

No. 659,935.

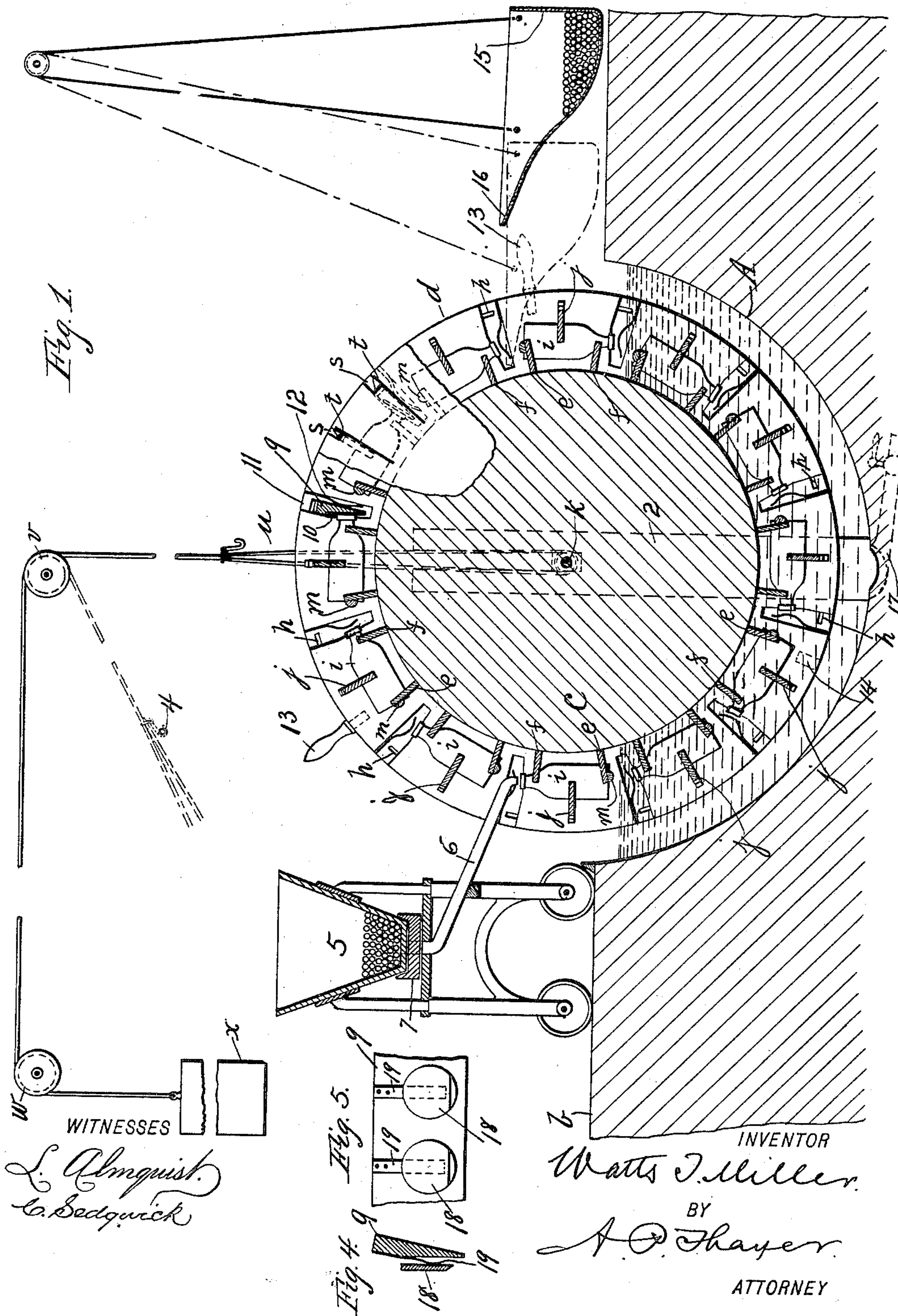
Patented Oct. 16, 1900.

