May 9, 1950 C. F. SCHAEFER 2,506,650

GLUING MACHINE

Filed March 28, 1947 3 Sheets-Sheet 1

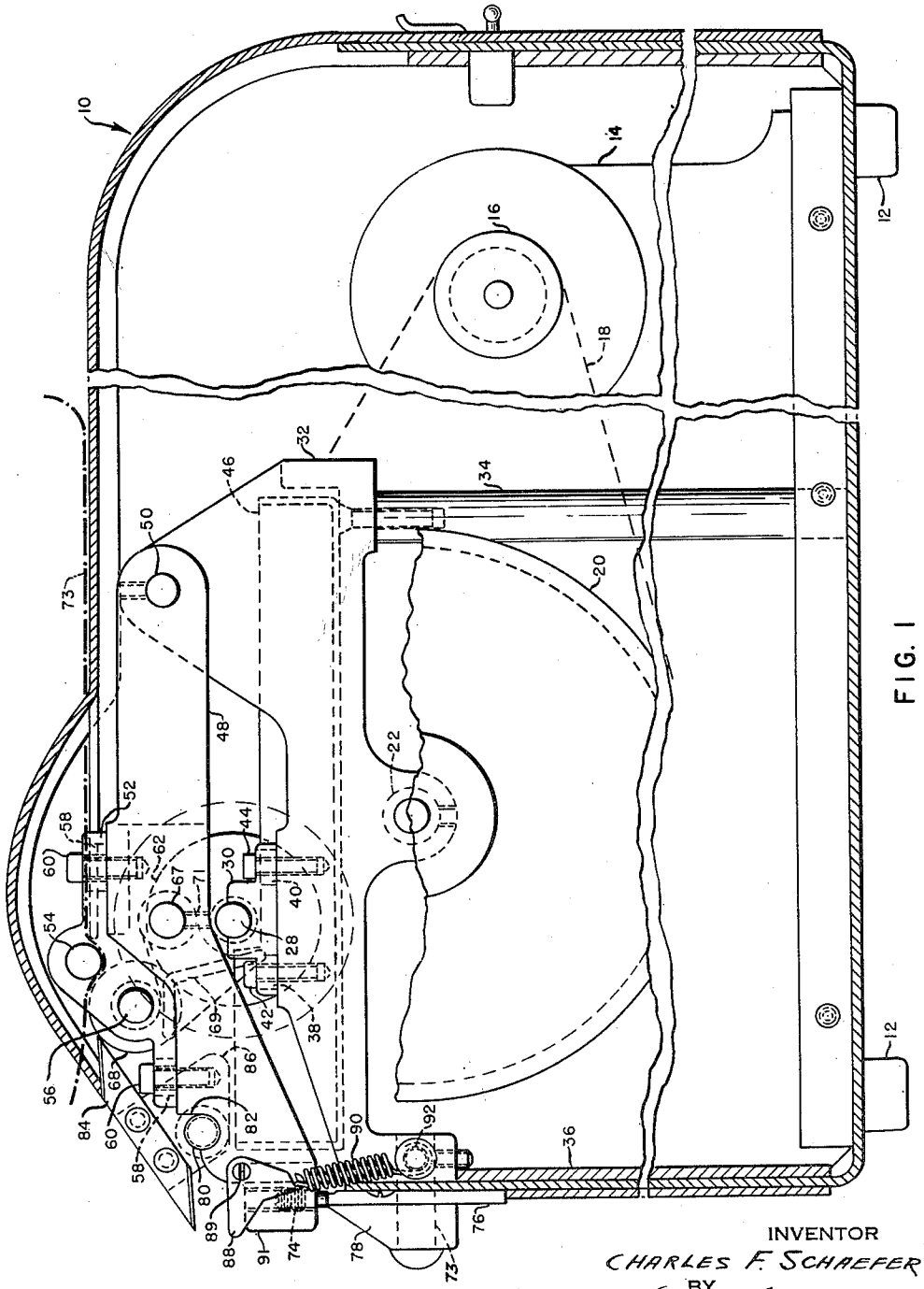


FIG. 1

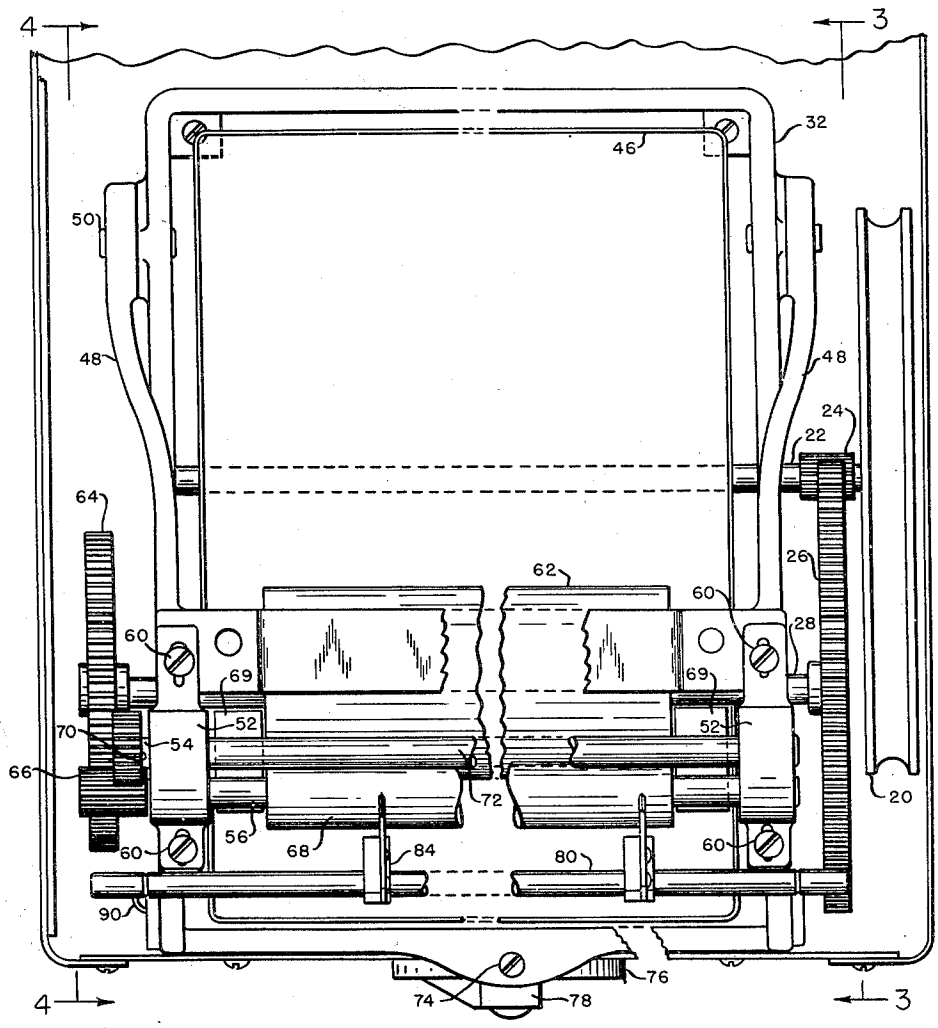
INVENTOR
CHARLES F. SCHAEFER
BY
Joseph Montgomery
ATTORNEY

May 9, 1950 C. F. SCHAEFER 2,506,650

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Filed March 28, 1947 3 Sheets-Sheet 2

