

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 1/008](#))}

B31F 1/0006

.. { Bending or folding; Folding edges combined with joining; Reinforcing edges during the folding thereof; (creasing [B31F 1/08](#), crêping paper [B31F 1/12](#), corrugating [B31F 1/20](#); bending and joining [B31F 1/0045](#); 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, belling, 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