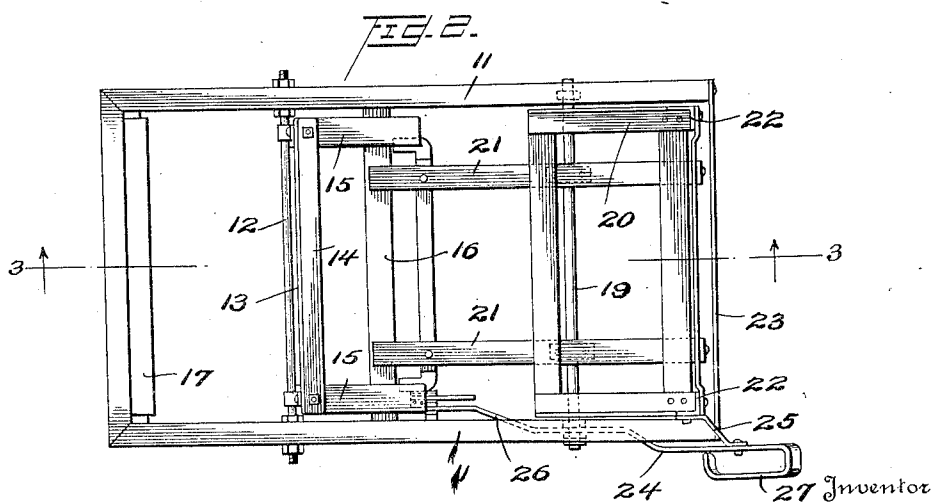
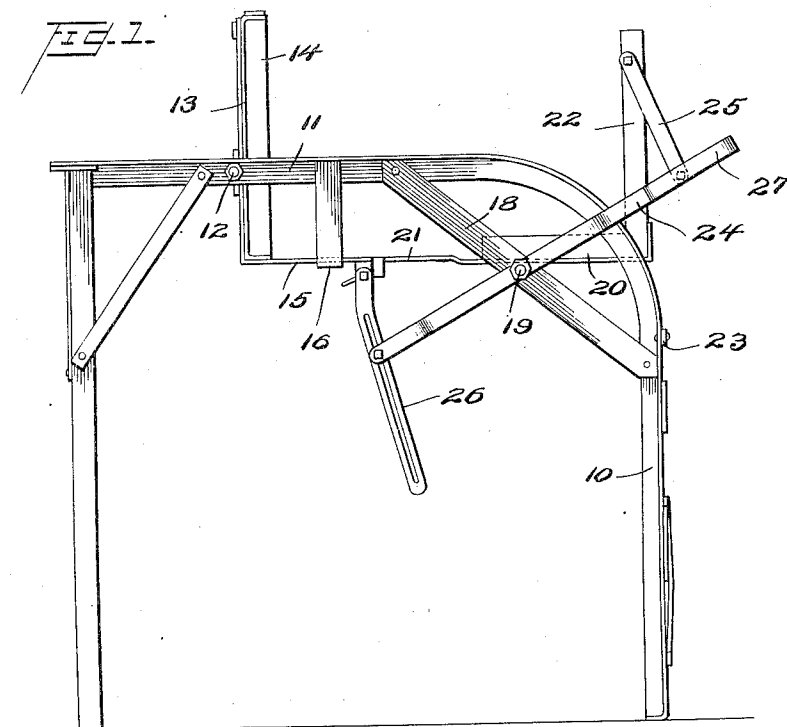


1,373,604.

R. H. DYER.  
 APPARATUS FOR INVERTING BOTTLES.  
 APPLICATION FILED AUG. 29, 1919.

Patented Apr. 5, 1921.

