April 29, 1941. O. M. FARRIS 2,240,093

APPARATUS FOR HANDLING GLASSWARE

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Fig. 1.

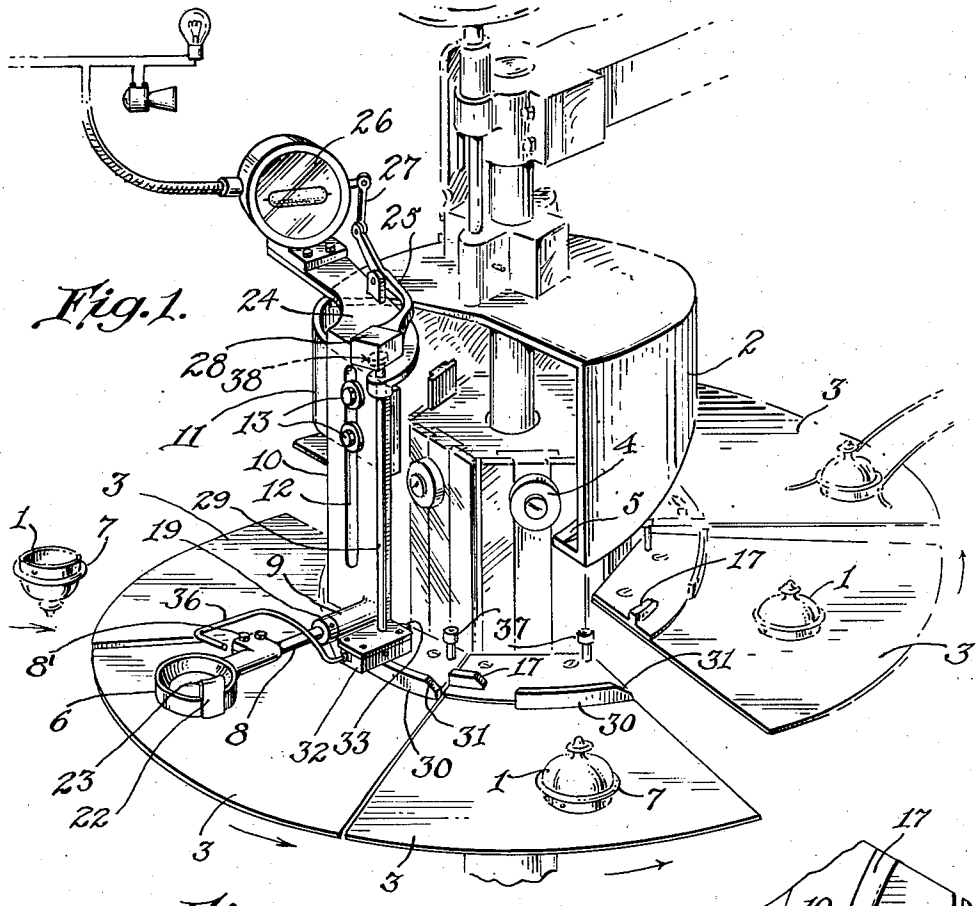


Fig. 2.

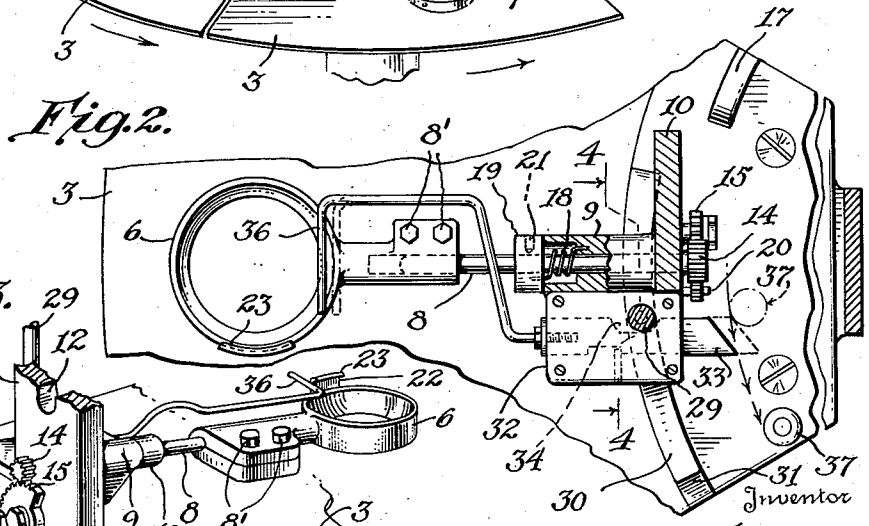
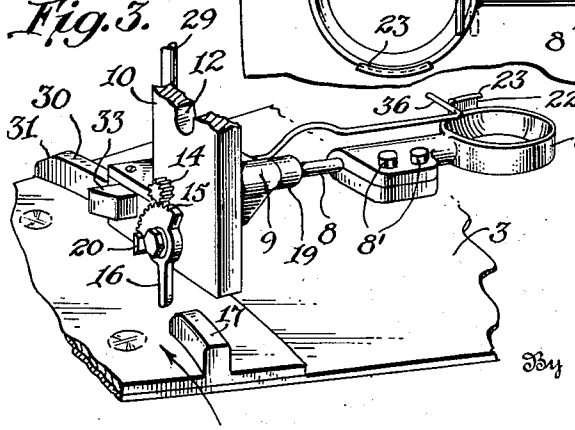


