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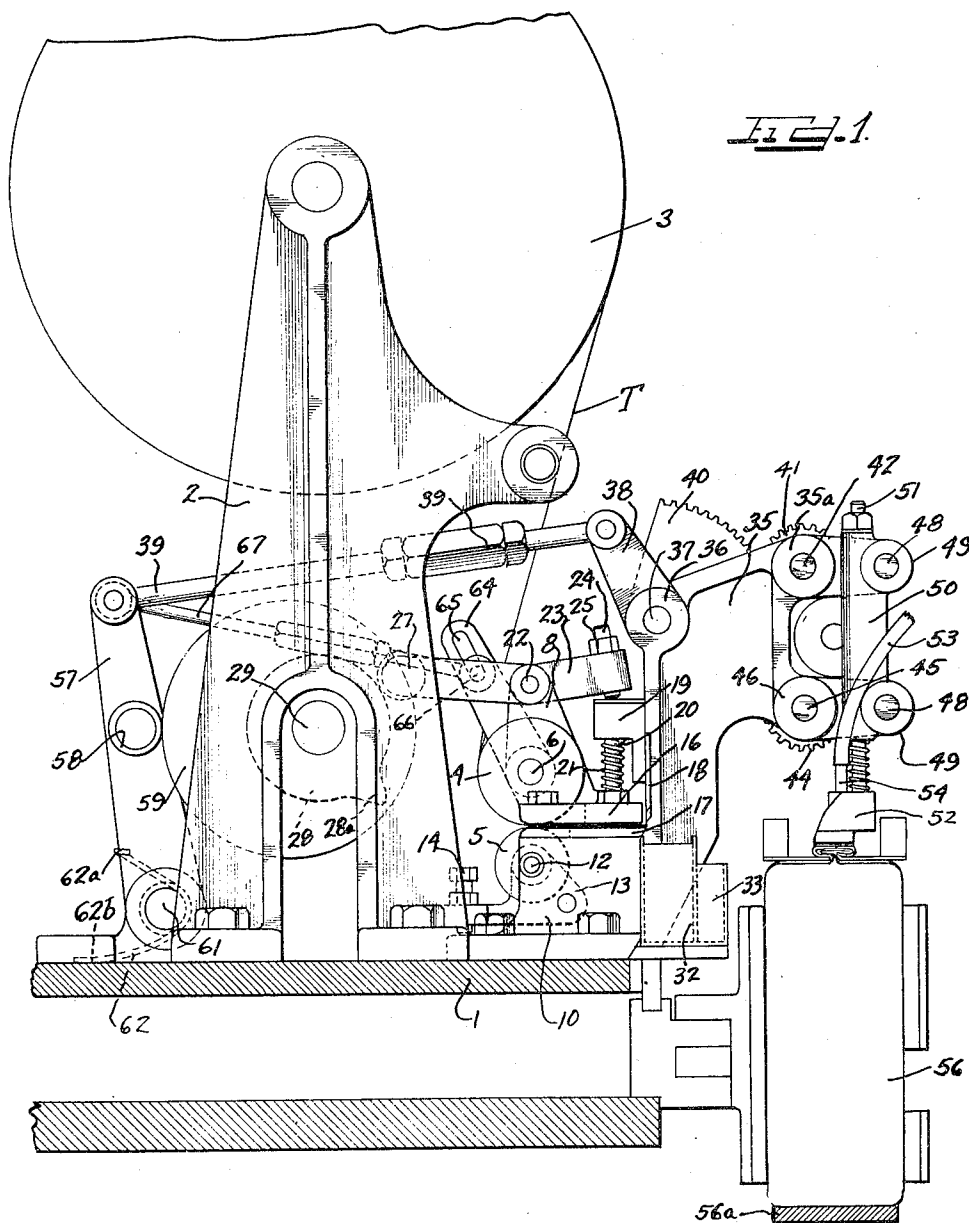
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2,234,017

