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E. G. DALEY

2,176,607

GLUE SPREADER

Filed May 9, 1938

Fig. 1.

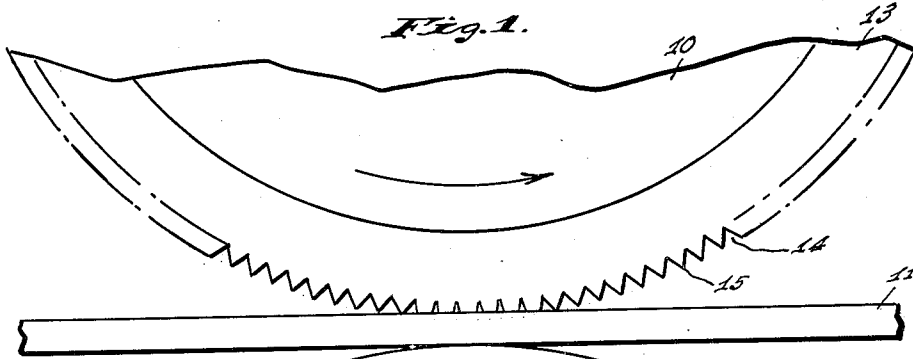


Fig. 2.

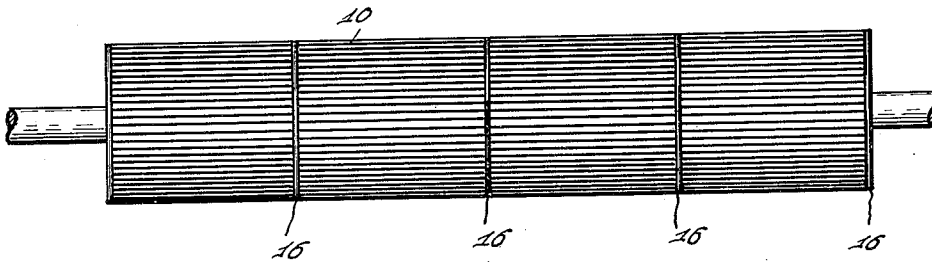


Fig. 3.

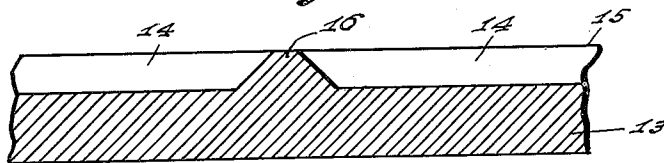
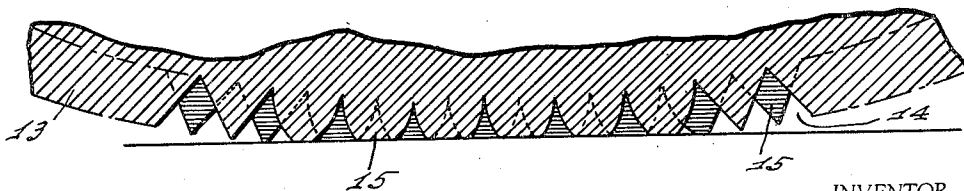


Fig. 4.



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GLUE SPREADER

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Application May 9, 1938, Serial No. 206,734

5 Claims. (Cl. 91—67.8)

This invention relates to glue-spreading machines of the type in which glue is carried to the work on the surface of an applicator member, usually a roll which rotates in contact with a supply of glue. The invention has for its object the provision of a glue-applying member which will apply the glue to wood under considerable hydrostatic pressure so as to force the glue into the pores of the wood and secure a better and stronger joint between two pieces of wood whose surfaces have been so treated.

In applying my invention to an applicator member in the form of a roll, I form the glue-applying roll, or at least the outer portion thereof, of some resilient material such, for example, as soft rubber. In the cylindrical surface of such resilient material I provide a multiplicity of recesses or pockets adapted to convey glue to the work, and I force such roll against the work with a force sufficient to compress the resilient material at the surface of the roll and thereby to reduce the effective volume of the recesses. Desirably, the recesses in the surface of the glue-applying roll are in the form of longitudinally extending grooves triangular in cross-section and closely spaced so that the ribs of resilient material between adjacent grooves will also be generally triangular in section.

