C. S. ADAMS.

WASHING MACHINE.

APPLICATION FILED JAN. 4, 1921.

1,421,055.

Patented June 27, 1922.

2 SHEETS—SHEET 1.

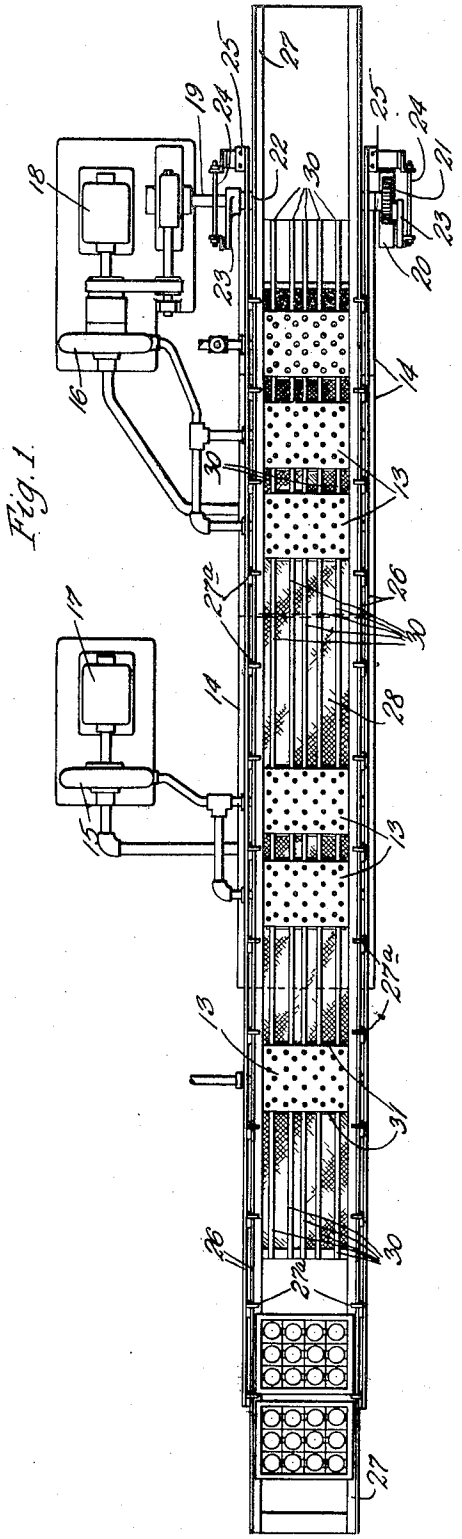


Fig. 1.

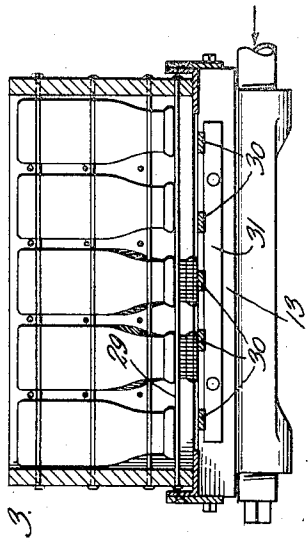


Fig. 3.

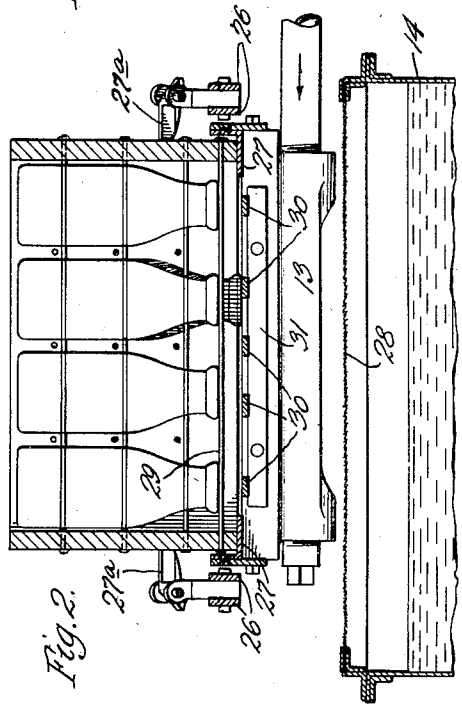


Fig. 2.

