

## 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](#) )

## Guidance heading:

## 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, 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 ( <a href="#">B31F 1/247</a> , <a href="#">B31F 1/30</a> 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 ( <a href="#">B31F 1/242</a> 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 <a href="#">B23D 35/008</a> ) }   |
| 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 ( <a href="#">B31F 1/30</a> 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

**Guidance heading:**

**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  |