No. 734,063. PATENTED JULY 21, 1903.

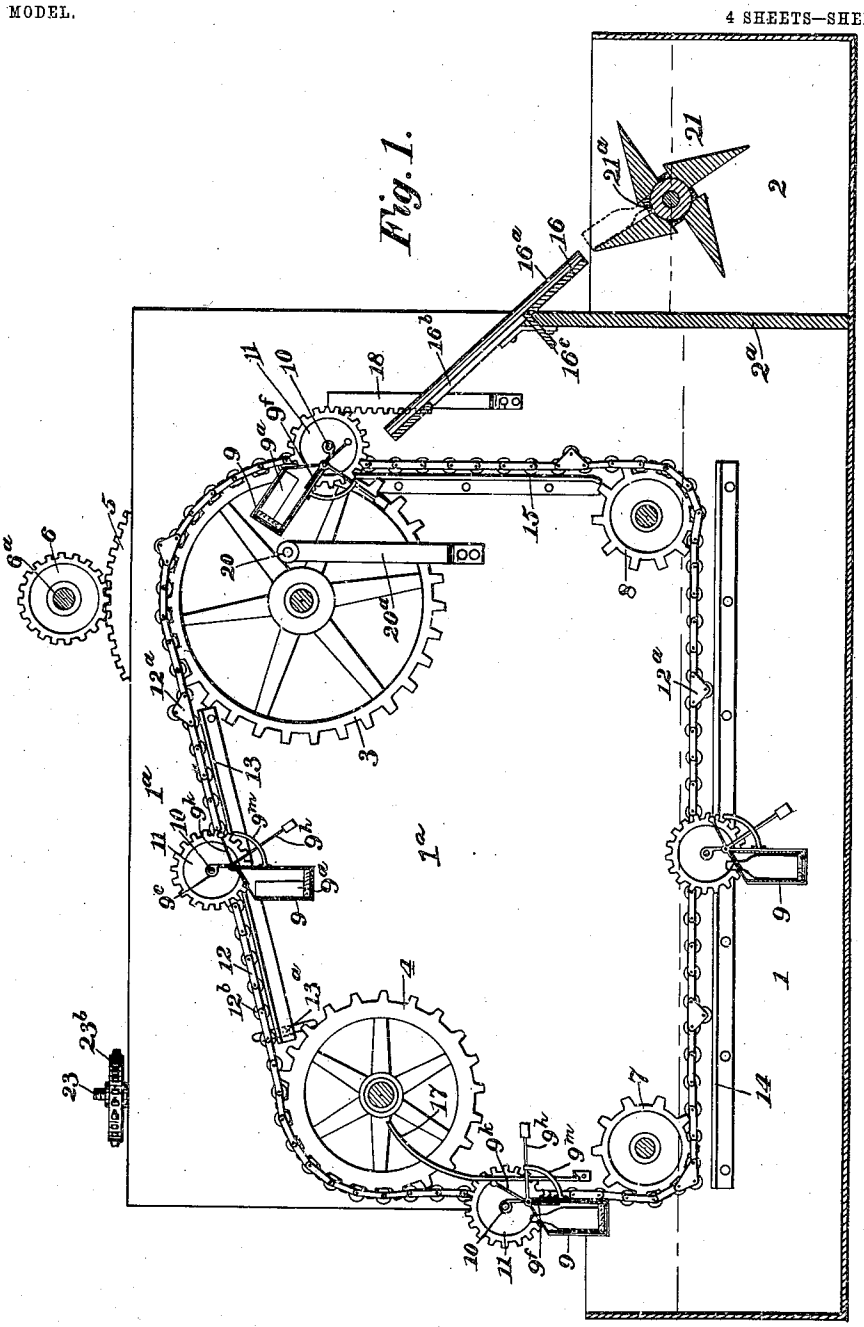
J. G. HAUCK.

BOTTLE WASHING MACHINE.

APPLICATION FILED OCT. 13, 1902.

NO MODEL. 4 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

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Benj. Finckel

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NO MODEL. 4 SHEETS—SHEET 2.