2 SHEETS—SHEET 1.



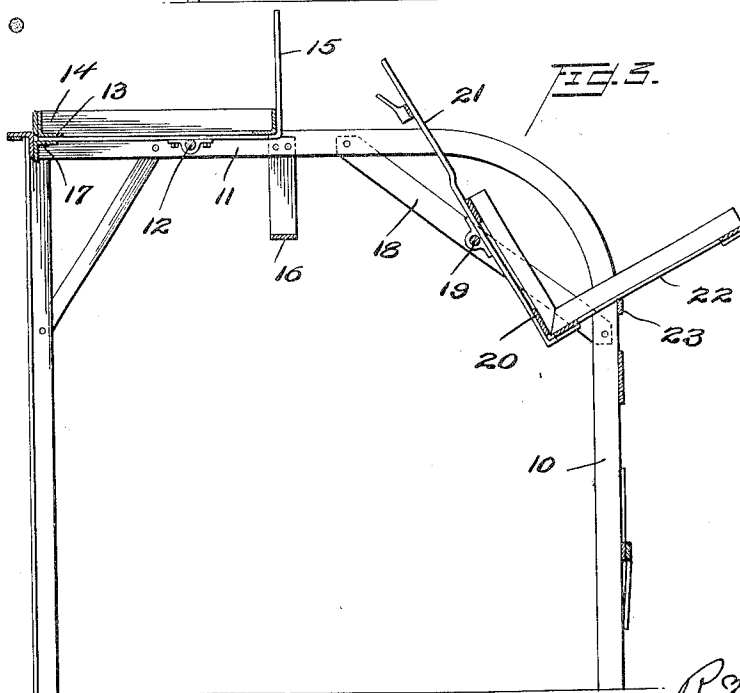
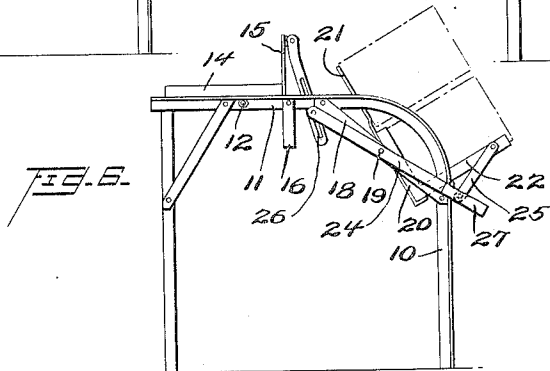
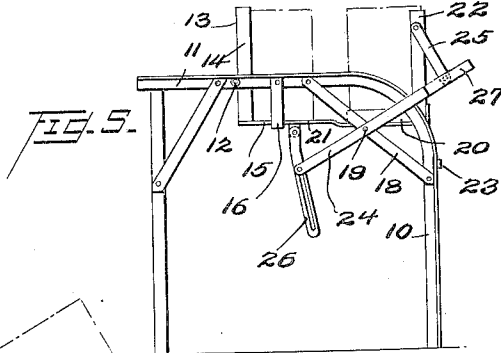
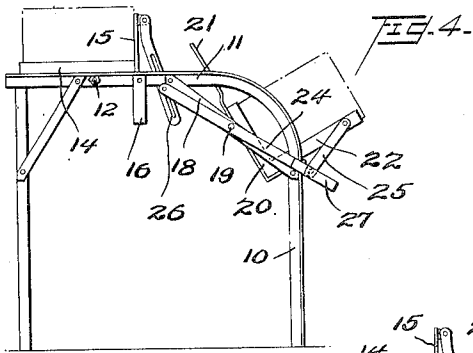
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 By *Hooker, Freeman, Watson & Co.*  
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Inventor

R. H. Dyer,

By Foster, Freeman, Watson & Co.,  
 Attorneys.

# UNITED STATES PATENT OFFICE.

RALPH H. DYER, OF PROVIDENCE, RHODE ISLAND.

## APPARATUS FOR INVERTING BOTTLES.

1,373,604.

Specification of Letters Patent.

Patented Apr. 5, 1921.

Application filed August 29, 1919. Serial No. 320,596.

*To all whom it may concern:*

Be it known that I, RALPH H. DYER, a citizen of the United States, and residing at Providence, county of Providence, and State of Rhode Island, have invented certain new and useful Improvements in Apparatus for Inverting Bottles, of which the following is a specification.

