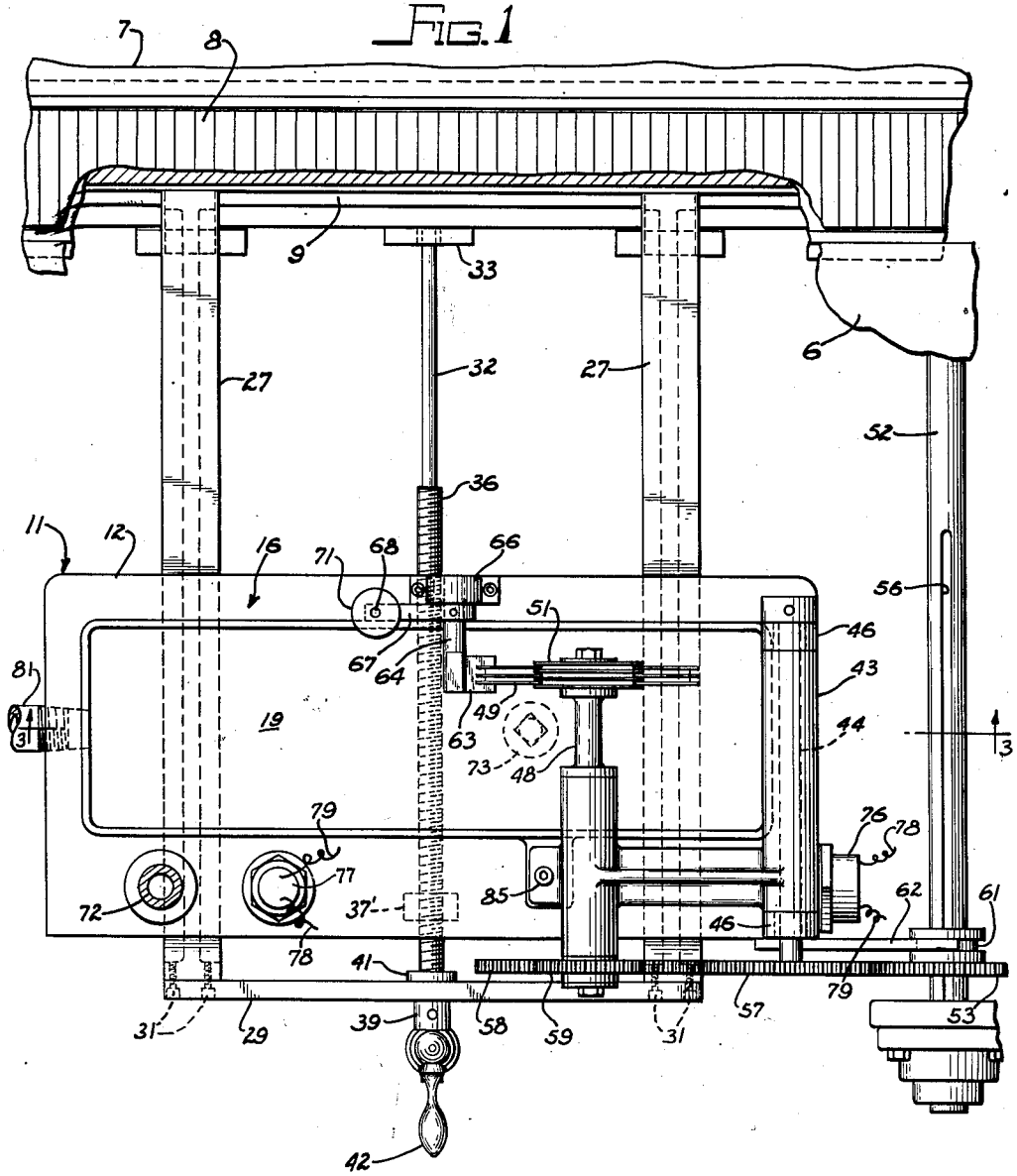
Oct. 28, 1952 R. E. ACKLEY 2,615,422

GLUING DEVICE

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FIG. 1




Inventor
Raymond E. Ackley
by: Gary, Desmond & Parker
Attys.

