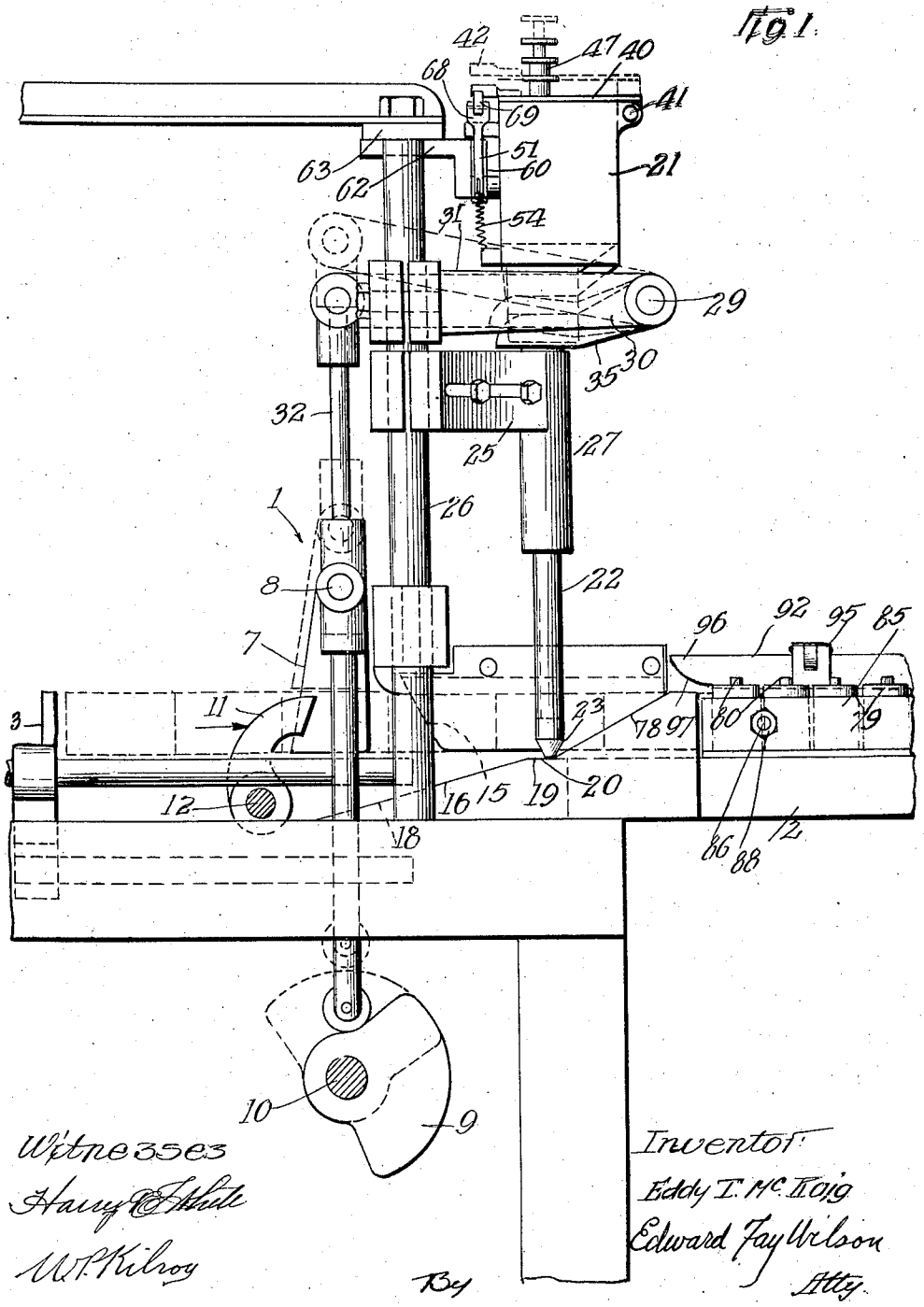
Dec. 21, 1926. 1,611,356

E. T. McKAIG

WRAPPER GLUING DEVICE

Filed Oct. 13, 1923 3 Sheets-Sheet 1

Fig. 1.



Witnesses
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Inventor:
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By Atty.