FIG. 2



INVENTOR
CHARLES F. SCHAEFER
BY
J. K. Montgomery
ATTORNEY

May 9, 1950 C. F. SCHAEFER 2,506,650

GLUING MACHINE

Filed March 28, 1947 3 Sheets-Sheet 3

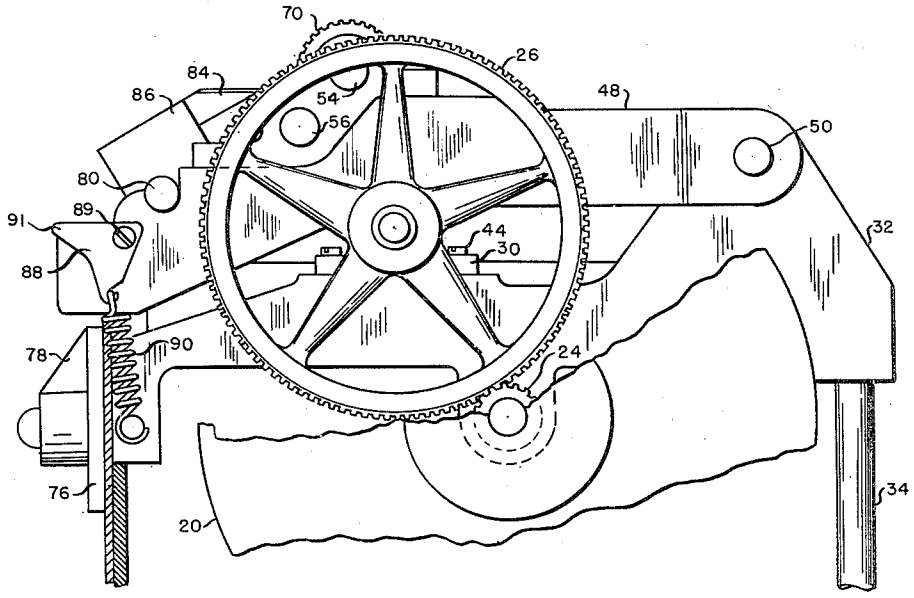


FIG. 3

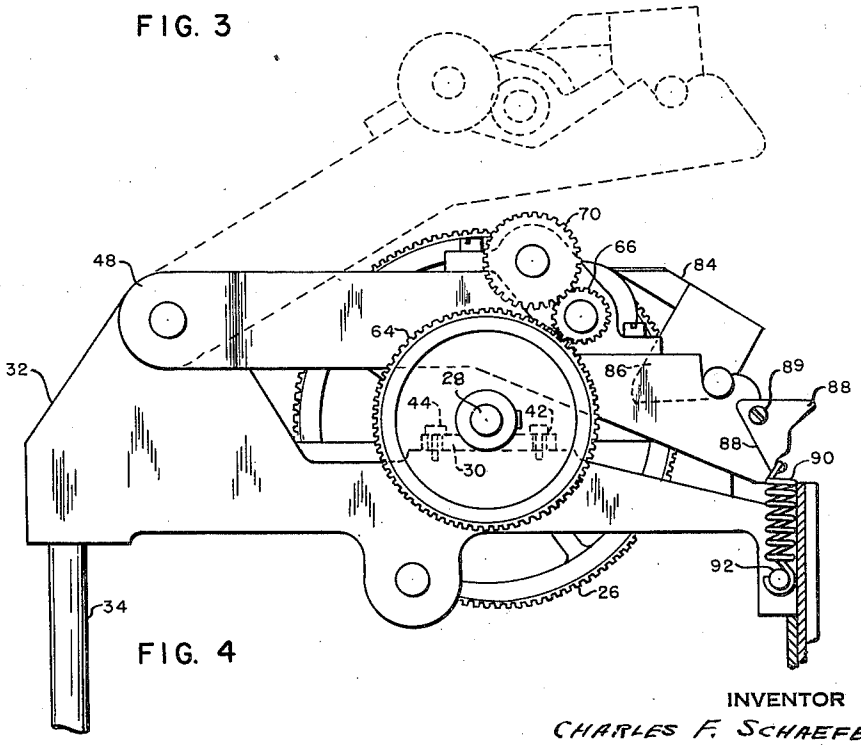


FIG. 4

INVENTOR
CHARLES F. SCHAEFER
BY
Dyl Montgomery
ATTORNEY

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GLUING MACHINE

Charles F. Schaefer, Norwalk, Conn.

