

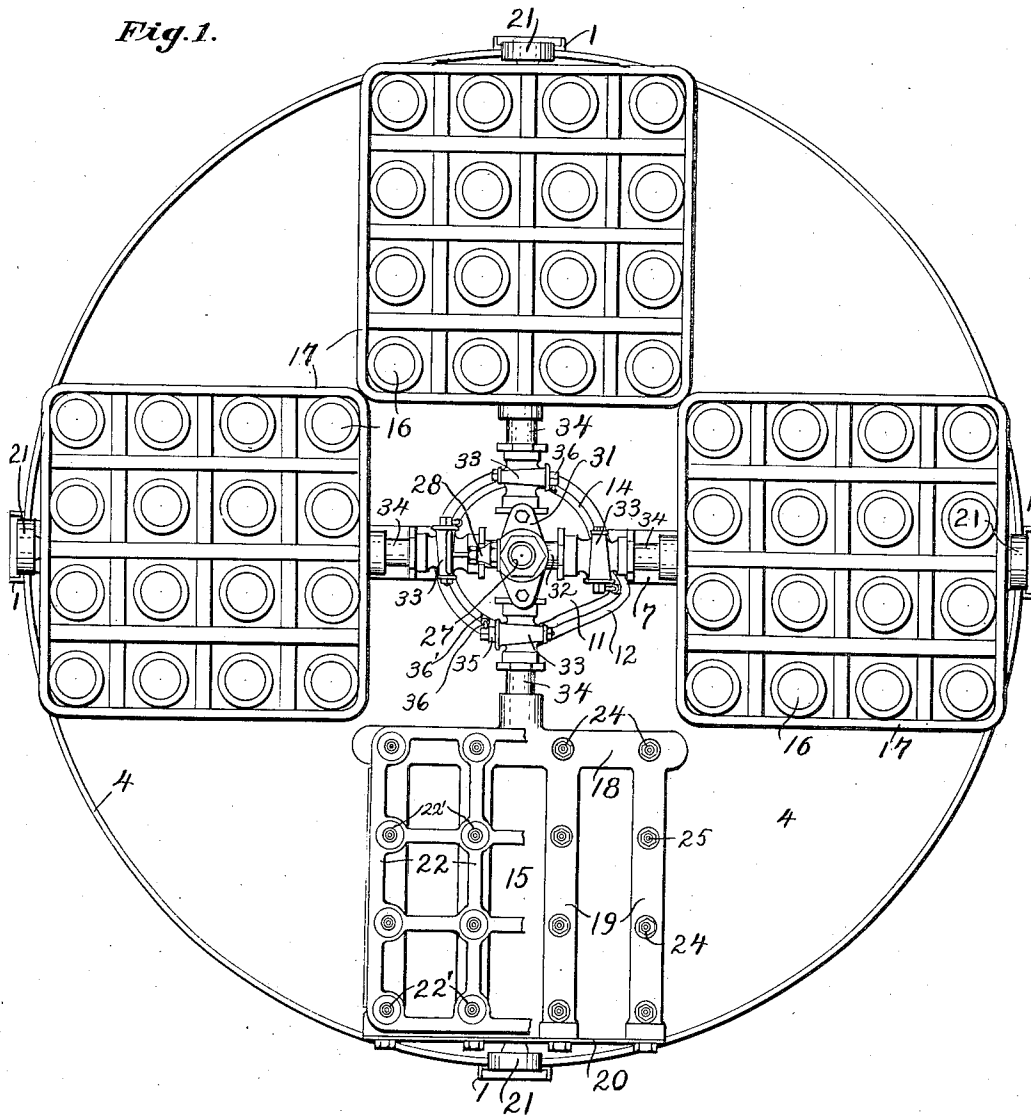
E. COURT.
BOTTLE RINSING MACHINE.
APPLICATION FILED OCT. 11, 1907.

908,446.

Patented Jan. 5, 1909.

3 SHEETS—SHEET 1.

Fig. 1.



