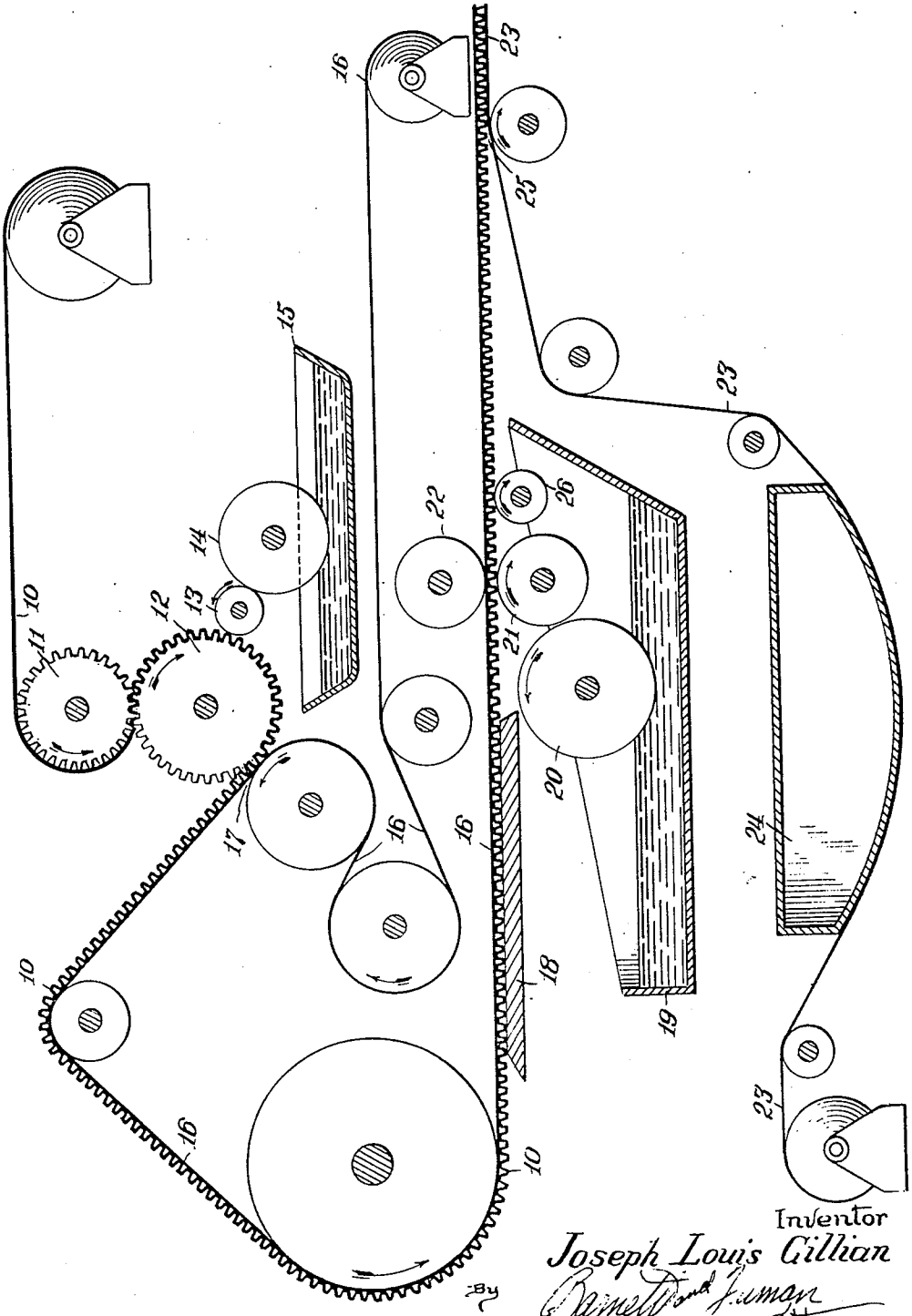
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MANUFACTURE OF CORRUGATED BOARD

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MANUFACTURE OF CORRUGATED BOARD

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4 Claims. (Cl. 154—32)

This invention relates to the manufacture of lined corrugated paper board and the object of the invention is to provide an improvement on the known apparatus for making corrugated paper board whereby the quality of the product is improved, the speed of production is increased, the amount of waste is reduced, and less adhesive material is employed.