Application March 28, 1947, Serial No. 737,939

10 Claims. (Cl. 91—50)

1

This invention relates to improvements in gluing machines and is particularly directed to machines for applying adhesive to one face of sheets of material.

One of the objects of the present invention resides in the provision of a machine of the character indicated wherein the various parts are readily adjustable for proper assembling and which can readily be disassembled.

Another object resides in the provision of simple and readily operable means for varying the contact or distance between the rollers for roller control adjustment.

Another object resides in the arrangement of the operating mechanism relative to the glue tank, whereby, upon removal of the cover plate of the machine, a large portion of the glue tank is exposed to permit filling of the tank without removing the tank and without disturbing any of the operating mechanism.

Another object of the present invention resides in the provision of resilient means for maintaining parts of the machine in proper operating positions; and the provision of means whereby the tension of the resilient means can readily be adjusted.

Another object resides in the provision of means whereby certain of the rollers can readily be moved out of position for inspection and cleaning of the machine and to permit removal of the tank roller for cleaning or replacement, without disturbing the setting or adjustment of any of the parts.

A further object resides in the spacing of the rollers relative to their bearings, and the provision of scraper means in the spaces for removing glue from the ends of the rollers and directing the same to the glue tank, thereby preventing the glue from contacting the roller shafts and bearings.

A further object is the provision of readily removable strippers having means associated therewith to prevent their being thrown out of operating position.

A still further object of the invention resides in the provision of a machine of the character indicated which is adapted to apply glue to sheets of material of various sizes, and wherein provision is made to prevent the transfer of glue from the gluing roller to the feed roller, regardless of the size of the sheet being glued.

Other and further objects of the present invention will be manifest from the following description and the accompanying drawings, in which drawings:

2

Fig. 1 is a side view of the machine with one side wall removed;

Fig. 2 is a fragmentary view thereof with the top wall or cover plate removed;

Fig. 3 is a side view taken substantially on line 3—3 of Fig. 2; and

Fig. 4 is a side view taken substantially on line 4—4 of Fig. 2.

Referring to the drawings in detail, a casing 10 for the machine comprising, top, bottom, side and end walls is supported on legs 12, as will be seen from Fig. 1. A motor 14 for driving the machine is mounted on the bottom wall of the casing, and has a pulley 16 over which a drive belt 18 passes, which belt in turn passes over a large pulley 20 on the shaft 22 carrying a pinion 24 adapted to mesh with a gear 26 mounted on a tank roller shaft 28.

The tank roller shaft 28 is mounted in bearings 30 (Fig. 1) on a support 32, one end of which support is carried on standards 34 and the other end by one end wall 36 of the casing or machine housing. The bearings 30 are open bearings and are adjustable lengthwise of the machine in slots 38 and 40 through which pass anchoring bolts 42 and 44, respectively. The purpose and advantage of the adjustability of these bearings will be pointed out hereinafter. The support 32 also removably supports an adhesive tank 46.

The support 32 has a bracket 48 pivotally secured thereto at 50. This bracket, as will be seen from Fig. 2, comprises a pair of arms which carry adjustable bearings 52 at their free ends for feed roller shaft 54, and glue roller shaft 56, which bearings are provided with slots 58, whereby the same may be moved for adjustment longitudinally of the bracket, and secured in adjusted position by screws 60.

The tank roller shaft 28 carries a tank roller 62 which is partly immersed in adhesive in the tank 46, and has a gear 64 at the end opposite the end which carries the gear 26. The gear 64 meshes with pinion 66 on the glue roller shaft 56, which shaft carries a glue roller 68 adapted to receive adhesive from the tank roller 62. The pinion 66 in turn is in mesh with a gear 70 on the feed roller shaft 54, which shaft carries a feed roller 72.

