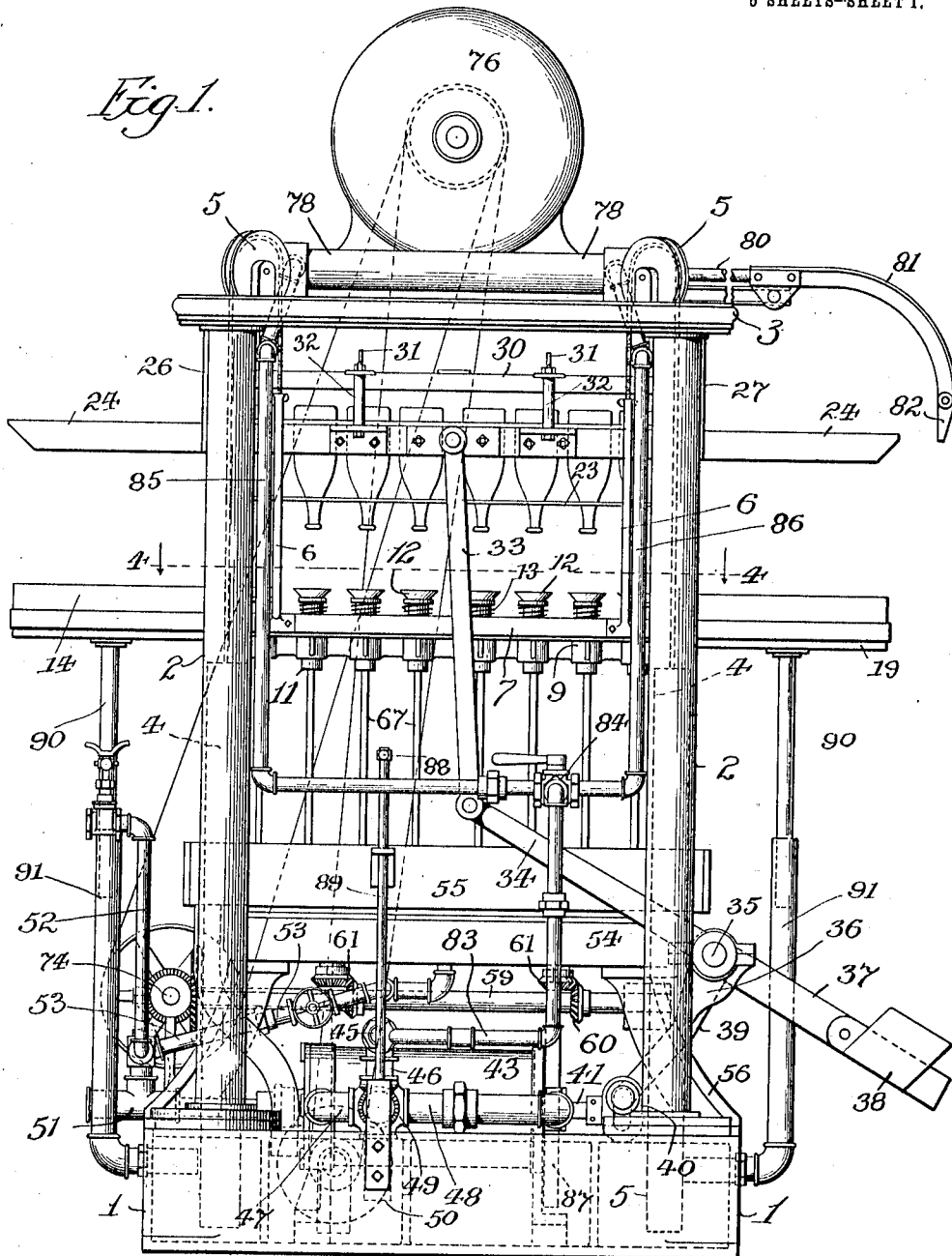


O. EICK.
BOTTLE WASHING AND RINSING MACHINE.
APPLICATION FILED APR. 22, 1910.

1,035,330.

Patented Aug. 13, 1912.

