Sept. 26, 1944. V. J. WINKEL 2,359,015

GLUE SPREADING DEVICE

Filed March 8, 1943 2 Sheets-Sheet 1

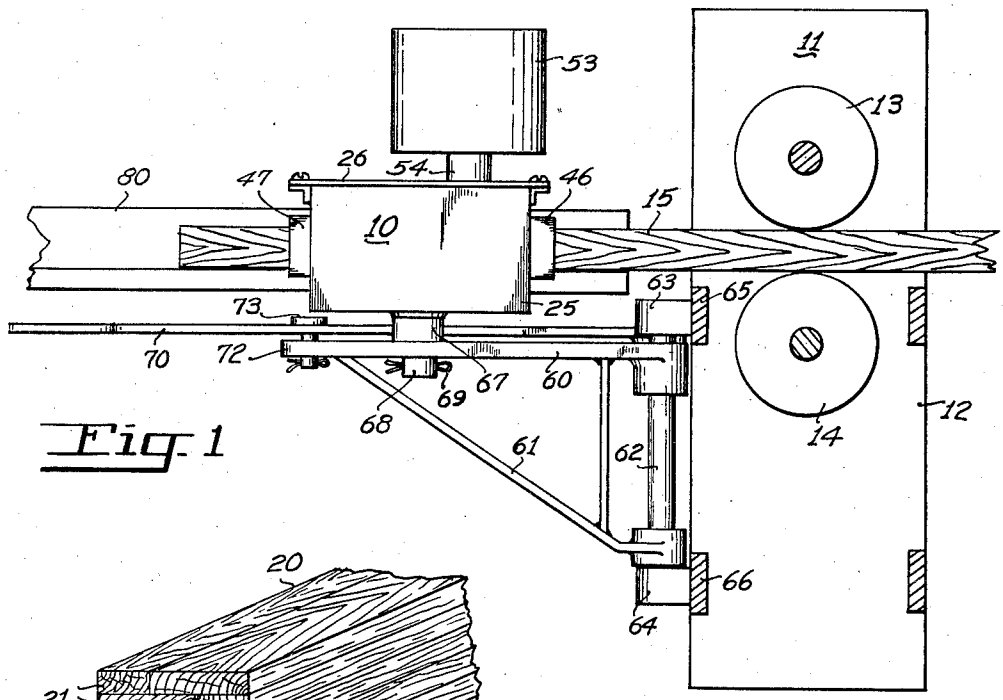


Fig. 1

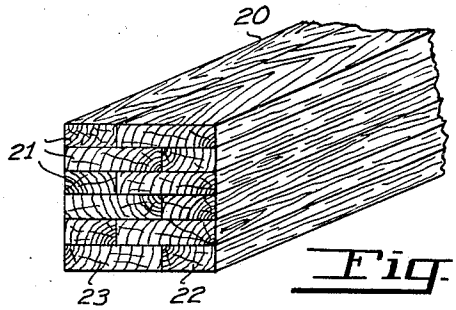


Fig. 3

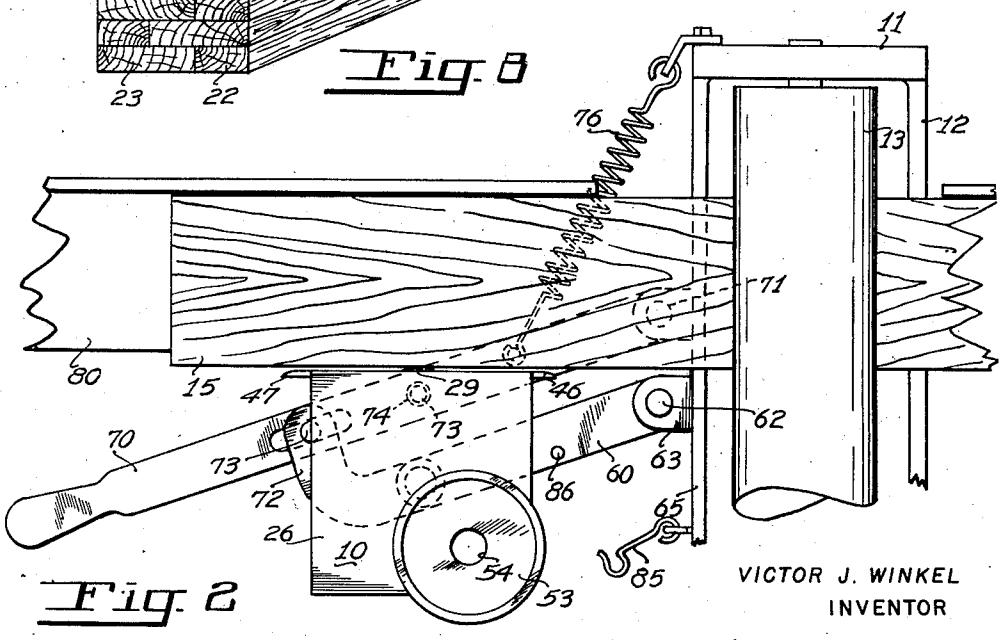


Fig. 2

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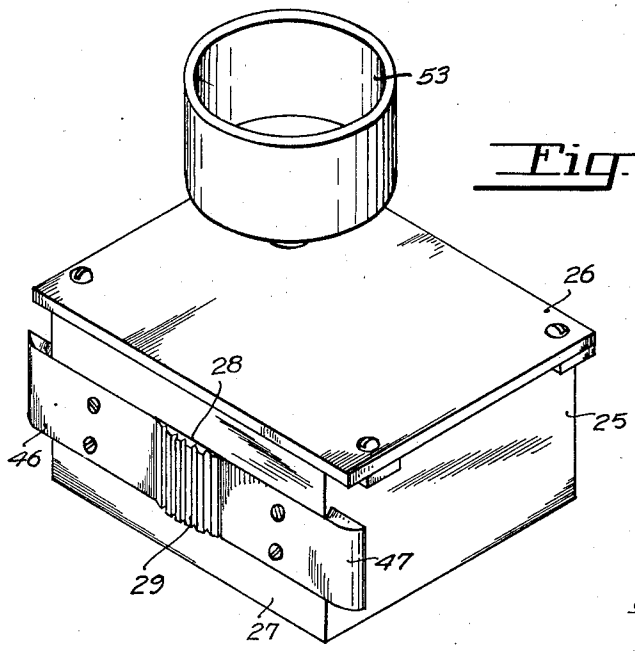