Fig. 3.



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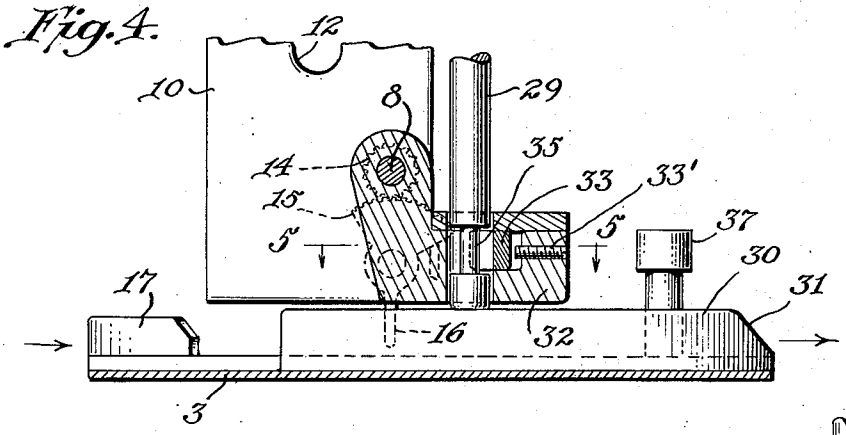
Attorneys

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Fig. 4.



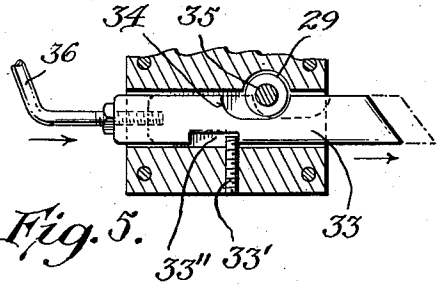
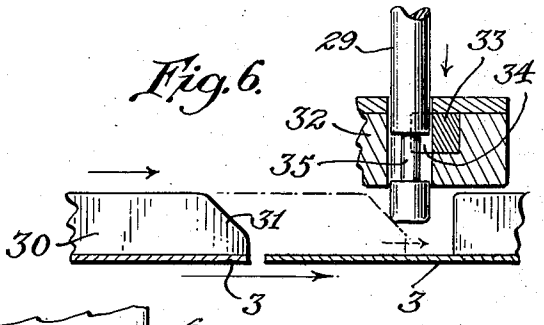


Fig. 5.

Fig. 6.



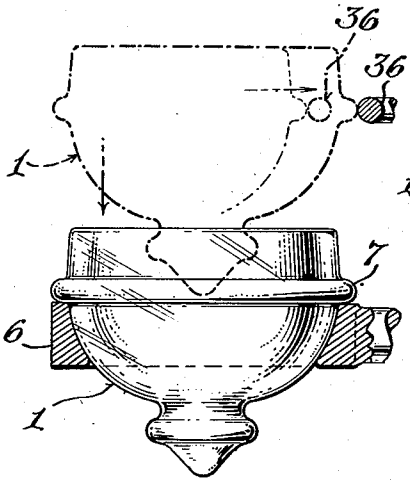


Fig. 7.