Inventor

Edward Court

By

Bryant & Leach

His Attorney

Witnesses

F. A. O. 1

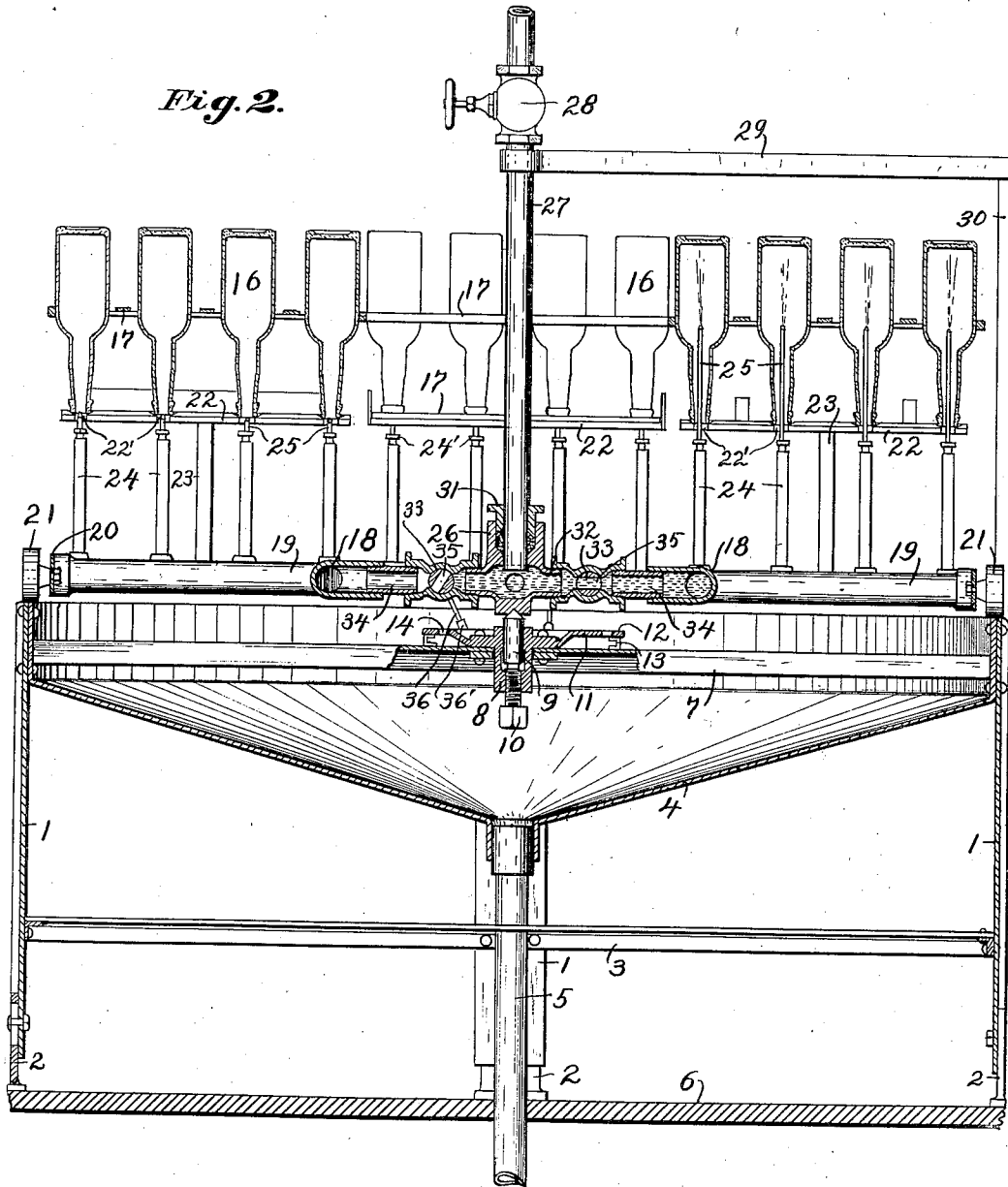
P. R. Fryman

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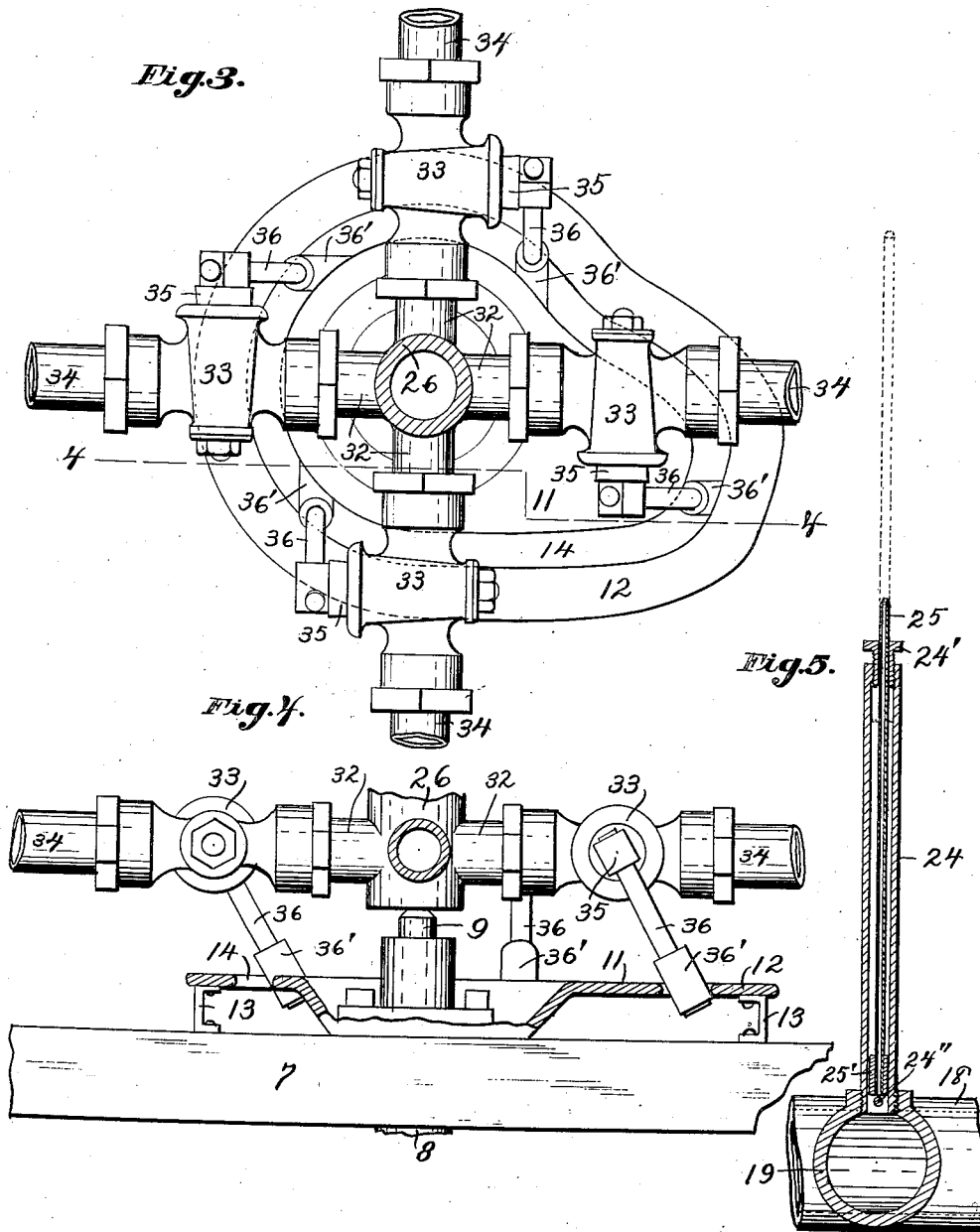
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3 SHEETS—SHEET 3.



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His Attorney

UNITED STATES PATENT OFFICE.

EDWARD COURT, OF MILWAUKEE, WISCONSIN.

BOTTLE-RINSING MACHINE.

No. 908,446.

Specification of Letters Patent.

Patented Jan. 5, 1909.

Application filed October 11, 1907. Serial No. 396,886.

To all whom it may concern:

Be it known that I, EDWARD COURT, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Bottle-Rinsing Machines, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

This invention relates broadly to improvements in bottle cleaning apparatus, and more particularly to bottle-rinsing machines designed for use in bottling-houses of breweries to give a final cleansing and washing to bottles prior to their transfer to the filling machines.

