

**CPC****COOPERATIVE PATENT CLASSIFICATION****B65H****HANDLING THIN OR FILAMENTARY MATERIAL, e.g. SHEETS, WEBS, CABLES****NOTE**

This subclass does not cover methods or devices intimately associated with other operations on thin or filamentary material, e.g. sheets, webs, cables or means for performing such operations, which are classified in the relevant subclasses for these operations, e.g.:

[B07C](#) Postal sorting, similar sorting of documents, e.g. cheques

[B08B 1/02](#) Cleaning travelling work, e.g. webs, by methods involving the use of tools, brushes or like members

[B21B 41/00](#) Metal rolling involving guiding, conveying or accumulating easily-flexible work, e.g. wire, sheet metal bands, in loops or curves

[B21C 47/00](#) , Winding-up, coiling, winding-off or temporarily

[B21C 49/00](#) accumulating metal wire, metal band or other flexible metal material, characterised by features relevant to metal processing only, other than by rolling

[B21D 43/00](#) Feeding, positioning or storing devices, combined with, or arranged in, or specially adapted for use in connection with, apparatus for working or processing sheet metal without essentially removing material

[B23K 9/12](#) Means for automatic feeding of electrodes for spot or seam welding or cutting

[B29C 31/00](#) Handling for shaping or joining of plastics, for shaping of substances in a plastic state in general or for after-treatment of shaped products, e.g. feeding the material to be shaped

[B41B 15/32](#) , Film-handling mechanisms in photographic

[B41B 21/32](#) composing machines

[B41F 13/02](#) Conveying or guiding webs through rotary printing presses or machines

[B41J 11/00](#) to Handling of copy- or impression-transfer material

[B41J 17/00](#) in typewriters or selective printing mechanisms

[B41K 3/44](#) Means for handling copy matter in stamping or numbering apparatus or devices

[B41L](#) Handling sheets or webs in apparatus or devices for manifolding, duplicating or printing for office or other commercial purposes, or on addressing machines or like series-printing machines

[B42B](#) Handling relating to permanently attaching together sheets, quires, or signatures

[B42C](#) Handling sheets in book-binding

[B65B](#) Handling of sheets or webs in apparatus for, or methods of, packaging articles, not of interest apart from their application in packaging machines

[B65C](#) Handling of labels in labelling or tagging apparatus

[C14B 1/62](#) Winding or stacking hides or leather in machines or devices for manufacturing leather

[D01](#) to [D07](#) Spinning, weaving, braiding, lace-making, knitting, sewing, making ropes or cables

[D21F 2/00](#) Transferring webs from wet ends to press

sections in paper-making  
[F26B 13/00](#) Handling fabrics, fibres, yarns or other material in long lengths in drying apparatus  
[G03B](#) Film-strip handling or handling of pictures in apparatus for taking photographs or for projecting or viewing them  
[G06K 13/00](#) Conveying record carriers from one station to another  
[G06M 7/00](#) Counting of flat articles, e.g. sheets, carried by a conveyer  
[G11B 15/00](#) to Information storage based on relative movement  
[G11B 19/00](#) , between record carrier and transducer,  
[G11B 23/00](#) , involving handling record carriers for  
[G11B 25/00](#) recording or reproducing  
[H01F 41/06](#) Manufacturing coils for magnets, inductances, transformers, by winding  
[H01G 13/02](#) Machines for winding capacitors  
[H04N 1/00](#) Sheet handling not of interest apart from its use in systems for transmission or reproduction of pictures or patterns not varying in time, e.g. facsimile transmission

**In this subclass:**

- the groups relating to thin material, as defined under (i) of Note (3) below, are primarily intended to cover the handling of articles made of paper or cardboard, but also include the handling of articles made of other materials which have similar characteristics or present similar handling problems, e.g. articles made of sheet-plastics or leather;
- the groups relating to filamentary material (groups [B65H 49/00](#) onwards,) as defined in Note (3) below, cover only methods or devices of general application or interest.

**In this subclass, the following terms or expressions are used with the meanings indicated:**

- "handling" includes feeding, folding (other than in the manufacture of products), guiding, orientating, storing, unwinding, and winding;
- "thin material" includes:
  - (i) sheets, signatures, envelopes, blanks, and thin and thin piles thereof (hereinafter referred to as "articles"), and
  - (ii) webs, tapes, and films, e.g. of paper, fabric, metal foil, or plastics;
- "filamentary material" includes thread, wires, ropes, cables, and hoses;
- "package" means a mass of filamentary material, formed by coiling, depositing, or winding, with or without a supporting core or former or an enclosing container or receptacle.
- {-"yarn" also covers similar filamentary materials. }

**WARNING**

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

- [B65H 35/07](#) covered by [B65H 35/0006](#) - [B65H 77/00](#) covered by [B65H 23/00](#) , [B65H 59/00](#) - [B65H 83/00](#) , [B65H 83/02](#) covered by

[B07C 1/02 C](#), [G07D 1/00 D](#), [G07D 11/00](#) and s.gr - [B65H 85/00](#)  
covered by [G03B 27/62](#) , [G03B 27/6264](#) , [G03B 27/6257](#)

**Guidance heading:** Feeding articles to machines ; Separating articles from piles ; Pile supports ( manipulators [B25J](#) )

**B65H 1/00** Supports or magazines for piles from which articles are to be separated ( carriers used for associating, collating, or gathering articles [B65H 39/00](#) )

- [B65H 1/02](#) . adapted to support articles on edge
- [B65H 1/022](#) . . { with non-controlled means for advancing the pile to present the pile to the separating device, e.g. weights or spring }
- [B65H 1/025](#) . . { with controlled positively-acting mechanical devices for advancing the pile to present the articles to the separating device }
- [B65H 1/027](#) . . { Support fully or partially removable from the handling machine, e.g. cassette, drawer }
- [B65H 1/04](#) . adapted to support articles substantially horizontally, e.g. for separation from top of pile
- [B65H 1/06](#) . . for separation from bottom of pile
- [B65H 1/08](#) . with means for advancing the articles to present the articles to the separating device { ( [B65H 1/02](#) takes precedence ) }
- [B65H 1/10](#) . . comprising weights { ( [B65H 1/022](#) takes precedence ) }
- [B65H 1/12](#) . . comprising spring { ( [B65H 1/022](#) takes precedence ) }
- [B65H 1/14](#) . . comprising positively-acting mechanical devices { ( [B65H 1/025](#) takes precedence ) }
- [B65H 1/16](#) . . comprising pneumatic or hydraulic means { ( [B65H 1/18](#) , [B65H 1/20](#) take precedence ) }
- [B65H 1/18](#) . . controlled by height of pile
- [B65H 1/20](#) . . controlled by weight of pile ; Floating arrangements
- [B65H 1/22](#) . . moving in direction of plane of articles, e.g. for bodily advancement of fanned-out piles
- [B65H 1/225](#) . . . { Round stack feeders }
- [B65H 1/24](#) . . with means for relieving or controlling pressure of the pile
- [B65H 1/26](#) . with auxiliary supports to facilitate introduction or renewal of the pile
- [B65H 1/263](#) . . { Auxiliary supports for keeping the pile in the separation process during introduction of a new pile }
- [B65H 1/266](#) . . { Support fully or partially removable from the handling machine, e.g. cassette, drawer ( [B65H 1/027](#) takes precedence ) }
- [B65H 1/28](#) . compartmented to receive piles side-by-side
- [B65H 1/30](#) . with means for replenishing the pile during continuous separation of articles therefrom

{ ( [B65H 1/22](#) takes precedence ) }

## B65H 3/00

**Separating articles from piles** ( associating, collating, or gathering articles [B65H 39/00](#) ; machines for separating superposed webs [B65H 41/00](#) ; unpiling thin material combined with folding [B65H 45/26](#) ; combinations of piling and depiling operations, of interest apart from the single operation of piling or depiling [B65H 83/00](#) , { [B07C 1/02](#) , [G07D 11/0084](#) } )

- B65H 3/02 . using friction forces between articles and separator
- B65H 3/04 . . Endless-belt separators
- B65H 3/042 . . . { separating from the bottom of the pile }
- B65H 3/045 . . . { for separating substantially vertically stacked articles }
- B65H 3/047 . . . { separating from the top of a pile }
- B65H 3/06 . . Rollers or like rotary separators { ( [B65H 3/42](#) takes precedence ) }
- B65H 3/0607 . . . { cooperating with means for automatically separating the pile from roller or rotary separator after a separation step }
- B65H 3/0615 . . . { reciprocating and rotatable in one direction only }
- B65H 3/0623 . . . { acting at least during a part of each separation cycle on the articles in a direction opposite to the final separating direction }
- B65H 3/063 . . . { separating from the bottom of pile ( [B65H 3/0615](#) , [B65H 3/0623](#) take precedence ) }
- B65H 3/0638 . . . { Construction of the rollers or like rotary separators ( [B65H 3/0615](#) takes precedence; construction of feed or guide rollers [B65H 27/00](#) ) }
- B65H 3/0646 . . . . { Wave generation rollers, i.e. combing wheels }
- B65H 3/0653 . . . { for separating substantially vertically stacked articles }
- B65H 3/0661 . . . { for separating inclined-stacked articles with separator rollers above the stack }
- B65H 3/0669 . . . { Driving devices therefor }
- B65H 3/0676 . . . { with two or more separator rollers in the feeding direction }
- B65H 3/0684 . . . { on moving support, e.g. pivoting, for bringing the roller or like rotary separator into contact with the pile }
- B65H 3/0692 . . . { Vacuum assisted separator rollers }
- B65H 3/08 . using pneumatic force { ( [B65H 3/40](#) , [B65H 3/42](#) take precedence ) }
- B65H 3/0808 . . { Suction grippers }
- B65H 3/0816 . . . { separating from the top of pile }
- B65H 3/0825 . . . . { and acting on the rear part of the articles relatively to the final separating direction }
- B65H 3/0833 . . . . { and acting on the front part of the articles relatively to the final separating direction }
- B65H 3/0841 . . . . . { this action resulting at least during a part of each separating cycle, in a movement of at least the front part of the articles in a direction opposite to the final separating direction }
- B65H 3/085 . . . { separating from the bottom of pile }
- B65H 3/0858 . . . . { this action resulting merely in a curvature of each article being separated ( in combination with the use of screw or like separators [B65H 3/28](#) ) }
- B65H 3/0866 . . . . . { the final separation being performed between rollers }

- B65H 3/0875 . . . . . { the final separation being performed by mechanical grippers }
- B65H 3/0883 . . . { Construction of suction grippers or their holding devices }
- B65H 3/0891 . . . { Generating or controlling the depression ( [B65H 3/0883](#) , [B65H 3/14](#) take precedence; in response to abnormal circumstances [B65H 7/16](#) ) }
- B65H 3/10 . . Suction rollers
- B65H 3/12 . . Suction bands, belts, or tables moving relatively to the pile
- B65H 3/122 . . . { Suction tables }
- B65H 3/124 . . . { Suction bands or belts }
- B65H 3/126 . . . . { separating from the bottom of pile }
- B65H 3/128 . . . . { separating from the top of pile }
- B65H 3/14 . . Air blasts producing partial vacuum
- B65H 3/16 . using magnetic force
- B65H 3/18 . using electrostatic force
- B65H 3/20 . using adhesives
- B65H 3/22 . by needles or the like engaging the articles
- B65H 3/24 . by pushers engaging the edges of the articles
- B65H 3/242 . . { for separating a part of the pile, i.e. several articles at once }
- B65H 3/245 . . . { the pile being pre-marked }
- B65H 3/247 . . . { the pile being off-set }
- B65H 3/26 . by separators engaging folds, flaps, or projections of articles
- B65H 3/28 . by screw or like separators
- B65H 3/30 . by escapement devices ( [screw and like separators](#) [B65H 3/28](#) ) ; from staggered piles ; from piles of articles having staggered formations, e.g. cuts or perforations
- B65H 3/32 . by elements, e.g. fingers, plates, rollers, inserted or traversed between articles to be separated and remainder of the pile ( [such elements acting only as supplementary devices to assist separation or prevent double feed](#) [B65H 3/50](#) )
- B65H 3/322 . . { for separating a part of the pile, i.e. several articles at once }
- B65H 3/325 . . . { the pile being pre-marked }
- B65H 3/327 . . . { the pile being off-set }
- B65H 3/34 . Article-retaining devices controlling the release of the articles to the separators
- B65H 3/36 . by separators moved in special paths, e.g. enclosing an area
- B65H 3/38 . . the paths not enclosing an area
- B65H 3/40 . by two or more separators acting alternately on the same pile ( [rotary or oscillating bodies carrying two or more separators](#) [B65H 3/42](#) )
- B65H 3/42 . by two or more separators mounted for movement with, or relative to, rotary or oscillating bodies

- B65H 3/44 . Simultaneously, alternately, or selectively separating articles from two or more piles
- B65H 3/443 . . { [simultaneously](#) }
- B65H 3/446 . . { [alternatively, i.e. according to a fixed sequence](#) }
  
- B65H 3/46 . Supplementary devices or measures to assist separation or prevent double feed ( [control means comprising detectors responsive to double feed B65H 7/12](#) )
- B65H 3/48 . . Air blast acting on edges of, or under, articles
- B65H 3/50 . . Elements, e.g. fingers, plates, rollers, inserted or traversed between articles to be separated and remainder of the pile
- B65H 3/52 . . Friction retainers acting on under or rear side of article being separated
- B65H 3/5207 . . . { [Non-driven retainers, e.g. movable retainers being moved by the motion of the article](#) }
- B65H 3/5215 . . . . { [for separation from the top of the pile](#) }
- B65H 3/5223 . . . . . { [Retainers of the pad-type, e.g. friction pads](#) }
- B65H 3/523 . . . . { [for separation from the bottom of the pile](#) }
- B65H 3/5238 . . . . . { [Retainers of the pad-type, e.g. friction pads](#) }
- B65H 3/5246 . . . { [Driven retainers, i.e. the motion thereof being provided by a dedicated drive](#) }
- B65H 3/5253 . . . . { [for separation from the top of the pile](#) }
- B65H 3/5261 . . . . . { [of the roller type, e.g. rollers](#) }
- B65H 3/5269 . . . . . { [of the belt type, e.g. belts](#) }
- B65H 3/5276 . . . . { [for separation from the bottom of the pile](#) }
- B65H 3/5284 . . . . . { [of the roller type, e.g. rollers](#) }
- B65H 3/5292 . . . . . { [of the belt type, e.g. belts](#) }
- B65H 3/54 . . Pressing or holding devices
- B65H 3/56 . . Elements, e.g. scrapers, fingers, needles, brushes, acting on separated article or on edge of the pile { ( [B65H 3/52 takes precedence](#) ) }
- B65H 3/565 . . . { [for reintroducing partially separated articles in the stack](#) }
- B65H 3/58 . . Articles spiked, threaded, cemented, or gummed together, to prevent double feed, e.g. piles with gummed edges
- B65H 3/60 . . Loosening articles in piles
- B65H 3/62 . . . by swinging, agitating, or knocking the pile
- B65H 3/64 . . . by vacuum apparatus
  
- B65H 3/66 . Article guides or smoothers, e.g. movable in operation
- B65H 3/68 . . immovable in operation
  
- B65H 5/00** **Feeding articles separated from piles ; Feeding articles to machines** ( [identical mechanisms or parts for delivering or advancing articles from machines \( { B65H 9/00 takes precedence; } identical mechanisms or parts for delivering or advancing articles from machines B65H 29/00 ; recirculating articles B65H 85/00 , { G03B 27/6257 } \)](#) )
  
- B65H 5/002 . { [Adaptations of counting devices \( delivery of articles from machines B65H 29/001 \)](#) }
- B65H 5/004 . { [using electrostatic force](#) }
- B65H 5/006 . { [Feeding stacks of articles to machines](#) }

- B65H 5/008 . { using vibrations }
- B65H 5/02 . by belts or chains, { e.g. between belts or chains ( by combinations of endless conveyers and grippers [B65H 5/085](#) ; by suction belts [B65H 5/224](#) ) }
- B65H 5/021 .. { by belts }
- B65H 5/023 ... { between a pair of belts forming a transport nip }
- B65H 5/025 ... { between belts and rotary means, e.g. rollers, drums, cylinders or balls, forming a transport nip }
- B65H 5/026 ... { between belts and stationary pressing, supporting or guiding elements forming a transport nip }
- B65H 5/028 .. { by chains }
- B65H 5/04 . by movable tables or carriages ( rotary tables [B65H 5/18](#) ; { suction gripper or gripper tables [B65H 5/10](#) } )
- B65H 5/06 . by rollers { or balls e.g. between rollers ( transport by suction rollers [B65H 5/226](#) ) }
- B65H 5/062 .. { between rollers or balls }
- B65H 5/064 ... { the axes of the rollers being perpendicular to the plane of the articles }
- B65H 5/066 .. { the articles resting on rollers or balls }
- B65H 5/068 .. { between one or more rollers or balls and stationary pressing, supporting or guiding elements }
- B65H 5/08 . by grippers, e.g. suction grippers
- B65H 5/085 .. { by combinations of endless conveyers and grippers ( suction belts [B65H 5/224](#) ) }
- B65H 5/10 .. Reciprocating or oscillating grippers { e.g. suction or gripper tables }
- B65H 5/12 .. Revolving grippers, e.g. mounted on arms, frames or cylinders
- B65H 5/14 .. Details of grippers ; Actuating-mechanisms therefor
- B65H 5/16 . by pusher, needles, friction, or like devices adapted to feed single articles along a surface or table
- B65H 5/18 . by rotary dials or tables
- B65H 5/20 . by dropping-roller or like device
- B65H 5/22 . by air-blast or suction device ( suction grippers [B65H 5/08](#) )
- B65H 5/222 .. { by suction devices }
- B65H 5/224 ... { by suction belts ( [B65H 11/005](#) takes precedence ) }
- B65H 5/226 ... { by suction rollers }
- B65H 5/228 .. { by air-blast devices }
- B65H 5/24 . { Feeding articles in overlapping streams, i.e. by separation of articles from a pile }
- B65H 5/26 . Duplicate, alternate, selective, or coacting feeds
- B65H 5/28 . Feeding articles stored in rolled or folded bands
- B65H 5/30 . Opening devices for folded sheets or signatures

- B65H 5/301 . . { comprising blade-like means inserted between the parts to be opened }
- B65H 5/302 . . . { the blade-like means being stationary }
- B65H 5/303 . . { comprising movable endless means for opening the folded sheets ( [B65H 5/308 takes precedence](#) ) }
- B65H 5/305 . . { comprising rotary means for opening the folded sheets ( [B65H 5/308 takes precedence](#) ) }
- B65H 5/306 . . . { two opposite rotary means, only one of them having gripping means }
- B65H 5/307 . . . { two opposite rotary means, both having gripping means }
- B65H 5/308 . . { the folded sheets or signatures travelling in hanging position }
  
- B65H 5/32 . Saddle-like members over which partially-unfolded sheets or signatures are fed to signature-gathering, stitching, or like machines
  
- B65H 5/34 . Varying the phase of feed relative to the receiving machine
  
- B65H 5/36 . Article guides or smoothers, e.g. movable in operation
- B65H 5/38 . . immovable in operation
  
- B65H 7/00 Controlling article feeding, separating, pile-advancing, or associated apparatus, to take account of incorrect feeding, absence of articles, or presence of faulty articles**
  
- B65H 7/02 . by feelers or detectors
- B65H 7/04 . . responsive to absence of articles, e.g. exhaustion of pile ( [B65H 7/14 takes precedence](#) )
- B65H 7/06 . . responsive to presence of faulty articles or incorrect separation or feed ( [B65H 7/14 takes precedence](#) )
- B65H 7/08 . . . responsive to incorrect front register
- B65H 7/10 . . . responsive to incorrect side register ( [controlling transverse register of webs B65H 23/032](#) )
- B65H 7/12 . . . responsive to double feed or separation
- B65H 7/125 . . . . { [sensing the double feed or separation without contacting the articles](#) }
- B65H 7/14 . . by photoelectric feelers or detectors
  
- B65H 7/16 . Controlling air-supply to pneumatic separators
  
- B65H 7/18 . Modifying or stopping actuation of separators
  
- B65H 7/20 . Controlling associated apparatus
  
- B65H 9/00 Registering, e.g. orientating, articles ; Devices therefor**
  
- B65H 9/002 . { [changing orientation of sheet by only controlling movement of the forwarding means, i.e. without the use of stop or register wall](#) }
  
- B65H 9/004 . { [Deskewing sheet by abutting against a stop, i.e. producing a buckling of the sheet](#) }
- B65H 9/006 . . { [the stop being formed by forwarding means in stand-by](#) }
- B65H 9/008 . . { [the stop being formed by reversing the forwarding means](#) }



- B65H 9/02 . Gauge pins
- B65H 9/04 . Fixed or adjustable stops or gauges ( gauge pins [B65H 9/02](#) )
- B65H 9/06 . Movable stops or gauges, e.g. rising and falling front stops [ N: ( [B65H 11/007](#) takes precedence ) ]
- B65H 9/08 . Holding devices, e.g. finger, needle, suction, for retaining articles in registered position
- B65H 9/10 . Pusher and like movable registers ; Pusher or gripper devices which move articles into registered position

#### **NOTE**

After the notation of the groups [B65H 9/10](#) to [B65H 9/108](#) and separated therefrom by a + sign, the notation L may be added to indicate that the device moves articles, already positioned in registered position according to a first direction, into registered position along a second direction perpendicular to the first one, e.g. for lateral registering

- B65H 9/101 . . { acting on the edge of the article }
- B65H 9/103 . . { acting by friction or suction on the article for pushing or pulling it into registered position, e.g. against a stop }
- B65H 9/105 . . . { using suction means }
- B65H 9/106 . . . { using rotary driven elements as part acting on the article ( [B65H 9/105](#) takes precedence; registering laterally while article is forwarded in principal direction [B65H 9/16](#) ) }
- B65H 9/108 . . { acting by air blast }
- B65H 9/12 . carried by article grippers
- B65H 9/14 . Retarding or controlling the forward movement of articles as they approach stops
- B65H 9/16 . Inclined tape, roller, or like article-forwarding side registers
- B65H 9/163 . . { Tape }
- B65H 9/166 . . { Roller }
- B65H 9/18 . Assisting by devices such as reflectors, lenses, transparent sheets, or mechanical indicators
- B65H 9/20 . Assisting by photoelectric, sonic, or pneumatic indicators

#### **B65H 11/00      Feed tables**

- B65H 11/002 . { incorporating transport belts }
- B65H 11/005 . . { Suction belts }
- B65H 11/007 . { with front stop arrangements }
- B65H 11/02 . angularly adjustable in plane of articles

**B65H 13/00**                    **Lifting the ends of piles to facilitate the formation of overlapped piles**

**B65H 15/00**                    **Overturning articles**

B65H 15/02                    .    Overturning piles

**Guidance heading:** **Feeding webs to or from machines ; Winding or unwinding webs ; Splicing webs** ( web-delivering apparatus incorporating devices for performing auxiliary operations [B65H 35/00](#) , [B65H 37/00](#) ; associating two or more webs [B65H 39/16](#) ; winding or unwinding metal band or like flexible metallic material during manufacture [B21C](#) ; { [cutting machines or devices in general B26D](#) } ; inselective printers, e.g. typewriters, ink-ribbon mechanisms [B41J](#) ; in cinematographic or photographic apparatus [G03B](#) ; winding, unwinding, or feeding tape to, in, or from, information processing apparatus [G06](#) , [G11B](#) )

**B65H 16/00**                    **Unwinding, paying-out webs** { ( reel-to-reel type web winding and unwinding mechanisms [B65H 18/103](#) , [B65H 18/145](#) ) }

B65H 16/005                    .    { [Dispensers, i.e. machines for unwinding only parts of web roll](#) }

B65H 16/02                    .    Supporting web roll

B65H 16/021                    ..    { [Multiple web roll supports or holders](#) }

B65H 16/023                    ...    { [rotatable](#) }

B65H 16/025                    ..    { [Unwinding apparatus incorporating length-measuring devices](#) }

B65H 16/026                    ..    { [Unwinding apparatus incorporating inspecting devices](#) }

B65H 16/028                    ..    { [on its outer circumference \( \[B65H 16/08\]\(#\) takes precedence \)](#) }

B65H 16/04                    ..    cantilever type

B65H 16/06                    ..    both-ends type

B65H 16/08                    ..    parallel rollers type

B65H 16/10                    .    Arrangements for effecting positive rotation of web roll

B65H 16/103                    ..    { [in which power is applied to web-roll spindle](#) }

B65H 16/106                    ..    { [in which power is applied to web roll](#) }

**B65H 18/00**                    **Winding webs**

B65H 18/02                    .    Supporting web roll

B65H 18/021                    ..    { [Multiple web roll supports](#) }

B65H 18/023                    ..    { [on its outer circumference](#) }

B65H 18/025                    ...    { [Parallel rollers type](#) }

B65H 18/026                    ..    { [Cantilever type](#) }

B65H 18/028                    ..    { [Both ends type](#) }

B65H 18/04                    ..    Interior-supporting

B65H 18/06                    ..    Lateral-supporting

B65H 18/08                    .    Web-winding mechanisms

- B65H 18/085 . . { for non-continuous winding }
- B65H 18/10 . . Mechanisms in which power is applied to web-roll spindle
- B65H 18/103 . . . { Reel-to-reel type web winding and unwinding mechanisms }
- B65H 18/106 . . . { for several juxtaposed strips }
- B65H 18/12 . . . to effect step-by-step advancement of web
- B65H 18/14 . . Mechanisms in which power is applied to web roll, e.g. to effect continuous advancement of web
- B65H 18/145 . . . { Reel-to-reel type web winding and unwinding mechanisms }
- B65H 18/16 . . . by friction roller
- B65H 18/18 . . . . to effect step-by-step advancement of web { ( not used ) }
- B65H 18/20 . . . the web roll being supported on two parallel rollers at least one of which is driven
- B65H 18/22 . . . by friction band
- B65H 18/24 . . . . to effect step-by-step advancement of web { ( not used ) }
- B65H 18/26 . . Mechanisms for controlling contact pressure on winding-web package, e.g. for regulating the quantity of air between web layers
- B65H 18/28 . Wound package of webs

**B65H 19/00****Changing the web roll**

- B65H 19/10 . in unwinding mechanisms or in connection with unwinding operations
- B65H 19/102 . . { Preparing the leading end of the replacement web before splicing operation; Adhesive arrangements on leading end of replacement web; Tabs and adhesive tapes for splicing }
- B65H 19/105 . . { Opening of web rolls; Removing damaged outer layers; Detecting the leading end of a closed web roll }
- B65H 19/107 . . { Processing the trailing end of the replaced web after splicing operation, e.g. rewinding it }
- B65H 19/12 . . Lifting, transporting, or inserting the web roll ; Removing empty core
- B65H 19/123 . . . { with cantilever supporting arrangements }
- B65H 19/126 . . . { with both-ends supporting arrangements }
- B65H 19/14 . . Accumulating surplus web for advancing to machine while changing the web roll
- B65H 19/18 . . Attaching, e.g. pasting, the replacement web to the expiring web { ( adhesive arrangements on leading end of replacement web, tabs and adhesive tapes for splicing [B65H 19/102](#) ) }

**WARNING**

Groups [B65H 19/1805](#) to [B65H 19/1842](#) are not complete pending reclassification. See also this group

- B65H 19/1805 . . . { Flying splicing, i.e. the expiring web moving during splicing contact }
- B65H 19/181 . . . . { taking place on the replacement roll }
- B65H 19/1815 . . . . . { the replacement web being stationary prior to splicing contact }
- B65H 19/1821 . . . . . { the replacement web being accelerated or running prior to splicing contact }

|              |       |  |
|--------------|-------|--|
| B65H 19/1826 | ....  | { taking place at a distance from the replacement roll }   |
| B65H 19/1831 | ..... | { the replacement web being stationary prior to splicing contact }   |
| B65H 19/1836 | ..... | { the replacement web being accelerated or running prior to splicing contact }   |
| B65H 19/1842 | ...   | { standing splicing, i.e. the expiring web being stationary during splicing contact }  |
| B65H 19/1847 | ....  | { taking place on the replacement roll }   |
| B65H 19/1852 | ....  | { taking place at a distance from the replacement roll }   |
| B65H 19/1857 | ...   | { Support arrangement of web rolls }   |
| B65H 19/1863 | ....  | { with translatory or arcuated movement of the roll supports }   |
| B65H 19/1868 | ....  | { The roll support being of the turret type }  |
| B65H 19/1873 | ....  | { with two stationary roll supports carrying alternately the replacement and the expiring roll }   |
| B65H 19/1878 | ....  | { with one stationary support for the rolls }  |
| B65H 19/1884 | ...   | { Details for effecting a positive rotation of web roll, e.g. accelerating the replacement roll }  |
| B65H 19/1889 | ....  | { related to driving arrangements }  |
| B65H 19/1894 | ....  | { the replacement web being accelerated through contact with the expiring web }  |
| B65H 19/20   | ..    | Cutting-off the expiring web   |
| B65H 19/22   | .     | in winding mechanisms or in connection with winding operations   |
| B65H 19/2207 | ..    | { the web roll being driven by a winding mechanism of the centre or core drive type }  |
| B65H 19/2215 | ...   | { Turret-type with two roll supports }   |
| B65H 19/2223 | ...   | { Turret-type with more than two roll supports }   |
| B65H 19/223  | ...   | { with roll supports being independently displaceable along a common path }  |
| B65H 19/2238 | ..    | { The web roll being driven by a winding mechanism of the nip or tangential drive type ( <a href="#">B65H 19/2276</a> takes precedence ) }   |
| B65H 19/2246 | ...   | { and the roll being supported on two rollers }  |
| B65H 19/2253 | ...   | { and the roll being displaced during the winding operation }  |
| B65H 19/2261 | ..... | { Pope-roller }  |
| B65H 19/2269 | ...   | { Cradle }   |
| B65H 19/2276 | ..    | { The web roll being driven by a winding mechanism of the coreless type }  |
| B65H 19/2284 | ..    | { Simultaneous winding at several stations, e.g. slitter-rewinders }   |
| B65H 19/2292 | ..    | { Removing cores from rolls or removing mandrels from coreless rolls after winding }   |
| B65H 19/24   | ..    | Accumulating surplus delivered web while changing the web roll   |
| B65H 19/26   | ..    | Cutting-off the web running to the wound web roll  |
| B65H 19/262  | ...   | { using a thin or filamentary material which is wound on the new roll }  |
| B65H 19/265  | ...   | { using a cutting member moving linearly in a plane parallel to the surface of the web and along a direction crossing the web }  |
| B65H 19/267  | ...   | { by tearing or bursting }   |
| B65H 19/28   | ..    | Attaching the leading end of the web to the replacement web-roll core or spindle ( <a href="#">cores, formers, supports or holders, e.g. reels, with arrangements for securing ends of material <a href="#">B65H 75/28</a></a> ) |

|                   |   |
|-------------------|---|
| B65H 19/283       | ... { by applying adhesive to the core }  |
| B65H 19/286       | ... { by applying adhesive to the web }   |
| B65H 19/29        | .. Securing the trailing end of the wound web to the web roll ( cores, formers, supports or holders, e.g. reels, with arrangements for securing ends of material <a href="#">B65H 75/28</a> ) |
| B65H 19/30        | .. Lifting, transporting, or removing the web roll ; Inserting core   |
| B65H 19/305       | ... { Inserting core }  |
| <b>B65H 20/00</b> | <b>Advancing webs</b>   |
| B65H 20/005       | . { Electrical drive motor control devices therefor }   |
| B65H 20/02        | . by friction roller  |
| B65H 20/04        | .. to effect step-by-step advancement of web  |
| B65H 20/06        | . by friction band  |
| B65H 20/08        | .. to effect step-by-step advancement of web  |
| B65H 20/10        | . by a feed band against which web is held by fluid pressure, e.g. suction or air blast   |
| B65H 20/12        | . by suction roller   |
| B65H 20/14        | . by direct action on web of moving fluid   |
| B65H 20/16        | . by web-gripping means, e.g. grippers, clips   |
| B65H 20/18        | .. to effect step-by-step advancement of web  |
| B65H 20/20        | . by web-penetrating means, e.g. pins   |
| B65H 20/22        | .. to effect step-by-step advancement of web  |
| B65H 20/24        | . by looping or like devices  |
| B65H 20/26        | . Mechanisms for advancing webs to or from the inside of web rolls  |
| B65H 20/28        | . Mechanisms for delivering webs in superposed folds and refeeding them from the lower end of the folded assemblies   |
| B65H 20/30        | . Arrangements for accumulating surplus web ( while changing the web roll <a href="#">B65H 19/14</a> , <a href="#">B65H 19/24</a> )   |
| B65H 20/32        | .. by making loops  |
| B65H 20/34        | ... with rollers  |
| B65H 20/36        | . having means to optionally advance the web either in one longitudinal direction or in the opposite longitudinal direction   |
| B65H 20/38        | .. by changing the direction of mechanism driving the web-roll spindle  |
| B65H 20/40        | .. by changing the direction of mechanism driving the pinch roller  |
| <b>B65H 21/00</b> | <b>Apparatus for splicing webs ( during web-roll changing <a href="#">B65H 19/00</a> )</b>  |