MECHANISM FOR CUTTING AND APPLYING TAPE TO FILLED BAGS

Filed Jan. 24, 1938

4 Sheets-Sheet 1



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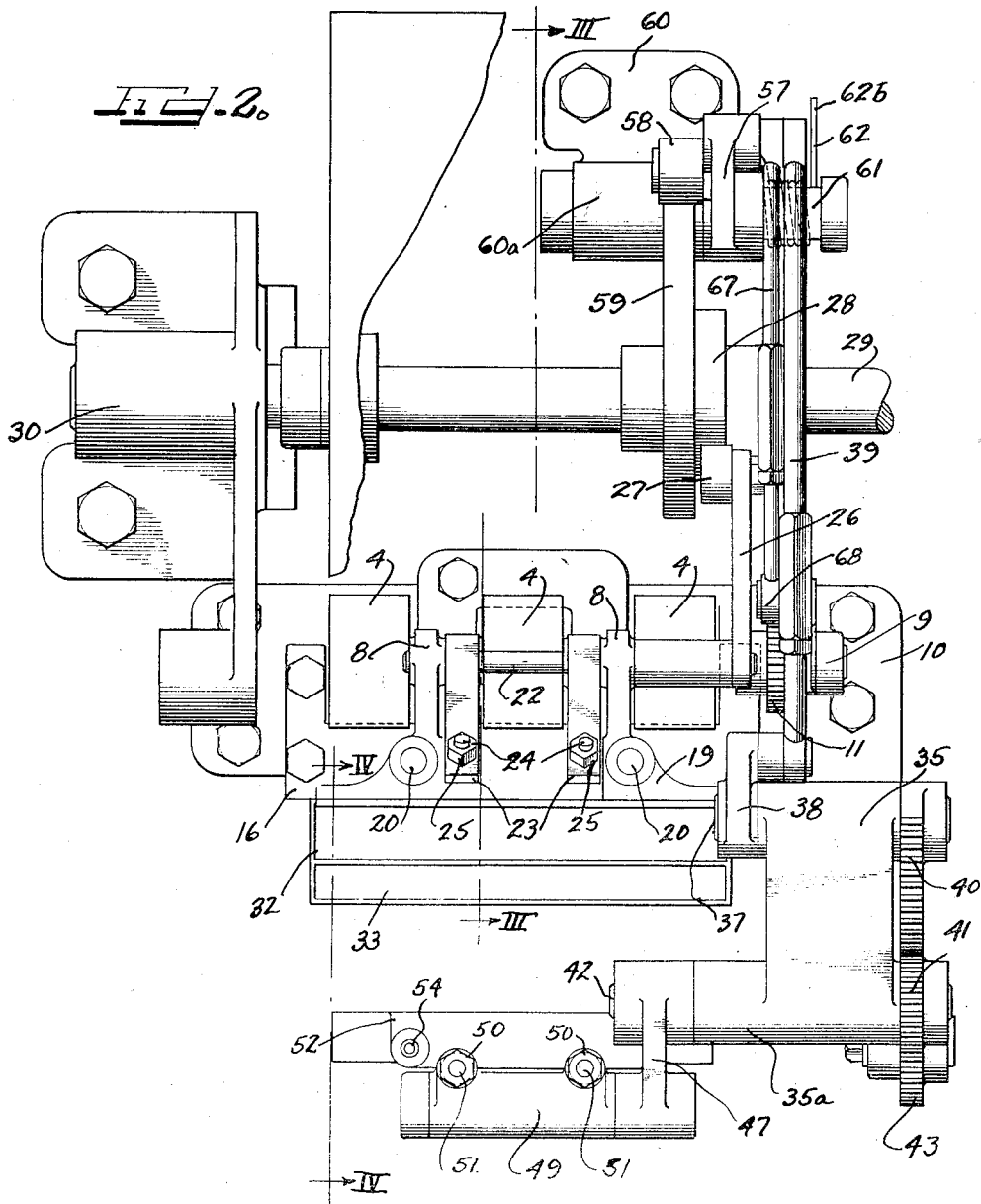
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MECHANISM FOR CUTTING AND APPLYING TAPE TO FILLED BAGS

