No. 852,471. PATENTED MAY 7, 1907.

O. E. THOMAS.

BOTTLE WASHER.

APPLICATION FILED APR. 17, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

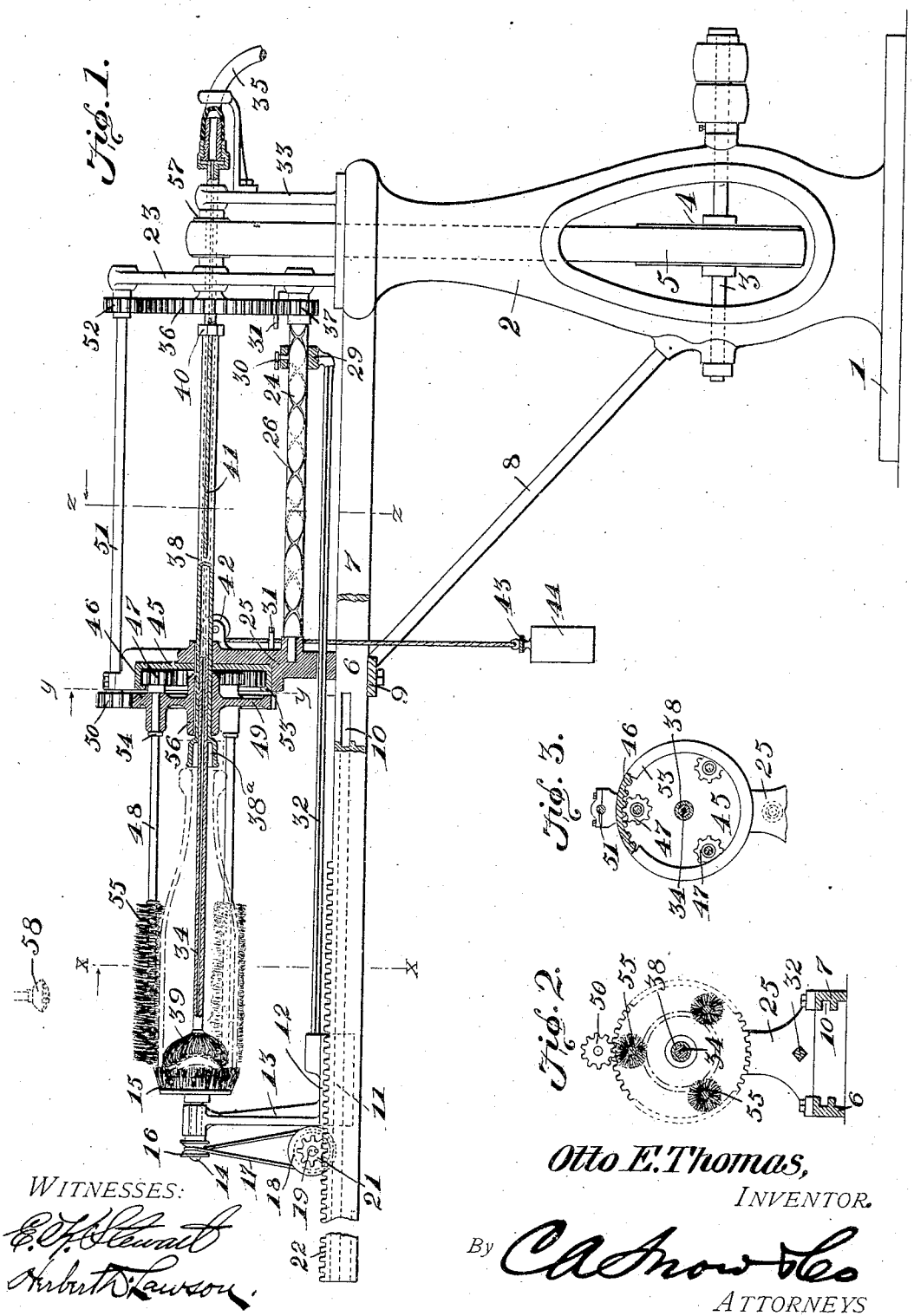

Fig. 3.

Fig. 2.

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2 SHEETS—SHEET 2.

Fig. 5.