Fig. 3

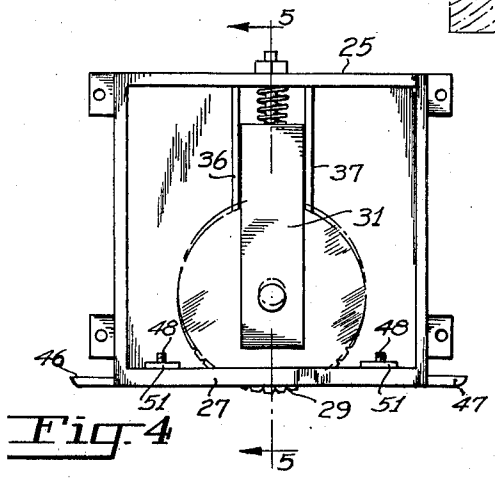


Fig. 4

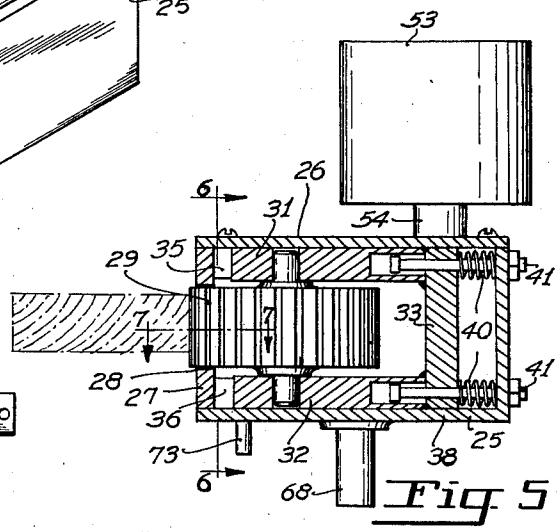


Fig. 5

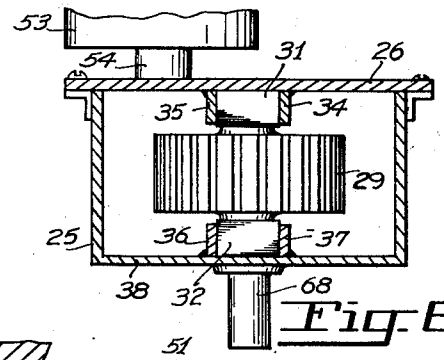


Fig. 6

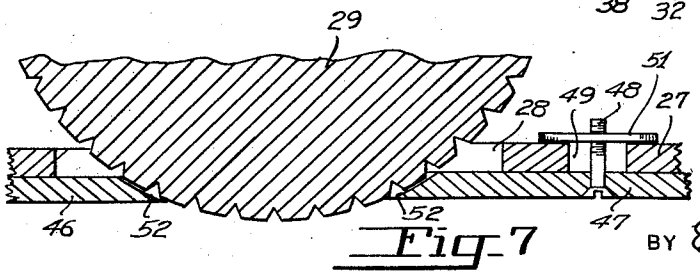


Fig. 7

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GLUE SPREADING DEVICE

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Application March 8, 1943, Serial No. 478,448

5 Claims. (Cl. 144—280)

The present invention relates to glue spreading devices and, while it is not necessarily limited thereto, it is particularly applicable to such devices as are suitable for spreading glue upon the vertical edge surfaces of a board.

In the manufacture of glued laminated members it is desirable to apply the glue to the surfaces of the individual pieces by machine rather than by hand. Glue spreading machines have been devised for applying glue upon upper and lower horizontally extending surfaces of boards, which machines usually comprise spreader rolls rotatable about horizontal axes with glue supplied to the rolls from a reservoir or trough into which a lower portion of the spreader rolls or intermediate transfer rolls extend. Such machines can be used only for applying glue to the horizontally extending surfaces of the wood pieces. In the event it is desired to spread the glue over the edge surfaces of the wood pieces, they must be passed through the spreader a second time, turned at right angles to the previous passage so that the edge surfaces extend in horizontal planes. This can readily be done in the case of wood pieces whose thickness and width dimensions are substantially the same, however, such procedure requires an additional handling step. In the case of relatively wide wood pieces, and particularly in instances where the wood pieces to be coated are of varying widths, much time is consumed in readjusting the spreader rolls for each of the successive passes of different pieces. While this is possible with certain types of machines, the average glue spreader in common use, being adapted primarily for spreading glue over the upper and lower horizontal flat surfaces of boards, have such a limited range of adjustment that the wood pieces cannot be passed edgewise therethrough. With such machines it is necessary to manually apply glue as with a brush to the side edges of the boards. Such procedure consumes much time and, hence, adds much to the unit cost of the finished product.

It is an object of the present invention to provide a new and improved glue spreading device which is particularly suitable for applying glue to edge surfaces of boards fed flatwise therepast.