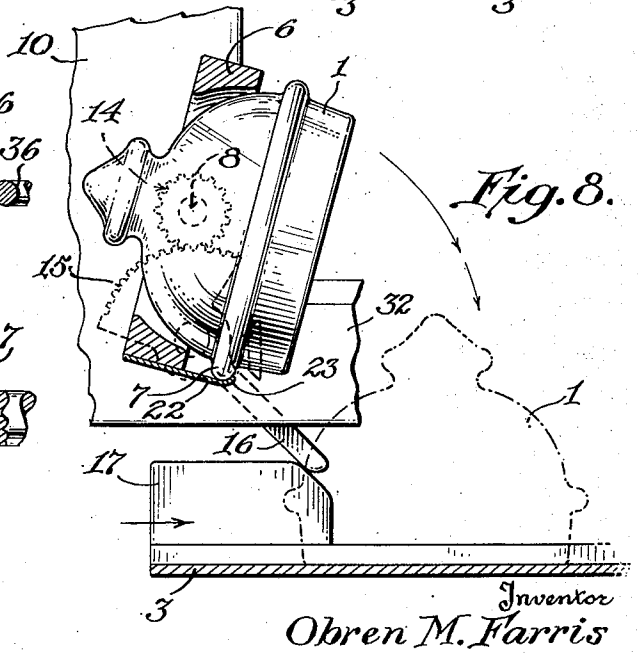


Fig. 8.

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UNITED STATES PATENT OFFICE

2,240,093

APPARATUS FOR HANDLING GLASSWARE

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Application August 30, 1939, Serial No. 292,719

10 Claims. (Cl. 198—33)

The invention relates to an apparatus for handling glass articles, and particularly glass percolator tops or other articles which are to be inverted after removal from the glass forming machine.

In the manufacture of glass percolator tops, the dome portion projects downwardly in the mold, but in subsequent handling of the percolator tops it is desirable that they be inverted, so that they will not roll about while being further treated.

One of the objects of the present invention is to provide a simple and inexpensive apparatus by which percolator tops may be quickly inverted when they are delivered from the glass forming machine.

Another object of the invention is to provide an apparatus of this character by which the tops after being turned over will be deposited at a particular point, without any throwing or sliding movement, so that the articles will be accurately positioned.

A further object of the invention is to provide means by which an alarm will be given if the turnover apparatus does not receive a percolator top.

Various other objects and advantages of the invention will be apparent to those skilled in the art, from the following detailed description, when taken in connection with the accompanying drawings in which,

Figure 1 is a perspective view of the apparatus associated with an escalator.

Figure 2 is a plan view of the apparatus, with parts shown in section.

Figure 3 is a perspective view of the apparatus with parts broken away.

Figure 4 is a vertical sectional view taken on line 4—4 of Figure 2.

Figure 5 is a detail sectional view, taken on line 5—5 of Figure 4.

Figure 6 is a detail vertical sectional view, illustrating the operation of certain parts of the apparatus if a percolator top is not delivered to the turn-over mechanism.

Figure 7 is a detail view illustrating how the percolator tops are received in the receiving ring; and

Figure 8 is a detail view illustrating how the percolator tops are delivered from the receiving ring.

Referring to the drawings in more detail, numeral 1 indicates a conventional percolator top. The tops are formed in a glass press, or other glass forming machine, with the dome portion down and the mouth portion up, as shown at the left of Figure 1.

Numeral 2 refers generally to an escalator which carries the tops from the level of the forming machine to the level of the fire-polisher, lehr, or other point of delivery. Escalators are well known in the industry and therefore it is only necessary to give a very general description of such an apparatus. The escalator travels in the direction indicated by the arrows, and the escalator pans are referred to by numeral 3. The pans at the left of Figure 1 are in their lowermost position, in which position they receive the percolator tops from the forming machine. Each pan has associated therewith a roller 4, and as the pans continue their travel in a circular path the rollers will engage the escalator cam 5, whereby the pans will be successively elevated to the desired level, in the well known manner. The movement of the escalator is preferably continuous. It is to be understood that the present invention is not limited to use with an escalator, for it is obviously adapted for general use in inverting percolator tops or other glass articles, regardless of any particular mechanism with which it may be associated.

The articles when formed in the molds of a forming machine, are usually delivered from the molds by a take-out mechanism of any desired type. The percolator top at the left of Figure 1 is shown enroute from the forming machine to the receiver ring 6. Neither the forming machine nor the take-out device is illustrated, as they form no part of the invention.

When the take-out device releases the percolator top it will drop into the receiving ring, with the bead 7 of the percolator top resting on the upper edge of the receiving ring, as shown in Figure 7.

The receiving ring is of course spaced above the escalator pans at their receiving position at the left of Figure 1, and the ring is clamped to an oscillatable shaft 8, by means of clamping bolts 8', whereby the ring may be adjusted longitudinally or circumferentially of the shaft. This shaft is mounted in a bushing 9 carried by a plate 10. The plate is stationary; being attached to the stationary cam housing 11. Of course the plate may be attached to the housing by any desired means, but in the present embodiment, the plate is provided with a vertical slot 12, and is maintained in vertically adjusted position by means of screws 13. Thus the receiving or turn-over ring 6 may be vertically ad-

justed to give the desired spacing between the ring and the escalator pans.

