Dec. 15, 1959 C. R. LEIGHTON ET AL 2,916,863

BAG TYING MACHINE

Filed Dec. 9, 1954 2 Sheets-Sheet 1

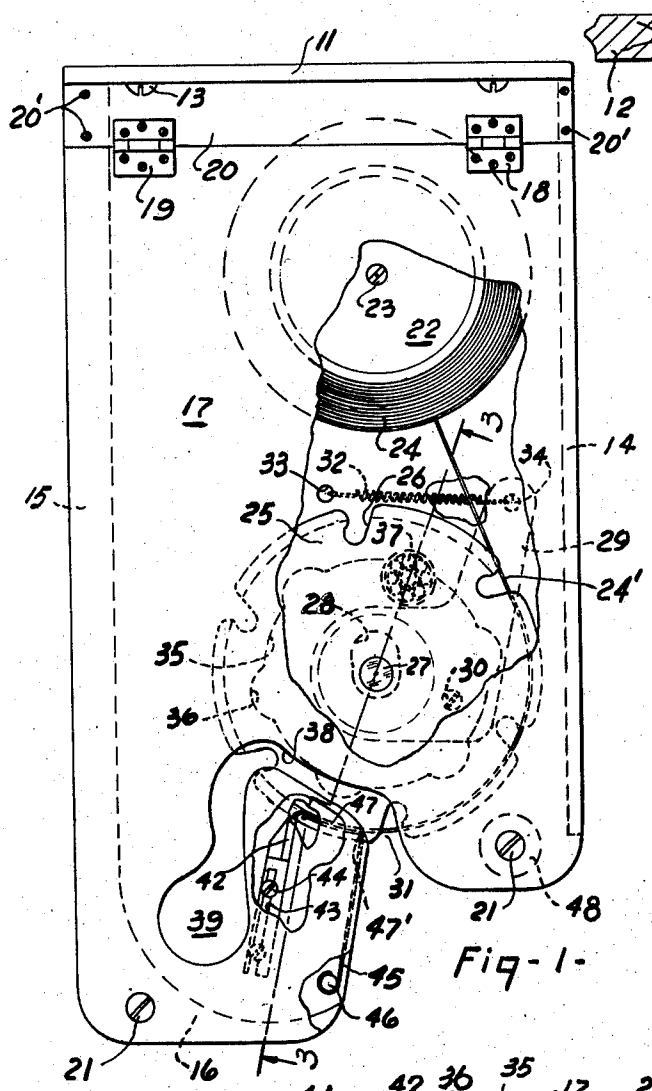

Fig-1-

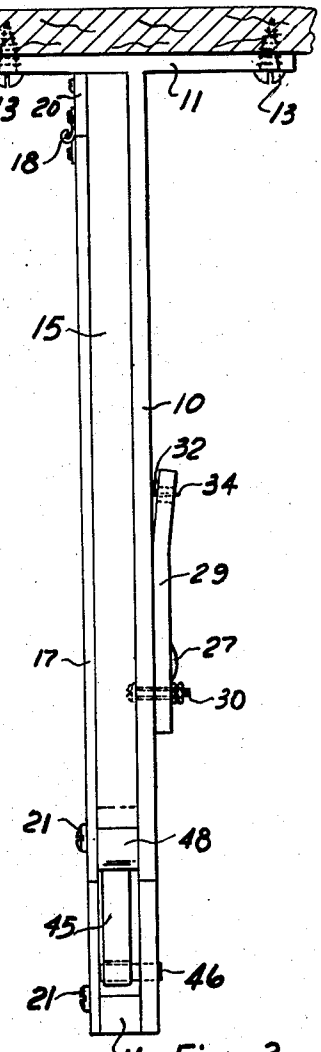

Fig-2

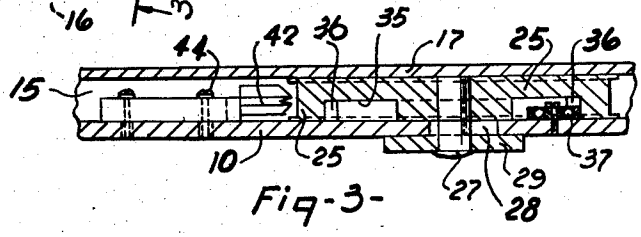

Fig-3-

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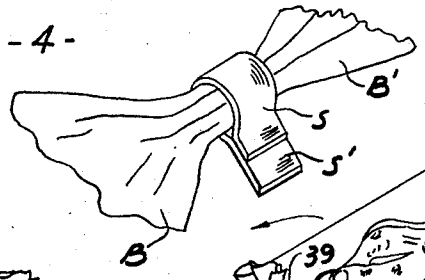
Fig-4-