A further object of the invention is to provide a glue spreading device which may be used in conjunction with a conventional glue spreading machine which applies glue to the horizontal flat surfaces of a board, the device of the invention serving to apply glue to the edge surfaces of the board.

A still further object of the invention is to provide a glue spreading device which may be removably attached to a conventional glue spreading machine for applying glue to edge portions of wood pieces fed through said machine, the device being automatically adjustable so as to compensate for boards of widely varying widths.

A still further object of the invention is to provide a new and improved device for applying glue to the edge surfaces of a board, which device is efficient in operation and of low manufacturing cost.

In accordance with an illustrated embodiment, the glue spreading device comprises a boxlike housing having a rectangular opening in the front wall. A glue spreader roll is mounted within the housing with its axis extending vertically or parallel with the front wall, the roll being journaled within a supporting yoke member slidably arranged within the housing for movement at right angles with respect to the front wall. The roll is biased toward the front wall by resilient spring means arranged within the housing and bearing against the yoke member. An arcuate peripheral portion of the spreader roll normally projects through the rectangular opening which is so dimensioned with respect to the roll so that when the roll is projected therethrough by the spring means, the opening is substantially sealed to preclude leakage of glue from the inside of the housing which is normally maintained filled with glue from a suitable source of supply connected thereto. The housing is pivotally supported upon a bracket arm which, in turn, is pivotally secured, such as upon the framework of a conventional horizontal roll glue spreading machine. By spring means connected to the bracket the housing is urged against the edge surface of a board being fed flatwise through the glue spreader. The spreader roll engaging with the edge surface of the board is urged slightly inwardly so as to permit transfer of glue by the rotating roll from the interior of the housing and the application thereof to the edge surface of the board traveling in contact with the roll. Immediately upon the passage of the board through the machine the spreader roll is urged outwardly with respect to the housing sealing the opening in the front wall thereof against leakage of glue therefrom.

For a consideration of what is believed novel

and inventive the attention is directed to the following description taken in connection with the accompanying drawings while the features of novelty will be pointed out with greater particularity in the appended claims.

