July 21, 1959 E. E. LAKSO 2,895,273

METHOD AND APPARATUS FOR WADDING CONTAINERS

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FIG. 1

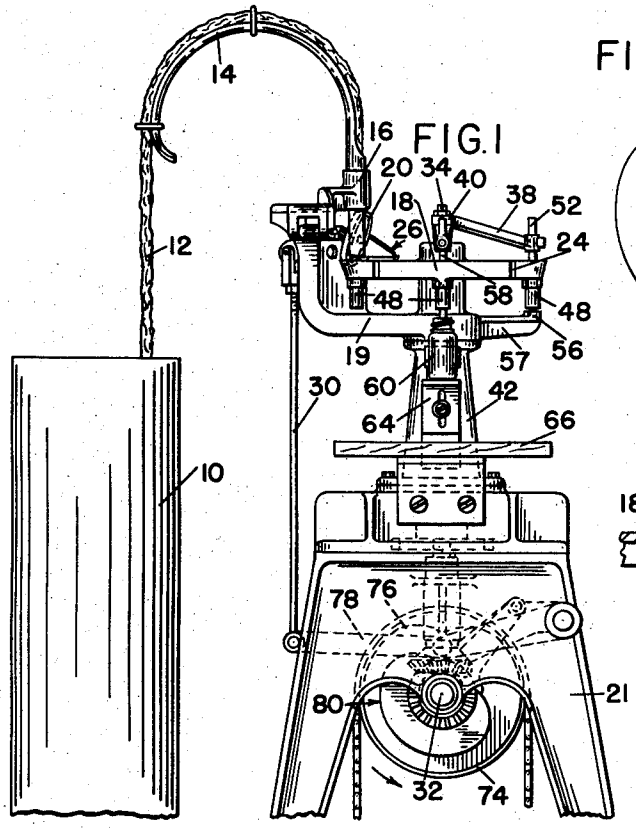


FIG. 4

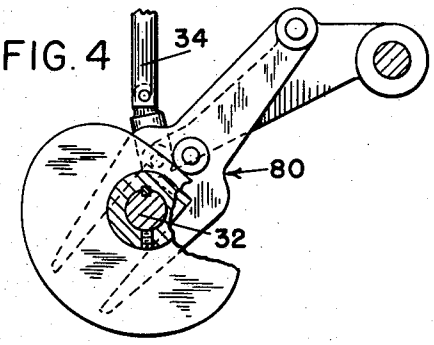


FIG. 5

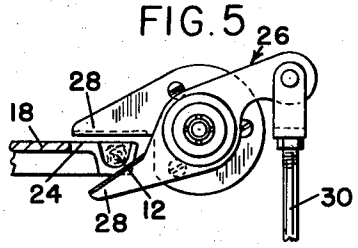


FIG. 6

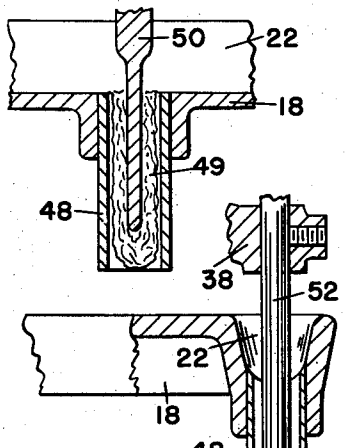


FIG. 7

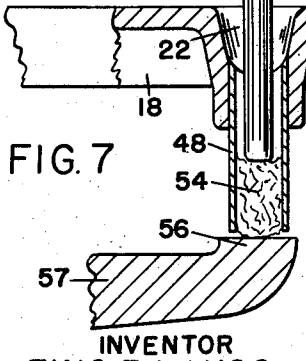
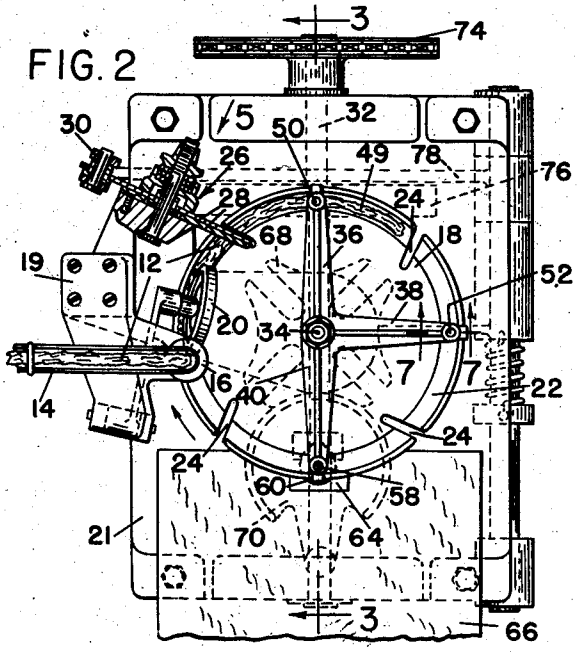


FIG. 2



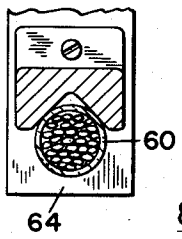
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FIG. 8