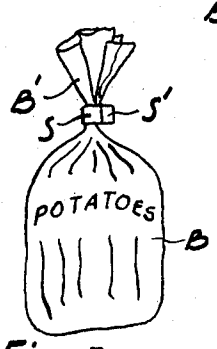


Fig-5-

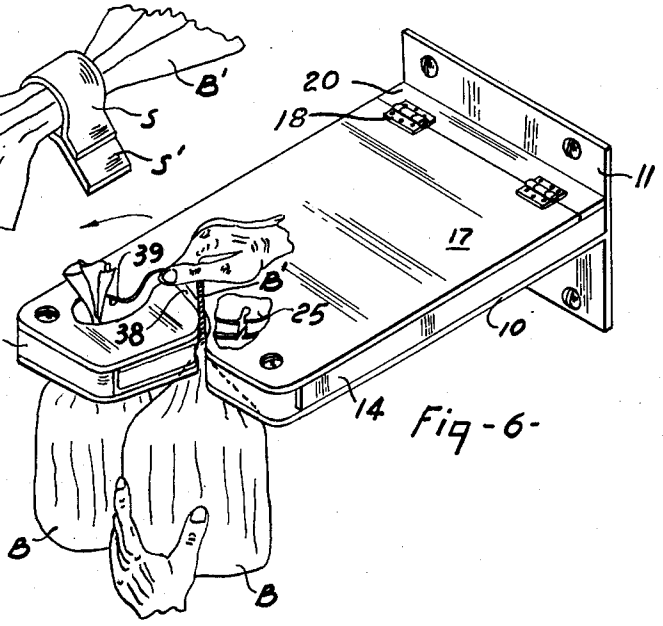


Fig-6-

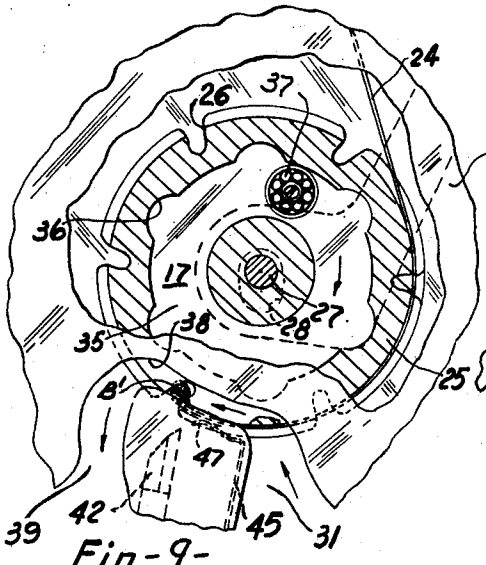


Fig-9-

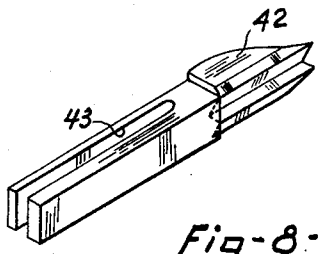


Fig-8-

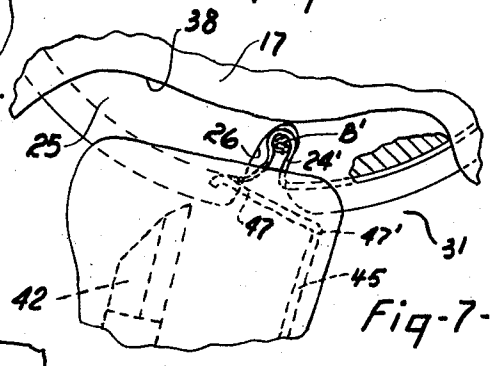


Fig-7-

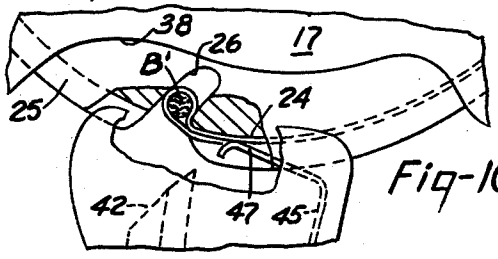


Fig-10-

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BAG TYING MACHINE

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14 Claims. (Cl. 53—135)

This invention relates to a bag tying machine.

It is an object of the present invention to provide a bag tying machine adapted to tie the bag with tacky tape by a simple operation including a thrust of the folded bag top into a slot and moving the bag with the tape to a removing position so as to effect the cutting of the tape and removal of the sealed bag from the machine.

It is another object of the invention to provide a machine for tying bags which is so adapted that it can be easily supported on a wall by wall brackets or on a table and readily available to the operator so that the placing of the bag in the machine and the operation of the machine can be effected with minimum effort and to save labor costs.

It is another object of the present invention to provide a bag tying machine which is effective with tacky tape which will automatically place the tape about the folded bag and as the operation continues automatically cut the tape so as to permit the severance of the bag and the tape from the machine.

Other objects of the present invention are to provide a bag tying machine having the above objects in mind which is of simple construction, inexpensive to manufacture, has a minimum number of parts, compact, light in weight, easy to operate, minimum wear on parts, of pleasing appearance, efficient and effective in use.

For other objects and a better understanding of the invention, reference may be had to the following detailed description taken in connection with the accompanying drawing, in which:

Figure 1 is a top plan view of the bag tying machine embodying the features of the present invention;

Fig. 2 is an elevational view of the bag tying machine attached to a wall;

