Nov. 26, 1940. J. R. DOSTAL 2,223,060

BOTTLE CONVEYER FLIGHT

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Fig. 1.

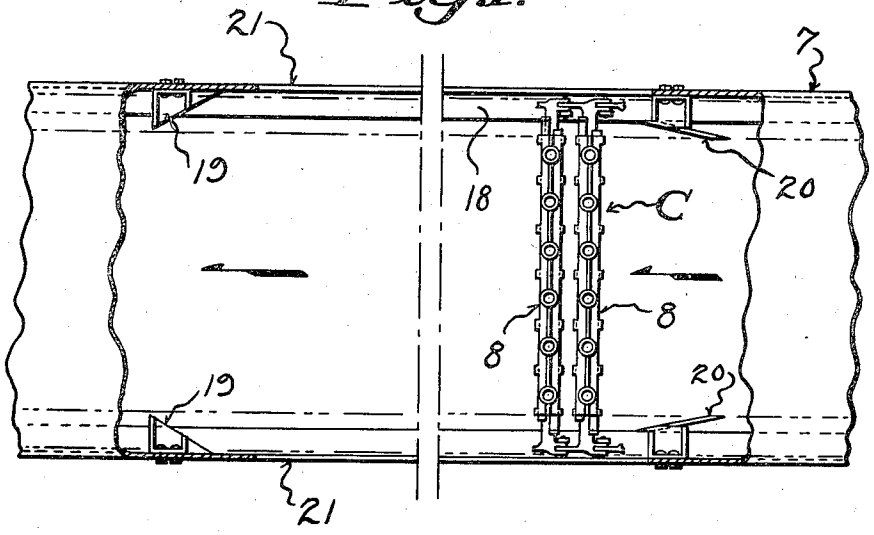
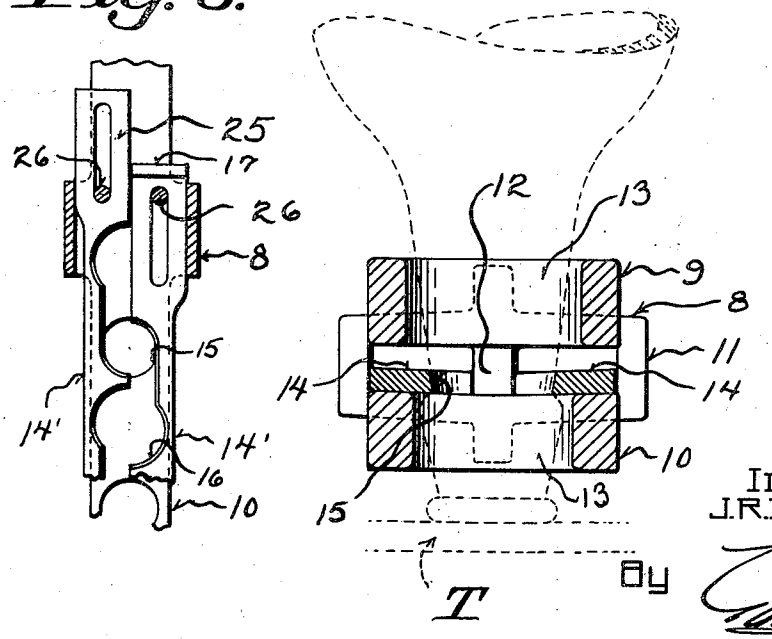


Fig. 4.

Fig. 6.



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Fig. 2. Fig. 3.