- B65H 21/02 . for premarked, e.g. preprinted, webs
- B65H 23/00** **Registering, tensioning, smoothing or guiding webs** ( registering articles [B65H 9/00](#) ; in connection with splicing [B65H 21/00](#) )
- B65H 23/005 . { Sensing web roll diameter ( warning or safety devices responsive to a predetermined diameter [B65H 26/08](#) ) }
- B65H 23/02 . transversely ( by tentering, gripper, or like apparatus operating on fabric webs [D06C](#) )
- B65H 23/0204 . . { Sensing transverse register of web ( and controlling it [B65H 23/032](#) ) }
- B65H 23/0208 . . . { with an element engaging the edge of the web }
- B65H 23/0212 . . . { with an element utilising fluid flow }
- B65H 23/0216 . . . { with an element utilising photoelectric effect }
- B65H 23/022 . by tentering devices
- B65H 23/025 . . by rollers
- B65H 23/0251 . . . { with a straight axis }
- B65H 23/0253 . . . . { with axially movable elements }
- B65H 23/0255 . . . . { with axially stretchable elements }
- B65H 23/0256 . . . . { with opposed helicoidal windings }
- B65H 23/0258 . . . { with a bowed axis }
- B65H 23/028 . . by clips
- B65H 23/032 . Controlling transverse register of web
- B65H 23/0322 . . { by acting on edge regions of the web }
- B65H 23/0324 . . { by acting on lateral regions of the web }
- B65H 23/0326 . . { by moving the unwinding device }
- B65H 23/0328 . . { by moving the winding device }
- B65H 23/035 . . by guide bars
- B65H 23/038 . . by rollers
- B65H 23/04 . longitudinally
- B65H 23/042 . . { Sensing the length of a web loop ( sensing web tension [23/04B](#) ) }
- B65H 23/044 . . { Sensing web tension ( [B65H 23/06](#) , [B65H 23/18](#) take precedence ) }
- B65H 23/046 . . { Sensing longitudinal register of web ( [B65H 23/18](#) takes precedence ) }
- B65H 23/048 . . { by positively actuated movable bars or rollers }
- B65H 23/06 . by retarding devices, e.g. acting on web-roll spindle
- B65H 23/063 . . { and controlling web tension }
- B65H 23/066 . . { Electrical brake devices therefor ( [B65H 23/063](#) takes precedence ) }
- B65H 23/08 . . acting on web roll being unwound
- B65H 23/085 . . . { and controlling web tension }
- B65H 23/10 . . acting on running web ( suction retarders [B65H 23/24](#) )
- B65H 23/105 . . . { and controlling web tension }
- B65H 23/12 . . . and causing parts thereof to move in opposite directions and in frictional engagement

- B65H 23/14 . . . . Tensioning rollers applying braking forces
- B65H 23/16 . . by weighted or spring-pressed movable bars or rollers
- B65H 23/18 . . by controlling or regulating the web-advancing mechanism, e.g. mechanism acting on the running web
- B65H 23/1806 . . . { in reel-to-reel type web winding and unwinding mechanism, e.g. mechanism acting on web-roll spindle }
- B65H 23/1813 . . . . { acting on web-roll }
- B65H 23/182 . . in unwinding mechanisms or in connection with unwinding operations
- B65H 23/1825 . . . . { and controlling web tension }
- B65H 23/185 . . . . motor-controlled
- B65H 23/188 . . in connection with running-web
- B65H 23/1882 . . . . { and controlling longitudinal register of web }
- B65H 23/1884 . . . . . { with step-by-step advancement }
- B65H 23/1886 . . . . . { Synchronising two or more webs }
- B65H 23/1888 . . . . { and controlling web tension }
- B65H 23/192 . . . . motor-controlled
- B65H 23/195 . . in winding mechanisms or in connection with winding operations
- B65H 23/1955 . . . . { and controlling web tension }
- B65H 23/198 . . . . motor-controlled { ( Controlling electrical drive motors therefor ) }
- B65H 23/24 . . by fluid action, e.g. to retard the running web
- B65H 23/245 . . . { Suction retarders }
- B65H 23/26 . . by transverse stationary or adjustable bars or rollers
- B65H 23/28 . . by longitudinally-extending strips, tubes, plates, or wires ( flexible tapes or bands [B65H 23/30](#) )
- B65H 23/30 . . by longitudinally-extending flexible tapes or bands
- B65H 23/32 . . Arrangements for turning or reversing webs
- B65H 23/34 . . Apparatus for taking-out curl from webs
  
- B65H 26/00** **Warning or safety devices, e.g. automatic fault detectors, stop-motions, for web-advancing mechanisms** ( safety devices in general [F16P](#) ; investigating chemical or physical properties of materials in general [G01N](#) ; indicating devices in general [G08B](#) )
  
- B65H 26/02 . responsive to presence of irregularities in running webs
- B65H 26/025 . . { responsive to web breakage }
- B65H 26/04 . . for variation in tension
  
- B65H 26/06 . responsive to predetermined lengths of webs
- B65H 26/063 . . { responsive to detection of the trailing edge }
- B65H 26/066 . . { responsive to information, e.g. printed mark, on the web or web roll }
  
- B65H 26/08 . responsive to a predetermined diameter
  
- B65H 27/00** **Special constructions of feed or guide rollers and surfaces thereof** ( { tentering rollers [B65H 23/02](#) } ; rollers in general [F16C 13/00](#) )

**Guidance heading:** Delivering articles from machines ; Piling articles ; Article or web delivery

**apparatus incorporating devices for performing specified auxiliary operations ; Associating or gathering articles or webs ; Machines for separating superposed webs**

## **B65H 29/00**

**Delivering or advancing articles from machines ; Advancing articles to or into piles**

- B65H 29/001 . { Adaptations of counting devices ( to feeding of articles to machines [B65H 5/002](#) ) }
- B65H 29/003 . { by grippers ( [B65H 29/02](#) takes precedence ) }
- B65H 29/005 .. { by chains or bands having mechanical grippers engaging the side edges of articles, e.g. newspaper conveyors }
- B65H 29/006 . { Winding articles into rolls }
- B65H 29/008 .. { Winding single articles into single rolls }
- B65H 29/02 . by mechanical grippers engaging the leading edge only of the articles
- B65H 29/04 .. the grippers being carried by endless chains or bands
- B65H 29/041 ... { and introducing into a pile ( slowing-down from grippers [B65H 29/683](#) ) }
- B65H 29/042 ... { Intermediate conveyers, e.g. transferring devices }
- B65H 29/044 .... { conveying through a machine }
- B65H 29/045 ... { Details of grippers }
- B65H 29/047 .... { Gripper opening devices }
- B65H 29/048 .... { Self-opening and -closing grippers }
- B65H 29/06 .. the grippers being carried by rotating members
- B65H 29/08 .. the grippers being oscillated in arcuate paths
- B65H 29/10 .. the grippers being reciprocated in rectilinear paths
- B65H 29/12 . by means of the nip between two, or between two sets of, moving tapes or bands { or rollers }
- B65H 29/125 .. { between two sets of rollers }
- B65H 29/14 .. and introducing into a pile
- B65H 29/145 ... { the pile being formed between the two, or between the two sets of, tapes or bands or rollers }
- B65H 29/16 . by contact of one face only with moving tapes, bands, or chains { ( with suction belts [B65H 29/242](#) ) }
- B65H 29/18 .. and introducing into a pile
- B65H 29/20 . by contact with rotating friction members, e.g. rollers, brushes, or cylinders { ( with suction rollers [B65H 29/243](#) ) }
- B65H 29/22 .. and introducing into a pile
- B65H 29/24 . by air blast or suction apparatus ( { [B65H 5/22](#) takes precedence; } dropping articles from suction carriers [B65H 29/32](#) { ; pneumatic brakes [B65H 29/686](#) } )
- B65H 29/241 .. { Suction devices }
- B65H 29/242 ... { Suction bands or belts }



- B65H 29/243 . . . { Suction rollers }
- B65H 29/245 . . { Air blast devices }
- B65H 29/246 . . . { acting on stacking devices }
- B65H 29/247 . . . . { blowing on upperside of the sheet }
- B65H 29/248 . . . { with coanda effect ( separating from a stack [B65H 3/14](#) ) }
  
- B65H 29/26 . by dropping { the articles }
- B65H 29/28 . . from mechanical grippers ( grippers engaging the leading edge only [B65H 29/02](#) )
- B65H 29/30 . . from magnetic holders
- B65H 29/32 . . from pneumatic, e.g. suction, carriers
- B65H 29/34 . . from supports slid from under the articles
- B65H 29/36 . . from tapes, bands, or rollers rolled from under the articles
  
- B65H 29/38 . by movable piling or advancing arms, frames, plates, or like members with which the articles are maintained in face contact
- B65H 29/40 . . Members rotated about an axis perpendicular to direction of article movement, e.g. star-wheels formed by S-shaped members
- B65H 29/42 . . Members rotated about an axis parallel to direction of article movement, e.g. helices
- B65H 29/44 . . Members oscillated in arcuate paths
- B65H 29/46 . . Members reciprocated in rectilinear path
  
- B65H 29/48 . by tables arranged to be tilted to cause sliding of articles
  
- B65H 29/50 . Piling apparatus of which the discharge point moves in accordance with the height to the pile
- B65H 29/51 . . piling by collecting on the periphery of cylinders
  
- B65H 29/52 . Stationary guides or smoothers
  
- B65H 29/54 . Article strippers, e.g. for stripping from advancing elements
- B65H 29/56 . . for stripping from elements or machines { for electrographic machines [G03G](#) }
  
- B65H 29/58 . Article switches or diverters
- B65H 29/585 . . { taking samples from the main stream }
- B65H 29/60 . . diverting the stream into alternative paths ( [B65H 29/62](#) takes precedence )
- B65H 29/62 . . diverting faulty articles from the main streams ( control devices detecting faulty articles [B65H 43/04](#) )
- B65H 29/64 . . directing the components of composite articles into separate paths
  
- B65H 29/66 . Advancing articles in overlapping streams
- B65H 29/6609 . . { forming an overlapping stream ( by separation of articles from a pile [B65H 5/24](#) ) }
- B65H 29/6618 . . . { upon transfer from a first conveyor to a second conveyor advancing at slower speed }
- B65H 29/6627 . . . . { in combination with auxiliary means for overlapping articles }
- B65H 29/6636 . . . . { in combination with auxiliary means for underlapping articles }

- B65H 29/6645 . . { buffering an overlapping stream of articles ( winding articles into rolls [B65H 29/006](#) ) }
- B65H 29/6654 . . { changing the overlapping figure }
- B65H 29/6663 . . . { reversing the overlapping figure ( round stack feeder [B65H 1/225](#) ) }
- B65H 29/6672 . . { dividing an overlapping stream into two or more streams; ( articles switches or diverters [B65H 29/58](#) ) }
- B65H 29/6681 . . { merging two or more streams into an overlapping stream }
- B65H 29/669 . . { ending an overlapping stream }
  
- B65H 29/68 . Reducing the speed of articles as they advance
- B65H 29/683 . . { Slowing-down from chain delivery ( [B65H 29/686](#) takes precedence ) }
- B65H 29/686 . . { Pneumatic brakes }
  
- B65H 29/70 . Article bending or stiffening arrangements
  
- B65H 31/00** **Pile receivers** ( carriers used for associating, collating or gathering articles [B65H 39/00](#) )
  
- B65H 31/02 . with stationary end support against which pile accumulates
  
- B65H 31/04 . with movable end support arranged to recede as pile accumulates
- B65H 31/06 . . the articles being piled on edge
- B65H 31/08 . . the articles being piled one above another
- B65H 31/10 . . . and applied at the top of the pile
- B65H 31/12 . . Devices relieving the weight of the pile or permitting or effecting movement of the pile end support during piling
- B65H 31/14 . . . Springs ( fluid springs [B65H 31/16](#) )
- B65H 31/16 . . . Fluid-pressure devices
- B65H 31/18 . . . Positively-acting mechanical devices
  
- B65H 31/20 . adjustable for different article sizes
  
- B65H 31/22 . removable or interchangeable
  
- B65H 31/24 . multiple or compartmented, e.d. for alternate, programmed, or selective filling
  
- B65H 31/26 . Auxiliary devices for retaining articles in the pile
  
- B65H 31/28 . Bands, chains, or like moving receivers ( for articles piled on edge [B65H 31/06](#) )
  
- B65H 31/30 . Arrangements for removing completed piles ( bands, chains, or like moving receivers [B65H 31/28](#) )
- B65H 31/3009 . . { by dropping, e.g. removing the pile support from under the pile }
- B65H 31/3018 . . . { from opposite part-support elements, e.g. operated simultaneously }
- B65H 31/3027 . . { by the nip between moving belts or rollers ( pile being formed between belts or rollers [B65H 29/145](#) ) }
- B65H 31/3036 . . { by gripping the pile }
- B65H 31/3045 . . . { on the outermost articles of the pile for clamping the pile }

- B65H 31/3054 . . { by moving the surface supporting the lowermost article of the pile, e.g. by using belts or rollers }
- B65H 31/3063 . . . { by special supports like carriages, containers, trays, compartments, plates or bars, e.g. moved in a closed loop }
- B65H 31/3072 . . { by moving a surface supporting the pile of articles on edge, e.g. by using belts or carriages }
- B65H 31/3081 . . { by acting on edge of the pile for moving it along a surface, e.g. by pushing }
- B65H 31/309 . . { by acting on one of the outermost articles for moving the pile of articles on edge along a surface, e.g. by pushing }
  
- B65H 31/32 . Auxiliary devices for receiving articles during removal of a completed pile
  
- B65H 31/34 . Apparatus for squaring-up piled articles
- B65H 31/36 . . Auxiliary devices for contacting each article with a front stop as it is piled
- B65H 31/38 . . Apparatus for vibrating or knocking the pile during piling
- B65H 31/40 . . Separate receivers, troughs, and like apparatus for knocking-up completed piles
  
- B65H 33/00      Forming counted batches in delivery pile or stream of articles**
  
- B65H 33/02 . by moving a blade or like member into the pile
  
- B65H 33/04 . by inserting marker slips in pile or stream
  
- B65H 33/06 . by displacing articles to define batches
- B65H 33/08 . . Displacing whole batches, e.g. forming stepped piles
- B65H 33/10 . . Displacing the end articles of a batch
  
- B65H 33/12 . by creating gaps in the stream
  
- B65H 33/14 . by diverting batches to separate receivers { ( [B65H 33/16](#) takes precedence; article switches or diverters [B65H 29/58](#) ) }
  
- B65H 33/16 . by depositing articles in batches on moving supports
- B65H 33/18 . . with separators between adjacent batches
  
- B65H 35/00      Delivering articles from cutting or line-perforating machines ; Article or web delivery apparatus incorporating cutting or line-perforating devices, e.g. of the kinds specified below ( [cutting or perforating machines or devices in general B26D](#) , [B26F](#) )**
  
- B65H 35/0006 . { Article or web delivery apparatus incorporating cutting or line-perforating devices }
- B65H 35/0013 . . { and applying the article or the web by adhesive to a surface ( [B65H 35/002](#) takes precedence ) }
- B65H 35/002 . . { Hand-held or table apparatus ( [B65H 35/006](#) takes precedence ) }
- B65H 35/0026 . . . { for delivering pressure-sensitive adhesive tape }
- B65H 35/0033 . . . . { and affixing it to a surface ( [B65H 35/004](#) takes precedence ) }
- B65H 35/004 . . . . { simultaneously with a second roll, e.g. masking tape }
- B65H 35/0046 . . . { with means for moistening or coating the articles or webs, or applying

- adhesive thereto }
- B65H 35/0053 . . . . { and affixing it to a surface }
- B65H 35/006 . . { with means for delivering a predetermined length of tape }
- B65H 35/0066 . . . { this length being adjustable }
- B65H 35/0073 . . { Details }
- B65H 35/008 . . . { Arrangements or adaptations of cutting devices }
- B65H 35/0086 . . . . { using movable cutting elements }
- B65H 35/0093 . . . { Arrangements or adaptations of length measuring devices }
  
- B65H 35/02 . from or with longitudinal slitters or perforators
  
- B65H 35/04 . from or with transverse cutters or perforators
- B65H 35/06 . . from or with blade, e.g. shear-blade, cutters or perforators ( from or with revolving blade [B65H 35/08](#) )
- B65H 35/08 . . from or with revolving, e.g. cylinder, cutters or perforators
  
- B65H 35/10 . from or with devices for breaking partially-cut or perforated webs, e.g. bursters
  
- B65H 37/00** **Article or web delivery apparatus incorporating devices for performing specified auxiliary operations ( incorporating cutting or line-perforating devices [B65H 35/00](#) )**
  
- B65H 37/002 . { Web delivery apparatus, the web serving as support for articles, material or another web }
- B65H 37/005 . . { Hand-held apparatus }
- B65H 37/007 . . . { Applicators for applying coatings, e.g. correction, colour or adhesive coatings }
  
- B65H 37/02 . for applying adhesive ( and securing together [B65H 37/04](#) )
  
- B65H 37/04 . for securing together articles or webs, e.g. by adhesive, stitching or stapling ( adhering replacement to expiring web during change of web roll [B65H 19/18](#) )
  
- B65H 37/06 . for folding
  
- B65H 39/00** **Associating, collating or gathering articles or webs ( machines for both collating or gathering and permanently attaching together sheets or signatures [B42C 1/00](#) )**
  
- B65H 39/02 . Associating, collating or gathering articles from several sources
- B65H 39/04 . . from piles
- B65H 39/041 . . . the piles being disposed in rotary carriers
- B65H 39/042 . . . the piles being disposed in superposed carriers
- B65H 39/043 . . . the piles being disposed in juxtaposed carriers
- B65H 39/045 . . . by collecting in rotary carriers
- B65H 39/05 . . . by collecting in superposed carriers
- B65H 39/055 . . . by collecting in juxtaposed carriers
- B65H 39/06 . . from delivery streams
- B65H 39/065 . . . by collecting in rotary carriers

- B65H 39/07 . . . by collecting in superposed carriers
- B65H 39/075 . . . by collecting in juxtaposed carriers
- B65H 39/10 . Associating articles from a single source, to form e.g. a writing-pad { ( [laminating B32B 37/00](#) , [B32B 38/00](#) ) }
- B65H 39/105 . . in rotary carriers
- B65H 39/11 . . in superposed carriers
- B65H 39/115 . . in juxtaposed carriers
- B65H 39/14 . Associating sheets with webs
- B65H 39/16 . Associating two or more webs
- B65H 41/00 Machines for separating superposed webs**
- B65H 43/00 Use of control, checking, or safety devices, e.g. automatic devices comprising an element for sensing a variable**
- B65H 43/02 . detecting, or responding to, absence of articles ( [B65H 43/08 takes precedence](#) )
- B65H 43/04 . detecting, or responding to, presence of faulty articles ( [B65H 43/08 takes precedence; diverting faulty articles from main streams B65H 29/62](#) )
- B65H 43/06 . detecting, or responding to, completion of pile ( [B65H 43/08 takes precedence](#) )
- B65H 43/08 . Photoelectric devices
- Guidance heading: Folding or unfolding thin material**
- B65H 45/00 Folding thin material ( specially adapted for the manufacture or treatment of particular products, see appropriate subclasses, e.g. [D06F 89/00](#) )**
- B65H 45/02 . Folding limp material ( { [Shaping of plastics or by bending or folding B29C 53/00](#) ; [Folding sheets, blanks or webs for box, carton, envelope or bag making B31B 1/26](#) ; [Shaping of paper or cardboard by bending or folding B31F 1/0003](#) ; } ) without application of pressure to define or form crease lines ( [winding or unwinding fabrics for feeding to or from machines B65H 16/00 to B65H 27/00](#) ; [folding garments for packaging purposes B65B](#) ; [folding fabrics in sewing machines D05B](#) )
- B65H 45/04 . . Folding sheets
- B65H 45/06 . . Folding webs ( [B65H 20/28 takes precedence](#) )
- B65H 45/08 . . . longitudinally
- B65H 45/09 . . . . Doubling, i.e. folding into half of width
- B65H 45/10 . . . transversely
- B65H 45/101 . . . . in combination with laying, i.e. forming a zig-zag pile
- B65H 45/1015 . . . . { [Folding webs provided with predefined fold lines; Refolding prefolded webs, e.g. fanfolded continuous forms](#) }
- B65H 45/103 . . . . by a carriage which reciprocates above the laying station

|                   |       |   |
|-------------------|-------|---|
| B65H 45/105       | ..... | coacting with fold holders  |
| B65H 45/107       | ..... | by means of swinging or reciprocating guide bars  |
| B65H 45/109       | ....  | Registering or counting the folds ; Detecting irregularities in the zig-zag pile  |
| B65H 45/12        | .     | Folding articles or webs with application of pressure to define or form crease lines ( <a href="#">B65H 20/28</a> takes precedence; pleating, kilting or goffering textile fabrics <a href="#">D06J</a> ) |
| B65H 45/14        | ..    | Buckling folders  |
| B65H 45/141       | ...   | { with noise reducing means }   |
| B65H 45/142       | ...   | { Pocket-type folders }   |
| B65H 45/144       | ....  | { Pockets or stops therefor }   |
| B65H 45/145       | ..... | { circular pockets }  |
| B65H 45/147       | ....  | { folding rollers therefor }  |
| B65H 45/148       | ....  | { diverters therefor }  |
| B65H 45/16        | ..    | Rotary folders  |
| B65H 45/161       | ...   | { Flying tuck folders }   |
| B65H 45/162       | ...   | { with folding jaw cylinders }  |
| B65H 45/163       | ....  | { Details of folding jaws therefor }  |
| B65H 45/164       | ....  | { Details of folding blades therefor }  |
| B65H 45/165       | ....  | { Details of sheet gripping means therefor }  |
| B65H 45/166       | ....  | { having an adjustable circumference }  |
| B65H 45/167       | ....  | { having associated sheet guide means }   |
| B65H 45/168       | ....  | { having changeable mode of operation }   |
| B65H 45/18        | ..    | Oscillating or reciprocating blade folders ( carried on rotary members <a href="#">B65H 45/16</a> )   |
| B65H 45/20        | ..    | Zig-zag folders { ( <a href="#">B65H 45/228</a> takes precedence ) }  |
| B65H 45/22        | ..    | Longitudinal folders, i.e. for folding moving sheet material parallel to the direction of movement  |
| B65H 45/221       | ...   | { incorporating folding triangles }   |
| B65H 45/223       | ....  | { Details of folding triangles }  |
| B65H 45/225       | ....  | { Arrangements of folding triangles }   |
| B65H 45/226       | ....  | { Positional adjustment of folding triangles }  |
| B65H 45/228       | ...   | { Zig-zag folders }   |
| B65H 45/24        | ..    | Interfolding sheets, e.g. cigarette or toilet papers  |
| B65H 45/26        | ..    | Folding in combination with unpiling ( unpiling <a href="#">B65H 3/00</a> )   |
| B65H 45/28        | ..    | Folding in combination with cutting ( cutting machines <a href="#">B26D</a> )   |
| B65H 45/30        | ..    | Folding in combination with creasing, smoothing or application of adhesive ( folding or adhesive application in article or web delivering <a href="#">B65H 37/00</a> )                                    |
| <b>B65H 47/00</b> |       | <b>Unfolding thin limp material ( <a href="#">B65H 20/28</a> takes precedence; opening devices for sheets or signatures <a href="#">B65H 5/30</a> )</b>   |

**Guidance heading:** **Unwinding, paying-out, forwarding, winding, coiling, or depositing, filamentary material** ( devices specially adapted or mounted for storing and repeatedly paying-out and re-storing lengths of material [B65H 75/34](#) ; working and processing wire [B21F](#) , G; unwinding, paying-out, forwarding, or winding ropes or cables in load-moving apparatus [B61B](#) ; [B65G](#) ; [B66](#) ; creels, warping, beaming, or leasing machines or methods for textile manufacturing purposes [D02H](#) )

|                   |   |
|-------------------|---|
| <b>B65H 49/00</b> | <b>Unwinding or paying-out filamentary material ; Supporting, storing or transporting packages from which filamentary material is to be withdrawn or paid-out ( <a href="#">winding B65H 54/00</a> ; bobbins, tubes or other cores for packages <a href="#">B65H 75/00</a> )</b>      |
| B65H 49/02        | . Methods or apparatus in which packages do not rotate  |
| B65H 49/04        | .. Package-supporting devices   |
| B65H 49/06        | ... for a single operative package  |
| B65H 49/08        | .... enclosing the package  |
| B65H 49/10        | ... for one operative package and one or more reserve packages  |
| B65H 49/12        | .... the reserve packages being mounted to permit manual or automatic transfer to operating position  |
| B65H 49/14        | ... for several operative packages  |
| B65H 49/16        | .... Stands or frameworks   |
| B65H 49/18        | . Methods or apparatus in which packages rotate ( <a href="#">flyers or other guides assisting paying-out B65H 57/00</a> ; supports or holders, for storing and repeatedly paying-out and rewinding lengths of material provided for particular purposes <a href="#">B65H 75/34</a> ) |
| B65H 49/20        | .. Package-supporting devices   |
| B65H 49/205       | ... { <a href="#">Hand-held or portable dispensers</a> }  |
| B65H 49/22        | ... Overhead suspension devices   |
| B65H 49/24        | ... Rollers   |
| B65H 49/26        | ... Axial shafts or spigots   |
| B65H 49/28        | ... Turntables { <a href="#">i.e. package resting on a table ( having also means for clamping the package B65H 49/30 )</a> }  |
| B65H 49/30        | ... Swifts or skein holders   |
| B65H 49/305       | .... { <a href="#">with axially adjustable or removable elements for retaining the package</a> }  |
| B65H 49/32        | ... Stands or frameworks  |
| B65H 49/321       | .... { <a href="#">characterised by features enabling their folding or dismantling</a> }  |
| B65H 49/322       | .... { <a href="#">Enclosing boxes with supporting means for the package or reel during unwinding</a> }   |
| B65H 49/324       | .... { <a href="#">Constructional details</a> }   |
| B65H 49/325       | ..... { <a href="#">Arrangements or adaptations for supporting the shafts, e.g. saddle type shaft bearings</a> }  |
| B65H 49/327       | ..... { <a href="#">Arrangements or adaptations for attachment to a wall, a post or the like</a> }  |
| B65H 49/328       | ..... { <a href="#">Arrangements or adaptations for stacking</a> }  |
| B65H 49/34        | .. Arrangements for effecting positive rotation of packages   |
| B65H 49/36        | . Securing packages to supporting devices ( <a href="#">arrangements for applying packages to, or removing from, supports B65H 65/00</a> , <a href="#">B65H 67/00</a> )   |
| B65H 49/38        | . Skips, cages, racks, or containers, adapted solely for the transport or storage of bobbins, cops, or the like   |
| <b>B65H 51/00</b> | <b>Forwarding filamentary material ( <a href="#">stretch-spinning methods D01D 5/12</a> ; drawing or drafting rovings or the like <a href="#">D01H 5/00</a> )</b>   |



- B65H 51/005 . Separating a bundle of forwarding filamentary materials into a plurality of groups
- B65H 51/01 . . by means of static electricity
- B65H 51/015 . Gathering a plurality of forwarding filamentary materials into a bundle
- B65H 51/02 . Rotary devices, e.g. with helical forwarding surfaces ( [devices for temporarily storing filamentary material during forwarding B65H 51/20](#) ; driven rotary devices for controlling tension [B65H 59/18](#) )
- B65H 51/04 . . Rollers, pulleys, capstans, or intermeshing rotary elements
- B65H 51/06 . . . arranged to operate singly
- B65H 51/08 . . . arranged to operate in groups or in co-operation with other elements
- B65H 51/10 . . . . with opposed co-acting surfaces, e.g. providing nips
- B65H 51/105 . . . . { one of which is an endless belt }
- B65H 51/12 . . . . in spaced relation to provide a series of independent forwarding surfaces around which material is passed or wound
- B65H 51/14 . Aprons, endless belts, lattices, or like driven elements
- B65H 51/16 . Devices for entraining material by flow of liquids or gases, e.g. air-blast devices ( [blowing slag wool in molten state C03B 37/06](#) )
- B65H 51/18 . Gripping devices with linear motion
- B65H 51/20 . Devices for temporarily storing filamentary material during forwarding, e.g. for buffer storage
- B65H 51/205 . . { by means of a fluid }
- B65H 51/22 . . Reels or cages, e.g. cylindrical, with storing and forwarding surfaces provided by rollers or bars { ( [measuring and temporal storing the weft in looms D03D 47/36](#) ; [thread feeding devices for weft knitting machines D04B 15/48](#) ) }
- B65H 51/24 . . . with interdigitating bars
- B65H 51/26 . . Rollers or bars mounted askew to facilitate movement of filamentary material along them, e.g. pairs of canted rollers
- B65H 51/28 . Arrangements for initiating a forwarding operation
- B65H 51/30 . Devices controlling the forwarding speed to synchronise with supply, treatment, or take-up apparatus ( [B65H 59/10](#) , [B65H 59/38 take precedence](#) )
- B65H 51/32 . Supporting or driving arrangements for forwarding devices
- B65H 54/00** **Winding, coiling, or depositing filamentary material ( cores, formers, holders, cans or receptacles [B65H 75/02](#) )**
- B65H 54/02 . Winding and traversing material on to reels, bobbins, tubes, or like package cores or formers
- B65H 54/023 . . { Hank to spool winders }
- B65H 54/026 . . { Doubling winders i.e. for winding two or more parallel yarns on a bobbin, e.g. in preparation for twisting or weaving }
- B65H 54/04 . . for making packages with closely-wound convolutions