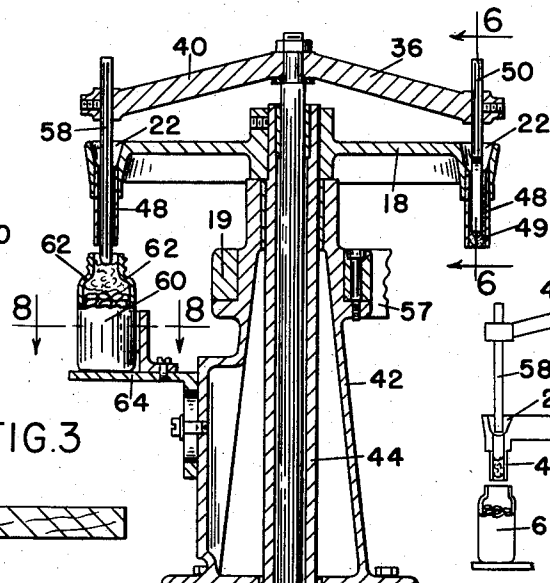


FIG. 3

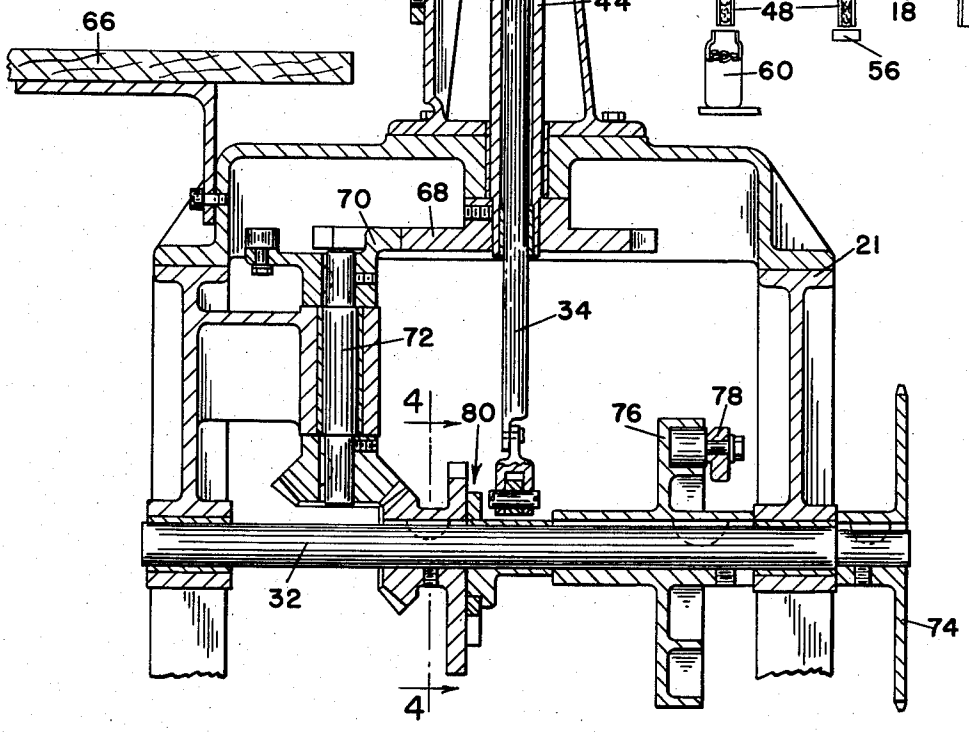


FIG. 9

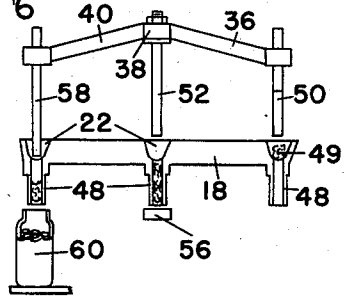
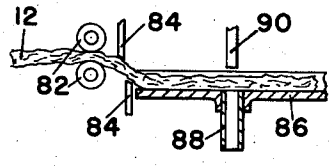


FIG. 10



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METHOD AND APPARATUS FOR WADDING CONTAINERS

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Application April 29, 1955, Serial No. 504,737

4 Claims. (Cl. 53—24)

This invention relates to a method and apparatus for inserting fibrous packing or wadding in containers and especially for inserting matted cotton fiber or the like in the ends of necked containers for loose materials to lightly hold the contents in position and to prevent relative motion thereof in the containers, so that the contents will not be damaged during movement of the containers.

When cotton or other fibrous wadding material is merely inserted in the neck of a container, such as a bottle, the wadding does not spread out under the shoulders of the bottle and thus fails to completely fill the space in the bottle above the contents, and this allows some of the contents to shift about; and if the wadding is pressed down into the bottle too tightly, the contents may be damaged by the act of thrusting the wadding therein, so that it is a recognized problem in the art to provide for insertion of cotton wadding or the like to substantially fill the space above the container contents, to the cap or stopper. For example, U. S. Patent #2,269,722 dated January 13, 1942, presents a solution to the problem wherein mechanical means are provided for positively spreading cotton wadding or the like out under the shoulders of the container.