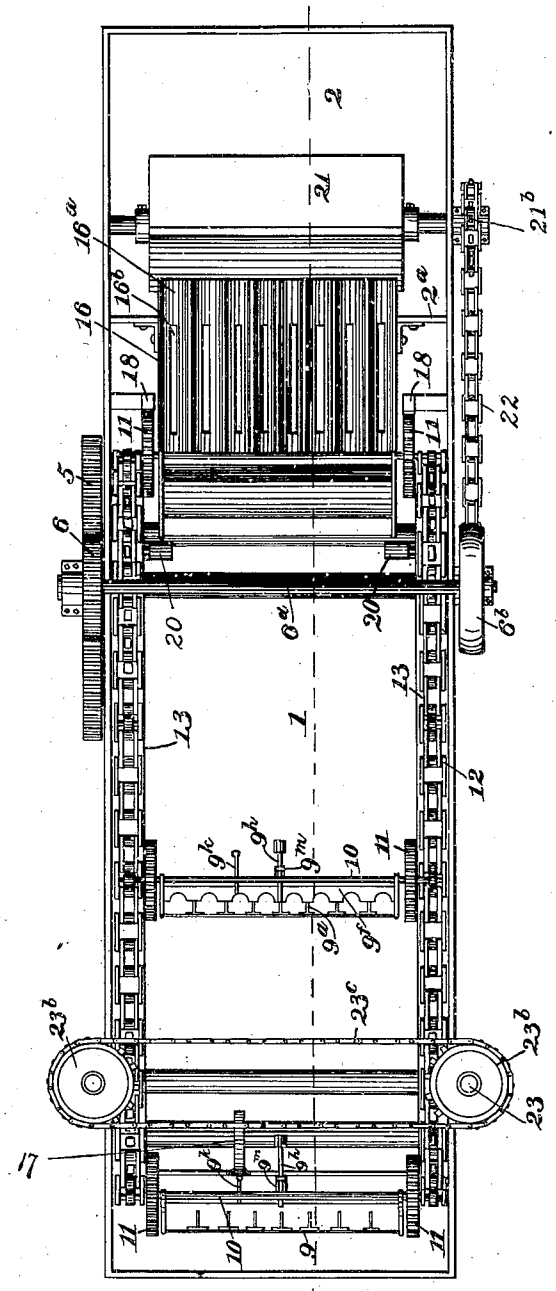


Fig. 2.

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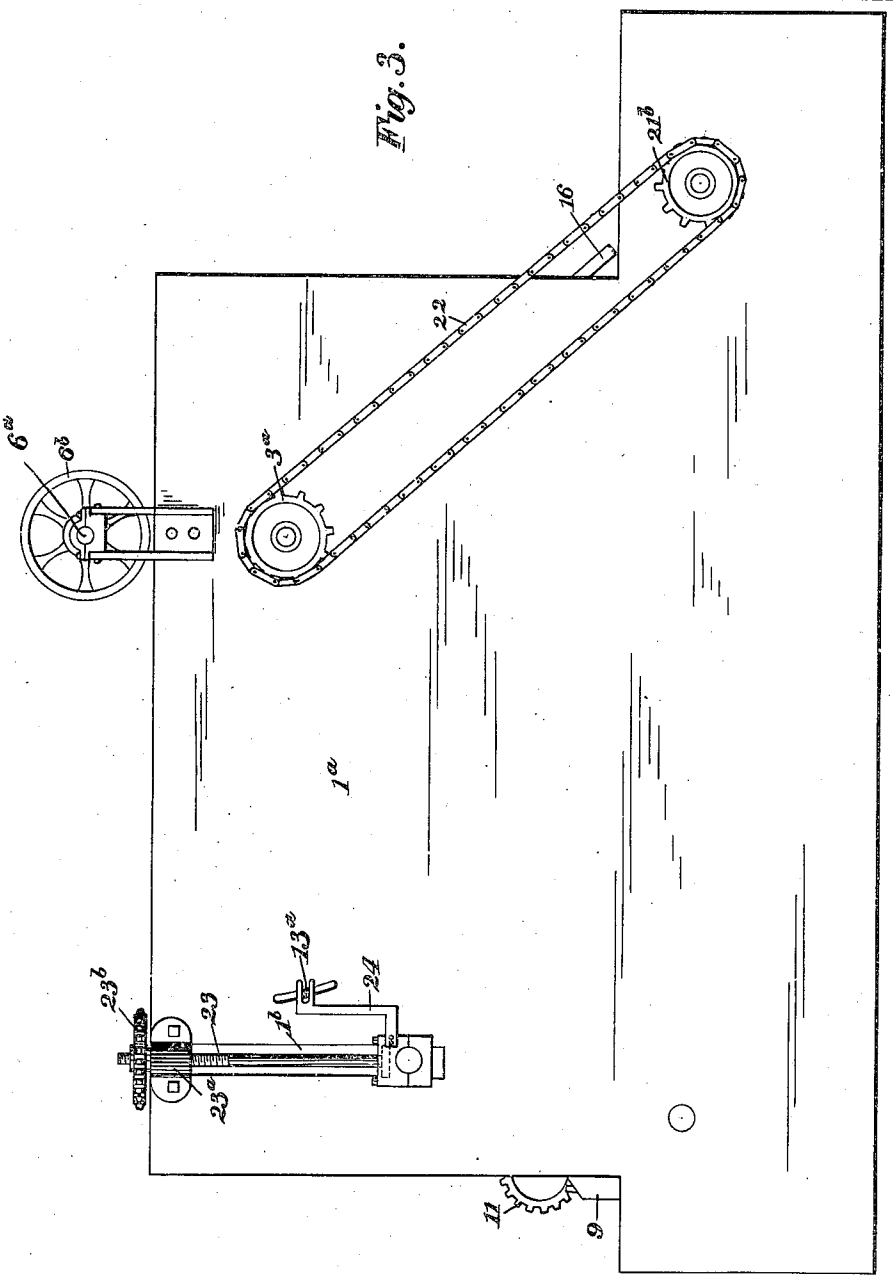
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NO MODEL. 4 SHEETS—SHEET 3.