W. T. MILLER.  
BOTTLE WASHING APPARATUS.

(Application filed Feb. 7, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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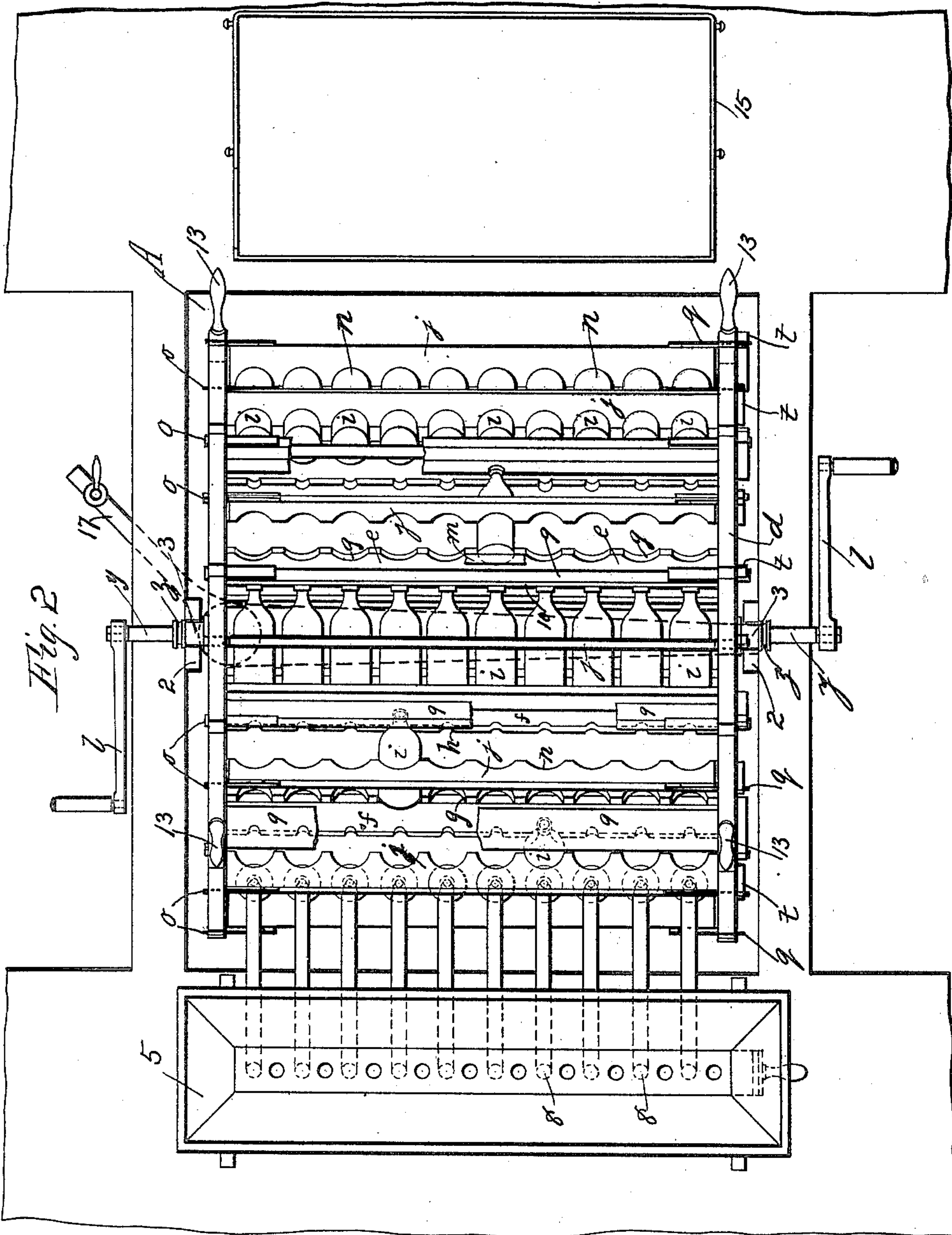
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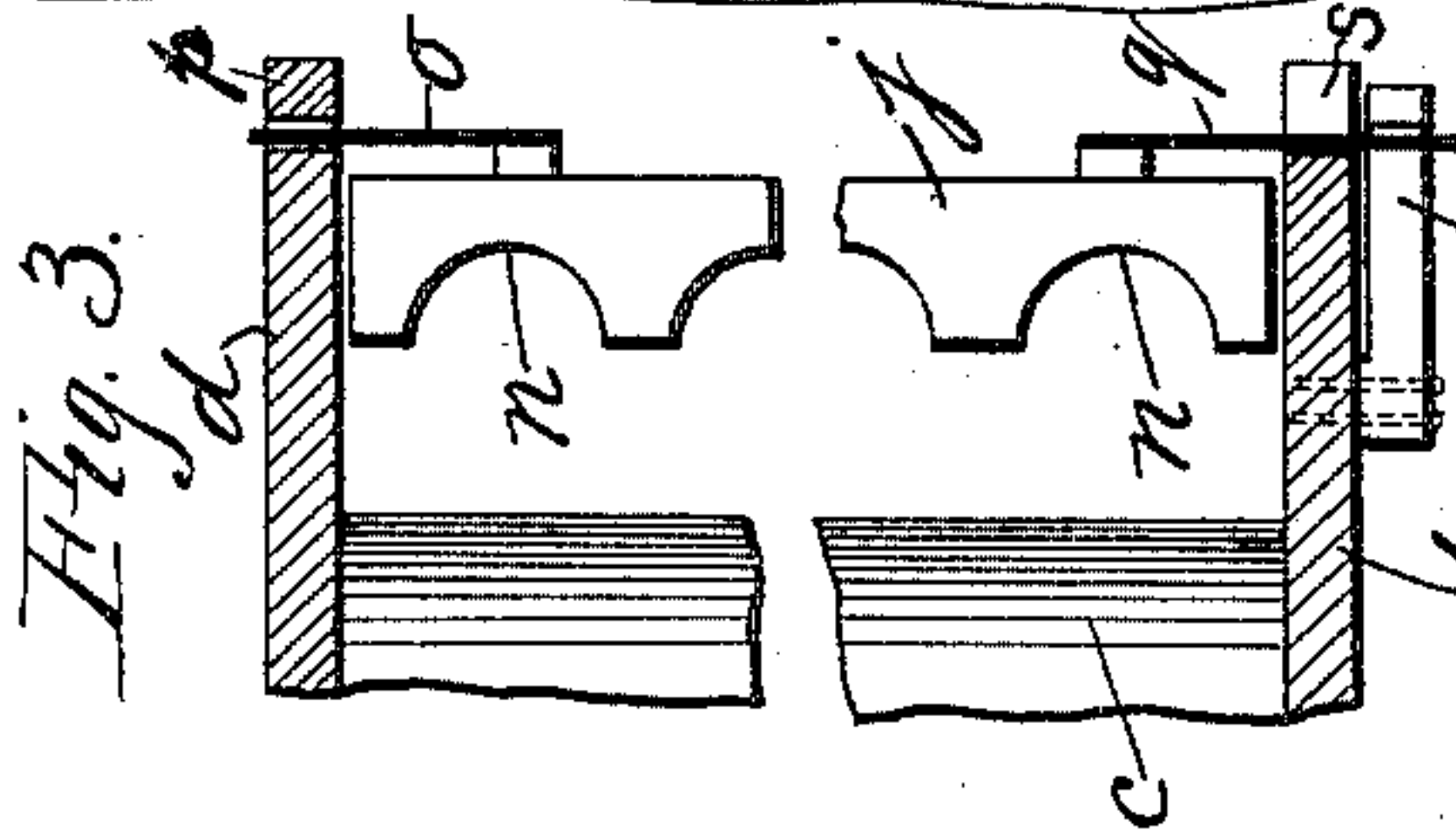
(No Model.)