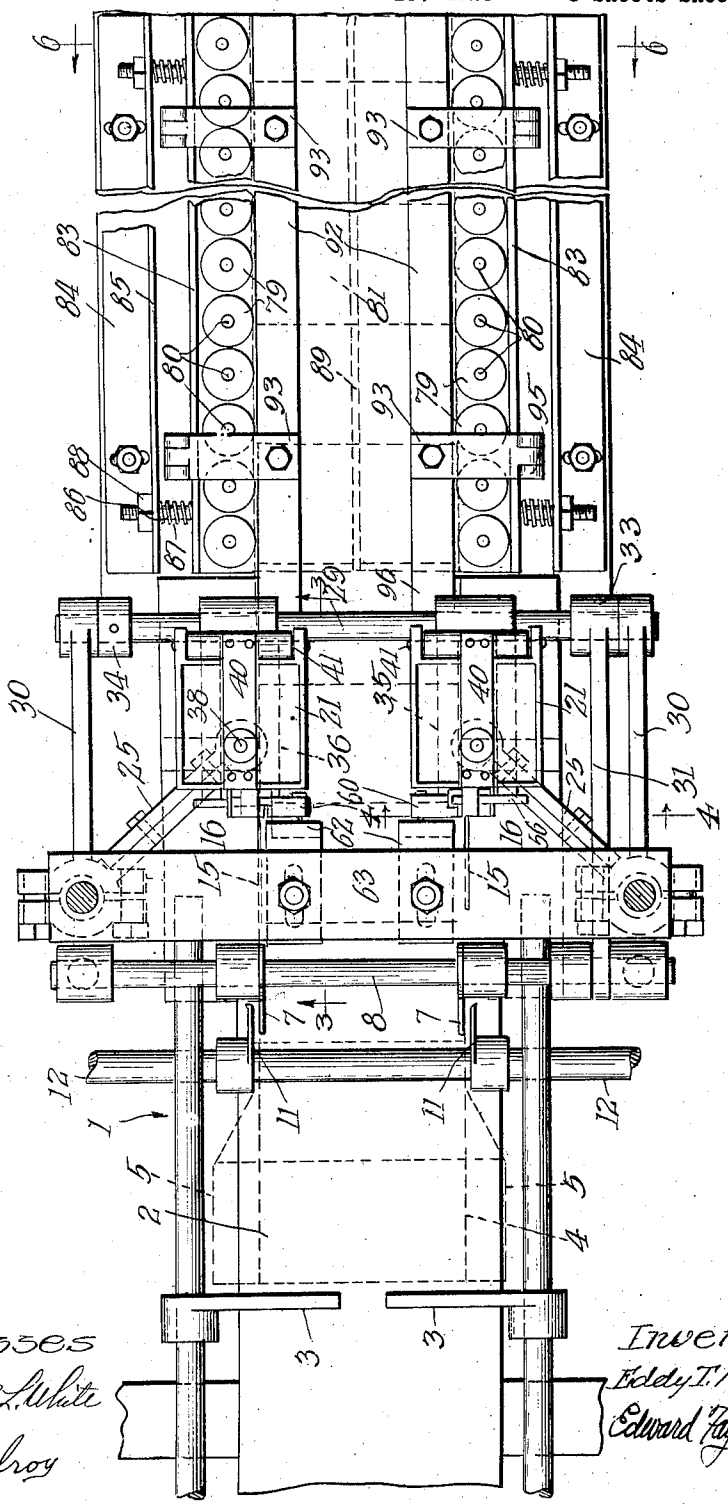
Dec. 21, 1926. 1,611,356

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WRAPPER GLUING DEVICE

Filed Oct. 13, 1923 3 Sheets-Sheet 2

Fig 2.