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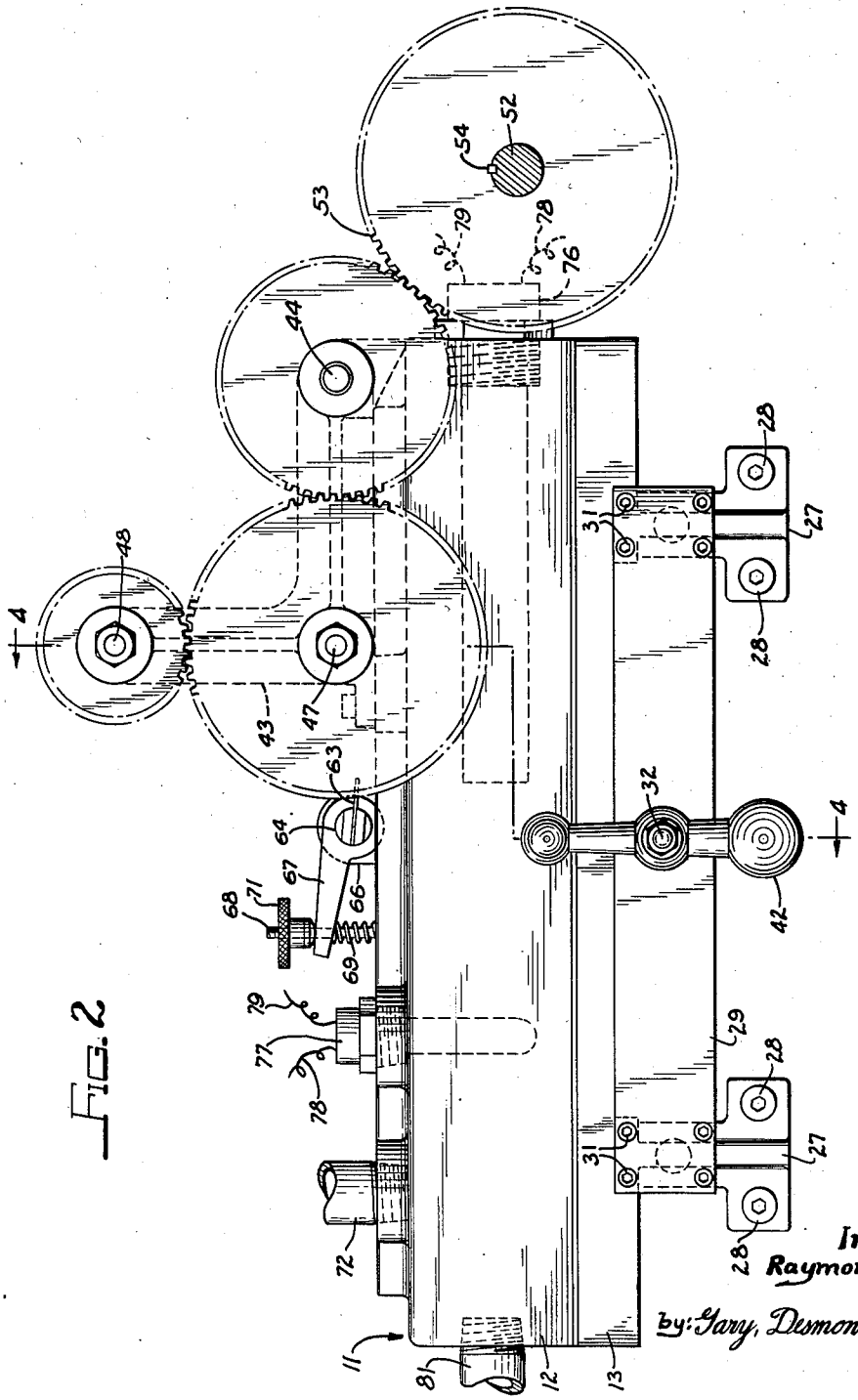



FIG. 2

Inventor
Raymond E. Ackley
by: Gary, Desmond & Parker
Attys.