It is the principal object of the present invention to provide a method and automatic apparatus to insert the cotton wadding or packing in a way to ensure that it spreads out under the shoulders of the containers without, however, using such mechanical means entering the container to accomplish this end, as disclosed in the aforementioned patent; and the objects of the invention include the provision of suitable lengths of cotton wadding or matted cotton strands or the like, these being precompressed by the apparatus forming the subject matter of the present invention, and are then inserted into the necks of the bottles by the machine while still under the compressed state, so that the wadding expands at the enlargements or shoulders of the containers just under the necks of the bottles, the material not being allowed to expand previous to the insertion thereof into the respective containers, and the necks of the bottles per se preventing expansion until the cotton wadding is pushed down sufficiently to come into conjunction with the expanded areas of the containers under the shoulders formed by the necks of the bottles; and the provision of method and means to carry out the invention wholly mechanically without the need for manual contact with the wadding.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings, in which

Fig. 1 is a view in elevation of a machine according to the present invention, part being broken away;

Fig. 2 is a top plan view thereof on an enlarged scale, part being broken away;

Fig. 3 is a sectional view on line 3—3 of Fig. 2 with parts omitted for clarity of illustration;

Fig. 4 is an enlarged section on line 4—4 of Fig. 3, part being broken away;

Fig. 5 is a view in elevation with part in section, looking in the direction of arrow 5 in Fig. 2 and illustrating the cut-off mechanism;

Fig. 6 is an enlarged section on line 6—6 of Fig. 3;

Fig. 7 is an enlarged section on line 7—7 of Fig. 2;

Fig. 8 is a section on line 8—8 of Fig. 3;

Fig. 9 is a diagrammatic view illustrating the action of the machine; and

Fig. 10 is a diagrammatic view illustrating an alternative feeding arrangement for the strand of wadding.

