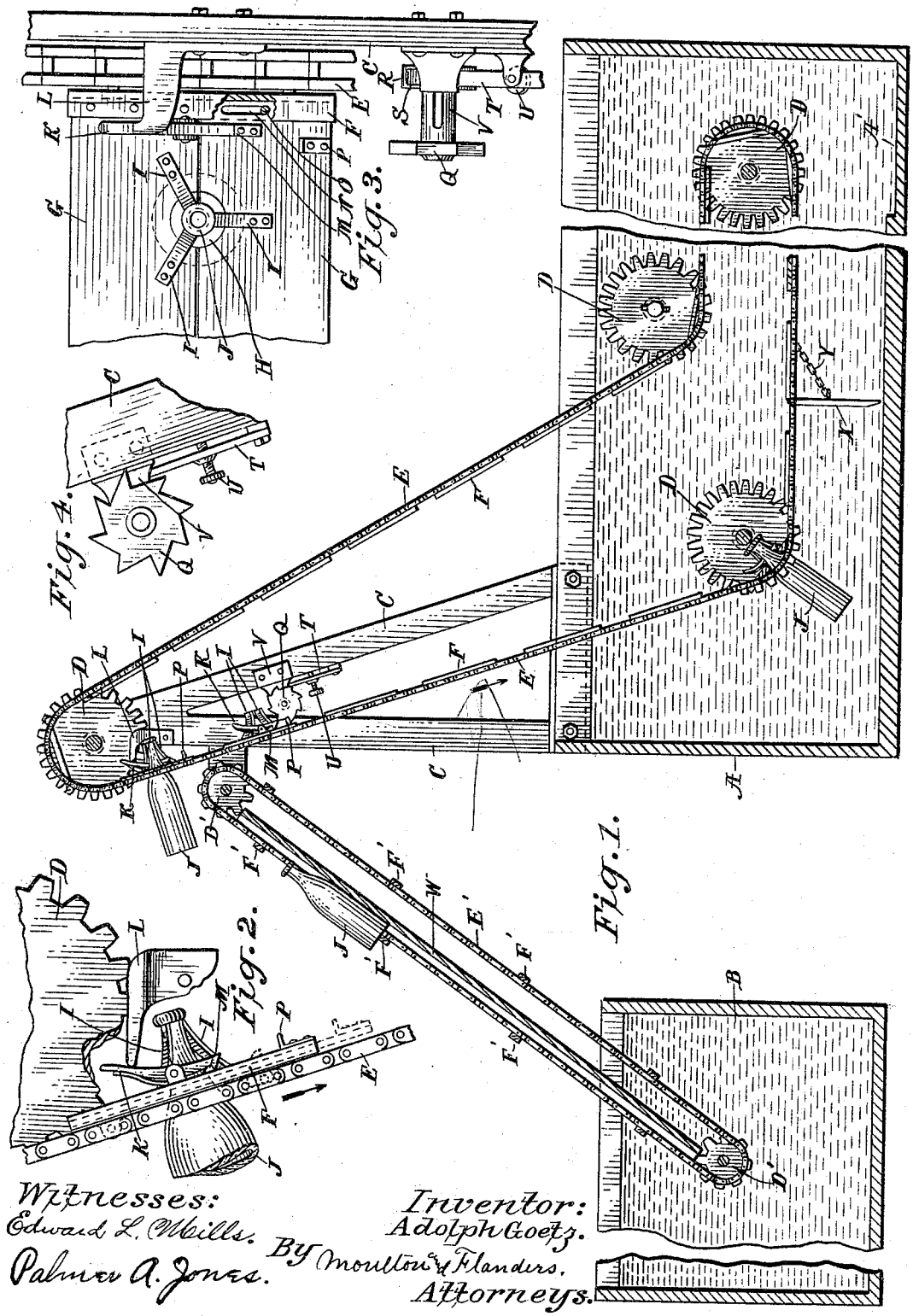
No. 647,082. Patented Apr. 10, 1900.

A. GOETZ.

BOTTLE WASHING MACHINE.

(Application filed Dec. 14, 1899.)

(No Model.)



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UNITED STATES PATENT OFFICE.

ADOLPH GOETZ, OF GRAND RAPIDS, MICHIGAN.

BOTTLE-WASHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 647,082, dated April 10, 1900.

Application filed December 14, 1899. Serial No. 740,241. (No model.)

To all whom it may concern:

Be it known that I, ADOLPH GOETZ, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, 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.

