

CPC**COOPERATIVE PATENT CLASSIFICATION****B31F****MECHANICAL WORKING OR DEFORMATION OF PAPER OR**

CARDBOARD (cutting, trimming, in general [B26](#); incising, scoring, in general [B26D 3/08](#); making layered products not composed wholly of paper or cardboard [B32B](#); multi-ply material of paper or cardboard, its manufacture [D21H](#))

B31F 1/00

Mechanical deformation of paper or cardboard without removing material including combined deformation and laminating (embossing combined with application of ink, type marking presses, selective embossing machines [B41F](#), [B41J](#), [B41K](#), [B41M](#); machines or apparatus for embossing decorations or marks [B44B 5/00](#); artists hand tools for embossing [B44B 11/04](#); producing decorative effects by processes for stamping ornamental designs on surfaces [B44C 1/24](#); mechanical deformation during paper or board making, kinds of paper or board [D21](#))

B31F 1/0003

. { Shaping by bending, folding, twisting, straightening, flattening or rim-rolling; Shaping by bending, folding or rim-rolling combined with joining; Apparatus therefor (shaping of tube ends [B31F 1/0008](#)) }

B31F 1/0006

.. { Bending or folding; Folding edges combined with joining; Reinforcing edges during the folding thereof; (creasing [B31F 1/008](#), crêping paper [B31F 1/12](#), corrugating [B31F 1/20](#); bending and joining [B31F 1/0045](#), stretching and folding [B31F 1/00B2B2](#); Reinforcing edges per se [B31F 5/08](#); making wound articles [B31C](#), folding thin material per se [B65H 45/00](#)) }

B31F 1/0009

... { of plates, sheets or webs }

B31F 1/0012

.... { combined with making folding lines ([B31F 1/0022](#) takes precedence) }

B31F 1/0016

.... { Folding edges; Folding edges combined with joining; Reinforcing edges during the folding thereof, e.g. by introducing a thread; Folding the edges of a sheathing ([B31F 1/0029](#) takes precedence) }

B31F 1/0019

.... { the plates, sheets or webs moving continuously ([B31F 5/08](#) takes precedence) }

B31F 1/0022

..... { combined with making folding lines }

B31F 1/0025

..... { Making the folding lines using rotary tools }

B31F 1/0029

..... { Folding edges; Folding edges combined with joining; Reinforcing edges during the folding thereof, e.g. by introducing a thread; Folding the edges of a sheathing }

B31F 1/0032

... { of tubes }

B31F 1/0035

.. { Straightening or flattening }

B31F 1/0038

.. { Rim-rolling }

B31F 1/0041

... { combined with joining }

B31F 1/0045

.. { Bending or folding combined with joining (Folding edges combined with joining [B31F 1/0016](#), [B31F 1/0029](#)) }

B31F 1/0048

... { Bending plates, sheets or webs at right angles to the axis of the article being formed and joining the edges }

B31F 1/0051

.... { for making articles of definite length }

B31F 1/0054

..... { using internal forming surfaces, e.g. mandrels }

B31F 1/0058

..... { Machines therefor having additional mandrels, e.g. mounted on a turntable, or on chains ([B31F 1/0064](#) takes precedence) }

B31F 1/0061

.... { for making articles of indefinite length }

- B31F 1/0064 { using internal forming surfaces, on e.g. mandrels }
- B31F 1/0067 { using only external forming surfaces, e.g. sleeves }
- B31F 1/007 { for making articles with multilayered walls }
- B31F 1/0074 { Making essentially non-hollow profiles, e.g. rods, ropes, cords }

- B31F 1/0077 . { Shaping by methods analogous to moulding, e.g. deep drawing techniques }

- B31F 1/008 . { Shaping of tube ends, e.g. flanging, bellling, closing, rim-rolling, corrugating; Fixing elements to tube ends }
- B31F 1/0083 . . { Closing }
- B31F 1/0087 . . { Rim-rolling }
- B31F 1/009 . . . { combined with joining, e.g. for fixing a closure element }
- B31F 1/0093 . . { Fixing elements to tube ends }

- B31F 1/0096 . { Lining or sheathing (folding the edge of the sheathing [B31F 1/0016](#), [B31F 1/0029](#)) }

- B31F 1/07 . Embossing, { i.e. producing impressions formed by locally deep-drawing, e.g. using rolls provided with complementary profiles } ({ [B31F 1/128](#) takes precedence; } corrugating [B31F 1/20](#))

