

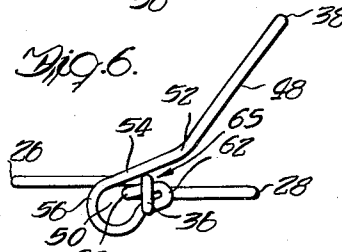
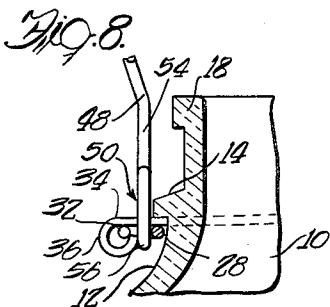
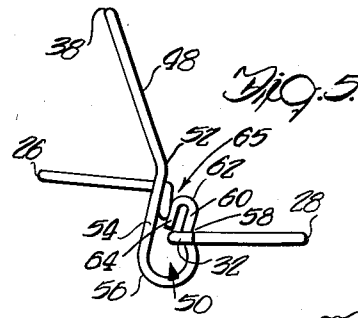
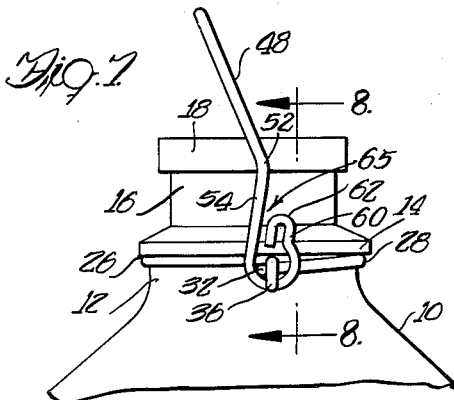
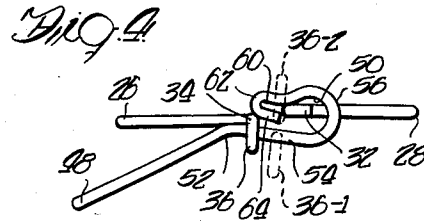
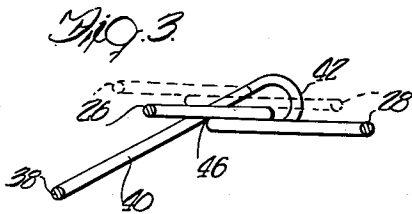
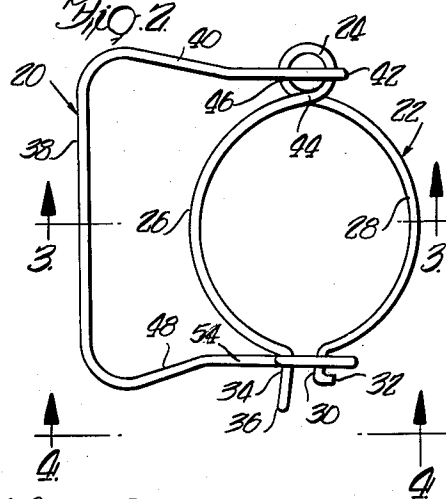
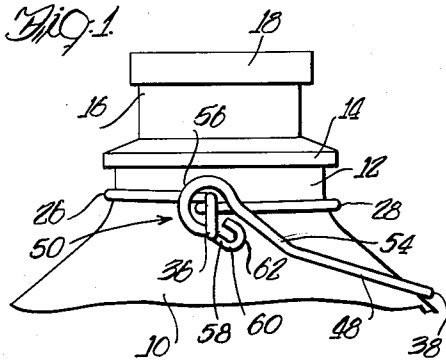
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J. F. BUYS

2,985,330

BOTTLE HOLDER

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1

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BOTTLE HOLDER

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7 Claims. (Cl. 215—100)

My invention relates to bottle holders and includes among its objects and advantages:

A. Assembly by unskilled personnel with a minimum of simple manipulation;

B. Fool-proof assembly technique in that, if the device is set on the bottle upside down, it is impossible to complete the assembly; and

C. Permanence in assembly, such that ultimate users or unskilled personnel will not succeed in removing the assembled unit from the bottle without rendering it unfit for a second use.

Glass milk bottles are commonly washed in inverted or upside down position by automatic machinery, which conveys them past nozzles that drench the outside and the inside of the bottle with copious jets of cleaning and sterilizing fluid. The more significant criteria for dependable and successful use of permanently affixed carrying handles in such automatic washing machinery include:

(1) The holder must not prevent effective cleaning of the outside of the bottle neck and of the holder itself; and

(2) The bail must avoid entanglement and breakage by pivoting with the utmost freedom if it is contacted by a stationary nozzle or other machine part below the moving inverted bottle.