2 Sheets—Sheet 2.



WITNESSES

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# UNITED STATES PATENT OFFICE.

WATTS T. MILLER, OF NEW YORK, N. Y.

## BOTTLE-WASHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 659,935, dated October 16, 1900.

Application filed February 7, 1900. Serial No. 4,320. (No model.)

*To all whom it may concern:*

Be it known that I, WATTS T. MILLER, a citizen of the United States of America, and a resident of the borough of Brooklyn, New York city, and State of New York, have invented certain new and useful Improvements in Bottle-Washing Apparatus, of which the following is a specification.

My invention consists of improvements in apparatus for washing milk and other bottles, whereby it is designed to accomplish the work expeditiously and economically, and particularly so as to avoid the exposure of the hands of the operators to the injurious effects of the alkaline waters used, as hereinafter described, reference being made to the accompanying drawings, in which—

Figure 1 is a longitudinal sectional elevation of my improved apparatus. Fig. 2 is a plan view. Fig. 3 is a detail in longitudinal section of the bottle-carrying drum, showing some of the parts more clearly. Figs. 4 and 5 represent in section and front views a modified form of stoppers for closing the bottles.

A represents a tank located, in any suitable form of construction, below the level of the floor *b* for containing the water in which to wash the bottles.

*c* represents the body, and *d* flanges of the ends of a drum to carry the bottles for rotating them in the tank, said flanges being of considerably-larger radial dimension than the radius of the body. On the body of the drum there is a series of pairs of longitudinal and radial ribs *e* and *f*, suitably notched in their outer edges, as at *g* and *h*, for seating the bottles *i*, to be confined by bars *j* for being carried through the water by rotating the drum, said drum being supported on pivots *k*, so as to be partly submerged in the water, and provided with cranks *l* for turning it by hand, or any other approved means for turning it may be used. The ribs *e* and *f* are fixedly attached to the drum, with their notches in their outer edges for receiving the bottles, the notches of the ribs *e* being adapted in size to the size of the bodies of the bottles and the notches of the ribs *f* being smaller to receive the necks of the bottles. The ribs *e* have a guard *m* to each notch, against which the bottom ends of the bottles lodge to prevent them from shifting backward. The bars

*j* are detachably applied to the drum and have notches *n* in their inner edges to fit the bottles. They are applied so as to bear on the bottles intermediately of the ribs *e* and *f*. They have a bar-spring *o* at one end that projects beyond said end and is inserted in a slot *p* in the flange *d* of the drum and at the other end have a longer bar-spring *q*, that enters a notch *s* in the other drum-flange when the bar is applied for securing the bottles and when pressed on the bottles is engaged by a spring-hook *t*, so that the bar is held by a yielding force better suited to the work than rigid fastenings for the bars.

As many of these pairs of bottle-receiving ribs and retaining-bars will be employed as the size of the drum will allow. In this example I represent the complement of ribs and bars adapted for applying twelve longitudinal rows of bottles having ten bottles in a row; but the drums may be larger or smaller, with corresponding variation in the number of bottles in a charge.

The charge of bottles may be applied to the drum where it is represented in the washing-tank, if desired; but in practice they will probably be applied to the drum when out of the tank and resting on its flanges *d*, on which the drum is adapted to be rolled, with the bottles on it, from place to place readily, as to the place where the bottles to be washed are stored for receiving the charge, thence to the first washing-tank, from which after the first washing in alkaline water the drum is to be removed to a second, and, if desired, to a third or fourth tank for completing the washing and rinsing, and then removed to the place for receiving the washed bottles, said drum being lowered into and raised out of the tanks by any suitable tackle, as a pair of slings *u*, suspended from pulleys *v w*, and counterbalanced, as at *x*, but may be so handled by hand when not too heavy. The journals *y* of the drum-shaft each have a pulley *z* to be engaged by the slings. The cranks *l* may be detachable from the journals to facilitate the application and removal of the slings. Vertically-slotted ports 2 receive the bearing-boxes 3 of the journals of the drum when it is placed in the tank. The slings are then detached from the journals and hooked up, as at 4, or otherwise secured



to be retained for hitching on again when required.