5 SHEETS-SHEET 1.



Witnesses:
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Baker Dodge

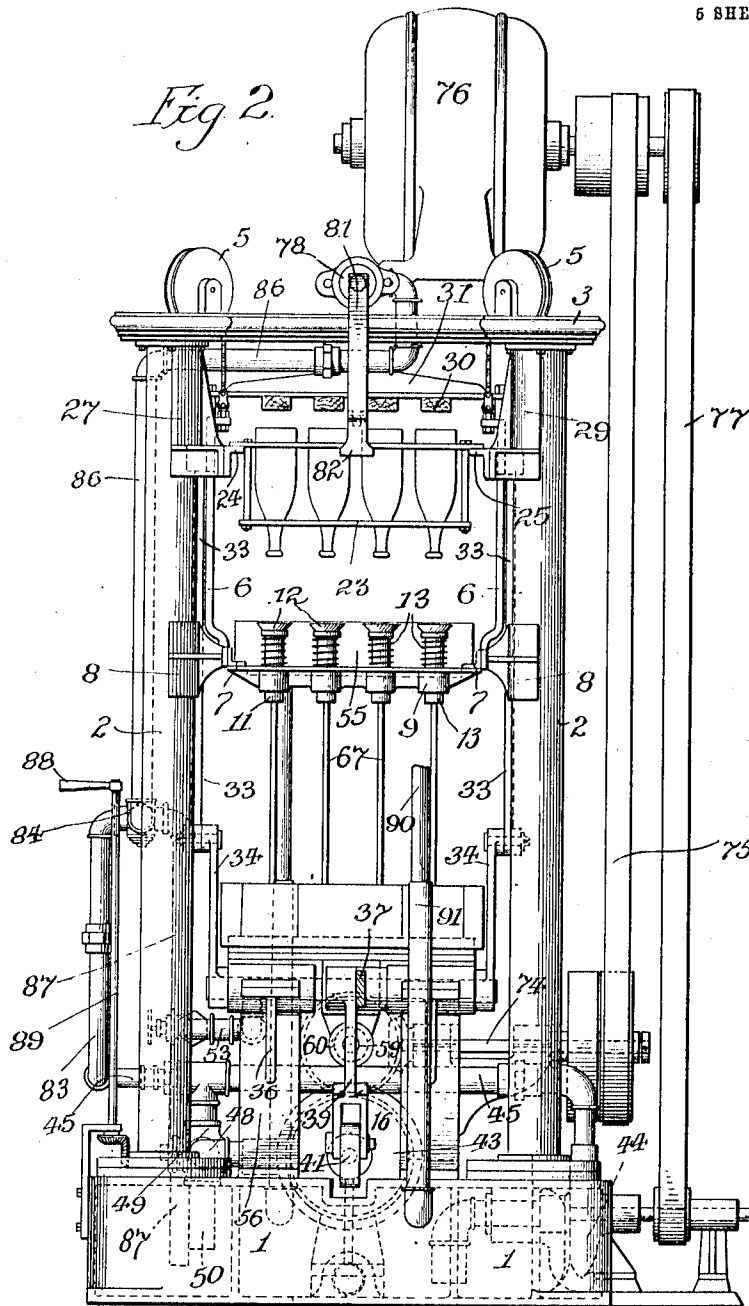
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6 SHEETS—SHEET 2.



Witnesses:
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Arthur Dodge

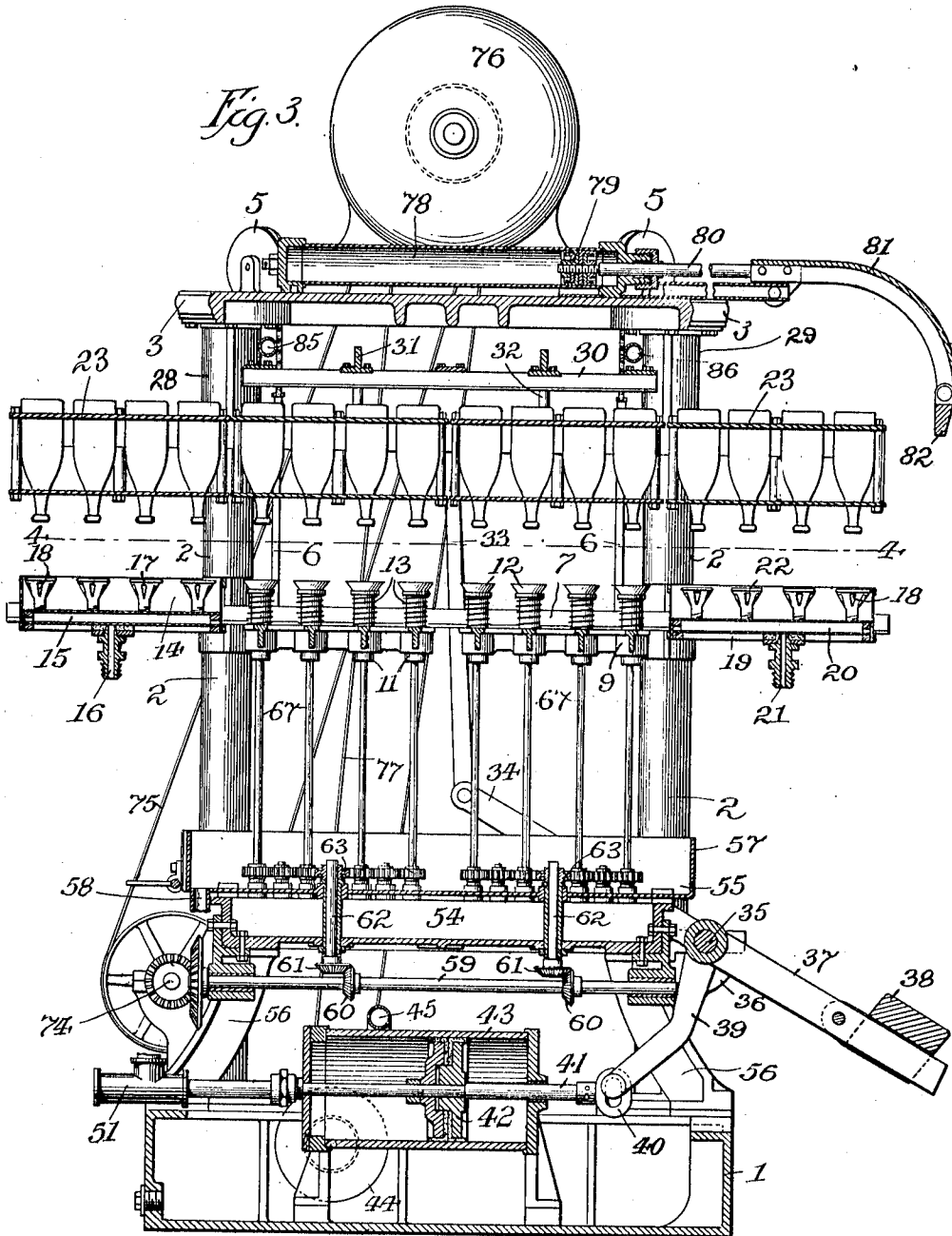
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6 SHEETS-SHEET 3.