INVENTOR.

Charles S. Adams

by Parker & Prochnow.

ATTORNEYS.

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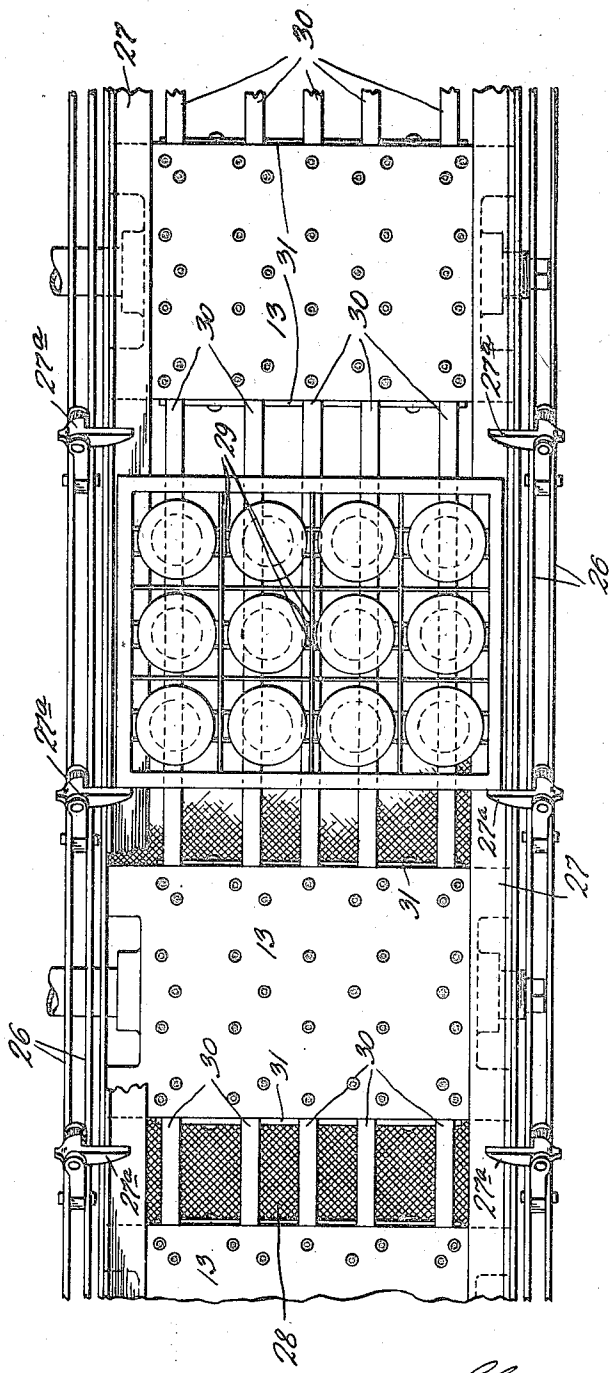


Fig. 4

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Charles S. Adams
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ATTORNEYS.

UNITED STATES PATENT OFFICE.

CHARLES S. ADAMS, OF BUFFALO, NEW YORK, ASSIGNOR TO RICE & ADAMS CORPORATION, OF BUFFALO, NEW YORK.

WASHING MACHINE.

1,421,055. Specification of Letters Patent. Patented June 27, 1922.

Application filed January 4, 1921. Serial No. 434,920.

To all whom it may concern:

Be it known that I, CHARLES S. ADAMS, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Washing Machines, of which the following is a specification.

This invention relates to bottle washing machines of that kind in which cases, each containing a number of bottles, are moved with the bottles inverted or mouth downward over jet devices which discharge water or other cleansing or sterilizing fluid up into and against the bottles.

In apparatus of this type the mouths or necks of the bottles rest on or in retaining wires, strips, or yokes in the cases, whereby the bottles are prevented from projecting from the cases as they are passed through the machine. However, in use, the retaining wires or strips may become broken, bent or distorted and permit the bottles to project below the bottoms of the cases. Under such conditions, as the cases of bottles move through the washing machine, the projecting ends of the bottles are liable to strike the jet devices or other parts of the apparatus and be broken or cause serious damage to the cases or to parts of the machine.