In the drawings, Fig. 1 is a side elevation of a glue spreading device constructed in accordance with one form of the invention and illustrated as being mounted upon the forward side of a conventional horizontal roll glue spreader; Fig. 2 is a plan view of the arrangement illustrated in Fig. 1; Fig. 3 is a view in perspective of the glue spreader device; Fig. 4 is a plan view of the glue spreader with the housing cover removed; Fig. 5 is a cross-sectional view taken along the line 5—5 of Fig. 4; Fig. 6 is a cross sectional view taken along the line 6—6 of Fig. 5; Fig. 7 is an enlarged fragmentary view taken along the line 7—7 of Fig. 5; and Fig. 8 is an explanatory view illustrating a portion of a laminated member made up of wood pieces having both flat side and edge surfaces coated with glue.

Referring to the drawings, in Fig. 1 is shown a glue spreading device of the invention indicated generally at 10 mounted upon the forward side of a conventional horizontal roll glue spreader indicated generally at 11. It will readily be understood, however, that the glue spreading device is not limited in its field of applicability for use only in conjunction with such other glue spreading machine since it may equally well be used independently. Furthermore, while the glue spreading device of the present invention is particularly suitable for use in spreading glue over vertical edge surfaces of boards, it will readily be obvious to those skilled in the art that the device may be utilized for spreading glue over any surface portion of a wooden member fed therepast irrespective of the angle of the surface plane.

The glue spreading machine 11, forming no part of the present invention, is shown only schematically as comprising a frame 12 and a pair of horizontally extending rolls 13 and 14. These rolls are connected to suitable driving means, (not shown) so that a board 15 introduced therebetween is engaged thereby and moved longitudinally along. The rolls 13 and 14 may thus represent glue spreader rolls to which glue may be supplied from horizontally extending troughs (not shown) arranged adjacent thereto.

The glue spreader machine 11 having horizontal spreader rolls, such as 13 and 14, is suitable only for spreading glue over the upper and lower horizontally extending flat surfaces of the board 15 fed therebetween. In the fabrication of certain types of laminated members it is desirable to apply a film of glue to one or both of the opposite side edges of the board, as well as to the flat surfaces thereof. For example, in the fragmentary view of Fig. 8 is shown a laminated beam member 20 composed of a plurality of layers 21 of relatively thick boards, each of the layers being further comprised of a plurality of boards 22, 23 which may be of varying widths, the joints between the adjacent edges of the boards of each layer being staggered throughout the stack for providing maximum strength in the finished unit. Boards to be laid up in the formation of a laminated assembly, such as shown in Fig. 8, are required to be coated with glue on the upper and lower flat surfaces and one vertical or edge surface. For the formation of still other types of laminated assemblies it may be necessary to coat both of the opposite edge surfaces of the individual boards in addition to the flat surfaces.

Referring more particularly to the views of Figs. 3 to 6, inclusive, the glue spreading device of the invention comprises a rectangular boxlike housing 25, having a removable cover plate 26 and a front wall 27 provided with a rectangular opening 28 substantially centrally disposed therein. Mounted within the housing is a corrugated cylindrical glue spreader roll 29, the axis of rotation of which extends vertically and parallel with the front wall 27. The roll 29 is provided with a shaft journaled at its opposite ends within parallel arms 31, 32 which are rigidly connected at their rear ends to a spacer member 33 forming a yoke therewith. The arms 31 and 32 are guided for sliding movement between pairs of spaced guides 34, 35 and 36, 37 which are secured to the underneath surface of the cover 26 and upper surface of the housing base 38, respectively. The pairs of guides extend transversely of the housing at right angles with respect to the front wall 27 on opposite sides of the opening 28. The yoke is biased toward the front wall 27 by means of compression springs 40 arranged between the rear housing wall and the yoke cross member 33. As indicated, the springs 40 may be arranged about bolts 41 secured to the rear wall of the housing and extending through cooperating bores provided in the yoke and piece 33, and the ends of the arms 31, 32. The yoke is freely slidable upon the ends of the bolts so arranged.

