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E. L. PERRY
CORRUGATED PACKING SHEET

2,668,786

Filed June 22, 1949

Fig. 1.

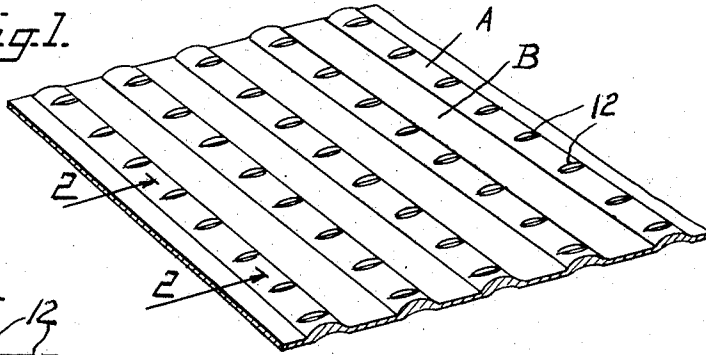


Fig. 2.

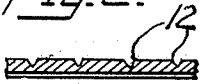


Fig. 3.

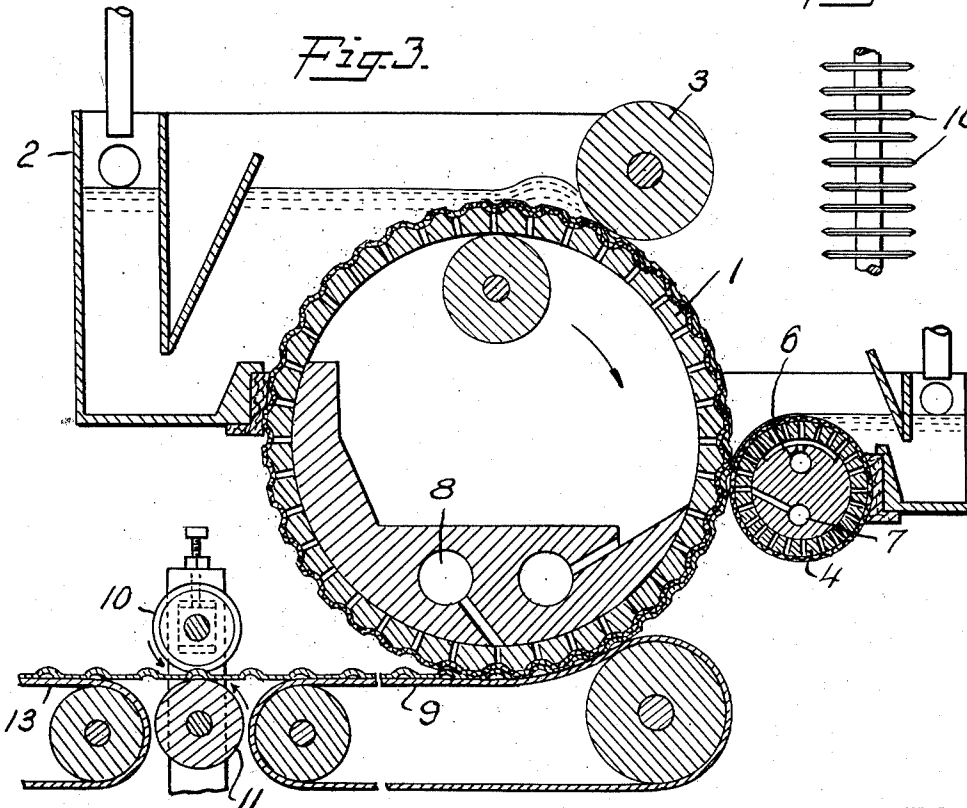
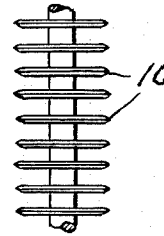


Fig. 4.



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UNITED STATES PATENT OFFICE

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CORRUGATED PACKING SHEET

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Application June 22, 1949, Serial No. 100,702

1 Claim. (Cl. 154—55)

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This application is directed to an improvement on the corrugated paper made directly from pulp disclosed in my former Patent No. 2,221,200, granted November 12, 1940.

The object of the present invention is to provide a corrugated packing sheet made of pulp which is flexible for folding both along lines parallel with the corrugations and also along lines transverse to the corrugations, to thereby facilitate folding the paper around cylindrical articles such, for example, as glass jars containing pharmaceutical preparations, and then folding the projecting end portions of the wrapping sheet down over the ends of the jars to protect the jar in all directions from breakage.

In the accompanying drawings

Fig. 1 is a perspective view on an enlarged scale showing a portion of a sheet of paper manufactured in accordance with my new method;

Fig. 2 is a section on line 2—2 of Fig. 1;

Fig. 3 is a diagrammatic sectional view showing the essential parts of the apparatus disclosed in my former patent with the addition of the parts for providing the transverse scores in the freshly formed sheet; and

Fig. 4 is a detail view showing the scoring roll in plan view.