Fig. 3 is an enlarged fragmentary sectional view of the bag tying machine taken through the operating parts and as viewed on line 3—3 of Fig. 1;

Fig. 4 is a perspective view of the sealing tape secured about the folded portion of the bag, only a fragment of the bag being shown and the tape being enlarged;

Fig. 5 is an elevational view of a complete bag showing the relative position of the tape sealing the folded open top part of the bag;

Fig. 6 is a perspective view illustrating the manner in which a polyethylene bag having its top part twisted is forced into the machine and also showing the location of the bag at the end of the tying operation and at the time it is removed from the machine;

Fig. 7 is an enlarged fragmentary plan view of the machine at the beginning of the tying operation and illustrating the manner in which the tape is peeled from the control finger for the tape;

Fig. 8 is a perspective view of the knife element removed from the machine;

Fig. 9 is an enlarged fragmentary plan view of the machine with portions broken away and illustrating the manner in which the control finger wipes the end of the tape upon itself to finally seal the bag and just prior

to the dragging of the tape over the knife element to sever it.

Fig. 10 is an enlarged fragmentary view with some parts broken away, showing the position of the tape when the parts are in the position shown in Fig. 9.

Referring now to the figures, **10** represents a bottom base plate having a vertical wall attaching flange **11** by which the machine is attached to a wall **12** with screws **13** extending through the flange and into the wall.

At the opposite sides of the base plate **10** are respectively two vertical spacers **14** and **15**, the spacer **15** being curved at the inner side of its outer end as indicated at **16**. The spacers **14** and **15** serve as a support for a top cover **17** which is connected by two hinges **18** and **19** to a rigid plate portion **20** running along the flange **11** and rigidly secured to the spacing members by means of screws **20'**. The cover can be hinged upwardly to provide access to the operating parts. Screws **21** are used to secure the cover **17** in place over the parts and to the base plate **10**.