Oct. 28, 1952 R. E. ACKLEY 2,615,422

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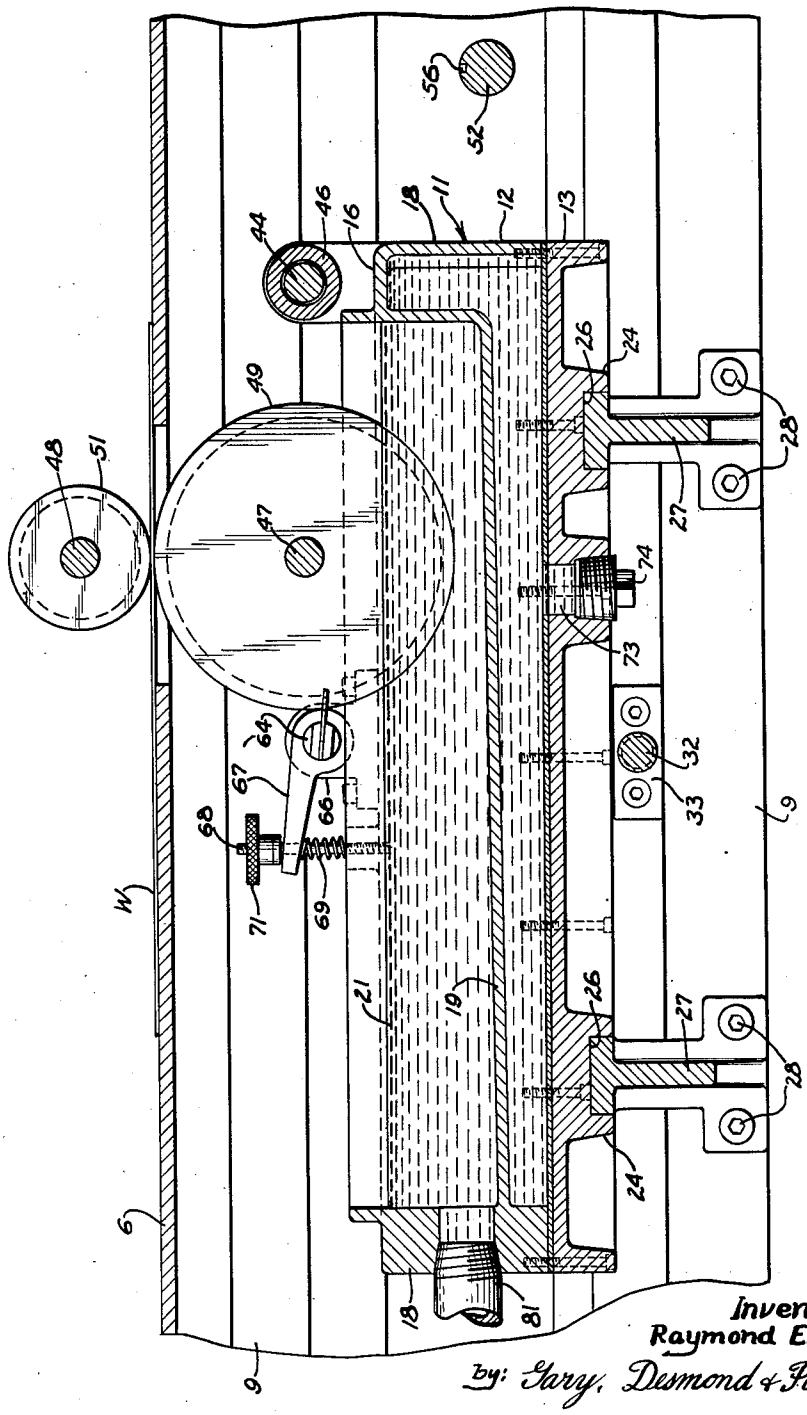



