

May 29, 1934.

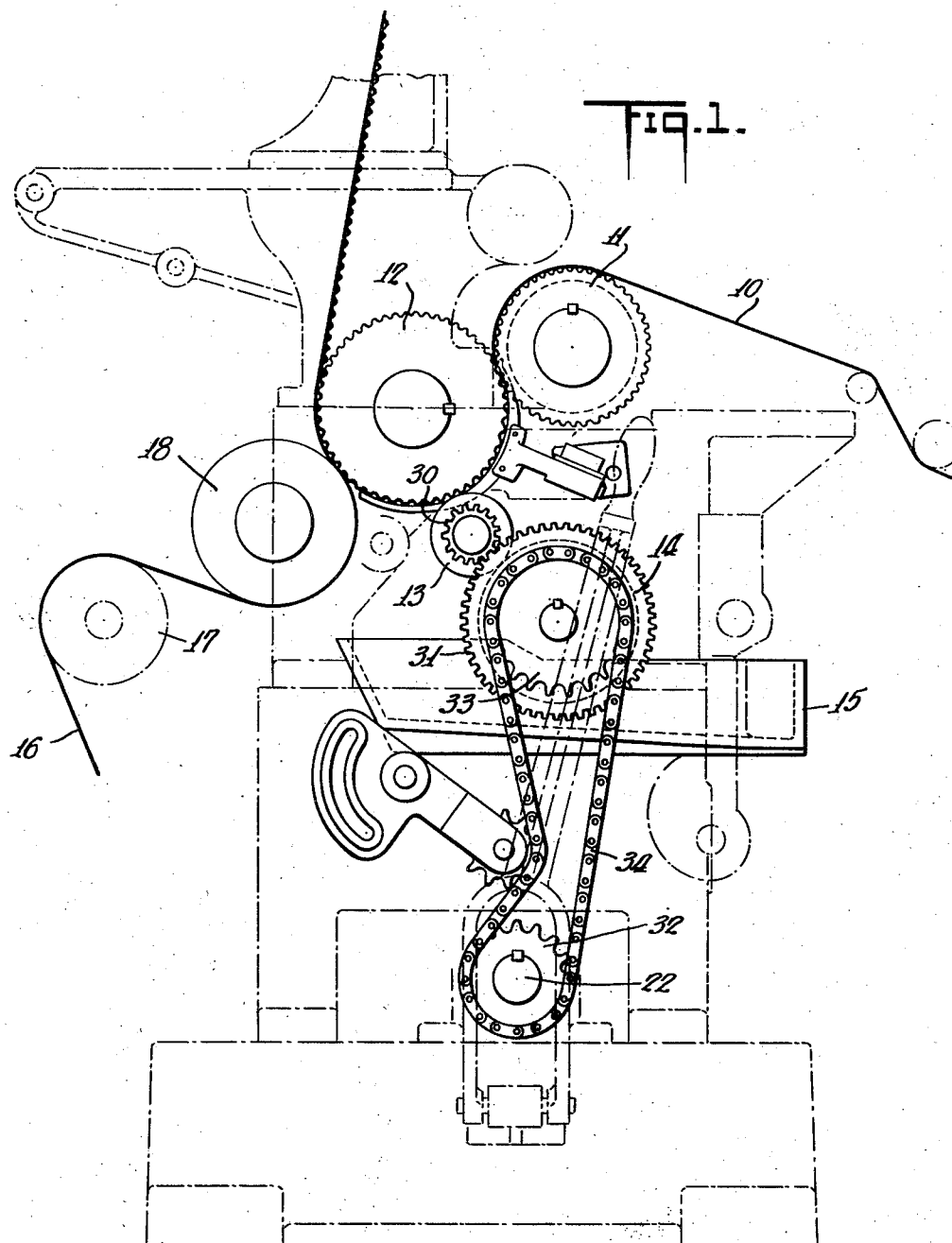
L. J. LIST

1,960,677

CORRUGATOR

Filed Dec. 14, 1932

2 Sheets-Sheet 1



INVENTOR

Leonardo J. List

BY

David Fairbank Hersh & Foster
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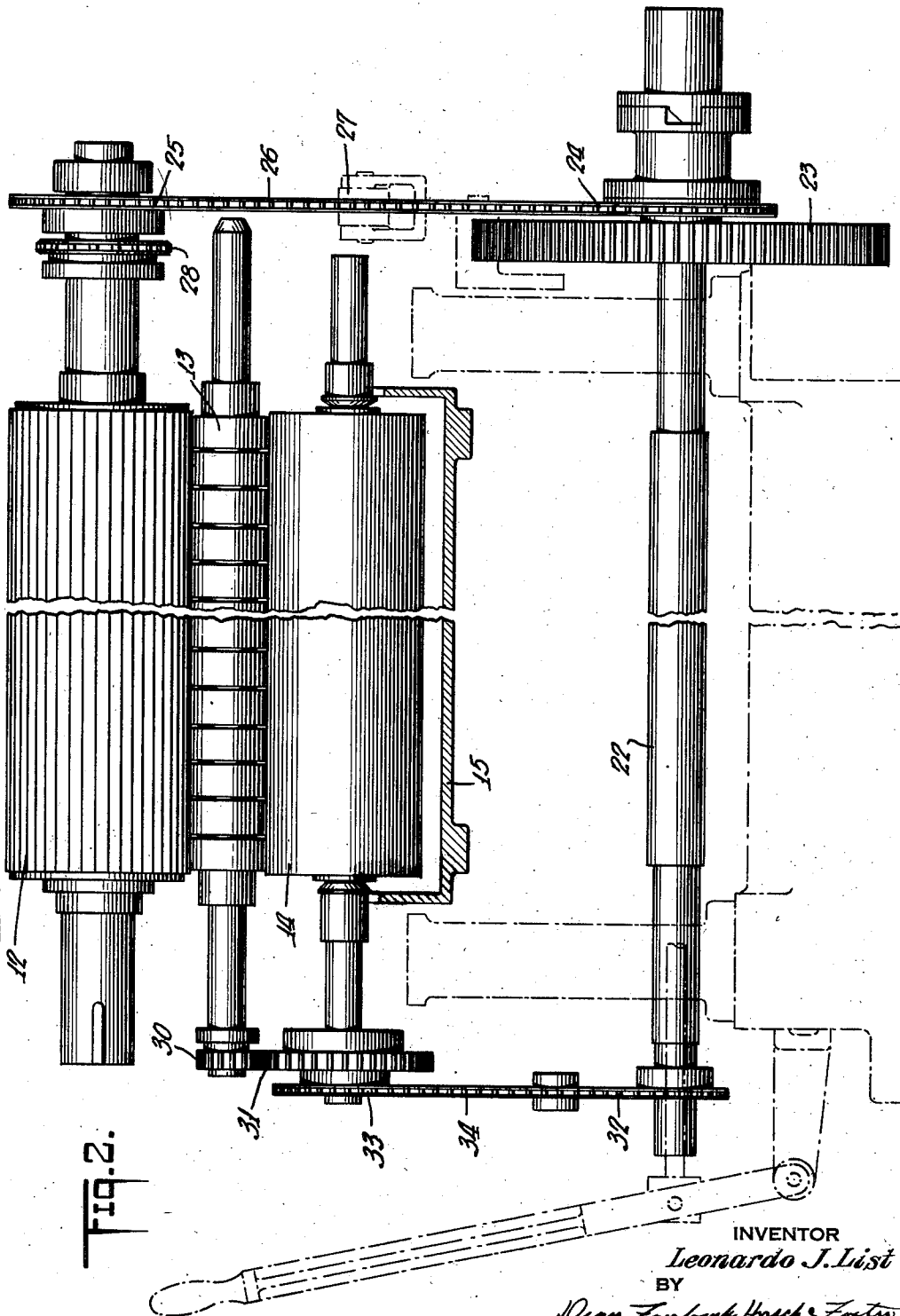
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INVENTOR

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UNITED STATES PATENT OFFICE

1,960,677

CORRUGATOR

Leonardo J. List, Merion, Pa., assignor to Samuel
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of New Jersey

Application December 14, 1932, Serial No. 647,166

1 Claim. (Cl. 154—30)

In corrugators of the type disclosed in the Sieg Patent 1,835,816 and the Langston Patents 1,186,997, 1,186,998 and 1,642,782, it is customary to provide an adhesive applying mechanism including a pick-up roller within an adhesive containing chamber, and a transfer roller for taking adhesive from the surface of said pick-up roller, and applying it to the crowns of the corrugations of the corrugated sheet prior to the application of the surface sheet to said crowns.

groove or space between the pick-up roller and the transfer roller.

In the accompanying drawings, there is shown for the purpose of illustration, one embodiment of the present invention.

In these drawings:

Fig. 1 is a side elevation of the machine embodying the present invention, certain of the parts being shown diagrammatically, and

Fig. 2 is a front elevation, partly in section, of the machine with one of the corrugating rollers removed.

The present invention is illustrated as adapted to a machine designed for the manufacture of single faced corrugated paper which may constitute the final product, or which may be delivered to another portion of the machine or to another machine to have an additional facing strip adhesively secured thereto. The machine is of the general type shown in the patents above referred to, in which a sheet 10 to be corrugated is caused to pass between a pair of intermeshing corrugating rollers 11 and 12 having the external surfaces thereof provided with longitudinally extending grooves or ridges.