Referring to the drawings, my improved packing sheet is formed directly from pulp on a suction drum having its surface formed with corrugations of any desired contour, but preferably somewhat flatter than shown in my previous patent. The cylinder is covered with an underlying coarse screen and a superimposed fine screen of the construction shown in my prior patent and therefore not shown in detail herein. The pulp is supplied to the cylinder 1 from a flow box indicated at 2 which may be of the construction shown in my former patent. At the forward end of the flow box in the direction of rotation of the cylinder is a metering roll 3 for regulating the amount of pulp deposited on the cylinder.

In the drawing the contour of the corrugations is such that the grooves in the cylinder in which the corrugations are formed are substantially filled with the pulp as the cylinder passes through the flow box, so that when the water is drawn from the pulp through the suction holes in the bottom of the grooves the exposed face of the sheet, that is, the face opposite the corrugations, will have depressions on the other side but of a very slight depth compared with the height of the corrugations. In other words, the corrugations on the face of the paper are

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composed throughout substantially their depth of loosely matted fibres which have been compressed somewhat by the suction extraction of the water, but which have not been compressed by the metering roller or by the facing roller 4 which will now be described.

This facing roller is of the construction shown in my prior patent and is mounted in a flow box from which it picks up a layer of pulp through the suction supplied from a suction port 6. This roller is of smooth cylindrical contour and is covered with coarse and fine screens in the manner described in my prior patent. The periphery of the facing roller lies adjacent to the periphery of the corrugating roller and is spaced from the crowns of the corrugations on the cylinder to an extent corresponding to the desired thickness of the sheet between the corrugations.

The layer of pulp picked up by the facing roller is transferred to the surface of the sheet formed on the cylinder at a time when both sheets are quite wet, and the suction through the surface of the cylinder draws the soft sheet of wet pulp on the facing roller down against the sheet of pulp so that the sheet formed on the facing roller assumes the contour of the exposed face of the corrugated sheet and the contacting fibres are so intermeshed by the suction that there is no significant line of demarcation between the pulp applied by the facing roller and the pulp sheet formed on the cylinder. The transfer of the pulp from the facing roller is aided by a discharge of compressed air from the compressed air pipe 7, and the suction in the cylinder draws the pulp from the facing roller down somewhat into the corrugations while at the same time the portions between the corrugations are compressed between the crowns of the corrugations and the surface of the facing roller.

The composite sheet has the cross sectional contour shown in Fig. 1, wherein A indicates the corrugations and B the spaces between the corrugations. In the spaces B there is no discernible line of demarcation between the layer of pulp picked up on the cylinder and the layer transferred from the facing roller. The same is true of the corrugations A except that the fibres at both surfaces of the corrugations are somewhat more compressed than in the intermediate part and the whole surface on both sides carries the impression of the fine screen forming the surface of both the cylinder and the finishing roller.

The composite sheet formed as above described is discharged from the cylinder by compressed air

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from a compressed air pipe 8 onto a drying belt 9 underlying the cylinder. At a point somewhat beyond the point at which the sheet is received by the drying belt where the pulp is partially dried but is still soft enough to receive impressions, the belt is discontinued and a pair of scoring rolls 10 and 11 are introduced which serve to impress into the corrugations a series of parallel score lines such as illustrated at 12 in Fig. 1, these score lines being of a depth of approximately one-half the height of the corrugations above the surface of the paper between the corrugations. The upper scoring roller is preferably mounted in an adjustable bearing so that the depth of the score lines may be adjusted for sheets of different thickness. Immediately beyond the scoring rollers another drying belt 13 is provided to support the sheet until it is fully dried.

If desired, the facing roller with its pulp supply may be omitted altogether, in which case the corrugated sheet will have substantially the same contour on both surfaces, as illustrated, but will not be compressed to the same extent between the corrugations. Also, if desired, the facing roller may be employed but without supplying the flow box with pulp. When so used the facing roller acts as a press roller to give a wire finish to the back of the sheet and compress the pulp between the corrugations, but without any substantial compression where the corrugations are built up on the cylinder.

I have shown my new packing sheet in its preferred form and also illustrated a preferred method and apparatus for making the same, but it is to be understood that the invention is not limited to the details hereinabove described but

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the same may be variously modified without departing from the spirit of the invention or the scope of the appended claim.

I claim:

- 5 As a new article of manufacture, a packing sheet of felted pulp having corrugations built up of substantially uncompressed pulp with intervening portions pressed to greater density, the opposite face of the sheet having shallow recesses
10 extending therein opposite said corrugations, and spaced score lines on the corrugated face of the sheet extending transversely of the corrugations, the spaces between said corrugations being not less in width than the corrugations.

EUGENE L. PERRY.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
Re. 20,034	Ives	July 14, 1936
261,865	Mather et al.	Aug. 1, 1882
1,211,229	Pruyn et al.	June 2, 1917
1,547,613	Salisbury	July 28, 1925
1,661,727	Koppelman et al.	Mar. 6, 1928
1,676,655	Lorenz	July 10, 1928
1,677,905	Salisbury	July 24, 1928
2,169,505	Sherman	Aug. 15, 1939
2,209,537	Perry	July 30, 1940
2,221,200	Perry	Nov. 12, 1940
2,245,014	Sherman	June 10, 1941
2,253,718	McKeage	Aug. 26, 1941
2,475,868	Anderson	July 12, 1949

FOREIGN PATENTS

Number	Country	Date
618,066	Germany	Aug. 31, 1935