FIG. 3

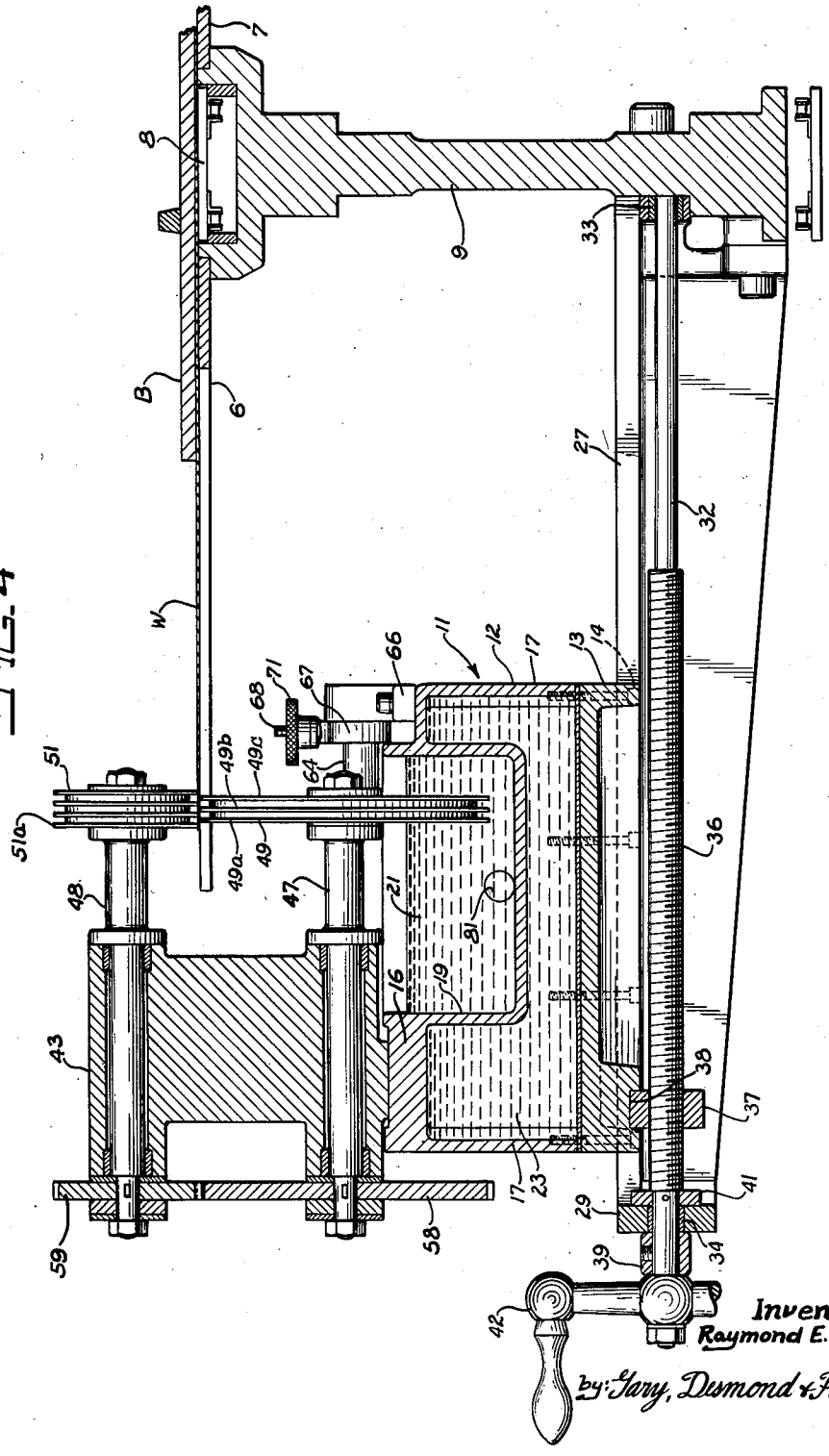
Inventor
Raymond E. Ackley
by: Gary, Desmond & Parker
Attys.

Oct. 28, 1952 R. E. ACKLEY 2,615,422

GLUING DEVICE

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FIG. 4




Inventor
Raymond E. Ackley
by: Gary, Desmond & Parker
Attys.

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# UNITED STATES PATENT OFFICE

2,615,422

## GLUING DEVICE

Raymond E. Ackley, Evanston, Ill., assignor to W. F. Hall Printing Company, Chicago, Ill., a corporation of Illinois

Application August 1, 1950, Serial No. 177,073

7 Claims. (Cl. 118—221)

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This invention relates to a gluing device and is more particularly concerned with the provision of a device of this type adapted for use on flat and fold wrapping machines of the type disclosed in my copending application Serial No. 157,150, filed April 20, 1950, in which wrappers are folded around books with the ends of the wrappers disposed in overlapping adhesive engagement.