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4 Sheets-Sheet 2



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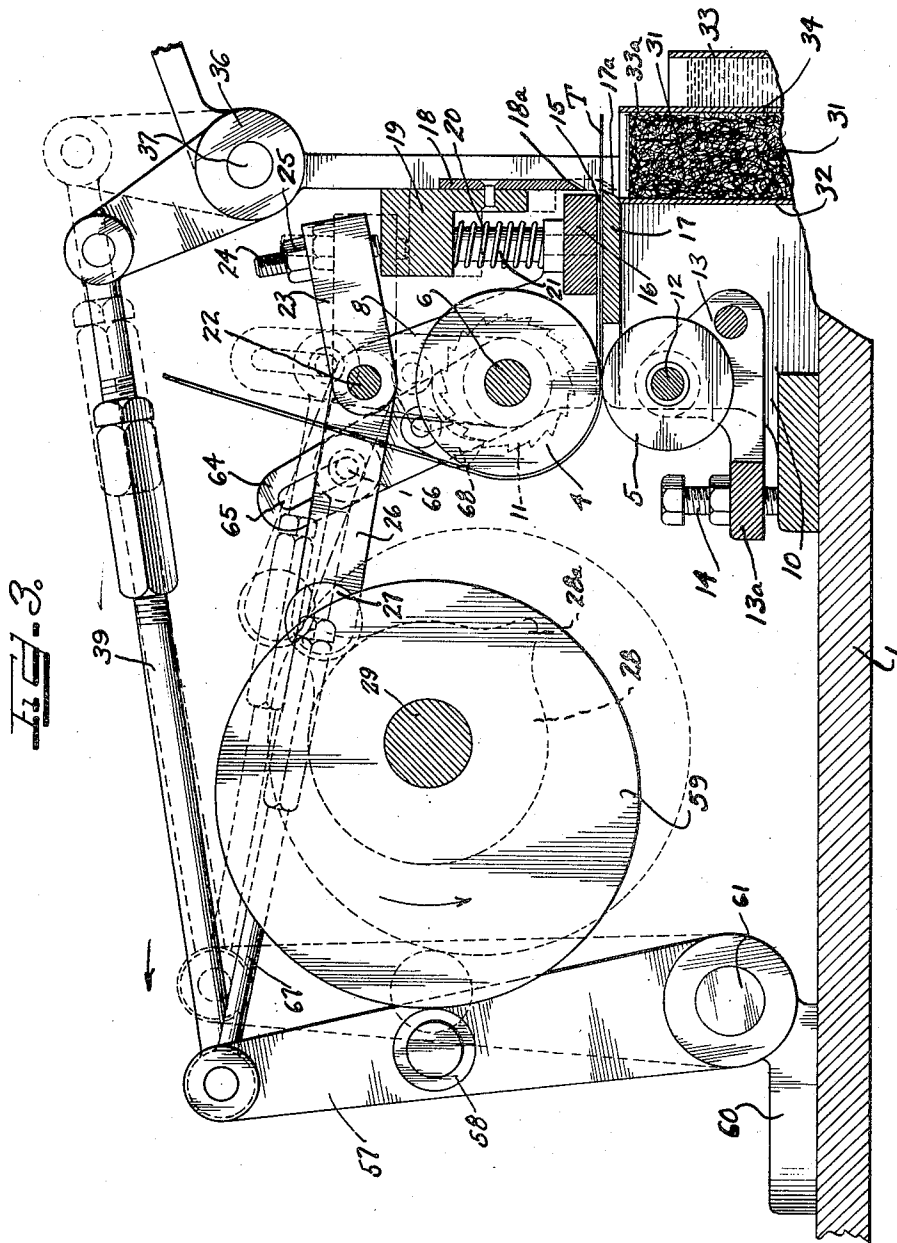
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MECHANISM FOR CUTTING AND APPLYING TAPE TO FILLED BAGS