As will be seen from Fig. 2, the tank roller 62 and the glue roller 68 are shorter than the width of the tank 46, whereby their ends are spaced from their bearings and are within the confines of the sidewalls of the tank. A pair of scrapers 69 are provided at the ends of the glue and tank rollers and in contact therewith, whereby to

scrape glue from the ends of the rollers and return the same to the glue tank, thereby preventing the same from contacting the roller shafts and bearings. These scrapers are adjustably mounted on stub shafts 67 (Fig. 1) secured in the bracket 48 and are adapted to be secured in adjusted position relative to the ends of the glue and tank rollers by a set screw 71, as shown in Fig. 1.

From the foregoing it will be seen that the pivoted bracket 48 carries the feed roller 72 and its shaft and bearings, as well as the glue roller 68 and its shaft and bearings. This bracket can be rotated on its pivot substantially 180° from its normal position, and when so rotated, the glue tank and tank roller are exposed, permitting access thereto, whereby the glue tank can be removed for cleaning, and the tank roller and its shaft can readily be lifted out of the open bearings 30 for cleaning.

Another advantage in having the feed and glue rollers mounted on the pivoted bracket, is that in the event a lump of hardened glue or other foreign matter enters between the glue roller and tank roller, the glue roller will automatically be moved away from the tank roller to accommodate and permit the passage of the same without injury to any of the parts of the machine, and the bracket will be returned to normal position by yielding means hereinafter described.

The free end of the bracket 48 remote from its pivotal point, is provided with an adjusting screw 74 which rests on an eccentrically mounted adjusting member or dial 76 provided with a handle or pointer 78. As will be seen from Fig. 1, the dial 76 is mounted on a shaft 73 carried by the support 32. When the dial is rotated in one direction, the free end of the bracket is raised about its pivotal point, and when rotated in the opposite direction is lowered. The raising and lowering of the bracket will adjust the position of the glue roller with respect to the tank roller whereby the proper thickness or film of adhesive is transferred from the tank roller to the glue roller.

The bracket also carries a shaft 80 in open bearings 82 for a plurality of strippers 84 adjustable along the shaft. These strippers are adapted to lie in contact with the upper surface of the glue roller 68, whereby the strip sheets of paper from the glue roller as the same are fed through the machine. These strippers each have a projecting eccentrically mounted weighted member 86 which serves to retain the strippers in contact with the glue roller, and which is adapted to engage the under surface of the glue roller, in the event the strippers are accidently rocked about the shaft 80, whereby to prevent the strippers and the shaft being knocked out of the open bearings, or out of operating position.

A lug 88 is provided at each side of the free end of the bracket to receive a spring 90, the other end of which is secured to a pin 92. These springs serve to hold the bracket in position whereby the glue roller 56 will be positioned properly relative to the tank roller 28, and will yield in the event any foreign matter, larger than the thickness of the desired film of adhesive, passes between the rollers. If desired the upper end of the springs 90 may be hooked over the ends of the stripper shaft 80, whereby they will serve to maintain the bracket in position as well as to retain the stripper shaft in its open bearings. As will be seen from Fig. 1, each of the lugs 88 is in the form of a bell crank pivotally mounted on a screw 89, and having a projecting portion 91 forming a handle. The springs 90 are connected to the lower end of the lug, so that upon loosening the screw 89, the lug can be rotated on the screw in either clockwise or counterclockwise direction to increase or decrease the tension on the spring.

When assembling the machine, the tank 46 is set in position on the support 32 and the tank roller 62 set in position with the ends of its shaft 28 in the open bearings 30, and the bearings adjusted whereby the gear 26 will be in proper mesh with the driving pinions 24, after which the bearings are secured in their adjusted position by the bolts 42 and 44. The feed roller 72 and the glue roller 68 are mounted in their bearings 52 on the bracket 48. The bracket 48 is then lowered about its pivot and the bearings 52 adjusted to bring the pinion 66 into proper mesh with the gear 64, and the glue roller 68 into proper position relative to the tank roller 62, after which the bearings 52 are secured in adjusted position.