The present invention is an improvement over the gluing device shown and described in said copending application in which the gluing device operates to apply a line of adhesive to the upper face of a wrapper adjacent a side edge thereof; after which, the adhesively coated portion of the wrapper is folded over and sealed to the other end of the wrapper. During the operation of the wrapping machine disclosed in said copending application, it was found that some of the adhesive would be displaced from the wrappers onto the wrapper supporting table during movement of the wrappers from the gluing device to a wrapper flare employed to fold the adhesively coated ends of the wrappers over the books to be wrapped, thereby causing the lower surfaces of subsequent wrappers to be coated with adhesive. When the adhesive was thus displaced from the upper surface of wrappers to the lower surface of subsequent wrappers the adhesive was thus transferred onto the operating parts of the wrapping machine, such as the folding flare, conveyor belt, overhead folding and sealing belts, etc. The present invention contemplates the provision of a gluing device in which a line of glue is applied to the lower surface of a sheet wrapper which is then immediately folded upwardly and inwardly over a book by means of a folding flare, thus preventing displacement of the adhesive from the wrapper onto the several parts of the machine.

Gluing devices have heretofore been provided with a glue applying roll of a width equal to the width of a line of adhesive to be applied to a sheet wrapper, the device being provided with a backing roll to support the sheet wrapper during engagement of the latter by the glue applying roll. In the use of this type of gluing device, considerable difficulty was encountered in trying to control the transfer of the proper quantity of adhesive to a sheet wrapper. Another objection to this type of gluing device was that some of the adhesive is transferred from the gluing roll onto the backing roll and thence onto the wrong side of the sheet wrapper. The present invention contemplates the provision of a gluing device in which the glue applying roll is provided with a plurality of circular glue applying surfaces arranged in spaced relation to apply a plurality of relatively narrow lines of adhesive to sheet wrappers. It has been learned that several closely spaced lines of adhesive provide a better sealing engagement than a single relatively wide line of adhesive.

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This invention further contemplates the provision of a gluing device embodying means to control the quantity and quality of the adhesive being transferred from the glue pot to sheet material in order to effect a more perfect uniform sealing engagement of the sheet material.

This invention further contemplates the provision of a gluing device in which the gluing and backing rolls are journaled upon a common bearing bracket to permit movement of the rolls from an operative position within the glue pot to an inoperative position outside of the glue pot to thus facilitate cleaning of the rolls and glue pot.

This invention further contemplates the provision of a gluing device mounted for sliding movement to adjust the position of the gluing rolls relative to a wrapping machine conveyor in order to apply lines of adhesive to wrappers of different widths.

This invention embodies other novel features, details of construction and arrangement of parts which are hereinafter set forth in the specification and claims, and illustrated in the accompanying drawings, wherein:

Fig. 1 is a top plan view illustrating a gluing device embodying features of the present invention.

Fig. 2 is a front elevational view of same.

Fig. 3 is a sectional view taken along the line 3—3 of Fig. 1.

Fig. 4 is a sectional view taken along the line 4—4 of Fig. 2.

Referring now to the drawings for a better understanding of this invention, the gluing device is shown as applied to a flat and fold wrapping machine of the type disclosed in my copending application Serial No. 157,150, filed April 20, 1950, in which books B and wrappers W are continuously moved along a pair of top plates 6 and 7 by means of an endless conveyor 8 during the several operations required to apply and seal a wrapper around a book. The endless conveyor extends around driving and driven sprockets (not shown) journaled in bearings provided at opposite ends of a machine frame 9.

The gluing device is shown as comprising a glue pot 11 which is preferably formed in two sections 12 and 13 secured together by cap screws 14. The upper section 12 is formed with a top wall

13 and depending side walls 17 and end walls 18, the top wall being formed with a trough 19 to receive a fluid adhesive 21. The lower section 13 is in the form of a plate having a depending marginal flange 22. The interior of the glue pot 11, as defined by the sections 12 and 13, is hollow to serve as a reservoir 23 for heated water which acts to heat the side walls and bottom of the trough 19 to maintain the adhesive 21 at a predetermined temperature. The lower section 13 is also formed with a pair of bosses 24 disposed in spaced parallel relation and provided with recesses 26 to receive a pair of supporting rails 27—27 mounted on the frame 9.

