

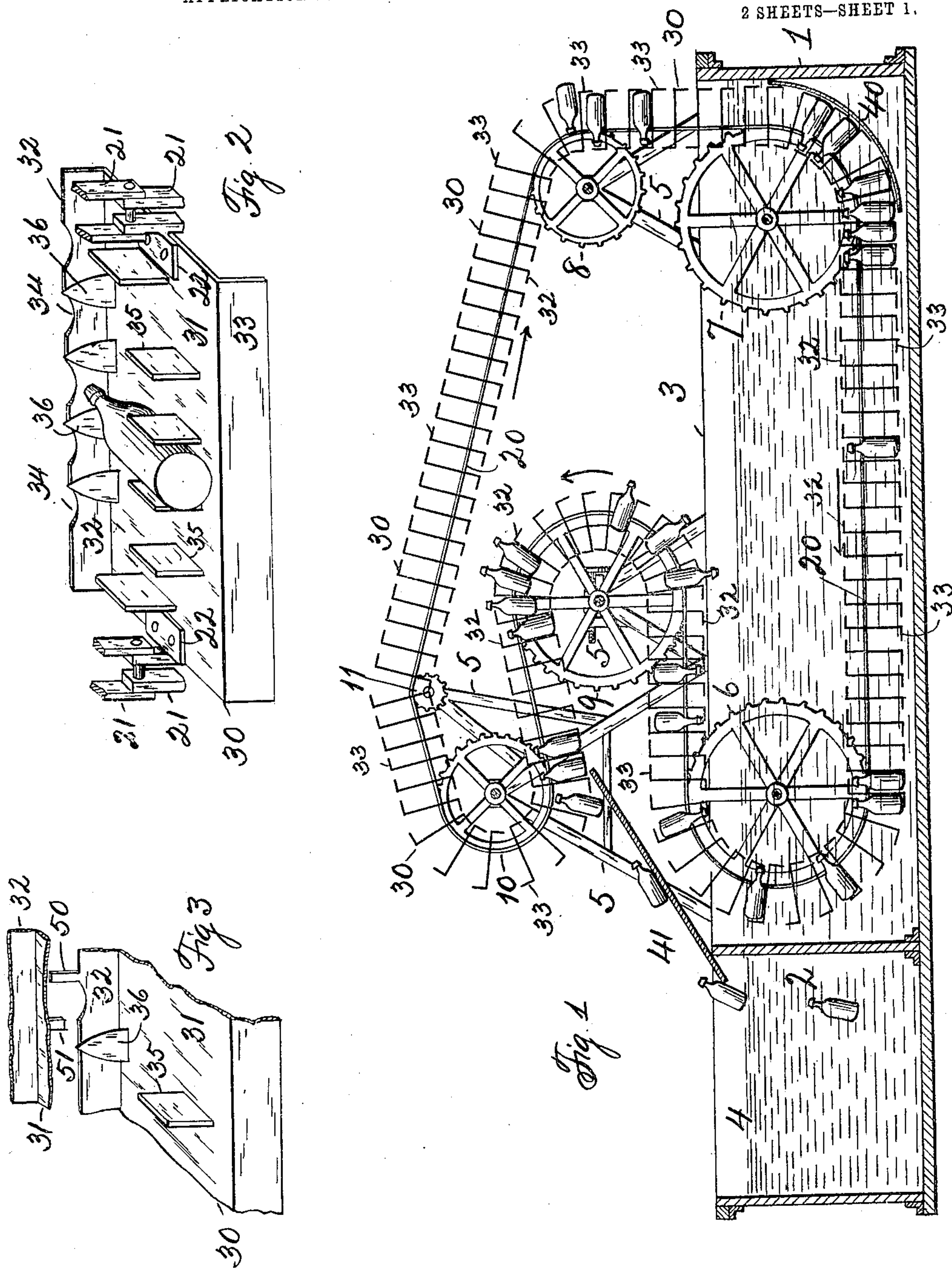
No. 807,687.

PATENTED DEC. 19, 1905.

B. F. SCHIRMER.
BOTTLE WASHING MACHINE.

APPLICATION FILED DEC. 8, 1902. RENEWED SEPT. 16, 1905.

2 SHEETS—SHEET 1.



WITNESSES:

Hermann Meyer
J. J. Corp.