The objects of the present invention are to provide a bottle washing machine in which the articles to be cleansed are moved to successive cleaning or draining positions without danger of breakage; also to provide a bottle washing machine which presents a continuous supporting surface for any bottles which may project downwardly beyond the cases in which they are held.

In the accompanying drawings:

Fig. 1 is a plan view of a bottle or can washing machine constructed in accordance with the invention.

Fig. 2 is a fragmentary sectional elevation thereof.

Fig. 3 is a view similar to Fig. 2, showing a case of pint bottles in the machine.

Fig. 4 is a plan view on an enlarged scale of a portion of the machine shown in Fig. 1.

Referring to the drawings:

There is illustrated a bottle washing machine of known type and of a form in general use, comprising, generally, a frame work which supports a series of jet boxes 13 above tanks 14. In apparatus of this type, cleaning and sterilizing agents or media, preferably a preliminary rinse water, a washing solution, an intermediate rinse water, and boiling water or steam, are successively applied through the respective jet boxes under pressure, from suitable sources. Two pumps for two fluids are shown, the jet box at the left hand portion of the machine being supplied with water from a service pipe for preliminary rinsing purposes and the jet box at the right hand portion of the machine being supplied with boiling water or live steam for rinsing and sterilizing purposes. The pump 15 is driven by a suitable motor 17 and the pump 16 by a motor 18. The motor 18 also serves to actuate a reciprocating conveyor for intermittently moving the articles to be washed through the machine. In the apparatus illustrated, the motor 18 drives a shaft 19 which carries a mutilated gear 20. The mutilated gear 20 drives a gear 21 fixed on a shaft 22. A pair of crank arms 23 are fixed to opposite ends of the shaft 22, these crank arms being connected by suitable links 24 to heads 25 which are connected to the reciprocating side bar 26 of the conveyor, which are suitably supported by guides at opposite sides of the guide track 27 for the bottle cases. The movement of the conveyor of the apparatus is forward, return and dwell or rest, whereby the cases of bottles are moved forward one space where they are allowed to rest while the conveyor returns to its original position, the forward and return movements being accomplished during one half revolution of the gear 20. The conveyor then again moves forward repeating the operations above set forth. In practice, a plurality of cases is fed into the machine and the ends of the cases are engaged by suitable dogs or pawls 27^a carried by the reciprocating conveyor bars such as are shown and described in the concurrently filed application of Willis C. Stephens, Serial No. 434,865, and moved forward on the tracks 27 one space, whereupon the conveyor returns the dogs to engage the next succeeding case. Other types of washing machines and other forms of conveyors and actuating means therefor may be employed.

In the apparatus shown, the jet boxes are spaced apart so that bottles moving through the machine rest over the jet boxes, then moving forward, come to rest between the jet boxes to permit the bottles to drain into the vats or tanks 14 which are provided with

a covering or screening of screen wire 28. The jet boxes 13 project above the screens 28 and preferably have upper surfaces in a common plane and if the retaining wires or strips 29 of the cases and on which the mouths of the bottles rest, are bent, distorted, or broken so as to allow the bottles to settle in the cases far enough for the bottles to project from the cases below the faces of the jet boxes 13, then as the cases are moved forward on the track, the projecting bottles are forced against the edges of the jet boxes 13 and broken, resulting not only in loss of bottles but also in damage to the cases and to the machine.

According to this invention, the machine is provided with a plurality of spaced parallel strips or bridging members 30 which extend horizontally lengthwise of the machine from one jet box to the next so as to bridge the intervening spaces between the jet boxes. The bridging members 30 are supported by suitable means, such, for instance, as cleats 31 fastened to the sides of the jet boxes 13. The function of these bridging members is to support and guide from one jet box to the next any bottles which may unduly project from the case (as indicated in shaded lines in Figs. 2 and 3) and prevent such bottles from contacting with the sides of the jet boxes or other parts of the machine. For this purpose the bridging members are preferably arranged with their upper or supporting surfaces in the same plane as the upper surfaces of the jet boxes, or with the upper surfaces of the ends of the bridging members which are attached to the jet boxes, in the same planes as the upper surfaces of the jet boxes, to which they are attached, thereby providing continuous supporting surfaces or runways for any bottles or articles which may project from the cases. As shown in Figs. 2 and 3, the bridging members are spaced one from the other in certain definite relations, so that they will support and protect bottles of various sizes which are differently spaced in the cases. Thus, for example, in Fig. 2 are shown four rows of quart bottles; while in Fig. 3 five rows of pint bottles are shown in cases of the same horizontal dimensions. The bridging members are spaced so that they can support the projecting bottles in either arrangement. This desired spacing of the bridging members is preferably obtained, as shown in the drawings, by providing a relatively central bridging strip and two intermediate strips spaced equal distances from the central strip and on opposite sides thereof, and a pair of outer strips each spaced an equal distance from the adjacent intermediate strip, the distance between each intermediate and adjacent outer strip being greater than the distance between the central strip and either of the intermediate strips. The strips should preferably be of such dimensions that they will not block or materially obstruct the mouths of the bottles when the bottles are resting on the strips.

