

**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 [B65H 75/28](#) )
- B65H 19/30 . . Lifting, transporting, or removing the web roll ; Inserting core
- B65H 19/305 . . . { Inserting core }
  
- B65H 20/00                      Advancing webs**
  
- 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 [B65H 19/14](#) , [B65H 19/24](#) )
- 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
  
- B65H 21/00                      Apparatus for splicing webs ( during web-roll changing [B65H 19/00](#) )**

- 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 <a href="#">B65H 23/30</a> )
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
<b>B65H 26/00</b>		<b>Warning or safety devices, e.g. automatic fault detectors, stop-motions, for web-advancing mechanisms</b> ( safety devices in general <a href="#">F16P</a> ; investigating chemical or physical properties of materials in general <a href="#">G01N</a> ; indicating devices in general <a href="#">G08B</a> )
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
<b>B65H 27/00</b>		<b>Special constructions of feed or guide rollers and surfaces thereof</b> ( { tentering rollers <a href="#">B65H 23/02</a> } ; rollers in general <a href="#">F16C 13/00</a> )

**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 ..... coating 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 ( [B65H 20/28](#) takes precedence; pleating, kilting or goffering textile fabrics [D06J](#) )
- 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 [B65H 45/16](#) )
- B65H 45/20 .. Zig-zag folders { ( [B65H 45/228](#) 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 [B65H 3/00](#) )
- B65H 45/28 .. Folding in combination with cutting ( cutting machines [B26D](#) )
- B65H 45/30 .. Folding in combination with creasing, smoothing or application of adhesive ( folding or adhesive application in article or web delivering [B65H 37/00](#) )

**B65H 47/00**      **Unfolding thin limp material** ( [B65H 20/28](#) takes precedence; opening devices for sheets or signatures [B65H 5/30](#) )

**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 ( safety devices in general <a href="#">F16P</a> ; indicating devices in general <a href="#">G08B</a> ) { Quality control of the package }</b>
B65H 63/003	. { responsive to winding of yarns around rotating cylinders }
B65H 63/006	. { quality control of the package }
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	..... { using electronic actuators }
B65H 63/0322	..... { using capacitor sensing means, i.e. the defect signal is a variation of impedance }
B65H 63/0324	..... { using photo-electric sensing means, i.e. the defect signal is a variation of light energy }
B65H 63/0325	..... { using fluid sensing means, e.g. acoustic }
B65H 63/0327	..... { using piezo-electric sensing means }
B65H 63/0328	..... { using pneumatic sensing means }
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	.... { by a plate separating the package from the driving drum }
B65H 63/0364	.... { by lifting or raising the package away from the driving roller }
B65H 63/0366	..... { Braking means for the raised or lifted package }
B65H 63/0368	.... { by clutching or de-clutching the package from its driving means ( package secured to a rotary driven member ) }
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 { Control of the correct working of the yarn cleaner }
B65H 63/061	.. { Mechanical slub catcher and detector }
B65H 63/062	.. { Electronic slub detector }
B65H 63/064	... { using capacitor sensing means, i.e. the defect signal is a variation of impedance }
B65H 63/065	... { using photo-electric sensing means, i.e. the defect signal is a variation of light energy }
B65H 63/067	... { using fluid sensing means, e.g. acoustic }
B65H 63/068	... { using piezo-electric sensing means }
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	.. { responsive to a predetermined size or diameter of the package }
B65H 63/084	.. { responsive to a predetermined weight of the package }

- 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



		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 )



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

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

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

		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

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

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 ( <a href="#">Nota: gripping pile see B65H 2301/4224</a> )
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

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 ( inside the core )
B65H 2405/462	...	outer gripper ( on circumference )
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 ; Occurrence</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 ( <a href="#">input by remote control devices B65H 2551/13</a> )
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

## **B65H 2801/00 Application field**

- 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