Witnesses:
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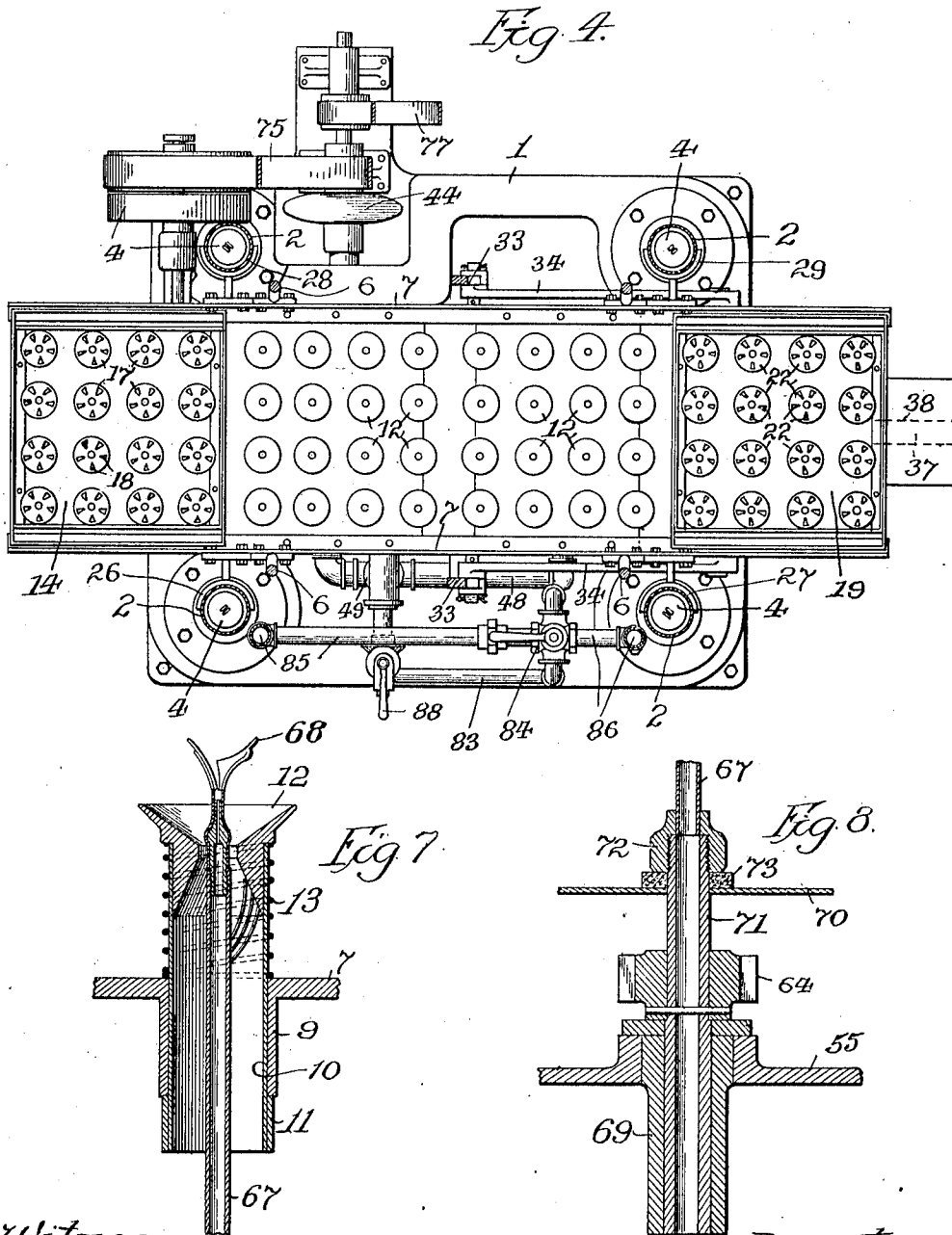
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5 SHEETS-SHEET 4.