On the base plate **10** and under the cover **17** there is provided a reel **22** that is rotatably mounted upon a screw or post **23**. Upon the cover being lifted, a roll **24** of tacky tape may be fitted over the reel. This tape is of narrow width, of the order of three-eighths of an inch and is led off from the roll **24** over a notched guide wheel **25** that has a plurality of notches **26** in the periphery thereof that extend at a slight angle to the radius thereof. This notched guide wheel **25** is journalled on a moving pivot **27** that extends through an elongated slot **28** in the base plate **10**. This pivot **27** is mounted on a crank arm **29** and the crank arm is in turn pivotally connected by bolt and nut means to the underside of the base plate **10**. The notched wheel **25** is biased toward a feed opening **31** within the base plate **10** and cover **17** by the action of a tension spring **32** anchored at one end in a hole **33** in the base plate **10** and secured at the other end to a hole **34** in the bell crank arm **29**.

A recess **35** is provided in the bottom of the notched guide wheel **25**, and this recess has a plurality of angularly spaced peripheral stop indentations **36** for receiving a ball bearing assembly **37** that is fixed to the base plate **10** and against which the notched guide wheel **25** engages under the action of the crank **29** and the spring **32**. The ball bearing assembly **37** and the indentations **36** serve as an indexing arrangement for stopping the notched guide wheel **25** so that the notches **26** are caused to be registered one at a time with the mouth opening **31** into which the gathered or twisted end of a polyethylene bag B is inserted.

Tape **24'** is fed from the tape roll **24** with its tacky side out forwardly over the periphery of the guide wheel **25** which is recessed to hold the tape against vertical displacement therefrom. This tape transverses the notches **26** and the mouth opening **31** as the guide wheel is turned.

After the bag B is filled with potatoes or other goods, the open top end is gathered and twisted in order to provide minimum bulk to enter the mouth opening **31** in the manner as illustrated in Fig. 6. The bag is supported with two hands with one hand on the twisted top and the other hand underneath. The gathered and twisted top B' of the bag engages the tacky side of the tape in the mouth opening and as it, with the tape, is forced inwardly, it takes this tape into any one of the notches **26** and then by means of the notched wheel, the top B' and the tape are taken laterally through a curved passage **38** having an enlarged end **39** to allow the gathered end of the bag when sealed to drop downwardly out of the machine. By movement of the gathered top B' of the bag into the notch **26** in the guide wheel **25** the tape **24'** is folded and sealed about the gathered portion of the

bag. As the movement continues through the passage 38, which is formed in the cover 17 as well as in the base plate 10, the end of the tape is folded upon itself and closed about the top B'. As the bag and the tape pass into the enlarged end 39 of the passage 38, the folded tape is drawn over a knife element 42. The knife element 42 has an elongated slot 43 and screws 44 secure the knife to the base plate 10, at the proper adjusted position to give desired maximum cutting effect. The knife is stationed so that the cut, upon the tape, is effected to cut the folded end from the tape and so that there is some overlap S' of the ends of cut sealing strip S, Figs. 5 and 6. The overlap S' may be folded over the loop of the strip and adhered thereto. In order to retain and maintain control of the end of the tape, there is a flat pressure wiping spring 45 which is anchored upon a pin 46 at one end and bent to provide a wiping finger portion 47 that is biased toward and runs along the periphery of the notched wheel 25. The tension spring 32 and the lever 29 at all times, except when the wheel is urged and pressed toward the reel 22, urge the notched wheel and the tape 24' against the finger portion 47 that thus serves as a stop therefor.

The finger portion 47 of the spring 45 is so sprung and biased inwardly as to effect a wiping action upon the tape over the gathered portion B' of the bag to cause the end to be sealed. Upon the sealing strip having been secured to the bag and severed from the tape end, the new tape end will be held by adhesion to the face of the bent finger portion 47. Each time the wheel is turned with the bag, the end of the strip is held by the finger portion 47 and the strip is peeled therefrom beginning from its heel end 47' until finally released from the surface of the spring end 47, and cut. The new end of the tape then becomes adhered to the finger portion 47 and control thereof is thereby maintained. The machine is thus made ready for the next tying operation.

It is also noted that when the wheel 25 is cammed toward the tape reel by the member 37 when it rides out of one of the indentations 36, the periphery of the wheel is drawn away from the spring end 47 so that the tacky surface of the tape following the bag is held away from the spring end by the bag and does not cling thereto. The rotation of the wheel, as shown in Fig. 7, gradually peels the end of the tape forwardly of the bag B' from the tape-engaging member 47 with the extreme free end portion of the tape being held by this member until the tape is wrapped around the gathered bag top and this end finally pulled away from the member 47. That part of the tape on the wheel following the bag is held away from the member 47 until the member 37 reaches the next indentation 36 of the guide wheel and permits the wheel to move away from the tape supply roll under tension of the spring 32.

