

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