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CORRUGATING MACHINE CONSTRUCTION

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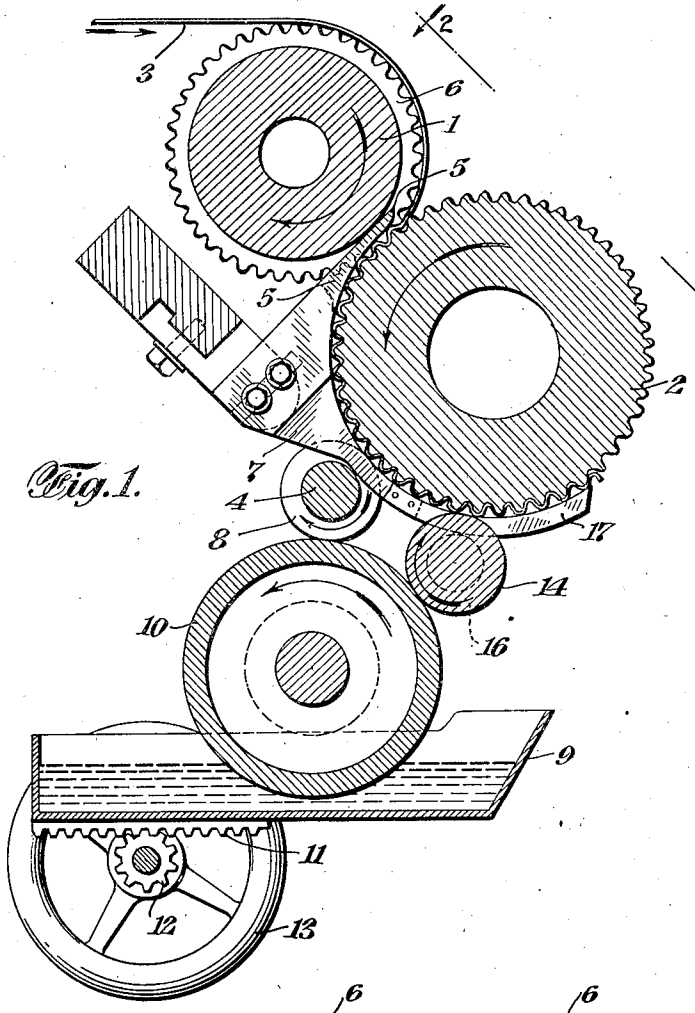


Fig. 1.

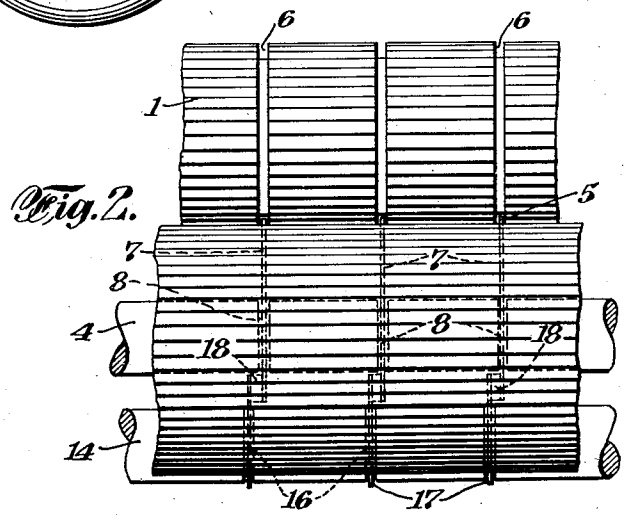


Fig. 2.

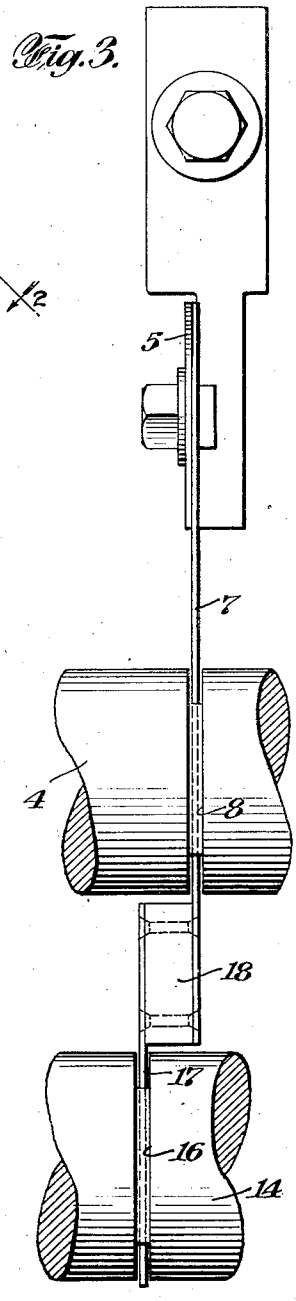


Fig. 3.