INVENTOR

Baldurn F. Schirmer

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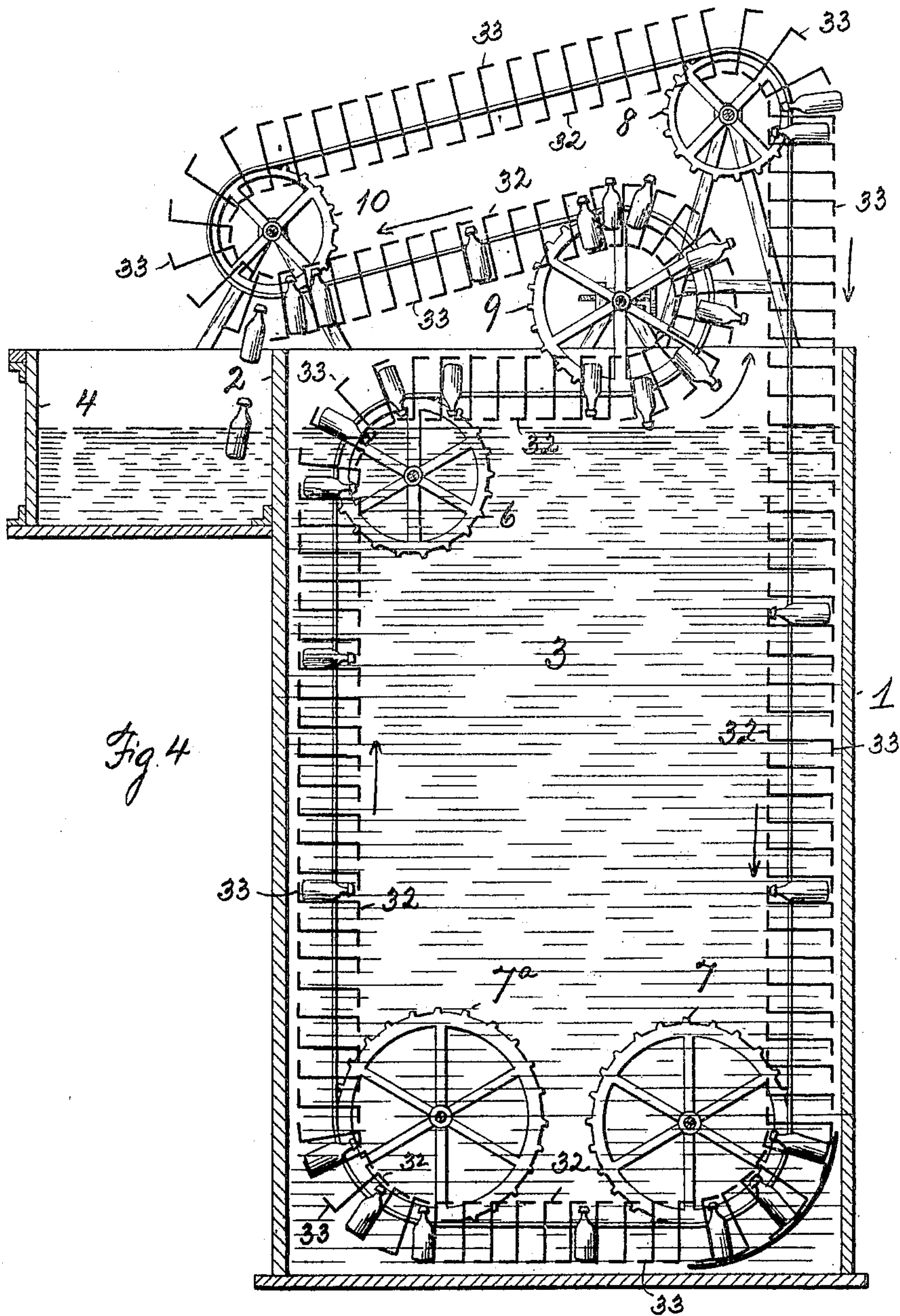


Fig. 4

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UNITED STATES PATENT OFFICE.

BALDWIN F. SCHIRMER, OF CLEVELAND, OHIO.

BOTTLE-WASHING MACHINE.

No. 807,687.

Specification of Letters Patent.

Patented Dec. 19, 1905.

Application filed December 8, 1902. Renewed September 16, 1905. Serial No. 278,780.

To all whom it may concern:

Be it known that I, BALDWIN F. SCHIRMER, a citizen of the United States, and a resident of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Bottle-Washing Machines, of which the following is a specification.