Witnesses:
C. H. Rauber.
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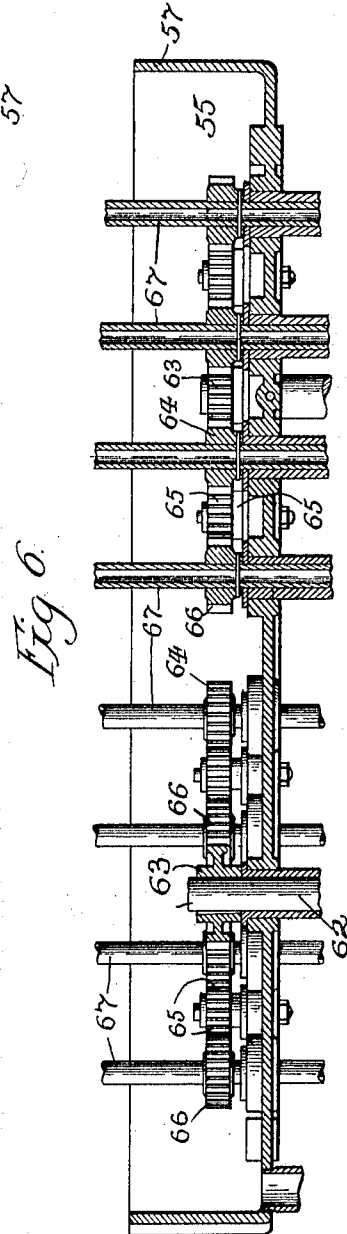
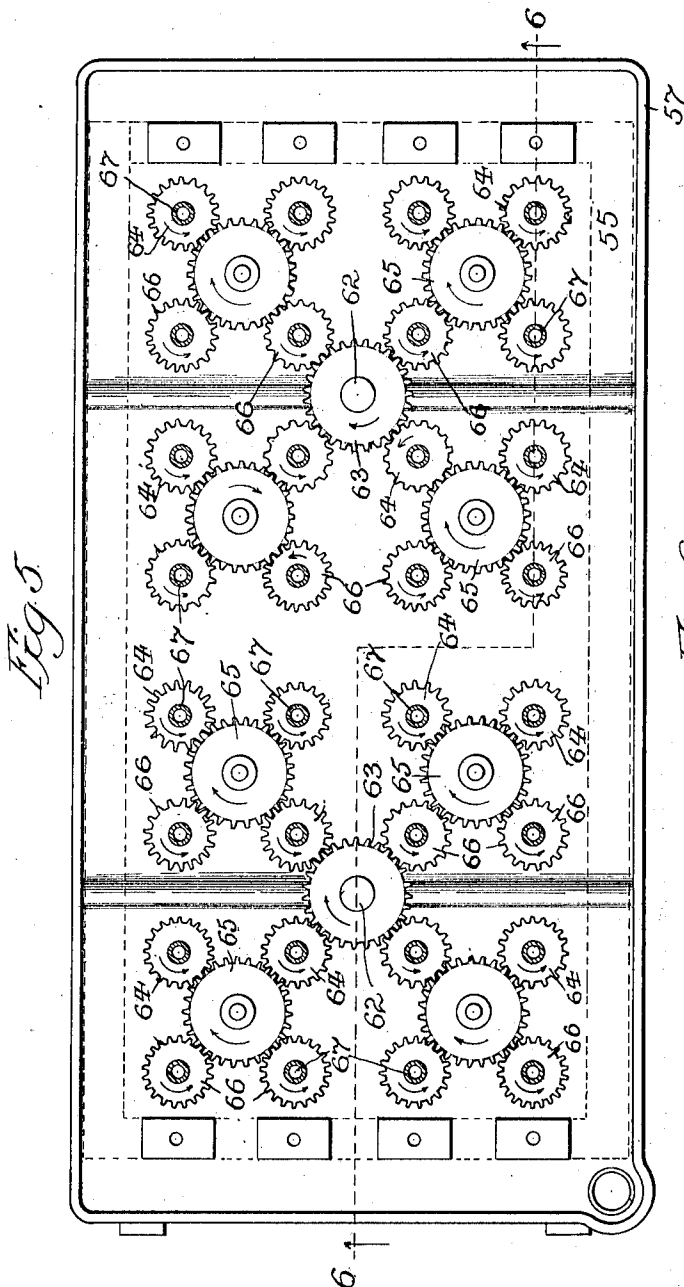
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Patented Aug. 13, 1912.