The disclosed embodiment satisfies criteria 1 and 2 completely and also achieves objective C.

Other objects and advantages of the invention will become apparent as the description proceeds.

In the accompanying drawings:

Figure 1 is an elevation of the top of a container with a device according to the invention mounted thereon;

Figure 2 is a plan view of the device itself in the unfastened condition, ready for assembly with a container;

Figure 3 is a section of line 3—3 of Figure 2;

Figure 4 is a side elevation as on line 4—4 of Figure 2;

Figure 5 is an elevation similar to Figure 4 with the parts in an intermediate stage of assembly;

Figure 6 is a similar view with the parts in a later stage of assembly just before they arrive in the position of Figure 1;

Figure 7 is a side elevation of the parts illustrated in Figure 1 with the weight of the bottle suspended by the carrier; and

Figure 8 is a detail section on line 8—8 of Figure 7.

In the embodiment selected for illustration of the invention in Figures 1 to 8 inclusive, the one gallon glass container 10 has a conventional tapered upper portion leading to a substantially cylindrical lower neck portion 12 above which is an annular projection, or peripheral flange, 14 commonly called a bumper roll. Above the bumper roll is a smaller cylindrical neck portion 16 and above this an enlarged lip, or peripheral flange, 18 at the extreme top.

The holder is made of two pieces of wire, identified generally as the handle wire 20 and the ring wire 22. The handle wire has a diameter of substantially 0.135

2

inch and the ring wire is somewhat smaller, usually 0.120 inch. The ring wire is bent to form the substantially circular loop 24, the ends of which are continued in the larger arcuate reaches 26 and 28, each shaped to encircle about 180° of the periphery of the lower neck 12. This is the well-known construction illustrated in Jenkins Patents 2,160,662, May 30, 1939 and 2,288,357, June 30, 1942.

The free ends of the reaches 26 and 28, remote from and substantially opposite the loop 24, are formed into complementary engagement means. The reach 28 is turned radially outward to form a horizontal arm 30 and then horizontally back to form a prong terminal 32. The reach 26 is turned outward to form a radial projection 34 which is curved down at its outer end and around to define a terminal in the shape of an eye 36 lying in a vertical plane and at such a radial distance that the terminal 32 registers with the central point in the eye 36. The eye 36 does not extend above the level of the reach 26.

The handle wire 20 is fashioned into a bail 38, and a second tension leg 40, which leg extends down to end in a second closed loop 42 encircling the right side of the loop 24, which is the side that crosses on top of the crossing at 44. As best indicated in Figure 3, the second leg 40 adjacent the second loop 42 passes over the other side of the loop 24 at 46, and contact at this point limits the counterclockwise movement of the handle member, which may swing from the position illustrated in Figure 1 until the bail 38 rests at the left side of the container 10. Thus the portion of the complete 360° around a horizontal axis, through which the bail 38 might rotate, is limited to the extent of about 120° by the bottle 10.

The first tension leg 48 terminates in a first loop 50, which joins the main reach of the leg 48 at 52. Beyond the point 52 is a short straight portion 54 tangent to an arcuate portion 56, which is then curved back reversely at 58 to define a U-shaped terminal which opens back toward the bight of the main loop and comprises an outwardly extending leg 60, a small bight 62, and a returning leg 64. The cut end of the returning leg 64 approximately bridges the opening between the straight reach 54 and the reverse bend at 58, being spaced from each of the parts by a distance materially less than the diameter of the ring wire 22.

Thus the return leg 64 of the small U-shaped guard terminal cooperates with the adjacent straight portion 54 to define a passage, or gate, 65, constituting the entrance for the projection 34 during assembly. The curvature of the small bight 62 defines a flared outer entrance opening for the gate, to facilitate wedging the projection 34 into and through the gate. But the cut end of the return leg 64 provides a square corner at the inner end of the gate 65, which obstructs any attempt to withdraw either projection 34 or 30 from the final assembled position inside the loop 50.

With the parts in the position indicated in Figures 2, 3, and 4, the reaches 26 and 28 can be separated by flexure of the wire in the loop 24 so that they can pass down over the flange 14. Because the projection 34 is outside the loop 50 before assembly with the bottle, there is no limit to this separation, so far as the handle member is concerned.