My invention relates to bottle-washing machines and machines of a similar class by means of which it is desired to carry a large number of bottles through a tank filled with water or similar cleansing or sterilizing solution and at the end of their journey to deliver them to another tank or receptacle or into the hands of the workmen. Machines of this class commonly comprise an endless carrier consisting of a pair of endless sprocket-chains, one mounted on each side of a tank and between which chains are suspended the bottle-holders proper. The sprocket-chains are propelled by sprocket-wheels from a suitable source of power, and the bottles are fed into the transverse holders at one end of the tank and delivered at the other end, either being automatically ejected from the bottle-holders or removed therefrom by hand.

The object of my invention is to provide an apparatus having the general characteristics stated and which is particularly simple in construction and highly efficient in operation.

In the drawings, Figure 1 is a longitudinal sectional elevation of a bottle-washing machine provided with my improved bottle-holders, the bottle-holding jaws and sprocket-chains being represented diagrammatically and the apparatus being shown provided with two tanks. Fig. 2 is a perspective view of one of the bottle-holding jaws, showing the parts in detail. Fig. 3 is a detailed perspective view of a part of one of the bottle-holding jaws, showing an additional guard at the front end of the receiving-plate. Fig. 4 is a longitudinal sectional elevation of a form of the apparatus in which the sterilizing-tank is sunk beneath the floor.

In the drawings, 1 is a tank divided by a partition 2 into two compartments—one, 3, designed to hold a sterilizing or cleansing solution and the other, 4, clean water. Mounted in suitable bearings in the sides of the tank (not shown) and upon a framework 5, secured above and adjacent to the tank, are sundry sprocket-wheels 6, 7, 8, 9, and 10, and

aspur-wheel 11, all designed to engage with an endless sprocket-chain 20 and to propel the same, as indicated in the drawings. It will be understood that each of the sprocket-wheels has a corresponding wheel on the other side of the machine.

A plurality of bottle-holding jaws 30 are arranged transversely between the two sprocket-chains and are attached to the links 21 21 of such chains by means of inwardly-extending flanges 22 22, made integral therewith and rigidly secured by rivets or other suitable means to the jaws 30. Each jaw consists of a bottle-holding plate 31, with an upwardly-extending flange 32 at its front end and a downwardly-extending flange 33 at its rear end. The flange 32 is hollowed out at certain points 34 34 to afford an opening through which the emptying of the bottles takes place.

The bottle-receiving plate 31 is provided with upwardly-projecting guards 35 35, arranged substantially at right angles to the plane of the receiving-plate 31 and likewise at right angles to the planes of the flanges 32 and 33. It is likewise provided with upwardly-extending guards 36 36, arranged parallel to the flange 32 and at right angles to the guards 35.

The bottles to be transmitted in the carrier formed by the sprocket-chains and transverse jaws are laid upon the top of the plate 31 between the guards 35 with the head of the bottle pointing toward the flange 32. It will be observed that the guards 35 35 are so arranged that a bottle fits snugly between each pair and that the guards 36 36 are so arranged as to afford a narrower space between them than between the guards 35. These guards serve aptly, therefore, to prevent the lateral displacement of the bottle upon this plate. The guards 36 in connection with the flange 32 also serve to prevent the longitudinal displacement forward of the bottle when on the receiving-plate. The jaws 30, being secured to the sprocket-chains 20, are arranged so that at the lowermost point of their travel the flanges 32 are uppermost and substantially horizontal, while the flanges 33 are lowermost and substantially horizontal. Being rigidly secured to the sprocket-chains, supposing the latter to move in the direction indicated by the arrows, it will be seen that the jaws gradually turn and are finally inverted, so that a point is reached when they

are between the wheels 6 and 9, where the flange 32 is lowermost and substantially horizontal and the flange 33 uppermost and substantially horizontal. Along this path of their travel the bottles are held bottom upward. The jaws are again reversed between the wheels 9 and 10 and again reversed between the wheels 10 and 8, so that while passing through the bottom of the tank the bottles are bottom downward, are then caused to be reversed to a position where they are bottom upward, and are again reversed in position to bring the bottles bottom downward at a point where the chain passes around the wheel 10.