5 SHEETS-SHEET 5.



Witnesses:
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UNITED STATES PATENT OFFICE.

OTTO EICK, OF BALTIMORE, MARYLAND.

BOTTLE WASHING AND RINSING MACHINE.

1,035,330.

Specification of Letters Patent.

Patented Aug. 13, 1912.

Application filed April 22, 1910. Serial No. 557,067.

To all whom it may concern:

Be it known that I, OTTO EICK, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Bottle Washing and Rinsing Machines, of which the following is a specification.

My present invention pertains to improvements in bottle-washing and rinsing machines, the construction and advantages of which will be hereinafter set forth, reference being had to the annexed drawings, wherein:

Figure 1 is a side elevation of the machine; Fig. 2 an end elevation thereof, certain portions being omitted. Fig. 3 a vertical longitudinal sectional view; Fig. 4 a horizontal sectional view, taken on the line 4-4 of Figs. 1 and 3. Fig. 5 a top plan view of the gear-box used in conjunction with the spindles; Fig. 6 a longitudinal sectional view, taken on the line 6-6 of Fig. 5; Fig. 7 a vertical sectional view of one of the mouthpieces and the cooperating brush-spindle; and Fig. 8 a vertical detail sectional view of one of the spindles and its allied parts, and illustrating in addition thereto a temporary cover-plate for the gear-box.

The object of the present invention is to provide a simple and efficient machine for cleaning and rinsing bottles, the apparatus being such that a single attendant can manipulate the same so long as the crates containing the bottles are fed thereto or placed upon the track or way on which the crates are supported as they are passed through the machine.

In the drawings, 1 denotes the base which, as will be seen upon reference to Fig. 3, is hollow and forms a water-receptacle. Extending upwardly from the base and rigidly secured thereto are four hollow columns 2, surmounted by a top plate or casting 3. A weight 4 is mounted in each of the columns, a chain passing from the weight over a pulley 5 and thence down to an arm 6, of which there are four, one for each weight, said arms in turn being rigidly connected to a mouth-piece plate 7. Said plate, as will be seen upon reference to Fig. 2, is provided with wings or bearing plates 8 which rest against the columns 2 and serve to guide the mouth piece plate as the same is moved up and down. The normal position of the mouth-piece plate is as shown in

Figs. 1 and 2, the weights at such time being at rest. The plate 7 is provided with a series of depending hubs 9 (Fig. 7) in each of which is mounted a tubular member 10, carrying at its lower end a stop ring 11 and at its upper end a conical mouth-piece 12. A spring 13 is interposed between the upper face of the mouth-piece plate 7 and the shouldered portion of each conical member 12, so that under normal conditions the tubular member 10 is held in its elevated position.

Projecting outwardly from the left-hand end of the mouth piece plate and secured thereto is a pan-like member 14, the bottom of which is hollow, forming a chamber 15 into which water may be introduced through a suitable pipe or connection, as 16. A series of fixed mouth-pieces 17 is secured in the upper face of the hollow bottom, each of said mouth-pieces being provided with a series of slits or openings 18 in the inclined walls thereof. A similar pan 19 is secured at the right-hand end of the mouth-piece plate, being provided with a hollow bottom 20, into which water may be forced through a pipe or coupling 21. A series of mouth-pieces 22, similar to the mouth-pieces 17, is secured in the pan, said mouth-pieces communicating with the hollow chamber 20.

The bottle-containing crates or trays are designated by 23 and are supported upon oppositely-disposed tracks 24, 25. The track 24 has secured to it a pair of guides 26, 27, bearing against the inner face of one pair of columns 2. The track 25 has secured to it suitable guides or members 28, 29, which bear against the opposite pair of columns 2. The tracks, as will be seen upon reference to Fig. 1, extend outwardly beyond the columns at each side of the machine, and are adapted to handle four or more crates, one crate overlying the pan 14, two crates being suspended over the mouth-piece plate 7, while a fourth is held over the pan 19.