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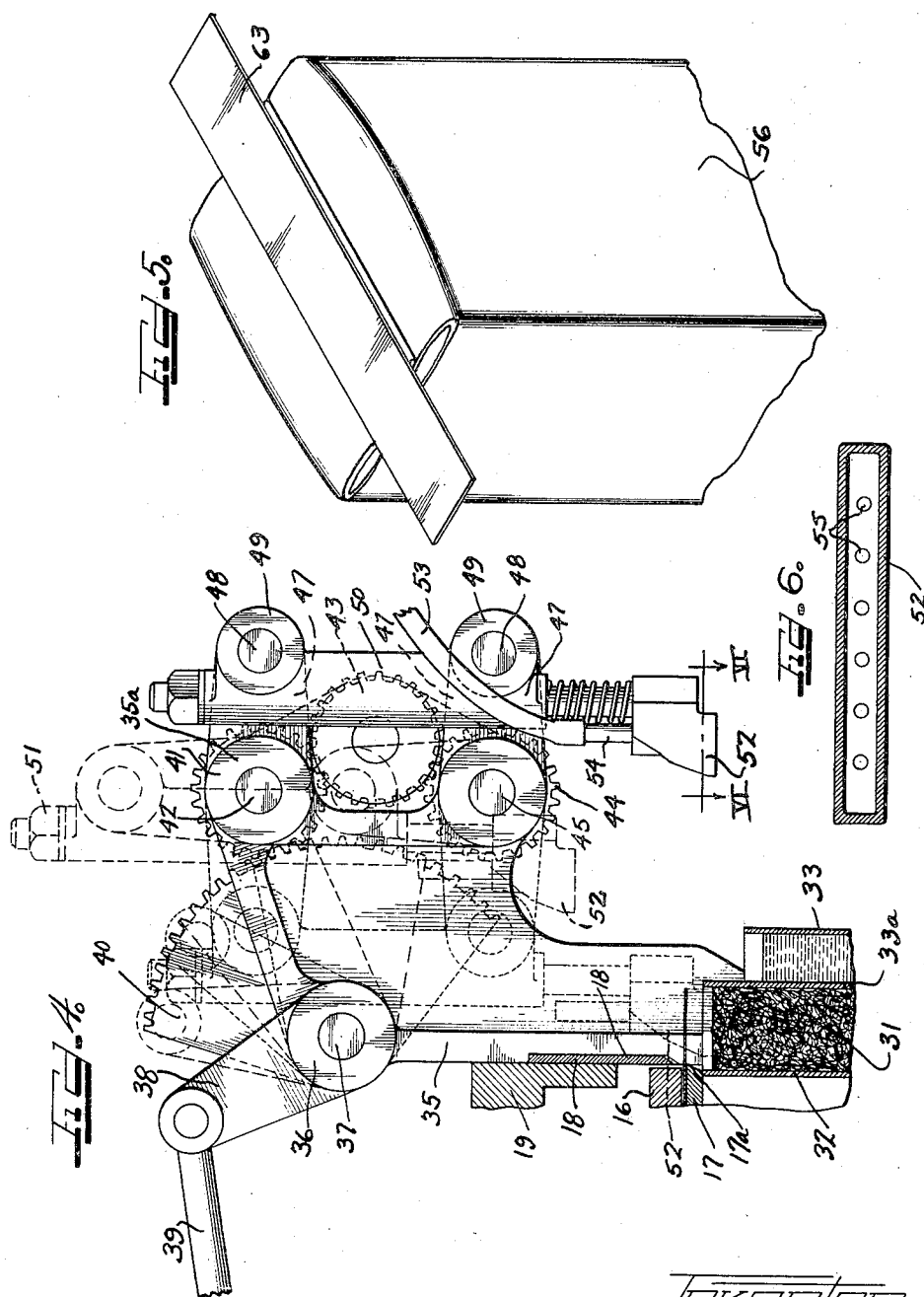
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MECHANISM FOR CUTTING AND APPLYING TAPE TO FILLED BAGS

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4 Sheets-Sheet 4



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MECHANISM FOR CUTTING AND APPLYING
TAPE TO FILLED BAGSHans A. Bauer, Chicago, Ill., assignor to B. F.
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13 Claims. (Cl. 216—25)

This invention relates to an apparatus for and method of cutting and applying tape.

In machines for closing and sealing bags with tape, the empty neck portion of the bag is first folded and the folded neck portion of the bag is properly positioned upon the top of the filled portion and tape is applied over the folded portion. The tape may be applied only upon the top of the bag, or it may be applied across the top and extended a short distance down the sides or ends of the bag.