When the machine has been assembled, in the manner described, the top wall or cover plate is placed in position. The flat surface of this cover plate terminates short of the feed roller 72 and serves as a feed table for sheets of material 73 fed to the machine, as shown in dot and dash line in Fig. 1, to receive a coating of adhesive. The motor switch may then be thrown to close the circuit to the motor 14 to drive the belt 18, pulley 20, pinion 24, gear 26, tank roller shaft 28, and the tank roller 62, whereby adhesive is picked up by the latter roller and transferred to the glue roller 68. The glue roller, which is driven through the gear 64 on shaft 28 and the pinion 66, transfers the adhesive to the sheet of material which is fed between the glue roller and the feed roller, the latter roller being driven by the pinion 70 which is in mesh with the pinion 66. As the sheet of material passes between the glue roller and feed roller, it is removed by the strippers 84. Only two strippers are shown in the drawing for clarity of illustration, it being understood that any desired number of such strippers may be employed, and may be moved along the shaft 80 to any desired position.

As will be seen from the foregoing the coating control adjustment includes the adjusting screw 74 for rough adjustment of the space between the glue roller and the tank roller, and the dial 76 for finer or vernier adjustment. The adjusting screw 74 when rotated in a clockwise direction will engage the periphery of the dial 76 and cause the bracket 48 to move about its pivot whereby to move the glue roller away from the tank roller, this movement being against the action of the springs 90. When the adjusting screw is rotated in the opposite direction the spring 90 will cause the bracket to move about its pivot in the direction to bring the glue roller closer to the tank roller. When the approximate desired adjustment is made in the manner described, should it then be desired to vary the thickness of the film of adhesive to be applied to the sheet of material, it is merely necessary to rotate the dial 76 in the desired direction, whereby to adjust the glue roller relative to the tank roller to accomplish the desired variation of the roller coating control.

This roller coating control has many ad-

vantages over scrapers as used in prior machines for controlling the coating, in that in the machine of the present invention lumps of glue are pulverized between the rollers, or pass between the rollers in the manner hereinbefore described, thereby avoiding streaky, uneven glued sheets, such as often result from the use of scrapers in prior machines by reason of the scrapers catching lumps of glue and retaining them in contact with the sheet being glued.

When it is desired to fill the tank, or remove it for cleaning, it is merely necessary to remove the top wall or cover plate. When it is desired to remove or to clean the tank roller, it is merely necessary to raise the bracket 48, in the manner previously described, whereby the tank roller is exposed, and being removably mounted, can readily be taken out of the machine.

It will be seen from Fig. 1, that there is ample clearance between the gluing roller and the feed roller so that no glue is transferred to the feed roller. It will also be seen that any sheet of material, of a width equal to or less than the length of the gluing roller, and of any desired length, can be coated by the machine of the present invention. Also that sheets or strips of material whether square, oblong, round, oval or any other shape can be efficiently coated.

It will be appreciated from the foregoing that the present invention provides a machine of the character indicated, which is compact, and readily adjustable; which is capable of efficiently carrying out all of the objects mentioned at the beginning of the specification; and which is capable of coating sheets of any desired material, such as paper, cardboard, leather, leatherette, cloth; and wherein any desired thickness of film of adhesive, within the limits of the machine can be applied to such sheets.

While I have illustrated and described a single feed roller, it is to be understood that more than one such roller may be employed. In fact when employing the machine to coat materials such as cardboard, for example, it is desirable that a pair of feed rollers be employed; such rollers being mounted in adjustable bearings on the pivoted bracket.

It is to be understood also that the present invention is not to be limited to the application of glue to sheets of material, as obviously the machine is readily adaptable to the application of any type of coating, and the terms, glue and gluing or glue applying roller, are intended to cover any kind of coating, and rollers for applying such coating.

While I have illustrated and described a preferred embodiment of my invention, it is to be understood that I do not wish to be limited to this precise embodiment, as obviously various changes and modifications may be made therein without departing from the spirit and scope of the invention.