Extending lengthwise of the tracks and between the same, over the crates which stand directly above the mouth-piece plate, is a series of bars 30, said bars being alined with the bottoms of the bottles in the crate, see Fig. 2, and supported by cross-bars 31, to which they are attached. Said bars 31 in turn are held in position by combined bolts and spacing members 32.

As will be seen, the bars 30 stand away from the bottoms of the bottles, so that the crates may be moved endwise on the tracks without interference of the bottles with said bars.

5 The bars and tracks, however, are raised and lowered together and the bottoms of the bottles come in contact with the bars. When the tracks, with the crates thereon, are lowered to proper position, the mouths of the

10 bottles come into contact with the mouth-pieces 12, the bottles at such time being raised from their seats in the crates. This action securely holds the bottles between the spring mouth-pieces 12 and the cooperating

15 bars 30 and prevents rotation of the bottles under the action of the brush-spindles, the construction of which will be hereinafter set forth.

To raise and lower the tracks, the following mechanism is employed: Extending

20 downwardly from each of the tracks is a link or draw-bar 33, each bar in turn being connected to an arm or lever 34, said arms being secured to and moving with a

25 rocker-shaft 35. Said shaft is mounted in suitable brackets 36, secured to a fixed portion of the frame of the machine, and between said brackets is secured an arm 37 carrying at its outer end a counterweight 38.

30 A two-armed lever 39 is also secured to the rocker-shaft 35, the lower end of said lever being pivotally connected with a slotted cross-head 40 secured upon the outer end of a piston-rod 41. Said rod is connected with

35 a piston 42, which works in a cylinder 43, secured to the bed of the machine. Any suitable motive power may be employed to actuate the piston, but I prefer to use water which may be pumped from the hollow base

40 1 through a pump 44 into a pipe 45 (Fig. 2) which pipe discharges through a downwardly-extending connection 46 into pipes 47 and 48 leading to the opposite ends of the cylinder. A valve 49 is interposed between

45 the pipes 46, 47 and 48, and serves to control the flow of water from the pipe 46 into one or the other of the pipes 47 and 48, and also permits discharge through a pipe 50 into the hollow base 1, it being understood that as the water is forced into one

50 end of the cylinder it is discharged from the other.

The piston-rod 41 is extended to the left and controls a valve working in a valve-casing 51, said valve controlling the supply of fresh water which passes from the

55 pipe 52 through the valve, when the same is open, into a pipe 53, which latter discharges into the hollow portion 54 of a gear-supporting box 55. Said gear-box is secured to a fixed portion of the frame, preferably the supporting legs 56 (Fig. 3). The upper face of the gear-box is provided with an upstanding rim 57 which in effect

65 forms a pan to catch the water which will

pass down from the bottles while they are being rinsed, a suitable drain 58 being provided to carry off such water.

A countershaft 59 underlies the gear-box, said shaft carrying bevel gears 60 which in turn mesh with similar gears 61, carried at

70 the lower end of two vertically-disposed shafts 62. Each of the shafts 62 has secured to the upper end thereof (see Figs. 5 and 6) a gear 63, said gear meshing with four

75 smaller gears 64, each of which smaller gears in turn meshes with an idler 65, said idler meshing with three small gears 66 similar to the gears 64. Each of the gears 64 and 66 throughout the series is secured

80 to a hollow spindle 67, said spindle passing upwardly into the tubular member 10 and carrying at its upper end a suitable brush as 68. The lower ends of the spindles 67 find their bearings in hubs 69 which in turn

85 are supported in openings formed in the upper face of the gear-box. If desired, the construction shown in Fig. 8 may be employed, wherein the gears are covered by a

90 plate 70, the spindles in this instance being made in two parts, the lower portion 71 of each spindle being threaded and the upper

95 portion 72 screwing thereon, a suitable washer 73 being interposed between the plate 70 and the upper portion 72 of the spindle.

Motion is imparted to shaft 59 from a cross-shaft 74, suitable gearing being interposed between the shafts and rotation being imparted to the shaft 74 through a belt 75

100 which receives its power from an electric motor 76, or other suitable source, which motor is mounted upon the top plate 3 of the machine. A belt 77 also receives its motion from the motor to drive the pump 44.

105 Mounted upon the top plate 3 is a cylinder 78, see Fig. 3, in which is mounted a piston 79, that actuates a piston-rod 80, carrying at its outer end a depending hook-shaped member 81. To the lower end of the member 81

110 is pivotally attached a pawl 82 which is free to swing in one direction but locked against movement in the other direction. This pawl, when in its vertical position, stands in line with the crates and serves, as the piston, the

115 piston-rod and the member 81 are moved in one direction, to advance the crates along the tracks. As the piston is moved in the opposite direction the pawl rocks upon its pivot and passes over the crate.

