

**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 1/08](#), [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