After the device has thus been positioned with the reaches 28 and 26 encircling the neck 12, the handle will not be in the position of Figure 1, but will extend downwardly to the left instead of to the right, as in Figure 4. The operator now grasps the handle and moves it from the position of Figures 3 and 4 up into the position of Figure 5. This movement brings the straight portion

3

54 against the projection 34 and forces the projection upwardly and to the right as clearly indicated in Figure 5 with respect to the projection 30. The projections 30 and 34, during this movement, provide joint fulcrums around which the handle turns, being restrained from movement toward each other beyond the positions indicated in Figure 6 by contact with the bottle neck.

Upon further rotation of the handle to the position of Figure 6, the bottle neck constitutes a positive abutment limiting the movement of reach 28 to the left, so that the projection 34 is forced to slide down along the portion 54 and between the portion 54 and the return guard leg 64, or rather, because the bottle is holding all the ring parts stationary except for vertical shifting of projections 34 and 30, the gate 65 slides over the projection 34. Thus the gate 65 is wedged open by the projection 34 and the projection passes through the gate. At its extreme of tightening movement, the wedging force carries the eye terminal 36 over and beyond the prong terminal 32, and then down into a position where the release of the projection 34 from the gate 65 permits the resilience of the ring member to snap the terminal 32 into the eye 36 and complete the assembly. The small return movement is equal to the length of the prong 32 and that permits the ring to expand to have a final inside diameter greater than the minimum diameter indicated in Figure 6 amounting to the length of the prong 32 divided by 3.1416.

The parts have now arrived at the position of Figure 1 and the prong terminal 32 is permanently entered in the eye 36. This positively locks the adjacent ends of the reaches 26 and 28 against any movement except direct withdrawal of the terminal 32 from the eye 36, and that is prevented by the bottle neck. Only intentional prying with a screw driver or similar tool by someone with mechanical skill can develop the large forces necessary to open the lock, and then not without taking the handle off, and substantially demolishing the device. The force necessary to push the projection 34 through the gate 65 is very large, but during the assembly the operator grasping the bail 38 has a very large leverage, so that a very moderate manual force is ample to put the parts together. No such fulcrum is available to anyone attempting to remove the device.

Referring to Figure 2 for convenience in explanation, the legs 40 and 48 can be separated by pulling them gently apart far enough to permit the hook 30, 32 to slip out of the loop. The entire ring will then dangle freely, connected to the bail only by the loops 24 and 42. This is the condition in which the machine that closes the loop 42 delivers the finished product.

It is convenient to ship such holders piled loose in barrels, and if they are thrown loosely into a barrel in the condition just described and shipped to their destination, the person emptying the barrel will frequently pick up one or two holders and find them so entangled and snarled into the other holders that he picks up many more than he wants and has a distasteful chore in disentangling them. In the positions of Figures 2 and 4, it will be noted that the hook 30, 32 has already been inserted in the loop 50. I have indicated in dotted lines at 36-1 in Figure 4 the position that the eye 36 would occupy with respect to the hook 30, 32 if the ring were undistorted and without strain. Because the eye 36 occupies the full line position in Figure 4, it pushes downwardly and to the right on the adjacent handle leg, and tends to rotate the handle leg counter-clockwise with respect to the ring, and the ring clockwise with respect to the handle. However, as clearly indicated in Figure 3, such rotation is prevented by the loop 24, which has abutment at opposite sides with the leg 40 and the loop 42. Accordingly, the gentle tension in the ring itself holds the parts in the positions of Figures 2 and 4 during shipment.

4

An operator reaching into a barrel full of units in the condition of Figures 2 and 4 can easily pick up a half dozen holders or a smaller number. Occasionally he will get one more than he intended, because one of those he grasps directly will pick up another one with the bail 38 of the pick-up hooked over the reach 26 of the ring of one the operator is grasping, but when this happens, it is a simple matter to lift the extra one off.

It may also happen, with a fair degree of frequency, that the devices will jiggle around, and the eye 36 will wind up in the position indicated at 36-2 in Figure 4. In this position also, the stress in the ring tends to return the eye to the position 36-1, and there is a twisting action identical in effect with that obtaining when the parts are in the full line position of Figure 4.

The degree of freedom allowed the ring for rotation about a horizontal axis through its carrying loops 42 and 50 depends on the diameter of the wire employed and on the relative diameters of the hooks 24 and 42. With the parts in the position of Figure 3, and the bail 38 on or substantially on the breast of the bottle, it is essential only that about 240 degrees of rotation be permitted for the handle. In commercial practice, I happen to employ the parts with such dimensions that substantially 360 degrees of relative rotation is possible. Starting with the full line position of Figure 3, with the handle stationary, the ring can rotate counter-clockwise into the dotted line position in substantial parallelism with the full line position. In this position, both sides of the loop 24 engage the leg 40 and limit further counter-clockwise displacement.

