

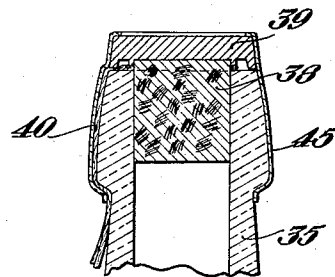
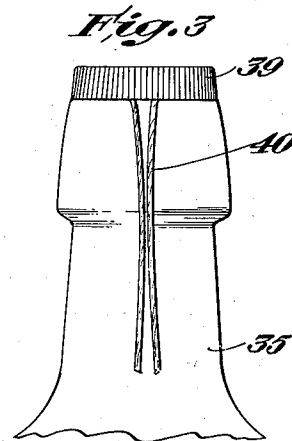
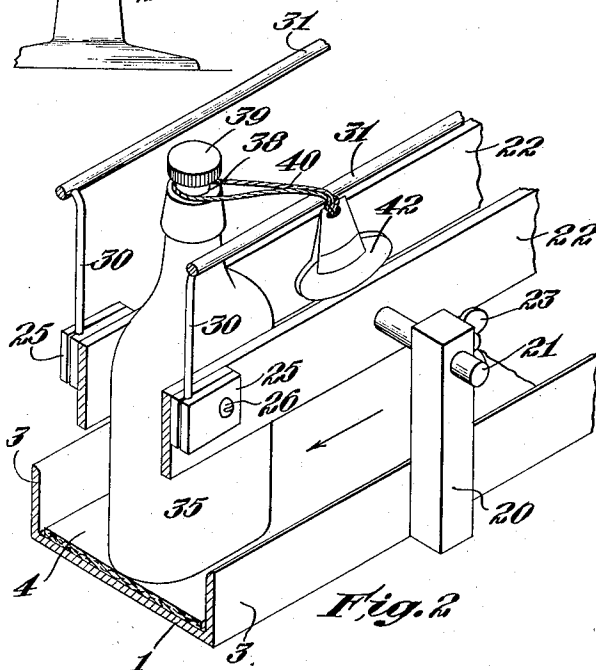
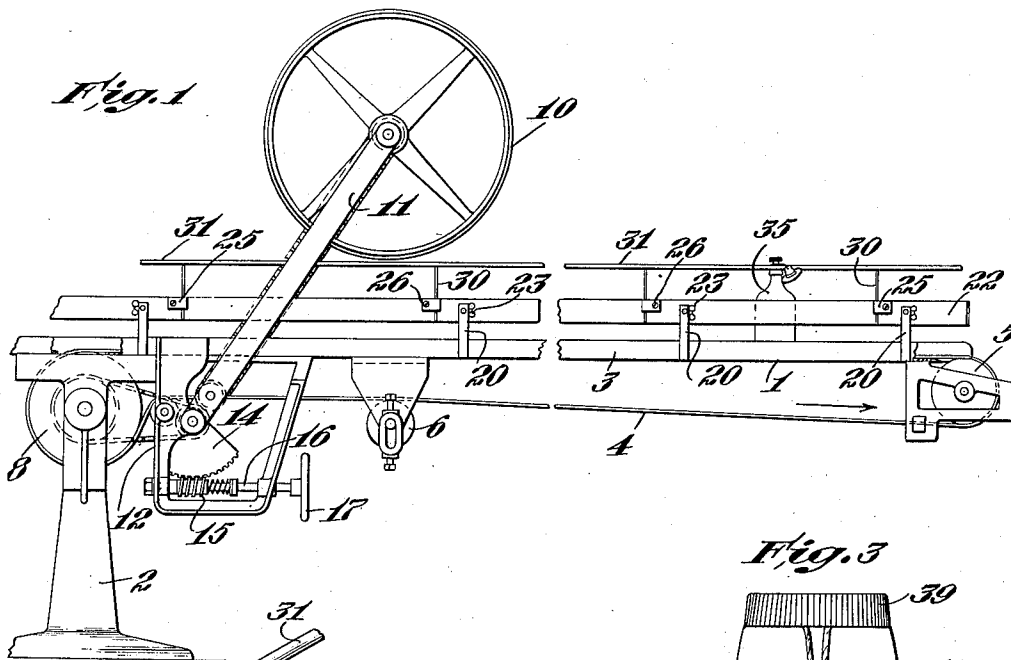
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ASSEMBLING OF BOTTLE SEALS AND STRANDS

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ASSEMBLING OF BOTTLE SEALS AND STRANDS

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This invention relates to a method and apparatus for applying a strand, such as a cord, ribbon or wire to the stopper of a bottle during the sealing operation, and to the resulting product.

5 In the sealing of bottles, such for example as liquor bottles, it is often desirable to attach one end of a cord or strand to the closure or stopper, with the usual sealing cap or sleeve enclosing the top of the bottle neck, the stopper and the at-
10 tached end of the strand, leaving the free end of the strand hanging down the side of the bottle to support a tag, identifying stamp, leaflet, recipe booklet, or the like, the arrangement being such that the sealing cap or sleeve may readily be
15 broken or torn by pulling on the free end of the strand.