In the manufacture of lined corrugated paper board it is important that the amount of paste employed for securing the liner to the corrugated board be neither too great nor too small. If the amount be too great the paste consumption is unnecessarily increased; the time required for the bond to set is increased; and the moisture content of the product is increased thereby tending to reduce the desired stiffness of the product. If the amount be too small the bond, of course, is not obtained and factory wastage increases.

It has heretofore been customary to apply paste to the ridges of the corrugated sheet by means of a doctor roll or transfer roll to which the paste is fed from the surface of an adjacent, power driven roll, the lower portion of which latter roll extends below the surface of a body of paste maintained in a paste pan. This expedient, while widely used with relative success, does not apply the adhesive with the desired degree of uniformity. That is to say, some of the ridges are overloaded with paste while others have an insufficient amount. This undesirable condition is especially noted when a relatively thick paste is employed as the adhesive. If a ridge, or any portion thereof, receives an insufficient amount of adhesive an unsatisfactory bond will result. On the other hand, if a ridge, or any portion thereof, is overloaded with paste the excess paste will be forced into the adjacent grooves of the corrugated sheet, resulting not only in paste wastage but also increased moisture content and weight of the finished board (which is undesirable) and increased bonding time, which slows up the process.

The present invention comprises in brief, the provision of means for distributing the adhesive uniformly over the ridges of the corrugated sheet after the adhesive has been applied by the doctor roll or transfer roll which distributing means, in the preferred embodiment of the invention, consists of a paste spreading roll over which the pasted ridges of the corrugated sheet pass after the paste has been applied thereto. This spreading roll, which may be power driven but preferably is an idle roll which rotates responsive to the frictional engagement of the corrugated board therewith, serves not only to distribute the previously applied paste in a thin, uniform film over the ridges but also removes any excess paste without permitting the paste to contact the adjacent grooves of the corrugated sheet.

An idle roll is preferred (that is, a roll which is driven solely by the corrugated sheet frictionally engaging the periphery thereof) for the reason that the peripheral speed of an idle roll so actuated must necessarily be no greater than the speed of movement of the corrugated sheet itself. Such roll will, therefore, respond immediately to any reduction, increase, or interruption in the movement of the corrugated sheet and, therefore, the excess paste will be removed without being forced into the grooves of the sheet. As above noted, the presence of excess paste in the grooves would not only waste paste but would also undesirably increase the moisture content of the finished product and decrease the speed of production. If a power driven roll is used care should be taken to have the peripheral speed of the roll the same as the speed of the corrugated sheet to avoid the undesired consequences above noted.

The invention is illustrated more or less diagrammatically in the accompanying drawing wherein the present invention is illustrated as applied to the double back paster of the conventional corrugated machine. Referring to the drawing, the straw-board or other suitable material, designated by reference character 10, passes through the conventional corrugating rolls 11, 12; paste is applied to the ridges by means of pasting rolls 13, 14, the latter of which draws paste from paste pan 15; the single back liner 16 is applied thereto at 17; and the material passes over suitable guide rolls and heating rolls to the double back unit for application of a liner to the opposite side of the corrugated sheet.

The double back unit comprises the conventional guide table 18, paste pan 19, paste roll 20, transfer roll 21, and pressure roll 22. The paste is applied to the corrugated sheet by transfer roll 21. The double back liner sheet 23, which is preferably pre-heated in steam chest 24, is supplied to the pasted ridges of the corrugated sheet at point 25.