The object of this invention is to provide a simple, quick acting and efficient apparatus for inverting bottles or similar vessels which are handled in large numbers and are placed in crates for transportation. The particular embodiment of the invention herein illustrated and described is especially utilized in connection with bottle washing machines in which milk bottles or similar bottles are washed in large numbers. Bottles of this character are almost universally handled in crates having partitions therein and arranged to contain one or two dozen bottles, one in each compartment. As they come from the washers or the washing machine they are usually dropped into the crates in their normal position with bottom down and open end up, and the rinsing water flows down the walls of the bottle and is retained therein. It is necessary before the bottles are reused to invert them and drain out the water therein gathered. To do this by hand involves considerable labor and danger of breakage. According to my invention the bottles are inverted one or two dozen at a time by simply placing a full crate and an empty crate on the bottle inverting machine, and operating lever mechanism whereupon the bottles are transferred from the full crate to the empty crate and at the same time inverted. The crate containing the inverted bottles may then be removed from the machine and stored until such time as they have completely dried out and are again ready for use.

In the accompanying drawings:

Figure 1 is a side elevation of the machine;

Fig. 2 is a top plan view of the same;

Fig. 3 is a vertical section along line 3—3 of Fig. 2, and

Figs. 4, 5 and 6 are reduced side elevations showing the various positions assumed by the moving parts of the machine and the crates placed thereon, in operation.

The frame work may either be of wood or metal as desired and comprises essentially uprights or legs 10 and horizontal members 11. I prefer to form one pair of uprights integral with the longitudinal horizontal members 11 as shown, but these members may be made separately and secured together if desired. Suitable horizontal braces are provided to hold the two parallel vertical frames in spaced relation and to thereby form a rigid structure. A bar 12 extends transversely between the horizontal side members 11 and upon this bar is pivoted a platform 13 in such manner as to be freely rotatable thereabout. This platform which will hereinafter be designated the receiving platform is provided with flanges 14 around its outer edges and with arms 15 which extend at right angles to the base of the platform. A hanger 16 suspended from the members 11 limits the rotatory movement of the platform in one direction by serving as a stop for the arms 15 and the horizontal cross-brace 17 limits the rotatory movement of this platform in the opposite direction. As shown the bar 12 is located to one side of the center of the platform so that it will have no tendency to tip automatically because of its own weight or when a crate of bottles is placed thereon.

Extending diagonally between legs 10 at the opposite end of the platform, and horizontal members 11 are braces 18 between which extends a bar 19 similar to and parallel with the bar 12. On this bar is pivoted a platform 20 hereinafter designated the delivering platform which has arms 21 extending laterally therefrom on the side toward the receiving platform and which also has a portion 22 extending at right angles thereto for supporting the bottom of a crate when the platform is in its inclined position as shown in Figs. 3, 4 and 6. The rotatory movement of this receiving platform is limited by a stop 23 extending between the legs 10 in one direction, and in the other direction by the hanger 16.

In the operation of the device the two platforms are rotated toward and away from each other and when rotated toward each other the maximum amount each platform has its projecting arms resting on member 16, the sets of arms 15 and 21 over-

lapping each other and lying parallel as shown in Fig. 2. In effecting a transfer and inversion of a crate of bottles a full crate of bottles with their mouths upward is placed on the receiving platform and an empty crate on the delivering platform in the positions clearly shown in Fig. 4. The delivering platform is then tipped until the arms 21 rest on the hanger 16 in which position the open top of the empty box is in a vertical plane and facing the receiving platform. The latter platform is then tipped or rotated toward the delivering platform until its arms 15 rest upon the hanger 16. The two crates are then exactly facing each other with the full crate of bottles resting directly over the arms 21 of the delivering platform. By rotating the delivering platform away from the receiving platform the full crate of bottles is picked up by the arms 21 and carried upwardly leaving the receiving platform empty. When in its final position the delivering platform is as illustrated in Fig. 6 with the two boxes resting one upon the other with their open sides together, the bottles having slid downwardly into the lowermost box in which they rest in inverted positions. The two boxes may then be removed from the delivering platform and the operations repeated.