- B31F 1/08 . Creasing (corrugating [B31F 1/20](#); zig-zag folding [B65H 45/20](#)) ({ combined with folding [B31F 1/0012](#), [B31F 1/0022](#); grooving by cutting [B26D 3/06](#), [B26D 3/08](#); by milling grooves [B23C 3/30](#); of plastics material [B29C 53/06](#)) }
- B31F 1/10 . . by rotary tools

- B31F 1/12 . Crêping paper, { i.e. providing paper with small irregular crinkles; Making paper elastic in all directions }
- B31F 1/122 . . { the paper being submitted to an additional mechanical deformation other than crêping, e.g. for making it elastic in all directions }
- B31F 1/124 . . { Multiple crêping, e.g. forming crêpes under different angles }
- B31F 1/126 . . { including making of the paper to be crêped }
- B31F 1/128 . . { Making paper elastic in all directions, other than by crêping ([B31F 1/122](#) takes precedence) }

- B31F 1/14 . . by doctor blades arranged crosswise to the web
- B31F 1/145 . . . { Blade constructions }
- B31F 1/16 . . by elastic belts ({ [B31F 1/18](#) takes precedence })
- B31F 1/18 . . by tools arranged in the direction of web feed; { Logitudinal crêping, i.e. providing paper with crêpes parallel to the direction of web movement, e.g. for making paper elastic transversely to this direction }

- B31F 1/20 . Corrugating; Corrugating combined with laminating to other paper or cardboard layers ({ corrugating sheet metal [B21D 13/00](#); corrugating plastics material [B29C 53/22](#); } corrugating veneer [B27D](#))
- B31F 1/205 . . { Corrugating tubes (corrugating tube ends [B31F 1/008](#); Making tubes, not otherwise provided for, [B31F 7/004](#); Corrugating metal tubes [B21D 15/00](#)) }
- B31F 1/22 . . Making webs in which the channel of each corrugation is longitudinal with the web feed
- B31F 1/225 . . . { combined with uniting the corrugated web to flat webs; Making corrugated-web structures }

- B31F 1/24 .. Making webs in which the channel of each corrugation is transverse to the web feed
- B31F 1/242 ... { the corrugations being obliquely inclined to the web feed ([B31F 1/247](#), [B31F 1/30](#) take precedence) }
- B31F 1/245 ... { by feeding the webs in a channel larger than the thickness of the webs by means of rollers, e.g. involving prefolding }
- B31F 1/247 ... { by reciprocating members }
- B31F 1/26 ... by interengaging toothed cylinders { cylinder constructions ([B31F 1/242](#) takes precedence) }
- B31F 1/28 combined with uniting the corrugated webs to flat webs; { Making double-faced corrugated cardboard }
- B31F 1/2804 { Methods }
- B31F 1/2809 { characterised by the chemical composition of the glue }
- B31F 1/2813 { Making corrugated cardboard of composite structure, e.g. comprising two or more corrugated layers }
- B31F 1/2818 { Glue application specially adapted therefor }
- B31F 1/2822 { involving additional operations }
- B31F 1/2827 { Edge treatment }
- B31F 1/2831 { Control }
- B31F 1/2836 { Guiding, e.g. edge alignment; Tensioning }
- B31F 1/284 { Warp prevention }
- B31F 1/2845 { Details, e.g. provisions for drying, moistening, pressing }
- B31F 1/285 { Heating or drying equipment }
- B31F 1/2854 { Means for keeping the sheet in contact with one of the corrugating rollers after corrugating, but before applying the facer sheet, e.g. by air pressure, suction or pressing fingers }
- B31F 1/2859 { Pressing fingers }
- B31F 1/2863 { Corrugating cylinders; Supporting or positioning means therefor; Drives therefor }
- B31F 1/2868 { Exchangeable corrugating cylinders (means for changing cutting members in shearing devices [B23D 35/008](#)) }
- B31F 1/2872 { Spraying devices, e.g. for moistening purposes; Lubricating devices }
- B31F 1/2877 { Pressing means for bringing facer sheet and corrugated webs into contact or keeping them in contact, e.g. rolls, belts }
- B31F 1/2881 { for bringing a second facer sheet into contact with an already single faced corrugated web }
- B31F 1/2886 { Additionally reinforcing, e.g. by applying resin or wire }
- B31F 1/289 { from discrete sheets }
- B31F 1/2895 { from corrugated webs having corrugations of particular shape }
- B31F 1/29 ... by making use of rods, e.g. co-operating with a toothed cylinder { combined with uniting the corrugated web to flat webs ([B31F 1/30](#) takes precedence) }
- B31F 1/30 ... Tools secured to endless chains { e.g. toothed belts; combined with uniting the corrugated web to flat webs }
- B31F 1/305 { with sets of interengaging tools each secured to endless chains }
- B31F 1/32 .. Corrugating already corrugated webs
- B31F 1/36 . Moistening and heating webs to facilitate mechanical deformation and drying deformed webs ({ [during corrugating B31F 1/28](#) })