I claim as my invention:

1. In a bottle washing machine in which cases of bottles are moved through said machine, the combination of jet devices which discharge cleansing media to the bottles in said cases, means for supporting the cases of bottles as they are moved through said machine over said jet devices, and means for supporting bottles which may project to abnormal positions from said cases to direct said bottles to said jet devices in positions to prevent said bottles from colliding with said jet devices.

2. In a washing machine of the type described, the combination with a plurality of spaced jet devices, means for forcing fluid agents through said jet devices, and means for moving articles over said jet devices to be treated by the fluids forced through, of a plurality of spaced bridging strips connecting said jet devices and having upper surfaces the ends of which are coplanar with the upper faces of said jet devices, whereby said articles are prevented from collision with parts of said jet devices.

3. In a washing machine of the type described, the combination with a plurality of spaced jet devices, means for forcing fluid agents through said jet devices, and means for moving articles over said jet devices to be treated by the fluids forced through, of a plurality of spaced bridging strips connecting said jet devices and arranged so as to support cased articles of different sizes, whereby said articles are prevented from projecting below the tops of said jet devices.

4. In a washing machine of the type described, the combination with a plurality of jet boxes spaced apart, means for forcing fluid agents through said jet boxes, and means for moving cases of bottles over said jet boxes whereby said bottles are treated by the fluid agents discharged from said jet boxes, of means for supporting bottles which project from said cases in positions wherein the lowermost portions of said bottles do not project below the plane of the upper faces of said jet boxes.

5. In a washing machine of the type described, the combination with a plurality of spaced jet boxes, means for forcing fluid agents through said jet boxes, and means for moving articles over said jet boxes whereby the articles are treated by the fluid agents forced through said jet boxes, said jet boxes having flat upper faces, of a plurality of bridging members connecting said jet boxes, said bridging members having upper faces, the ends of which are in the

same horizontal plane as the upper faces of said jet boxes, thereby providing continuous supporting surfaces for articles moved through said machine.

6. In a washing machine of the type described, the combination with a track adapted to support a plurality of cases of bottles to be cleansed, and a plurality of means spaced apart for supplying cleaning media to cases of bottles in different locations on said track and having upper surfaces over which the cases of bottles are moved, of bridging members connecting said means, said bridging members having horizontal bottle supporting surfaces in the same plane as the upper surfaces of said media supplying means.

7. In a washing machine of the type described, the combination of a plurality of jet boxes arranged in a horizontal series, means for supplying cleaning media to said jet boxes, a guide track for supporting a plurality of articles to be cleaned in operative relation with said jet boxes, a longitudinal bridging strip extending centrally of said track and connecting said jet boxes, a pair of intermediate bridging strips arranged lengthwise on opposite sides of said central strip, and a pair of outer strips flanking said intermediate strips and spaced an equal distance therefrom, the distance between each of said outer strips and the adjacent intermediate strip being greater than the distance between either of said intermediate strips and said central strip.

8. In a washing machine of the type described, the combination with a track adapted to support a plurality of cases of bottles to be cleansed, and a plurality of means spaced apart for supplying cleaning media to cases of bottles in different locations on said track and having upper surfaces over which said cases of bottles are moved, of bridging members connecting said means, said bridging members having horizontal bottle supporting surfaces in the same plane as the upper surfaces of said media supplying means, each of said bridging members being of less width than the diameters of the mouth openings of said bottles.

Witness my hand this 30th day of December, 1920.

CHARLES S. ADAMS.

Witnesses:

ORLANDO ADAMS,

J. R. KNIGHTS.