In the present instance, the tape is preferably applied across the top of the bag with its ends extended beyond the bag whereby the same may be pressed upon the top of the bag and against the ends of the bag to seal the bag. It will, however, be understood that the apparatus can also be used for applying the tape where it is only glued to the top of the bag.

In using a narrow tape of proper width for such a purpose, a reel or roll of tape is soon exhausted and it is necessary to stop the machine and put a fresh roll of tape in place. This results in the loss of time and work done.

It is an object of this invention to overcome the loss of time and work done that resulted from prior practice. To this end, the apparatus and method contemplates using a roll of tape having a width that is equal to the desired length of tape and shearing a narrow strip from the roll, moistening the same, picking it up and conveying it to the top of the filled bag and pressing it thereon.

It is a further object in connection with this invention, to provide a simple apparatus that is exceedingly efficient and involves a simple method for performing the purpose sought to be accomplished.

The invention comprises the novel apparatus and method hereinafter described and more particularly pointed out and defined in the appended claims.

In the accompanying drawings which illustrate a preferred form of this invention and in which similar reference numerals refer to similar features in the different views:

Fig. 1 is an elevational view of an apparatus involving this invention.

Fig. 2 is a top plan view of the same with parts omitted.

Fig. 3 is an enlarged sectional view taken substantially upon the line III—III of Fig. 2 looking in the direction of the arrows.

Fig. 4 is an enlarged part sectional and part elevational view taken substantially upon the

line IV—IV of Fig. 2 looking in the direction of the arrows.

Fig. 5 is a perspective view of a filled bag with its neck portion folded and the tape applied.

Fig. 6 is an enlarged sectional view taken substantially upon the line VI—VI of Fig. 4 looking in the direction of the arrows.

According to this invention, a broad roll of tape is intermittently advanced and a narrow strip is cut transversely from the forward edge for automatically dropping by gravity upon a moistening pad. The narrow strip is then gently pressed against the moistening pad so that the glue on the strip will be sufficiently moistened for gluing purposes. The moistened strip is then picked up by suction means and conveyed over and upon the folded neck portion of the bag and sufficiently pressed down so that it will adhere to the bag.

In referring to the drawings, it will be observed that the operating mechanism of the apparatus is mounted upon a base 1 from which a suitable stanchion 2 rises that supports a reel 3 for a roll of gummed tape T. From the reel 3, the tape descends and passes between an upper series of feed rolls 4 and a lower series of feed rolls 5.

The feed rolls 4, which are three in number, are secured upon a shaft 6 which is journaled in bearing brackets 8 and 9 which are associated with a casting 10 on the base 1. The shaft 6 carries a ratchet wheel 11 adjacent the bracket 9 whereby the shaft 6 may be intermittently operated as will later more fully appear.

The rolls 5 which are also three in number are mounted upon a shaft 12 which is journaled in adjustable bearing brackets 13 (Fig. 3) pivoted to an upstanding part of the casting 10 as indicated at 13, and having an adjustable screw 14 extending through an arm 13a thereon for engaging the base portion of the casting 10. By adjusting the screw 14 the shaft 12 can be raised or lowered to vary the gripping space between the feed rollers.

From the feed rollers 4 and 5, the gummed tape passes through a guideway 15 formed between a plate 16 and a shear plate 17 on the casting 10. With reference to Fig. 3, it will be noted that the forward edge of the plate 17 extends beyond the plate 16 and is formed with a sloping shearing edge 17a with which a reciprocating shearing plate 18 cooperates.

The shearing plate 18 which is provided with a lower bevelled shearing edge 18a is secured to a supporting block 19 which is slidably supported

upon posts 20 rising from the upper guide plate 16. Between the reciprocable block 19 and the plate 16 and surrounding the posts 20 are coiled springs 21 which have a tendency to elevate the reciprocable block 19 and shear plate 18 to inoperative position.