- B65H 54/06 . . for making cross-wound packages
- B65H 54/08 . . . Precision winding arrangements
- B65H 54/10 . . for making packages of specified shapes or on specified types of bobbins, tubes, cores, or formers
- B65H 54/103 . . . { forming frusto-conical packages or forming packages on frusto-conical bobbins, tubes, cores or formers }
- B65H 54/106 . . . { Manual or other small, compact or portable winding devices for forming packages for different purposes }
- B65H 54/12 . . . on flanged bobbins or spools ( [B65H 54/20](#) takes precedence )
- B65H 54/14 . . . on tubes, cores, or formers having generally parallel sides, e.g. cops or packages to be loaded into loom shuttles
- B65H 54/16 . . . forming bottle bobbin packages
- B65H 54/18 . . . forming spools to be loaded into sewing, lace, embroidery, or like machines
- B65H 54/20 . . . forming multiple packages
- B65H 54/205 . . . . { the winding material being continuously transferred from one bobbin to the adjacent one }
- B65H 54/22 . . Automatic winding machines, i.e. machines with servicing units for automatically performing end-finding, interconnecting of successive lengths of material, controlling and fault-detecting of the running material and replacing or removing of full or empty cores
- B65H 54/24 . . . having a plurality of winding units moving along an endless path past one or more fixed servicing units
- B65H 54/26 . . . having one or more servicing units moving along a plurality of fixed winding units
- B65H 54/28 . . Traversing devices ; Package-shaping arrangements ( [arrangements for preventing ribbon winding B65H 54/38](#) ; [grooved, slotted, or split drums for driving of packages B65H 54/46](#) )
- B65H 54/2803 . . . { with a transversely moving package }
- B65H 54/2806 . . . { Traversing devices driven by cam }
- B65H 54/2809 . . . . { rotating grooved cam ( [driving split drums B65H 54/50](#) ) }
- B65H 54/2812 . . . . . { with a traversing guide running in the groove }
- B65H 54/2815 . . . . { heart-shaped cam }
- B65H 54/2818 . . . { Traversing devices driven by rod }
- B65H 54/2821 . . . { Traversing devices driven by belts or chains ( [B65H 54/2836](#) takes precedence ) }
- B65H 54/2824 . . . . { with at least two traversing guides travelling in opposite directions }
- B65H 54/2827 . . . { Traversing devices with a pivotally mounted guide arm }
- B65H 54/283 . . . { Traversing devices driven by pneumatic or hydraulic means }
- B65H 54/2833 . . . { Traversing devices driven by electromagnetic means }
- B65H 54/2836 . . . { with a rotating guide for traversing the yarn }
- B65H 54/2839 . . . . { counter rotating guides, e.g. wings }
- B65H 54/2842 . . . . { grooved, slotted, or split drums }
- B65H 54/2845 . . . . { "screw" type Owens Fiberglas }
- B65H 54/2848 . . . { Arrangements for aligned winding ( [reels with grooves or grooved elements for aligned winding B65H 75/26 B](#) ) }
- B65H 54/2851 . . . . { by pressing the material being wound against the drum, flange or already wound material, e.g. by fingers or rollers; guides moved by the already

|                              |       |   |
|------------------------------|-------|---|
|                              |       | wound material ( <a href="#">B65H 54/2869</a> takes precedence ) }  |
| <a href="#">B65H 54/2854</a> | ....  | { Detection or control of aligned winding or reversal }   |
| <a href="#">B65H 54/2857</a> | ..... | { Reversal control }  |
| <a href="#">B65H 54/286</a>  | ..... | { by detection that the material has reached the flange or the reel end }   |
| <a href="#">B65H 54/2863</a> | ..... | { the flange acting on the material, e.g. provoking wire climbing or incident angle changing }  |
| <a href="#">B65H 54/2866</a> | ..... | { by detection of position, or distance made of the traverser }   |
| <a href="#">B65H 54/2869</a> | ..... | { Control of the rotating speed of the reel or the traversing speed for aligned winding }   |
| <a href="#">B65H 54/2872</a> | ..... | { by detection of the incidence angle }   |
| <a href="#">B65H 54/2875</a> | ..... | { by detecting or following the already wound material, e.g. contour following }  |
| <a href="#">B65H 54/2878</a> | ..... | { by detection of incorrect conditions on the wound surface, e.g. material climbing on the next layer, a gap between windings }   |
| <a href="#">B65H 54/2881</a> | ...   | { Traversing devices with a plurality of guides for winding on a plurality of bobbins ( forming multiple packages <a href="#">B65H 54/20</a> ) }  |
| <a href="#">B65H 54/2884</a> | ...   | { Microprocessor-controlled traversing devices in so far the control is not special to one of the traversing devices of groups <a href="#">B65H 54/2803</a> - <a href="#">B65H 54/325</a> or group <a href="#">B65H 54/38</a> } |
| <a href="#">B65H 54/2887</a> | ....  | { detecting the position of the yarn guide }  |
| <a href="#">B65H 54/289</a>  | ....  | { stopping the yarn guide in a predetermined position }   |
| <a href="#">B65H 54/2893</a> | ...   | { Superposed traversing, i.e. traversing or other movement superposed on a traversing movement }  |
| <a href="#">B65H 54/2896</a> | ...   | { Flyers }  |
| <a href="#">B65H 54/30</a>   | ...   | with thread guides reciprocating or oscillating with fixed stroke { ( <a href="#">B65H 54/2803</a> to <a href="#">B65H 54/2896</a> take precedence ) }  |
| <a href="#">B65H 54/32</a>   | ...   | with thread guides reciprocating or oscillating with variable stroke  |
| <a href="#">B65H 54/325</a>  | ..... | { in accordance with growth of the package }  |
| <a href="#">B65H 54/34</a>   | ...   | for laying subsidiary winding, e.g. transfer tails  |
| <a href="#">B65H 54/343</a>  | ....  | { when starting winding on an empty bobbin }  |
| <a href="#">B65H 54/346</a>  | ....  | { on or outwardly of the fully wound yarn package }   |
| <a href="#">B65H 54/36</a>   | ...   | Yarn-guide advancing or raising mechanisms, e.g. cop-building arrangements  |
| <a href="#">B65H 54/365</a>  | ....  | { for cops of pirn winding machine ( <a href="#">B65H 54/14</a> takes precedence ) }  |
| <a href="#">B65H 54/38</a>   | ..    | Arrangements for preventing ribbon winding; { Arrangements for preventing irregular edge forming, e.g. edge raising or yarn falling from the edge }   |
| <a href="#">B65H 54/381</a>  | ...   | { Preventing ribbon winding in a precision winding apparatus, i.e. with a constant ratio between the rotational speed of the bobbin spindle and the rotational speed of the traversing device driving shaft }                   |
| <a href="#">B65H 54/383</a>  | ....  | { in a stepped precision winding apparatus, i.e. with a constant wind ratio in each step }  |
| <a href="#">B65H 54/385</a>  | ...   | { Preventing edge raising, e.g. creeping arrangements }   |
| <a href="#">B65H 54/386</a>  | ....  | { with energy storing means for recovering the kinetic energy at the end of the traversing stroke }   |
| <a href="#">B65H 54/388</a>  | ...   | { Preventing the yarn from falling off the edge of the package }  |
| <a href="#">B65H 54/40</a>   | ..    | Arrangements for rotating packages  |
| <a href="#">B65H 54/42</a>   | ...   | in which the package, core, or former is rotated by frictional contact of its   |

- periphery with a driving surface
- B65H 54/44 . . . in which the package, core, or former is engaged with, or secured to, a driven member rotatable about the axis of the package
- B65H 54/46 . . . Package drive drums
- B65H 54/48 . . . . Grooved drums
- B65H 54/485 . . . . . { with an auxiliary guide }
- B65H 54/50 . . . . Slotted or split drums
- B65H 54/52 . . . Drive contact pressure control, e.g. pressing arrangements
- B65H 54/54 . . . Arrangements for supporting cores or formers at winding stations ; Securing cores or formers to driving members
- B65H 54/543 . . . . { Securing cores or holders to supporting or driving members, e.g. collapsible mandrels }
- B65H 54/547 . . . . Cantilever supporting arrangements
- B65H 54/553 . . . . Both-ends supporting arrangements
- B65H 54/56 . Winding of hanks or skeins
- B65H 54/58 . . Swifts or reels adapted solely for the formation of hanks or skeins ( [B65H 49/30](#) takes precedence )
- B65H 54/585 . . . { Reels for rolling tape-like material, e.g. flat hose or strap, into flat spiral form; Means for retaining the roll after removal of the reel }
- B65H 54/60 . . Devices for domestic use
- B65H 54/62 . . Binding of skeins
- B65H 54/64 . Winding of balls; { ( [Forming hollow objects by winding on to fusible or soluble cores, e.g. forming pressure vessels B29C 53/56](#) ) }
- B65H 54/66 . . Winding yarns into balls
- B65H 54/68 . Winding on to cards or other flat cores, e.g. of star form
- B65H 54/70 . Other constructional features of yarn-winding machines
- B65H 54/702 . . { Arrangements for confining or removing dust ( for spinning [D01H 11/00](#) ; cleaning in general [B08B](#) ) }
- B65H 54/705 . . { Arrangements for reducing hairyness of the filamentary material }
- B65H 54/707 . . { Suction generating system }
- B65H 54/71 . . Arrangements for severing filamentary materials
- B65H 54/72 . . Framework ; Casings ; Coverings
- B65H 54/74 . . Driving arrangements ( [arrangements for preventing ribbon winding B65H 54/38](#) ; [arrangements for rotating packages B65H 54/40](#) )
- B65H 54/76 . Depositing materials in cans or receptacles
- B65H 54/78 . . Apparatus in which the depositing device or the receptacle is reciprocated
- B65H 54/80 . . Apparatus in which the depositing device or the receptacle is rotated
- B65H 54/82 . . . and in which coils are formed before deposition
- B65H 54/84 . . Arrangements for compacting materials in receptacles
- B65H 54/86 . Arrangements for taking-up waste material before or after winding or depositing
- B65H 54/88 . . by means of pneumatic arrangements, e.g. suction guns

**B65H 55/00****Wound packages of filamentary material**

B65H 55/005

- . { with two or more filaments wound in parallel on the bobbin }

B65H 55/02

- . Self-supporting packages

B65H 55/04

- . characterised by method of winding

B65H 55/043

- . . { the yarn paying off through the centre of the package }

B65H 55/046

- . . { packages having a radial opening through which the material will pay off }

**B65H 57/00****Guides for filamentary materials ; Supports therefor**

B65H 57/003

- . { Arrangements for threading or unthreading the guide }

B65H 57/006

- . { Traversing guides }

B65H 57/02

- . Stationary rods or plates

B65H 57/04

- . Guiding surfaces within slots or grooves

B65H 57/06

- . Annular guiding surfaces ; Eyes, e.g. pigtails

B65H 57/08

- . . formed of wire or the like

B65H 57/10

- . . with flared apertures

B65H 57/12

- . Tubes

B65H 57/14

- . Pulleys, rollers, or rotary bars

B65H 57/16

- . formed to maintain a plurality of filaments in spaced relation

B65H 57/18

- . mounted to facilitate unwinding of material from packages

B65H 57/20

- . . Flyers ( for inserting twist [D01H](#) )

B65H 57/22

- . adapted to prevent excessive ballooning of material

B65H 57/24

- . with wear-resistant surfaces

B65H 57/26

- . Supports for guides

B65H 57/28

- . Reciprocating or oscillating guides ( traversing devices for winding, coiling, or depositing filamentary material [B65H 54/28](#) )

**B65H 59/00****Adjusting or controlling tension in filamentary material, e.g. for preventing snarling ; Application of tension indicators**

B65H 59/005

- . { Means compensating the yarn tension in relation with its moving due to traversing arrangements }

B65H 59/02

- . by regulating delivery of material from supply package ( by contact of package with

- support [B65H 49/02](#) ; by controlling speed of driving mechanism of unwinding or paying-out devices [B65H 59/38](#) )
- B65H 59/04 . . by devices acting on package or support
  - B65H 59/043 . . . { with a braking force varying proportionally to the diameter or the weight of the package being unwound }
  - B65H 59/046 . . . . { varying proportionally to the weight only }
  - B65H 59/06 . . by devices acting on material leaving the package
  - B65H 59/08 . by contact of running length of material with supply package
  - B65H 59/10 . by devices acting on running material and not associated with supply or take-up devices ( by controlling speed of driving mechanism of material-forwarding devices [B65H 59/38](#) )
  - B65H 59/105 . . { the material being subjected to the action of a fluid }
  - B65H 59/12 . . Stationary elements arranged to deflect material from straight path
  - B65H 59/14 . . . and provided with surfaces imposing additional retarding forces on material
  - B65H 59/16 . . Braked elements rotated by material
  - B65H 59/18 . . Driven rotary elements ( [material-forwarding devices B65H 51/00](#) )
  - B65H 59/20 . . Co-operating surfaces mounted for relative movement
  - B65H 59/22 . . . and arranged to apply pressure to material
  - B65H 59/225 . . . . { Tension discs }
  - B65H 59/24 . . . . Surfaces movable automatically to compensate for variation in tension
  - B65H 59/26 . . . and arranged to deflect material from straight path
  - B65H 59/28 . . . . the surfaces being urged towards each other
  - B65H 59/30 . . . . . Surfaces movable automatically to compensate for variation in tension
  - B65H 59/32 . . . . the surfaces being urged away from each other
  - B65H 59/34 . . . . . Surfaces movable automatically to compensate for variation in tension
  - B65H 59/36 . . Floating elements compensating for irregularities in supply or take-up of material ( [buffer storage devices B65H 51/20](#) )
  - B65H 59/38 . by regulating speed of driving mechanism of unwinding, paying-out, forwarding, winding, or depositing devices, e.g. automatically in response to variations in tension
  - B65H 59/381 . . { using pneumatic or hydraulic means }
  - B65H 59/382 . . { using mechanical means }
  - B65H 59/384 . . { using electronic means }
  - B65H 59/385 . . . { Regulating winding speed }
  - B65H 59/387 . . . { Regulating unwinding speed }
  - B65H 59/388 . . . { Regulating forwarding speed }
  - B65H 59/40 . Applications of tension indicators
  - B65H 61/00** **Applications of devices for metering predetermined lengths of running material ( of general application [G01B](#) )**
  - B65H 61/005 . { for measuring speed of running yarns }

|                   |   |
|-------------------|---|
| <b>B65H 63/00</b> | <b>Warning or safety devices, e.g. automatic fault detectors, stop-motions ( <a href="#">safety devices in general F16P</a> ; indicating devices in general <a href="#">G08B</a> ) { <a href="#">Quality control of the package</a> }</b> |
| B65H 63/003       | . { <a href="#">responsive to winding of yarns around rotating cylinders</a> }  |
| B65H 63/006       | . { <a href="#">quality control of the package</a> }  |
| B65H 63/02        | . responsive to reduction in material tension, failure of supply, or breakage, of material  |
| B65H 63/024       | .. responsive to breakage of materials  |
| B65H 63/028       | ... characterised by the detecting or sensing element   |
| B65H 63/032       | .... electrical or pneumatic  |
| B65H 63/0321      | ..... { <a href="#">using electronic actuators</a> }  |
| B65H 63/0322      | ..... { <a href="#">using capacitor sensing means, i.e. the defect signal is a variation of impedance</a> }   |
| B65H 63/0324      | ..... { <a href="#">using photo-electric sensing means, i.e. the defect signal is a variation of light energy</a> }   |
| B65H 63/0325      | ..... { <a href="#">using fluid sensing means, e.g. acoustic</a> }  |
| B65H 63/0327      | ..... { <a href="#">using piezo-electric sensing means</a> }  |
| B65H 63/0328      | ..... { <a href="#">using pneumatic sensing means</a> }   |
| B65H 63/036       | ... characterised by the combination of the detecting or sensing elements with other devices, e.g. stopping devices for material advancing or winding mechanism   |
| B65H 63/0362      | .... { <a href="#">by a plate separating the package from the driving drum</a> }  |
| B65H 63/0364      | .... { <a href="#">by lifting or raising the package away from the driving roller</a> }   |
| B65H 63/0366      | ..... { <a href="#">Braking means for the raised or lifted package</a> }  |
| B65H 63/0368      | .... { <a href="#">by clutching or de-clutching the package from its driving means ( <a href="#">package secured to a rotary driven member</a> )</a> }  |
| B65H 63/04        | . responsive to excessive tension or irregular operation of apparatus   |
| B65H 63/06        | . responsive to presence of irregularities in running material, e.g. for severing the material at irregularities { <a href="#">Control of the correct working of the yarn cleaner</a> }   |
| B65H 63/061       | .. { <a href="#">Mechanical slub catcher and detector</a> }   |
| B65H 63/062       | .. { <a href="#">Electronic slub detector</a> }   |
| B65H 63/064       | ... { <a href="#">using capacitor sensing means, i.e. the defect signal is a variation of impedance</a> }   |
| B65H 63/065       | ... { <a href="#">using photo-electric sensing means, i.e. the defect signal is a variation of light energy</a> }   |
| B65H 63/067       | ... { <a href="#">using fluid sensing means, e.g. acoustic</a> }  |
| B65H 63/068       | ... { <a href="#">using piezo-electric sensing means</a> }  |
| B65H 63/08        | . responsive to delivery of a measured length of material, completion of winding of a package, or filling of a receptacle   |
| B65H 63/082       | .. { <a href="#">responsive to a predetermined size or diameter of the package</a> }  |
| B65H 63/084       | .. { <a href="#">responsive to a predetermined weight of the package</a> }  |

- B65H 63/086 . . { responsive to completion of unwinding of a package }
- B65H 63/088 . . { Clamping device ( connected with slub-catcher [B65H 63/061](#) ) }
  
- B65H 65/00** **Securing material to cores or formers ( arrangements for securing ends of material to cores, formers, supports or holders, e.g. reels, [B65H 75/28](#) )**
  
- B65H 65/005 . { Securing end of yarn in the wound or completed package }
  
- B65H 67/00** **Replacing or removing cores, receptacles, or completed packages at paying-out, winding, or depositing stations**
  
- B65H 67/02 . Arrangements for removing spent cores or receptacles and replacing by supply packages at paying-out stations ( { for cans [D01H 9/008](#) ; arrangement of the service carriage [B65H 54/26](#) ; } supports for packages [B65H 49/04](#) , [B65H 49/20](#) )
  
- B65H 67/04 . Arrangements for removing completed take-up packages and { or } replacing by cores, formers, or empty receptacles at winding or depositing stations ; Transferring material between adjacent full and empty take-up elements { ( arrangement of the service carriage [B65H 54/26](#) ) }
  
- B65H 67/0405 . . { Arrangements for removing completed take-up packages or for loading an empty core ( [B65H 67/044](#) takes precedence ) }
- B65H 67/0411 . . . { for removing completed take-up packages }
- B65H 67/0417 . . . { for loading an empty core }
- B65H 67/0422 . . . . { for loading a starter winding, i.e. a spool core with a small length of yarn wound on it; preparing the starter winding }
- B65H 67/0428 . . { for cans, boxes and other receptacles }
- B65H 67/0434 . . . { Transferring material devices between full and empty cans }
- B65H 67/044 . . Continuous winding apparatus for winding on two or more winding heads in succession
- B65H 67/048 . . . having winding heads arranged on rotary capstan head
- B65H 67/052 . . . having two or more winding heads arranged in parallel to each other
- B65H 67/056 . . . having two or more winding heads arranged in series with each other
  
- B65H 67/06 . Supplying cores, receptacles, or packages to, or transporting from, winding or depositing stations { ( between spinning and winding machines [D01H 9/18](#) , e.g. transporting cans [D01H 9/185](#) ) }
  
- B65H 67/061 . . { Orientating devices }
- B65H 67/062 . . { Sorting devices for full/empty packages }
- B65H 67/063 . . { Marking or identifying devices for packages }
- B65H 67/064 . . { Supplying or transporting cross-wound packages, also combined with transporting the empty core }
- B65H 67/065 . . . { Manipulators with gripping or holding means for transferring the packages from one station to another, e.g. from a conveyer to a creel trolley }
- B65H 67/066 . . { Depositing full or empty bobbins into a container or stacking them }
- B65H 67/067 . . { Removing full or empty bobbins from a container or a stack }
- B65H 67/068 . . { Supplying or transporting empty cores }
- B65H 67/069 . . { Removing or fixing bobbins or cores from or on the vertical peg of trays, pallets or the pegs of a belt }



- B65H 67/08 . Automatic end-finding and material-interconnecting arrangements ( [knot-tying devices B65H 69/00](#) )
- B65H 67/081 . . { acting after interruption of the winding process, e.g yarn breakage, yarn cut or package replacement }
- B65H 67/083 . . . { handling the yarn-end of the new supply package }
- B65H 67/085 . . . { end-finding at the take-up package, e.g. by suction and reverse package rotation }
- B65H 67/086 . . { Preparing supply packages }
- B65H 67/088 . . . { Prepositioning the yarn end into the interior of the supply package }

**B65H 69/00** **Methods of, or devices for, interconnecting successive lengths of material ; Knot-tying devices** { ;Control of the correct working of the interconnecting device }

- B65H 69/02 . by means of adhesives
- B65H 69/04 . by knotting
- B65H 69/043 . . { the threads are moved in ducts having the form of the wanted knot }
- B65H 69/046 . . . { by a fluid }
- B65H 69/06 . by splicing { Grommets made by splicing [D07B 1/18](#) , auxiliary apparatus for splicing ropes or cables [D07B 7/16](#) }
- B65H 69/061 . . { using pneumatic means }
- B65H 69/063 . . . { Preparation of the yarn ends }
- B65H 69/065 . . . . { using mechanical means }
- B65H 69/066 . . . { Wet splicing i.e. adding liquid to the splicing room or to the yarn ends preparing rooms }
- B65H 69/068 . . { using a binding thread, e.g. sewing }
- B65H 69/08 . by welding
- B65H 69/085 . . { using ultrasonic means }

**B65H 71/00** **Moistening, sizing, oiling, waxing, colouring or drying filamentary material as additional measures during package formation** ( [applying liquids or other fluent materials to surfaces in general B05](#) )

- B65H 71/002 . { Abrading, scraping ( in general [D02J 3/00](#) ) }
- B65H 71/005 . { Oiling, waxing by applying solid wax cake during spooling }
- B65H 71/007 . { Oiling, waxing by applying liquid during spooling }

**B65H 73/00** **Stripping waste material from cores or formers, e.g. to permit their re-use**

**Guidance heading:** **Methods, apparatus, or devices of general interest or not otherwise provided for in connection with the handling of webs, tapes, or filamentary materials** ( [unwinding, paying-out, forwarding or winding ropes or cables in load-moving apparatus B61B](#) , [B65G](#) , [B66](#) )



|                   |   |
|-------------------|---|
| <b>B65H 75/00</b> | <b>Storing webs, tapes, or filamentary material, e.g. on reels ( fishing reels <a href="#">A01K 89/00</a> ; storing means for record carriers, specially adapted for cooperation with the recording or reproducing apparatus <a href="#">G11B 23/02</a> )</b> |
| B65H 75/005       | . { Working on damaged packages, e.g. reshaping collapsed cores ( working on cores, reels or the like to permit their reuse <a href="#">B65H 75/505</a> ) }   |
| B65H 75/02        | . Cores, formers, supports, or holders for coiled, wound, or folded material, e.g. reels, spindles, bobbins, cop tubes, cans ( packaging aspects <a href="#">B65D 85/67</a> )   |
| B65H 75/025       | .. { specially adapted for winding or storing webs with the confronting layers spaced from each other, e.g. frames for storing nap fabrics }  |
| B65H 75/04        | .. Kinds or types ( <a href="#">B65H 75/18</a> takes precedence )   |
| B65H 75/06        | ... Flat cores, e.g. cards  |
| B65H 75/08        | ... of circular or polygonal cross-section ( cans or receptacles <a href="#">B65H 75/16</a> )   |
| B65H 75/10        | .... without flanges, e.g. cop tubes  |
| B65H 75/105       | ..... { Pirns destined for use in shuttles, i.e. with a yarn receiving portion and a thicker base portion, this thicker portion being adapted to be engaged by a spindle in a spinning frame and also being adapted for fitting in a shuttle }                |
| B65H 75/12        | .... with a single end flange { ( e.g. with a conical end flange ) } ; formed with one end of greater diameter than the barrel  |
| B65H 75/14        | .... with two end flanges   |
| B65H 75/141       | ..... { covers therefor }   |
| B65H 75/143       | ..... { at least one end flange being shaped to cover the windings }  |
| B65H 75/145       | ..... { Reinforcement or protection arrangements for the peripheral edge of the flanges }   |
| B65H 75/146       | ..... { with at least one intermediate flange between the two end flanges }   |
| B65H 75/148       | ..... { with at least one frustoconical end flange }  |
| B65H 75/16        | ... Cans or receptacles, e.g. sliver cans   |
| B65H 75/18        | .. Constructional details   |
| B65H 75/182       | ... { Identification means }  |
| B65H 75/185       | ... { End caps, plugs or adapters }   |
| B65H 75/187       | .... { Reinforcing end caps }   |
| B65H 75/20        | ... Skeleton construction, e.g. formed of wire { ( perforated supports for textile materials to be treated <a href="#">D06B 23/042</a> ) }  |
| B65H 75/22        | ... collapsible ; with removable parts  |
| B65H 75/24        | ... adjustable in configuration, e.g. expansible  |
| B65H 75/241       | .... { axially adjustable reels or bobbins }  |
| B65H 75/242       | .... { Expansible spindles, mandrels or chucks, e.g. for securing or releasing cores, holders or packages ( expansible mandrels for machine tools <a href="#">B23B 31/00</a> ) }  |
| B65H 75/243       | ..... { comprising a fluid pressure actuated elastic member, e.g. a diaphragm or a pneumatic tube }   |
| B65H 75/245       | ..... { by deformation of an elastic or flexible material }   |
| B65H 75/246       | ..... { by relative rotation of the clamping elements and the supporting spindle or core }  |

|              |       |   |
|--------------|-------|---|
| B65H 75/247  | ..... | { using rollers or rods moving relative to a wedge or cam surface }   |
| B65H 75/248  | ..... | { with clamping elements linked to the spindle }  |
| B65H 75/26   | ...   | Arrangements for preventing slipping of winding   |
| B65H 75/265  | ....  | { Reels with grooves or grooved elements inhibiting aligned or orderly winding }  |
| B65H 75/28   | ...   | Arrangements for positively securing ends of material   |
| B65H 75/285  | ....  | { Holding devices to prevent the wound material from unwinding }  |
| B65H 75/30   | ...   | Arrangements to facilitate driving or braking   |
| B65H 75/305  | ....  | { Arrangements to facilitate driving by a portable drill }  |
| B65H 75/32   | ...   | Arrangements to facilitate severing of material   |
| B65H 75/34   | ..    | <p>specially adapted or mounted for storing and repeatedly paying-out and re-storing lengths of material provided for particular purposes, e.g. anchored hoses, power cables ( retractors for storing flexible hoses as accessories of dental work stands <a href="#">A61G 15/18</a> ; vehicle safety belt retractors <a href="#">B60R 22/34</a> ; hose-storing devices in apparatus or devices for transferring liquids from bulk storage containers or reservoirs into vehicles or portable containers <a href="#">B67D 7/40</a> ; clothes-line supports <a href="#">D06F 53/00</a> ; spring drums for liftable blinds with horizontal lamellae <a href="#">E06B 9/322</a> ; spring drums or tape drums for roll-type closures or roller blinds <a href="#">E06B 9/56</a> ; hauling- or hoisting-chains with arrangements for holding electric cables, hoses or the like <a href="#">F16G 13/16</a> ; devices for guiding pipes, cables or protective tubing, between relatively movable points, e.g. movable channels, <a href="#">F16L 3/01</a> ; flexible rulers or tapes with scales <a href="#">G01B 3/10</a> ; electrical features of stored material, see the relevant subclasses, e.g. <a href="#">H02G</a> )</p> |
| B65H 75/36   | ...   | without essentially involving the use of a core or former internal to a stored package of material, e.g. with stored material housed within casing or container, or intermittently engaging a plurality of supports as in sinuous or serpentine fashion   |
| B65H 75/362  | ....  | { with stored material housed within a casing or container ( <a href="#">B65H 75/368</a> takes precedence ) }   |
| B65H 75/364  | ..... | { the stored material being coiled }  |
| B65H 75/366  | ....  | { with stored package of material loosely hanging on a support, e.g. a hose hanger }  |
| B65H 75/368  | ....  | { with pulleys }  |
| B65H 75/38   | ...   | involving the use of a core or former internal to, and supporting, a stored package of material   |
| B65H 75/40   | ....  | mobile or transportable   |
| B65H 75/403  | ..... | { Carriage with wheels }  |
| B65H 75/406  | ..... | { hand-held during use ( <a href="#">B65H 75/48</a> , <a href="#">B65H 75/4473</a> take precedence ) }  |
| B65H 75/42   | ..... | attached to, or forming part of, mobile tools, machines or vehicles   |
| B65H 75/425  | ..... | { attached to, or forming part of a vehicle, e.g. truck, trailer, vessel }  |
| B65H 75/44   | ....  | Constructional details  |
| B65H 75/4402 | ..... | { Guiding arrangements to control paying-out and re-storing of the material ( guides per se <a href="#">B65H 57/00</a> ) }  |
| B65H 75/4405 | ..... | { Traversing devices; means for orderly arranging the material on the drum }  |
| B65H 75/4407 | ..... | { positively driven, e.g. by a transmission between the drum and the traversing device }  |
| B65H 75/441  | ..... | { with a handle on the guide for manual operation }   |
| B65H 75/4413 | ..... | { with a transversely moving drum }   |

|              |       |  |
|--------------|-------|--|
| B65H 75/4415 | ..... | { Guiding ribs on the drum }   |
| B65H 75/4418 | ..... | { Arrangements for stopping winding or unwinding; Arrangements for releasing the stop means }  |
| B65H 75/4421 | ..... | { acting directly on the material }  |
| B65H 75/4423 | ..... | { Manual stop or release button }  |
| B65H 75/4426 | ..... | { Stopping at the end of winding or unwinding }  |
| B65H 75/4428 | ..... | { acting on the reel or on a reel blocking mechanism }   |
| B65H 75/4431 | ..... | { Manual stop or release button }  |
| B65H 75/4434 | ..... | { actuated by pulling on or imparting an inclination to the material }   |
| B65H 75/4436 | ..... | { Arrangements for yieldably braking the reel or the material for moderating speed of winding or unwinding }   |
| B65H 75/4439 | ..... | { acting directly on the material }  |
| B65H 75/4442 | ..... | { acting on the reel }   |
| B65H 75/4444 | ..... | { with manually adjustable brake pads }  |
| B65H 75/4447 | ..... | { centrifugally }  |
| B65H 75/4449 | ..... | { Arrangements or adaptations to avoid movable contacts or rotary couplings, e.g. by the use of an expansion chamber for a length of the cord or hose }  |
| B65H 75/4452 | ..... | { Simultaneous winding and unwinding of the material, e.g. winding or unwinding on a stationary drum while respectively unwinding or winding on a rotating drum using a planetary guiding roller }                   |
| B65H 75/4455 | ..... | { using a planetary assembly coaxially rotating around a central drum }  |
| B65H 75/4457 | ..... | { Arrangements of the frame or housing }   |
| B65H 75/446  | ..... | { for releasably or permanently attaching the frame to a wall, on a floor or on a post or the like }   |
| B65H 75/4463 | ..... | { Swivelling attachment }  |
| B65H 75/4465 | ..... | { Foldable or collapsible }  |
| B65H 75/4468 | ..... | { Tubular frame }  |
| B65H 75/4471 | ..... | { Housing enclosing the reel }   |
| B65H 75/4473 | ..... | { without arrangements or adaptations for rotating the core or former ( cores or formers which are not specially adapted for repeatedly paying-out and re-storing lengths of material <a href="#">B65H 75/02</a> ) } |
| B65H 75/4476 | ..... | { with stored material wound around two spaced supports }  |
| B65H 75/4478 | ..... | { relating to handling of fluids }   |
| B65H 75/4481 | ..... | { Arrangements or adaptations for driving the reel or the material ( by a spring <a href="#">B65H 75/48</a> ) }  |
| B65H 75/4484 | ..... | { Electronic arrangements or adaptations for controlling the winding or unwinding process, e.g. with sensors }   |
| B65H 75/4486 | ..... | { Electric motors }  |
| B65H 75/4489 | ..... | { Fluid motors }   |
| B65H 75/4492 | ..... | { Manual drives }  |
| B65H 75/4494 | ..... | { Arrangements or adaptations of the crank }   |
| B65H 75/4497 | ..... | { driving by the wheels of the carriage or vehicle }   |
| B65H 75/48   | ..... | Automatic restoring devices { ( <a href="#">B65H 75/4418</a> takes precedence ) }  |
| B65H 75/483  | ..... | { Balance reel }   |