The inner ends of the supporting rails 27—27 are secured to the wrapping machine frame 9 by cap screws 28, and the outer ends of the rails are secured together by means of a cross bar 29 and cap screws 31. An adjustment screw 32 is journaled at its inner end in a bearing 33 secured on the side of the frame 9, and is journaled at its outer end in a bearing 34 provided on the cross bar 29. The adjustment screw 32 is threaded at 36 to receive a nut 37 which has its upper portion engaged within a slot 38 formed in the bottom section 13 of the glue pot 11. A pair of thrust collars 39 and 41 are secured to the adjustment screw on opposite sides of the cross bar 29, and a hand wheel 42 is secured on the outer end of the adjustment screw.

A roll supporting bracket 43 is mounted for pivotal movement about a shaft 44 journaled at its ends within apertures provided in bosses 46—46 formed on the upper section 12 of the glue pot. A pair of roll shafts 47 and 48 are journaled in the free end of the bracket 43 in a common vertical plane and in parallel relation to the shaft 44. A gluing roll 49 is secured to the inner end of the shaft 47, and a backing roll 51 is secured to the inner end of the shaft 48. The gluing roll 49 is formed with three annular gluing surfaces 49*a*, 49*b* and 49*c* arranged in spaced relation to apply three relatively narrow lines of adhesive to the bottom face of a wrapper W, as illustrated in Fig. 4 in the drawings. The backing roll 51 is formed with four annular surfaces 51*a*, 51*b*, 51*c* and 51*d* arranged in spaced relation to engage the upper surface of a wrapper W. It will be noted that the annular surfaces provided on the backing roll 51 are staggered with respect to the annular surfaces formed on the gluing roll 49. The gluing roll 49 and backing roll 51 may each be formed from either a single piece of metal or from a plurality of discs having spacing collars disposed therebetween.

A driving shaft 52 is journaled in suitable bearings (not shown) and is driven in timed relation with the endless conveyor 8 by any suitable power transmission means (not shown). A driving gear 53 is mounted for sliding movement along the shaft 52 and is engaged against relative rotational movement by means of a key 54 and keyway 56. An intermediate gear 57 is keyed to the shaft 44 for meshing engagement with the driving gear 53 and with a driven gear 58 keyed to the gluing roll shaft 47. A gear 59 is keyed to the backing roll shaft 48 for meshing engagement with the gear 58. The hub of the driving gear 53 is formed with an annular recess 61 to receive the bifurcated end of an arm 62 which is secured to the side of the glue pot 11 by means of cap screws.

A wiper plate 63 is secured to the end of a shaft 64 journaled in a bearing 66 secured to the upper section 12 of the glue pot 11. An adjustment arm 67 is secured to the shaft 64 and has its free end formed with an aperture to receive a stud screw 68 provided on and extending upwardly from the upper section 12 of the glue pot. A helical compression spring 69 is mounted upon the stud 68 between the glue pot and the arm 67, and an adjustment nut 71 is threaded onto the outer end of the stud 68. As illustrated in Figs. 1 and 2, the outer end of the wiper plate 63 is formed with a contour corresponding to the contour of the peripheral surface of the gluing roll 49.

The glue pot 11 is provided with a water inlet 72 and a water outlet 73 which is normally closed by means of a drain plug 74. An electrical heating element 76 extends through the wall of the glue pot to heat the water contained within the reservoir 23. A thermostat 77 is mounted upon the glue pot to control the temperature of the water within the reservoir 23, the thermostat being electrically connected to the heating element 76 and to a source of current by means of leads 78 and 79. The thermostat 77 acts in the usual manner to connect or disconnect the heating element 76 to a source of current, depending upon the temperature of the water within the reservoir 23. The trough 19 is provided with a drain outlet 81.