As the jaws are rigidly attached to the links, it will be observed that as the links pass over the sprocket-chains the bottle-holding plates 31 change their angles to each other. For instance, while the carrier is passing the sprocket-wheel 8 the flange 33 is a great distance from the plate 31 on the jaw immediately in front of it. In other words, the pocket formed between two successive jaws is at that point open and adapted to receive the bottles, which are at that place fed into the machine with their necks pointed toward the flanges 32. As the carrier moves onward the flange 33 is caused to approach nearer to the plate 31 of the jaw in front of it and the bottles are practically inclosed. This continues during their travel in a vertical direction and until the wheel 7 is reached. This wheel is made of a larger diameter than the wheel 8. The angles formed, therefore, between any two adjacent jaws in passing the lower right-hand quadrant of the wheel are not so great as those formed in passing the upper right-hand quadrant of the wheel 8. The flanges 33 do not, therefore, move away from the plates 31 of the jaws immediately in front of them, and the bottle is prevented from escaping. A guard 40 is placed at this point to prevent the accidental discharge of the bottle. The bottles are inclosed and held in a vertical position between the adjacent jaws while they are passing horizontally between the wheels 7 and 6. They pass around the wheel 6 and are then reverted, but, falling toward the inner flanges 32 of each of the jaws, are not allowed to escape from the pockets between the jaws, although their contents can empty.

The wheel 5 is made of a diameter equal to or greater than the wheel 6, and consequently the jaws do not open sufficiently while passing around this wheel to permit of the escape of the bottles. Between the wheels 9 and 10 the bottles have assumed an upright position. The wheel 10 has a smaller diameter than the wheel 9, and consequently the jaws are opened wide while the carrier passes around this wheel, and the bottles are thereby permitted to drop out of the carrier by the force of gravity.

A slide 41 is provided to receive them and guide them into the fresh-water tank 4, or the wheel 10 may be so placed that they are dropped directly into such tank without the intervention of a slide 41, as shown in Fig. 4.

In cases where the sprocket-wheels must be kept as small as possible it may be desirable to provide additional means for preventing the escape of the bottles when they are held bottom upward. For this purpose I provide the flanges 32 with an additional supplementary projecting guard 50, and I place a similar guard 51 on the lower part of the plate 31 of the jaw immediately in front of that to which the guard 50 is secured.

The bottle-holding jaws may be made of any suitable material and size. I prefer to make them of sheet metal and to stamp each jaw out of one piece, turning up the flange 32 and turning down the flange 33 from the same piece and forming the guards 35 and 36 by cutting out flaps from the material of the plate 31 and turning it upward. The jaws, however, form the subject-matter of a separate application for Letters Patent of the United States, Serial No. 135,065, filed by me on the 13th day of December, 1902, and to which reference may be made for more particular details of its construction.

In Fig. 4 I have illustrated a form of my improved apparatus, in which the sterilizing or cleansing tank is very deep as compared with the fresh-water tank and in which the bottles are shown as discharging directly into the fresh-water tank without the intervention of the slide 41, as shown in Fig. 1.

What I claim is—

1. In a machine of the class described, a bottle-holder comprising a plurality of jaws arranged in succession along an endless flexible carrier, to which they are rigidly secured, each jaw adapted to receive a bottle and carry it with its longitudinal axis substantially at right angles to the line of travel of the carrier and provided with means for preventing the lateral displacement of the bottles and for preventing the longitudinal displacement of the bottles except at predetermined times.

2. In a machine of the class described, a bottle-holder comprising a plurality of jaws arranged in succession along an endless flexible carrier, each jaw adapted to receive a bottle and carry it with its longitudinal axis substantially at right angles to the line of travel of the carrier and provided with means for preventing the lateral displacement of the bottles and for preventing the longitudinal displacement of the bottles except at predetermined times, the means for the last-mentioned purpose consisting of a flange projecting from the next jaw toward the bottle.

3. In a machine of the class described, an endless flexible bottle-carrier comprising chains, a plurality of jaws arranged in succession along the chains and secured to the

links thereof, at a point intermediate the ex-
tremities of the jaws and substantially at a
right angle to the link to which each jaw is
firmly attached, whereby, when the direction
5 of movement of the carrier is varied, the ad-
jacent jaws are caused to change their angles
with respect to each other.

Witness my hand, this 3d day of December,
1902, at the city of Buffalo, in the county of
Erie and State of New York.

BALDWIN F. SCHIRMER.

Witnesses:

C. A. STRANGMANN,
EDWARD C. REEB.