The rear end of the shaft 8 is provided with a pinion 14 meshing with a segmental rack 15 pivotally mounted on the plate 10. A trigger or finger 16 extends downwardly from the segmental rack into the path of a trigger trip dog 17; there being one of these dogs mounted on each escalator pan 3. Mounted on the oscillatable shaft 8, and housed with the bushing 9, is a coil spring 18, shown in Figure 2. One end of this coil spring is attached to the bushing, and the other end is attached to a collar 19 mounted on the shaft 8, so that the shaft is normally urged in a direction to bring the segmental rack 15 against a stop member 20, shown in Figures 2 and 3. When the segmental rack is against the stop member, the receiving ring 6 is in its normal receiving position, as shown in Figures 1, 2 and 3. The collar 19 may be adjusted about the shaft 8 by means of a set screw 21, to vary the tension on coil spring 18.

A percolator top having been delivered to the receiving ring 6, the travel of the escalator pans will cause a trigger trip dog 17 to engage the trigger or finger 16 and move it to the left (Fig. 3). This movement of the trigger causes the receiving ring 6 to rotate to the left (Fig. 3), by reason of the meshing segmental rack 15 and pinion 14. The receiving ring is thus turned over to invert and deliver the percolator top to the escalator pan. As soon as the finger 16 rides free of the dog 17, the spring 18 returns the parts to normal position.

But as mentioned hereinbefore, in delivering the tops to the pans, it is desirable not to impart to the tops any throwing or sliding action. For this purpose there is provided on one side of the receiving or turn-over ring 6, a finger 22 having an inturned hooked end 23. This finger is on the side of the ring which turns under in inverting the percolator tops. The tops are normally supported in the ring by the glass bead 7 of the tops resting on the upper edge of the ring, as shown in Figure 7. But when the ring has been turned to approximately the position shown in Figure 8, the percolator top starts to move bodily from the ring, until the glass bead on the percolator top engages the hooked end 23 of the finger 22. This bodily movement of the top is shown in Figure 8, and it will be noted that the glass bead no longer engages the ring, but engages the hooked end of the finger. Of course the rotation of the ring continues, and as it moves on beyond the point shown in Figure 8, the percolator moves about the hooked end as a pivot, and drops dead upon the escalator pan, in the position shown in dotted lines in Figure 8, as the hooked end passes free of the bead. Thus the percolator tops are not only inverted, but also they are accurately positioned on the escalator pans. This accurate positioning of the tops greatly facilitates the delivering of the tops from the escalator, for the fire-polishing or annealing operations, etc.

Of course the forming machine, take-out device and escalator are all timed so that in normal operation a top will be delivered to the receiving ring for each escalator pan. But sometimes due to failure of the forming machine a top is not delivered, and in such event it is important that the fact be immediately called to the operator's attention, so that he can clear the mold and make any corrections which may be necessary. The means for sounding an alarm when a top is not delivered to the turn-over ring, will now be described.

The plate 10 carries at its upper end a bracket 24, and a lever 25 is pivotally mounted, intermediate its ends, on this bracket. One end of the lever is operatively connected with a mercury switch, or any other desired type of switch 26, by means of a link 27. When the switch is closed an electric bulb will be lighted, a horn sounded, etc.

The opposite end of the lever 25 is counterweighted, as indicated by numeral 28, and rests on the upper end of a signal control rod 29. The arrangement is such that the control rod will remain in its elevated position as long as the percolator tops are periodically delivered to the turn-over ring, and no signal will be given. But if a top is not delivered the control rod will drop, and the signal will be given.

On each of the escalator pans 3 there is a track 30, the forward end of which is beveled, as indicated by numeral 31. Numeral 32 refers to a housing carried by the plate 10, and the lower portion of the rod 29 extends through an opening in this housing and normally rests on the track 30, whereby the rod is maintained in elevated position.

Mounted for reciprocable sliding movement in the housing is a latch 33, and this latch is provided with an elongated cut-away portion 34. The rod 29 has a reduced portion 35 adapted to cooperate with the latch, as presently appears. The movement of the latch may be limited by a bolt 33' projecting into a notch 33'' provided in the latch.