After the sheet 10 has been corrugated between the two rollers 11 and 12, adhesive is applied to the crowns of the corrugations of the sheet by means of a transfer roller 13 which is disposed closely adjacent to but spaced from a pick-up roller 14, the lower portion of which is immersed in a pan 15 containing silicate of soda or other suitable adhesive.

A liner or surface sheet 16 passes over an idler 17, and is pressed against the adhesive coated crowns of the corrugated sheet by means of a smooth surfaced pressure roller 18. The resultant single faced corrugated paper passes out from between the rollers 12 and 18 and to a suitable winding mechanism or to other mechanisms for subsequent operations.

The rollers 11, 12 and 18 are driven by any suitable means so that the peripheral speeds of these rollers are substantially the same. As shown, said means includes a drive shaft 22 journaled in the frame structure of the machine, and having a drive gear 23 secured thereto to which power is transmitted. One of the corrugating rollers, for instance the roller 12, is driven from the drive shaft 22 by means of a sprocket wheel 24 on the shaft 22, a sprocket wheel 25 on the shaft of the roller 12, and a drive chain 26 passing over the two sprocket wheels and held tight by an idler 27. The corrugating roller 11 may be driven from the shaft of the corrugating roller 12 by any

Various attempts have been made to retard this excess flow at higher speed and to guard the paper against the splashing of adhesive thereagainst by scraping excess adhesive from the pick-up roller, and otherwise overcoming the trouble referred to, but to the best of my knowledge, all such attempts have heretofore been unsuccessful or unsatisfactory.

In machines of this type it is essential that the transfer roller rotate at approximately the same surface speed as the corrugating roller and the paper, in order that the adhesive may be properly applied to the crowns of the corrugations.

I have discovered that the trouble above referred to may be entirely overcome by rotating the pick-up roller at a substantially lower peripheral speed than that of the transfer roller and the paper. By means of this lower speed of the pick-up roller, a lesser amount of adhesive is raised to the transfer roller, a longer time is permitted for the return draining of adhesive, and no objectionable excess accumulates in the

suitable means, as for instance a chain drive 28, which drives the roller 11 at the same peripheral speed as the roller 12.

The roller 18 is driven from the drive shaft 22 by any suitable means at the same peripheral speed as the corrugating rollers 11 and 12.

The construction so far described is old, and has not been set forth with any detailed particularity inasmuch as it is understood that it may be similar to the construction shown in one or more of the aforesaid patents.

As an important feature of the present invention, the transfer roller 13 and the pick-up roller 14 are driven from the drive shaft in such a manner that the transfer roller 13 has substantially the same peripheral speed as the roller 12 and the pick-up roller has a substantially lower peripheral speed than the transfer roller 13. By means of this arrangement, a lesser amount of adhesive is raised to the transfer roller 13 and no objectionable excess of adhesive accumulates in the groove or space between the pick-up roller 14 and the transfer roller 13.

For carrying out this feature of the invention, the shaft of the transfer roller 13 has a gear 30 which meshes with a gear 31 mounted on the shaft of the pick-up roller 14. In order to rotate the pick-up roller 14 at a lower peripheral speed than the transfer roller 13, the gear 31 has a pitch diameter which is larger than the diameter of the pick-up roller, while the gear 30 has a pitch diameter smaller than the diameter of the transfer roller 13.

Means are provided for driving the shaft of the roller 13 or 14 from the drive shaft 22 at such a speed that the peripheral speed of the transfer

roller 13 is substantially equal to that of the roller 12. As shown, the drive shaft 22 carries a sprocket 32, and the shaft of the pick-up roller 14 has a sprocket 33, a drive chain 34 passing over said sprockets. The sprockets 32 and 33 are so proportioned as to drive the transfer roller 13 at substantially the same peripheral speed as that of the roller 12.

Any existing machines of the type set forth can be changed so that the peripheral speed of the pick-up roller 14 is materially less than the peripheral speed of the transfer roller 13 without any substantial modification in the construction of the machine.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

A machine for making corrugated paper, including a corrugating roller, an adhesive transfer roller adjacent thereto for applying adhesive to the crowns of a corrugated sheet formed by said corrugating roller; an adhesive receptacle, a pick-up roller extending into said receptacle and adjacent to but spaced from said transfer roller for supplying adhesive in a thin layer to the surface of said transfer roller, the thickness of said layer being substantially equal to said spacing, means for driving said transfer roller at a peripheral speed substantially equal to the speed of said corrugated sheet, and means for driving said pick-up roller at a peripheral speed substantially below that of said corrugated sheet to permit increased time interval for drainage of excess adhesive from the surface of said pick-up roller into said receptacle.

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