120

To effect a movement of the piston water-pressure is preferably employed and a branch pipe 83 extends from the main supply pipe 45, the pipe being provided with a

125 hand-valve 84 which controls the flow of water through pipes 85 and 86 which lead to the opposite ends of the cylinder 78. The valve 84 is of a type which will admit pressure into one end of the cylinder while permitting the opposite end of the cylinder to

130

be drained, the drainage water passing around the valve and down through a pipe 87 to the hollow base or reservoir 1. The valve 84, as will be seen upon reference to Figs. 1 and 2, stands adjacent to a handle 88, carried at the upper end of a rod 89, which through suitable gearing is connected with the valve 49. Thus the attendant has both the valve-handles within easy reach and can, through the manipulation of the same, raise and lower the tracks with the crates thereon, and when the tracks have been elevated so as to clear the bottles of the mouth-pieces and spindles, advance the trays through the machine.

Each of the rinsing chambers 15 and 20 is provided with a drain pipe which opens into the pan thereof, the pipe being designated by 90, the lower end of which telescopes into a fixed pipe 91, terminating in a hollow base or chamber 1.

In the operation of the machine the crates or trays containing the bottles are placed upon the tracks 24 and 25 and are caused to move along the same under the action of the pawl or detent 82, as the arm or hook-shaped member 81 which carries the same is drawn inwardly under the action of the piston 79. When the crates have been properly positioned upon the tracks, or when the mouths of the bottles (which stand in an inverted position) are directly over the mouth-pieces, the operator, through the manipulation of the valve 49, causes the track with the crates thereon to be drawn downwardly, the bottles coming into contact with the mouth-pieces, and the mouth-piece plate likewise moving downwardly, by reason of the contact of the bottles therewith. This downward movement of the mouth-piece plate will cause the spindles to pass through said mouth-pieces and up into the bottles. The bottles which are in the central crate, or that positioned over the mouth-piece plate 7, will be forced upwardly against the bars 30 and thus held against rotation, which would otherwise take place during the action of the rotary brushes carried by the spindles. The bottles in the other crates, or those at the right and left hand ends of the tracks, cooperate with the mouth-pieces 17 and 22, respectively, and inasmuch as there are no brushes to act upon such bottles it is not necessary that they be held against rotation; consequently no bars such as 30 overlie the same.

The water which passes into the various bottles will be caught by the pans above referred to and carried back to the hollow chamber 1, or to any other desired point. The parts may be held in this position as long as necessary and when the bottles have been sufficiently cleansed the operator, by

manipulating the valve 49, permits the water to discharge from the right-hand end of the cylinder 43, which allows the parts to assume the positions shown in Fig. 3. The mouth-piece plate will, under the action of the counterweights, ascend with the bottles and the tracks until the counterweights come to rest, the tracks continuing their upward movement until the mouths of the bottles are fully clear of the mouth-piece plate, after which the crates may be advanced along the track by the manipulation of the advancing mechanism, comprising the cylinder 78, piston 79, rod 80, hook-shaped member or arm 81 and pawl or detent 82.

Having thus described my invention, what I claim is:

1. In a bottle-washing machine, the combination of a yieldingly-supported mouth-piece plate; a series of mouth-pieces carried thereby, said mouth-piece plate being normally held in an elevated position; a pair of tracks adapted to receive a plurality of crates said tracks being supported independently of the mouth-piece plate; means for lowering said tracks with the crates thereon and thereby bringing the mouths of the bottles into contact with the mouth-pieces; and means for subjecting the interior of the bottles thus positioned to the cleansing action of water or other suitable liquid.

2. In an apparatus for washing bottles, the combination of a yieldingly sustained mouth-piece plate; a series of spring-pressed mouth-pieces carried by the central portion thereof; a series of brush-spindles standing in line with the mouth-pieces and adapted to pass therethrough; a series of mouth-pieces carried upon the outer portion of each end of the mouth-piece plate; a pair of tracks mounted above the mouth-piece plate, said tracks being coextensive with said plate and the various mouth-pieces carried thereby; means for raising and lowering said tracks with the bottle-carrying crates thereon; and means for projecting water through the brush-spindles and mouth-pieces carried by the outer ends of the mouth-piece plate.

3. In a machine for washing bottles, the combination of a base; a plurality of columns secured to said base and extending upwardly therefrom; counterweights mounted in said columns; a mouth-piece plate connected to said weights; a plurality of mouth-pieces carried by said plate; a pair of tracks located above the plate and supported independently thereof, said tracks being adapted to support a plurality of bottle-carrying crates; and means for drawing said tracks downwardly toward the mouth-piece plate and causing the bottles carried by the crates to contact with the mouth-pieces and to force the mouth-piece plate downwardly during

the latter portion of the downward movement of the tracks.