Fig. 3.



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NO MODEL. 4 SHEETS—SHEET 4.

Fig. 4.

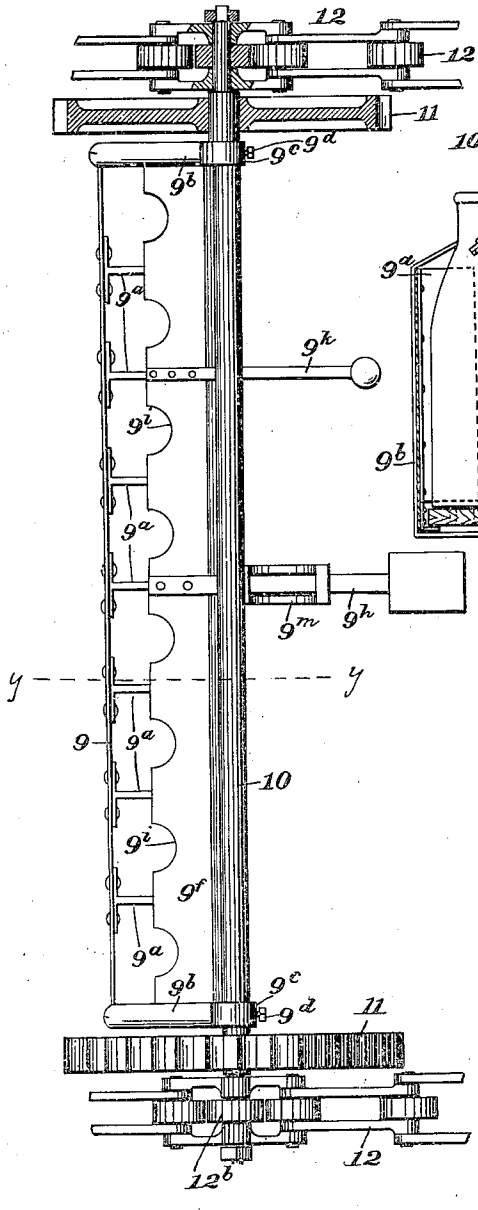


Fig. 5.

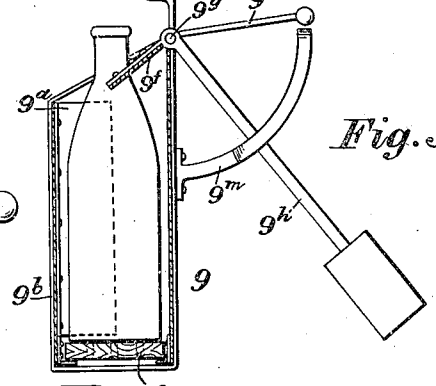
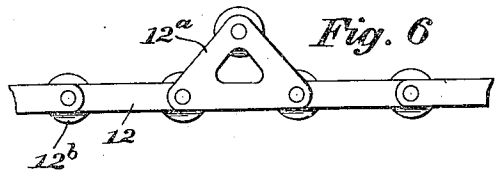


Fig. 6



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No. 734,063. Patented July 21, 1903.