It has been proposed to attach the strand to the closure by inserting a length of the strand into the bore of the bottle neck and clamping it
20 in place between the side of the stopper and the bore of the bottle neck. This has been found objectionable for a number of reasons. If the strand extending into the bottle neck is a cord or string of fibrous material, it tends to act as a
25 wick, and by absorption of the liquid contents from the interior of the bottle and evaporation of the liquid from the exterior part of the strand which is exposed to the air, the contents are slowly drained. If the strand, or the means for fas-
30 tening it to the stopper inside the bottle neck, is of metal, the metal may have a deleterious effect on the liquid contents of the bottle.

It has also been proposed to overcome these objectionable features by attaching the strand to
35 the outer end of the stopper by a staple or other fastener before the stopper is applied to the bottle. By this method, not only is the attachment of the strand less secure, but in using the method for quantity production it is necessary to make
40 up a large batch of stoppers and attached strands, usually carrying tags or the like at their free ends, separate and apart from the sealing machines and before they are applied to the bottles, and then to apply them to the bottles from a
45 mass or bulk supply of the previously assembled stoppers and strands. In such procedure the strands and their attached tags become entangled and it requires time and labor to separate and apply them, thus increasing the difficulty and
50 the cost of sealing the bottles.

The principal object of the present invention is to provide an economical and efficient method and apparatus for applying loops of strand material and maintaining them in position about
55 the stoppers of bottles or the like containers dur-

ing the sealing operation; to provide a means or apparatus which may be used in conjunction with or applied to standard sealing machines, and which may be readily adjusted so as to be used
5 with bottles or containers of different sizes and shapes; and to provide a seal for a bottle, including a stopper, sealing cap or sleeve, and a length of strand material, the arrangement being such that the strand material is out of possible
10 contact with the contents of the bottle and one end thereof is available as a rip cord to break or tear the seal away from the stopper and neck of the bottle.

Further objects will be apparent from a consideration of the following description and ac-
15 companying drawing, wherein

Fig. 1 is a side elevation of a sealing machine embodying the present invention;

Fig. 2 is a fragmentary perspective view of the conveyor and associated parts;

Fig. 3 is an enlarged view showing the neck of a bottle after passing under the presser wheel;
and

Fig. 4 is a sectional view of a bottle sealed in accordance with the present invention.

The embodiment chosen for the purpose of illustration comprises an elongate base 1 supported on spaced uprights 2, the base being channel shaped in cross section to provide upright sides or belt guides 3. An endless belt conveyor 4
30 extends along the base 1 between the guides 3, over a pulley or guide roll 5 at the receiving end of the base, thence along under the base and over a belt-tensioning pulley 6 and finally around a driving pulley 8 at the rear or exit end of the
35 base.

A presser wheel 10 is rotatably mounted on a pair of arms 11 pivotally connected at their lower ends to a bracket 12 which is secured to the base 1. The lower ends of arms 11 are connected
40 with a segmental gear 14 meshing with a worm 15 which is mounted on a shaft 16. The shaft 16 may be rotated by means of a hand wheel 17 and is operative to swing the arms 11 upwardly or
45 downwardly so as to vary the height of the presser wheel 10 relative to the line of travel of the conveyor belt 4. Suitable means such as a chain drive are used to drive the belt 4 and presser
50 wheel 10, the drive being connected to a mechanism (not shown) which drives the belt 4 at substantially the same linear speed as the peripheral speed of the presser wheel.

Uprights 20 are secured to the belt guides 3 at spaced points along the base 1 and these uprights are provided with openings adjacent to
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their upper ends for the reception of pins or rods 21 which support bottle guide rails 22 running the full length of the base, as shown in Fig. 1. The rods 21 may be moved inwardly or outwardly to vary the distance between the guide rails in accordance with the type and sizes of bottles being carried by the conveyor and the guide rails, when adjusted, may be locked in position by set screws 23.

Clamping members 25 are secured at spaced points along each of the guide rails 22 by screws 26, which are also operative to open and close the jaws of the clamps. Upright supports or legs 30 are received by the clamps 25 and each set of legs supports a drag rail 31 which extends longitudinally above the guide rail 22 and over the marginal portions of the conveyor belt 4, as shown in Fig. 2. The length of the legs 30 is such that the height of the rails above the belt 4 may be varied so that either rail may be adjusted to the horizontal level of the top of a bottle 35 being sealed. Although two such drag rails are here shown by way of illustration, it is to be understood that a single rail mounted on either guide is all that is essential.

In sealing bottles in accordance with the present invention, the drag rail 31 is positioned at the same level as the top edges of the bottles to be sealed and the conveyor belt 4 is then put in operation. The bottles, after being filled are transported to the receiving end of the conveyor belt 4 and stoppers 38 having flanged heads 39 are then partially inserted in the neck of the bottles, as shown in Figs. 1 and 2, this step being carried out either before the bottles are transported to the conveyor belt or while the bottles are being carried along by the belt. This operation may be performed automatically or by hand, but irrespective of the particular manner of partially inserting the stopper 38, a strand 40, either in the form of a loop or having a looped portion, is then applied about the body portion of the partially inserted stopper, as shown in Fig. 2. The strand 40 may be of cord, ribbon, fine wire, or other suitable material, and as here shown one end of the loop, that is, the free end, may be secured to a tag, recipe booklet or leaflet 42.