When the drum is placed in the tank with its charge of bottles, it may either be rotated a few times, by which the bottles will fill and discharge as the drum goes around, or the bottles may be at once charged with shot or other readily-mobile objects and partly filled with water and then closed to retain the shot, and the drum may be turned to dash the shot and water about as long as may be necessary to thoroughly effect the inside washing, after which the bottles are to be opened and discharged and removed along with the drum to another washing-tank. The shot will probably only be used in the first washing; but they may be further used, if desired.

For charging the bottles with shot a movable shot-magazine 5, or one having a movable spout 6 for each bottle in a longitudinal row, and a sliding gate 7, having a charge-pocket 8 (dotted) for each spout, of well-known contrivance, are arranged to shift the spouts forward to each row of bottles when brought to the right position, as seen in Fig. 1, by shifting the drum intermittently in its rotatory course in the right-hand direction. The gate is then opened and the shot discharged into the bottles, thus charging row after row of bottles. It will be seen that when so charged with shot the bottles are full of water, part of which it is desirable to discharge, so that there will be freedom for the rest to dash about after the bottles are closed. The bottles are therefore not closed until reaching the highest position or thereabout, when, being in horizontal position, half or a little more of the water will run out. Then a gate-bar 9, having a felt or other slightly-compressible side 10, is inserted in radial slots 11 in the flanges *d* of the drum in front of the nozzles of the bottles, said flanges of the drum each being provided with a suitable spring 12 to press the gate against the nozzles to close them sufficiently to prevent escape of the shot. It is immaterial if some water escapes while the bottles are above the water in the tank, because water will enter again while the bottles are submerged. When all the bottles are so charged and closed, the drum is to be rotated by the cranks or otherwise a few turns to dash the shot and water about in the bottles as desired, and for more active dashing radial lever-handles 13, connected with the flanges of the drum, may be used to quickly shift the drum forward and backward by short violent movements, said handles being detachably inserted in sockets, as 14, for distributing the action and equalizing the work by division of the drum to be successively brought into the position where the dashing will be most effective. Before this operation, however, the drum will preferably be raised and suspended out of the water in the tank by the slings to avoid obstruction by the water. These lever-handles have also to be detached when the drum is rotated in the

tank by the cranks. After thus manipulating the drum sufficiently to wash the bottles thoroughly they are to be opened for discharging the water and the shot preparatory to removing the drum to the rinsing-tank, which is done by removing the gate-bars, and when it is desirable to recover the shot a receiving-pan 15, having a wide taper mouth 16, suitable for being presented under the mouths of a row of bottles, as indicated at the right hand of Fig. 1, may be employed to receive the shot when the gate is lifted, the pan being capable of swinging or otherwise moving into the position for receiving the shot and then shifting out of the way for allowing the discharged bottles to pass on and another row to be brought to the position for discharging, and so on until all the bottles are discharged; but instead of employing the pan for receiving the shot they may be allowed to fall into the tank to be discharged with the water through the outlet 17 when the water is drawn off and be received in a sieve, which allows the water to escape, but retains the shot. The gate-bars 9 are, like the clamping-bars *j*, provided with bar-springs *o* and *q* to be secured in slots *p* and hooks *t* to hold them in position.

Instead of the felt or other elastic facing of the bars 9 to close the mouths of the bottles a separate stopper-plate 18, of wood or other suitable material, for each bottle may be attached to the bars by a spring or springs 19, as shown in Figs. 4 and 5, which will compensate for slight variations in the lengths of the bottles to better advantage.