UNITED STATES PATENT OFFICE.

JOHN GEORGE HAUCK, OF COLUMBUS, OHIO.

BOTTLE-WASHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 734,063, dated July 21, 1903.

Application filed October 13, 1902. Serial No. 127,078. (No model.)

To all whom it may concern:

Be it known that I, JOHN GEORGE HAUCK, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Bottle-Washing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of the present invention is to provide an improved construction of bottle-washing machine in which the bottles are delivered or transferred automatically and promptly from the hot washing solution to the cool rinsing-water; and the main feature of the invention consists in details of construction whereby this result can be accomplished, all as hereinafter set forth and claimed. There are, however, some features of the construction that can be used in other combinations.

In the accompanying drawings, illustrating an embodiment of the invention, Figure 1 is a longitudinal vertical sectional view on the line *x x*, Fig. 2, of the two tanks and frame, disclosing in side view the operating construction at one side of the machine. Fig. 2 is a top plan view. Fig. 3 is a side view in elevation of the exterior of one side of the machine. Fig. 4 is a plan view, on a larger scale, of a bottle-holder and its supporting-shaft, together with the carrying-chain, a few of the parts being in section. Fig. 5 is a transverse sectional view on the line *y y*, Fig. 4, through the bottle-holder. Fig. 6 is a side view of a fraction of the carrying-chain on the same scale as that employed in Fig. 4.

In the several views the character 1 designates the hot-solution tank, and 2 a cool-rinsing-water tank. These two tanks are shown to be separated by a partition 2^a, and by preference this partition is a poor conductor of heat, though not necessarily so, because the rinsing-water can be flowing or continuously changing. The sides of the hot-solution tank are shown to be extended considerably upward, as indicated at 1^a, to afford a frame for supporting the principal working parts and other elements of the construction. Between the sides 1^a and at each side of the frame are journaled the shafts of sprocket-wheels 3 and 4, located adjacent said sides of the frame, the shaft containing the wheels 3 having keyed to one end projecting beyond the frame a large spur-gear 5, to be driven by a pinion 6 on one end of another shaft 6^a, having at its other end a band-pulley 6^b, to which the power for operating the machine is applied. In the hot-solution tank 1, near the sides thereof and under each of the large sprocket-wheels 3 and 4, are smaller sprocket-wheels 7 and 8 on appropriate shafts also housed in the sides of the tank. Running about the sprocket-wheels 3 and 4 and 7 and 8 is a sprocket-chain 12 for supporting the shafts of the bottle-holders. The bottle-holder consists of a box-like structure 9, preferably made of galvanized sheet metal and divided into a series of pockets by parallel T-irons 9^a, riveted vertically to one side, the pockets being made of sufficient size to just receive the bottles to be washed. The box is open at its top and bottom, and the ends thereof are strengthened and made rigid by metal straps 9^b, encompassing the ends of the box. The upper parts of the strap are formed into an eye 9^c, which fits upon a box-holding shaft 10. The eyes 9^c are secured rigidly to the shaft 10 by set-screws 9^d, so that if the shaft is rocked the box will tilt with it. The box 9 is preferably provided with a wooden bottom 9^e, caged loosely below the lower ends of the T-irons 9^a and above appropriate inwardly-projecting flanges of angle-iron secured along the edges of the bottom of the box. The wooden bottom of the box is preferably perforated to permit the liquid to promptly escape therefrom when the box is lifted out of the tank. The wooden bottom in the box prevents breakage of the bottles when they are dropped into the pockets. The upper part of the box is furnished with lid 9^f, hinged, as seen at 9^g, along the rear upper edges of the box, the lid being provided with a weighted arm 9^h, extending rearward from the box and tending to close the lid by moving the latter upward. The weighted arm 9^h works in a slotted arc-shaped bracket 9^m, designed to limit the movement of the arm and therefore of the lid in both directions. The lid has a scallop 9^i above or opposite each pocket, such scallop being of a shape to fit about the shoulder of the bottle, so that