My invention relates to improvements in machines for washing bottles; and its object is to provide means whereby the bottles will be carried through a tank containing a suitable solution for cleaning the same, then emptied and drained, and then automatically released and deposited in another tank containing water or other liquid for removing the cleaning solution.

The device consists, essentially, of two tanks for containing the liquids, endless chains having connected therewith bottle-holding devices and extending within a tank containing the cleaning solution, and thence upward above the same, means for automatically releasing the bottles, and a suitable conveyer to receive the bottles and convey the same into another tank containing water or other suitable liquid for removing the cleaning solution, as hereinafter more fully described, and particularly pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section of a device embodying my invention; Fig. 2, an enlarged detail in side elevation of the holding and releasing mechanism attached to the chains for conveying the bottles through the cleaning liquid and discharging the same; Fig. 3, the same in front elevation, and Fig. 4 a detail of the mechanism for closing the bottle-holding device after the same has been opened to discharge the bottles.

Like letters refer to like parts in all of the figures.

A represents a tank of suitable dimensions for containing a suitable cleaning liquid, usually a solution of caustic potash, and having a recess or other suitable receptacle A′ at the rear end for the collection of labels or other matter removed from the bottles.

B is another tank adapted to contain water or other suitable liquid for washing or removing the solution contained in the tank A from the bottles.

C is a suitable frame erected upon the tank A at the end adjacent to the tank B.

D are suitable sprocket-wheels arranged, as shown in Fig. 1, at the top of the frame C and within the tank A and at each side of the same, only one side being shown. Connecting these wheels are endless sprocket-chains E, arranged, as shown in Fig. 1, at each side of the tank, and extending between these chains at intervals are bottle-holding devices consisting of grooved strips or bars F, attached to the chains in any convenient manner, between which bars are parallel plates G G, having a series of semicircular opposing recesses in their adjacent edges, as shown in Fig. 3, and their respective ends inserted in the grooves of the strip F. One of said plates is rigidly secured by rivets or otherwise in the strips F in any convenient manner, rivets being shown, and the other plate G is slidable within the grooves in the strips F and provided at each end with transverse slots N, engaged by stop-pins O, whereby the said plate moves in the grooves toward and from the adjacent plate to a limited extent and sufficient to release the bottles, as hereinafter set forth. The respective plates are provided with radially-arranged springs I, adapted to engage the neck of the bottle and abut against the bead around the top of the same, and thus securely hold the bottle within the recess H in the adjacent edges of the plates G while passing downward and through the solution in the tank A and upward to the top of the frame, as illustrated in Fig. 1, it being understood that F in said figure represents the described plates in each instance except where in the tank at the lower side is shown a plate to which is attached a scraper X, consisting of a plate or rake hinged to one of the plates G and limited in its movement by the chain Y, so that it will traverse the bottom of the tank in a vertical position and carry any sediment or labels or other solid matter into the recess A′ and deposit the same therein. Upon the movable plate G is a lug M, projecting outward therefrom and engaged by a spring-latch K to hold the said plate in close rela-

tion to the other plate G and to bring the spring I in proper position to securely hold the bottle.

L is an arm projecting from the frame and adapted to engage the rear end of the latch K and by depressing the same release the plate G and permit it to move downward by gravity as far as allowed by the slots N and the pins O. This separates the springs I sufficiently to release the bottle J at such a point in its movement as will permit it to fall upon the upper end of an inclined table W, provided with suitable grooves to receive the bottles and traversed by the sprocket-chains E' at each side.

F' are transverse bars attached to the chains E' at intervals, whereby the bottles are gradually lowered along the channel in the table W into the contents of the tank B to prevent breaking of the bottles. D are suitable sprocket-wheels at each end of the said table W to engage and move the sprocket-chains E'. After the described release of the bottles the movable plate G is again moved up close to the fixed plate G by the engagement of lugs P, projecting from said plate suitably to engage a tooth of the ratchet-wheel Q, suitably mounted on a shaft journaled in a bearing V and provided with a brake-wheel R, engaged by a brake-shoe S, having a spring-arm T and the tension-screw U to regulate the pressure upon the brake-wheel, whereby the wheel Q will hold the movable plate G until it is moved upward in the strips F and the latches K again engaged with the lugs M. The wheel will then be forced to turn and permit the lug P to pass. If so desired, this wheel may be utilized as a part of a counter to keep a record of the number of bottles passing through the machine; but such a counter would be no part of the present invention, and therefore is not shown. Any suitable means for imparting a slow motion to the respective sprocket-chains may be used and is omitted because forming no part of my invention.