The cylindrical spreader roll 29 is normally projected under the force of the compression springs 40 partially through the rectangular opening 28 in the front wall so that an arcuate peripheral portion thereof extends beyond the outer surface of the housing. The height of the opening 28 is only very slightly greater than the length of the roll 29 while the width of the opening may be adjusted to predetermine the extent to which the spreader roll 29 is permitted to project therethrough. As illustrated, the opposite sides of the opening 28 in the front wall 27 of the housing are defined by the end edges of a pair of slidable plates 46 and 47 which are mounted in cooperatively machined grooves provided in the front wall. As shown more clearly in Fig. 7, these plates are adjustable endwise and may be secured in the desired position by means of retaining screws 48 extending through the elongate slots 49 in the rear fixed portion of the front wall 27 and threaded at their outer ends in the clamping members 51. The inner ends of the slides 46, 47 are cut at an angle corresponding generally to the curvature of the roll 29 as indicated at 52 so that when the roll 29 is forced thereagainst by the springs 40 a relatively wide surface contact is made therewith. It will be observed that the width of the beveled surfaces 52 is somewhat greater than the width of the corrugation grooves in the surface of the roll 29 so that there will be no possibility for the edges of the slides 46 and 47 to become caught in the grooves.

The housing is maintained filled with glue from a suitable source of supply connected therewith. As shown, a reservoir 53 is mounted on top of the housing cover 26 and communicates with the interior of the housing through the tubular connection 54. When the spreader device is not in use, leakage of glue from the housing is precluded by the roller fitting closely against the edges of the opening.

The spreading device thus far described may conveniently be mounted upon a pivoted bracket secured to the framework at the forward end of the glue spreader machine 11 previously referred to, as shown in Figs. 1 and 2. The bracket arrangement comprises an upper arm 60 and an angularly extending bracing arm 61 having aligned bearings at their ends for cooperatively receiving a shaft 62 which, in turn, is suitably secured as by blocks 63 and 64 to adjacent frame members 65 and 66 of the machine 11. Secured to the upper surface of the bracket arm 60 toward its outer end is a cylindrical socket 67 which is adapted to receive the stub shaft 68 rigidly secured to and depending from the bottom wall 38 of the housing 25. The housing may be retained in place by any simple arrangement such as a removable key 69 extending through the end of the shaft 68 below the bracket arm 60. A manual control lever 70 is pivotally secured to the frame member 65 of the machine 11 as indicated at 71 and is connected to the right angularly extending end portion 72 of the bracket arm 60 through a pin and slot arrangement. A pin 73 secured to the bottom 38 of the housing depends loosely through an enlarged hole 74 provided through the arm 70 spaced the same distance from the pivotal axis 71 of the arm 70 as the shaft 68 is from the axis of the shaft 62 for the bracket arm. The bracket arm 60 and lever 70 extend parallel with each other and since the pivotal connections 68, 73 of the spreader housing upon the arm 60 and lever 70, respectively, and the pivotal connections 62 and 71 of these members upon the machine frame member 65 also extend in parallel lines, the front wall 27 of the housing will always be maintained at right angles to the front side of the machine 11, or, in other words, parallel with the adjacent edge of boards fed through the machine. A spring 76 suitably anchored at one end to a convenient part of the framework of the machine 11 is connected at its opposite end to the lever 70 whereby the glue spreading device is urged into engagement with a side edge of a board 15 being passed through the gluing machine.

The operation of the glue spreading device thus far described is as follows: Boards which are to be coated with glue are passed along a suitable table indicated at 80 toward the glue spreading machine 10, 11. Upon the approach of the end of the board to the spreading device 10 the end of the handle 70 is swung outwardly against the bias of spring 76 until the end of the board passes the leading edge of the housing 25 when the handle is released. Upon contact with the edge of the board, the roll 29 is pressed inwardly of the housing against the bias of the springs 40. Due to the pressure contact made by the portion of the roll projecting through opening 28 with the edge surface of the board by virtue of the tension of spring 76, the roll 29 is caused to rotate. Upon rotation of the roll 29 a film of glue adhering to the surface thereof is transferred from the interior of the housing to the edge surface of the board, the thickness of the glue film thus transferred being regulated by proper adjustment of the slides 46, 47. As the roll 29 is pushed back a slot is formed between the roll and the adjacent edge of the forward plate 47, the width of the slot determining the thickness of the glue film transferred from the interior of the housing and applied to the surface of the board.

It will be obvious that slide 46 must be adjusted simultaneously with slide 47 but, due to the rotation of the roll 29, leakage of glue between the roll and the edge of slide 46 is precluded and, moreover, the excess glue adhering to the roll 29 which was not applied to the surface of the board is returned into the interior of the housing.

As soon as the end of the board clears the roll 29 it will immediately be forced to its outer limit position by springs 40 into tight engagement with the edges of the slides 46, 47 thereby substantially sealing the opening 28 against leakage of glue from the interior of the housing during periods of inoperation between successive boards.