- B65H 75/486** . . . . . { Arrangements or adaptations of the spring motor }
- B65H 75/50** . Methods of making reels, bobbins, cop tubes, or the like by working an unspecified material, or several materials
- B65H 75/505** . . { Working on cores, reels or the like to permit their reuse, e.g. correcting distortion, replacing parts of the core or reel }
- B65H 79/00** **Driving-gear for devices for forwarding, winding, unwinding, or depositing material, not otherwise provided for**
- B65H 81/00** **Methods, apparatus, or devices for covering or wrapping cores by winding webs, tapes, or filamentary material, not otherwise provided for ( forming hollow objects by winding filamentary material on to fusible or soluble cores { [B29C 53/56](#) } ; Wrapping for the purpose of packaging [B65B 11/00](#) ; making wound articles of paper [B31C](#) )**
- B65H 81/02** . Covering or wrapping annular or like cores forming a closed or substantially closed figure
- B65H 81/04** . . by feeding material obliquely to the axis of the core
- B65H 81/06** . Covering or wrapping elongated cores
- B65H 81/08** . . by feeding material obliquely to the axis of the core
- B65H 83/00** **Combinations of piling and depiling operations, e.g. performed simultaneously, of interest apart from the single operation of piling or depiling as such**
- B65H 83/02** . performed on the same pile or stack
- B65H 83/025** . . { onto and from the same side of the pile or stack }
- B65H 85/00** **Recirculating articles, i.e. feeding each article to, and delivering it from, the same machine work-station more than once**
- B65H 99/00** **Subject matter not provided for in other groups of this subclass**

**Guidance heading:**

- B65H 2019/00** **Changing the web roll**
- B65H 2019/10** . in unwinding mechanisms or in connection with unwinding operations
- B65H 2019/16** . . Driving, e.g. accelerating, the replacement web roll in association with web-splicing operation

**Guidance heading:**

- B65H 2211/00** **Driving or braking the forwarding elements**

**Guidance heading:**

**B65H 2220/00****Function indicators**

- B65H 2220/01 . indicating an entity as a function of which control, adjustment or change is performed, i.e. input
- B65H 2220/02 . indicating an entity which is controlled, adjusted or changed by a control process, i.e. output
- B65H 2220/03 . indicating an entity which is measured, estimated, evaluated, calculated or determined but which does not constitute an entity which is adjusted or changed by the control process per se
- B65H 2220/04 . for distinguishing adjusting from controlling, i.e. manual adjustments
- B65H 2220/08 . for distinguishing changing an entity in function of another entity purely by mechanical means, i.e. no electronics involved
- B65H 2220/09 . indicating that several of an entity are present
- B65H 2220/11 . indicating that the input or output entities exclusively relate to machine elements
- B65H 2220/15 . indicating that the device moves articles, already positioned in a stationary registered position according to a first direction, into a stationary registered position along a second direction perpendicular to the first one, e.g. for lateral registering

**B65H 2301/00****Handling processes for sheets or webs**

- B65H 2301/10 . Selective handling processes
- B65H 2301/11 .. of web or zig-zag web
- B65H 2301/12 .. of sheets or web
- B65H 2301/121 ... for sheet handling processes, i.e. wherein the web is cut into sheets
- B65H 2301/122 ... for web or sheet handling processes wherein the sheets are cut from the web
- B65H 2301/13 .. Relative to size or orientation of the material
- B65H 2301/131 ... single width or double width
- B65H 2301/132 ... single face or double face
- B65H 2301/1321 .... Printed material
- B65H 2301/133 ... Face-up or face-down handling mode
- B65H 2301/134 ... Portrait or landscape printing
- B65H 2301/14 .. of batches of material of different characteristics
- B65H 2301/141 ... of different format, e.g. A0 - A4
- B65H 2301/142 ... of different thickness
- B65H 2301/1421 .... Single sheet or set of sheets
- B65H 2301/1422 .... Sheet or envelope
- B65H 2301/15 .. of sheets in pile or in shingled formation
- B65H 2301/151 ... Selective shingled formation
- B65H 2301/1511 .... Selective shingled or non shingled formation

|                 |       |   |
|-----------------|-------|---|
| B65H 2301/152   | ...   | of sheets piled horizontally or vertically  |
| B65H 2301/16    | ..    | of discharge in bins, stacking, collating or gathering  |
| B65H 2301/161   | ...   | Mailing or sorting mode   |
| B65H 2301/162   | ...   | Normal or offset stacking mode  |
| B65H 2301/163   | ...   | Bound or non bound, e.g. stapled or non stapled stacking mode                                     |
| B65H 2301/1635  | ...   | selective stapling modes, e.g. corner or edge or central  |
| B65H 2301/164   | ...   | Folded or non folded stacking mode  |
| B65H 2301/165   | ...   | Normal or finished stacking mode  |
| B65H 2301/166   | ...   | Superposed or interfolded stacking mode   |
| B65H 2301/17    | ..    | Selective folding mode  |
| B65H 2301/20    | .     | Continuous handling processes   |
| B65H 2301/21    | ..    | of batches of material of different characteristics   |
| B65H 2301/211   | ...   | of different format, e.g. A0 - A4   |
| B65H 2301/212   | ...   | of different thickness  |
| B65H 2301/22    | ..    | of material of different characteristics  |
| B65H 2301/23    | ..    | of multiple materials in parallel to each other   |
| B65H 2301/231   | ...   | Recto verso portions of a single material   |
| B65H 2301/30    | .     | Orientation, displacement, position of the handled material                                       |
| B65H 2301/31    | ..    | Features of transport path  |
| B65H 2301/311   | ...   | for transport path in plane of handled material, e.g. geometry                                    |
| B65H 2301/3111  | ....  | circular  |
| B65H 2301/3112  | ....  | S-shaped  |
| B65H 2301/31122 | ....  | Omega-shaped  |
| B65H 2301/31124 | ....  | U-shaped  |
| B65H 2301/3113  | ....  | vertical  |
| B65H 2301/3114  | ....  | oblique with respect to axis of handled material  |
| B65H 2301/3115  | ....  | linear  |
| B65H 2301/312   | ...   | for transport path involving at least two planes of transport forming an angle between each other |
| B65H 2301/3121  | ....  | L-shaped  |
| B65H 2301/3122  | ....  | U-shaped  |
| B65H 2301/3123  | ....  | S-shaped  |
| B65H 2301/3124  | ....  | Y-shaped  |
| B65H 2301/3125  | ....  | T-shaped  |
| B65H 2301/314   | ...   | Closed loop   |
| B65H 2301/316   | ...   | of web roll   |
| B65H 2301/3162  | ....  | involving only one plane containing the roll axis   |
| B65H 2301/31622 | ..... | rectilinear transport path  |
| B65H 2301/3164  | ....  | involving at least two planes containing the roll axis  |
| B65H 2301/31642 | ..... | L-shaped  |
| B65H 2301/32    | ..    | Orientation of handled material   |

|                 |       |   |
|-----------------|-------|---|
| B65H 2301/321   | ...   | Standing on edge  |
| B65H 2301/322   | ...   | Riding over one elongated or saddle-like member   |
| B65H 2301/3221  | ....  | on saddle-like member extending perpendicularly to the transport direction  |
| B65H 2301/323   | ...   | Hanging   |
| B65H 2301/324   | ...   | Inclined  |
| B65H 2301/325   | ...   | of roll of material   |
| B65H 2301/3251  | ....  | vertical axis   |
| B65H 2301/3253  | ....  | inclined axis   |
| B65H 2301/33    | ..    | Modifying, selecting, changing orientation  |
| B65H 2301/331   | ...   | Skewing, correcting skew, i.e. changing slightly orientation of material  |
| B65H 2301/3311  | ....  | levelling   |
| B65H 2301/332   | ...   | Turning, overturning  |
| B65H 2301/3321  | ....  | kinetic therefor  |
| B65H 2301/33212 | ..... | about an axis parallel to the direction of displacement of material   |
| B65H 2301/33214 | ..... | about an axis perpendicular to the direction of displacement and parallel to the surface of material  |
| B65H 2301/33216 | ..... | about an axis perpendicular to the direction of displacement and to the surface of material   |
| B65H 2301/3322  | ....  | according to a determined angle   |
| B65H 2301/33222 | ..... | 90°   |
| B65H 2301/33224 | ..... | 180°  |
| B65H 2301/333   | ...   | Inverting   |
| B65H 2301/3331  | ....  | Involving forward reverse transporting means  |
| B65H 2301/33312 | ..... | forward reverse rollers pairs   |
| B65H 2301/33314 | ..... | forward reverse belts   |
| B65H 2301/3332  | ....  | Tri-rollers type  |
| B65H 2301/34    | ..    | Modifying, selecting, changing direction of displacement  |
| B65H 2301/341   | ...   | without change of plane of displacement   |
| B65H 2301/3411  | ....  | Right angle arrangement, i.e. 90 degrees  |
| B65H 2301/34112 | ..... | changing leading edge   |
| B65H 2301/3412  | ....  | involving transport means arranged obliquely to the in-feed or/and out-feed conveyor  |
| B65H 2301/342   | ...   | with change of plane of displacement  |
| B65H 2301/3421  | ....  | for changing level of plane of displacement, i.e. the material being transported in parallel planes after at least two changes of direction |
| B65H 2301/3422  | ....  | by travelling a path section in arc of circle   |
| B65H 2301/3423  | ....  | by travelling an angled curved path section for overturning and changing feeding direction  |
| B65H 2301/34232 | ..... | involving conical angled curved path  |
| B65H 2301/35    | ..    | Spacing   |
| B65H 2301/351   | ...   | parallel to the direction of displacement   |
| B65H 2301/36    | ..    | Positioning ; Changing position   |
| B65H 2301/361   | ...   | during displacement   |
| B65H 2301/3611  | ....  | centering, positioning material symmetrically relatively to a given axis of   |



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|                  |       | displacement   |
| B65H 2301/36112  | ..... | by elements engaging both sides of web   |
| B65H 2301/3612   | ....  | oscillating material transversely relatively to a given axis of displacement                 |
| B65H 2301/3613   | ....  | Lateral positioning  |
| B65H 2301/36132  | ..... | involving slanted belts or chains arrangement  |
| B65H 2301/362    | ...   | of stationary material   |
| B65H 2301/3621   | ....  | perpendicularly to a first direction in which the material is already in registered position |
| B65H 2301/36212  | ..... | centering, positioning material symmetrically relatively to said first direction             |
| B65H 2301/363    | ...   | of material in pile  |
| B65H 2301/364    | ...   | of material in roll  |
| B65H 2301/40     | .     | Type of handling process   |
| B65H 2301/41     | ..    | Winding, unwinding   |
| B65H 2301/412    | ...   | Roll   |
| B65H 2301/4124   | ....  | Outer end attachment   |
| B65H 2301/41242  | ..... | Tab arrangement  |
| B65H 2301/41244  | ..... | glued between outmost layer and tail   |
| B65H 2301/41246  | ..... | by machine e.g. on unwinder turret   |
| B65H 2301/4127   | ....  | with interleaf layer, e.g. liner   |
| B65H 2301/4128   | ....  | Multiple rolls   |
| B65H 2301/41282  | ..... | coaxially arranged   |
| B65H 2301/41284  | ..... | involving juxtaposed lanes wound around a common axis  |
| B65H 2301/412845 | ..... | and spliced to each other, e.g. for serial unwinding   |
| B65H 2301/413    | ...   | Supporting web roll  |
| B65H 2301/41306  | ....  | Slot arrangement, e.g. saddle shaft bearing  |
| B65H 2301/41308  | ....  | Releasably clamping the web roll shaft   |
| B65H 2301/4131   | ....  | Support with vertical axis   |
| B65H 2301/41312  | ..... | the axis being displaced on circular path of 360 degrees                                     |
| B65H 2301/4132   | ....  | Cantilever arrangement   |
| B65H 2301/41322  | ..... | pivoting movement of roll support  |
| B65H 2301/413223 | ..... | around an axis parallel to roll axis   |
| B65H 2301/413226 | ..... | around an axis perpendicular to roll axis  |
| B65H 2301/41324  | ....  | linear movement of roll support  |
| B65H 2301/413243 | ..... | parallel to roll axis  |
| B65H 2301/413246 | ..... | perpendicular to roll axis ( e.g. lowering )   |
| B65H 2301/4133   | ..... | special features   |
| B65H 2301/41335  | ..... | locking mechanism for roll, e.g. axial flange  |
| B65H 2301/4134   | ....  | Both ends type arrangement   |
| B65H 2301/41342  | ..... | shaft transversing the roll ( see also <a href="#">B65H 75/08</a> )                          |
| B65H 2301/41344  | ..... | the roll being fixed to the shaft ( e.g. by clamping )                                       |
| B65H 2301/41346  | ..... | separate elements engaging each end of the roll ( e.g. chuck )                               |



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| B65H 2301/4135   | ....  | Movable supporting means   |
| B65H 2301/41352  | ..... | moving on linear path ( including linear slot arrangement )                              |
| B65H 2301/413523 | ..... | reciprocating supporting means   |
| B65H 2301/413526 | ..... | vertically moving supporting means   |
| B65H 2301/41354  | ..... | moving along a path enclosing a circular area, e.g. turret                               |
| B65H 2301/41356  | ..... | moving on path enclosing a non-circular area   |
| B65H 2301/41358  | ..... | moving on an arc of a circle, i.e. pivoting supporting means                             |
| B65H 2301/4136   | ....  | Mounting arrangements not otherwise provided for   |
| B65H 2301/41361  | ..... | sequentially used roll supports for the same web roll                                    |
| B65H 2301/41362  | ..... | one of the supports for the roller axis being movable as auxiliary bearing               |
| B65H 2301/41364  | ..... | the roller axis pivoting around an axis perpendicular to itself                          |
| B65H 2301/41366  | ..... | arrangements for mounting and supporting and -preferably- driving the (un)winding shaft  |
| B65H 2301/413665 | ..... | articulated bearing  |
| B65H 2301/41368  | ..... | one or two lateral flanges covering part of or entire web diameter                       |
| B65H 2301/413683 | ..... | at least one flange transmitting driving force   |
| B65H 2301/413686 | ..... | The driving flange being rotationally fixed  |
| B65H 2301/41369  | ..... | hub arrangements, i.e. involving additional part between core / roll and machine bearing |
| B65H 2301/4137   | ....  | on its outer circumference   |
| B65H 2301/41372  | ..... | rollers or balls arrangement   |
| B65H 2301/41374  | ..... | arranged in a stationary manner  |
| B65H 2301/41376  | ..... | arranged in a non-stationary manner, i.e. changing according to actual roll diameter     |
| B65H 2301/4138   | ..... | belt arrangement   |
| B65H 2301/41382  | ..... | arranged in stationary manner  |
| B65H 2301/41384  | ..... | arranged in non-stationary manner, i.e. changing according to actual roll diameter       |
| B65H 2301/41386  | ..... | fixed or flexible frictional surface   |
| B65H 2301/41387  | ..... | on inclined surface  |
| B65H 2301/4139   | ....  | Supporting means for several rolls   |
| B65H 2301/41392  | ..... | moving in forced (kinematic) relationship  |
| B65H 2301/41394  | ..... | moving independently from each other   |
| B65H 2301/41398  | ..... | juxtaposed   |
| B65H 2301/414    | ...   | Winding  |
| B65H 2301/4141   | ....  | Preparing winding process  |
| B65H 2301/41414  | ..... | involving pulper or doctor blade or air knife  |
| B65H 2301/41417  | ..... | cutting leading strip (überführstreifen) for transferring web                            |
| B65H 2301/41419  | ....  | Starting winding process   |
| B65H 2301/41421  | ..... | involving electrostatic means  |
| B65H 2301/41422  | ..... | involving mechanical means   |
| B65H 2301/414222 | ..... | fixed to frame, tucking leading edge to core e.g. by brush                               |
| B65H 2301/414225 | ..... | fixed to shaft or mandrel, e.g. clamping or pinching leading edge to shaft or mandrel    |

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| B65H 2301/414227 | ..... | rotatable grippers for coreless winding  |
| B65H 2301/41423  | ..... | involving liquid, e.g. wetting core by water   |
| B65H 2301/41424  | ..... | involving use of glue  |
| B65H 2301/41425  | ..... | involving blowing means, e.g. air blast  |
| B65H 2301/41426  | ..... | involving suction means, e.g. core with vacuum supply  |
| B65H 2301/41427  | ..... | involving arrangements for securing leading edge to core, e.g. adhesive tape                             |
| B65H 2301/41428  | ..... | involving additional element between core and web  |
| B65H 2301/41429  | ..... | in coreless applications   |
| B65H 2301/4143   | ....  | Performing winding process   |
| B65H 2301/41432  | ..... | special features of winding process  |
| B65H 2301/414321 | ..... | helical winding ( <a href="#">L65H 715/012</a> takes precedence )  |
| B65H 2301/414322 | ..... | oscillated winding, i.e. oscillating the axis of the winding roller or material                          |
| B65H 2301/414323 | ..... | spiral winding, i.e. single layers not touching each other, e.g. for tyre rubber                         |
| B65H 2301/414324 | ..... | involving interleaf web/sheet, e.g. liner  |
| B65H 2301/414325 | ..... | winding a core in-line with the web, e.g. wound core made out of sheet material                          |
| B65H 2301/414326 | ..... | winding on core with non-circular cross-sectional profile, e.g. polygonal, oval, flat or slightly curved |
| B65H 2301/414327 | ..... | winding on core irregular inner or outer longitudinal profile, e.g. stepped or grooved                   |
| B65H 2301/414328 | ..... | different torques on both ends of core   |
| B65H 2301/414329 | ..... | blowing gas into winding gap   |
| B65H 2301/4144   | ....  | Finishing winding process  |
| B65H 2301/41441  | ..... | and blocking outer layers against falling apart  |
| B65H 2301/41442  | ..... | Specified by the sealing medium sealing used   |
| B65H 2301/414421 | ..... | Glue or hot-melt   |
| B65H 2301/414422 | ..... | Adhesive tape  |
| B65H 2301/414424 | ..... | Electrostatic charge   |
| B65H 2301/414425 | ..... | Simultaneous deformation of trailing edge and outer layers   |
| B65H 2301/414427 | ..... | Heating or use of thermoplastic material   |
| B65H 2301/414428 | ..... | Folding of trailing end  |
| B65H 2301/41443  | ..... | Specified by the place to where the sealing medium is applied  |
| B65H 2301/414433 | ..... | onto the roll  |
| B65H 2301/414436 | ..... | onto the web   |
| B65H 2301/41444  | ..... | Specified by process phase during which sealing /securing is performed                                   |
| B65H 2301/414443 | ..... | Sealing or securing within the winding station   |
| B65H 2301/414446 | ..... | Sealing or securing in a separate following station  |
| B65H 2301/41445  | ..... | after winding process  |
| B65H 2301/41446  | ..... | removing roll/core from shaft/mandrel, e.g. by compressed air  |
| B65H 2301/41447  | ..... | discharging roll by e.g. rolling it down a slope   |

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| B65H 2301/4146   | ....  | involving particular drive arrangement  |
| B65H 2301/41461  | ..... | centre drive  |
| B65H 2301/41462  | ..... | nip drive   |
| B65H 2301/41464  | ..... | lateral drive arrangement, e.g. operating on the flange of the web roll                         |
| B65H 2301/41466  | ..... | combinations of drives  |
| B65H 2301/41468  | ..... | centre and nip drive  |
| B65H 2301/4148   | ....  | slitting  |
| B65H 2301/41482  | ..... | prepare slitting process  |
| B65H 2301/41484  | ..... | slitting roll after winding, i.e. cutting log into individual rolls                             |
| B65H 2301/41485  | ..... | winding on one single shaft or support  |
| B65H 2301/41486  | ..... | winding on two or more winding shafts simultaneously  |
| B65H 2301/414863 | ..... | directly against central support roller   |
| B65H 2301/414866 | ..... | on bed rollers  |
| B65H 2301/41487  | ..... | trimming edge   |
| B65H 2301/4149   | ..... | features concerning supply of cores   |
| B65H 2301/41493  | ..... | integrated core cutter  |
| B65H 2301/41496  | ..... | loading pre-arranged set of cores   |
| B65H 2301/415    | ...   | Unwinding   |
| B65H 2301/41501  | ....  | Special features of unwinding process   |
| B65H 2301/415013 | ..... | Roll holder being able to pivot around an axis perpendicular to roller axis                     |
| B65H 2301/415016 | ..... | Roll material fed from inner layer  |
| B65H 2301/41505  | ....  | Preparing unwinding process   |
| B65H 2301/41506  | ..... | the web roll not yet being in the unwinding support / unwinding location                        |
| B65H 2301/415063 | ..... | the preparation performed in a roll preparation station   |
| B65H 2301/415066 | ..... | by connecting trailing edge of expiring web to leading edge of following web                    |
| B65H 2301/41508  | ..... | the web roll being in the unwinding support / unwinding location                                |
| B65H 2301/415085 | ..... | by adjusting / registering the lateral position of the web roll                                 |
| B65H 2301/41509  | ..... | opening web roll and related steps  |
| B65H 2301/415095 | ..... | gripping an edge of the web e.g. by clamping and forward it e.g. to splicing web advancing unit |
| B65H 2301/4151   | ....  | Starting unwinding process  |
| B65H 2301/41518  | ....  | Performing unwinding process  |
| B65H 2301/415185 | ..... | Web unwound being guided over (pivoting) guide resting on the roller diameter                   |
| B65H 2301/4152   | ....  | Finishing unwinding process   |
| B65H 2301/41522  | ..... | Detecting residual amount of web  |
| B65H 2301/41524  | ..... | Detecting trailing edge   |
| B65H 2301/41525  | ..... | and consuming web roll up to trailing edge  |
| B65H 2301/4155   | ....  | after unwinding process   |
| B65H 2301/41552  | ..... | separating core from remaining layers of wound material from each other                         |
| B65H 2301/415525 | ..... | by cutting wound material, e.g. transversally ( core slabbing )                                 |
| B65H 2301/4165   | ...   | Unwinding or winding material from or to one station in which the material is                   |

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|                  |       | stored   |
| B65H 2301/417    | ...   | Handling or changing web rolls   |
| B65H 2301/41702  | ....  | management and organisation of stock and production                                    |
| B65H 2301/41704  | ....  | involving layout of production or storage facility                                     |
| B65H 2301/4171   | ....  | Handling web roll  |
| B65H 2301/4172   | ..... | by circumferential portion, e.g. rolling on circumference                              |
| B65H 2301/41722  | ..... | by acting on outer surface, e.g. gripping or clamping                                  |
| B65H 2301/41724  | ..... | by crane   |
| B65H 2301/41726  | ..... | by conveyor  |
| B65H 2301/4173   | ..... | by central portion, e.g. gripping central portion                                      |
| B65H 2301/41732  | ..... | by crane   |
| B65H 2301/41734  | ..... | involving rail   |
| B65H 2301/4174   | ..... | by side portion, e.g. forwarding roll lying on side portion                            |
| B65H 2301/41745  | ..... | by axial movement of roll  |
| B65H 2301/4175   | ..... | ( N: involving cart: see <a href="#">B65H 2405/422</a> )                               |
| B65H 2301/4176   | ....  | Preparing leading edge of replacement roll   |
| B65H 2301/41764  | ..... | by adhesive tab  |
| B65H 2301/41766  | ..... | by adhesive tab or tape with cleavable or delaminating layer                           |
| B65H 2301/418    | ....  | Changing web roll  |
| B65H 2301/4181   | ..... | Core or mandrel supply   |
| B65H 2301/41812  | ..... | by conveyor belt or chain running in closed loop                                       |
| B65H 2301/41814  | ..... | by container storing cores and feeding through wedge-shaped slot or elongated channel  |
| B65H 2301/41816  | ..... | by core magazine within winding machine i.e. horizontal or inclined ramp holding cores |
| B65H 2301/41818  | ..... | mandrels circulating (cycling) in machine or system                                    |
| B65H 2301/4182   | ..... | Core or mandrel insertion e.g. means for loading core or mandrel in winding position   |
| B65H 2301/41822  | ..... | from above i.e. by gravity   |
| B65H 2301/41824  | ..... | from below e.g. between rollers of winding bed   |
| B65H 2301/41826  | ..... | by gripping or pushing means, mechanical or suction gripper                            |
| B65H 2301/41828  | ..... | in axial direction   |
| B65H 2301/41829  | ..... | positioning the core e.g. in axial direction   |
| B65H 2301/4185   | ..... | Core or mandrel discharge or removal, also organisation of core removal                |
| B65H 2301/41852  | ..... | by extracting mandrel from wound roll, e.g. in coreless applications                   |
| B65H 2301/418523 | ..... | by movement of the wound web roll  |
| B65H 2301/418526 | ..... | by movement of the mandrel   |
| B65H 2301/41854  | ..... | by extracting core from wound roll, i.e. in coreless applications only                 |
| B65H 2301/41856  | ..... | by stripping core from mandrel or chuck, e.g. by spring mechanism                      |
| B65H 2301/41858  | ..... | by collecting cores in container   |
| B65H 2301/41859  | ..... | by continuously operated device, e.g. conveyor   |
| B65H 2301/4186   | ..... | by lifting or lowering device, e.g. crane  |
| B65H 2301/4187   | ....  | Relative movement of core or web roll in respect of mandrel                            |

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| B65H 2301/4189   | ..... | Cutting  |
| B65H 2301/41891  | ..... | Cutting knife located between two winding rollers  |
| B65H 2301/41892  | ..... | Cutting knife located in winding or guiding roller and protruding therefrom  |
| B65H 2301/418925 | ..... | and cooperating with second assembly located in another roller   |
| B65H 2301/41893  | ..... | Cutting knife moving on circular path  |
| B65H 2301/41894  | ..... | Cutting knife moving on circular or acuate path, e.g. pivoting around winding roller                                       |
| B65H 2301/41896  | ..... | Several cutting devices, e.g. located at different upstream/downstream positions of the web path                           |
| B65H 2301/41898  | ..... | Cutting threading tail and leading it to new core  |
| B65H 2301/419    | ...   | from or to storage, i.e. the storage integrating winding or unwinding means  |
| B65H 2301/4191   | ....  | for handling articles of limited length, e.g. AO format, arranged at intervals from each other                             |
| B65H 2301/41912  | ..... | between two belt like members  |
| B65H 2301/4192   | ....  | for handling articles of limited length in shingled formation  |
| B65H 2301/41922  | ..... | and wound together with single belt like members   |
| B65H 2301/419225 | ..... | Several belts spaced in axis direction   |
| B65H 2301/41924  | ..... | between two belt like members  |
| B65H 2301/4193   | ....  | for handling continuous material   |
| B65H 2301/42     | ..    | Piling, depiling, handling piles   |
| B65H 2301/421    | ...   | Forming a pile   |
| B65H 2301/4211   | ....  | of articles alternatively overturned, or swivelled from a certain angle  |
| B65H 2301/42112  | ..... | swivelled from 180°  |
| B65H 2301/42114  | ..... | swivelled from 90°   |
| B65H 2301/4212   | ....  | of articles substantially horizontal   |
| B65H 2301/42122  | ..... | by introducing articles from under the pile  |
| B65H 2301/42124  | ..... | by introducing articles selectively from under or above the pile   |
| B65H 2301/4213   | ....  | of a limited number of articles, e.g. buffering, forming bundles   |
| B65H 2301/42132  | ..... | between belts  |
| B65H 2301/42134  | ..... | Feeder loader, i.e. picking up articles from a main stack for maintaining continuously enough articles in a machine feeder |
| B65H 2301/4214   | ....  | of articles on edge  |
| B65H 2301/42142  | ..... | by introducing articles from beneath   |
| B65H 2301/42144  | ..... | by erecting articles from horizontal transport flushing with the supporting surface of the pile                            |
| B65H 2301/42146  | ..... | by introducing articles from above   |
| B65H 2301/4215   | ....  | of articles riding on an elongated member  |
| B65H 2301/4216   | ....  | of web folded in zig-zag form  |
| B65H 2301/42162  | ..... | Juxtaposing several piles  |
| B65H 2301/42164  | ..... | Guiding web alternatively to corner of pile receiver   |
| B65H 2301/421645 | ..... | by stationary guide element  |
| B65H 2301/4217   | ....  | Forming multiple piles   |
| B65H 2301/42172  | ..... | simultaneously   |

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| B65H 2301/4218   | ....  | Changing the pile  |
| B65H 2301/4219   | ....  | forming a pile in which articles are offset from each other, e.g. forming stepped pile   |
| B65H 2301/42192  | ..... | forming a pile of articles in zigzag fashion   |
| B65H 2301/42194  | ..... | forming a pile in which articles are offset from each other in the delivery direction  |
| B65H 2301/422    | ...   | Handling piles, sets or stacks of articles   |
| B65H 2301/4221   | ....  | Removing package around stack  |
| B65H 2301/42212  | ..... | Extracting staple from stapled set of articles   |
| B65H 2301/4222   | ....  | Squaring-up piles  |
| B65H 2301/4223   | ....  | Pressing piles   |
| B65H 2301/4224   | ....  | Gripping piles, sets or stacks of articles   |
| B65H 2301/42242  | ..... | by acting on the outermost articles of the pile for clamping the pile  |
| B65H 2301/42244  | ..... | Sets in which articles are offset to each other  |
| B65H 2301/4225   | ....  | in or on special supports  |
| B65H 2301/42252  | ..... | Vehicles, e.g. carriage, truck   |
| B65H 2301/42254  | ..... | Boxes ; Cassettes ; Containers   |
| B65H 2301/422542 | ..... | emptying or unloading processes  |
| B65H 2301/422544 | ..... | opening processes  |
| B65H 2301/422546 | ..... | superposed   |
| B65H 2301/422548 | ..... | filling or loading process   |
| B65H 2301/42256  | ..... | Pallets ; Skids ; Platforms with feet, i.e. handled together with the stack  |
| B65H 2301/4226   | ....  | Delivering, advancing piles  |
| B65H 2301/42261  | ..... | by dropping  |
| B65H 2301/422615 | ..... | from opposite part-support elements, e.g. operated simultaneously  |
| B65H 2301/42262  | ..... | by acting on surface of outermost articles of the pile, e.g. in nip between pair of belts or rollers ( <i>Nota: gripping pile see B65H 2301/4224</i> ) |
| B65H 2301/42264  | ..... | by moving the surface supporting the lowermost article of the pile, e.g. conveyor, carriage  |
| B65H 2301/42265  | ..... | by moving the surface supporting the pile of articles on edge, e.g. conveyor or carriage   |
| B65H 2301/42266  | ..... | by acting on edge of the pile for moving it along a surface, e.g. pushing  |
| B65H 2301/42268  | ..... | by acting on one of the outermost article for moving pile of articles on edge along a surface, e.g. pushing  |
| B65H 2301/4227   | ....  | Deforming piles, e.g. folding  |
| B65H 2301/4228   | ....  | Dividing piles   |
| B65H 2301/4229   | ....  | cutting piles  |
| B65H 2301/423    | ...   | Depiling ; Separating articles from a pile   |
| B65H 2301/4231   | ....  | by two or more separators acting selectively on the same pile  |
| B65H 2301/4232   | ....  | of horizontal or inclined articles, i.e. wherein articles support fully or in part the mass of other articles in the piles                             |
| B65H 2301/42322  | ..... | from bottom of the pile  |
| B65H 2301/423225 | ..... | by dropping the article through an opening beneath the pile  |
| B65H 2301/42324  | ..... | from top of the pile   |