What I claim is:

1. In a machine of the class described; a support; a glue tank carried by said support; a tank roller positioned in said tank; a bracket pivotally mounted on said support; a gluing roller carried by the bracket and disposed in close proximity to the tank roller to receive glue therefrom; bearings for said gluing roller mounted on said bracket; bearings for said tank roller mounted on said support; and means for adjustably positioning and for securing said last named bearings in adjusted positions with respect to said support, whereby the tank roller may be adjusted relative to the gluing roller and fixed in adjusted position, said bracket being movable about its pivot away from the tank roller to permit access to the latter roller and its adjustable bearings.

2. In a machine of the class described; a support; a glue tank carried by said support; a tank roller positioned in said tank for receiving glue from the tank; bearings for said tank roller adjustably mounted on said support; a bracket pivotally mounted on said support; a feed roller and a gluing roller; a single unit mounted on each side of the bracket having bearings for said feed roller and gluing roller, the latter roller being disposed in close proximity to the tank roller to receive glue therefrom; means for adjustably positioning said units on said bracket whereby adjustment of said units will effect adjustment of the feed and gluing rollers relative to the tank rollers; and manual means carried by said support at a point remote from the pivotal mounting of the bracket and operable for moving the bracket about its pivot to vary the adjustment between the tank roller and the gluing roller to vary the amount of glue transferred.

3. In a machine of the class described; a support; a glue tank carried by said support; a tank roller positioned in said tank for receiving glue from said tank; bearings for said tank roller mounted on said support; a bracket pivotally mounted on said support; a gluing roller carried by said bracket and disposed in close proximity to the tank roller for receiving glue therefrom; bearings for said gluing roller mounted on said bracket; means for adjustably positioning the gluing roller bearings on the bracket whereby to initially adjust the gluing roller relative to the tank roller; means for securing the gluing roller bearings in their fixed adjusted position; and means connected with the bracket and support for adjusting the bracket about its pivot to vary the initial adjustment between the gluing roller and the tank roller to vary the amount of glue received by the gluing roller.

4. In a machine of the class described; a casing; a support within the casing; a glue containing tank on said support; a tank roller positioned in said tank and adapted to receive glue from said tank; a shaft therefor; bearings for said shaft carried by said support; a gear on each end of said shaft; means for driving one of said gears; a bracket pivotally mounted on said support; a glue applying roller disposed in close proximity to the tank roller for receiving glue from the tank roller; a feed roller; shafts for the glue applying roller and feed roller; a pinion on one end of the shaft of the glue applying roller adapted to mesh with one of the gears on the tank roller shaft; bearings for the shafts of the gluing roller and the feed roller carried by said bracket; means for adjusting the tank roller shaft and the glue applying roller shaft relative to each other to bring the said pinion into proper mesh with the gear on the tank roller shaft; and means for adjusting the said pivoted bracket, with the pinion and gear in mesh, to vary the space between the glue applying roller and the tank roller, whereby to vary the amount of glue transferred from the tank roller to the glue applying roller.

5. In a machine of the class described; a casing; a support within the casing; a glue tank carried by said support; a tank roller positioned in said tank; a shaft therefor; bearings for said shaft carried by said support; a gear on each end of said shaft; means for driving one of said gears; a

bracket pivotally mounted on said support; a glue applying roller carried by said bracket and disposed in close proximity to the tank roller for receiving glue therefrom; a feed roller; shafts for said glue applying and feed rollers; a pinion on one end of the shaft of the glue applying roller adapted to mesh with one of the gears on the tank roller shaft; bearings carried at each side of the bracket for the shafts of the glue applying roller and the feed roller; means for adjusting said tank roller bearings and said glue applying and feed roller bearings relative to each other to bring the said pinion into proper mesh with the gear on the tank roller shaft; and manually adjustable resilient means connecting the free end of the bracket to the support for retaining the pivoted bracket in position to maintain the said gear and pinion in mesh with each other.