The strands are applied so that their looped portions encircle the body portion of the stopper between the flanged head 39 and the top of the bottle neck and their free ends are dropped over the drag bar or rail 31 so that the tags or booklets secured thereto hang downwardly outside the rail, as shown in Fig. 2. As the bottles 35 are carried along by the belt 4, the free ends of the loops dragging along the rail 31 and weighted by the tags create an appreciable frictional resistance which is increased by the downwardly hanging booklet or tag 42, and hence any slack in the loops is taken up and the loops are thus subjected to a slight tensioning and are held sufficiently taut to prevent them from dropping down about the neck of the bottle or becoming otherwise dislodged, and are maintained in this condition until after the bottles have been carried past the presser wheel 10.

The tensioning thus exerted on the loops 40 is effective snugly to hold them in position around the body portion of the stoppers, and when the bottles reach the presser wheel the stoppers are forced all the way into their necks, thus clamping the loops between the upper edges of the bottles and the flanged heads of the stoppers, but leaving the free ends of the loops extending downwardly over the drag rail 31. After the

stoppers have been pressed into the necks of the bottles, the belt 4 carries the bottles to the rear or exit end of the base where the free ends of the loops drop off the end of the drag rail and hang downwardly against the necks and sides of the bottles, as shown in Fig. 3.

A sealing cap or sleeve 45 of known form may then be applied about the upper end of the bottle neck, the periphery of the flanged head of the stopper and the attached end of the loop, leaving the free end of the looped strand hanging down below the seal 45.

In a bottle sealed in accordance with the present invention the strand is securely clamped between the flanged head of the stopper and upper edge of the bottle, not only out of sight but also out of possible contact with the contents of the bottle, and the intermediate portion of the loop or strand is held between the sealing cap or sleeve and neck of the bottle and its free end hangs downwardly to provide a rip cord for breaking or tearing the seal. When the strand 40 is pulled upwardly the sleeve 45 is torn along a line extending from its lower edge to the junction line of the top edge of the bottle and the flange of the stopper. The seal thus broken may be readily removed by hand. Or, by pulling one of the strands to the right and/or the other strand to the left the seal may be torn circumferentially and thus easily removed from about the neck of the bottle.

While I have shown and described one desirable embodiment of the invention it is to be understood that this disclosure is for the purpose of illustration only and that various changes in shape, arrangement and proportion of parts, as well as the substitution of equivalent elements for those herein shown and described, may be made without departing from the spirit and scope of the invention as set forth in the appended claims.

I claim:

1. Apparatus of the class described comprising a conveyor for supporting bottles for movement along a predetermined path, means arranged to force partially inserted stoppers into the necks of said bottles as they are carried along by said conveyor, and means disposed along said path and operative to maintain in a tensioned condition loops of strand material circumposed about stoppers partially inserted in the necks of said bottles during the travel along said path.

2. Apparatus of the class described comprising a conveyor for supporting bottles for movement along a predetermined path, means arranged to force partially inserted stoppers into the necks of said bottles as they are carried along by said conveyor, and means constructed and arranged to effect a tensioning drag on a length of strand material having a loop circumposed about stoppers partially inserted in the necks of bottles moving along said path.

3. Apparatus of the class described comprising a conveyor for supporting bottles for movement along a predetermined path, means arranged to force partially inserted stoppers into the necks of said bottles as they are carried along by said conveyor, and a rail disposed along said path, said rail being constructed and arranged to exert a drag on the free ends of strands having loops circumposed about stoppers partially inserted in the necks of bottles moving along said path.

4. Apparatus of the class described comprising a conveyor for supporting bottles for movement along a predetermined path, means arranged to

force partially inserted stoppers into the necks of said bottles as they are carried along by said conveyor, a rail disposed along said path, said rail being constructed and arranged to exert a drag on the free ends of strands having loops circumposed about stoppers partially inserted in the necks of bottles moving along said path, and means for adjusting the position of said rail relative to the line of travel of said bottles.

5. Method of sealing bottles which comprises partially inserting in the neck of a bottle a stopper having a flanged head, circumposing a loop of strand material about said stopper so that said loop is positioned between the flanged head of the stopper and the top edge of the bottle, forcing said stopper into the neck of the bottle while maintaining a slight tension on said loop, and applying a seal about said neck and flanged head so that the intermediate portion of said strand is between said seal and neck and the free end extends downwardly from the lower end of said

seal.

6. Method of sealing bottles which comprises partially inserting in the neck of a bottle a stopper having a flanged head, circumposing a loop of strand material about said stopper so that said loop is positioned between the flanged head of the stopper and the top edge of the bottle, forcing said stopper into the neck of the bottle while holding the intermediate portion of said strand substantially at right angles to the axis of said neck and simultaneously exerting a slight tension on said loop to hold it snugly about said stopper, and applying a seal about said neck and flanged head so that the intermediate portion of said strand is between said seal and neck and the free end extends downwardly from the lower end of said seal.

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