Attached to and extending outwardly from the latch, is a wire 36. The outer end of this wire is positioned over one side of the receiving ring, in the path of a percolator top dropping into the ring, as shown in Figures 1, 2, 3 and 7. When a top drops into the ring it will strike the member 36 and move it to the right (Figs. 2 and 7), and thereby move the latch 33 inwardly. This inward movement of the latch causes it to engage the reduced portion 35 of the signal control rod 29. This interlocking relation between the rod and the latch maintains the rod in elevated position when the rod rides off the end of the track 30. It is thus clear that no signal is given if a percolator top or other article is delivered to the receiving or turn-over ring 6. The further rotation of the escalator brings the beveled end of the latch 33 into contact with the latch reset post 37, whereby the latch is moved outwardly to its original position, free of the signal control rod 29. It will be noted that each reset post is positioned at the forward end of each track 30, so that when the latch is reset to release the signal control rod, such rod is over the track and hence cannot drop.

If a percolator top is not delivered to the ring 6, the member 36 and latch 33 will remain in their outward position, so that there is no interlocking relation between the latch and the signal control rod 29. In such an event, when the rod rides off the rear end of the track 30, it will drop by gravity to the position shown in Figure 6. The downward movement of the rod is preferably limited by the head 38 of the rod striking the bracket. When the rod drops of course the weighted end 28 of the lever 25 moves downwardly and this movement of the lever closes the switch 26 and this causes a bulb to be lighted and a horn sounded, or any other signal to be given.

Thus the operator's attention is immediately called to the fact that a top was not delivered.

In the further rotation of the escalator the lower end of the rod 29 will engage beveled end 31 of the next track 30, as shown in dotted lines in Figure 6, and the rod will thus be elevated to a position where it may be locked by the latch 33, if a top is delivered to the ring.

From the foregoing description it will be apparent that I have devised a very simple apparatus by which percolator tops or other glass articles may be quickly inverted, and accurately positioned when inverted, and by which a signal will be given to the operator when a top is not delivered from the forming machine to the receiving or turn-over ring.

While the apparatus has been illustrated and described in considerable detail, yet it is apparent that various changes and modifications may be made without departing from the spirit of the invention, and all such changes and modifications are intended to be included within the scope of the appended claims.

What I claim is:

1. An apparatus for handling glass articles, including a ring to receive the articles, a conveyer beneath the ring, and means operated by the conveyer for rotating the ring about a horizontal axis to invert the articles and deposit them on the conveyer.

2. An apparatus for handling glass articles, including a ring to receive the articles, means for rotating the ring about a horizontal axis to invert the articles and deliver them, and means carried by the ring to prevent the articles from sliding while being delivered.

3. An apparatus for handling glass articles, including a ring to receive the articles, means for rotating the ring about a horizontal axis to invert the articles and deliver them, and means for engaging the articles while they are being delivered to accurately position the delivered articles.

4. An apparatus for handling glass articles having a bead, including a ring to receive the articles, means for rotating the ring about a horizontal axis to invert the articles and deliver them, and means carried by the ring for engaging the bead as the articles are delivered, whereby no throwing or sliding movement is imparted to the articles.

5. An apparatus for handling glass articles having a bead, including a ring to receive the articles, a conveyer beneath the ring, means operated by the conveyer for rotating the ring about a horizontal axis to invert the articles and deliver them, and a hook-like member carried by the ring and adapted to engage the bead on the articles as they are delivered from the ring.

6. An apparatus for handling glass articles having a bead, including a ring to receive the articles, an escalator having pans adapted to pass beneath the ring, means carried by the escalator pans for causing the ring to rotate about a horizontal axis to invert the articles and deliver them, and a hook-like member carried by the ring and adapted to engage the bead on the articles as they are delivered from the ring.

7. An apparatus for handling glass articles, including a ring to receive the articles, means for rotating the ring about a horizontal axis to invert the articles and deposit them, and means for giving a signal if an article is not delivered to said ring.

8. An apparatus for handling glass articles, including a ring to receive the articles, a conveyer beneath the ring, means for rotating the ring about a horizontal axis to invert the articles and deposit them on said conveyer, and means for giving a signal if an article is not delivered to said ring.

9. An apparatus for handling glass articles, including a ring to receive the articles, a conveyer beneath the ring, means for rotating the ring about a horizontal axis to invert the articles and deposit them on said conveyer, a signal controlling member in the path of an article droping into said ring, said member being movable by said article to prevent the giving of a signal.

10. An apparatus for handling glass articles, including a ring to receive the articles, a conveyer beneath the ring, means for rotating the ring about a horizontal axis to invert the articles and deposit them on said conveyer, a movable signal controlling member in the path of an article dropping into said ring, and means for giving a signal if said member is not moved by an article.

OBREN M. FARRIS.