Witnesses
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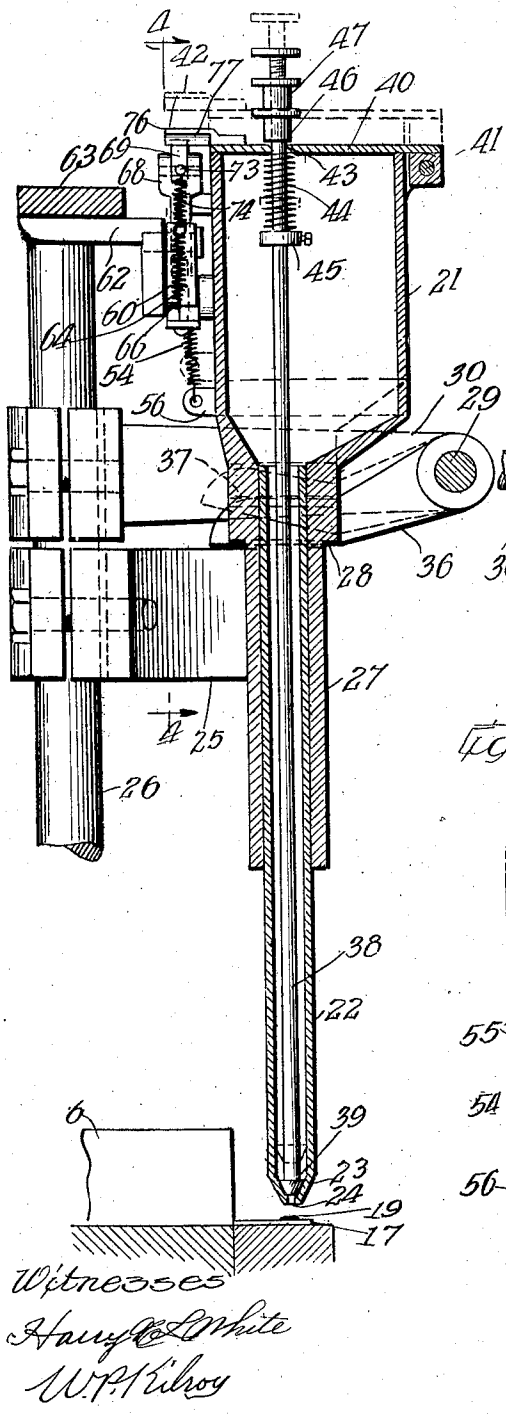
Dec. 21, 1926. 1,611,356

E. T. McKAIG

WRAPPER GLUING DEVICE

Filed Oct. 13, 1923 3 Sheets-Sheet 3

Fig. 3.



Witnesses
Harry L. White
W. P. Kilroy

Fig. 4.

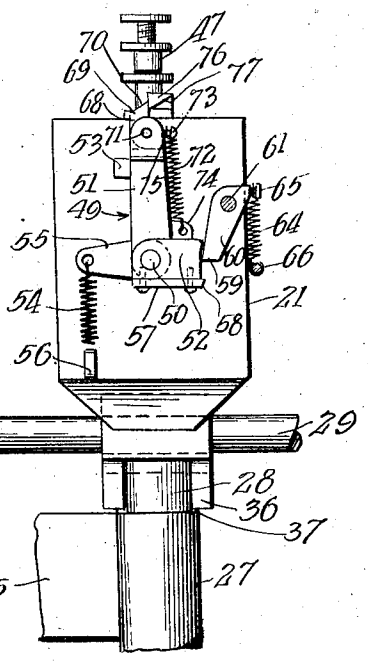
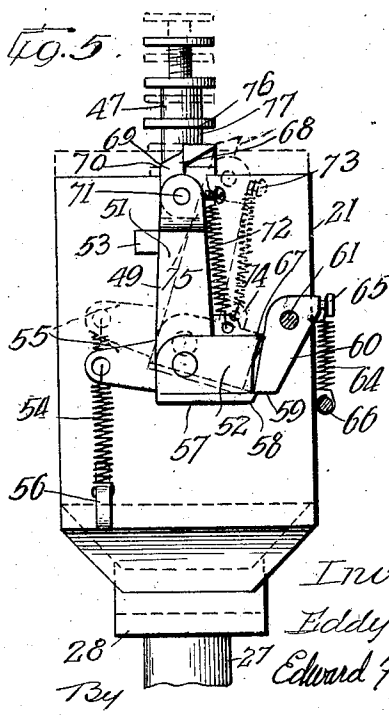


Fig. 5.



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Patented Dec. 21, 1926. 1,611,356

UNITED STATES PATENT OFFICE.

EDDY T. McKAIG, OF CHICAGO, ILLINOIS, ASSIGNOR TO ANTON TRINI, OF CHICAGO, ILLINOIS.