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CORRUGATING MACHINE CONSTRUCTION

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4 Claims. (Cl. 154—30)

The invention relates to corrugating machines of the type used in the production of corrugated paper, wherein the so-called liner sheet to be corrugated is fed in between a pair of meshing corrugating rolls; and while passing around with one of said rolls after the corrugating step the liner is fed past an adhesive-applying roll which contacts with and applies sodium silicate or other suitable adhesive to the peaks of the corrugations, after which a facing sheet is brought into contact with the above mentioned peaks of the corrugations. In the operation of machines of the above type it is desirable to provide stripper members operating in grooves in the rolls to separate the corrugated paper from one of the corrugating rolls and guide it to travel partially around with the other corrugating roll past the point where the adhesive-applying roll applies adhesive to the peaks of the corrugations, as well as to guide the corrugated web to travel further along with the second mentioned corrugating roll after the adhesive-applying operation has been completed.

The grooved portions of the adhesive-applying roll produce alined spots on the peaks of successive corrugations to which adhesive is not properly applied, thus weakening the product, and to avoid this objection it has been proposed (see patent to G. W. Swift, Jr., No. 2,043,635 dated June 9, 1936) to employ shoe-like members acting upon the web after it has passed the adhesive-applying roll to transfer or displace some of the previously applied adhesive from adjacent parts of the corrugated web to the above mentioned bare spots.

The present invention aims to provide more complete and uniform application of the adhesive to the peaks of the corrugations while guiding the web adequately in its travel through the corresponding part of the machine as above mentioned, and is particularly advantageous when using adhesives of the starch base type, although also usable with other adhesives. Further objects and advantages of the invention will be in part obvious and in part specifically referred to in the description hereinafter contained which, taken in conjunction with the accompanying drawings, discloses a preferred apparatus adapted to operate in accordance with the invention; such disclosure however should be considered merely as illustrative of the invention in its broader aspects. In the drawing—

Fig. 1 is a longitudinal sectional view of a corrugating machine constructed to operate in accordance with the invention, but showing only the main parts of the machine with which the invention is more closely concerned.

Fig. 2 is in the nature of a plan view but taken from the position indicated by the dotted lines 2—2 of Fig. 1, looking in the direction of the arrows.

Fig. 3 is a side elevation showing detached a guide member construction adapted to be used in the combination of parts shown in Figs. 1 and 2.

In accordance with the present invention we employ in connection with a grooved adhesive-applying roll of the character above referred to, a second adhesive-applying member or roll positioned to act upon the corrugated web after the latter has passed the first adhesive-applying roll, this second adhesive-applying member not being dependent in its action upon adhesive which has already been applied to the peaks of the corrugations by the first roll and not requiring any displacement of already applied adhesive to cover the bare spots, but acting to apply adhesive additional to that applied by the first roll and to deposit the additional adhesive thus applied upon the bare spots of the web, and also upon other areas thereof if desired.

The invention is disclosed as applied to a corrugating machine of known type as to many of its features of construction and mode of operation and since this, as well as other corrugating machine constructions suitable for the purpose, are well known in the art, only the particular parts of the machine will be referred to with which the present invention is more directly concerned. We have shown in the drawing a pair of meshing corrugating rolls 1 and 2 which will be understood as heated in suitable manner and supported and driven as is known in the art. The liner sheet 3 after passing partially around the first corrugating roll 1, passes in between rolls 1 and 2 where the corrugating step is performed, and the corrugated web then passes around with the roll 2 past an adhesive-applying roll 4 supported and driven in suitable manner (not illustrated) and which applies a suitable adhesive—for example a starch base glue or silicate of soda solution—to the peaks of the corrugations of web 3 as the latter is carried by roll 2 past adhesive-applying roll 4.

To separate the corrugated web 3 from roll 1 and cause it to be carried around with roll 2, until and after the adhesive has been applied, as above mentioned, stripper members 5 may be employed which project into circumferential grooves 6 in roll 1, and also guide members 7

which penetrate into grooves 8 in the adhesive-applying roll 4 and having arcuately shaped guiding surfaces adjacent the periphery of roll 2, to keep the corrugated web 3 in close engagement with the corrugations of roll 2 until a facing sheet is applied to the sticky peaks of the web in a manner well known in the art and which accordingly need not be specifically shown or described herein. For similar reasons the detailed construction of the parts used for supporting the rolls employed and the stripper members and guide members need not be described in detail.

Adhesive may be supplied to the adhesive-applying roll 4 from a suitable adhesive supplying member or pot 9 in which a transfer roll 10 rotates so as to carry adhesive progressively to roll 4 as the latter rotates. As shown the adhesive pot 9 and associated parts (including the roll 4 and an additional adhesive-applying member later to be described) are retractible from operative position by means of a rack 11 engaged by pinion 12 which may be operated by hand wheel 13 to advance the adhesive-applying mechanism into operative position or withdraw it therefrom. In carrying out the invention by the illustrated form of apparatus we employ a second adhesive-applying member 14 shown in the form of a roller which also picks up adhesive from transfer roll 10, and which is positioned to act upon the peaks of corrugated web 3 after the latter has passed the above mentioned adhesive-applying roll 4. Adhesive-applying portions of the roller 14 are located in line with the grooves 8 of roll 4, and thus as the corrugated web travels past the adhesive-applying apparatus, spots on the peaks of the corrugations which are left bare by roll 4 on account of the grooves 8 therein, will have additional adhesive deposited by the above mentioned portions of roller 14 which are in line with grooves 8 and receive their own additional supply of adhesive from pot 9.

