Nov. 24, 1953 J. B. McCABE ET AL 2,660,290

BOTTLE CARRYING POCKET

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Fig. 1.

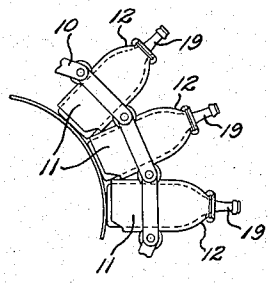


Fig. 2.

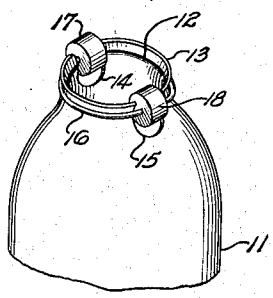


Fig. 3.

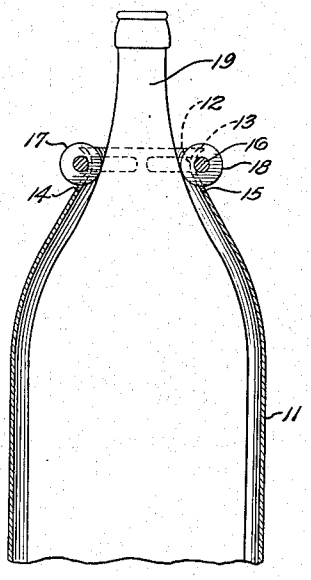
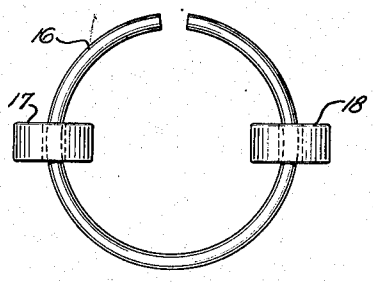


Fig. 4.



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BOTTLE CARRYING POCKET

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12 Claims. (Cl. 198—131)

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This invention relates to improvements in bottle carrying pockets for use in the conveyor of a bottle washing machine.

Most of the bottle washers in use today are provided with an endless chain conveyor having a plurality of tubular bottle carrying pockets which are open at both ends and which have one end formed with a neck portion of reduced diameter. In use, the bottle to be carried in a pocket is inserted through the larger open end, neck first, so that when the bottle is completely inserted its neck protrudes from the neck of the pocket.

Bottle carrying pockets used heretofore have not been entirely satisfactory because the neck of a bottle often becomes jammed in the neck of a pocket. Whenever such a jammed condition occurs it prevents the bottle from dropping out of the pocket by gravity at the discharge station, with the result that the machine must be shut down so that the operator can remove the bottle manually. If the machine is not shut down in time, bottle breakage results.

With the above in mind it is a principal object of the present invention to provide an improved bottle carrying pocket for use in the conveyors of bottle washers or the like, which pocket is so designed that jamming of the bottle in the neck of the pocket is effectively prevented.

A further more specific object of the invention is to provide an improved bottle carrying pocket of the class described wherein the neck of the pocket is provided with freely rotatable rollers for contacting the neck of a bottle positioned in said pocket.

A further object of the invention is to provide an improved bottle carrying pocket of the class described which is interchangeable with conventional pockets, and which requires no alteration of the bottle washer to permit its use.

A further object of the invention is to provide an improved bottle carrying pocket of the class described wherein the rollers are carried by a snap ring, and wherein the roller unit (the snap ring and rollers) is readily removable from the pocket body.

A further object of the invention is to provide an improved bottle carrying pocket of the class described which is simple and inexpensive in construction, easy to manufacture, and otherwise well adapted for the purposes described.

With the above and other objects in view, the invention consists of the improved bottle carrying pocket, and all of its parts and combinations, as set forth in the claims and all equivalents thereof.

In the drawing accompanying and forming a part of this specification, wherein is shown one

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complete embodiment of the preferred form of the invention, and wherein like characters of reference indicate the same parts in all of the views:

Fig. 1 is a fragmentary side elevational view of a roller type of endless conveyor for use in a bottle washing machine, the conveyor including the improved bottle carrying pockets;

Fig. 2 is a fragmentary perspective view of the neck end of one of the improved bottle carrying pockets;

Fig. 3 is a fragmentary vertical sectional view taken through one of the improved bottle carrying pockets and showing a bottle positioned in said pockets; and

Fig. 4 is a plan view of the roller unit removed from the improved bottle carrying pocket.

Referring more particularly to Fig. 1 of the drawing, the numeral 10 indicates an endless type roller chain conveyor having a plurality of bottle carrying pockets 11 which are tubular in shape and open at both ends. The pockets 11 are each tapered at one end to form a neck portion 12 of reduced diameter. The neck portion 12 terminates in an outwardly flared rim 13 as is clearly shown in Figs. 2 and 3. The neck portion 12 is formed with diametrically opposite cut away portions 14 and 15 which extend axially inwardly from the rimmed end thereof.

A snap ring 16, preferably made of round stock, has an inner diameter substantially equal to the outer diameter of the most restricted portion of the neck 12. A pair of axially bored rollers 17 and 18 are freely rotatably mounted on the snap ring 16. The snap ring 16 is normally positioned around the neck 12 at the most restricted portion thereof. The rollers 17 and 18 are normally positioned in the cut out portions 14 and 15, as shown in Figs. 2 and 3. The rollers 17 and 18 are of such size that they project radially inwardly of the inner surface of the neck of the pocket 11 to contact opposite sides of the neck of a bottle 19 when the latter is placed in the pocket 11.