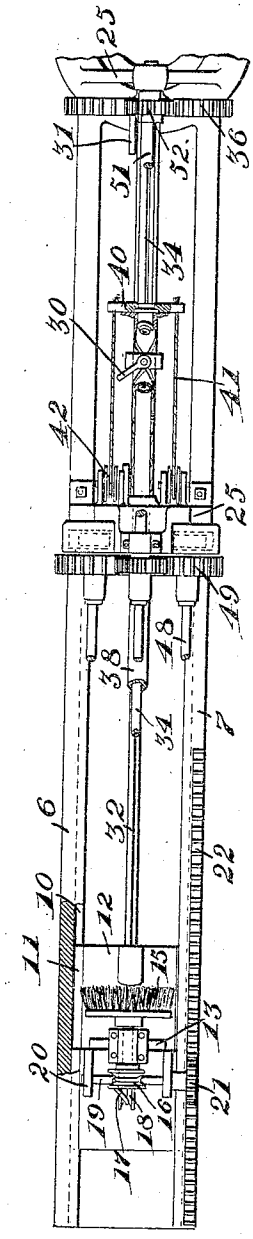
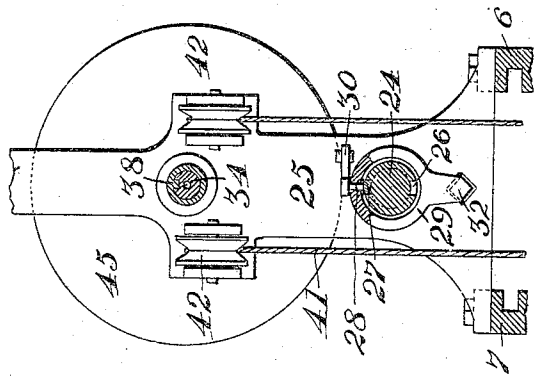


Fig. 4.



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UNITED STATES PATENT OFFICE.

OTTO EDWARD THOMAS, OF AUBURN, CALIFORNIA.

BOTTLE-WASHER.

No. 852,471. Specification of Letters Patent. Patented May 7, 1907.

Application filed April 17, 1906. Serial No. 312,227.

To all whom it may concern:

Be it known that I, OTTO EDWARD THOMAS, a citizen of the United States, residing at Auburn, in the county of Placer and State of California, have invented a new and useful Bottle-Washer, of which the following is a specification.

This invention relates to machines for washing bottles and its object is to provide a device of this character adapted to support the bottle in a horizontal position during the cleaning operation and which will thoroughly scrub the bottom and sides of the bottle as well as the interior thereof all of the scrubbing taking place simultaneously so that the bottle can be quickly and thoroughly cleaned.

The invention consists of a supporting frame having a carriage on which is mounted a brush for scrubbing the bottom of a bottle said brush being actuated by the movement of the carriage and said carriage being driven by novel mechanism provided for that purpose. Rotatable brushes are mounted to revolve around a bottle and another brush is employed for projecting into and cleaning the interior of a bottle. Said interior brush is adapted to be moved longitudinally as it rotates so that all parts of the bottle will be cleaned thereby.

The invention also consists of certain other novel features of construction and combinations of parts which will be hereinafter more fully described and pointed out in the claims.

In the accompanying drawings is shown the preferred form of the invention.

In said drawings: Figure 1 is a side elevation of the complete machine the central portion thereof being shown in section; Fig. 2 is a section on line *x*—*x* Fig. 1; Fig. 3 is a section on line *y*—*y* Fig. 1; Fig. 4 is a section on line *z*—*z* Fig. 2; and Fig. 5 is a plan view of the bed of the machine and the mechanism mounted thereon, the outside and inside brushes being removed and parts of the sleeve and drive shaft and one of the shafts being broken away.

Referring to the figures by numerals of reference, 1 is a base on which is mounted a standard 2 having a drive shaft 3 journaled therein and carrying a pulley 4 on which is disposed a belt 5. A bed consisting of parallel connected side rails 6 and 7 extends laterally from the top of the standard 2 which is provided with a brace 8 connected to a cross strip 9 extending under the side rails and also to the standard 2. The two side rails are grooved longitudinally within their inner faces as shown at 10 and projecting into these grooves are supporting cleats 11 formed on the sides of a carriage 12 extending between the side rails and having a standard 13 thereon in which a shaft 14 is rotatably mounted. This shaft has a circular brush 15 secured to one end while adjacent its other end is fastened a pulley 16 which receives motion through a crossed belt 17 from a pulley 18 on a shaft 19. This shaft is mounted in ears 20 extending from the carriage 12 and projects over the side rails 7 where it is provided with a gear 21. This gear meshes with a rack 22 formed on the rail 7 so that when the carriage is slid longitudinally between the rails the gear 21 will be rotated and produce a corresponding movement of the pulleys 18 and 16.