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| B65H 2301/423245 | ..... | the pile lying on a stationary support, i.e. the separator moving according to the decreasing height of the pile           |
| B65H 2301/42326  | ..... | selectively from bottom or top of the pile   |
| B65H 2301/42328  | ..... | of inclined articles and inclination angle >45   |
| B65H 2301/4233   | ....  | by peeling, i.e. involving elongated elements traversing pile  |
| B65H 2301/4234   | ....  | assisting separation or preventing double feed   |
| B65H 2301/42342  | ..... | vibrating  |
| B65H 2301/42344  | ..... | separating stack from the sheet separating means after separation step   |
| B65H 2301/42346  | ..... | Releasing stack holding means during separation step   |
| B65H 2301/4236   | ....  | of web material in zig-zag form  |
| B65H 2301/4237   | ....  | of vertical articles, e.g. by extracting articles laterally from the pile  |
| B65H 2301/42372  | ..... | by extracting articles upwards from the pile   |
| B65H 2301/424    | ...   | in sorter  |
| B65H 2301/426    | ...   | Forming batches  |
| B65H 2301/4261   | ....  | by inserting a wire or tape shaped marker element  |
| B65H 2301/42612  | ..... | cut into tabs before or upon insertion   |
| B65H 2301/4262   | ....  | by inserting auxiliary support as defined in <a href="#">B65H 31/32</a>  |
| B65H 2301/42622  | ..... | and using auxiliary means for facilitating introduction of the auxiliary support   |
| B65H 2301/4263   | ....  | Feeding end plate or end sheet before formation or after completion of a pile  |
| B65H 2301/42632  | ..... | feeding batch receiving board or sheet into the pile for receiving next batch  |
| B65H 2301/43     | ..    | Gathering ; Associating ; Assembling   |
| B65H 2301/431    | ...   | Features with regard to the collection, nature, sequence and/or the making thereof   |
| B65H 2301/4311   | ....  | Making personalised books or mail packets according to personal, geographic or demographic data                            |
| B65H 2301/4312   | ....  | Gathering material delivered from a digital printing machine   |
| B65H 2301/4313   | ....  | Making samples assemblies  |
| B65H 2301/4314   | ....  | Making packets of bundles of banknotes or the like in correct sequence   |
| B65H 2301/4315   | ....  | Webs   |
| B65H 2301/43151  | ..... | and ribbons, tapes or strips   |
| B65H 2301/43152  | ..... | and threads  |
| B65H 2301/4316   | ....  | sheet-like articles and threads  |
| B65H 2301/4317   | ....  | Signatures, i.e. involving folded main product or jacket   |
| B65H 2301/43171  | ..... | Inserting subproducts in a signature as main product   |
| B65H 2301/431711 | ..... | the subproduct being inserted in a direction substantially perpendicular to the fold of the main product                   |
| B65H 2301/431713 | ..... | the main product being slightly inclined or horizontal and oriented with opening face laterally to its transport direction |
| B65H 2301/431715 | ..... | the main product being slightly inclined or horizontal and oriented with opening face rearwards to its transport direction |
| B65H 2301/431716 | ..... | the main product being oriented with opening face upwards  |
| B65H 2301/431718 | ..... | the subproduct being inserted in a direction parallel to the fold of the main product                                      |



|                 |       |   |
|-----------------|-------|---|
| B65H 2301/43172 | ..... | attaching subproducts on outer portion of a main product  |
| B65H 2301/4318  | ....  | Gathering, associating, assembling articles from a single source which is supplied by several sources |
| B65H 2301/432   | ...   | in pockets, i.e. vertically   |
| B65H 2301/4321  | ....  | and dropping material through bottom of the pocket  |
| B65H 2301/4322  | ....  | Asymmetric pockets  |
| B65H 2301/433   | ...   | in trays, i.e. horizontally   |
| B65H 2301/434   | ...   | In channels, e.g. in which the articles are substantially vertical or inclined                        |
| B65H 2301/4341  | ....  | with several channels on a rotary carrier rotating around an axis parallel to the channels            |
| B65H 2301/435   | ...   | on collecting conveyor  |
| B65H 2301/4351  | ....  | receiving articles astride thereon  |
| B65H 2301/4352  | ....  | with pushers, e.g. the articles being substantially horizontal  |
| B65H 2301/4353  | ....  | with compartments, e.g. the articles being substantially horizontal in each compartment               |
| B65H 2301/4354  | ....  | with grippers   |
| B65H 2301/4355  | ....  | with pins engaging into handled material  |
| B65H 2301/4356  | ....  | with supports for receiving combination of articles astride and in standing position                  |
| B65H 2301/436   | ...   | on saddles  |
| B65H 2301/4361  | ....  | on a rotary carrier rotating around an axis parallel to the saddles                                   |
| B65H 2301/437   | ...   | Repairing a faulty collection due to e.g. misfeed, multiplefeed                                       |
| B65H 2301/438   | ...   | Finishing   |
| B65H 2301/4381  | ....  | Bringing a cover  |
| B65H 2301/4382  | ....  | Binding or attaching processes  |
| B65H 2301/43821 | ..... | involving binding tape  |
| B65H 2301/43822 | ..... | involving heating   |
| B65H 2301/43823 | ..... | involving pressure sensitive adhesive   |
| B65H 2301/43824 | ..... | involving wrapping, banding or strapping  |
| B65H 2301/43825 | ..... | involving elastically deformable member, e.g. clip  |
| B65H 2301/43826 | ..... | involving wire element supplied from a wire dispenser   |
| B65H 2301/43827 | ..... | involving coating adhesive on at least a part of the handled material                                 |
| B65H 2301/43828 | ..... | involving simultaneous deformation of at least a part of the articles to be bound                     |
| B65H 2301/44    | ..    | Moving, forwarding, guiding material  |
| B65H 2301/441   | ...   | by vibrating  |
| B65H 2301/442   | ...   | by acting on edge of handled material   |
| B65H 2301/4421  | ....  | by abutting edge  |
| B65H 2301/4422  | ....  | with guide member moving in the material direction  |
| B65H 2301/4423  | ....  | with guide member rotating against the edges of material  |
| B65H 2301/443   | ...   | by acting on surface of handled material  |
| B65H 2301/4431  | ....  | by means with operating surfaces contacting opposite faces of material                                |
| B65H 2301/44312 | ..... | between belts and rollers   |
| B65H 2301/44314 | ..... | between belts and cylinder  |

|                  |       |   |
|------------------|-------|---|
| B65H 2301/44316  | ..... | between belts   |
| B65H 2301/44318  | ..... | between rollers   |
| B65H 2301/44319  | ..... | between balls   |
| B65H 2301/4432   | ....  | by means having an operating surface contacting only one face of the material, e.g. roller                        |
| B65H 2301/44322  | ..... | belt  |
| B65H 2301/44324  | ..... | Rollers   |
| B65H 2301/443243 | ..... | pivoting around an axis perpendicular to the plane of the material ( especially when web is running in a U-loop ) |
| B65H 2301/443246 | ..... | pivoting around an axis parallel to the plane of the material   |
| B65H 2301/4433   | ....  | by means holding the material   |
| B65H 2301/44331  | ..... | at particular portion of handled material ( to be used in combination with at least one code L65H713 )            |
| B65H 2301/44332  | ..... | using magnetic forces   |
| B65H 2301/44334  | ..... | using electrostatic forces  |
| B65H 2301/44335  | ..... | using adhesive forces   |
| B65H 2301/44336  | ..... | using suction forces  |
| B65H 2301/44338  | ..... | using mechanical grippers   |
| B65H 2301/4434   | ....  | involving user cooperation  |
| B65H 2301/44342  | ..... | pulling   |
| B65H 2301/4435   | ....  | by acting only on part of the surface   |
| B65H 2301/44352  | ..... | on opposite lateral edge regions  |
| B65H 2301/444    | ...   | Stream of articles in shingled formation, overlapping stream  |
| B65H 2301/4447   | ....  | multiple streams  |
| B65H 2301/44472  | ..... | superposed  |
| B65H 2301/44474  | ..... | interfolded   |
| B65H 2301/445    | ...   | stream of articles separated from each other  |
| B65H 2301/4451   | ....  | forming a stream or streams of separated articles   |
| B65H 2301/44512  | ..... | forming parallel streams of separated articles  |
| B65H 2301/44514  | ..... | Separating superposed articles  |
| B65H 2301/44516  | ..... | so that there are no intervals between the sheets   |
| B65H 2301/4452   | ....  | Regulating space between separated articles   |
| B65H 2301/44522  | ..... | Varying space between separated articles  |
| B65H 2301/4453   | ....  | and performing dynamic accumulation   |
| B65H 2301/4454   | ....  | Merging two or more streams   |
| B65H 2301/4455   | ....  | Diverting a main stream into part streams   |
| B65H 2301/44552  | ..... | by alternatively directing articles following each other to appropriate part stream                               |
| B65H 2301/446    | ...   | Assisting moving, forwarding or guiding of material   |
| B65H 2301/4461   | ....  | by blowing air towards handled material   |
| B65H 2301/4462   | ....  | by jogging  |
| B65H 2301/447    | ...   | transferring material between transport devices   |

**NOTE**

When classifying in this group, the notation + [B65H 2220/01](#) designates downstream transport device, while the notation + [B65H 2220/02](#) designates the upstream transport device

|                                 |       |  |
|---------------------------------|-------|--|
| <a href="#">B65H 2301/4471</a>  | ....  | Grippers, e.g. moved in paths enclosing an area  |
| <a href="#">B65H 2301/44712</a> | ..... | carried by chains or bands   |
| <a href="#">B65H 2301/44714</a> | ..... | carried by rotating members  |
| <a href="#">B65H 2301/44716</a> | ..... | oscillated in arcuate paths  |
| <a href="#">B65H 2301/44718</a> | ..... | reciprocated in rectilinear paths  |
| <a href="#">B65H 2301/4472</a>  | ....  | Suction grippers, e.g. moved in paths enclosing an area  |
| <a href="#">B65H 2301/44722</a> | ..... | oscillated in arcuate paths  |
| <a href="#">B65H 2301/44724</a> | ..... | reciprocated in rectilinear paths  |
| <a href="#">B65H 2301/4473</a>  | ....  | Belts, endless moving elements on which the material is in surface contact                           |
| <a href="#">B65H 2301/44732</a> | ..... | transporting articles in overlapping stream  |
| <a href="#">B65H 2301/44734</a> | ..... | overhead, i.e. hanging material by attraction forces, e.g. suction, magnetic forces                  |
| <a href="#">B65H 2301/44735</a> | ..... | suction belt   |
| <a href="#">B65H 2301/4474</a>  | ....  | Pair of cooperating moving elements as rollers, belts forming nip into which material is transported |
| <a href="#">B65H 2301/4475</a>  | ....  | Rotary or endless transport devices having elements acting on edge of articles                       |
| <a href="#">B65H 2301/4476</a>  | ....  | Endless transport devices with compartments  |
| <a href="#">B65H 2301/44765</a> | ....  | Rotary transport devices with compartments   |
| <a href="#">B65H 2301/4477</a>  | ....  | Transport device with transport surface in sliding contact with handled material                     |
| <a href="#">B65H 2301/4478</a>  | ....  | Transport device acting on edge of material  |
| <a href="#">B65H 2301/4479</a>  | ....  | Saddle conveyor with saddle member extending in transport direction                                  |
| <a href="#">B65H 2301/44795</a> | ....  | Saddle conveyor with saddle member extending transversally to transport direction                    |
| <a href="#">B65H 2301/448</a>   | ...   | Diverting  |
| <a href="#">B65H 2301/4481</a>  | ....  | Stripping material from carrier web  |
| <a href="#">B65H 2301/4482</a>  | ....  | to multiple paths, i.e. more than 2  |
| <a href="#">B65H 2301/44822</a> | ..... | 3 paths  |
| <a href="#">B65H 2301/449</a>   | ...   | Features of movement or transforming movement of handled material                                    |
| <a href="#">B65H 2301/4491</a>  | ....  | transforming movement from continuous to intermittent or vice versa                                  |
| <a href="#">B65H 2301/4492</a>  | ....  | braking  |
| <a href="#">B65H 2301/44921</a> | ..... | by friction contact with non driven element  |
| <a href="#">B65H 2301/4493</a>  | ....  | intermittent   |
| <a href="#">B65H 2301/45</a>    | ..    | Folding, unfolding   |
| <a href="#">B65H 2301/4505</a>  | ...   | Folding bound sheets, e.g. stapled sheets  |
| <a href="#">B65H 2301/451</a>   | ...   | involving manual operations  |
| <a href="#">B65H 2301/452</a>   | ...   | utilising rotary folding means   |

|                  |       |   |
|------------------|-------|---|
| B65H 2301/4521   | ....  | without tucker blades   |
| B65H 2301/453    | ...   | opening folded material   |
| B65H 2301/4531   | ....  | by opposite opening drums   |
| B65H 2301/45312  | ..... | adjusting stop relative to one of the drum, i.e. in function of format  |
| B65H 2301/4532   | ....  | by movable member crossing the path of the folded material, i.e. traversing along product lip                                 |
| B65H 2301/45322  | ..... | Helical member  |
| B65H 2301/4533   | ....  | by stationary member in the transport path of the folded material, i.e. the fold being parallel to the direction of transport |
| B65H 2301/46     | ..    | Splicing  |
| B65H 2301/4601   | ...   | special splicing features or applications   |
| B65H 2301/46011  | ....  | in winding process  |
| B65H 2301/46013  | ....  | and maintaining register of spliced webs  |
| B65H 2301/46014  | ....  | of webs with labels   |
| B65H 2301/46015  | ....  | of (half) tube webs   |
| B65H 2301/46016  | ....  | replacing lap splice by butt splice   |
| B65H 2301/46017  | ....  | involving several layers  |
| B65H 2301/46018  | ....  | involving location or further processing of splice  |
| B65H 2301/460183 | ..... | marking of splice   |
| B65H 2301/460186 | ..... | detect location of splice   |
| B65H 2301/4602   | ...   | Preparing splicing process  |
| B65H 2301/46022  | ....  | by detecting mark on rotating new roll and/or synchronize roll with trailing web speed  |
| B65H 2301/46024  | ....  | by collecting a loop of material of the fresh web downstream of the splicing station  |
| B65H 2301/4604   | ...   | Opening web rolls, remove outer layers  |
| B65H 2301/46042  | ....  | by tearing, bursting etc. preferably only outer (protective) layer  |
| B65H 2301/46043  | ....  | by cutting or tearing only outermost layer  |
| B65H 2301/46044  | ....  | by cutting or perforating in tranverse direction  |
| B65H 2301/4606   | ...   | Preparing leading edge for splicing   |
| B65H 2301/46064  | ....  | by transversally operated carriage  |
| B65H 2301/46066  | ....  | by inserting adhesive tape between leading edge and wound roll  |
| B65H 2301/4607   | ....  | by adhesive tape  |
| B65H 2301/46072  | ..... | inserted between leading edge and wound web roll  |
| B65H 2301/46075  | ....  | by adhesive tab   |
| B65H 2301/46078  | ....  | the adhesive tab or tab having a cleavable or delaminating layer  |
| B65H 2301/461    | ...   | Processing webs in splicing process   |
| B65H 2301/4611   | ....  | before splicing   |
| B65H 2301/46115  | ..... | by bringing leading edge to splicing station, e.g. by chain or belt   |
| B65H 2301/4613   | ....  | during splicing   |
| B65H 2301/46132  | ..... | consuming web up to trailing edge   |
| B65H 2301/4615   | ....  | after splicing  |
| B65H 2301/46152  | ..... | cutting off tail after (flying) splicing  |

|                  |       |   |
|------------------|-------|---|
| B65H 2301/46154  | ..... | guiding tail after (flying) splicing  |
| B65H 2301/4617   | ..... | cutting webs in splicing process  |
| B65H 2301/46171  | ..... | cutting leading edge of new web, e.g. manually  |
| B65H 2301/46172  | ..... | cutting expiring web only   |
| B65H 2301/46174  | ..... | cutting both spliced webs separately  |
| B65H 2301/46176  | ..... | cutting both spliced webs simultaneously  |
| B65H 2301/46178  | ..... | cutting by transversally moving element   |
| B65H 2301/462    | ...   | Form of splice  |
| B65H 2301/4621   | ....  | Overlapping article or web portions   |
| B65H 2301/46212  | ..... | with C-folded trailing edge for embedding leading edge  |
| B65H 2301/46213  | ..... | with L-folded edges sealed together   |
| B65H 2301/4622   | ....  | Abutting article or web portions, i.e. edge to edge   |
| B65H 2301/46222  | ..... | involving double butt splice, i.e. adhesive tape applied on both sides of the article or web portions     |
| B65H 2301/4623   | ....  | Spaced article or web portions, i.e. gap between edges  |
| B65H 2301/4625   | ....  | Slanted   |
| B65H 2301/463    | ...   | splicing means, i.e. means by which a web end is bound to another web end                                 |
| B65H 2301/4631   | ....  | Adhesive tape   |
| B65H 2301/46312  | ..... | double-sided  |
| B65H 2301/46314  | ..... | Pieces of adhesive tape, e.g. labels  |
| B65H 2301/4632   | ....  | Simultaneous deformation of the two web ends  |
| B65H 2301/46325  | ....  | Separate element, e.g. clip   |
| B65H 2301/46326  | ....  | Stitched or seamed together   |
| B65H 2301/46327  | ....  | Ultrasonic sealing  |
| B65H 2301/4633   | ....  | Glue  |
| B65H 2301/46332  | ..... | hot melt  |
| B65H 2301/4634   | ....  | Heat seal splice  |
| B65H 2301/4636   | ....  | None, i.e. simply feeding both webs simultaneously or sequentially  |
| B65H 2301/4637   | ....  | Male and female configuration   |
| B65H 2301/464    | ...   | effecting splice  |
| B65H 2301/4641   | ....  | by pivoting element   |
| B65H 2301/46412  | ....  | by element moving in a direction perpendicular to the running direction of the web                        |
| B65H 2301/46414  | ....  | by nipping rollers  |
| B65H 2301/464145 | ..... | at least one of the rollers having additional feature, eg. knife or at least partly non-cylindrical shape |
| B65H 2301/4695   | ...   | longitudinally  |
| B65H 2301/50     | .     | Auxiliary process performed during handling process   |
| B65H 2301/51     | ..    | Modifying a characteristic of handled material  |
| B65H 2301/511    | ...   | Processing surface of handled material upon transport or guiding thereof, e.g. cleaning                   |
| B65H 2301/5111   | ....  | Printing ; Marking  |
| B65H 2301/51115  | ....  | freeing product contained in handled material   |

|                  |       |   |
|------------------|-------|---|
| B65H 2301/5112   | ....  | removing material from outer surface  |
| B65H 2301/51121  | ..... | removing printed information, e.g. marks  |
| B65H 2301/51122  | ..... | peeling layer of material   |
| B65H 2301/5113   | ....  | applying adhesive   |
| B65H 2301/51132  | ..... | hot melt adhesive   |
| B65H 2301/5114   | ....  | coating   |
| B65H 2301/51145  | ..... | by vapour deposition  |
| B65H 2301/5115   | ....  | Cleaning  |
| B65H 2301/512    | ...   | Changing form of handled material   |
| B65H 2301/5121   | ....  | Bending, buckling, curling, bringing a curvature  |
| B65H 2301/51212  | ..... | perpendicularly to the direction of displacement of handled material, e.g. forming a loop |
| B65H 2301/512125 | ..... | by abutting against a stop  |
| B65H 2301/51214  | ..... | parallel to direction of displacement of handled material                                 |
| B65H 2301/512145 | ..... | Forming a tube  |
| B65H 2301/5122   | ....  | Corrugating ; Stiffening  |
| B65H 2301/5123   | ....  | Compressing, i.e. diminishing thickness   |
| B65H 2301/51232  | ..... | for flattening  |
| B65H 2301/5124   | ....  | Stretching ; Tenting  |
| B65H 2301/51242  | ..... | Stretching transversely ; Tenting   |
| B65H 2301/512422 | ..... | involving roller pair acting on edge of web   |
| B65H 2301/512425 | ..... | involving guiding web along the circumference of a ring section                           |
| B65H 2301/512427 | ..... | involving members moving axially on periphery of a drum                                   |
| B65H 2301/5125   | ....  | Restoring form  |
| B65H 2301/51252  | ..... | Compensating stretching   |
| B65H 2301/51254  | ..... | Unshirring  |
| B65H 2301/51256  | ..... | Removing waviness or curl, smoothing  |
| B65H 2301/512565 | ..... | involving tri-roller arrangement  |
| B65H 2301/5126   | ....  | Embossing, crimping or similar processes  |
| B65H 2301/5127   | ....  | shredding   |
| B65H 2301/513    | ...   | Modifying electric properties   |
| B65H 2301/5131   | ....  | Magnetising   |
| B65H 2301/5132   | ....  | Bringing electrostatic charge   |
| B65H 2301/5133   | ....  | Removing electrostatic charge   |
| B65H 2301/514    | ...   | Modifying physical properties   |
| B65H 2301/5141   | ....  | Rendering inert   |
| B65H 2301/5142   | ....  | Moistening  |
| B65H 2301/51422  | ..... | by passing through a bath   |
| B65H 2301/5143   | ....  | Warming   |
| B65H 2301/51432  | ..... | Applying heat and pressure  |
| B65H 2301/5144   | ....  | Cooling   |
| B65H 2301/515    | ...   | Cutting handled material  |

|                  |       |  |
|------------------|-------|--|
| B65H 2301/5151   | ....  | transversally to feeding direction   |
| B65H 2301/51512  | ..... | using a cutting member moving linearly in a plane parallel to the surface of the web and along a direction crossing the handled material |
| B65H 2301/515123 | ..... | arranged for cutting web supported on the surface of a cylinder  |
| B65H 2301/515126 | ..... | for cutting from inside of the cylinder  |
| B65H 2301/51514  | ..... | Breaking ; Bursting ; Tearing, i.e. cutting without cutting member   |
| B65H 2301/5152   | ....  | Cutting partially, e.g. perforating  |
| B65H 2301/5153   | ....  | Details of cutting means   |
| B65H 2301/51531  | ..... | involving forms of stored energy, e.g. compressed air or explosive   |
| B65H 2301/51532  | ..... | Blade cutter, e.g. single blade cutter   |
| B65H 2301/515323 | ..... | rotary   |
| B65H 2301/515326 | ..... | Multiple blade cutter  |
| B65H 2301/51533  | ..... | Air jet  |
| B65H 2301/51534  | ..... | Water jet  |
| B65H 2301/51535  | ..... | adhesive tape or tab   |
| B65H 2301/51536  | ..... | Laser  |
| B65H 2301/51537  | ..... | Vacuum means   |
| B65H 2301/51538  | ..... | Die-cutting  |
| B65H 2301/51539  | ..... | Wire   |
| B65H 2301/5154   | ....  | from hand-held or table dispenser  |
| B65H 2301/51541  | ..... | with means mounted on roll of material   |
| B65H 2301/5155   | ....  | longitudinally   |
| B65H 2301/5159   | ....  | shredding  |
| B65H 2301/516    | ...   | Securing handled material to another material  |
| B65H 2301/5161   | ....  | Binding processes  |
| B65H 2301/51611  | ..... | involving at least a binding element traversing the handled material: e.g. staple  |
| B65H 2301/51612  | ..... | involving ultrasonic waves   |
| B65H 2301/51614  | ..... | involving heating element  |
| B65H 2301/51616  | ..... | involving simultaneous deformation of parts of the material to be bound  |
| B65H 2301/5162   | ....  | Coating, applying liquid or layer of any material to material  |
| B65H 2301/5163   | ....  | Applying label, tab to handled material  |
| B65H 2301/517    | ...   | Drying material  |
| B65H 2301/52     | ..    | for starting   |
| B65H 2301/521    | ...   | Stripping web from roll  |
| B65H 2301/522    | ...   | Threading web into machine   |
| B65H 2301/52202  | ....  | around several subsequent rollers ( e.g. calendar )  |
| B65H 2301/53     | ..    | for acting on performance of handling machine  |
| B65H 2301/5305   | ...   | Cooling parts or areas of handling machine   |
| B65H 2301/531    | ...   | Cleaning parts of handling machine   |
| B65H 2301/532    | ...   | Modifying characteristics of surface of parts in contact with handled material   |
| B65H 2301/5321   | ....  | Removing electrostatic charge generated at said surface  |
| B65H 2301/5322   | ....  | Generating electrostatic charge at said surface  |



|                |      |  |
|----------------|------|--|
| B65H 2301/5323 | .... | bringing adhesive properties                                 |
| B65H 2301/533  | ...  | Self-repair ; Self-recovery ; Automatic correction of errors |
| B65H 2301/54   | ..   | for managing processing of handled material                  |
| B65H 2301/541  | ...  | Counting   |
| B65H 2301/542  | ...  | Quality control  |
| B65H 2301/5421 | .... | taking samples   |
| B65H 2301/543  | ...  | processing waste material                                    |
| B65H 2301/544  | ...  | Reading ; Scanning   |

## **B65H 2401/00      Materials used in construction, properties thereof**

|                |      |   |
|----------------|------|---|
| B65H 2401/10   | .    | Materials   |
| B65H 2401/11   | ..   | Macromolecular composition  |
| B65H 2401/111  | ...  | Elastomer   |
| B65H 2401/112  | ...  | Fiber reinforced composition  |
| B65H 2401/1121 | .... | Carbon fibre composition  |
| B65H 2401/113  | ...  | Polymer composition   |
| B65H 2401/114  | ...  | Polyester composition   |
| B65H 2401/1141 | .... | Flexible polyester film made from biaxially oriented polyethylene terephthalate |
| B65H 2401/115  | ...  | Resin composition   |
| B65H 2401/12   | ..   | Ceramic composition   |
| B65H 2401/13   | ..   | Coatings, paint, varnish and details thereof                                    |
| B65H 2401/14   | ..   | textile materials   |
| B65H 2401/141  | ...  | woven or knit material  |
| B65H 2401/15   | ..   | Metals  |
| B65H 2401/20   | .    | Physical properties   |
| B65H 2401/21   | ..   | electrical properties   |
| B65H 2401/211  | ...  | Conductivity  |
| B65H 2401/212  | ...  | electrical resistance   |
| B65H 2401/213  | ...  | magnetic properties   |
| B65H 2401/22   | ..   | visual aspect properties  |
| B65H 2401/221  | ...  | opaque material   |
| B65H 2401/222  | ...  | transparent material  |
| B65H 2401/23   | ..   | Strength of materials   |
| B65H 2401/231  | ...  | Rigidity  |
| B65H 2401/2311 | .... | tensile elastic, Young's modulus  |
| B65H 2401/24   | ..   | Other properties  |
| B65H 2401/241  | ...  | Self lubricating  |
| B65H 2401/242  | ...  | porous  |
| B65H 2401/243  | ...  | heat-shrinkable   |
| B65H 2401/244  | ...  | non-permeable   |

## **B65H 2402/00      Features of construction**

- B65H 2402/10 . Modular construction
- B65H 2402/11 .. using preforms, e.g. profiles
- B65H 2402/20 . Force system
- B65H 2402/21 .. Concurrent force system
- B65H 2402/22 .. Parallel force system
- B65H 2402/23 .. Composition of forces
- B65H 2402/231 ... Parallelogram of forces
- B65H 2402/232 ... Resolution of a force
- B65H 2402/24 .. Means for balancing forces
- B65H 2402/25 .. Centrifugal force
- B65H 2402/30 . Support, subassembly, mounting thereof
- B65H 2402/31 .. Pivoting support means
- B65H 2402/32 .. Sliding support means
- B65H 2402/33 .. cantilever support means
- B65H 2402/34 .. other support assembly
- B65H 2402/341 ... Eccentric mounting
- B65H 2402/342 ... Parallelogram mounting
- B65H 2402/343 ... Telescopic mounting
- B65H 2402/344 ... scissor-like assembly
- B65H 2402/35 .. rotating around an axis
- B65H 2402/351 ... Turntable
- B65H 2402/352 ... turret
- B65H 2402/40 . Features of frame, housing or mounting of the handling apparatus
- B65H 2402/41 .. Portable or hand-held apparatus
- B65H 2402/411 ... with means for mounting the apparatus on the user body, e.g. arm, wrist
- B65H 2402/412 ... details or the parts to be hold by the user: e.g. handle
- B65H 2402/413 ... with means for mounting the apparatus to clothing of a user
- B65H 2402/414 ... Manual tools for filamentary material, e.g. for mounting or removing a bobbin, measuring tension or splicing
- B65H 2402/42 .. Mobile apparatus, i.e. mounted on mobile carrier such as tractor or truck
- B65H 2402/43 .. Wall apparatus, i.e. mounted on vertical support
- B65H 2402/44 .. Housing
- B65H 2402/441 ... movable for facilitating access to area inside the housing, e.g. pivoting, sliding
- B65H 2402/442 ... with opening for introducing material to be handled, e.g. to insert wound roll of product
- B65H 2402/443 ... with opening for delivering material, e.g. to pull out web (dispensing)
- B65H 2402/45 .. door (s)
- B65H 2402/46 .. table apparatus
- B65H 2402/50 . Machine elements
- B65H 2402/51 .. Joints

|                 |       |   |
|-----------------|-------|---|
| B65H 2402/511   | ...   | riveted joints  |
| B65H 2402/512   | ...   | Key and spline joints   |
| B65H 2402/5121  | ....  | Key joint   |
| B65H 2402/5122  | ....  | Spline joint  |
| B65H 2402/513   | ...   | Welded joints   |
| B65H 2402/514   | ...   | threaded joints   |
| B65H 2402/515   | ...   | Quick release   |
| B65H 2402/5151  | ....  | involving pawl and ratched rack   |
| B65H 2402/5152  | ....  | Snap  |
| B65H 2402/5153  | ....  | Clip  |
| B65H 2402/5154  | ....  | involving magnetic forces   |
| B65H 2402/5155  | ....  | Latch mechanism   |
| B65H 2402/5156  | ....  | Ball-spring release mechanism   |
| B65H 2402/516   | ...   | other joints  |
| B65H 2402/5161  | ....  | Ball and socket, knee joint   |
| B65H 2402/5162  | ....  | Knuckle joint   |
| B65H 2402/5163  | ....  | Bayonet joint   |
| B65H 2402/5164  | ....  | plugs, dowels or other devices fastened in walls or the like by inserting them in holes made therein for that purpose |
| B65H 2402/517   | ...   | Washer  |
| B65H 2402/5171  | ....  | of elastic material   |
| B65H 2402/52    | ..    | Bearings  |
| B65H 2402/521   | ...   | Details of mounting   |
| B65H 2402/5211  | ....  | Self aligning bearings  |
| B65H 2402/522   | ...   | Support of bearing  |
| B65H 2402/5221  | ....  | Shaft   |
| B65H 2402/52211 | ..... | retractable   |
| B65H 2402/523   | ...   | Magnetic bearings   |
| B65H 2402/524   | ...   | Thrust bearings   |
| B65H 2402/525   | ...   | using fluid, e.g. air cushion, hydrodynamic, hydrostatic bearings Thrust bearings                                     |
| B65H 2402/53    | ..    | Guideways   |
| B65H 2402/531   | ...   | involving bearings  |
| B65H 2402/54    | ..    | Springs   |
| B65H 2402/541   | ...   | Wound tape or wire spring, i.e. spirally coiled tape or wire spring   |
| B65H 2402/542   | ...   | Helical spring  |
| B65H 2402/543   | ...   | Compression spring  |
| B65H 2402/544   | ...   | Leaf spring   |
| B65H 2402/5441  | ....  | Single point attachment, i.e. one end of the spring is free   |
| B65H 2402/545   | ...   | Torsion spring  |
| B65H 2402/546   | ...   | Dead point arrangement, i.e. wherein a mechanism is maintained in standstill by spring forces                         |
| B65H 2402/547   | ...   | constant force arrangement  |
| B65H 2402/60    | .     | Assembling, coupling means  |

|               |     |  |
|---------------|-----|--|
| B65H 2402/61  | ..  | Keying means, i.e. for preventing incorrect mounting of an element |
| B65H 2402/62  | ..  | Adapter, interface   |
| B65H 2402/63  | ..  | Couplings  |
| B65H 2402/631 | ... | flexible   |
| B65H 2402/632 | ... | Resilient material coupling  |
| B65H 2402/633 | ... | Universal joint ; Hooke's coupling                                 |
| B65H 2402/64  | ..  | Locking means  |
| B65H 2402/70  | .   | Lubrication  |
| B65H 2402/80  | .   | Method of manufacturing  |