While the longitudinal ribs for seating the bottles on the face of the drum are preferred, it is obvious that appropriate seats of any other form of construction adapted for the purpose may be used, and I do not limit myself to the ribs, and while the bottle-clamping bars and the bottle-closing bars are represented as detachably mounted on the drum they may be connected for retention on the drum.

It will be seen that by arranging the bottles lengthwise in circumferential lines of the drum, with the mouths open to the forward direction of the drum, the bottles fill and empty more readily and the action of the water in them is more effective.

What I claim as my invention is—

1. In bottle-washing apparatus, the combination with a water-holding tank, of a rotatory drum located in said tank and having radially-projecting longitudinal ribs on its face provided with bottle-retaining seats, said ribs arranged in pairs to seat the bottles at points suitably distant from the middle parts for stability, clamping-bars having bottle-retaining notches corresponding with the notches of the seat-ribs, and means for detachably securing said bars at the ends between each pair of seat-ribs with their notches bearing on the bottles intermediately of the bearing-points of the bottles in the seats.



2. In bottle-washing apparatus, the combination with a water-holding tank, of a rotatory drum located in said tank and having bottle-retaining seats on its face, and clamping-bars adapted for securing the bottles placed lengthwise in circumferential lines of the drum, also bars carrying stoppers for a row of bottles and means for detachably securing said bars at their ends with the stoppers bearing on the mouth ends of the bottles with yielding pressure.

3. In bottle-washing apparatus, the combination with a water-holding tank, of a rotatory drum located in said tank and having radial longitudinal ribs provided with bottle-retaining seats on its face, and clamping-bars adapted for securing the bottles placed lengthwise in circumferential lines of the drum, also bars for closing the mouths of the bottles, each bar adapted to close the mouths of a series or row of bottles and being arranged lengthwise of the drum and detachably secured at its ends so as to bear on the bottles intermediately of their bearings in the seat-ribs.

4. In bottle-washing apparatus, the combination with a water-holding tank, of a rotatory drum located in said tank, and having seats on its face and clamping-bars adapted for securing the bottles placed lengthwise in circumferential lines of the drum, also bars for closing the mouths of the bottles, each bar adapted to close the mouths of a series or row of bottles, and having an individual spring-pressed stopper for each bottle, said stopper-bars extending lengthwise of the drum and detachably secured at the ends for closing and opening the bottles.

5. In bottle-washing apparatus, the combination with a water-holding tank, of a rotatory drum located in said tank and having seats on its face and clamping means adapted for

securing the bottles placed lengthwise in circumferential lines of the drum, also having flanges adapted for the drum charged with the bottles to roll along the floor, said drum being removable into and out of the water-holding tank and rotatable therein on its journals.

6. In bottle-washing apparatus, the combination with a water-holding tank and a rotatory drum located in said tank and having seats on its face and clamping means adapted for securing the bottles placed lengthwise in circumferential lines, of means for charging the bottles clamped on the face of the drum with readily-movable articles as shot, consisting of a magazine having a series of spouts adapted to be set to register with a row of bottles, and a gate for simultaneously discharging the charges of said articles into the bottles.

7. In bottle-washing apparatus, the combination with a water-holding tank and a rotatory drum located in said tank and having seats on its face and clamping means adapted for securing the bottles placed lengthwise in circumferential lines, of means for charging the bottles clamped on the face of the drum with readily-movable articles as shot, gate-bars for closing and opening the mouths of the charged bottles and a pan for recovering said articles when the bottles are opened, said pan supported by means adapted for presenting the pan for receiving the said articles and retiring it for unobstructed further movement of the drum.

Signed by me at New York, N. Y., this 25th day of January, 1900.

WATTS T. MILLER.

Witnesses:

J. M. HOWARD,  
C. SEDGWICK.