This application is a continuation in part of my co-pending application S.N. 386,824, filed October 19, 1953; S.N. 392,871, filed November 18, 1953; and S.N. 424,828, filed April 22, 1954, each of which is now abandoned.

Others may readily adapt the invention for use under various conditions of service by employing one or more of the novel features disclosed or equivalents thereof. As at present advised, with respect to the apparent scope of my invention, I desire to claim the following subject matter:

1. The combination with a bottle having a cylindrical neck and a peripheral flange on said neck; of a carrier comprising a ring underlying said flange; and a handle member having connections to transmit lifting force from said handle to first and second points on opposite sides of said ring; said ring having a first radial projection extending out from said flange; said handle having a first terminal portion permanently articulated with said first radial projection; said ring having two adjacent ends approximately opposite said first radial projection; second and third projections on said adjacent ring ends, extending radially outward from under said flange; said handle having a second terminal loop adjacent said second and third projections; said second terminal loop, in assembled relationship, encircling both said second and third projections; said second terminal loop lying in a plane tangential to said ring and having a constricted, resilient, outwardly opening gate adapted to expand and admit said second projection to pass in through said gate; whereby said second terminal loop can be placed over said third projection by relative radial movement, and subsequently forced over said second projection by relative tangential movement complete the assembly.

2. A carrier according to claim 1 in which said reaches are shaped to grip said neck and thus resist contraction of said ring to enable said third projection provide a fulcrum for said loop and assist the user in prying said gate over said second projection.

3. A carrier according to claim 2 in which said loop has an inwardly facing shoulder adjacent the inner end of said gate, said shoulder adapted to abut said third projection during the prying movement.

4. A carrier according to claim 2 in which said reaches

5

are proportioned to permit said second projection to pass slightly beyond said third projection under the heavy force of the prying movement, and said second and third projections have hook means adapted to interlock upon movement of said second projection beyond said third projection; said hook means retaining said second and third projections permanently locked, with said reaches crossed over each other at the inner ends of said projections.

5. The combination with a bottle having a cylindrical neck and a peripheral flange on said neck; of a carrier comprising a ring underlying said flange; and a handle member having connections to transmit lifting force from said handle to first and second points on opposite sides of said ring; a first one of said connections comprising a first projection rigid with said ring and projecting out from under said flange; a first loop at one, first end of said handle encircling said first ring projection; said first ring projection extending in a substantially radial direction; said first loop having a constricted outwardly opening gate too narrow to admit said first ring projection; said first loop being resilient and adapted to yield and let said first ring projection pass inward through said gate by forcing the sides of said gate apart; said gate opening upwardly near the top of said first loop when said bottle is suspended below said handle with the entire combination upheld by lifting upwardly on said handle; the second of said connections comprising a second outward projection on said ring and a second loop at the other, second, end of said handle, encircling said second ring projection; said first and second loops lying in approximately parallel planes on opposite sides of said ring and neck; whereby said handle may swing freely about an axis lying in the plane of said ring and perpendicular to the axis of said ring and neck; said ring having a first arcuate portion adjacent said first ring projection and integral therewith; and a second arcuate portion adjacent said third ring projection and integral therewith; said first and second arcuate portions together encircling the entirety of said neck; said second arcuate portion having a third ring projection at its end, adjacent said first ring projection; said first and third ring projections being separate and

6

movable apart by flexing the rest of said ring open far enough to permit said flexed-open ring to slip down over said flange; said first and third ring projections having terminals at their outer ends extending laterally with respect to the radial projections proper; said terminals being adapted to obstruct removal of said first loop by radial outward movement; said terminals comprising a first terminal having the shape of an eye lying in a radial vertical plane; and a second terminal having the shape of a reversely directed prong lying in a horizontal plane; said terminals being adapted to move beyond each other and then back into locked positions with said prong entering into said eye from the side remote from the arcuate ring portion carrying said prong.

6. A combination according to claim 5 in which said arcuate ring portions are limited by contact with said neck to a crossed-over position with said prong just clearing the periphery of said eye; whereby one ring projection lying inside first loop and engaging said sharp-cornered gate end is prevented from yielding further, and becomes a temporary fulcrum for prying said gate over the other ring projection outside said loop.

7. A combination according to claim 6 in which progressive rotation of said loop to pry it over said outside ring projection carries said outside projection, first above and beyond said inside projection then down into registry with said inside projection, to position said prong to enter said eye when said gate slips over and beyond said outside projection.

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