Mechanism has been provided for lowering the shear plate 18 for performing a cutting operation. To this end, a shaft 22 is journaled in the upper ends of the brackets 8 and this shaft has secured thereon a pair of arms 23 through which adjustable bolts 24 extend for engaging the reciprocable block 19. These bolts 24 can be adjusted to vary the effective stroke of the arms 23 by means of the nuts 25.

The shaft 22 is adapted to be actuated in a clockwise direction at the proper time by means of a crank arm 26 secured thereto at one end. The rear end of the arm 26 carries a roller 27 that is in engagement with a cam 28 secured upon the shaft 29 which is journaled in the stanchion 2 and a bearing bracket 30 extending upwardly from the base 1. The cam 28 is provided with a hump 28a which will engage the roller 27 for actuating the crank arm 26 and rocking shaft 22 in a clockwise direction as viewed in Fig. 1 for forcing arms 23 downwardly for actuating the shear plate 18 for severing a strip of tape from the roll.

As soon as a strip of tape is severed as above set forth, it drops upon a moistening pad 31 which may consist of any suitable material confined in a rectangular receptacle 32 to which moisture or water is supplied from an adjacent water holding receptacle 33, the inner wall 33a of which serves as a partition between the water receptacle and the pad receptacle. This partition wall is provided with apertures 34 as indicated in Fig. 3 for the passage of water to the pad 31.

Mechanism has been provided for pressing the severed strip of tape against the pad for moistening the gum or glue thereon and then picking it up and conveying it to the top of a bag. While this mechanism may assume various forms, a preferred form has been illustrated in Figs. 1, 2 and 4 and will now be set forth.

Adjacent one end of the moistening pad, there is an upstanding casting 35 having a bearing 36 in which a shaft 37 is journaled. A crank arm 38 secured upon one end of the shaft is connected to an operating pitman 39 for rocking shaft 37. A gear segment 40 is secured upon the other end of the shaft 37 and this gear segment meshes with a gear 41 mounted upon a shaft 42 journaled in a bearing 35a on the casting 35. The gear 41 meshes with an idler gear 43 journaled upon the casting 35 below the gear 41. The idler gear 43 meshes with a lower gear 44 secured upon a shaft 45 journaled in a bearing 46 on the casting 35.

The shafts 42 and 45 are in vertical alignment and crank arms 47 are secured upon the shafts 42 and 45, one upon each shaft. The outer ends of the cranks 47 are journaled upon spaced shafts 48 which are secured in bearings 49 which are integral with vertical socket members 50 through which bolts 51 extend. To the lower ends of the bolts 51, there is secured a suction presser foot 52.

The suction presser foot 52 consists of a hollow elongated metal member with a suction hose 53 attached to the top thereof by means of a short pipe 54. The suction hose is adapted to be con-

nected to any conventional air pump or the like for providing a suction in the presser foot. The bottom of the presser foot 52 is provided with a plurality of apertures 55 (Fig. 6) for creating a suction effect upon the strip of severed tape as will later more fully appear.

The suction presser foot 52 is adapted to be moved back and forth between the moistening pad and the bag which is represented by the reference 56 as positioned upon a runway 56a. To this end, the aforementioned pitman 39 is pivotally connected at its rear end to an upstanding crank arm 57 which carries a roller 58 at an intermediate point that is in engagement with a cam 59 secured upon shaft 29. The lower end of the crank arm 57 is pivoted to a casting 60 which is provided with a bearing for receiving a pivot stud 61 upon which the crank arm is pivoted. A coil spring 62 is wound around the pivot pin 61 with one end 62a hooked over the edge of the crank arm 57 and the other end 62b extending longitudinally in contact with the base 1. The normal tendency of the spring 62 is to force the crank arm 57 to the right to actuate the suction presser foot in an upward and rearward direction.

During the actuation of the presser foot in a direction toward the bag 56, the feed rolls 4 and 5 are rotated for advancing the tape and shearing a strip therefrom such as shown at 63 in Fig. 5. To this end, a crank arm 64 is pivoted upon the upper roller shaft 6. The upper end of the crank arm is provided with a slot 65. A bolt 66, which is adjustably clamped in said slot, is connected to the forward end of a pitman 67 which is pivotally connected at its rear end to the crank arm 57.