A standard 23 is mounted on the upper end of the standard 2 and has journaled within it one end of a propelling screw 24 which is disposed horizontally above the rails 7 and bears at its other end within a standard 25 mounted on the side rails above the cross strip 9. This propelling screw has crossed spiral grooves 26 therein in either of which travels a button 27 secured to a stem 28 which is rotatably mounted in a collar 29 adapted to slide on the screw 24. An arm 30 extends laterally from the stem 28 and is adapted to be contacted and shifted by arms 31 disposed in the path thereof and upon the standards 23 and 25, this shifting resulting in the turning of the button so as to cause the reversal of the movement of the collar 29. A rod 32 connects the collar 29 with the carriage so as to cause the carriage and the collar 29 to move in unison. Another standard 33 is mounted upon the standard 2 and this standard as well as standards 23 constitutes a bearing for a hollow shaft 34, which is also journaled in the standard 25 and is open at its end, a hose 35 being preferably connected to one end of said shaft so as to direct water thereinto. A large gear 36 is secured to the shaft 34 and transmits motion to the screw 24 through a gear 37 which is secured to said screw. A sleeve 38 is mounted upon the shaft 34 and slides within the standard 25 and to the free end of this sleeve is secured a cup 38[a] adapted to contract and house a brush 39 secured to shaft 34 and shaped to clean the interior of a bottle. A cross arm 40 is loosely mounted

on the other end of the sleeve and has cords 41 fastened to its ends and extending over pulleys 42 on the standard 25 and thus downward to a cross strip 43 to which a weight 44 is connected.

A disk 45 is secured to the standard 25 and has an annular flange 46 provided with teeth upon its inner face which mesh with gears 47 secured to one end of spindles 48. These spindles are rotatably mounted in a gear 49 which is adapted to revolve on the sleeve 38 and is driven by means of a gear 50 secured to a shaft 51 which in turn receives motion from the gear 36 through a gear 52. The flange 46 is provided with an inwardly extending portion 53 which overlaps gears 47 and serves to hold them in proper relation with the teeth on the flange 46. Collars 54 are arranged on the spindles 48 and serve to prevent longitudinal movement of the gear 49 on the sleeve 38. Each of these spindles 48 has a cylindrical brush 55 thereon adapted to contact with and clean the outer surface of a bottle. A tubular extension 56 is formed at the center of gear 49 and constitutes a stop for the cup 38^a.

In using the machine herein described the shaft 34 is driven by the belt 5 which passes over a pulley 57 on said shaft and gear 36 causes the screw 24 and shaft 51 to rotate. Gear 50 of the shaft 51 rotates the large gear 49 and as the spindles 48 are mounted within this large gear it will be revolved therewith. At the same time said spindles 48 and their brushes 55 will be rotated on their axes because their gears 47 will travel upon the stationary gear 46. The rotation of screw 24 will cause the collar 29 to travel longitudinally thereon carrying the carriage 12 therewith. As gear 21 is connected to said carriage it will be revolved by reason of its rack 22 and therefore rotary motion will be transmitted to the circular brush 15. When the collar 29 has moved a predetermined distance in the direction of standard 25 the arm 30 carried thereby will be tripped by arm 31 and cause button 27 to reverse and travel in the other groove 26 thereby resulting in the reversal of the movement of the collar. When the parts are in this position the carriage 12 is removed its greatest distance from the brushes 55. The bottle to be cleaned is then placed with the bottom thereof against the brush 15 and its mouth against the cup 38^a, and as the carriage 12 moves forward the brush 15 will be rotated and will push the bottle longitudinally against the cup 38^a and upon brush 39 so that all portions of its inner surface will be cleaned by brush 39 and water entering the shaft 34. During this longitudinal movement of the bottle brushes 39 and 55 will be rapidly revolved by the mechanism described and water may be discharged upon the brushes 55 and the outer faces of the bottle from a sprinkler 58 which has been shown by dotted lines in Fig. 1. This movement of the bottle will also force the sleeve 38 and cup 38^a backward along shaft 34, and raise the weight 44. As soon as the carriage 12 reaches the limit of its forward movement the button 47 will be automatically tripped by arm 31 so as to cause the automatic reversal of the movement of the carriage and as the carriage moves away from gear 49 the weight 44 will move downward so as to cause the cup 38^a and sleeve 38 to project the bottle beyond the brushes where it can be conveniently grasped and removed after the carriage 12 has moved to the outer ends of the side rails 7. At the same time the brush will become housed in the cup.