WRAPPER-GLUING DEVICE.

Application filed October 13, 1923. Serial No. 668,327.

My invention relates to improvements in article wrapping machines and has special reference to improvements in machines for gluing the ends of folded wrappers on articles, such as soap bars and the like.

In the development of soap wrapping machines mechanisms have been produced for applying an adhesive, such as glue, to parts of the wrapper for securing it upon the bar of soap, but so far as I am aware these have not proven eminently satisfactory in operation nor durable in use. The glue has been largely wasted and the apparatus has been soon destroyed or worn badly, owing to the severe shocks to which it is subjected in use and the rapidity with which the soap bars pass through the machine.

In devising my present improvements I have had the object before me of providing an efficient apparatus for the purpose by which all of the glue will be applied and none wasted, only sufficient glue being applied to properly secure the wrappers, and in which apparatus the mechanical movements, strokes or impacts, shall be reduced to a minimum to the end that the apparatus shall not require frequent repairing or rebuilding.

In other words, it is my object to provide a very simple and durable mechanism for applying glue to the wrappers, in partly folded condition and before the folded end portions are pressed home.

I have provided mechanism for depositing drops of glue upon the partly folded wrappers, including mechanically operated outlet valves, but the mechanism is so arranged that once the valve opening mechanism has been released for opening the valve, it will automatically complete the opening of the valve to the adjusted limit and will without stopping immediately close the valve, and this independently of any other function or operation of the machine or its parts with which the glue control mechanism is associated.

The type of machine to which my invention is most closely related is provided with automatic mechanism which folds the wrapper around the article, such as a bar of soap, with the ends of the wrapper projecting at each end of the bar in the form of an open-ended rectangular tube. Thereafter these open end portions of the wrapper are folded in against the end of the bar, usually first the top wall, then the side walls, thus producing a V-shaped flap which is folded in against the end of the bar and against the parts of the wrapper previously folded in. It has become more or less common practice to cement or glue these V-shaped flaps to retain them in folded position and prevent the inadvertent unwrapping of the bars.

My invention will be more readily understood by reference to the accompanying drawings forming part of this specification and in which:

Figure 1 is a fragmentary side elevation of a soap bar wrapping machine equipped with a gluing device and constructed in accordance with my invention;

Figure 2 is a fragmentary plan view of same;

Figure 3 is a detail vertical sectional view on the line 3—3 of Figure 2;

Figure 4 is a fragmentary sectional view on the line 4—4 of Figures 2 and 3; and

Figure 5 is a view similar to Figure 4, showing some of the parts in different positions.

In said drawings 1 represents generally a soap bar wrapping machine which is adapted to receive soap bars consecutively and soap bar wrappers, and is provided with automatic means for wrapping the wrappers around the soap bars with the ends of the wrappers projecting beyond each end of the bars, as illustrated in Figure 6. The soap bars thus partly wrapped are deposited consecutively upon a flat table-like support and guide plate 2 just in front of a pair of pusher arms 3. But as such automatic wrapping mechanism forms no part of the present invention it is thought that it is not necessary to further illustrate it.

The partly wrapped soap bars are shown in dotted lines in position on the guide plate 2 at 4 and the tubular projecting ends of the wrapper are shown at 5. The wrapping machine with which my improvement is illustrated is provided with means for first pressing or folding the top wall 6 of the end portions 5 of the wrapper downwardly and in against the ends of the soap bar. Such means comprise vertically movable thin plungers 7, one at each side of the machine, and carried on a transverse shaft 8, which is suitably held and guided for reciprocal up and down movement. The lower ends of the plungers 7 are thin and knife-like and