When the bag reaches the enlarged end of the passage 38, the guide wheel is returned to its original position by the spring 32 and the bag is moved outwardly into the discharge end 39 of the passage 38, thus drawing the tape against the severing knife 42. The bag may then be withdrawn from the machine in a direction substantially parallel to the axis of the guide wheel.

If, for any reason, it is necessary to arrange the tape upon the notched wheel or to place a new reel or roll 24 in the machine, the fastening screws 21 are disengaged from the base plate 10 and the cover 17 lifted upon its hinges 18 and 19. The base plate 10 is held rigidly upon the wall in the manner above described. A round spacing member 48 is provided at one side of the base plate 10 and is secured by one of the screws 21. The parts may be made either of plastic, as shown, or of metal.

While various changes may be made in the detail construction, it shall be understood that such changes shall be within the spirit and scope of the present invention as defined by the appended claims.

What is claimed is:

1. A tacky tape bag tying machine comprising a flat base plate, a reel journaled on said base plate adapted to receive a roll of tacky tape, a notched tape guide wheel having notches adapted to receive a gathered bag, connected to said base plate for pivotal adjustment with respect thereto, a lever pivoted on the base plate, means for connecting said guide wheel to said lever for rotation thereon, a spring finger tape control member anchored to said base plate and adapted to maintain the end of the tape against the periphery of said guide wheel and to which the tacky side of the tape will adhere to maintain control of the same, tensioning biasing means connected between the base plate and the lever for urging the notched wheel toward said spring finger control member, said base plate having a passage through which the gathered bag top is passed with the guide wheel to receive the tape and to remove the tape end from the spring finger tape control member, and a knife element having its cutting edge lying adjacent to the finger control member and over which the tape may be drawn to sever it.

2. A tacky tape bag tying machine as defined in claim 1, and said knife element being adjustably secured to said base plate adjacent to said bag passage, said bag passage in the base plate having an enlarged discharge portion running parallel to said knife element.

3. A tacky tape bag tying machine as defined in claim 1, and spacing members on the top of said base plate and a cover plate supported upon said spacing members and overlying the operating parts of the machine, said cover plate having a passage conforming to and in registry with the passage in the base plate.

4. A tacky tape bag tying machine as defined in claim 1, and index means disposed between the base plate and the notched wheel for effecting indexing movement of the notched wheel upon the base plate.

5. A tacky tape bag tying machine as defined in claim 1, and said notched guide wheel being recessed on one face thereof and having angularly spaced indexing indentations in the wall of said recess and ball bearing means carried on said base plate to enter said indentations whereby indexing of the notched wheel is effected with respect to the passage as the wheel is turned.

6. A tacky tape bag tying machine comprising a flat base plate having an elongated slot, a notched tape guide wheel having notches adapted to receive a gathered bag, a bell crank lever pivoted upon the underside of said base plate, a pivot pin carried on said lever and projecting upwardly through said elongated slot, said notched guide wheel journalled on said pivot pin, a reel journalled on said base plate adapted to receive a roll of tacky tape so that it may be fed to said notched wheel, a tape control spring member anchored on said base plate and having a finger portion running along the periphery of said notched wheel and to which the tape may be adhered, tension spring means extending between said base plate and said bell crank to urge the notched wheel toward said tape control spring member, said base plate having an elongated passage through which the gathered bag may be passed to receive the tape and to cause the tape to be forced into a notch and to be folded about the gathered portion of the bag, said wheel upon being turned and the bag passed through the slot serving to peel the tape from the finger portion, a knife member adjustably secured to said base plate adjacent to the end of said finger portion, said bag passage having a discharge portion extending parallel to said knife so that the tape can be drawn over the edge of the knife, a ball bearing assembly fixed to said base plate, said notched wheel being recessed on one face thereof and having angularly spaced indentations for receiving said ball bearing means whereby indexing of the notched wheel can be effected as the wheel is turned.