In carrying out this invention, it is preferred to use strips of relatively loose but matted cotton fibers and it has been found convenient to feed the cotton fibers more or less continuously in the form of a strand to a position where it may be cut off in equal lengths, and then processed as will be hereinafter more fully described for insertion in the neck of a container such as a pill-bottle or the like to carry out the objects of the invention above described.

In Fig. 1 there is provided, for instance, a container 10 in which the stranded cotton fiber matting or wadding 12 is stored and fed out over, for instance, a guide 14 of appropriate shape held by a supporting sleeve 16, the strand descending to be fed out upon a table or the like generally indicated at 18.

The strand may be held down and guided, for instance, by a vertically movable idle wheel 20 or some similar means for depositing the advancing cotton strand in a required position for further processing. A bracket 19 supports the sleeve 16 and wheel 20 on the base 21 of the machine.

The table 18 may be provided with an annular depression or groove 22 located in the upper surface thereof to receive the strand of cotton 12, the table being indexed in direction of the arrow in Fig. 2 for instance, the cotton strand being advanced in a clockwise direction in that figure in the groove 22.

The table 18 may be provided with a series of substantially tangentially-arranged, inwardly-directed slots as at 24 for the transverse reception of a cutting device best shown in Fig. 5 and generally indicated at 26. It is to be understood that the table is indexed, i.e. it rotates in step-by-step fashion.

This cutting device may comprise a pair of shearing blades 28, one of which may be made stationary and the other of which may be pivotally mounted and made to oscillate in timed relation to the indexing action of table 18 by means of a rod 30, which in turn is actuated by the main cam shaft 32 located in the lower part of the machine and supported in the base or framework 21. The entire operation of the machine is suitably based on this shaft. The parts are in timed relation, so that when the table is in motion, the shears will be positioned so as to fail to interfere with such motion, and when the table is stationary, the cam shaft will act to cut off the strand of cotton more or less to a desired length such as indicated in Fig. 3.

Substantially at the same time, a vertically reciprocating non-rotary operating rod 34 actuated by the cam shaft 32 is actuated to descend, bringing with it a spider or the like which is mounted thereon at the upper end thereof. The spider comprises arms 36, 38 and 40 and each arm carries at its outermost end a tool for operating upon the severed cotton strand pieces.

The rod 34 may be conveniently mounted in an upright casing, stand or the like such as at 42, mounted upon the machine frame 21 and it may be conveniently enclosed within a rotating elongated sleeve 44 which is keyed to the table 18 for rotating the same, it being understood that the rod 34 is not rotatable but axially movable only.

The lowermost position of the spider is shown in Fig. 3 and the uppermost position thereof in Fig. 9.

The table **18** carries at regularly spaced intervals a series of open-ended, vertically arranged sleeves **48** and as illustrated in the drawing, these are spaced 90° apart and are located in the lower portion of the annular groove **22**. These sleeves receive the cut-off pieces of cotton strand.

The arm **36** of the vertically reciprocable spider has adjustably mounted at its outer end a doubling blade indicated at **50**. When the rod **34** and the spider is in its uppermost position, this doubler and the other tools held on the spider are free and clear of the table which may be indexed as above described to advance the cotton strand. However, when the table is stationary, the rod **34** descends and the doubler blade **50** being aligned with a sleeve **48** in the position indicated for this tool in Fig. 2, thrusts down upon the just severed length of strand indicated at **49** in Fig. 2. This action causes the cotton strand to be folded and located wholly within the respective sleeve **48** in doubled condition therein, see Fig. 6.

When the rod **34** again rises, and the table indexes 90°, this brings the filled sleeve **48** under the next tool which is indicated at **52**, this tool being adjustably mounted in arm **38**. Tool **52** is a plunger acting as a hammer in the next cycle of operation of the machine to compress the cotton wadding in its tube **48**, as is indicated at **54** in Fig. 7, against an anvil **56** located on a fixed arm **57** extending from the machine base as for instance at the upper end of the casing **42**.