4. In a machine for washing bottles, the combination of a base; a series of hollow
5 columns secured to the base and extending upwardly therefrom; a mouth-piece plate mounted between the columns and guided thereby; a weight mounted in each of said
10 columns; connections between said weights and the mouth-piece plate; a plurality of mouth-pieces carried by the mouth-piece plate; a pair of tracks mounted between the
15 columns and guided thereby said tracks being supported independently of the mouth-piece plate; and means under the control of the operator for lowering and raising said
20 tracks, the mouths of the bottles as the same are lowered coming in contact with the mouth-pieces and serving to depress said mouth-pieces and the mouth-piece plate during the latter portion of the downward
movement of said tracks.

5. In a machine for washing bottles, the combination of a base; a plurality of columns
25 extending upwardly therefrom; a mouth-piece plate mounted between said columns and guided thereby; counterweights serving to hold the mouth-piece plate in its elevated position; a pair of tracks extending
30 between the columns above the mouth-piece plate and supported independently of the mouth-piece plate; means under the control of the operator for raising and lowering said tracks and the bottle-crates carried
35 thereby and causing the bottles to contact with the mouth-pieces upon the mouth-piece plate to depress the same; and a series of rotatable spindle brushes extending in line with the mouth-pieces and adapted to pass
40 therethrough as the mouth-piece plate is lowered.

6. In a machine for washing bottles, the combination of a base; a series of columns
45 extending upwardly therefrom; a mouth-piece plate mounted between said columns and guided thereby; means for normally holding said plate in its elevated position; a series of rotatable spindle-brushes mounted
50 in line with the mouth-pieces carried by the plate and adapted to pass through the mouth-pieces when the plate is lowered; a pair of tracks mounted above the mouth-piece plate and adapted to support bottle-
55 holding crates; means for raising and lowering said tracks independently of the mouth-piece plate, said means causing the bottles, as the tracks are lowered, to contact with the mouth-pieces and to depress the mouth-piece
60 plate so that the spindle-brushes will pass into the bottles; and means for advancing the crates along the tracks when the tracks are in their elevated position.

7. In a bottle-washing machine, the combination of a base; a plurality of columns

extending upwardly therefrom; counter- 65
weights mounted in said columns; a mouth-piece plate mounted between and guided by said columns; connections between said mouth-piece plate and the counterweights; a pair of tracks mounted between the columns 70
and above and independent of said mouth-piece plate, said tracks being adapted to support a bottle-crate; a cylinder; a piston mounted in said cylinder; a piston-rod extending outwardly from said piston; a 75
rocker-shaft; a connection between said rocker-shaft and the piston-rod; a pair of counterweighted arms secured to said rocker-shaft; a pair of arms secured to said rocker-shaft and extending outwardly therefrom in 80
a direction opposite to that of the counterweighted arms; and a link secured to the outer end of each of said arms, said links being connected to the tracks and adapted to move the same upwardly and downwardly 85
according to the movement of the piston in the cylinder.

8. In a bottle-washing machine, the combination of a base; a plurality of columns
90 extending upwardly therefrom; a track or way mounted between said columns and adapted to support a plurality of bottle-holding crates; a cylinder; a piston mounted in said cylinder; a piston-rod; an arm secured to the outer end of said piston-rod, 95
extending downwardly to a point in line with the tracks; and a pawl or detent carried by the outer end of the arm and adapted to contact with the crates when moved in one direction to advance the same along the 100
tracks and to rock and pass over the crates when moved in the opposite direction.

9. In a bottle-washing machine, the combination of a base; a plurality of columns
105 extending upwardly therefrom; a track or way mounted between said columns and adapted to support a plurality of bottle-holding crates; a cylinder; a piston mounted in said cylinder; a piston-rod; an arm secured to the outer end of said piston-rod, 110
extending downwardly to a point in line with the tracks; a pawl or detent carried by the outer end of the arm and adapted to contact with the crates when moved in one direction to advance the same along the tracks 115
and to rock and pass over the crates when moved in the opposite direction; and means under the control of the operator for admitting fluid to one end of said cylinder as it is permitted to pass out of the opposite end, 120
and vice versa.

10. In a bottle-washing machine, the combination of a hollow base adapted to receive water or other fluid; a plurality of columns
125 extending upwardly therefrom; a top plate carried by the columns; tracks or ways mounted between the columns; a cylinder carried on the top plate; a piston working

therein; a piston-rod; an arm secured to the piston-rod and extending downwardly in line with the tracks; a pawl or detent carried at the outer end of said arm and adapted to contact, when moved in one direction, with the bottle-carrying crates mounted upon the tracks; pipes leading to the opposite ends of the cylinder; a valve controlling the flow of fluid through said pipes; and a

pump for forcing fluid into the pipes from 10 the hollow base.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

OTTO EICK.

Witnesses:

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AUG. H. JOSTES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