The paste distributing means which, in combination with the known mechanism above described constitutes the present invention, is illustrated by reference character 26, and, as above stated, preferably consists of an idle roll mounted to be engaged by the ridges of the corrugated

sheet and to rotate responsive to such engagement in the direction indicated by the arrow. Preferably the paste spreading roll 26 is not less than approximately two inches in diameter and is mounted so that its point of contact with the corrugated sheet is between four and one-half and five inches from the point of application of the paste thereto by the transfer roll 21. Generally speaking the precise location of the spreading roll will be governed by the type of adhesive employed and the speed of the machine and it will be understood, therefore, that the above figures are merely suggestive and not by way of limitation. Also it is preferred to mount the spreading roll 26 so that any excess paste removed thereby will fall back into the paste pan 19.

The spreading roll 26 serves not only to distribute the paste uniformly over the ridges of the flutings (which results in a better bond) but also reduces the paste consumption, increases the speed of the machine (because a quicker bond is obtained) and improves the quality of the product for the reason that the removal of excess paste reduces its weight and moisture content.

As illustrative of the advantages obtained by the present invention it is noted that with the provision of a spreading roll of the type above described the amount of adhesive employed (a modified corn starch paste) was reduced from three to two and one-half pounds per thousand square feet; the board was stiffer; the speed of the machine was increased about fifteen feet per minute; and the wastage was decreased by nearly 10%.

It is the intention to cover all modifications within the scope of the following claims.

I claim:

1. In an apparatus for continuously pasting a liner to a corrugated sheet comprising a paste applicator, means for continuously passing an unlined side of a corrugated sheet across the paste applicator for application of paste to the ridges of the sheet, and means for continuously applying a liner to the pasted ridges, the improvement which consists of a paste spreading roll mounted for free rotation around its longitudinal axis between the paste applicator and the liner applying means and positioned to be engaged and rotated by the pasted ridges of the corrugated sheet, whereby paste is evenly and uniformly distributed over the surface of said ridges and excess paste is removed from the sheet.

2. In an apparatus for continuously pasting a liner to a corrugated sheet comprising a paste applicator, means for continuously passing an unlined side of a corrugated sheet across the paste applicator for application of paste to the ridges of the sheet, and means for continuously applying a liner to the pasted ridges, the improvement which consists of a paste spreading roll mounted for rotation around its longitudinal axis between the paste applicator and the liner applying means and so positioned that the periphery thereof will engage the pasted ridges of the corrugated sheet, will evenly and uniformly distribute the desired amount of paste over the surface of said ridges and will remove excess paste from the sheet, the peripheral speed of the paste spreading roll being the same as the linear speed of the corrugated sheet.

3. In an apparatus for continuously pasting a liner to the ridges of a corrugated sheet comprising means for continuously applying paste from a source of supply to the ridges of a corrugated sheet and means for continuously applying a liner to said pasted ridges, the improvement which consists in the provision of means having a surface engaging, and moving at the same linear speed as the pasted ridges of the corrugated sheet for distributing the paste over the surface of said ridges and removing any excess paste from the sheet.

4. In an apparatus for continuously pasting a liner to the ridges of a corrugated sheet comprising means for continuously applying paste from a source of supply to the ridges of a corrugated sheet and means for continuously applying a liner to said pasted ridges, the improvement which consists in the provision of means having a surface engaging, and moving at the same linear speed as the pasted ridges of the corrugated sheet for distributing the paste over the surface of said ridges, removing any excess from the sheet and returning such excess to the source of paste supply.

JOSEPH LOUIS GILLIAN.

CERTIFICATE OF CORRECTION.

Patent No. 2,301,695. November 10, 1942.

JOSEPH LOUIS GILLIAN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, first column, line 20, for "flutings" read --sheet--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 29th day of December, A. D. 1942.

Henry Van Arsdale,
Acting Commissioner of Patents.

(Seal)