The crank arm 64 carries a pawl 68 (Fig. 3) that engages the ratchet wheel 11 when the pitman 67 is actuated toward the left in a rearward direction and that rides idly over the ratchet wheel 11 when the pitman moves to the right or in a forward direction.

In the position of the parts as shown in full lines in the drawings, the tape has already been advanced with a portion projecting beyond the shear plates as shown in Figs. 1 and 3. The cam 59 is shown in full lines with its greatest radius engaging the roller 58. As the cam 59 rotates from this position through the operation of shaft 29, the radius acting against roller 58 will gradually decrease and bring spring 62 into action for moving crank arm 57 and the parts connected thereto in a forward direction or to the right.

As the pitman 39 is moved forwardly, the gear segment 40 will cause the gears 41, 43 and 44 to rotate. The gears 41 and 44 will rotate in an anti-clockwise direction as viewed in Fig. 4 and will rotate the shafts 42 and 45 to which they are secured in the same direction. This rotation of the shafts 42 and 45 will cause the crank arms 47 and the presser foot 52 to rotate through arcs of substantially 180° as shown in dotted lines in Fig. 4.

However, before the suction presser foot is rotated 180° in a rearward direction, the cam 28 engages the roller 27 for actuating the arm 26 and rocking shaft 22 and arms 23 thereon in a clockwise direction for actuating the shear plate 18 for severing the advanced tape. The severed strip of tape drops by gravity upon the moistening pad.

When the suction presser foot 52 and the parts associated therewith have been rotated substan-

tially 180° as above set forth, they will move downwardly and the presser foot will press the severed strip of tape against the moistening pad for moistening or wetting the gum or glue.

At this time, suction is created in the suction line 53 and presser foot 52 for causing the severed strip of tape to adhere to the bottom of the presser foot.

When the severed strip of tape is under suction, the cam 59 will begin to engage roller 58 and move the pitman 39 in a rearward direction causing a reverse rotation of gears 41, 43 and 44 with the result that shafts 42 and 45 will now be rotated in a clockwise direction for causing the crank arms 47 and presser foot 52 with the severed strip of tape adhering thereto to move over a bag and descend and press the strip of tape upon the fold of the bag as shown in Fig. 1.

During the rearward movement of the crank arm 57, the pitman 67 will actuate the crank arm 64 for again advancing the tape to the position shown in Fig. 3 for a repetition of the operation just described.

From the foregoing, it will be appreciated that a simple novel apparatus and method has been provided for shearing narrow strips of tape transversely from a coil of tape on a reel, properly moistening the gum or glue thereon, then transporting the same and pressing the same upon the folded neck portion of a filled bag.

It is characteristic of this invention that the severed strip of tape is caused to be moistened and transported over the top of the bag and pressed thereon by a single member which moves in an arc of substantially 180°.

While the strip of tape 63 is shown as pressed directly upon the fold of the bag, the position of the bag could be varied so that the strip 63 would be pressed partly upon the fold and partly upon the adjacent bag top of the bag to seal the fold. In the latter event a narrower reel of tape having a width substantially equal to the endwise width of the bag could be used.

The foregoing described apparatus is adapted to constitute one of the units of bag closing machine in which an intermittently operating conveyor is used to advance the bags in timed relation to the operation of the parts.

I am aware that numerous changes may be made in the apparatus and method involved, so I do not propose limiting the patent granted thereon otherwise than necessitated by the prior art.

I claim as my invention:

1. In an apparatus of the class described, mechanism for feeding a web of gummed tape, means for severing a strip of tape from said web, a moistening pad upon which the severed strip of tape descends, a suction presser foot, means for moving said presser foot in an arc for contacting said severed strip and pressing the same against said moistening pad, and causing the same to adhere to said presser foot, and means for moving said presser foot in the same arcuate path in the opposite direction and applying said severed strip to a bag.

2. In an apparatus of the class described, means for advancing a web of gummed tape having a width corresponding to the length of strip desired, means for transversely shearing a narrow strip from said tape, a moistening pad beneath said means for receiving the sheared strip, and a member movable in an arc from a predetermined position for pressing said strip upon said pad and then picking it up and conveying it in

the same arcuate path to said predetermined position for applying the same to a bag.