are arranged to move up and down close to the ends of the soap bars as the bars are moved along the plate 2 by the pushers 3. The shaft 8 with the plungers 7 is moved up and down by any suitable means, such as the cam 9 on a shaft 10 which is adapted to be suitable operatively connected with the pushers 3, so that while the pushers are forcing the line of soap bars forwardly the plungers 7 are raised out of the path of the wrappers, and while the pushers are moving backward to the positions shown in full lines the plungers are brought down and fold or press the top walls 6 of the wrappers downwardly and in against the ends of the soap bars. Immediately thereafter the former or folding arms 11 carried on a transverse shaft 12 are rotated forwardly, that is in the direction of the arrow on Figure 1, and they engage the rear walls 13 of the end portions of the wrappers and fold them in against the lower ends of the plungers 7. This occurs just before the plungers 7 are lifted. The forward walls 14 of the end portions of the wrappers are forced inwardly by a stationary former 15 at each side of the machine as the line of soap bars are moved forwardly through the machine by the pushers 3. It is not thought necessary to illustrate the mechanical means by which the back and forth movement of the pushers 3 is co-ordinated and timed with the movements of the plungers 7 and folders 11, as such is well known to those skilled in the art and forms no part of this present invention.

As the soap bars are pushed through the machine the folding of the top, rear and front walls of the ends of the wrappers are completed, as described, and there is provided guides 16, one at each side, which are adapted to lift the V-shaped end portions 17 of the wrappers as they appear after the top, rear and front walls are folded, as described, and press this V-shaped flap into flat contact with the soap bar, thus completing the folding operations.

These guides 16 extend outwardly from the ends of the bars, their rear ends 18 being low enough to receive the flaps 17 even if they are bent downwardly in the previous forming operations and lift them to horizontal positions at the point 19, which is the second position of the bars after the position where the top walls 6 are formed down. It should be understood that the movement of the soap bars through the machine is intermittent, the line of bars standing still while the pushers 3 are drawn back to permit the next bar to be deposited in front of them on the guide plate 2. The several bars shown in Figures 1 and 2 are shown in these stationary positions, and in one of these positions the V-shaped flaps 17 are at 19 where the former guide 16 is provided with a flat horizontal portion 20. Beyond these points the former guides 16 are formed inwardly and upwardly and are adapted as the soap bars move forwardly to swing the end flaps 17 upwardly and inwardly against the ends of the bars. Heretofore such machines have been provided with smooth guides at the ends of the soap bars beyond the former guides 16 and the V-shaped flaps would be pressed tightly against the other parts of the wrapper, but when freed from such smooth guides would tend to spring down again. Also heretofore means have been provided for depositing glue upon the upper surfaces of the V-shaped flaps at the points 19 but such glue depositing means have not proven satisfactory and furthermore the mere pressing of the flaps against the ends of the bars by the flat pressure strips spoken of has not served to permanently secure the flaps in position, with the result that they would spring down and out as soon as released from the machine, the glue being still moist.

My present invention is directed particularly to providing satisfactory, durable and economical glue depositing mechanism.

For depositing the glue upon the flaps 17 at the positions 19, I provide two elevated reservoirs 21 one at each end arranged substantially above the two end flaps. Each reservoir is provided with a depending glue delivery tube 22 tapered at its lower end 23 and provided in its lower end with a delivery opening 24. Each reservoir 21 is supported on the outer end of an arm or bracket 25 which is clamped at its other end on a vertical post 26 forming part of the wrapping machine. The bracket 25 is adjustable as to length and the post 26 is cylindrical and consequently the position of the delivery end of the tube 22 can be adjusted accurately to deliver glue upon the V-shaped flap near its apex or point in position to best serve to fasten the flap in folded condition. The reservoir is supported on the bracket by means of a tubular support 27 rigid with the outer end of the bracket and which receives the tube 22. The lower end of the reservoir has an external shoulder 28 which prevents the lowering of the reservoir and delivery tube too far but permits the contact of the lower end of the tube with the flaps. The reservoir is movable up and down in time with the movements of the soap bars to permit the bars to move freely forward after the deposit of the glue. The mechanism for lifting the reservoirs and their delivery tubes comprise a horizontal transverse shaft 29 mounted in the free ends of forwardly extending arms 30; these arms, one at each side of the machine being rigidly secured at their rear ends on the upright posts 26. A lever arm 31 is rigidly mounted at its forward end upon the shaft 29 to swing therewith and its rear end is connected to the transverse shaft

or bar 8 by a vertically disposed link 32. As the bar 8 is moved up and down the lever arm 31 is swung up and down and the shaft 29 is oscillated. The shaft 29 is operatively mounted in the forward ends of the rigid arms 30 and is held against endwise movement in one direction by the outer end 33 of the lever arm 31 and in the other direction by a set collar 34. For engagement with the two reservoirs 21 for lifting them, forked lever arms 35 are rigidly mounted on the shaft 29, one for each reservoir, the forked ends 36 extending beneath respective reservoirs and contacting beneath shoulders 37 on the lower ends of the reservoirs in position to lift the reservoirs when the rear end of the lever arm 31 is raised. By the means just described the reservoirs with their delivery tubes 22 are lifted once for each cycle from a position where the lower ends of the tubes rest upon the folded flaps to the upper positions shown in dotted lines.