This action compresses the cotton wadding in the respective tube **48** in which it was located by the doubler blade **50** and in this condition, the compressed wadding is swung around another 90° in the cycle of operation of the machine to be located under a plunger indicated at **58**, see particularly Fig. 3. Plunger **58** is adjustably mounted vertically on arm **40** and when the rod **34** again descends, the compressed wadding **54** is merely pushed out of its tube **48** into the open neck of a bottle **60**, whereupon the compressed wadding is enabled to spread out under the shoulders of the bottle at **62** and thus fills the entire space above the contents of the container. This action is wholly accomplished without the necessity of any pressure being applied to the container contents by plunger **58** and is due to the pre-compressed condition of the wadding.

By this operation, the cottoning of the container is easily and efficiently accomplished without any damage to the container contents and at the same time the contents will be firmly packed and held against shifting by reason of the cotton wadding filling the space under the shoulders of the bottle, all without the need of any mechanical means to spread out the wadding under the shoulders and without the necessity of excess pressure on the plunger **58**, so that the contents are adequately packed and protected against damage.

The container **60** may be located on a shelf **64** adjustably mounted on the machine and any conventional means, whether manual or mechanical, may be utilized to position the containers one after another in the position to receive the compressed cotton wadding **54** as above described. The table **66** may be used by the operator for providing a supply of uncottoned bottles.

The table may be rotated by means of a Geneva wheel **68** or any other means which may be convenient, and this device may receive its operation through the means of a mutilated gear **70** rotated by a shaft **72** through appropriate gearing from cam shaft **32** which may derive its power from any source such as sprocket **74**. The rod **30** may be operated by means of a cam such as at **76** in operative relationship with a lever **78** having a fulcrum at some convenient location on the machine frame. The rod **34** is actuated by a cam or crank of convenient design and indicated generally at **80**, but any other device could be utilized for this purpose. In any event, all of the moving parts of the machine may be operated from the cam shaft **32**.

An alternative form of feeding device is diagrammatically illustrated in Fig. 10 where a pair of driven wheels **82** feed the cotton strand **12** through the nip thereof in timed relation to a pair of cutters **84** and onto a table **86** equipped with the sleeve **88** as shown in position for the tool **90** to operate thereupon in the manner above described with respect to the apparatus embodying the rotary table **18**.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

1. The method of packing wadding in a necked shouldered container and substantially immobilizing the contents thereof comprising the steps of providing a predetermined amount of loose compressible wadding, compressing the same in a tube in an axial direction therein, and then aligning the tube with the open mouth of a container, projecting the compressed wadding out of the tube into the neck and upon the contents of the container and partially below the neck, and allowing the wadding to expand under the shoulders of the container formed by the neck and substantially fill the space between the contents and the shoulders.

2. A rotary table apparatus for inserting wadding into partially filled necked containers comprising a series of stations arranged about the periphery of the table, means at one station to feed a length of loose wadding to the table, means at a succeeding station to compress the wadding on the table, and separate means at a third station to eject the compressed wadding from the table into the neck of a container and at least partially below said neck into light contact with the contents of the container, so that the compressed wadding expands and covers the said contents.

3. A rotary table apparatus for inserting wadding into partially filled necked containers comprising a series of stations arranged about the periphery of the table, a series of tubes on the table, means at one station to feed a length of loose wadding into a tube on the table, means at a succeeding station to compress the wadding in the tube, and means at a third station to eject the compressed wadding from the tube into the neck of a container and at least partially below said neck into light contact with the contents of the container, so that the compressed wadding expands and covers the said contents.

4. Apparatus for inserting wadding into partially filled necked containers comprising a series of stations arranged one after another, an enclosure, means to travel the enclosure relatively past the stations, means at one station to feed a length of looose wadding into the enclosure, means at a succeeding station to compress the wadding in the enclosure, and separate means at a third station to eject the compressed wadding from the enclosure into the neck of a container and at least partially below said neck into light contact with the contents of the container, so that the compressed wadding expands and covers the said contents.

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