The object of my invention is to provide an improved rinsing machine that will insure a thorough cleansing of the bottles to remove any sediment, particles of bristles, or other foreign substance that may adhere to and remain in the bottles after their preliminary washing. As the bottles, after rinsing, are transferred immediately to the filling machines, it is highly desirable that all such foreign substances and impurities be removed, since otherwise upon final inspection of the filled bottles considerable loss of time, material and labor is occasioned by the necessity of rejecting many of the bottles due to the presence of these impurities. It has been found that the ordinary rinsing apparatus wherein stationary water spouts are employed over which the bottles are superimposed fails to remove these objectionable substances, especially any that may be upon the bottom of the bottles, due to the production of a partial vacuum within the bottles causing such foreign matter to further adhere to the bottles. The present machine has been designed to overcome this objection and contemplates, among other improvements, the provision of automatically movable nozzles operated by hydraulic pressure to be forced upwardly into the bottles and inject jets of water into the same, so as to effectually cleanse and rinse the bottles, removing thereby all such foreign matter and impurities.

Further objects of my invention are to generally improve the construction and operation of apparatus of this character and the novel means and mechanism by which I attain these objects are more particularly described in the following specification and

illustrated in the accompanying drawings forming a part thereof, in which:

Figure 1 is a top plan view of the machine; Fig. 2 is a vertical central section, showing the positions of the various parts during the rinsing operation; Fig. 3 is a detail view of the valve mechanism controlling the water supply; Fig. 4 is a detail side elevation partly in section taken on line 4—4 of Fig. 3; and Fig. 5 is a sectional detail of one of the adjustable nozzles.

Referring more particularly to the drawings, the support for the machine comprises a series of legs 1, which have vertically adjustable feet 2, to permit the machine to be leveled when placed on uneven floor surfaces. The legs 1 are braced and reinforced by cross-bars 3.

A cylindrical hopper or tank 4 is carried upon the legs 1, the edge or rim of its upper body portion forming a track for the rollers or wheels of the bottle-carrier as will be more particularly described hereinafter. Leading from the lower central portion of the tank 4 is a suitable drain pipe 5 for carrying off the dirt and waste water to a sewer or other suitable conduit beneath the floor 6.

Mounted upon the channel bar 7 which extends across the interior of the tank 4 and rests upon the upper portion of the funnel-shaped body thereof, is a cylindrical bushing 8 which has a central opening screw-threaded at its lower end, and which is secured by bolts to the channel bar 7. Within the central opening of this bushing 8 and projecting above the same is an adjustable supporting pin 9 upon which rests the center piece or chamber of the bottle-carrier as will be more particularly set out hereinafter. This pin 9 is adjustable vertically by means of the set-screw 10 which engages in the screw-threaded portion of the central opening of the bushing 8. By the adjustment of this screw 10 the bottle-carrier is raised or lowered to regulate and vary the friction of the supporting rollers upon the rim of the tank 4 as will later appear.

Preferably formed integral with the bushing 8 is the cam 11 in the form of a plate of metal extending upwardly and outwardly from the bushing as seen in Figs. 2 and 4. Surrounding this cam 11 and spaced therefrom is a guide piece 12 which is supported on channel bar 7 by means of the brackets 13. Between the cam 11 and the guide 12 is

formed the irregularly curved groove or channel 14 the purpose of which is to receive valve operating members to be hereinafter described.

5 The construction of the bottle-carrier will now be described. This carrier comprises four independent racks or supports 15 upon which are placed the crates 17 containing the bottles 16. It is understood that a less
10 number of racks 15 could be employed but to gain the greatest capacity for the machine compatible with convenience in operation the present number has been selected. The crates 17 are of any ordinary construction
15 suitable for the purpose and forming no part of this invention need no further description. The racks 15 are each of the same construction and a description of one will suffice for all. These racks 15 as shown
20 in Figs. 1 and 2 consist of a lower frame comprising a base or end feed pipe 18 from which project a series of parallel spaced pipes 19 in communication with the pipe 18, and secured at their outer ends by means
25 of a brace or end piece 20. There are four of the pipes 19 provided in each rack, the space therebetween being such as to provide sufficient width to the rack to receive a crate carrying four rows of bottles.
30 Mounted upon the end piece or brace 20 of each rack 15 is a roller 21 which travels upon the upper edge or rim of the tank 4 and supports the outer end of each rack of the bottle carrier. Beside the lower
35 frame, the racks 15 are provided with an upper frame or platform upon which rest the crates 17. This upper frame 22 is supported above the lower frame by braces 23 and is provided with openings 22' at spaced
40 intervals therein with each of which the mouth of a bottle registers when the bottle-filled crates 17 are in place.