Within the tube 22 is a valve rod 38 provided on its lower end with a valve head 39 for closing the delivery opening 24. This valve rod extends up through the tube 22 and its reservoir and also through a lever arm 40 on the top of the reservoir. The lever arm 40 is pivotally mounted on the forward edge of the reservoir at 41 and its rear end 42 is free to swing up. The valve rod 38 passes through a free hole 43 in the lever and is yieldingly connected to the lever by means of a compression spring 44 on the rod beneath the lever and pressing at its lower end against a set collar 45. Above the lever the rod is threaded and is provided with a nut 46 for adjusting the amount of lift of the valve and a jamb nut 47 for retaining the nut 46 in its adjusted position. The spring yieldingly retains the valve seated until the lever 40 rises into contact with the nut 46. By adjusting the nut 46 on the valve rod the lift of the valve and consequently the amount of glue deposited each time can be adjusted to the exact requirement necessary for proper operation.

Besides the bodily up and down movement with the reservoir the lever 40 has an independent movement for opening the valve. The means for producing this independent movement is best shown in Figures 4 and 5.

For effecting this independent movement of the lever 40 for opening the delivery valve, I provide mechanism mounted on the rear wall of each reservoir comprising in each instance a bell-crank lever 49 pivotally mounted at its heel on a pivot 50 projecting out from the reservoir, and on which the lever is free to swing in a vertical plane. One arm 51 of the lever projects upward and the other arm 52 projects horizontally and transversely of the machine. The lever is held at one limit of its movement, as shown in Figure 4, with the arm 51 against a fixed stop 53 by a spring 54 which extends between a projection 55, rigid with the lever, and a projection 56 rigid with the reservoir. On the lower side of the arm 52 is provided a hardened plate 57 which has an end 58 extending beyond the free end of the arm. This extending end is for contact with the lower end 59 of a dog 60 which is pivoted at its upper end upon a horizontal pivot 61 carried on a part rigid with the machine. As shown, this part comprises a bracket 62 rigidly mounted on a transverse bar 63 forming part of the frame of the machine. The lower end 59 of the dog 60 is held in contact with the outer end of the arm 52 of the bell crank 49 by a tension spring 64 extending between a projection 65 on the outer side of the base of the dog and a projection 66 rigid with the bracket 62. It will now be understood that as the reservoir is lifted by the forked lever, the bell crank lever is lifted with it, the toe of the dog slides along the outer end of the arm 52 until it strikes the projection 58 when the further lifting of the reservoir causes the upper arm 51 of the lever 49 to swing to the right, Figure 4. This action continues until the projection 58 is released from the the dog 60, which is effected by a projection 67 on the outer end of the arm 52 which contacts with the adjacent side of the dog 60 and rotates it to push its lower end off of the projection 58, at which time the spring 54 automatically returns the bell crank to its original position with its arm 51 in contact with the stop 53. I utilize this automatic return movement of the bell crank to lift the valve. For this purpose I provide a pivotally mounted dog 68 on the free end of the arm 51, having an upwardly extending projection 69 beveled on its outer end 70 for a purpose to be explained. The dog 68 is mounted on a pivot 71 and is held in position by a tension spring 72 which extends between a projection 73 on the hub of the dog and a fixed projection 74 on the bell crank lever 49. The base of the dog is provided with a projection 75 which is held against a shoulder on the outer end of the arm 51 and is free to turn to the left, Figure 4, against the pull of the spring 72. The outer or free end of the lever 40 on the top of the reservoir is provided with a projection 76 which extends over the dog and which lies in the path of the projection 69 on the dog as the lever 49 is swung on its pivot. The projection 76 has a beveled under surface 77 which corresponds with the beveled upper surface 70 on the outer end of the projection 69 on the dog 68. As shown in Figure 4, the two projections 68 and 76 overlap vertically when the arm 51 is against the stop 53 and consequently when the arm 51 is swung over to the right the