B31F 5/00	Attaching together paper or cardboard sheets, strips, or webs; { or other preformed paper articles joining by rim-rolling B31F 1/0041, B31F 1/009; closing tube ends by inserting an element B31F 1/008, making boxes B31B } Reinforcing edges of paper or cardboard (means for applying adhesive or glue B05C ; stapling in box or like making B31B ; attaching the replacement web to the expiring web during web-roll changing B65H 19/18 ; apparatus for splicing webs during handling B65H 21/00)
B31F 5/001	. { by stapling or riveting }
B31F 5/003	. { by stitching }
B31F 5/005	. { by folding (rim-rolling B31F 1/0041) }
B31F 5/006	. { using a strip, e.g. profiled (B31F 5/06 takes precedence) }
B31F 5/008	. { by friction, e.g. obtained ultrasonic vibrations }
B31F 5/02	. by crimping or slotting { or perforating }
B31F 5/022	.. { using a rotary tool }
B31F 5/025	.. { by slotting }
B31F 5/027	.. { by perforating, e.g. by folding over the partially cut part }
B31F 5/04	. by exclusive use of adhesives
B31F 5/06	. by adhesive tape
B31F 5/08	.. for reinforcing edges; { Applying a strip or tape to an edge, e.g. for decorating, for protecting }
B31F 5/085	... { combined with folding the strip around the edge, or applying an already folded strip on (folding edges B31F 1/0016 , B31F 1/0029) }
B31F 7/00	Processes for working paper not otherwise provided for
B31F 7/002	. { tubular articles, e.g. changing the cross-section }
B31F 7/004	. { Making tubes }
B31F 7/006	. { edges, e.g. sheet edges }
B31F 7/008	. { Repairing }
B31F 7/02	. Breaking the coating on paper
B31F 2201/00	Mechanical deformation of paper or cardboard without removing material
B31F 2201/07	. Embossing (not used)
B31F 2201/0702	.. by tools working discontinuously
B31F 2201/0705	... Hand operated
B31F 2201/0707	.. by tools working continuously

B31F 2201/071	...	Type and characteristics of the embossing tools (not used)
B31F 2201/0712	....	Other than rollers, e.g. belts, plates
B31F 2201/0715	....	Rollers
B31F 2201/0717	.....	Methods and means for forming the embossments
B31F 2201/072	.....	Laser engraving
B31F 2201/0723	.....	Characteristics of the rollers
B31F 2201/0725	.....	Hardness
B31F 2201/0728	.....	Material
B31F 2201/073	.....	Rollers having a multilayered structure
B31F 2201/0733	.....	Pattern
B31F 2201/0735	.....	Pattern inclined with respect to the axis of the roller
B31F 2201/0738	.....	Cross sectional profile of the embossments
B31F 2201/0741	.....	Roller cooperating with a non-even counter roller
B31F 2201/0743	.....	having a matching profile
B31F 2201/0746	.....	and having a self-centering profile
B31F 2201/0748	.....	having a dissimilar profile
B31F 2201/0751	.....	and having a self-centering profile
B31F 2201/0753	.....	Roller supporting, positioning, driving means
B31F 2201/0756	..	Characteristics of the incoming material, e.g. creped, embossed, corrugated
B31F 2201/0758	..	Characteristics of the embossed product
B31F 2201/0761	...	Multi-layered
B31F 2201/0764	....	the layers being nested
B31F 2201/0766	....	the layers being superposed tip to tip
B31F 2201/0769	....	the layers being shifted
B31F 2201/0771	..	Other aspects of the embossing operations
B31F 2201/0774	...	Multiple successive embossing operations
B31F 2201/0776	...	Exchanging embossing tools
B31F 2201/0779	..	Control
B31F 2201/0782	..	Layout of the complete embossing machine, of the embossing line
B31F 2201/0784	..	Auxiliary operations
B31F 2201/0787	...	Applying adhesive
B31F 2201/0789	...	Joining plies without adhesive
B31F 2201/0792	...	Printing
B31F 2201/0794	...	Cutting
B31F 2201/0797	...	Perforating