6. In a machine of the class described; a casing; a support within the casing; a glue tank carried by said support; a tank roller positioned in said tank; a shaft for the tank roller; adjustable bearings for the shaft carried by said support; a gear on each end of said shaft; means for driving one of said gears; a bracket pivotally mounted on said support; a glue applying roller carried by said bracket and disposed in juxtaposition to said tank roller to receive glue therefrom; a feed roller; a shaft for each of said glue applying and feed rollers; a pinion on one end of the shaft of the glue applying roller adapted to mesh with one of the gears on the tank roller shaft; an adjustable bearing carried at each side of the bracket for the shafts of the glue applying roller and the feed roller; means for adjusting the tank roller bearings and the glue applying and feed roller bearings relative to each other to bring said pinion into proper mesh with the gear on the tank roller shaft and to bring said glue applying roller into proper position relative to the tank roller; resilient means between the free end of the pivoted bracket and said support for retaining the bracket in position to maintain the pinion and gear in mesh with each other, and to maintain the glue applying roller and the tank roller in relative operating positions; manual means for varying the said relative positions of the glue applying and tank rollers; and adjustable means carried by said bracket and adapted normally to engage said manual means.

7. In a machine of the class described; a support; a glue tank carried by said support; a tank roller positioned in the tank for receiving glue from said tank; bearings for said tank roller mounted on said support; a bracket pivotally mounted on said support; a gluing roller carried by said bracket and disposed in juxtaposition to said tank roller and adapted to receive glue from the tank roller; a feed roller for feeding a sheet of material in contact with the gluing roller to receive glue therefrom; said feed and gluing rollers being carried by said bracket; open bearings in said bracket; a shaft mounted in said bearings; a plurality of stripper members carried by said shaft adapted to contact the gluing roller; gravity means connected with said stripper members and carried by said shaft for urging the members in a direction to contact the gluing roller whereby to strip the sheet of material therefrom; said gravity means being adapted to engage said gluing roller to prevent displacement of the said shaft with respect to said bearings; and manually operable means connected with the bracket and the support for adjusting the bracket about its pivot to vary the relative positions of the tank roller and the gluing roller to vary the amount of glue transferred, without disturbing the position of the stripper members relative to the gluing roller.

8. In a machine of the class described, a support, a glue tank carried on said support, a tank roller mounted on said support and positioned in said tank, a bracket pivotally mounted on said support, a gluing roller mounted on said bracket and disposed in close proximity to said tank roller to receive glue therefrom, bearings on said bracket, a shaft mounted on said bearings, a plurality of stripper members carried by said shaft and normally in engagement with the peripheral surface of the gluing roller, a weighted member connected with each of said stripper members and carried by said shaft for retaining the said stripper members in engagement with the surface of the gluing roller, said weighted members having a portion projecting under the gluing roller whereby to prevent displacement of the stripper members.

9. In a machine of the class described; a support; a glue tank carried by said support, a tank roller positioned in said tank for receiving glue from the tank; a bracket pivotally mounted on said support; a gluing roller carried by said bracket and disposed in close proximity to the tank roller to receive glue therefrom; bearings for said gluing roller mounted on said bracket; cam means mounted in said support for engagement with said bracket; and manually rotatable means associated with said cam means to operate said cam means whereby to cause the bracket to move about its pivotal connection to effect adjustment of the gluing roller relative to the tank roller to vary the amount of glue transferred by the latter to the gluing roller.

10. In a machine of the class described; a support; a glue tank carried by said support; a tank roller positioned in said tank for receiving glue from the tank; a bracket pivotally mounted on said support; a gluing roller carried by said bracket and disposed in close proximity to the tank roller to receive glue therefrom; bearings for said gluing roller mounted on said bracket; a shaft mounted in said support at a point remote from the pivotal mounting of the bracket to the support; cam means carried by said shaft and disposed in operative relation to said bracket; and manually rotatable means associated with said cam means to operate said cam means in engagement with said bracket to cause the bracket to move about its pivotal connection to effect adjustment of the gluing roller relative to the tank roller to vary the amount of glue transferred by the latter to the gluing roller.

CHARLES F. SCHAEFER.

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