From the foregoing description the operation of my device will be readily understood. The bottles are inserted at a point between the wheel Q and the top of the tank, as shown in Fig. 2, and securely held by means of the springs I and the plates G. They are thence carried downward into the tank and traverse the same along the bottom and thence back again in inverted position and carried upward by the chain, the contents thereof being discharged into the tank A. After being drained they slowly move upward and over the wheels at the upper part of the frame C. When the latches K contact the arms L, the lower plates slide downward and the bottles are released and fall upon the upper end of the grooved table W and are thence gradually lowered by the bars F' into the tank B and are exposed to the action of the water or other liquid therein, and thus cleansed from the solution remaining thereon without any necessity of manipulation by hand or other attention than inserting them in place, as heretofore mentioned. The scraper X carries the labels and other solid matter that may accumulate in the tank into the recess A', from whence they may be removed in any convenient manner.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of a tank, a sprocket-chain in the tank and extending above the same, a plate connected to the chains in fixed relation thereto, a second plate connected to the chains and movable relative thereto, said plates having their edges adjacent and provided with semicircular opposing recesses, radial springs adjacent to said recesses and adapted to engage the neck of a bottle; means for holding the plates in close relation; means for releasing the same to permit the plates to separate and release the bottles, and means for restoring the plates to position again, substantially as described.

2. The combination of a tank, sprocket-chains movable therein, and extending upward therefrom, strips connected to the respective chains, a plate rigidly attached to said strips, a second plate movably attached to the strips, the edges of said plates being provided with opposing semicircular recesses, and radial springs adjacent to the recesses, a latch on one of said plates, and a lug on the other plate engaged by the latch, a fixed arm to engage the latch and release the same, and means for restoring the movable plate to close relation with the other plate, substantially as described.

3. The combination of a tank, sprocket chains and wheels at each side of the tank, said chains extending above the tank, grooved strips attached to said chains, a plate rigidly attached to the respective strips, a second plate slidable in the grooves and provided with transverse slots, stop-pins to engage said slots, means on said plates for holding and carrying bottles, a latch to hold the plates in close relation, an arm to engage and release the latch, a yielding obstruction to engage the movable plate and restore it to closed position, substantially as described.

4. The combination of a tank having sprocket-chains at each side thereof and extending above the same, grooved strips attached to the respective chains, a plate rigidly secured at each end to said strips, a plate movable in said grooves and provided with transverse slots, stop-pins engaging said slots, a latch engaging a lug on the movable plate, an arm engaging and releasing the latch, springs on the plate to hold a bottle, a second lug on the movable plate, a ratchet-wheel in the path of said lug, a brake-wheel connected to the ratchet-wheel, and a brake engaging the brake-wheel, substantially as described.

5. In combination with a tank, sprocket-chains movable in the tank and extending

above the same, and means for holding and releasing bottles connected to said chains; a second tank, an inclined table to receive the bottles, sprocket-chains at each side of the table and transverse bars attached to the sprocket-chains, and means for moving all of said sprocket-chains, substantially as described.

6. The combination of a tank adapted to contain a cleaning solution, sprocket-chains at each side of the tank and extending above the same, plates attached to said chains at intervals in fixed relation thereto, and plates attached to said chains in movable relation thereto, said plates having semicircular recesses in their adjacent sides, and radial springs adjacent to the recesses, latches to hold the plates in close relation, arms to release the latches, means for restoring the plates to close relation, a second tank containing a washing liquid, an inclined grooved table, sprocket-chains surrounding the table, transverse bars connecting the sprocket-chains and traversing the table, and means for imparting motion to all the said sprocket-chains, substantially as described.

7. The combination of a tank adapted to contain a cleaning solution, sprocket-wheels at each side of the tank, a frame at one end of the tank, sprocket-wheels at the top of the frame, endless chains at each side of the tank and engaging said sprocket-wheels, plates attached to said chains and having means for holding and releasing the bottles, an arm near the top of the frame to operate the releasing mechanism, a ratchet-wheel, a brake-wheel and a brake attached to the frame, to raise the lower plate of the bottle-holding mechanism to place, an inclined table to receive the bottles when released, sprocket-chains traversing the table, transverse bars attached to the sprocket-chains; and a second tank containing a liquid for removing the cleansing solution from the bottles, substantially as described.

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

ADOLPH GOETZ.

Witnesses:
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