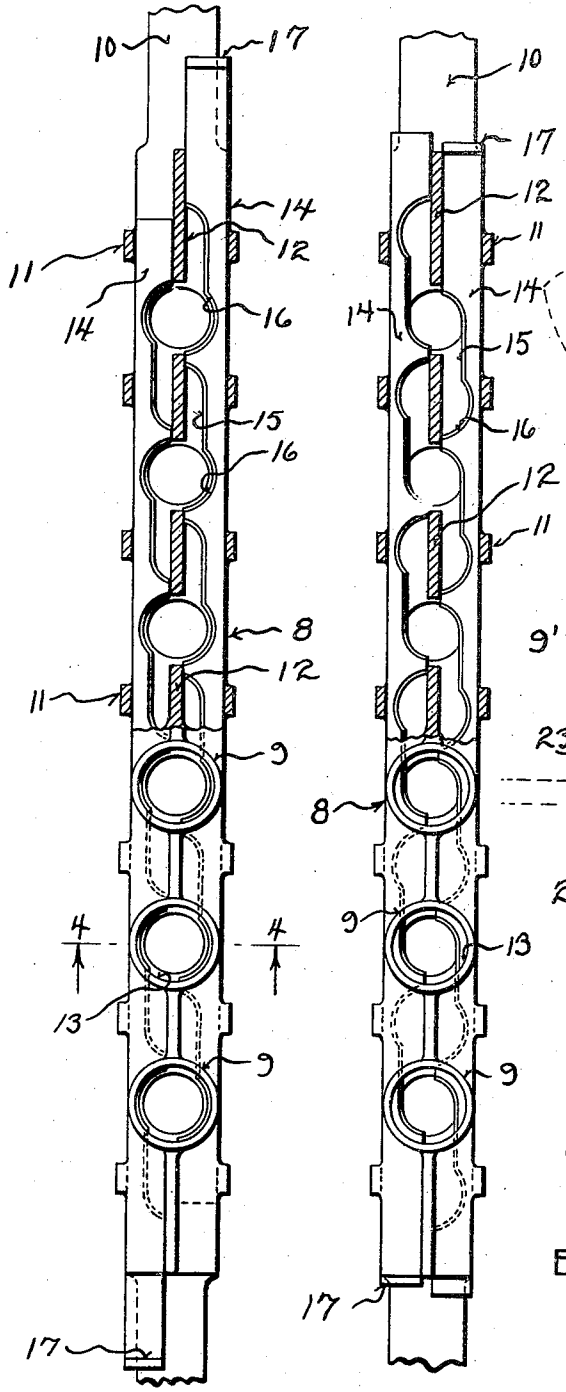
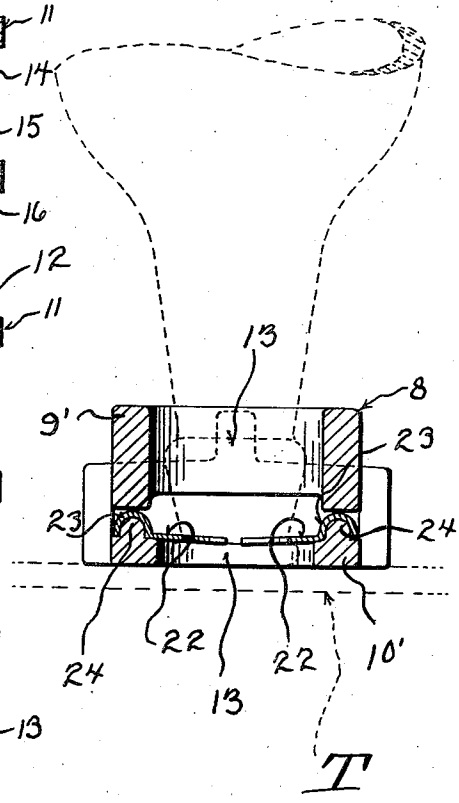


Fig. 5.



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UNITED STATES PATENT OFFICE

2,223,060

BOTTLE CONVEYER FLIGHT

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Application October 26, 1939, Serial No. 301,408

2 Claims. (Cl. 198—131)

This invention pertains to improvements in bottle washers, and more particularly to means for locking bottles upon the endless conveyer of a bottle washing machine.

The invention has primarily for its object the provision of a simple and inexpensive locking mechanism, for effectively holding the bottles on the conveyer as it travels through the machine, and which compensates for variations and irregularities occurring in the contour of the bottle necks.

Incidental to the foregoing, a more specific object of the invention resides in the provision of an endless carrier for bottle washing machines, comprising transverse flights for reception of the bottles, and a pair of complementary locking bars simultaneously reciprocal in opposite directions for locking and releasing bottles from the carrier.

A still further object is to provide a locking mechanism, which, upon operation, automatically rotates the bottles to a position for proper locking contact, thus compensating for irregularities occurring, and avoiding damage to the bottles.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the novel construction, combination, and arrangement of parts, substantially as hereinafter described, and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the herein disclosed invention may be made as come within the scope of the claims.

In the accompanying drawings are illustrated one complete example of the physical embodiment of the present invention constructed according to the best mode so far devised for the practical application of the principles thereof.

In the drawings:

Figure 1 is a fragmentary plan view of a conventional bottle washer equipped with the present invention, parts being broken away and in section to more clearly illustrate structural details;

Figure 2 is an enlarged fragmentary plan of one of the carrier flights partially broken away and in section, the locking mechanism being shown in open position;

Figure 3 is a similar view showing the locking mechanism in operative position;

Figure 4 is an enlarged transverse section taken on the line 4—4 of Figure 2;

Figure 5 is a similar view illustrating a modification of the invention; and

Figure 6 is a fragmentary plan section illustrating still another modification.

The present invention is designed as an improvement in bottle holders of the general type disclosed in U. S. Letters Patent No. 2,094,398, in which a single reciprocative bar provided with keyhole slots is employed for engaging the neck of the bottles, adjacent either the bead or head of the bottle, depending upon its design. Due to the fact that the keyhole slots in the locking bar are fixed, while variations in contour and dimensions occur in the bottles in the course of manufacture, holders of the foregoing type have been found objectionable, in that the bottles are frequently damaged, or insecurely locked upon the carrier.