The accompanying drawing illustrates my invention: Fig. 1 is a fragmental elevation of a portion of a glue-spreading machine illustrating one of my improved glue-applying rolls in contact with a board; Fig. 2 is a side elevation of a roll embodying my invention; Fig. 3 is a fragmental longitudinal section of the roll illustrated in Fig. 2; and Fig. 4 is a fragmental transverse section of a modified form of roll.

In this application, I have not attempted to illustrate details of the complete glue-spreading machine, for the construction of such machines is well known. See, for example, the machine illustrated in my co-pending application Serial No. 206,735, filed May 9, 1938. In such a machine, a glue-applying roll 10 rotates in contact with a supply of glue to become coated therewith, and a scraper bar or doctor roll (not shown) is associated with the glue-applying roll to regulate the thickness of the glue-film retained by the applicator roll and carried on its surface to its point of contact with the work. As indicated in Fig. 1, the work is in the form of a board 11 supported from beneath on a second roll 12 which may or may not be used for the purpose of applying glue to the lower surface of the board.

The glue-applying roll is formed of, or at least

has an annular covering 13, of resilient material such as soft or cushioned rubber; and in the outer surface of this resilient material the roll is provided with a multiplicity of recesses or pockets, here shown in the form of grooves 14 approximately triangular in cross-section. These grooves are preferably closely spaced so as to leave between them ribs or ridges 15 which are also approximately triangular in cross-section.

In the use of a roll such as has been described, the grooves 14 become filled with liquid glue as the roll rotates in contact with the glue supply, and such glue is carried in the grooves to the point of contact with the board or other object to which it is to be applied. The glue-applying roll is forced against the board 11 with sufficient force to compress the ribs or ridges 15, as is clearly indicated in Fig. 1. This radial compression of the ribs 15 results in an increase in their circumferential thickness which, in turn, causes a reduction in the cross-sectional area of the grooves 14 over that portion of the surface of the roll which is in contact with the board 11. The reduction in the cross-sectional area of the grooves 14 places the glue therein under a considerable pressure causing it forcibly to enter the pores of the board.

The hydrostatic pressure generated as the grooves 14 are reduced in volume tends not only to force the glue into the pores of the board, but also tends to cause it to flow longitudinally of the grooves. With thick, viscous glues, the resistance to longitudinal flow may be so great that only a small proportion of the glue will be displaced longitudinally of the roll. With less viscous glues, however, it may be necessary to control longitudinal flow. One means for accomplishing this end is illustrated in Figs. 2 and 3 where the continuity of the grooves 14 is interrupted at intervals along the roll by annular ungrooved portions 16. The face of each of such ungrooved portions, engaging the face of the board 11, effects a seal preventing glue within the grooves 14 from escaping longitudinally of the roll.

Another method of preventing longitudinal glue-flow in the grooves 14 is illustrated in Fig. 4 where, instead of providing an ungrooved portion 16 between axially spaced groups of grooves, the grooves in adjacent groups are staggered so that each groove 14 of one group is closed at its ends by a rib 15 on an adjacent group.

My invention is susceptible to considerable modification over and above that specifically indicated. The proportions and shape of the

grooves may vary considerably; but I prefer to use the approximate proportions indicated in the drawing where each of the ribs 15 has approximately the same cross-sectional area as each of the grooves 14.

5 I claim as my invention:

10 1. In a glue-spreading machine, an applicator roll having a glue-applying face of resilient material provided with longitudinal grooves of restricted cross-sectional area, a work-support, and means for forcing said roll against work on said work-support with sufficient force to compress the resilient material between said grooves and thereby reduce the cross-sectional area of the grooves.

15 2. The invention set forth in claim 1 with the addition that said grooves are arranged in axially spaced groups, the grooves of each group being discontinuous with the grooves of any adjacent group.

3. The invention set forth in claim 1 with the addition that said grooves are arranged in axially spaced groups, the grooves of each group being staggered relatively to the grooves of the adjacent group or groups.

5 4. The invention set forth in claim 1 with the addition that said grooves are arranged in axially spaced groups, each group of grooves being separated from an adjacent group by an ungrooved portion of the roll-face.

10 5. In a glue-spreading machine, an applicator roll having a glue-applying face of resilient material provided with a multiplicity of recesses, a work-support, and means for forcing said roll against work on said work-support with sufficient force to compress the resilient material between said recesses and thereby reduce the volume of the recesses.

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