What is claimed is:

1. In a machine of the character described the combination with a bed; of a standard supported upon the bed, a gear immovably mounted upon the standard, a shaft extending through the standard, a gear rotatably mounted on the shaft, means for transmitting rotary motion from the shaft to said gear, spindles rotatably mounted within the rotatable gear, brushes at one end of the spindles, and gears on the spindles meshing with the stationary gear.

2. In a machine of the character described the combination with a bed having a standard thereon; of a sleeve mounted within the standard, a tubular shaft extending into the sleeve, a brush carried by the shaft, a contracting device upon the sleeve, gravity operated means for holding said device normally projected upon the brush, a gear rotatably mounted on the sleeve, means for transmitting motion thereto from the shaft, brushes movable with said gear, and means for rotating the brushes upon their axes.

3. In a machine of the character described the combination with a bed; of a standard thereon, a rotatable brush carried by the standard, a longitudinally movable brush contracting device carried by the standard, a series of brushes movable around the first mentioned brush, the brushes of said series being rotatable upon their axes, a carriage movable upon the bed, a circular brush carried thereby, means operated by the movement of the carriage for rotating the circular brush, and mechanism for actuating the carriage and brushes.

4. In a machine of the character described the combination with a bed; of a carriage movably mounted thereon, a brush supported by the carriage, means operated by the movement of the carriage for rotating the brush, a shaft rotatably mounted above the bed, a brush mounted thereon, and mechanism operated by said shaft for reciprocating the carriage.

5. In a machine of the character described the combination with a bed; of a carriage slidably mounted thereon, a brush projecting

from and rotatably mounted upon the carriage, and mechanism carried by the carriage for rotating the brush, said mechanism engaging the bed and adapted to be actuated by the movement of the carriage.

6. In a machine of the character described the combination with a bed; of a carriage movable longitudinally of the bed, a brush rotatably mounted upon the carriage, a rotatable element carried by the carriage and adapted to travel upon the bed during the movement of the carriage, and mechanism operated by said element for actuating the brush.

7. In a machine of the character described the combination with a bed; of a carriage movable longitudinally of the bed, a brush rotatably mounted upon the carriage, a rotatable element carried by the carriage and adapted to travel upon the bed during the movement of the carriage, and mechanism operated by said element for actuating the brush, a propelling screw adjacent one end of the path of the carriage, means for actuating the screw, and a connection between the screw and carriage, said connection engaging and adapted to be actuated by the screw.

8. In a machine of the character described the combination with a bed; of a carriage movable longitudinally of the bed, a brush rotatably mounted upon the carriage, a rotatable element carried by the carriage and adapted to travel upon the bed during the movement of the carriage, mechanism operated by said element for actuating the brush, a propelling screw adjacent one end of the path of the carriage, means for actuating the screw, a connection between the screw and carriage, means movably mounted within said connection for engaging the screw, and shifting arms in the path of said means for automatically reversing said means to reverse the movement of the connecting device.

9. In a machine of the character described the combination with a tubular rotatable shaft, and an expansible brush at one end thereof; of a longitudinally movable brush contracting device mounted upon said shaft, a rotatable element upon the shaft, a plurality of brushes disposed around and parallel with the tubular shaft, and mechanism for simultaneously revolving said brushes around the shaft and rotating them upon their axes.

10. In a machine of the character described the combination with a bed, and a circular rotatable brush movably supported thereon; of a tubular shaft rotatably mounted above the bed, an expansible brush carried by said shaft, a longitudinally movable brush contracting cup mounted upon the shaft, and means for exerting longitudinal pressure upon the cup to clamp a bottle between the cup and circular brush.

11. In a machine of the character described the combination with a bed; of a tubular rotatable shaft, a brush carried thereby, a circular brush movably supported above the bed for operating upon the bottom of a bottle, a series of brushes disposed around and parallel with the shaft, and mechanism operated by the shaft for simultaneously rotating all of the brushes upon their axes, for revolving the series of brushes around the shaft, and for moving the circular brush longitudinally of the bed.

12. In a machine of the character described the combination with a bed, and cleaning devices supported thereabove; of a carriage, a brush movable therewith, mechanism for actuating the brush, and means for automatically reciprocating the carriage.

13. In a machine of the character described the combination with a bed, and cleaning devices supported thereabove; of a carriage, a brush movable therewith, means for automatically reciprocating the carriage, and mechanism upon the carriage and engaging the bed for actuating the carriage brush during the movement of the carriage.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

OTTO EDWARD THOMAS.

Witnesses:
W. F. JACOBS,
A. N. TERRY.