In order to accomplish this movement of the two platforms in a most convenient and expeditious manner I have provided suitable lever mechanism. Rotatably mounted on the outer end of cross rod 19 is lever 24. The outer end of this lever is connected by means of link 25 to portion 22 of the delivering platform and the inner end of the lever is connected by means of link 26 to one of the arms 15 of the receiving platform. A handle 27 is provided at the outer end of the lever 24 for conveniently manually operating the device. As it is necessary that the delivering platform be rotated to horizontal position before the receiving platform is rotated to vertical position and that the delivering platform be rotated to inclined position again before the receiving platform be moved, a pin and slot connection is provided between the inner end of lever 24 and the link 26 as clearly shown in Fig. 1. It can be seen that in moving the handle 27 downwardly or upwardly the delivering platform is rotated as soon as the lever 24 is moved, but that the receiving platform will not be moved until the pin has reached either end of the pin and slot connection illustrated.

In the operation of the device a single attendant can rapidly invert many dozen bottles in the time required to invert by hand a comparatively few bottles and without danger of breakage. The machine is simple, not liable to become damaged or inoperative even when subjected to hard

usage, and is inexpensive to manufacture in the first instance.

It is obvious that the embodiment of the invention illustrated may be modified and I do not limit myself to this exact form.

What is claimed is:

1. In apparatus of the class described, in combination, a frame, a platform pivoted to the frame adapted to receive an open ended receptacle containing bottles, a second platform also pivoted to the frame at a point apart from the pivotal point of the first platform and adapted to support an open ended empty receptacle and lever mechanism supported on the frame and connected to the respective platform, whereby they may be rotated about their respective pivotal points to transfer the bottles from the first receptacle to the second and simultaneously invert them.

2. In apparatus of the class described, in combination, a frame, a platform pivoted to the frame adapted to receive an open ended receptacle containing bottles, a second platform also pivoted to the frame at a point apart from the pivotal point of the first platform and adapted to support an open ended empty receptacle, and lever mechanism connecting said platforms adapted to be actuated to rotate the platforms about their respective pivotal points to transfer the bottles from the first receptacle to the second and simultaneously invert them.

3. In apparatus of the class described, a frame, a platform pivoted to the frame adapted to receive an open ended receptacle containing bottles, a second platform also pivoted to the frame at a point apart from the pivotal point of the first platform adapted to support an open ended empty receptacle, a lever pivoted to the frame and having a handle, links connecting the platforms to the lever, the lever being adapted to be actuated to rotate the platforms about their respective pivotal points to transfer the bottles from the first receptacle to the second and to simultaneously invert them.

4. In apparatus of the class described, a frame, a platform pivoted to the frame adapted to receive an open ended receptacle containing bottles, a second platform pivoted to the frame with its axis of rotation parallel to the axis of rotation of the first frame and lever mechanism connecting said platforms adapted to tilt them toward each other when actuated in one direction and to tilt them away from each other when actuated in the opposite direction for the purpose set forth.

5. In apparatus of the class described, a frame, a platform pivoted to the frame adapted to receive an open ended receptacle containing bottles, a second platform also pivoted to the frame at a point lower than the pivotal point of the first platform,

the axes of rotation of said platform being parallel, and lever mechanism supported on said frame connected to the platforms, said mechanisms being adapted to be actuated to  
5 rotate the platforms about their pivotal points, for the purpose set forth.

6. In apparatus of the class described, a frame, a platform pivoted thereto and having arms extending at an angle thereto, said  
10 platform being to receive an open receptacle containing bottles, a second platform pivoted to the frame with its axis of rotation

parallel to the axis of rotation of the first platform, said platform having arms on one side thereof extending substantially at 15 right angles thereto, the arms of each platform being on the side of the platform toward the other platform, and each platform being adapted to be rotated toward the other into a substantially vertical position 20 with their arms lying parallel, for the purpose set forth.

In testimony whereof I affix my signature.  
RALPH H. DYER.