when the lid is in its raised or closed position it will prevent the escape of the bottles when the box is carried down into the washing solution, as hereinafter described, without in the least obstructing the flow of such liquid into the interior of the bottles. The lid also has secured to it a rearwardly-projecting arm 9^k, for the purpose to be hereinafter explained. On each end of each of the shafts 10 and just beyond the end of the box is keyed a spur-gear 11, for the purpose to be hereinafter set forth. The bottle-holder supporting-chain 12 is of ordinary sprocket-chain construction, except that the links shown at 12^a are of triangular form and are provided with bearings for the shaft 10 in their apexes. Between the links 12^a and on the spindles of the shaft 10 antifriction-rollers 12^b are journaled, so that the chain will be properly supported and run with as little friction as practicable at that portion which is passing between the sprocket-wheels 7 and 8. Tracks 13, consisting of one flange of an angle-iron, are provided for the upper portion of the chain and similar tracks 14 are provided for the lower portion of the chain, while similar tracks 15 are provided for the rear portion of said chain in its course about the wheels 3, 4, 7, and 8.

Arranged above the partition, between the hot-solution tank 1 and the cool-water tank 2, is a board chute 16, grooved at 16^a in planes coinciding with the pockets in the bottle-holders, so that as the bottles are discharged by gravity from those pockets, as hereinafter described, they descend into the cool-water tank. The bottoms of the grooves in the chute 16 are provided with slots 16^b, through which the hot solution from the bottles and bottle-holder returns to its proper tank, and to further insure this return of the hot solution the lower ends of the slots at the under side of the chute are furnished with a water-deflecting board 16^c, inclined inward toward the hot-solution tank. Secured to the sides of the front or left-hand end, as seen in Fig. 1, of the machine is an upwardly-standing and rearwardly-curved cam-bar 17. This bar is arranged in the path of movement of the end of the arm 9^k, so that the contact of said arm with said cam-bar shall raise said arm and depress the lid 9^f, permitting the ready insertion of the bottles to be washed into the pockets of the bottle-holder. Before the bottles are depressed into the solution sufficiently to cause them to rise by buoyancy the arm 9^k passes the cam-bar 17 and the lid rises, precluding, as before stated, the escape of the bottles from the holder. Secured to the sides of the rear of the machine are rack-bars 18, arranged in the orbit or plane of movement of the spur-gears 11 on the shafts 10. The rack-bars 18 engage these spur-gears 11 as they are carried upward and partially rotate said shafts 10, and therefore the bottle-holders, which are fast thereto. When the bottle-holder in this operation is swung upward to stand in an inclined position with the upper open end downward, the lid 9^f is pulled down to open position and the bottles are free to slide out and down the chute into the cool-water tank. In order to prevent the bottle-holder from falling back with violence or upon a holder next below, (if the holders are arranged close together in the chain,) I provide small projections 20, preferably roller projections, supported on the upper ends of brackets 20^a, secured to the sides 1^a below the sprocket-wheels 3. These projections 20 catch the free end of the box in its upturned position at the moment the gears 11 leave the rack-bars 18, and hence support the same until the box is dragged by the sprocket-chain over the shaft of the wheels 3.

In the cool-water tank 2 is journaled a bladed wheel 21, the blades being set slightly apart at their roots or bases where they join the hub, and the intervening spaces or channels between the blades are provided with a cushioned or elastic bottom 21^a, preferably consisting of rubber strips running longitudinally along the bottom of the spaces between the blades. The bladed wheel 21 is shown to be rotatable by means of a sprocket-chain 22, running from a sprocket-wheel 3^a, fastened on the protruding end of the shaft of the driven wheel 3, to a sprocket-wheel 21^b on the protruding end of the shaft of the bladed wheel. The motion of the bladed wheel is so timed as to present the cushioned space between two of the blades to the lower edge of the chute 16 at the moment the bottles slide off the chute. The revolving bladed wheel, as shown, is shouldered between the blades, so as to straddle the mouth ends of the bottles, and adapted to carry the bottles down into the cool rinsing-water, thus cleansing them of any residue, after which they are removed by an attendant. As before suggested, the water in the tank 2 can be running water, and being cool the bottles can be removed by hand.

In a machine of this sort the speed of the chain 12 will be comparatively small to allow abundant time for the bottles to pass through the hot soaking solution. The empty bottle holders or boxes as they come to the front or left-hand end of the machine are filled with bottles to be washed when the lid is depressed by the cam-bar 17.

