

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 or cardboard {, i.e. providing paper or cardboard with small irregular crinkles; Making paper or cardboard 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 or cardboard 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 or cardboard

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