### **B65H 2403/00      Power transmission ; Driving means**

|               |     |  |
|---------------|-----|--|
| B65H 2403/10  | .   | Friction gearings  |
| B65H 2403/11  | ..  | Variable-speed drive unit  |
| B65H 2403/111 | ... | frontal  |
| B65H 2403/20  | .   | Belt drives  |
| B65H 2403/21  | ..  | Timing belts   |
| B65H 2403/211 | ... | Double-sided timing belts  |
| B65H 2403/22  | ..  | planetary  |
| B65H 2403/25  | ..  | Arrangement for tensioning   |
| B65H 2403/30  | .   | Chain drives   |
| B65H 2403/31  | ..  | involving non endless chain : e.g. the chain being used as a flexible rack                               |
| B65H 2403/40  | .   | Toothed gearings   |
| B65H 2403/41  | ..  | Rack-and-pinion, cogwheel in cog railway   |
| B65H 2403/411 | ... | Double rack cooperating with one pinion, e.g. for performing symmetrical displacement relative to pinion |
| B65H 2403/412 | ... | Flexible rack  |
| B65H 2403/42  | ..  | Spur gearing   |
| B65H 2403/421 | ... | involving at least a gear with toothless portion   |
| B65H 2403/422 | ... | involving at least a swing gear  |
| B65H 2403/43  | ..  | Bevel gearing  |
| B65H 2403/44  | ..  | Internal gearing   |
| B65H 2403/45  | ..  | helical gearing  |
| B65H 2403/46  | ..  | worm gearing   |
| B65H 2403/47  | ..  | Ratchet  |
| B65H 2403/48  | ..  | Other  |
| B65H 2403/481 | ... | Planetary  |
| B65H 2403/482 | ... | Harmonic drive   |
| B65H 2403/483 | ... | Differential gearing   |

|                |   |
|----------------|---|
| B65H 2403/484  | ... Speed reducers  |
| B65H 2403/50   | . Driving mechanisms  |
| B65H 2403/51   | .. Cam mechanisms   |
| B65H 2403/511  | ... involving cylindrical cam, i.e. cylinder with helical groove at its periphery |
| B65H 2403/512  | ... involving radial plate cam  |
| B65H 2403/513  | ... involving elongated cam, i.e. parallel to linear transport path               |
| B65H 2403/514  | ... involving eccentric   |
| B65H 2403/52   | .. Translation screw-thread mechanisms  |
| B65H 2403/53   | .. Articulated mechanisms   |
| B65H 2403/531  | ... Planar mechanisms   |
| B65H 2403/5311 | .... Parallelogram mechanisms   |
| B65H 2403/532  | ... Crank-and-rocker mechanism  |
| B65H 2403/5321 | .... with oscillating crank, i.e. angular movement of crank inferior to 360       |
| B65H 2403/533  | ... Slotted link mechanism  |
| B65H 2403/5331 | .... with sliding slotted link  |
| B65H 2403/5332 | .... with rotating slotted link   |
| B65H 2403/5333 | .... with oscillating slotted link  |
| B65H 2403/54   | .. other  |
| B65H 2403/541  | ... Trigger mechanisms  |
| B65H 2403/542  | ... Geneva mechanisms   |
| B65H 2403/543  | ... producing cycloids  |
| B65H 2403/544  | ... involving rolling up - unrolling of transmission element, e.g. winch          |
| B65H 2403/5441 | .... with steel band as tracting element  |
| B65H 2403/55   | .. Tandem ; twin or multiple mechanisms, i.e. performing the same operation       |
| B65H 2403/60   | . Damping means, shock absorbers  |
| B65H 2403/61   | .. Rotation damper  |
| B65H 2403/70   | . Clutches ; Couplings  |
| B65H 2403/72   | .. Clutches, brakes, e.g. one-way clutch +F204                                    |
| B65H 2403/721  | ... Positive-contact clutches, jaw clutches                                       |
| B65H 2403/722  | ... Gear clutches   |
| B65H 2403/723  | ... Wrap spring clutches  |
| B65H 2403/724  | ... electromagnetic clutches  |
| B65H 2403/7241 | .... eddy current clutches  |
| B65H 2403/725  | ... Brakes  |
| B65H 2403/7251 | .... Block brakes   |
| B65H 2403/7252 | .... fluid controlled   |
| B65H 2403/7253 | .... pneumatically controlled   |
| B65H 2403/7254 | .... Dynamo electric brakes   |
| B65H 2403/7255 | .... Disc brakes  |
| B65H 2403/73   | .. Couplings  |

|                |      |  |
|----------------|------|--|
| B65H 2403/731  | ...  | Slip couplings   |
| B65H 2403/732  | ...  | Torque limiters  |
| B65H 2403/733  | ...  | Spring overload-release arrangements                               |
| B65H 2403/735  | ...  | Rubber couplings   |
| B65H 2403/80   | .    | Transmissions, i.e. for changing speed                             |
| B65H 2403/81   | ..   | involving swing gear   |
| B65H 2403/82   | ..   | Variable speed drive units   |
| B65H 2403/821  | ...  | friction   |
| B65H 2403/8211 | .... | frontal  |
| B65H 2403/90   | .    | Machine drive  |
| B65H 2403/91   | ..   | Heat engine  |
| B65H 2403/92   | ..   | Electric drive   |
| B65H 2403/921  | ...  | Piezoelectric drives   |
| B65H 2403/923  | ...  | Synchronous motor  |
| B65H 2403/93   | ..   | Fluid power drive  |
| B65H 2403/94   | ..   | Other features of machine drive                                    |
| B65H 2403/941  | ...  | Manually powered handling device                                   |
| B65H 2403/942  | ...  | Bidirectional powered handling device                              |
| B65H 2403/943  | ...  | Electronic shaft arrangement                                       |
| B65H 2403/944  | ...  | Multiple power sources for one mechanism                           |
| B65H 2403/945  | ...  | Self-weight powered  |
| B65H 2403/946  | ...  | Means for restitution of accumulated energy, e.g. flywheel, spring |

#### **B65H 2404/00      Parts for transporting or guiding the handled material**

|                 |       |   |
|-----------------|-------|---|
| B65H 2404/10    | .     | Rollers   |
| B65H 2404/11    | ..    | Details of cross-section or profile             |
| B65H 2404/111   | ...   | shape   |
| B65H 2404/1112  | ....  | D-shape   |
| B65H 2404/1113  | ....  | C-shape   |
| B65H 2404/1114  | ....  | Paddle wheel                                    |
| B65H 2404/1115  | ....  | toothed roller                                  |
| B65H 2404/1116  | ....  | Polygonal cross-section                         |
| B65H 2404/1118  | ....  | with at least a relief portion on the periphery |
| B65H 2404/1119  | ....  | with at least an axial cavity on the periphery  |
| B65H 2404/112   | ...   | Means for varying cross-section                 |
| B65H 2404/1121  | ....  | for changing diameter                           |
| B65H 2404/11211 | ..... | by inflation                                    |
| B65H 2404/1122  | ....  | for rendering elastically deformable            |
| B65H 2404/11221 | ..... | involving spring                                |
| B65H 2404/113   | ...   | made of circular segments                       |

|                 |       |  |
|-----------------|-------|--|
| B65H 2404/114   | ...   | Built-up elements  |
| B65H 2404/1141  | ....  | covering a part of the periphery   |
| B65H 2404/115   | ...   | other  |
| B65H 2404/1151  | ....  | brush  |
| B65H 2404/1152  | ....  | Markings, patterns   |
| B65H 2404/117   | ...   | comprising hollow portions   |
| B65H 2404/12    | ..    | with at least an active member on periphery  |
| B65H 2404/121   | ...   | articulated around axis parallel to roller axis  |
| B65H 2404/122   | ...   | rotated around an axis parallel to the roller axis ( <a href="#">B65H 2404/54</a> takes precedence ) |
| B65H 2404/123   | ...   | moving in parallel to roller axis  |
| B65H 2404/1231  | ....  | Arrangement of axially movable active elements, i.e. movable in parallel to roller axis              |
| B65H 2404/13    | ..    | Details of longitudinal profile  |
| B65H 2404/131   | ...   | shape  |
| B65H 2404/1311  | ....  | Undulations, wavy shape  |
| B65H 2404/1312  | ....  | tapered shape  |
| B65H 2404/1313  | ....  | concave  |
| B65H 2404/1314  | ....  | convex   |
| B65H 2404/1315  | ....  | conical  |
| B65H 2404/1316  | ....  | stepped or grooved   |
| B65H 2404/13161 | ..... | Regularly spaced grooves   |
| B65H 2404/13162 | ..... | Helicoidal grooves   |
| B65H 2404/13163 | ..... | in longitudinal direction  |
| B65H 2404/1317  | ....  | End profile  |
| B65H 2404/13171 | ..... | tapered  |
| B65H 2404/132   | ...   | arrangement of segments along axis   |
| B65H 2404/1321  | ....  | Segments juxtaposed along axis   |
| B65H 2404/13211 | ..... | and interconnected by gearing, e.g. differential gearing   |
| B65H 2404/13212 | ..... | and driven independently   |
| B65H 2404/133   | ...   | Limited number of active elements on common axis   |
| B65H 2404/134   | ...   | Axle   |
| B65H 2404/1341  | ....  | Elastic mounting, i.e. subject to biasing means  |
| B65H 2404/1342  | ....  | Built-up, i.e. arrangement for mounting axle element on roller body                                  |
| B65H 2404/13421 | ..... | involving two elements, i.e. an element at each end of roller body                                   |
| B65H 2404/1343  | ....  | axially limiting roller  |
| B65H 2404/1344  | ....  | with eccentric shaft   |
| B65H 2404/1345  | ....  | with two or more degrees of freedom  |
| B65H 2404/1346  | ....  | balancing roller   |
| B65H 2404/1347  | ....  | curved   |
| B65H 2404/135   | ...   | Body   |
| B65H 2404/1351  | ....  | Pipe element   |
| B65H 2404/136   | ...   | with canals  |



|                 |       |  |
|-----------------|-------|--|
| B65H 2404/1361  | ....  | with cooling/heating system  |
| B65H 2404/1362  | ....  | vacuum   |
| B65H 2404/1363  | ....  | air supply or suction  |
| B65H 2404/1364  | ....  | liquid   |
| B65H 2404/137   | ...   | Means for varying longitudinal profiles  |
| B65H 2404/1371  | ....  | Means for bending, e.g. for controlled deflection                                  |
| B65H 2404/1372  | ....  | anti-deflection  |
| B65H 2404/1373  | ....  | means for varying width  |
| B65H 2404/1374  | ....  | means for varying longitudinal length  |
| B65H 2404/1375  | ....  | means for assemble/disassemble   |
| B65H 2404/138   | ...   | other  |
| B65H 2404/1381  | ....  | Hinge  |
| B65H 2404/1385  | ....  | built up out of spar elements  |
| B65H 2404/14    | ..    | Roller pairs   |
| B65H 2404/141   | ...   | with particular shape of cross profile   |
| B65H 2404/1411  | ....  | D-shape / cylindrical  |
| B65H 2404/1412  | ....  | Polygonal / cylindrical  |
| B65H 2404/1413  | ....  | Paddle / cylindrical   |
| B65H 2404/1414  | ....  | complementary relief   |
| B65H 2404/1415  | ....  | with male / female profiles  |
| B65H 2404/1416  | ....  | toothed or cylindrical   |
| B65H 2404/142   | ...   | arranged on movable frame  |
| B65H 2404/1421  | ....  | rotating, pivoting or oscillating around an axis, e.g. parallel to the roller axis |
| B65H 2404/14211 | ..... | the axis being one the roller axis, i.e. orbiting roller                           |
| B65H 2404/14212 | ..... | rotating, pivoting or oscillating around an axis perpendicular to the roller axis  |
| B65H 2404/1422  | ....  | reciprocating  |
| B65H 2404/1423  | ....  | circulating on a path, e.g. not enclosing an area                                  |
| B65H 2404/14231 | ..... | enclosing an area  |
| B65H 2404/1424  | ....  | moving in parallel to their axis   |
| B65H 2404/143   | ...   | driving roller and idler roller arrangement  |
| B65H 2404/1431  | ....  | idler roller details   |
| B65H 2404/144   | ...   | with relative movement of the rollers to / from each other                         |
| B65H 2404/1441  | ....  | involving controlled actuator  |
| B65H 2404/1442  | ....  | Tripping arrangements  |
| B65H 2404/145   | ...   | other  |
| B65H 2404/1451  | ....  | Pressure   |
| B65H 2404/1452  | ....  | web tension  |
| B65H 2404/147   | ...   | both nip rollers being driven  |
| B65H 2404/15    | ..    | Roller assembly, particular roller arrangement                                     |
| B65H 2404/152   | ...   | Arrangement of roller on a movable frame   |
| B65H 2404/1521  | ....  | rotating, pivoting or oscillating around an axis: e.g. parallel to the roller axis |

|                 |       |  |
|-----------------|-------|--|
| B65H 2404/15212 | ..... | rotating, pivoting or oscillating around an axis perpendicular to the roller axis  |
| B65H 2404/1522  | ....  | moving linearly in feeding direction   |
| B65H 2404/1523  | ....  | moving in parallel to its axis   |
| B65H 2404/1526  | ....  | both roller ends being journalled to be movable independently from each other  |
| B65H 2404/153   | ...   | Arrangements of rollers facing a transport surface   |
| B65H 2404/1531  | ....  | the transport surface being a cylinder   |
| B65H 2404/1532  | ....  | the transport surface being a belt   |
| B65H 2404/154   | ...   | Rollers conveyor   |
| B65H 2404/1541  | ....  | Arrangement for curved path section, e.g. perpendicular to plane of handled material ( <a href="#">quadrant conveyor section</a> ) |
| B65H 2404/1542  | ....  | Details of pattern of rollers  |
| B65H 2404/15421 | ..... | Chevron or herringbone configuration   |
| B65H 2404/15422 | ..... | Quadrant or basket roller configuration  |
| B65H 2404/1543  | ....  | extensible   |
| B65H 2404/1544  | ....  | on a movable frame   |
| B65H 2404/16    | ..    | Details of driving   |
| B65H 2404/161   | ...   | Means for driving a roller parallelly to its axis of rotation, e.g. during its rotation  |
| B65H 2404/162   | ...   | containing, enclosing own driving means  |
| B65H 2404/1621  | ..... | containing, enclosing braking means  |
| B65H 2404/164   | ...   | self-centring or automatically centring  |
| B65H 2404/165   | ...   | braking roller   |
| B65H 2404/166   | ...   | reverse roller   |
| B65H 2404/167   | ...   | Idle roller  |
| B65H 2404/17    | ..    | Details of bearings  |
| B65H 2404/171   | ...   | beam supply  |
| B65H 2404/172   | ...   | tilting  |
| B65H 2404/173   | ...   | bearing inside roller for surface to rotate  |
| B65H 2404/174   | ...   | free bearing but slots or liquid support   |
| B65H 2404/18    | ..    | composed of several layers   |
| B65H 2404/181   | ...   | with cavities or projections at least at one layer   |
| B65H 2404/182   | ...   | with emery paper like coating ( <a href="#">gripping, anti-slip</a> )  |
| B65H 2404/183   | ...   | with outer layer helicoidally turned around shaft  |
| B65H 2404/1831  | ..... | wire around shaft  |
| B65H 2404/184   | ...   | light weighted   |
| B65H 2404/185   | ...   | easy deformable  |
| B65H 2404/186   | ...   | with electro-conductive layer  |
| B65H 2404/187   | ...   | with wear resistance   |
| B65H 2404/19    | ..    | Other features of rollers  |
| B65H 2404/191   | ...   | magnetic   |
| B65H 2404/192   | ...   | noise limiting roller  |
| B65H 2404/193   | ...   | Incorporating element used for control, e.g. IC tag  |

|                |   |
|----------------|---|
| B65H 2404/20   | . Belts   |
| B65H 2404/21   | .. plan profile   |
| B65H 2404/211  | ... edge structure  |
| B65H 2404/22   | .. Cross section profile  |
| B65H 2404/221  | ... Round belt  |
| B65H 2404/2211 | .... Multiplicity of round belts spaced out each other  |
| B65H 2404/222  | ... Flat belt   |
| B65H 2404/2221 | .... Flat belt wider than width of transported material   |
| B65H 2404/2222 | .... with protrusions on inner side ; Beads   |
| B65H 2404/223  | ... V-belt  |
| B65H 2404/224  | ... details of edges  |
| B65H 2404/23   | .. with auxiliary handling means  |
| B65H 2404/231  | ... pocket or gripper type  |
| B65H 2404/2311 | .... integrally attached to or part of belt material  |
| B65H 2404/232  | ... Blade, plate, finger  |
| B65H 2404/2321 | .... on two opposite belts or set of belts, i.e. having active handling section cooperating with and facing to each other |
| B65H 2404/2322 | .... Dog pins, i.e. details of construction or arrangement  |
| B65H 2404/233  | ... rotary means, e.g. rollers  |
| B65H 2404/234  | ... penetrating means   |
| B65H 2404/24   | .. Longitudinal profile   |
| B65H 2404/241  | ... Endless helicoidal spring   |
| B65H 2404/242  | ... Timing belts  |
| B65H 2404/2421 | .... Double-sided timing belts  |
| B65H 2404/243  | ... with portions of different thickness  |
| B65H 2404/25   | .. Driving or guiding arrangements  |
| B65H 2404/251  | ... Details of drive roller   |
| B65H 2404/2511 | .... Arrangement for varying outer diameter, e.g. for adjusting speed or belts  |
| B65H 2404/252  | ... Details of idler roller   |
| B65H 2404/253  | ... Relative position of driving and idler rollers  |
| B65H 2404/2531 | .... for performing transport along a path curved according to an axis parallel to the transport surface                  |
| B65H 2404/2532 | .... Arrangement for selectively changing the relative position of the driving and idler rollers                          |
| B65H 2404/254  | ... Arrangement for varying the guiding or transport length   |
| B65H 2404/255  | ... Arrangement for tensioning  |
| B65H 2404/256  | ... Arrangement of endless belt   |
| B65H 2404/2561 | .... twisted around an axis parallel the transport direction  |
| B65H 2404/257  | ... Arrangement of non endless belt   |
| B65H 2404/2571 | .... Wrapping/unwrapping arrangement  |
| B65H 2404/26   | .. Particular arrangement of belt, or belts   |
| B65H 2404/261  | ... Arrangement of belts, or belt(s) / roller(s) facing each other for forming a transport nip                            |

|                |      |  |
|----------------|------|--|
| B65H 2404/2611 | .... | forming curved transport path  |
| B65H 2404/2612 | .... | forming serpentine transport path  |
| B65H 2404/2613 | .... | Means for changing the transport path, e.g. deforming, lengthening   |
| B65H 2404/2614 | .... | Means for engaging or disengaging belts into or out of contact with opposite belts, rollers or balls                   |
| B65H 2404/2615 | .... | arranged on a movable frame, e.g. pivoting   |
| B65H 2404/262  | ...  | Arrangements of belts facing rollers   |
| B65H 2404/263  | ...  | Arrangements of belts facing balls   |
| B65H 2404/264  | ...  | Arrangement of side-by-side belts  |
| B65H 2404/2641 | .... | on movable frame   |
| B65H 2404/265  | ...  | Arrangement of belt forming a deformable ring, e.g. driven in the nip of a roller pair                                 |
| B65H 2404/267  | ...  | Arrangement of belt(s) in edge contact with handled material   |
| B65H 2404/268  | ...  | Arrangement of belts facing a transport surface, e.g. contact glass in copy machine                                    |
| B65H 2404/2682 | .... | means for engaging/disengaging with/from transport surface   |
| B65H 2404/269  | ...  | other arrangements   |
| B65H 2404/2691 | .... | Arrangement of successive belts forming a transport path   |
| B65H 2404/2692 | .... | Arrangement of belts in pressure contact with a roll of material   |
| B65H 2404/2693 | .... | Arrangement of belts on movable frame  |
| B65H 2404/27   | ..   | material used  |
| B65H 2404/271  | ...  | felt or wire mesh  |
| B65H 2404/28   | ..   | Other properties of belts  |
| B65H 2404/281  | ...  | porous   |
| B65H 2404/282  | ...  | transparent  |
| B65H 2404/283  | ...  | magnetic   |
| B65H 2404/284  | ...  | Elasticity   |
| B65H 2404/285  | ...  | including readable marks, patterns: e.g. serving for control   |
| B65H 2404/286  | ...  | Hardness   |
| B65H 2404/30   | .    | Chains   |
| B65H 2404/31   | ..   | with auxiliary handling means  |
| B65H 2404/311  | ...  | Blades, lugs, plates, paddles, fingers   |
| B65H 2404/3111 | .... | on two opposite chains or set of chains, i.e. having active handling section cooperating with and facing to each other |
| B65H 2404/312  | ...  | Pockets, containers  |
| B65H 2404/313  | ...  | Bars, rods, e.g. bridging two chains running synchronously   |
| B65H 2404/3132 | .... | arranged obliquely relatively to transport direction   |
| B65H 2404/314  | ...  | Means penetrating in handled material, e.g. needle, pin  |
| B65H 2404/3141 | .... | Wicket pins  |
| B65H 2404/315  | ...  | Details of arrangement of the auxiliary handling means on the chain(s)   |
| B65H 2404/32   | ..   | Saddle conveyor  |
| B65H 2404/321  | ...  | with articulated pusher element, e.g. retractable  |
| B65H 2404/33   | ..   | Means for guiding chains   |

|                 |       |  |
|-----------------|-------|--|
| B65H 2404/34    | ..    | Gripper bars bridging at least two chains running synchronously and parallelly   |
| B65H 2404/341   | ...   | Details of driving or return drum  |
| B65H 2404/342   | ...   | Details of guiding   |
| B65H 2404/3421  | ....  | in curved sections   |
| B65H 2404/343   | ...   | Details of the bar bridging the chains   |
| B65H 2404/35    | ..    | Arrangement of chains facing each other for forming a transport nip  |
| B65H 2404/351   | ...   | the nip being formed between elongate members bridging two chains running synchronously and in parallel                            |
| B65H 2404/352   | ...   | Details of guiding   |
| B65H 2404/36    | ..    | Arrangement of side-by-side chains   |
| B65H 2404/40    | .     | Shafts, cylinders, drums, spindles   |
| B65H 2404/41    | ..    | Details of cross section profile   |
| B65H 2404/411   | ...   | Means for varying cross-section  |
| B65H 2404/412   | ...   | made of circular segments  |
| B65H 2404/4121  | ....  | moving relatively to each other during rotation  |
| B65H 2404/42    | ..    | Arrangement of pairs of drums  |
| B65H 2404/421   | ...   | Bed arrangement, i.e. involving parallel and spaced drums, e.g. arranged horizontally for supporting a roll to be wound or unwound |
| B65H 2404/4211  | ....  | with means for changing space between the drums  |
| B65H 2404/4212  | ....  | with means for changing inclination of bed   |
| B65H 2404/4213  | ....  | the drums having different diameter  |
| B65H 2404/4214  | ....  | the drums having different deformability   |
| B65H 2404/422   | ...   | Nip arrangement, i.e. parallel drums in pressure contact to each other   |
| B65H 2404/43    | ..    | Rider roll construction  |
| B65H 2404/431   | ...   | involving several segments in axial direction  |
| B65H 2404/432   | ...   | involving a plurality of parallel rider rolls  |
| B65H 2404/433   | ...   | involving at least one rider roller following a spindle moved on a path, e.g. arcuate or circular path                             |
| B65H 2404/434   | ...   | Driven rider roll arrangement  |
| B65H 2404/50    | .     | Surface of the elements in contact with the forwarded or guided material   |
| B65H 2404/51    | ..    | Cross section, i.e. section perpendicular to the direction of displacement   |
| B65H 2404/511   | ...   | convex   |
| B65H 2404/512   | ...   | concave  |
| B65H 2404/513   | ...   | with limited number of active areas  |
| B65H 2404/5131  | ....  | saw profile  |
| B65H 2404/52    | ..    | other geometrical properties   |
| B65H 2404/521   | ...   | Reliefs  |
| B65H 2404/5211  | ....  | only a part of the element in contact with the forwarded or guided material  |
| B65H 2404/5212  | ....  | produced by embedding particles  |
| B65H 2404/52121 | ..... | by subjecting to blast finishing   |
| B65H 2404/52122 | ..... | by subjecting to knurling  |
| B65H 2404/5213  | ....  | Geometric details  |

|                 |       |   |
|-----------------|-------|---|
| B65H 2404/52131 | ..... | Grooves   |
| B65H 2404/52132 | ..... | perforations  |
| B65H 2404/5214  | ....  | extending in parallel to transport direction  |
| B65H 2404/522   | ...   | details of surface roughness and/or surface treatment   |
| B65H 2404/5221  | ....  | knurling  |
| B65H 2404/53    | ..    | with particular mechanical, physical properties   |
| B65H 2404/531   | ...   | particular coefficient of friction  |
| B65H 2404/5311  | ....  | Surface with different coefficients of friction   |
| B65H 2404/532   | ...   | with particular durometer   |
| B65H 2404/5321  | ....  | means for changing hardness   |
| B65H 2404/5322  | ....  | surface with different hardness   |
| B65H 2404/533   | ...   | with particular electric properties, e.g. dielectric material   |
| B65H 2404/5331  | ....  | with conductive material  |
| B65H 2404/539   | ...   | other   |
| B65H 2404/5391  | ....  | adhesive properties   |
| B65H 2404/5392  | ....  | reflecting particular waves   |
| B65H 2404/54    | ..    | Surface including rotary elements, e.g. balls or rollers ( <a href="#">not used for indexing wave generation rollers, e.g. combing wheels classified in B65H 3/0646</a> ) |
| B65H 2404/55    | ..    | Built-up surface, e.g. arrangement for attaching the surface to the forwarding or guiding element   |
| B65H 2404/551   | ...   | Non permanent attachment, i.e. allowing interchange ability of the surface  |
| B65H 2404/5511  | ....  | Non permanent attachment, i.e. allowing interchange ability   |
| B65H 2404/5512  | ....  | covering only a part of the surface   |
| B65H 2404/5513  | ....  | Strip-shaped built-up surface   |
| B65H 2404/552   | ...   | permanent attachment  |
| B65H 2404/5521  | ....  | Coating   |
| B65H 2404/56    | ..    | Flexible surface  |
| B65H 2404/561   | ...   | Bristles, brushes   |
| B65H 2404/562   | ...   | involving inflatable elements   |
| B65H 2404/563   | ...   | Elastic, supple built-up surface  |
| B65H 2404/5631  | ....  | Floating built-up surface   |
| B65H 2404/60    | .     | Other elements in face contact with handled material  |
| B65H 2404/61    | ..    | Longitudinally-extending strips, tubes, plates, or wires  |
| B65H 2404/611   | ...   | arranged to form a channel  |
| B65H 2404/6111  | ....  | and shaped for curvilinear transport path   |
| B65H 2404/6112  | ....  | and displaceable for changing direction of transport  |
| B65H 2404/612   | ...   | and shaped for curvilinear transport path   |
| B65H 2404/62    | ..    | Transversely-extending bars or tubes  |
| B65H 2404/621   | ...   | with variable cross-section, e.g. inflatable  |
| B65H 2404/622   | ...   | Details of longitudinal profile   |
| B65H 2404/6221  | ....  | Concave   |
| B65H 2404/623   | ...   | gate arrangement  |

|                |      |  |
|----------------|------|--|
| B65H 2404/63   | ..   | Oscillating, pivoting around an axis parallel to face of material, e.g. diverting means  |
| B65H 2404/631  | ...  | Juxtaposed diverting means with each an independant actuator   |
| B65H 2404/632  | ...  | Wedge member   |
| B65H 2404/633  | ...  | Sword member, i.e. member contacting the surface of material with an edge portion  |
| B65H 2404/64   | ..   | reciprocating perpendicularly to face of material, e.g. pushing means  |
| B65H 2404/65   | ..   | rotating around an axis parallel to face of material and perpendicular to transport direction, e.g. star wheel                       |
| B65H 2404/651  | ...  | having at least one element, e.g. stacker/inverter   |
| B65H 2404/652  | ...  | having two elements diametrically opposed  |
| B65H 2404/653  | ...  | having 3 or 4 elements   |
| B65H 2404/654  | ...  | having more than 4 elements  |
| B65H 2404/655  | ...  | Means for holding material on element  |
| B65H 2404/6551 | .... | Suction means  |
| B65H 2404/6552 | .... | peripheral means closing the area formed between the transport elements  |
| B65H 2404/656  | ...  | Means for disengaging material from element  |
| B65H 2404/657  | ...  | Means for varying the space between the elements   |
| B65H 2404/658  | ...  | Means for introducing material on elements   |
| B65H 2404/6581 | .... | in a direction parallel to the axis of rotation of elements  |
| B65H 2404/6582 | .... | multiple, i.e. for introducing material selectively, alternatively or simultaneously at different angular positions at the periphery |
| B65H 2404/659  | ...  | particular arrangement   |
| B65H 2404/6591 | .... | Pair of opposite elements rotating around parallel axis, synchronously in opposite direction   |
| B65H 2404/66   | ..   | rotating around an axis perpendicular to face of material  |
| B65H 2404/661  | ...  | Paddle wheel   |
| B65H 2404/662  | ...  | Disc shaped  |
| B65H 2404/663  | ...  | Helical or worm shaped   |
| B65H 2404/67   | ..   | rotating around an axis parallel to face of material and parallel to transport direction   |
| B65H 2404/68   | ..   | reciprocating in transport direction   |
| B65H 2404/69   | ..   | Other means designated for special purpose   |
| B65H 2404/691  | ...  | Guiding means extensible in material transport direction   |
| B65H 2404/6911 | .... | by unwinding from storage section  |
| B65H 2404/692  | ...  | Chute, e.g. inclined surface on which material slides by gravity   |
| B65H 2404/6922 | .... | Shaft-like element channel   |
| B65H 2404/693  | ...  | Retractable guiding means, i.e. between guiding and non guiding position   |
| B65H 2404/694  | ...  | Non driven means for pressing the handled material on forwarding or guiding elements   |
| B65H 2404/6942 | .... | in sliding contact with handled material   |
| B65H 2404/695  | ...  | Paternoster type   |
| B65H 2404/696  | ...  | Ball, sphere   |
| B65H 2404/6961 | .... | Driving means  |
| B65H 2404/70   | .    | Other elements in edge contact with handled material, e.g. registering, orientating, guiding devices                                 |



|                |      |  |
|----------------|------|--|
| B65H 2404/71   | ..   | Adaptor, mask, i.e. restricting the working area of the parts for transporting or guiding the handled material |
| B65H 2404/72   | ..   | Stops, gauge pins, e.g. stationary   |
| B65H 2404/721  | ...  | adjustable   |
| B65H 2404/722  | ...  | movable in operation   |
| B65H 2404/723  | ...  | formed of forwarding means   |
| B65H 2404/7231 | .... | by nip rollers in standby  |
| B65H 2404/7232 | .... | by nip rollers in reversed rotation  |
| B65H 2404/724  | ...  | formed of sensing means  |
| B65H 2404/725  | ...  | retractable  |
| B65H 2404/73   | ..   | Means for sliding the handled material on a surface, e.g. pushers  |
| B65H 2404/731  | ...  | moved in a path enclosing an area  |
| B65H 2404/7312 | .... | by means of chains   |
| B65H 2404/732  | ...  | in a direction perpendicular to a feeding / delivery direction   |
| B65H 2404/733  | ...  | reciprocating  |
| B65H 2404/74   | ..   | Guiding means  |
| B65H 2404/741  | ...  | movable in operation   |
| B65H 2404/7412 | .... | retractable  |
| B65H 2404/7414 | .... | pivotable  |
| B65H 2404/742  | ...  | for guiding transversely   |
| B65H 2404/743  | ...  | for guiding longitudinally   |
| B65H 2404/7431 | .... | along a curved path  |