In the operation of the gluing device thus described, the books B and wrappers W are moved along the top plates 6 and 7 of the wrapping machine by means of the endless conveyor 8. As illustrated more clearly in Fig. 4 the side of each wrapper passes between the gluing roll 49 and the backing roll 51 which are driven at a common peripheral speed and in timed relation with the conveyor 8. During rotation of the gluing roll 49, adhesive 21 is carried upwardly from the trough 19 to the lower face of the wrapper W. By providing three annular surfaces on the gluing roll, three relatively narrow lines of adhesive are applied to the lower face of the wrapper. It will be noted that the annular surfaces provided on the backing roll are in staggered relation with respect to the annular surfaces provided on the gluing roll to thus prevent transfer of the adhesive from the gluing roll to the backing roll when wrappers are not interposed therebetween. The quantity of adhesive being transferred from the trough 19 to a wrapper W is controlled by the wiper 63, the wiper being adjustably positioned with respect to the gluing roll surface by means of the adjustment nut 71. The adhesive is maintained at a predetermined temperature by means of the water contained within the reservoir 23, the water being heated by the electrical heating element 76 under the control of the thermostat 77. The roll bracket 43 is normally secured in its operative position by means of a cap screw 85 and is pivoted to its inoperative position to facilitate cleaning of the several parts of the device. It will be noted that the gluing device is adapted for use in applying adhesive to wrappers of different widths. The glue pot 11 is adjusted transversely of the wrapping machine by means of the adjustment screw 32. It will also be noted that the gluing device 11 merely rests upon the supporting rails 27—27 and may, if desired, be lifted and removed from the wrapping machine for cleaning or replacement.

While this invention has been shown in but one form, it is obvious to those skilled in the art that it is not so limited but is susceptible of various changes and modifications without departing

from the spirit and scope of the claimed invention.

I claim as my invention:

1. In a gluing device, a glue pot having top, bottom and side walls defining a central chamber adapted to hold a supply of water, a trough depending from said top wall and into the interior of said chamber, a gluing roll journaled on said glue pot and having its lower portion disposed within said trough, a backing roll journaled on said glue pot to coact with said gluing roll in applying adhesive to sheet material, said gluing roll embodying a plurality of narrow annular glue applying surfaces arranged in closely spaced relation along a common axis to thus provide a more effective sealing engagement than is provided by the use of a single relatively wide roll, said backing roll embodying a plurality of narrow annular surfaces arranged in closely spaced relation along a common axis, the glue applying surfaces on said gluing roll being disposed in staggered relation with respect to the annular surfaces formed on the backing roll, the spacing between the annular peripheral surfaces of each of said rolls being slightly greater than the width of the individual annular surfaces to prevent transfer of adhesive from the gluing roll to the backing roll.

2. In a gluing device, a glue pot having top, bottom and side walls defining a central chamber adapted to hold a supply of water, a trough depending from said top wall and into the interior of said chamber, a bracket supporting shaft journaled on said glue pot, a roll bracket journaled on said shaft for pivotal movement toward and away from said trough, a gluing roll shaft journaled in said bracket, a gluing roll keyed to said gluing roll shaft and having its lower portion normally disposed within said trough, a backing roll shaft journaled in said bracket above said gluing roll shaft, a backing roll keyed to said backing roll shaft to coact with said gluing roll in applying adhesive to sheet material interposed therebetween, a rail to support said glue pot for movement along a path transversely to the path of the work between the rolls, and means to move said glue pot along said rail.

3. In a gluing device, a glue pot having top, bottom and side walls defining a central chamber adapted to hold a supply of water, a trough depending from said top wall and into the interior of said chamber, a bracket supporting shaft journaled on said glue pot, a roll bracket journaled on said shaft for pivotal movement toward and away from said trough, a gluing roll shaft journaled in said bracket, a gluing roll keyed to said gluing roll shaft and having its lower portion normally disposed within said trough, a backing roll shaft journaled in said bracket above said gluing roll shaft, a backing roll keyed to said backing roll shaft to coact with said gluing roll in applying adhesive to sheet material interposed therebetween, a rail to support said glue pot for movement along a path transversely to the path of the work between the rolls, means to move said glue pot along said rail, and wiper means mounted on said glue pot to remove excess adhesive from said gluing roll.