7. A tacky tape bag tying machine as defined in claim 6, and a vertical wall attaching flange on one end of

said base plate, a rigid plate portion extending outwardly from the flange and spaced above the base plate, a cover hinged to said rigid plate, spacers on said base plate, said cover adapted to rest upon said spacers over the operating parts and having a passage conforming to said passage in the base plate and registered with it, and means for releasably fastening said cover to said base plate.

8. A tacky tape bag-tying machine comprising a frame member, means on said member for rotatably supporting a roll of tacky tape, a notched guide wheel, means for mounting said guide wheel on said frame member for rotative movement, a tape-engaging member on the frame member to maintain the tape in a position extending along the periphery of the wheel spanning a notch therein and to which member the tacky side of the tape adheres, means on the frame member providing a passage through which a gathered bag top may be passed to be inserted into a notch in the guide wheel whereby the tape is depressed into said notch and the wheel may be turned by movement of the bag to fold the tape around the bag with the free end of the tape held by said tape-engaging member, and a severing member on the frame against which the tape may be drawn to sever it after said folding operation.

9. A bag-sealing machine comprising a frame member, a guide wheel rotatably mounted thereon having a notch in its periphery in which a gathered bag is received whereby the wheel may be rotated by movement of the bag, means on the frame member for mounting a supply roll of tacky tape with the nontacky side of the tape supported upon the periphery of the wheel and spanning said notch to be depressed therein when the gathered bag is received in the notch, means to engage the tacky side of the tape on the side of said notch opposite the supply roll whereby, when the wheel is rotated by movement of the bag, the tape is peeled from said engaging member and wrapped around the bag, and a severing member on the frame against which the tape may be moved to sever the tape after said folding operation.

10. A bag-sealing machine comprising a frame member, a guide wheel rotatably mounted thereon having a notch in its periphery in which a gathered bag is received whereby the wheel may be rotated by movement of the bag, means on the frame member for mounting a supply roll of tacky tape with the nontacky side of the tape supported upon and facing the periphery of the wheel and spanning said notch to be depressed therein when the gathered bag is received in the notch, means to engage the tacky side of the tape on the side of said notch opposite the supply roll whereby, when the wheel is rotated by movement of the bag, the tape is peeled from said engaging member and wrapped around the bag, and a severing member on the frame against which the tape may be moved to sever the tape after said folding operation, said frame having an open portion into which the bag may be moved away from said notch to be withdrawn from the machine.

11. A tacky tape bag-tying machine comprising a frame, means on the frame for rotatably supporting a roll of tacky tape, a notched guide member, means for mounting said guide member on the frame for rotative movement, a tape-engaging member engaging the free end of the tape to hold a portion of the tape lying between said tape-engaging member and the tape roll in position to span the notch on the guide member, means on the frame providing a passage into said notch through which a gathered bag top may be passed to depress the tape into said notch whereby the guide member can be turned by movement of the bag and the latter passed between said tape-engaging member and the guide member to wrap the tape around the bag, and means to sever the wrapped portion of the tape from that remaining connected to the supply roll.

12. A bag-tying machine as in claim 11 wherein the passage has a closed end discharge portion from which the bag top may be withdrawn in a direction substantially parallel to the axis of said notched guide member.

13. In a bag-sealing machine, a frame comprising spaced wall members, a tape guide member rotatably mounted between said wall members and presenting a tape-receiving notch, means for supporting a roll of tape, tacky on one side, between said wall members with a portion of the tape spanning said notch and the nontacky side of the tape facing the notch, each of said wall members being provided with a slot having an open mouth through which a bag top may be inserted into said notch to depress the tape therein with the tacky side thereof facing the bag top, said slots being of arcuate shape about the axis of the guide member to permit the latter to be turned by movement of the bag along said slots, and means on the frame between the wall members to engage the free end of the tape and fold it about the bag top during such movement.

14. A bag-sealing machine as in claim 13 wherein at least one of said slots has a closed portion at the end thereof opposite the mouth through which the sealed bag top may be withdrawn in a direction substantially axially of the guide member.

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