It may sometimes happen that the carrying-chain 12 will become slack. To take up such slack the forward wheels 4 can be made adjustable by any appropriate means. I have shown the boxes of the shaft of said wheels 4 as slidable vertically in slots 1^b in the sides 1^a and vertically-arranged screws 23, swiveled at their lower ends in said boxes and turning in bracket-nuts 23^a. To adjust both ends of the shafts simultaneously and equally, the upper ends of the screws 23 have sprockets 23^b fixed thereto and the two sprockets connected by a chain 23^c, and this chain or either of the sprockets can be operated to raise or lower the shaft of the wheels 4 and so take

up slack in the carrying-chain 12. If desired, the tracks 13 can be adjusted with the shaft of the wheels 4 by means adapted to move the tracks simultaneously and correspondingly with the bearing-blocks of the said shaft. The tracks for this purpose are indicated to be pivoted at their rear ends and provided with a pin 13^a at their forward ends which extends through the side 1^a and is supported in a bracket-arm 24, fixed to the bearing-blocks of the shaft referred to and adjustable therewith; but this detail as to adjusting the tracks 13 may not in practice be necessary, because the slack in the chain can be taken out by removing a link or two, in which case very slight adjustment of the shaft will suffice.

Because the two chains at the sides of the machine are united all around by the shafts of the bottle-holders and therefore constitute practically one structure—a carrying-chain—I will use the singular number in pointing out such construction in my claims.

What I claim, and desire to secure by Letters Patent, is—

1. In a bottle-washing machine, the combination of two tanks, a carrying-chain, bottle-holders pivotally hung therein, and means for tilting said bottle-holders to discharge the bottles as they come from one tank into the other.

2. In a bottle-washing machine, the combination of a carrying-chain, a bottle-holder pivotally hung therein, and means for automatically tilting said bottle-holder to discharge the bottles from said holder.

3. In a bottle-washing machine, the combination of a washing-tank, a carrying-chain, a bottle-holder pivotally hung therein having a bottle-retaining lid, means for holding said lid in bottle-retaining position, means for automatically moving said lid to permit bottles to be placed in said holder, and means for tilting said bottle-holder to discharge the bottles.

4. In a bottle-washing machine, the combination of a washing-tank, a carrying-chain, a bottle-holder pivotally hung in said chain having a hinged bottle-retaining lid, and a weight attached to said lid adapted to close said lid when the bottle-holder is freely suspended, and open said lid when the bottle-holder is tilted.

5. In a bottle-washing machine, the combination of a carrying-chain, bottle-holders pivotally hung therein, means for successively and automatically tilting said bottle-holders to discharge bottles therefrom, and means for catching and supporting a tilted bottle-holder temporarily in its tilted position.

6. In a bottle-washing machine, the combination of two tanks, a carrying-chain, a bottle-holder pivotally hung therein, means for automatically tilting said bottle-holder as it emerges from the washing liquid in one tank to discharge bottles therefrom, and a bottle-chute arranged between the two tanks to receive the bottles as they are discharged from said holder and direct them to the other tank.

7. In a bottle-washing machine, the combination of two tanks, a carrying-chain in one of said tanks, a bottle-holder pivotally hung therein, means for automatically tilting said bottle-holder to discharge bottles therefrom, a bladed wheel in the other of said tanks constructed to receive and hold said bottles to depress them in the tank.

8. In a bottle-washing machine, the combination of a carrying-chain, a bottle-holder fixed to a shaft journaled or hung in said chain, a spur-gear fast on said shaft and a rack-bar adapted to engage said spur-gear to tilt said bottle-holder to release bottles therefrom.

9. In a bottle-washing machine, the combination of a carrying-chain, a bottle-holder having a movable bottle-retaining lid said bottle-holder fixed to a shaft journaled or hung in said chain, a spur-gear fast on said shaft, and a rack-bar adapted to engage said spur-gear to tilt said bottle-holder to move said bottle-retaining lid and discharge the bottles from the bottle-holder.

10. In a bottle-washing machine, a bottle-holder, a shaft to which said bottle-holder is fixed and a carrying-chain for said shaft having links provided with bearings for said shaft.

11. In a bottle-washing machine, the combination of a shaft for supporting a bottle-holder, a carrying-chain for said shaft, links provided with a bearing for said shaft, and an antifriction-roller on said shaft adjacent said bearing.

12. In a bottle-washing machine, the combination of a bottle-holder carrying sprocket-chain, a sprocket-wheel over which said chain runs, adjustable bearing therefor, an adjustable track for supporting said chain, and means for adjusting simultaneously both the sprocket-wheel and the chain-supporting track.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN GEORGE HAUCK.

Witnesses:

SAMUEL W. LATHAM,

A. J. FINCKEL.