4. In a gluing device, a glue pot having top, bottom and side walls defining a central chamber adapted to hold a supply of water, a trough depending from said top wall and into the interior of said chamber, a bracket supporting shaft journaled on said glue pot, a roll bracket journaled on said shaft for pivotal movement toward and away from said trough, a gluing roll shaft journaled in said bracket, a gluing roll keyed to said gluing roll shaft and having its lower portion normally disposed within said trough, a backing roll shaft journaled in said bracket above said gluing roll shaft, a backing roll keyed to said backing roll shaft to coact with said gluing roll in applying adhesive to sheet material interposed therebetween, a rail to support said glue pot for movement along a path transversely to the path of the work between the rolls, means to move said glue pot along said rail, wiper means mounted on said glue pot to remove excess adhesive from said gluing roll, and means to adjust the position of said wiper means relative to said gluing roll.

5. In a gluing device, a glue pot having top, bottom and side walls defining a central chamber adapted to hold a supply of water, a trough depending from said top wall and into the interior of said chamber, a bracket supporting shaft journaled on said glue pot, a roll bracket journaled on said shaft for pivotal movement toward and away from said trough, a gluing roll shaft journaled in said bracket, a gluing roll keyed to said gluing roll shaft and having its lower portion normaly disposed within said trough, a backing roll shaft journaled in said bracket above said gluing roll shaft, a backing roll keyed to said backing roll shaft to coact with said gluing roll in applying adhesive to sheet material interposed therebetween, a rail to support said glue pot for movement along a path transversely to the path of the work between the rolls, means to move said glue pot along said rail, a driving gear, an intermediate gear keyed to said bracket supporting shaft for meshing engagement with said driving gear, a driven gear keyed to said gluing roll shaft to mesh with said intermediate gear, and a gear keyed to said backing roll shaft to mesh with said driven gear.

6. In a gluing device, a glue pot having top, bottom and side walls defining a central chamber adapted to hold a supply of water, a trough depending from said top wall and into the interior of said chamber, a bracket supporting shaft journaled on said glue pot, a roll bracket journaled on said shaft for pivotal movement toward and away from said trough, a gluing roll shaft journaled in said bracket, a gluing roll keyed to said gluing roll shaft and having its lower portion normally disposed within said trough, a backing roll shaft journaled in said bracket above said gluing roll shaft, a backing roll keyed to said backing roll shaft to coact with said gluing roll in applying adhesive to sheet material interposed therebetween, a rail to support said glue pot for movement along a path transversely to the path of the work between the rolls, means to move said glue pot along said rail, a driving gear, an intermediate gear keyed to said bracket supporting shaft for meshing engagement with said driving gear, a driven gear keyed to said gluing roll shaft to mesh with said intermediate gear, a gear keyed to said backing roll shaft to mesh with said driven gear, said driving gear being keyed on a driving shaft for common rotational movement therewith and relative axial movement, and a fork member mounted on said glue pot to move said driving gear axially along said driving shaft responsive to movement of the glue pot along said rails.

7. In a gluing device, a glue pot having a trough, a gluing roll mounted for rotational

movement with its lower portion disposed within said trough, a backing roll journaled in parallel relation to said gluing roll to coact with the latter in applying several relatively-narrow closely-spaced lines of adhesive to sheet material passing therebetween, each roll comprising a plurality of closely-spaced narrow annular surfaces and intervening annular recesses, the annular surfaces on one roll being disposed in registry with the annular recesses of the other roll to prevent transfer of adhesive from the gluing roll to the backing roll, each roll comprising a shaft, a plurality of discs, and spacing collars between said discs, said collars having a relatively greater thickness and smaller diameter than said discs.

RAYMOND E. ACKLEY.




## REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

| Number | Name | Date |
|---|---|---|
| 732,703 | Brown | July 7, 1903 |
| 959,986 | Zapf | May 31, 1910 |
| 1,140,450 | Etheridge | May 25, 1915 |
| 1,416,984 | Schoenwetter | May 23, 1922 |
| 1,810,223 | Peterson | June 16, 1931 |
| 2,170,140 | Grupe | Aug. 22, 1939 |
| 2,366,210 | Murch et al. | Jan. 2, 1945 |
| 2,476,097 | Kagen et al. | July 12, 1949 |