#### **B65H 2405/00      Parts for holding the handled material**

|                 |       |   |
|-----------------|-------|---|
| B65H 2405/10    | .     | Cassettes, holders, bins, decks, trays, supports or magazines for sheets stacked substantially horizontally |
| B65H 2405/11    | ..    | Parts and details thereof   |
| B65H 2405/111   | ...   | Bottom  |
| B65H 2405/1111  | ....  | with several surface portions forming an angle relatively to each other                                     |
| B65H 2405/1112  | ....  | with stepped surface portions   |
| B65H 2405/1113  | ....  | with surface portions curved in width-wise direction  |
| B65H 2405/11131 | ..... | forming a wavy profile  |
| B65H 2405/1114  | ....  | with surface portions curved in lengthwise direction  |
| B65H 2405/11141 | ..... | forming wavy profile  |
| B65H 2405/1115  | ....  | with surface inclined, e.g. in width-wise direction   |
| B65H 2405/11151 | ..... | with surface inclined upwardly in transport direction   |
| B65H 2405/11152 | ..... | with surface inclined downwardly in transport direction   |
| B65H 2405/1116  | ....  | with means for changing geometry  |
| B65H 2405/11161 | ..... | by at least a protruding portion arrangement  |
| B65H 2405/11162 | ..... | Front portion pivotable around an axis perpendicular to transport direction                                 |
| B65H 2405/11163 | ..... | Portion pivotable around an axis parallel to transport direction  |
| B65H 2405/11164 | ..... | Rear portion extensible in parallel to transport direction  |

|                  |       |  |
|------------------|-------|--|
| B65H 2405/111643 | ..... | involving extension members pivotable around an axis perpendicular to bottom surface                                     |
| B65H 2405/111646 | ..... | involving extension members pivotable around an axis parallel to bottom surface and perpendicular to transport direction |
| B65H 2405/1117   | ....  | pivotable, e.g. around an axis perpendicular to transport direction, e.g. arranged at rear side of sheet support         |
| B65H 2405/11171  | ..... | around an axis parallel to transport direction   |
| B65H 2405/11172  | ..... | around an axis perpendicular to both transport direction and surface of sheets   |
| B65H 2405/1118   | ....  | Areas with particular friction properties, e.g. friction pad arrangement   |
| B65H 2405/1119   | ....  | Areas with particular deformation properties, e.g. flexible, elastic   |
| B65H 2405/112    | ...   | Rear, i.e. portion opposite to the feeding / delivering side   |
| B65H 2405/1122   | ....  | movable linearly, details therefor   |
| B65H 2405/1124   | ....  | pivotable, details therefor  |
| B65H 2405/113    | ...   | Front, i.e. portion adjacent to the feeding / delivering side  |
| B65H 2405/1132   | ....  | with stepped surface portions  |
| B65H 2405/1134   | ....  | movable, e.g. pivotable  |
| B65H 2405/1136   | ....  | inclined, i.e. forming an angle different from 90 with the bottom  |
| B65H 2405/1138   | ....  | curved   |
| B65H 2405/114    | ...   | Side, i.e. portion parallel to the feeding / delivering direction  |
| B65H 2405/1142   | ....  | Projections or the like in surface contact with handled material   |
| B65H 2405/11425  | ..... | retractable  |
| B65H 2405/1144   | ....  | extendible   |
| B65H 2405/115    | ...   | Cover  |
| B65H 2405/12     | ..    | Parts to be handled by user  |
| B65H 2405/121    | ...   | Locking means  |
| B65H 2405/13     | ..    | Elements acting on corner of sheet, e.g. snubber member  |
| B65H 2405/14     | ..    | Details of surface   |
| B65H 2405/141    | ...   | Reliefs, projections   |
| B65H 2405/1412   | ....  | Ribs extending in parallel to feeding/delivery direction   |
| B65H 2405/1414   | ....  | Hook and loop-type fastener  |
| B65H 2405/142    | ...   | relating to particular friction properties   |
| B65H 2405/15     | ..    | Large capacity supports arrangements   |
| B65H 2405/20     | .     | Cassettes, holders, bins, decks, trays, supports or magazines for sheets stacked on edge                                 |
| B65H 2405/21     | ..    | Parts and details thereof  |
| B65H 2405/211    | ...   | bottom   |
| B65H 2405/2111   | ....  | with several surface portions forming an angle relatively to each other  |
| B65H 2405/212    | ...   | end supports   |
| B65H 2405/214    | ...   | sides  |
| B65H 2405/22     | ..    | pocket like holder   |
| B65H 2405/221    | ...   | details of bottom  |
| B65H 2405/30     | .     | Other features of supports for sheets  |

|                 |       |   |
|-----------------|-------|---|
| B65H 2405/31    | ..    | Supports for sheets fully removable from the handling machine, e.g. cassette  |
| B65H 2405/311   | ...   | and serving also as package   |
| B65H 2405/312   | ...   | Trolley, cart, i.e. support movable on the floor  |
| B65H 2405/313   | ...   | with integrated handling means, e.g. separating means   |
| B65H 2405/32    | ..    | Supports for sheets partially insertable - extractable, e.g. upon sliding movement, drawer  |
| B65H 2405/321   | ...   | Shutter type element, i.e. involving multiple interlinked support elements  |
| B65H 2405/3211  | ....  | with means to span a long self-supporting length  |
| B65H 2405/322   | ...   | with belt or curtain like support member, i.e. for avoiding relative movement between sheets and support during insertion or extraction |
| B65H 2405/323   | ...   | Cantilever finger member, e.g. reciprocating in parallel to plane of handled material   |
| B65H 2405/3231  | ....  | Cantilever during insertion but supported on both sides of the pile upon full insertion   |
| B65H 2405/324   | ...   | between operative position and non operative position   |
| B65H 2405/325   | ...   | with integrated handling means, e.g. separating means   |
| B65H 2405/33    | ..    | Compartmented support   |
| B65H 2405/331   | ...   | Juxtaposed compartments   |
| B65H 2405/3311  | ....  | for storing articles horizontally or slightly inclined  |
| B65H 2405/33115 | ..... | Feed tray juxtaposed to discharge tray  |
| B65H 2405/3312  | ....  | for storing articles vertically or inclined (>45)   |
| B65H 2405/33125 | ..... | Feed tray juxtaposed to discharge tray  |
| B65H 2405/332   | ...   | Superposed compartments   |
| B65H 2405/3321  | ....  | Feed tray superposed to discharge tray  |
| B65H 2405/3322  | ....  | discharge tray superposed to feed tray  |
| B65H 2405/34    | ..    | Holder with cylindrical section   |
| B65H 2405/35    | ..    | Means for moving support  |
| B65H 2405/351   | ...   | shifting transversely to transport direction, e.g. for handling stepped piles   |
| B65H 2405/352   | ...   | in closed loop  |
| B65H 2405/3521  | ....  | rail guided means, e.g. without permanent interconnection   |
| B65H 2405/353   | ...   | vertically  |
| B65H 2405/354   | ...   | around an axis, e.g. horizontal   |
| B65H 2405/36    | ..    | Multiple support  |
| B65H 2405/361   | ...   | Movable from storage of support, e.g. stack of empty support  |
| B65H 2405/40    | .     | Holders, supports for rolls   |
| B65H 2405/42    | ..    | Supports for rolls fully removable from the handling machine  |
| B65H 2405/421   | ...   | and serving also as package   |
| B65H 2405/422   | ...   | Trolley, cart, i.e. support movable on floor  |
| B65H 2405/4221  | ....  | for both full and empty ( or partial ) roll   |
| B65H 2405/4222  | ....  | Carts with full reels placed laterally one beside the other   |
| B65H 2405/4223  | ....  | Cart holding roll placed onto another cart  |
| B65H 2405/4225  | ....  | comprising means for rotating the roll around a vertical axis   |
| B65H 2405/4226  | ....  | Cart comprising splicing means  |

|                |      |   |
|----------------|------|---|
| B65H 2405/4228 | .... | with air bearing, e.g. Luftkissen   |
| B65H 2405/423  | ...  | Overhead means, gantry  |
| B65H 2405/43   | ..   | Supports for rolls partially removable from the handling machine  |
| B65H 2405/44   | ..   | Supports for storing rolls  |
| B65H 2405/441  | ...  | Palette   |
| B65H 2405/4412 | .... | combined with a frame for superposing several palettes  |
| B65H 2405/4414 | .... | Rib-cage bin  |
| B65H 2405/45   | ..   | Shafts for winding/unwinding  |
| B65H 2405/451  | ...  | Radially extending end abutments  |
| B65H 2405/452  | ...  | Active holding elements, e.g. inflatable bladders   |
| B65H 2405/4521 | .... | engaging the side portion of the web roll   |
| B65H 2405/453  | ...  | Passive holding elements, e.g. spring-biased pins   |
| B65H 2405/454  | ...  | Means for penetrating into the core material, e.g. for transmitting torque                                  |
| B65H 2405/46   | ..   | Grippers for bobbins, i.e. rolls  |
| B65H 2405/461  | ...  | center gripper ( <a href="#">inside the core</a> )  |
| B65H 2405/462  | ...  | outer gripper ( <a href="#">on circumference</a> )  |
| B65H 2405/50   | .    | Gripping means  |
| B65H 2405/51   | ..   | oscillating in arcuate paths  |
| B65H 2405/52   | ..   | reciprocating   |
| B65H 2405/53   | ..   | Rotary gripping arms  |
| B65H 2405/531  | ...  | with relative movement of the arms relatively to the axis of rotation during rotation                       |
| B65H 2405/532  | ...  | with means for changing the length of the arms during rotation  |
| B65H 2405/54   | ..   | Rotary gripping arms, i.e. integrated in a rotary element as for instance a cylinder, a disk or a turntable |
| B65H 2405/541  | ...  | arranged on opposite and synchronised rotary element  |
| B65H 2405/55   | ..   | Rail guided gripping means running in closed loop, e.g. without permanent interconnecting means             |
| B65H 2405/551  | ...  | with permanent interconnection allowing variable spacing between the grippers                               |
| B65H 2405/552  | ...  | with permanent interconnection and determined spacing between the grippers                                  |
| B65H 2405/5521 | .... | details of interconnection, e.g. chain, link  |
| B65H 2405/56   | ..   | releasably connected to transporting means  |
| B65H 2405/57   | ..   | Details of the gripping parts   |
| B65H 2405/571  | ...  | Compliant material  |
| B65H 2405/572  | ...  | Retractable parts   |
| B65H 2405/573  | ...  | Pair of L-shaped reciprocating jaws   |
| B65H 2405/574  | ...  | laterally projecting from feeding direction   |
| B65H 2405/575  | ...  | Details of gripping surface   |
| B65H 2405/58   | ..   | Means for achieving gripping/releasing operation  |
| B65H 2405/581  | ...  | moving only one of the gripping parts towards the other   |
| B65H 2405/5812 | ...  | pivoting the movable gripping part towards the other part   |
| B65H 2405/582  | ...  | movable in transport direction, e.g. on a portion of the transport path of the gripping means               |

|                     |       |  |
|---------------------|-------|--|
| B65H 2405/583       | ...   | Details of gripper orientation   |
| B65H 2405/5831      | ....  | Gripping mouth orientated in direction of gripper displacement                   |
| B65H 2405/5832      | ....  | and varying its orientation after gripping                                       |
| B65H 2405/584       | ...   | Associated control means   |
| B65H 2405/60        | .     | Penetrating means  |
| <b>B65H 2406/00</b> |       | <b>Means using fluid</b>   |
| B65H 2406/10        | .     | made only for exhausting gaseous medium  |
| B65H 2406/11        | ..    | producing fluidised bed  |
| B65H 2406/111       | ...   | for handling material along a curved path, e.g. fluidised turning bar            |
| B65H 2406/1115      | ....  | pivoting around an axis perpendicular to the axis of the guided material         |
| B65H 2406/112       | ...   | for handling material along preferably rectilinear path, e.g. nozzle bed for web |
| B65H 2406/113       | ...   | Details of the part distributing the air cushion                                 |
| B65H 2406/1131      | ....  | Porous material  |
| B65H 2406/1132      | ....  | Multiple nozzles arrangement   |
| B65H 2406/11325     | ..... | Adjustable impact angle  |
| B65H 2406/12        | ..    | producing gas blast  |
| B65H 2406/121       | ...   | Fan  |
| B65H 2406/1211      | ....  | Axial  |
| B65H 2406/122       | ...   | Nozzles  |
| B65H 2406/1222      | ....  | adjustable impact angle  |
| B65H 2406/13        | ..    | pressure arrangement for compensating weight of handled material                 |
| B65H 2406/131       | ...   | in combination with rollers or drums   |
| B65H 2406/14        | ..    | with selectively operated air supply openings                                    |
| B65H 2406/15        | ..    | rotary pressurized means, e.g. cylinder, drum, shaft, spindle                    |
| B65H 2406/20        | .     | made only for liquid medium  |
| B65H 2406/21        | ..    | for spraying liquid  |
| B65H 2406/211       | ...   | nozzles  |
| B65H 2406/30        | .     | Suction means  |
| B65H 2406/31        | ..    | Suction box ; Suction chambers   |
| B65H 2406/311       | ...   | for accumulating a loop of handled material                                      |
| B65H 2406/312       | ...   | incorporating means for transporting the handled material against suction force  |
| B65H 2406/3122      | ....  | Rollers  |
| B65H 2406/3124      | ....  | Belts  |
| B65H 2406/32        | ..    | Suction belts  |
| B65H 2406/321       | ...   | integral in feed table   |
| B65H 2406/322       | ...   | Suction distributing means   |
| B65H 2406/3221      | ....  | for variable distribution in the direction of transport                          |
| B65H 2406/3222      | ....  | switchable suction elements  |

|                 |       |   |
|-----------------|-------|---|
| B65H 2406/3223  | ....  | details of the openings in the belt, e.g. shape, distribution   |
| B65H 2406/32231 | ..... | belt with alternated perforated and non perforated sections in transport direction  |
| B65H 2406/323   | ...   | Overhead suction belt, i.e. holding material against gravity  |
| B65H 2406/33    | ..    | Rotary suction means, e.g. roller, cylinder or drum   |
| B65H 2406/331   | ...   | arranged for rotating while moving along material to be handled, e.g. rolling on material   |
| B65H 2406/3312  | ....  | arranged for planetary movement on rotary support means   |
| B65H 2406/3314  | ....  | arranged for linear movement, e.g. on reciprocating support   |
| B65H 2406/332   | ...   | Details on suction openings   |
| B65H 2406/333   | ...   | rotating around an axis perpendicular to the surface of handled material, e.g. disk   |
| B65H 2406/334   | ...   | arranged on movable frame   |
| B65H 2406/34    | ..    | Suction grippers  |
| B65H 2406/341   | ...   | being oscillated in arcuate paths   |
| B65H 2406/342   | ...   | being reciprocated in a rectilinear path  |
| B65H 2406/343   | ...   | Details of sucking member   |
| B65H 2406/3432  | ....  | Elongated sucking member ; Sucking bar  |
| B65H 2406/344   | ...   | circulating in closed loop  |
| B65H 2406/345   | ...   | Rotary suction grippers   |
| B65H 2406/3452  | ....  | performing reciprocating movement during rotation   |
| B65H 2406/34525 | ..... | parallelly to the axis of rotation  |
| B65H 2406/3454  | ....  | performing oscillating movement during rotation   |
| B65H 2406/35    | ..    | Other elements with suction surface, e.g. plate or wall   |
| B65H 2406/351   | ...   | facing the surface of the handled material  |
| B65H 2406/3511  | ....  | with nozzles oriented obliquely towards the material  |
| B65H 2406/352   | ...   | facing the edge of the handled material   |
| B65H 2406/36    | ..    | Means for producing, distributing or controlling suction  |
| B65H 2406/361   | ...   | distributing vacuum from stationary element to movable element  |
| B65H 2406/3612  | ....  | involving a shoe in sliding contact with flanges of a rotating element  |
| B65H 2406/3614  | ....  | involving a shoe in sliding contact with an inner section of the periphery of a rotating element                                  |
| B65H 2406/362   | ...   | adjusting or controlling distribution of vacuum transversally to the transport direction, e.g. according to the width of material |
| B65H 2406/3622  | ....  | adjusting or controlling distribution of vacuum in the transport direction  |
| B65H 2406/363   | ...   | adjusting or controlling distribution of vacuum for a plurality of suction means  |
| B65H 2406/3632  | ....  | means for auto adjustment of vacuum distribution according to the size of handled material  |
| B65H 2406/364   | ...   | simultaneously blowing and sucking  |
| B65H 2406/365   | ...   | selectively blowing or sucking  |
| B65H 2406/366   | ...   | producing vacuum  |
| B65H 2406/3661  | ....  | Injectors   |
| B65H 2406/3662  | ....  | Fans  |
| B65H 2406/36625 | ..... | cross flow, transverse  |

|                     |      |   |
|---------------------|------|---|
| B65H 2406/3663      | .... | Pumps   |
| B65H 2406/40        | .    | Fluid power drive ; Fluid supply elements                               |
| B65H 2406/41        | ..   | Valves  |
| B65H 2406/411       | ...  | Spool or slide valves   |
| B65H 2406/412       | ...  | Rotary valves   |
| B65H 2406/413       | ...  | Seat valves   |
| B65H 2406/414       | ...  | Servo valves  |
| B65H 2406/415       | ...  | Throttle valves   |
| B65H 2406/416       | ...  | Check valves  |
| B65H 2406/417       | ...  | Bleed valves  |
| B65H 2406/418       | ...  | Diaphragm valves  |
| B65H 2406/42        | ..   | Distribution circuits   |
| B65H 2406/421       | ...  | with means for changing the temperature of the fluid                    |
| B65H 2406/4212      | .... | for cooling fluid   |
| B65H 2406/422       | ...  | Air throttling devices  |
| B65H 2406/423       | ...  | distributing fluid from stationary elements to movable element          |
| <b>B65H 2407/00</b> |      | <b>Other means designed for special purposes</b>                        |
| B65H 2407/10        | .    | Safety means, e.g. for preventing injury to operator                    |
| B65H 2407/11        | ..   | Means preventing illegal operation                                      |
| B65H 2407/20        | .    | for manual intervention of operator                                     |
| B65H 2407/21        | ..   | Manual feeding  |
| B65H 2407/22        | ..   | means for observing the handled material during its handling            |
| B65H 2407/30        | .    | Means for preventing damage of handled material                         |
| B65H 2407/31        | ..   | Controlling atmosphere confining the handled material                   |
| B65H 2407/311       | ...  | involving humidity control means  |
| B65H 2407/32        | ...  | Protective cover  |
| B65H 2407/33        | ..   | Means for controlling access to the area confining the handled material |
| B65H 2407/40        | .    | Means for adding commercial value                                       |
| B65H 2407/41        | ..   | Sound producing means   |
| B65H 2407/42        | ..   | Animation displaying means  |
| B65H 2407/43        | ..   | Optic means, e.g. transparent body                                      |
| B65H 2407/431       | ...  | Built up optic means, e.g. magnifying glass                             |
| B65H 2407/44        | ..   | Static information displaying means, e.g. logo                          |
| B65H 2407/50        | .    | Means for protecting parts of handling machine                          |
| B65H 2407/51        | ..   | Means for making dustproof  |
| <b>B65H 2408/00</b> |      | <b>Specific machines</b>  |



|                |   |
|----------------|---|
| B65H 2408/10   | . for handling sheet(s)   |
| B65H 2408/11   | .. Sorters or machines for sorting articles   |
| B65H 2408/111  | ... with stationary location in space of the bins and a diverter per bin  |
| B65H 2408/112  | ... with stationary location in space of the bins and in-feed member movable from bin to bin  |
| B65H 2408/1121 | .... pivoting in-feed member  |
| B65H 2408/113  | ... with variable location in space of the bins relative to a stationary in-feed path   |
| B65H 2408/1131 | .... and variable bin capacity  |
| B65H 2408/114  | ... means for shifting articles contained in at least one bin, e.g. for displacing the articles towards processing means as stapler, perforator |
| B65H 2408/1141 | .... performing alignment in the totality or a large number of bins at a time   |
| B65H 2408/1142 | .... performing alignment in one bin or a limited number of bins at a time  |
| B65H 2408/1143 | .... performing extraction of the sheets from the bin   |
| B65H 2408/1144 | .... combination of shifting means for performing shifting in several directions  |
| B65H 2408/116  | ... non sort tray arrangement, i.e. high capacity tray for collecting multiple set  |
| B65H 2408/1162 | .... above sorting trays  |
| B65H 2408/1164 | .... beneath sorting trays  |
| B65H 2408/118  | ... Combination of several sorting modules  |
| B65H 2408/12   | .. stapler arrangement  |
| B65H 2408/121  | ... stationary stapler  |
| B65H 2408/122  | ... movable stapler   |
| B65H 2408/1221 | .... movable from bin to bin  |
| B65H 2408/1222 | .... movable transversely to direction of transport   |
| B65H 2408/1223 | .... reciprocating relatively to the bin  |
| B65H 2408/123  | ... means for replenishing stapler with staples   |
| B65H 2408/124  | ... means for changing size of staple   |
| B65H 2408/125  | ... head unit separate from anvil unit  |
| B65H 2408/13   | .. Wall or kiosk dispenser, i.e. for positively handling or holding material until withdrawal by user   |
| B65H 2408/20   | . for handling web(s)   |
| B65H 2408/21   | .. Accumulators   |
| B65H 2408/211  | ... Coil type accumulator   |
| B65H 2408/212  | ... of zigzag-type  |
| B65H 2408/213  | ... with several cascaded loops   |
| B65H 2408/214  | ... loop hanger accumulator   |
| B65H 2408/215  | ... supported by vacuum or blown air  |
| B65H 2408/216  | ... roller with accumulated material wound around it ( scrap roll )   |
| B65H 2408/217  | ... of rollers type, e.g. with at least one fixed and one movable roller  |
| B65H 2408/2171 | .... the position of the movable roller(s), i.e. the web loop, being positively actuated  |
| B65H 2408/2172 | .... several cascaded loops of rollers  |
| B65H 2408/2173 | .... the rollers wrapped by the web being rotationally driven otherwise than by   |

|                     |       |   |
|---------------------|-------|---|
|                     |       | web   |
| B65H 2408/2174      | ....  | belt or similar device for carrying web through the accumulator                       |
| B65H 2408/22        | ..    | Splicing machines   |
| B65H 2408/221       | ...   | features of splicing unit   |
| B65H 2408/2211      | ....  | splicing unit located above several web rolls arranged parallel to each other         |
| B65H 2408/23        | ..    | Winding machines  |
| B65H 2408/231       | ...   | Turret winders  |
| B65H 2408/2312      | ....  | with bedroll, i.e. very big roll used as winding roller                               |
| B65H 2408/23121     | ..... | and transfer pad ( to attach leading edge to new core )                               |
| B65H 2408/23122     | ..... | with integrated core supply   |
| B65H 2408/2313      | ....  | with plurality of reel supporting or back-up rollers travelling around turret axis    |
| B65H 2408/2315      | ....  | specified by number of arms   |
| B65H 2408/23152     | ..... | with two arms   |
| B65H 2408/23155     | ..... | with three arms   |
| B65H 2408/23157     | ..... | with more than three arms   |
| B65H 2408/232       | ...   | Winding bed of two rolls  |
| B65H 2408/2321      | ....  | with winding bed supplied with vacuum or compressed air                               |
| B65H 2408/2324      | ....  | The winding rolls having different properties   |
| B65H 2408/2326      | ....  | at least one of the winding rollers being movable                                     |
| B65H 2408/233       | ...   | Central support turret  |
| B65H 2408/234       | ...   | Hand-held winding device  |
| B65H 2408/235       | ...   | Cradles   |
| B65H 2408/236       | ...   | Pope-winders with first winding on an arc of circle and secondary winding along rails |
| B65H 2408/2362      | ...   | with two secondary winding spools, e.g. on separate carriages                         |
| B65H 2408/2364      | ....  | with additional element for facilitating web roll change                              |
| B65H 2408/237       | ...   | with substantially continuous horizontal movement of roll support, e.g. Metso-Type    |
| B65H 2408/238       | ...   | Modified Pope-winders with secondary winding on a arc of a circle                     |
| B65H 2408/24        | ..    | unwinding machines  |
| B65H 2408/241       | ...   | Turret  |
| B65H 2408/2411      | ....  | with protruding guiding roll or surface between unwound rolls on mobile assembly      |
| B65H 2408/2412      | ....  | details of indexing drive or mechanism  |
| B65H 2408/2415      | ....  | specified by number of arms   |
| B65H 2408/24153     | ..... | with two arms   |
| B65H 2408/24156     | ..... | with three arms   |
| B65H 2408/40        | .     | Machines for test or simulation purposes  |
| <b>B65H 2511/00</b> |       | <b>Dimension ; Position ; Number ; Identification ; Occurence</b>                     |
| B65H 2511/10        | .     | Size ; Dimension  |

|               |     |   |
|---------------|-----|---|
| B65H 2511/11  | ..  | Length  |
| B65H 2511/112 | ... | of a loop, e.g. a free loop or a loop of dancer rollers         |
| B65H 2511/114 | ... | Remaining length of web roll                                    |
| B65H 2511/12  | ..  | Width   |
| B65H 2511/13  | ..  | Thickness   |
| B65H 2511/135 | ..  | Surface texture ; e.g. roughness                                |
| B65H 2511/14  | ..  | Diameter  |
| B65H 2511/142 | ... | of roll or package  |
| B65H 2511/15  | ..  | Height  |
| B65H 2511/152 | ... | of stack  |
| B65H 2511/16  | ..  | Irregularities  |
| B65H 2511/162 | ... | Protuberances or enlargements on the surface                    |
| B65H 2511/164 | ... | Cavities, recesses or holes in the surface                      |
| B65H 2511/166 | ... | relative to diameter, eccentricity or circularity               |
| B65H 2511/17  | ..  | Deformation   |
| B65H 2511/172 | ... | Elongation ; Stretching   |
| B65H 2511/18  | ..  | relative to handling machine                                    |
| B65H 2511/182 | ... | Capacity of area accommodating handled material                 |
| B65H 2511/20  | .   | Location in space   |
| B65H 2511/21  | ..  | Angle   |
| B65H 2511/212 | ... | Rotary position   |
| B65H 2511/214 | ... | Inclination   |
| B65H 2511/216 | ... | Orientation, e.g. with respect to direction of movement         |
| B65H 2511/22  | ..  | Distance  |
| B65H 2511/222 | ... | Stroke  |
| B65H 2511/224 | ... | Nip between rollers, between belts or between rollers and belts |
| B65H 2511/23  | ..  | Coordinates   |
| B65H 2511/232 | ... | in two dimensions   |
| B65H 2511/234 | ... | in three dimensions   |
| B65H 2511/24  | ..  | Irregularities  |
| B65H 2511/242 | ... | in orientation, e.g. skew                                       |
| B65H 2511/25  | ..  | Sequence  |
| B65H 2511/30  | .   | Number  |
| B65H 2511/31  | ..  | Numeric flow, i.e. number per unit of time                      |
| B65H 2511/32  | ..  | of windings   |
| B65H 2511/33  | ..  | of rotations  |
| B65H 2511/34  | ..  | Credit  |
| B65H 2511/40  | .   | Identification  |
| B65H 2511/411 | ..  | of colour   |
| B65H 2511/412 | ..  | of user, e.g. user code   |

|                |      |  |
|----------------|------|--|
| B65H 2511/413  | ..   | of image   |
| B65H 2511/414  | ..   | of mode of operation   |
| B65H 2511/415  | ..   | of job   |
| B65H 2511/416  | ..   | of material  |
| B65H 2511/417  | ..   | of state of the machine  |
| B65H 2511/50   | .    | Occurrence   |
| B65H 2511/51   | ..   | Presence   |
| B65H 2511/511  | ...  | of user  |
| B65H 2511/512  | ...  | Marks ; Patterns   |
| B65H 2511/5125 | .... | Marks invisible for the human eye  |
| B65H 2511/514  | ...  | Particular portion of element  |
| B65H 2511/515  | ..   | Absence ( <a href="#">error, fault B65H 2511/52</a> )  |
| B65H 2511/516  | ...  | Marks ; Patterns   |
| B65H 2511/518  | ...  | Particular portion of element  |
| B65H 2511/52   | ..   | Error ; Fault ( <a href="#">dimensional irregularities B65H 2511/16</a> ; <a href="#">irregularities in location B65H 2511/24</a> ; <a href="#">speed irregularities B65H 2513/106</a> ) |
| B65H 2511/521  | ...  | Presence of foreign object or undesirable material, i.e. material of another nature than the handled material  |
| B65H 2511/522  | ...  | Folds or misfolding  |
| B65H 2511/524  | ...  | Multiple articles, e.g. double feed  |
| B65H 2511/526  | ...  | Breakdown  |
| B65H 2511/528  | ...  | Jam  |
| B65H 2511/529  | ...  | number thereof, frequency of occurrence  |

#### **B65H 2513/00      Dynamic entities ; Timing aspect**

|               |     |   |
|---------------|-----|---|
| B65H 2513/10  | .   | Speed   |
| B65H 2513/102 | ..  | Reference   |
| B65H 2513/104 | ..  | Relative speed  |
| B65H 2513/106 | ..  | Variation ; Irregularities  |
| B65H 2513/108 | ..  | Passage from one speed to another speed   |
| B65H 2513/11  | ..  | angular   |
| B65H 2513/112 | ... | of the yarn balloon   |
| B65H 2513/114 | ... | Converting or comparing angular speed to linear speed, e.g. when detecting remaining length of web roll |
| B65H 2513/20  | .   | Acceleration or deceleration  |
| B65H 2513/21  | ..  | Acceleration  |
| B65H 2513/212 | ... | angular   |
| B65H 2513/22  | ..  | Deceleration  |
| B65H 2513/222 | ... | angular   |
| B65H 2513/30  | .   | Kinetic energy  |

|               |   |
|---------------|---|
| B65H 2513/40  | . Movement  |
| B65H 2513/41  | .. Direction of movement  |
| B65H 2513/412 | ... Direction of rotation of motor powering the handling device |
| B65H 2513/42  | .. Route, path  |
| B65H 2513/50  | . Timing  |
| B65H 2513/51  | .. Sequence of process  |
| B65H 2513/511 | ... relating to a particular timing for sensing a variable      |
| B65H 2513/512 | .. Stopping   |
| B65H 2513/514 | .. Starting   |
| B65H 2513/52  | .. Age ; Life time  |
| B65H 2513/53  | .. duration of event  |
| B65H 2513/54  | .. Chronology of event  |

**B65H 2515/00**      **Physical entities not provided for in groups [B65H 2511/00](#) or [B65H 2513/00](#)**

|               |  |
|---------------|--|
| B65H 2515/10  | . Mass ; Weight  |
| B65H 2515/11  | .. Mass flow rate  |
| B65H 2515/112 | .. Specific weight   |
| B65H 2515/114 | .. Denier  |
| B65H 2515/116 | .. Inertia   |
| B65H 2515/12  | . Density  |
| B65H 2515/20  | . Volume   |
| B65H 2515/21  | .. Volume flow rate  |
| B65H 2515/212 | ... of air   |
| B65H 2515/30  | . Force ; Stress   |
| B65H 2515/31  | .. Tensile force   |
| B65H 2515/312 | ... in direction perpendicular to transport direction  |
| B65H 2515/314 | ... Tension profile, i.e. distribution of tension e.g. across the material feeding direction or along diameter of web roll |
| B65H 2515/32  | .. Torque ; Moment   |
| B65H 2515/322 | ... Braking torque   |
| B65H 2515/34  | .. Pressure  |
| B65H 2515/342 | ... Fluid pressure   |
| B65H 2515/37  | .. Elasticity modulus  |
| B65H 2515/40  | . Temperature  |
| B65H 2515/41  | .. Heat conductivity   |
| B65H 2515/50  | . Vibrations ; Oscillations  |
| B65H 2515/60  | . Optical characteristics, e.g. colour, light  |

|               |  |
|---------------|--|
| B65H 2515/70  | . Electrical characteristics   |
| B65H 2515/702 | .. Voltage   |
| B65H 2515/704 | .. Current   |
| B65H 2515/706 | .. Power   |
| B65H 2515/708 | .. Resistance  |
| B65H 2515/71  | .. Magnetic properties   |
| B65H 2515/712 | .. Capacitance   |
| B65H 2515/714 | .. Inductance  |
| B65H 2515/716 | .. Static electricity  |
| B65H 2515/80  | . Miscellaneous  |
| B65H 2515/805 | .. Humidity  |
| B65H 2515/81  | .. Rigidity ; Stiffness ; Elasticity   |
| B65H 2515/815 | .. Slip  |
| B65H 2515/82  | .. Sound ; Noise   |
| B65H 2515/83  | .. Environmental conditions, i.e. in the area confining the handled material or the handling machine |
| B65H 2515/84  | .. Quality   |
| B65H 2515/842 | ... Condition, e.g. degree of wear, presence of wrinkles   |