If the bottle 19 is slightly over size in length, or if for any reason a bottle is pushed into the pocket 11 farther than normal, the snap ring 16 is expanded slightly as the rollers 17 and 18 are pushed apart by the neck of the bottle. However, since the rollers 17 and 18 are freely rotatable on the snap ring 16, the bottle cannot become wedged into the neck of the pocket. Bottles 19 will freely drop out of the large ends of the pockets by gravity at the discharge station when the pockets are exposed because the rollers are freely rotatable and can also move radially inwardly to their normal positions as the snap ring 16 contracts to its normal condition.

It is apparent that jamming of bottles in the

necks of the bottle carrying pockets is effectively prevented. It is also apparent that the roller unit, comprising the snap ring 16 and rollers 17 and 18, can be quickly and easily removed from the pocket 11 for cleaning or replacement.

Various changes and modifications may be made without departing from the spirit of the invention, and all of such changes are contemplated as may come within the scope of the claims.

What we claim is:

1. In combination: a tubular bottle carrying pocket having an open bottom and having a neck portion of reduced diameter; and rollably mounted antifriction means mounted in the neck portion of said pocket and positioned so that it is adapted to engage the neck portion of a bottle placed in said pocket through said bottom opening.

2. In combination: a tubular bottle carrying pocket having an open bottom and having a neck portion of reduced diameter; and roller means mounted in the neck portion of said pocket and positioned so that it is adapted to rollingly engage the neck portion of a bottle placed in said pocket through said bottom opening.

3. In combination: a tubular bottle carrying pocket having a bottom opening and having a neck portion of reduced diameter; and at least one roller mounted in the neck portion of said pocket for rotation on an axis at a right angle to the axis of said pocket and positioned so that it is adapted to rollingly engage the neck portion of a bottle inserted in said pocket through said bottom opening.

4. In combination: a tubular bottle carrying pocket having a neck portion of reduced diameter, said neck being formed with a cut-away portion; a roller positioned in said cut-away portion and having a peripheral portion projecting radially inwardly from the inner surface of said neck portion; and means supporting said roller in said position for rotation on an axis at a right angle to the axis of said pocket.

5. In combination: a tubular bottle carrying pocket having a neck portion of reduced diameter formed with a cut-away portion extending axially inwardly from the end thereof; a roller positioned in said cut-away portion and having its periphery projecting radially inwardly from the inner surface of said neck portion; and means supporting said roller in said position for rotation on an axis at a right angle to the axis of said pocket.

6. In combination: a tubular bottle carrying pocket having a neck portion of reduced diameter formed with a cut-away portion extending axially inwardly from the end thereof; a roller positioned in said cut-away portion and having its periphery projecting radially inwardly from the inner surface of said neck portion; and means removably supporting said roller in said position for rotation on an axis at a right angle to the axis of said pocket.

7. In combination: a tubular bottle carrying pocket having a bottom opening and having a neck portion of reduced diameter; and a plurality of rollers mounted in the neck portion of said pocket and positioned so that they are adapted to rollingly engage spaced portions of the neck of a bottle inserted in said pocket through said bottom opening.

8. In combination: a tubular bottle carrying pocket having an opening at one end and having its opposite end formed with a tapered neck portion of reduced diameter, said last mentioned

end portion terminating in an outwardly flared rim, and said neck being formed with cut-away portions; a resilient snap ring removably surrounding said neck below said rim; and roller means positioned in said cut-away portions and rotatably carried by said snap ring for rotation on axes at right angles to the axis of said pocket, said roller means having peripheral portions projecting radially inwardly beyond the inner surface of said neck and adapted to engage the neck of a bottle inserted in said pocket through the end opening.

9. In combination: a tubular bottle carrying pocket having an opening at one end and having its opposite end formed with a tapered neck portion of reduced diameter, said last mentioned end portion having an annular groove, and said neck being formed with cut-away portions intersecting said groove; a resilient snap ring in the groove of said neck; and roller means positioned in said cut-away portions and rotatably carried by said snap ring for rotation on axes at right angles to the axis of said pocket, said roller means having peripheral portions projecting radially inwardly beyond the inner surface of said neck and adapted to engage the neck of a bottle inserted in said pocket through the end opening.

10. In combination: a tubular bottle carrying pocket having an opening at one end and having its opposite end formed with a tapered neck portion of reduced diameter, said last mentioned end portion terminating in an outwardly flared rim and said neck being formed with a pair of diametrically oppositely disposed cut-away portions extending axially inwardly from the rimmed end thereof; a resilient snap ring removably surrounding said neck below said rim; and rollers positioned in said cut-away portions and rotatably carried by said snap ring for rotation on an axis at a right angle from the axis of said shaft, said rollers being of such size that portions thereof project radially inwardly beyond the inner surface of said neck whereby they are adapted to engage opposite sides of the neck of a bottle positioned in said pocket.

11. In combination, a tubular bottle carrying pocket having an open bottom and having a portion at its opposite end for receiving the neck of a bottle; and rollably mounted anti-friction means mounted at said last-mentioned end and positioned to engage the neck portion of a bottle placed in said pocket through said bottom opening.

12. In combination, a tubular bottle carrying pocket having a bottle receiving opening at one end, there being a cut-away portion adjacent the opposite end, a holding member removably surrounding said opposite end adjacent said cut-away portion, and anti-friction means carried by said holding member and having a portion positioned in said cut-away portion of the pocket in a position to engage the neck of a bottle inserted in said pocket through the bottle receiving opening.

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