3. In an apparatus of the class described, a moistening pad, a bag runway, means for severing a strip of tape for dropping upon said pad, a suction presser foot, means for supporting said presser foot for movement between said moistening pad and bag runway for conveying the severed tape from said pad to said bag runway and applying the same upon a bag.

4. In an apparatus of the class described, a moistening pad for moistening strips of tape, a bag runway spaced from said pad, a suction presser foot, means for mounting said presser foot for movement in an arcuate path between said pad and runway and means for actuating said presser foot.

5. In an apparatus for applying gummed tape to a bag, a moistening pad, means for advancing a web of tape over said pad, means for shearing a strip of tape from said web for descent upon said pad, a runway for the bag, a presser foot, means for mounting said presser foot for movement in an arcuate path between said pad and runway for picking up a strip of tape from said pad and conveying it to said runway and pressing it upon a bag, and means for operating said presser foot.

6. In an apparatus for applying sealing tape to bags, a moistening pad, means for advancing a strip of tape over said pad, a bag runway spaced from said pad, a presser foot, means for mounting said presser foot for movement in an arc between said pad and runway, means for moving said presser foot from said runway to said pad, means for shearing a piece of tape from said strip for descent upon said pad while said presser foot is moving toward said pad, said presser foot being adapted to press said severed strip upon said pad and cause the same to adhere thereto and means for moving said presser foot to said runway for applying the severed tape upon a bag.

7. In an apparatus for applying gummed tape to bags, a reel of tape having a width equal to the length of tape desired, a moistening pad, means for advancing the forward portion of said tape over said pad, means for transversely shearing a strip from said tape for descent upon said pad, a suction presser foot, and means for moving said presser foot down upon said strip for moistening said strip and causing the same to adhere to said presser foot, and means for elevating and moving said presser foot for applying said strip to a bag.

8. The method of sealing a filled container, which consists in transversely severing a strip of tape from a gummed tape web having a width corresponding to the desired length of tape, allowing the severed strip to drop to a moistening position and subjecting its gummed side to moisture, and thereafter moving the moistened strip to the container and applying it thereto under pressure with its gummed side down.

9. Apparatus for sealing containers comprising moistening means, a container runway, means for successively supplying and subjecting tape sealing strips to said moistening means, and means including a member actuated in timed relation to said second means for picking up strips as they are moistened and applying them under pressure to a container in said runway.

10. Apparatus for sealing containers comprising a container runway, means for successively feeding gummed tape strips to a position adja-

cent said runway, means for subjecting the gummed sides of the strips to moisture, and means including a presser foot operable in timed relation to the strip moistening operation for 5 successively picking up and carrying the moistened strips to the runway and applying them to the containers under pressure.

10 11. In apparatus for applying a sealing tape to containers, a container runway, means for advancing a web of tape having a width equal to the desired length of tape and the container, moistening means, mechanism for severing a strip from the forward end of the web and delivering it to said moistening means, and means actuated 15 in timed relation to said mechanism including a member for picking up and transporting each severed piece of moistened tape from said moistening means to the runway and applying it to a container therein under pressure.

20 12. The method of sealing a filled container having a folded open end portion, which consists in transversely severing a strip of tape from a gummed tape web having a width corresponding to the desired length of tape, allowing the severed

strip to drop with its gummed surface downwardly onto a moistened surface, thereafter pneumatically applying pressure against one surface of the strip to retain the strip in engagement with an element having a strip-engaging surface, moving the element with the moistened strip on its 5 surface to the container, and utilizing said element to position the moistened strip on the folded portion of the container and press the gummed side of the strip against the same. 10

13. In apparatus for sealing a filled container having a folded open end portion, means for advancing a web of gummed tape, mechanism for severing a narrow strip from said tape, means 15 for moistening the gummed portion of the severed strip, and means actuated in timed relation to said mechanism including a presser suction member for picking up the moistened strip, conveying it away from the moistening means and applying it to said container with its gummed 20 portion engaging the folded portion of the container.

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