dog 68 will rotate rearwardly on its pivot until the tip of the projection 68 slips past beneath the lower edge of the projection 76 at which time the spring 72 returns the dog 68 to its normal position and ready to cause the two inclined surfaces of the dog 68 and the lever 40 to contact when the bell crank is released from the dog 60 and is returned to its position of rest by the spring 54. When this occurs the dog 68 serves to lift the lever 40 to the extent of the vertical overlapping of the two beveled surfaces and in such lifting of the lever the valve rod 22 is lifted to the prearranged amount and a predetermined quantity of glue flows out through the delivery opening 24. This drop remains on the end of the delivery tube until it descends into contact with the flap and is deposited on the flap.

It will now be clear that the valve is opened near the upper limit of movement of the reservoir and when the delivery tube is free of the flap, also that the opening and closing of the valve is entirely automatic, that the valve is not opened by any positively connected member and that no action of the machine or its mechanism can prevent the immediate closing of the valve after it has been opened. By this means sufficient glue is deposited for each passing flap and the accidental leaking or waste of glue, due to the valves remaining open, as in the forms heretofore used, is prevented. This result is due to the fact that no mechanical or other control is retained of the valve opening lever once it is released, but it acts to open the valve the predetermined amount and then it automatically releases the valve and allows it to be closed by the valve spring 44.

After the glue has been deposited upon the ends, as has been described, the flaps are bent or formed up against the ends of the bars by the upper parts 78 of the forming guides 16 which are shaped to produce this result as the soap bars are pushed on through the machine.

The horizontal guide table or plate 2 extends through the machine beyond the forward ends of the guides 16 and the soap bars as they leave said guides are moved progressively along the delivery end of said guide plate 2. Upon this delivery end of the guide plate 2 I provide means for causing the end flaps to be formed in against the previously folded end flaps. This means consists of two lines of rollers 79 rotatably mounted on vertical pins or trunnions 80. The row of pins at each side are rigidly secured in a horizontal plate 81, which in turn is mounted on one leg 82 of an angle member, the other leg 83 standing upright. For yieldingly holding the line of rollers against the row of soap bars passing through the machine, I provide a second angle member 84 beyond each line of rollers secured rigidly upon the bed plate 2 and having openings in its upper leg 85 for receiving pins 86 projecting out from the inner angle members. Between the two angle members I arrange springs 87 on the pins by which the line of rollers is yieldingly pushed inwardly against the row of soap bars, and I provide adjustable nuts 88 on the outer ends of the pins to limit the inward movement of the lines of rollers.

The plates 81 extend toward each other, their inner edges being separated by a narrow crack 89, and they form the table or guide along which the soap bars are moved during the operation upon the bars by the rollers 82.

I claim:

1. In a glue feed controlling mechanism for a wrapping machine or the like, a glue reservoir, a delivery tube dependent therefrom, a valve normally closing the lower end of the tube, and valve operating means having a part adapted to be engaged and moved a predetermined distance and then released, spring means operable to return said part to its first position as released, and means operable by said part on its return movement to open and close said valve.

2. In a mechanism of the kind described, an elevated reservoir for suitable glue, a tube for directing the glue to the point of application, a valve for controlling the outflow of glue, means for alternately lowering and lifting the tube to deposit the glue and to permit a glued flap to pass on, mechanism for opening and closing the valve, and trigger means for releasing the valve operating means, the valve operating means being arranged to automatically complete a cycle of opening and closing the valve each time it is released.

3. In a mechanism of the kind described, a conduit supplied with glue, a valve for controlling the outflow of glue, tension means for normally holding the valve closed, a lever for opening the valve against said tension means, a swinging lever for lifting the valve opening lever, tension means for moving the swinging lever, means for automatically releasing the swinging lever, said swinging lever when released being adapted to lift the lifting lever and immediately release it for closing.

Signed at Chicago, Illinois, this 9th day of October, 1923.

EDDY T. McKAIG.