Referring now to that form of the invention illustrated in Figures 1 to 4 inclusive, the numeral 7 designates the casing of a conventional washing machine through which an endless carrier C travels in the usual manner. The carrier C is of the type disclosed in Letters Patent No. 2,094,398, and comprises a plurality of transverse flights 8 pivotally connected at their ends to form a link conveyer. Each flight consists of alined upper and lower sections 9 and 10, respectively, which are spaced apart, as best shown in Figure 4, and connected at intervals by vertical side ribs 11, and central webs 12. It will be apparent that while each flight may be cast or formed integrally as explained, if desired, for manufacturing purposes, the sections may be formed separately and connected in any suitable manner without affecting the principles of the invention. The upper and lower sections 9 and 10 are provided with alined spaced openings 13, which form pockets for the reception of the bottle necks, as indicated in dotted lines in Figure 4. Reciprocatively mounted on each of the flights between the spaced sections are a pair of complementary locking bars 14, which are guided between the ribs 11 and the central webs 12, as best shown in Figures 2 and 3.

The opposed edges of each bar 14 are notched out at spaced intervals, the notches being indicated as 15 terminate at one end in an enlarged recess 16. As best shown in Figures 2 and 3 the notches on the adjacent bars are oppositely disposed with relation to their restricted and enlarged portions. One end of each bar terminates in a vertical finger 17 disposed upon the opposite sides of the flight with relation to the adjacent bar.

As best shown in Figure 1 the pivotally con-

nected ends of the flights 8 travel upon supporting tracks 18 secured to the side walls of the casing 7, and for the purpose of actuating the locking bars 14, cams 19 and 20, respectively, are attached to the side walls of the case 7, in the path of travel of the vertical fingers 17. The cams 19 and 20 are positioned upon opposite sides of an opening 21 provided in the casing 7 in which space the operator both loads and removes bottles from the carrier C.

Therefore, assuming the carrier to be traveling in the direction indicated by the arrows in Figure 1, the cams 20 are designed to engage the fingers 17 of the locking bars, causing them to be laterally projected with relation to each other to aline the recesses 16 of the opposed notches 15, as best shown in Figure 1, in which position the bottles are released for removal from the carrier pockets 13, in that the recesses 16 are of sufficient diameter to allow the heads or beads of the bottles to pass therethrough.

The carrier is loaded before the flights reach the cams 19, which engage the fingers 17 forcing the locking bars inwardly to aline the restricted portion of the notches 15, as best shown in Figure 3, the distance between the restricted portions being such as to cause the locking bars to engage the necks of the bottles to securely lock the same on the carrier, both in upright and inverted position.

As best shown in Figure 4, the edges of the notches 15 are slightly tapered to better fit the contour of the bottle neck and provide close contact with the shoulder formed by either the head or bead of the bottle.

In that form of the invention heretofore described, the locking bars are formed of comparatively heavy stock and are designed to engage the necks of the bottles adjacent their heads, while in the modification shown in Figure 5, the locking bars 22 are stamped out of relatively thin sheet metal for locking engagement with the bottles adjacent their end beads. In the latter form of lock, the outer edges of the bars are provided with longitudinal channels 23 straddling ribs 24 formed on the lower section 10' of the flight, while the upper section 9' is so spaced as to prevent dislodgment of the locking bars 22 from the ribs 24.

The modification shown in Figure 6 differs only from that form of the invention illustrated in Figures 1 to 4, in that the locking bars 14', instead of being guided by the ribs and webs formed on the flights, are provided adjacent their ends with slots 25 for reception of pins 26 carried by the flights.

From the foregoing explanation considered in connection with the accompanying drawings it will be apparent that bottles may be inserted or removed from the pockets formed by the openings 13, at any point between the cams 19 and 20, in that the cams 20 withdraw the locking bars to their open position, as shown in Figure 2. Inasmuch as the pockets are of sufficient diameter to allow the bottles to drop downwardly and rest upon their flared portions, suitable tracks T, indicated in dotted lines in Figures 4 and 5, are positioned below the flights to support the bottles for engagement by the locking bars immediately adjacent the shoulders formed by either the head or bead of the bottle, as heretofore explained.

One of the salient features of the present invention results from the fact that in shifting the locking bars inwardly by the cams 19, the necks of the bottles are first engaged by the edges of the notches at the point of intersection of the restricted portions and the recesses 16, and due to the fact that the bars are moved in opposite directions, the tendency is to rotate the bottle, until a sufficiently small diameter is found to allow the restricted portions to freely pass the bottle neck.

Thus it will be seen that although irregularities may occur in the circumferential contour of the bottle neck, resulting in a high spot at some point about its circumference, the locking bars will not jam, or mutilate the bottle, but instead will cause its rotation until the high spot reaches a point allowing the restricted portions of the opposed notches to pass.

I claim:

1. An endless carrier for bottle washing machines comprising, a plurality of transverse flights, each provided with spaced pockets for receiving the necks of bottles, and a pair of complementary oppositely slidable bars carried by each of said flights for locking engagement with the bottle necks adjacent a peripheral bead formed thereon in one position of the bars.

2. An endless carrier for bottle washing machines comprising, a plurality of transverse flights, each provided with spaced pockets for receiving the necks of bottles, and a pair of complementary oppositely movable locking bars carried by each flight and provided with opposed notches increased at one end, said notches being arranged for alinement of the increased ends of said notches with said pockets in one position of the bars, and of the restricted portions of the notches in the other position of the bars for engaging the bottle necks adjacent a peripheral bead formed thereon to lock the bottles in said pockets.

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