In the illustrated form of apparatus the roller 14 is also provided with circumferential grooves 16 located in staggered relation or somewhat out of line with grooves 8, and additional guide members 17 penetrate into these grooves 16, such guide members acting in a manner similar to guide member 7 above described, to hold the corrugated web closely in the corrugations of roll 2 in the region of the adhesive-applying roller 14. As shown in Fig. 3 the guide members 7 and 17 may be connected together in offset relation by the aid of blocks 18.

In the operation of apparatus as above described the spots on the peaks of the corrugations which are left bare by the roll 4, are coated with additional adhesive independently supplied by roller 14, without requiring that any adhesive as deposited by roll 4 be removed from other portions of the web for this purpose, and the apparatus operates reliably to insure complete and uniform distribution of the adhesive over the peaks of the web when an adhesive having the physical qualities of starch base glue is used. A construction of the above described character enables thicker guide members and wider grooves in the adhesive-applying rolls to be used without producing spots on the peaks of the corrugated web which are bare of adhesive, so that the guide members are stronger and longer lived, and hold their shape better and more effectively hold the corrugated web in proper position. The distribution of the adhesive between the rolls 4 and 14 will depend upon the adjustment of the space between their peripheries and the transfer roll 10. According to the spacing of rolls 4 and 14 from roll 10 it may result that the adhesive is quite equally distributed between them, or roll 14 may pick up most of the adhesive so that roll 4 receives adhesive only at points in line with the grooves of roll 14. The rolls 4 and 14 may be full rolls except for the provisions of grooves therein wide enough to receive the guide members as shown, or either or both rolls may have much wider peripheral grooves or gaps therein, so long as the adhesive-applying portions of one roll are positioned to supply adhesive to points in line with the gaps or grooves of the other roll.

While a specific embodiment of the invention has been described it should be understood that changes may be made therein without departing from the invention in its broader aspects within the scope of the appended claims.

We claim:

1. A corrugating machine construction having an adhesive applying roll positioned to apply adhesive to the peaks of a corrugated web passing through the machine, said adhesive applying roll having circumferential grooves therein, guide members penetrating into said grooves to engage the web adjacent said adhesive applying roll, an adhesive supplying member, and a second adhesive applying roll positioned to act on the corrugated web after it has passed said first mentioned adhesive-applying roll, said second mentioned adhesive applying roll being constructed and arranged to apply adhesive additional to that applied by the first mentioned roll and having adhesive applying portions which are in line with the above mentioned circumferential grooves of the first mentioned adhesive-applying roll.

2. A corrugating machine construction including an adhesive supplying member, an adhesive applying roll positioned to apply adhesive to the peaks of a corrugated web passing through the machine, said adhesive applying roll having circumferential grooves therein, guide members penetrating into said grooves to engage the web adjacent said adhesive applying roll, said adhesive applying roll being also positioned to receive adhesive from said supply member, and a second adhesive applying member constructed and arranged to apply adhesive additional to that applied by said roll, said second adhesive applying member being positioned to act upon the web after it has passed the above mentioned adhesive applying roll, said adhesive applying member having adhesive applying portions which are in line with the above mentioned circumferential grooves of the adhesive applying roll.

3. A corrugating machine having an adhesive-applying roll positioned to apply adhesive to the peaks of a corrugated web passing through the machine, said adhesive-applying roll having circumferential grooves therein, guide members penetrating into said grooves to engage the web adjacent said adhesive-applying roll, a second adhesive applying roll positioned to act on the corrugated web after it has passed the first mentioned adhesive-applying roll, said second mentioned adhesive-applying roll also having circumferential grooves therein which are located out of line with the circumferential grooves of the first mentioned adhesive-applying roll, and guide members penetrating into said grooves of

the second mentioned adhesive-applying roll to engage the adjacent portions of the web.

4. A corrugating machine having an adhesive-applying roll positioned to apply adhesive to the peaks of a corrugated web passing through the machine, said adhesive-applying roll having circumferential grooves therein, guide members penetrating into said grooves to engage the web adjacent said adhesive-applying roll, a second adhesive-applying roll positioned to act on the corrugated web after it has passed the first mentioned adhesive-applying roll, said second mentioned adhesive-applying roll also having circumferential grooves therein which are located out of line with the circumferential grooves of the first mentioned adhesive-applying roll, and guide members penetrating into said grooves of the second mentioned adhesive-applying roll to engage the adjacent portion of the web, the second mentioned guide members being positioned in offset relation to the first mentioned guide members.

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