## **B65H 2519/00      Chemical characteristics**

## **B65H 2551/00      Means for control to be used by operator ; User interfaces**

|               |   |
|---------------|---|
| B65H 2551/10  | . Command input means   |
| B65H 2551/11  | .. Slidable members   |
| B65H 2551/12  | .. Rotating members   |
| B65H 2551/13  | .. Remote control devices   |
| B65H 2551/132 | ... Speech recognition  |
| B65H 2551/14  | .. Switches ; Selectors ( <a href="#">contact switches B65H 2553/25</a> ) |
| B65H 2551/15  | .. Push buttons ; Keyboards   |
| B65H 2551/152 | .. Pedals   |
| B65H 2551/16  | .. Levers ; Joysticks   |
| B65H 2551/18  | .. Graphical interactive displays ; Mouses ; Touchscreens                 |
| B65H 2551/185 | .. Voice actuated input means   |
| B65H 2551/20  | . Display means ; Information output means                                |
| B65H 2551/21  | .. Monitors ; Video displays  |
| B65H 2551/212 | ... Liquid crystal display (LCD)  |
| B65H 2551/22  | .. Numerical displays   |
| B65H 2551/23  | .. Analog displays  |
| B65H 2551/24  | .. Voice generating means   |

- B65H 2551/25 . . Printing or plotting means
- B65H 2551/26 . . for input variables
- B65H 2551/27 . . for output variables
- B65H 2551/28 . . Sound generating means
- B65H 2551/29 . . Means displaying permanently a particular information, e.g. mark, ruler

**B65H 2553/00 Means for sensing, detecting or otherwise used for control**

- B65H 2553/10 . using fluid
- B65H 2553/11 . . pneumatic
- B65H 2553/12 . . hydraulic
- B65H 2553/20 . using electric elements
- B65H 2553/21 . . Variable resistances, rheostats or potentiometers
- B65H 2553/212 . . . Strain gauges
- B65H 2553/22 . . Magnetic detectors, e.g. Hall detectors
- B65H 2553/23 . . Capacitive detectors
- B65H 2553/232 . . . Electrodes arrangement
- B65H 2553/24 . . Inductive detectors
- B65H 2553/25 . . Contact switches
- B65H 2553/26 . . Piëzo-electric sensors
- B65H 2553/27 . . Electro mechanical thermal sensors, e.g. thermocouples, pyroelectric sensors, temperature sensitive sensor
- B65H 2553/30 . using acoustic or ultrasonic elements
- B65H 2553/40 . using optical, e.g. photographic, elements
- B65H 2553/41 . . Photoelectric detectors
- B65H 2553/412 . . . in barrier arrangements, i.e. emitter facing a receptor element
- B65H 2553/414 . . . involving receptor receiving light reflected by a reflecting surface and emitted by a separate emitter
- B65H 2553/416 . . . Array arrangement, i.e. row of emitters or detectors
- B65H 2553/42 . . Cameras
- B65H 2553/43 . . Bar code reader
- B65H 2553/44 . . involving light guide
- B65H 2553/442 . . . optical fibres
- B65H 2553/45 . . Scanning means
- B65H 2553/46 . . Illumination arrangement
- B65H 2553/51 . Encoder, e.g. rotary
- B65H 2553/512 . . linear
- B65H 2553/52 . RFID sensor
- B65H 2553/60 . Details of intermediate means between the sensing means and the element to be sensed



- B65H 2553/61 . . Mechanical means
- B65H 2553/612 . . . Contact arms ; Levers ; Antennas
- B65H 2553/614 . . . Impact generating means
- B65H 2553/62 . . involving vibrating element
- B65H 2553/80 . Arrangement of the sensing means
- B65H 2553/81 . . on a movable element
- B65H 2553/82 . . with regard to the direction of transport of the handled material
- B65H 2553/822 . . . Multiple sensors in a direction perpendicular to the direction of transport of the handled material
- B65H 2553/83 . . selectively positionable in operative state

#### **B65H 2555/00 Actuating means**

- B65H 2555/10 . linear
- B65H 2555/11 . . pneumatic
- B65H 2555/112 . . . Inflatable element
- B65H 2555/12 . . hydraulic
- B65H 2555/13 . . magnetic, e.g. linear solenoids
- B65H 2555/132 . . . Linear induction motors
- B65H 2555/134 . . . Linear stepper motor
- B65H 2555/14 . . piezoelectric
- B65H 2555/20 . angular
- B65H 2555/21 . . pneumatic
- B65H 2555/22 . . hydraulic
- B65H 2555/23 . . magnetic, e.g. rotary solenoids
- B65H 2555/24 . . Servomotors
- B65H 2555/25 . . D.C. motors
- B65H 2555/252 . . . in derivation ; Shunt motors
- B65H 2555/26 . . Stepper motors
- B65H 2555/27 . . piezoelectric
- B65H 2555/30 . Multi-axis
- B65H 2555/31 . . Robots
- B65H 2555/32 . . Automatic guided vehicle system
- B65H 2555/40 . Powering means
- B65H 2555/41 . Electrostatic forces
- B65H 2555/42 . . Magnets

#### **B65H 2557/00 Means for control not provided for in groups [B65H 2551/00](#) to [B65H 2555/00](#)**

- B65H 2557/10 . for signal transmission

- B65H 2557/11      ..      wireless ( [input by remote control devices B65H 2551/13](#) )
- B65H 2557/112      ...      using sound
- B65H 2557/12      ..      Network
- B65H 2557/13      ..      Data carrier, e.g. chip, transponder, magnetic strip
  
- B65H 2557/20      .      Calculating means ; Controlling methods
- B65H 2557/22      ..      Fuzzy logic
- B65H 2557/23      ..      Recording or storing data
- B65H 2557/24      ..      Calculating methods ; Mathematic models
- B65H 2557/242      ...      involving a particular data profile or curve
- B65H 2557/2423      ....      involving an average value
- B65H 2557/2426      ....      involving a standard deviation
- B65H 2557/25      ..      Modular control, i.e. systems which work independently or partially dependently on other systems
- B65H 2557/26      ..      with key characteristics based on open loop control
- B65H 2557/262      ..      with key characteristics based on feed forward control
- B65H 2557/264      ..      with key characteristics based on closed loop control
- B65H 2557/2644      ...      characterised by PID control
- B65H 2557/266      ..      characterised by function other than PID for the transformation of input values to output values, e.g. mathematical
  
- B65H 2557/30      .      Control systems architecture or components, e.g. electronic or pneumatic modules ; Details thereof
- B65H 2557/31      ..      for converting, e.g. A/D converters
- B65H 2557/32      ..      for modulating frequency or amplitude
- B65H 2557/33      ..      for digital control, e.g. for generating, counting or comparing pulses
- B65H 2557/34      ..      for analog control, e.g. proportional, integral or differentiated
- B65H 2557/35      ..      for timing
- B65H 2557/352      ...      Clocks ; Timers
- B65H 2557/354      ...      Sequence controllers
- B65H 2557/36      ..      Stroboscopes
- B65H 2557/37      ..      for fluid control
- B65H 2557/371      ...      Rotary valve
- B65H 2557/38      ..      for neural adaptive control
  
- B65H 2557/50      .      Use of particular electromagnetic waves, e.g. light, radiowaves or microwaves
- B65H 2557/51      ..      Laser
- B65H 2557/512      ..      infra-red
- B65H 2557/514      ..      ultraviolet
- B65H 2557/516      ..      Polarized light
- B65H 2557/518      ..      X-ray
- B65H 2557/52      ..      Particle radiation
  
- B65H 2557/60      .      Details of processes or procedures

|               |     |  |
|---------------|-----|--|
| B65H 2557/61  | ..  | for calibrating  |
| B65H 2557/62  | ..  | for web tracking, i.e. retrieving a certain position of a web                              |
| B65H 2557/63  | ..  | Optimisation, self-adjustment, self-learning processes or procedures, e.g. during start-up |
| B65H 2557/64  | ..  | for detecting type or properties of handled material                                       |
| B65H 2557/65  | ..  | for diagnosing   |
| B65H 2557/652 | ... | need of maintenance  |

#### **B65H 2601/00      Problem to be solved or advantage achieved**

|                |      |   |
|----------------|------|---|
| B65H 2601/10   | .    | Ensuring correct operation                                      |
| B65H 2601/11   | ..   | Clearing faulty handling, e.g. jams                             |
| B65H 2601/111  | ...  | Clearing uncorrect discharge of sheet                           |
| B65H 2601/12   | ..   | Compensating ; Taking-up  |
| B65H 2601/121  | ...  | Wear  |
| B65H 2601/122  | ...  | Play  |
| B65H 2601/123  | .... | Defaults of handled material                                    |
| B65H 2601/1231 | .... | relative to geometry, shape of handled material                 |
| B65H 2601/124  | ...  | Unbalance   |
| B65H 2601/125  | ...  | Vibration ( <a href="#">B65H 2601/524</a> takes precedence )    |
| B65H 2601/20   | .    | Avoiding or preventing undesirable effects                      |
| B65H 2601/21   | ..   | Dynamic air effects   |
| B65H 2601/211  | ...  | Entrapping air in or under the material                         |
| B65H 2601/212  | ...  | Environmental change in the area confining the handled material |
| B65H 2601/22   | ..   | Gravity effects, e.g. effect of weight of handled material      |
| B65H 2601/221  | ...  | Centrifugal force effect  |
| B65H 2601/24   | ..   | Deformation of part of handling machine                         |
| B65H 2601/25   | ..   | Damages to handled material                                     |
| B65H 2601/251  | ...  | Smearing  |
| B65H 2601/252  | ...  | Collapsing, e.g. of piles                                       |
| B65H 2601/2525 | ...  | Collisions  |
| B65H 2601/253  | ...  | to particular parts of material                                 |
| B65H 2601/2531 | .... | Edges   |
| B65H 2601/2532 | .... | Surface   |
| B65H 2601/254  | ...  | Permanent deformation   |
| B65H 2601/255  | ...  | Jam   |
| B65H 2601/26   | ..   | Damages to handling machine                                     |
| B65H 2601/261  | ...  | Clogging  |
| B65H 2601/2611 | .... | Soiling   |
| B65H 2601/2612 | .... | Pollution   |
| B65H 2601/2613 | .... | Oxidation   |
| B65H 2601/27   | ..   | Other problems  |

|                     |      |  |
|---------------------|------|--|
| B65H 2601/271       | ...  | Over stacking  |
| B65H 2601/272       | ...  | Skewing of handled material during handling  |
| B65H 2601/273       | ...  | Adhering of handled material to another handled material or to part of the handling machine          |
| B65H 2601/30        | .    | Facilitating or easing   |
| B65H 2601/31        | ..   | entities relating to handled material  |
| B65H 2601/32        | ..   | entities relating to handling machine  |
| B65H 2601/321       | ...  | Access   |
| B65H 2601/322       | ...  | Replenishing   |
| B65H 2601/3222      | .... | of binding material, e.g. needles  |
| B65H 2601/324       | ...  | Removability or inter-changeability of machine parts, e.g. for maintenance                           |
| B65H 2601/325       | ...  | Manual handling of handled material  |
| B65H 2601/326       | ...  | Manual handling of handling machine  |
| B65H 2601/40        | .    | Increasing or maximizing   |
| B65H 2601/41        | ..   | entities relating to handled material  |
| B65H 2601/42        | ..   | entities relating to the handling machine  |
| B65H 2601/421       | ...  | Capacity   |
| B65H 2601/422       | ...  | Versatility  |
| B65H 2601/423       | ...  | Life span  |
| B65H 2601/50        | .    | Diminishing, minimizing or reducing  |
| B65H 2601/51        | ..   | entities relating to handled material  |
| B65H 2601/511       | ...  | Waste of handled material  |
| B65H 2601/52        | ..   | entities relating to handling machine  |
| B65H 2601/521       | ...  | Noise  |
| B65H 2601/522       | ...  | Wear of friction surface   |
| B65H 2601/523       | ...  | Required space   |
| B65H 2601/524       | ...  | Vibration  |
| B65H 2601/5242      | .... | by using mass damper   |
| B65H 2601/5244      | .... | by using electro-rheological fluid (ERF)   |
| B65H 2601/525       | ...  | Cost of application or use, e.g. energy, consumable  |
| B65H 2601/60        | .    | Miscellaneous  |
| B65H 2601/61        | ..   | Refurbishing ; Renewing the handling machine ; Upgrading modifying functions of the handling machine |
| <b>B65H 2701/00</b> |      | <b>Handled material or storage means</b>   |
| B65H 2701/10        | .    | Handled articles or webs   |
| B65H 2701/11        | ..   | Dimensional aspect of article or web   |
| B65H 2701/111       | ...  | Plane geometry, contour  |
| B65H 2701/1111      | .... | Geometric shape  |

|                 |       |   |
|-----------------|-------|---|
| B65H 2701/11112 | ..... | disk  |
| B65H 2701/11114 | ..... | triangle  |
| B65H 2701/11113 | ....  | irregular shape   |
| B65H 2701/11132 | ..... | tabbed sheet  |
| B65H 2701/112   | ...   | Section geometry  |
| B65H 2701/1121  | ....  | shape   |
| B65H 2701/11212 | ..... | U-shape   |
| B65H 2701/11214 | ..... | tube  |
| B65H 2701/11216 | ..... | circular segment  |
| B65H 2701/11218 | ..... | corrugations  |
| B65H 2701/1123  | ....  | Folded article or web   |
| B65H 2701/11231 | ..... | Fan-folded material or zig-zag or leporello   |
| B65H 2701/11232 | ..... | Z-folded  |
| B65H 2701/11234 | ..... | C-folded  |
| B65H 2701/11238 | ..... | Asymmetric folded material  |
| B65H 2701/1125  | ....  | variable thickness  |
| B65H 2701/11252 | ..... | thicker edges, e.g. reinforced  |
| B65H 2701/11254 | ..... | Splice  |
| B65H 2701/113   | ...   | Size  |
| B65H 2701/1131  | ....  | of sheets   |
| B65H 2701/11312 | ..... | large formats, i.e. above A3  |
| B65H 2701/1133  | ....  | of webs   |
| B65H 2701/11332 | ..... | strip, tape, narrow web   |
| B65H 2701/12    | ..    | Surface aspects   |
| B65H 2701/121   | ...   | Perforations  |
| B65H 2701/1211  | ....  | arranged linearly   |
| B65H 2701/12112 | ..... | transversally   |
| B65H 2701/1212  | ....  | where perforations serve for handling   |
| B65H 2701/122   | ...   | Projecting portions   |
| B65H 2701/1221  | ....  | regularly distributed   |
| B65H 2701/12212 | ..... | ball relief   |
| B65H 2701/12213 | ..... | polygonal humps relief  |
| B65H 2701/123   | ...   | Hollow portions   |
| B65H 2701/1231  | ....  | grooves   |
| B65H 2701/12312 | ..... | linear, e.g. for further folding  |
| B65H 2701/124   | ...   | Patterns, marks, printed information  |
| B65H 2701/1241  | ....  | register marks  |
| B65H 2701/12411 | ..... | line  |
| B65H 2701/1242  | ....  | printed information   |
| B65H 2701/12422 | ..... | codes or the like which can be used for further processing, e.g. relative to consumed or still available material |
| B65H 2701/1243  | ....  | hologram  |

|                 |       |  |
|-----------------|-------|--|
| B65H 2701/1244  | ....  | RFID ( <a href="#">Radio Frequency Identification Data</a> ) transponder               |
| B65H 2701/125   | ...   | Particular treatment   |
| B65H 2701/1252  | ....  | for facilitating sliding contact   |
| B65H 2701/13    | ..    | Parts concerned of the handled material  |
| B65H 2701/131   | ...   | Edges  |
| B65H 2701/1311  | ....  | leading edge   |
| B65H 2701/1313  | ....  | trailing edge  |
| B65H 2701/1315  | ....  | side edges, i.e. regarded in context of transport                                      |
| B65H 2701/132   | ...   | Side portions  |
| B65H 2701/1321  | ....  | of folded article or web   |
| B65H 2701/13212 | ..... | Fold, spine portion of folded article  |
| B65H 2701/13214 | ..... | Side opposite to spine portion of folded article                                       |
| B65H 2701/1322  | ....  | corner   |
| B65H 2701/139   | ...   | Piled package  |
| B65H 2701/17    | ..    | Nature of material   |
| B65H 2701/171   | ...   | Physical features of handled article or web  |
| B65H 2701/1712  | ....  | Transparent  |
| B65H 2701/1714  | ....  | Magnetic   |
| B65H 2701/1716  | ....  | Elastic  |
| B65H 2701/1718  | ....  | Porous or permeable  |
| B65H 2701/1719  | ....  | Photosensitive, e.g. exposure, photographic or phosphor                                |
| B65H 2701/172   | ...   | Composite material   |
| B65H 2701/1722  | ....  | including layer with adhesive properties   |
| B65H 2701/17222 | ..... | Encapsulated adhesive  |
| B65H 2701/17224 | ..... | distributed only on a part of the surface of the material                              |
| B65H 2701/1724  | ....  | including layer with magnetic properties   |
| B65H 2701/1726  | ....  | including detachable components  |
| B65H 2701/17262 | ..... | distributed only on a part of the surface of the material                              |
| B65H 2701/1727  | ....  | including layer with anti-adhesive properties  |
| B65H 2701/1728  | ....  | Liquid soaked material   |
| B65H 2701/173   | ...   | Metal  |
| B65H 2701/1732  | ....  | Aluminium  |
| B65H 2701/174   | ...   | Textile, fibre ( <a href="#">for filamentary material B65H 2701/31</a> and subgroups ) |
| B65H 2701/1742  | ....  | Fibreglass   |
| B65H 2701/175   | ...   | Plastic  |
| B65H 2701/1752  | ....  | Polymer film   |
| B65H 2701/176   | ...   | Cardboard  |
| B65H 2701/1762  | ....  | Corrugated   |
| B65H 2701/1764  | ....  | Cut-out, single-layer, e.g. flat blanks for boxes                                      |
| B65H 2701/1766  | ....  | Cut-out, multi-layer, e.g. folded blanks or boxes                                      |
| B65H 2701/1768  | ....  | Book covers and the like   |
| B65H 2701/177   | ...   | Fibrous or compressible material   |

|                 |       |  |
|-----------------|-------|--|
| B65H 2701/178   | ...   | Hide, leather or skin  |
| B65H 2701/18    | ..    | Form of handled article or web   |
| B65H 2701/182   | ...   | Piled package  |
| B65H 2701/1822  | ....  | Juxtaposed stacks  |
| B65H 2701/1824  | ....  | Web material folded in zig-zag form  |
| B65H 2701/18242 | ..... | Juxtaposed sets  |
| B65H 2701/1826  | ....  | Arrangement of sheets  |
| B65H 2701/18262 | ..... | Ordered set of articles forming one batch  |
| B65H 2701/18263 | ..... | wherein each article is offset from its neighbour in the pile  |
| B65H 2701/18264 | ..... | Pile of alternate articles of different properties, e.g. pile of working sheets with intermediate sheet between each working sheet |
| B65H 2701/18265 | ..... | Ordered set of batches of articles   |
| B65H 2701/18266 | ..... | wherein the batches are offset from each other, e.g. stepped pile  |
| B65H 2701/18267 | ..... | wherein the batches are separated by separator elements in the pile  |
| B65H 2701/18268 | ..... | Unordered set of articles  |
| B65H 2701/18269 | ..... | Marker arrangement   |
| B65H 2701/1827  | ..... | Interleaf layers   |
| B65H 2701/18271 | ....  | of folded sheet material   |
| B65H 2701/18272 | ..... | Z-folded   |
| B65H 2701/18274 | ..... | W-folded   |
| B65H 2701/1828  | ....  | Parts concerned of piled package   |
| B65H 2701/18282 | ..... | Sides  |
| B65H 2701/1829  | ....  | Bound, bundled or stapled stacks or packages   |
| B65H 2701/18292 | ..... | Stapled sets of sheets   |
| B65H 2701/184   | ...   | Wound packages   |
| B65H 2701/1842  | ....  | of webs  |
| B65H 2701/18422 | ..... | Coreless   |
| B65H 2701/1844  | ....  | Parts concerned  |
| B65H 2701/18442 | ..... | Core   |
| B65H 2701/18444 | ..... | Helically wound material   |
| B65H 2701/1846  | ....  | Parts concerned  |
| B65H 2701/1848  | ....  | Dimensional aspect   |
| B65H 2701/18482 | ..... | Proportion   |
| B65H 2701/18483 | ..... | Diameter much larger than width, e.g. audio/video tape bobbin  |
| B65H 2701/18484 | ..... | Diameter substantially equal to width, e.g. toilet paper roll  |
| B65H 2701/18485 | ..... | Diameter much smaller than width   |
| B65H 2701/18486 | ..... | Non-cylindrical form, e.g. flat bobbin   |
| B65H 2701/1849  | ....  | in cartridge or similar packaging device   |
| B65H 2701/186   | ...   | Several articles or webs processed together  |
| B65H 2701/1862  | ....  | Rolls and sheets   |
| B65H 2701/1864  | ....  | Superposed webs  |
| B65H 2701/19    | ..    | Specific article or web  |



|                 |      |   |
|-----------------|------|---|
| B65H 2701/191   | ...  | Bags, sachets and pouches or the like   |
| B65H 2701/1912  | ...  | Banknotes, bills and cheques or the like  |
| B65H 2701/1914  | ...  | Cards e.g. telephone, credit and identity cards   |
| B65H 2701/1916  | ...  | Envelopes and articles of mail  |
| B65H 2701/1918  | ...  | Insert between web or strip layer e.g. wire   |
| B65H 2701/192   | ...  | Labels ( <a href="#">carrying webs or liners</a> <a href="#">B65H 2701/194</a> )                  |
| B65H 2701/1922  | ...  | for covering surfaces such as carpets, roads, roofs or walls                                      |
| B65H 2701/1924  | ...  | Napkins or tissues e.g. dressings, toweling, serviettes, kitchen paper and compresses             |
| B65H 2701/1926  | ...  | Opened booklet  |
| B65H 2701/1928  | ...  | Printing plate  |
| B65H 2701/193   | ...  | Sample e.g. laminate  |
| B65H 2701/1932  | ...  | Signatures, folded printed matter, newspapers or parts thereof and books                          |
| B65H 2701/1934  | ...  | Sticky notes e.g. sheets partially coated with temporary adhesive                                 |
| B65H 2701/1936  | ...  | Tickets or coupons  |
| B65H 2701/1938  | ...  | Veneer sheet  |
| B65H 2701/194   | ...  | Web supporting regularly spaced adhesive articles, e.g. labels, rubber articles, labels or stamps |
| B65H 2701/19402 | .... | Glue dots, arranged individually or in patterns   |
| B65H 2701/19404 | .... | Supporting second web with articles as precut portions  |
| B65H 2701/1942  | ...  | Web supporting regularly spaced non-adhesive articles   |
| B65H 2701/1944  | ...  | Wrapping or packing material  |
| B65H 2701/20    | .    | Features of handled material other than dimensional aspect, use, or nature                        |
| B65H 2701/30    | .    | Handled filamentary material  |
| B65H 2701/31    | ..   | Textiles threads or artificial strands of filaments   |
| B65H 2701/311   | ...  | Slivers   |
| B65H 2701/312   | ...  | Fibreglass strands  |
| B65H 2701/3122  | .... | extruded from spinnerets  |
| B65H 2701/313   | ...  | Synthetic polymer threads   |
| B65H 2701/3132  | .... | extruded from spinnerets  |
| B65H 2701/314   | ...  | Carbon fibres   |
| B65H 2701/319   | ...  | Elastic threads   |
| B65H 2701/32    | ..   | Optical fibres or optical cables  |
| B65H 2701/33    | ..   | Hollow or hose-like material  |
| B65H 2701/331   | ...  | leaving an extruder   |
| B65H 2701/332   | ...  | Flattened hoses   |
| B65H 2701/333   | ...  | Hoses for drip irrigation   |
| B65H 2701/34    | ..   | electric cords or electric power cables   |
| B65H 2701/341   | ...  | in a manufacturing process  |
| B65H 2701/35    | ..   | Ropes, lines  |
| B65H 2701/351   | ...  | in a manufacturing process  |

|                |      |  |
|----------------|------|--|
| B65H 2701/352  | ...  | Clotheslines   |
| B65H 2701/353  | ...  | Construction lines, e.g. masonry line or for gardening   |
| B65H 2701/354  | ...  | Cutting lines, e.g. for grass cutting  |
| B65H 2701/355  | ...  | Fishlines  |
| B65H 2701/356  | ...  | Kitelines  |
| B65H 2701/357  | ...  | Marking strings, e.g. pre-inked lines  |
| B65H 2701/358  | ...  | Strings for guiding plants   |
| B65H 2701/36   | ..   | Wires  |
| B65H 2701/361  | ...  | Semiconductor bonding wires  |
| B65H 2701/362  | ...  | Tying wires, e.g. for tying concrete reinforcement rods  |
| B65H 2701/363  | ...  | Barbed wires   |
| B65H 2701/364  | ...  | Wires used in fences   |
| B65H 2701/365  | ...  | Aerial wires, e.g. for wireless telegraph installation on aircraft   |
| B65H 2701/366  | ...  | Pintle for seaming paper machine fabrics   |
| B65H 2701/37   | ..   | Tapes  |
| B65H 2701/371  | ...  | Curved tapes, e.g. "Spreizband"  |
| B65H 2701/372  | ...  | Ink ribbons  |
| B65H 2701/373  | ...  | Spring steel   |
| B65H 2701/374  | ...  | Warning bands, e.g. police warning tapes   |
| B65H 2701/375  | ...  | Strapping tapes  |
| B65H 2701/376  | ...  | Electrician's fish tapes   |
| B65H 2701/377  | ...  | Adhesive tape  |
| B65H 2701/3772 | .... | Double-sided   |
| B65H 2701/378  | ...  | Recording tape   |
| B65H 2701/379  | ...  | Sealing tape   |
| B65H 2701/38   | ..   | Thread sheet, e.g. sheet of parallel yarns or wires  |
| B65H 2701/39   | ..   | Other types of filamentary materials or special applications   |
| B65H 2701/391  | ...  | Spiral coiled hoses or cords   |
| B65H 2701/3911 | ...  | Chains   |
| B65H 2701/3912 | ...  | Fences made of wire  |
| B65H 2701/3913 | ...  | Extruded profiled strands  |
| B65H 2701/3914 | ...  | Irregular cross section, i.e. not circular   |
| B65H 2701/3915 | ...  | Strings of lights, e.g. Christmas lighting   |
| B65H 2701/3916 | ...  | Inserts between layers of wire, hose or yarn   |
| B65H 2701/3917 | ...  | Faired cables  |
| B65H 2701/3918 | ...  | Surgical sutures   |
| B65H 2701/3919 | ...  | USB, earphones, audio or video cables, e.g. for connecting small electronic devices such as MP3 players or mobile telephones |
| B65H 2701/50   | .    | Storage means for webs, tapes, or filamentary material   |
| B65H 2701/51   | ..   | Cores or reels characterised by the material   |
| B65H 2701/511  | ...  | essentially made of sheet material   |
| B65H 2701/5112 | .... | Paper or plastic sheet material  |

|                     |       |   |
|---------------------|-------|---|
| B65H 2701/5114      | ....  | Metal sheets  |
| B65H 2701/5116      | ....  | Wood veneer   |
| B65H 2701/5118      | ....  | Textile material  |
| B65H 2701/512       | ...   | moulded   |
| B65H 2701/5122      | ....  | Plastics  |
| B65H 2701/5124      | ....  | Metals  |
| B65H 2701/5126      | ....  | Particles of fibres, e.g. lignocelluloses material                            |
| B65H 2701/5128      | ....  | Vitreous material   |
| B65H 2701/513       | ...   | assembled mainly from rigid elements of the same kind                         |
| B65H 2701/5132      | ....  | Wooden planks or similar material   |
| B65H 2701/5134      | ....  | Metal elements  |
| B65H 2701/51342     | ..... | Moulded metal elements  |
| B65H 2701/51344     | ..... | Metal profiles  |
| B65H 2701/5136      | ....  | Moulded plastic elements  |
| B65H 2701/514       | ...   | Elastic elements  |
| B65H 2701/515       | ...   | assembled from parts made of different materials                              |
| B65H 2701/5152      | ....  | End flanges and barrel of different material                                  |
| B65H 2701/51522     | ..... | Wooden barrel   |
| B65H 2701/51524     | ..... | Paperboard barrel   |
| B65H 2701/51526     | ..... | Metal barrel  |
| B65H 2701/51528     | ..... | Plastic barrel  |
| B65H 2701/52        | ..    | Integration of elements inside the core or reel                               |
| B65H 2701/522       | ...   | Chemical agents   |
| B65H 2701/524       | ...   | Weights   |
| B65H 2701/526       | ...   | Magnets   |
| B65H 2701/528       | ...   | Heating or cooling devices  |
| B65H 2701/53        | ..    | Adaptations of cores or reels for special purposes                            |
| B65H 2701/532       | ...   | Tearable or frangible cores or reels  |
| B65H 2701/533       | ...   | Storage compartments for accessories  |
| B65H 2701/534       | ...   | Stackable or interlockable reels or parts of reels                            |
| B65H 2701/535       | ...   | Dimensional aspect, e.g. non-cylindrical cores                                |
| B65H 2701/536       | ...   | Arrangements for protecting connectors attached to the wound material         |
| B65H 2701/537       | ...   | Stopping the winding or unwinding of reels which do not feature spring motors |
| B65H 2701/70        | .     | Use of material   |
| B65H 2701/71        | .     | Special purposes ; Special handling other than the normal handling            |
| <b>B65H 2801/00</b> |       | <b>Application field</b>  |
| B65H 2801/03        | .     | Image reproduction devices  |
| B65H 2801/06        | ..    | Office-type machines, e.g. photocopiers                                       |
| B65H 2801/09        | ..    | Single-function copy machines   |

|              |     |   |
|--------------|-----|---|
| B65H 2801/12 | . . | Single-function printing machines, typically table-top machines |
| B65H 2801/15 | . . | Digital printing machines                                       |
| B65H 2801/18 | . . | Stencil printing machines                                       |
| B65H 2801/21 | . . | Industrial-size printers, e.g. rotary printing press            |
| B65H 2801/24 | .   | Post -processing devices  |
| B65H 2801/27 | . . | Devices located downstream of office-type machines.             |
| B65H 2801/31 | . . | Devices located downstream of industrial printers               |
| B65H 2801/36 | .   | Plotting  |
| B65H 2801/39 | .   | Scanning  |
| B65H 2801/42 | .   | Die-cutting   |
| B65H 2801/45 | .   | Audio or video tape players, or related mechanism               |
| B65H 2801/48 | .   | Bookbinding   |
| B65H 2801/51 | .   | Automobile  |
| B65H 2801/54 | .   | Cigarette making  |
| B65H 2801/57 | .   | Diaper manufacture  |
| B65H 2801/61 | .   | Display device manufacture, e.g. liquid crystal displays        |
| B65H 2801/63 | .   | Dunnage conversion  |
| B65H 2801/66 | .   | Envelope filling machines                                       |
| B65H 2801/69 | .   | Form fill-and-seal machines                                     |
| B65H 2801/72 | .   | Fuel cell manufacture   |
| B65H 2801/75 | .   | Labelling machines  |
| B65H 2801/78 | .   | Mailing systems   |
| B65H 2801/81 | .   | Packaging machines  |
| B65H 2801/84 | .   | Paper-making machines   |
| B65H 2801/87 | .   | Photovoltaic element manufacture, e.g. solar panels             |
| B65H 2801/91 | .   | Recording tape manufacture                                      |
| B65H 2801/93 | .   | Tyres   |