At proper intervals on the pipes 19 and the pipe 18 of each rack 15 are tubes 24
45 which are in alinement with the openings 22' of the frame 22 and extend to points slightly below these openings so as not to interfere with the flow of the waste water from the bottles in rinsing. These tubes 24 are in
50 communication with the pipes 19 and with pipe 18 of each rack 15 so that water supplied for rinsing has a free passage into the same. Within these tubes 24, as clearly
55 shown in Fig. 5, are disposed the tubular nozzles 25 which pass through the guide-caps 24' at the top of the tubes 24 and normally extend into the frame 22, in the openings 22' thereof, but in this position do not
60 extend above the upper surface of such frame, hence do not interfere with the removal of the bottle-crates 17 after rinsing of the bottles or with placing them upon
the racks prior to rinsing. Each of these
65 nozzles 25 consists of an elongated narrow tube to which at its lower end within the

tube 24 is secured a head or piston 25'. Beside its function as a piston this head 25' serves as a stop to limit the vertical upward movement of the nozzle 25. To limit the downward movement of the nozzle 25 a pin
70 24" is disposed across the interior of each tube 24 at the base thereof. These nozzles 25 are automatically adjusted and operated by hydraulic pressure. When the water supply is in communication with any one of the
75 racks 15, the water under pressure enters the tubes 24 and acting against the pistons 25' of the nozzles moves them upwardly into the position indicated in dotted lines in Fig. 5 and as clearly shown in Fig. 2. When the water
80 supply is cut off, the force of the water being removed in the tubes 24, these nozzles sink back into their respective tubes. In their elevated position, during the rinsing operation, these nozzles enter the bottles 16 and
85 direct jets of water against the interior so as to clean both the bottom and sides of the bottles, removing all foreign matter by the force of the water jets.

A central support for the bottle-carrier is
90 provided in the shape of a central chamber 26 which is formed hollow providing a distributing chamber for the water which is led therefrom to the several racks 15, and which is centrally supported by the pin 9 of the
95 bushing 8, said pin engaging the lower central exterior portion of the chamber 26. Into the upper central portion of chamber 26 enters the water supply pipe 27 provided with the handle valve 28, such pipe having
100 the center of its bore arranged in alinement with the central vertical axis of pin 9. The pipe 27 is firmly braced by the horizontal and vertical braces 29 and 30, and passes through a stuffing box 31 mounted in the upper portion
105 of the chamber 26. This chamber 26 is rotatable about the pipe 27 as an axis and rests upon the pin 9 as a pivotal point of support. From the member 26 radiate the pipe-sections 32 disposed at right angles to one another about said member and in communication therewith. Each of the pipe-sections
110 32 is connected with a valve-chamber 33 which is in turn in communication with and connected to one of the horizontal pipes 34.
115 These latter pipes 34 are each connected with the base pipe 18 of each of the racks 15. The racks 15 are thus connected with the supporting and distribution chamber 26 by a water conduit consisting of a pipe-section 32,
120 valve-chamber 33, and pipe 34, and these parts being securely held together there is provided for the inner end of each rack a strong and suitable support, the outer end of each rack being supported upon rollers 21,
124 which travel upon tank 4.

The distribution of the water supplied through pipe 27 from the chamber 26 and through the water conduits just described to the several racks, is controlled by rotatable
130

valves or valve plugs 35 which are mounted horizontally in the valve chambers 33, each being provided with a transverse opening adapted to be placed in registry with ports in their respective valve chambers to permit communication between the racks and the chamber 26. Attached to the outer exterior portions of the valves 35 are depending operating arms 36, each provided with a friction roller 36'. These arms 36 enter the channel 14 between the cam 11 and the guide 12, the rollers 36' alternately engaging the edge of the cam 11 and that of guide 12 in their travel around the channel 14. The relation of the cam 11 and the guide 12 is such, that upon rotation of the bottle-carrier, the arms 36 are so operated through the travel of their rollers 36' in the channel 14, as to rotate the valves 35 to a closed position until a rack 15 assumes the position of the one on the right in Fig. 2, whereupon communication is opened between such rack and chamber 26 by the rotation to open position of the valve 35 in valve chamber 33, as will be more particularly set forth in the description of the operation of the machine hereinafter.