With the spreader device mounted upon the pivoted bracket arrangement as shown it may be used with boards of varying widths without requiring special adjustment for each. The tension spring 76 urges the device firmly against the edge surface of the board irrespective of its width. Furthermore, with the parallel arrangement of the bracket 60 and control arm 70 with the housing 25 mounted thereupon as shown, the front wall of the housing is maintained parallel to the edge of the board being fed through the machine irrespective of swinging movements of the bracket support.

The housing, being loosely mounted upon the bracket arm 60, it is merely necessary to remove the key 69 to permit removal of the housing unit so that spreader machine 11 may be used alone when desired. The edge glue spreader device may be temporarily locked in an inoperative position, such as by a hook 85 secured to the frame member 65 and adapted to be hooked into a hole 86 in the bracket arm 60.

While only a single edge glue spreading device was described, it will be obvious that a second similar device may be provided for applying glue to both side edges of boards. Furthermore, it will be understood by those skilled in the art that numerous changes may be made in the structure described, but it is intended in the following claims to include all such changes as fall within the true spirit and scope of the invention.

I claim:

1. A device for spreading glue over a vertical edge surface of a board during longitudinal movement thereof, said device comprising a housing, a cylindrical member, a rectangular opening in one wall of said housing, resilient means biasing said member toward said wall, an arcuate portion of the periphery of said member normally extending through said opening and substantially closing the same, means for maintaining said housing filled with glue, means for movably supporting said housing adjacent the path of travel of said board, and means operatively connected to said housing for urging said peripheral portion of said member into engagement with the edge surface of a board traveling therepast whereby said member is pushed back into said housing and glue is fed from said housing through said opening onto said board surface.

2. A glue spreader comprising a housing, a rectangular opening in one wall of said housing, a cylindrical member, support means for said member slidably arranged in said housing, the axis of said member extending parallel with said housing wall, an arcuate peripheral portion of said member normally extending through said opening and substantially closing the same, a pivotal support for said housing, means connected

to said support for urging said housing toward a board being moved longitudinally therepast and said portion of said member into engagement with a surface portion of said board.

3. A glue spreader comprising a housing adapted to receive a quantity of glue, a cylindrical glue feeder roll, a rectangular opening in one wall of said housing, means supporting said roll in said housing with the axis thereof extending parallel with said wall, means in said housing resiliently biasing said roll toward said wall, an arcuate peripheral portion of said roll normally extending through said opening substantially closing the same against passage of glue therethrough, means supporting said housing with said wall parallel with the plane surface of a board fed therepast and at right angles to the axis of said roll, means urging said housing toward said board to bring said roll into engagement with said board surface whereby said roll is forced slightly inwardly of said housing and glue carried therefrom upon rotation of said roll and applied thereby to said board surface.

4. A glue spreading device particularly adapted for spreading glue over a vertical edge surface of a board being moved longitudinally therepast, said device comprising a housing having a rectangular opening in a vertical front wall thereof, a cylindrical glue spreader roll mounted within said housing with its axis extending vertically, support means for said roll movably mounted within said housing for movement toward and away from said front wall, means resiliently biasing said support means toward said front wall so that an edge portion of said roll is normally projected through said opening beyond the outer surface of said front wall, said opening being so dimensioned with relation to said roll that said roll in the outermost position substantially closes said opening, means for maintaining said housing substantially filled with glue, means for movably supporting said housing with said front wall parallel with and adjacent an edge surface of said board, pressure means operatively connected to said housing for holding said projecting portion of said roll against said board edge surface whereby said roll is forced inwardly of said housing and rotated by movement of said board to transfer glue from said housing to said surface.

5. A glue spreader comprising an enclosing housing having a rectangular opening in one wall, a cylindrical glue spreader roll in said housing, the surface of said roll being provided with grooves extending longitudinally thereof, means in said housing for supporting said roll with the axis thereof parallel to the plane of said opening, means biasing said roll toward said opening whereby an arcuate portion of the periphery of said roll is projected through said opening and beyond the outer surface of said wall, the periphery of said roll in such position engaging with a pair of opposite edges of said wall defining said opening, said one wall including a pair of slidably adjustable portions defining said pair of opposite edges, said opposite edges of said wall portions being beveled at an angle corresponding substantially to the surface of said roll engaged thereby, the width of the beveled surface of said wall portions being greater than the width of the grooves of said roll.

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