The operation of the machine is as follows: An operator first places the crates 17 filled with bottles upon the racks 15 and turns the carrier to an intermediate position to that illustrated in the drawings, wherein all control valves are closed, and then turns on the water supply by means of the valve 28 of supply pipe 27. The carrier is then rotated to bring one of the racks 15 into the position of the one in the right side of Fig. 2, whereupon the arm 36 traveling in the channel 14 is forced into the position illustrated in Figs. 3 and 4 through contact of its roller 36' with the edge of cam 11 and in this position opens the valve 35 of the water conduit of this rack to admit water thereto. Immediately that water enters the pipes 18 and 19 of the rack hydraulic pressure is exerted upon the nozzles 25 or the pistons 25' thereof, and these nozzles are forced upwardly into the bottles 16, as shown in Fig. 2, while jets of water therefrom are directed against the bottoms and other parts of the interior of the bottles so that a thorough cleansing and rinsing is effected. When a sufficient interval has elapsed for the rinsing, which is usually governed by the time required for the operator to unload the oppositely disposed rack, whose bottles have already been rinsed, the carrier is rotated to permit another rack to take up the position for rinsing its bottles and the rack just in such position is brought to unloading position. The instant that this further rotation is given the first rack, the position of the arm 36 of the valve 35 of that rack is reversed by contact with the inner side of the guide piece 12 due to the sudden change in direction of the curves of the cam

11 and guide 12, so that the valve is rotated sufficiently to turn its opening out of register with the ports of the valve-chamber 33 thus instantly cutting off the flow of water therethrough. With the cutting off of the water, the pressure in the piston is relieved, and the nozzles 25 fall of their own weight to their normal positions so that the bottles and their crate may be readily removed without the interference that would be occasioned by the nozzles in their elevated position.

The embodiment of one form of my invention has been herein described and its operation pointed out, but it is to be understood that this is for illustrative purposes, and that various changes may be introduced in the construction and operation without departing from the intended scope of my invention, the salient features of which are pointed out in the claims.

What I claim and desire to secure by Letters Patent of the United States, is:

1. In a bottle rinsing machine, a central support, a tank, a vertically adjustable rotatable bottle-carrier comprising a series of independent racks having rollers engaging the tank, said racks each being provided with an upper and lower frame, the lower frame having a base pipe and a series of communicating pipes connected with said base pipe, said series of pipes being spaced from and parallel to one another, a plurality of tubes mounted upon the lower frame of each rack, in communication with the pipes thereof, nozzles disposed within said tubes adapted to be elevated above the upper frame of each rack upon water pressure being admitted to the tubes, and valves controlling the admission of water to the racks and tubes, operative through the rotation of the bottle carrier, substantially as described.

2. In a bottle rinsing machine, a supply pipe for admitting water thereto, a cylindrical tank, a rotatable bottle carrier having rollers traveling upon said tank, a central supporting chamber mounted within the tank receiving said supply pipe and forming a central support for the carrier, rotatable valves controlling admission of water from the central chamber to the carrier, depending arms provided with rollers carried upon said valves, and means for opening and closing said valves upon rotation of the carrier, comprising a cam and guide surrounding and spaced from said cam, the depending arms of the valves extending into the space between said cam and guide and being actuated through contact of their rollers with the cam and guide, substantially as described.

3. In a bottle rinsing machine, a circular tank, a vertically adjustable carrier supported thereon and having rollers engaging the upper periphery of the tank, said carrier comprising a central chamber, valve chambers

connected therewith and a hollow frame communicating with said valve chambers, horizontally mounted valves in said valve chambers each having a depending arm, and
5 means for engaging said arms upon rotation of the carrier and thereby opening said valves, substantially as described.

In witness whereof I hereto affix my signature in the presence of two witnesses.

EDWARD COURT.

Witnesses:

C. W. W. MCGEE,

B. MCC. LEACH.