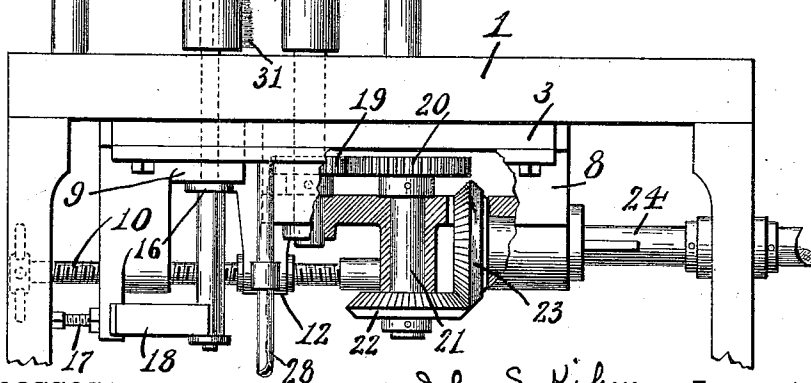
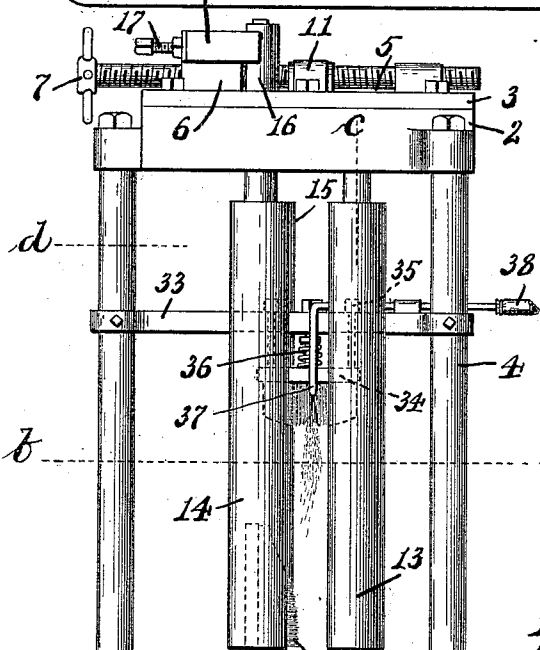
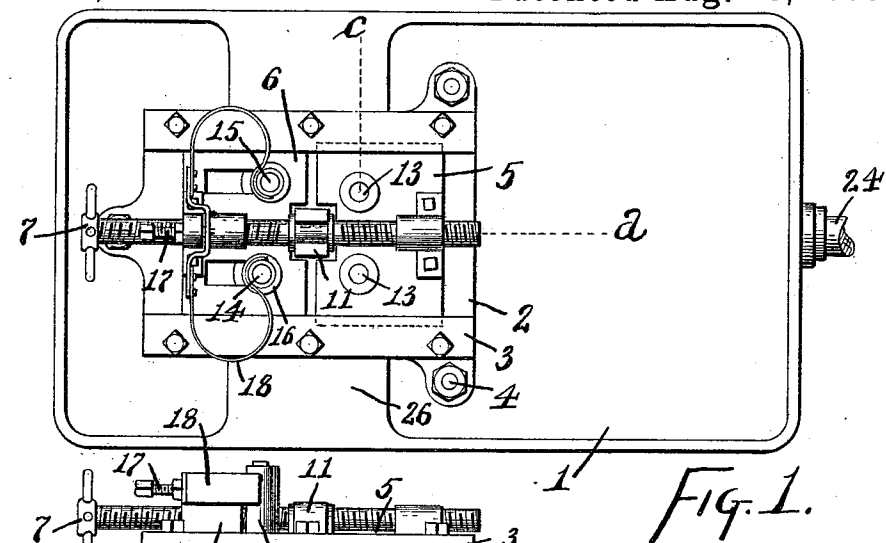


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BOTTLE WASHER.

No. 544,308.

Patented Aug. 13, 1895.



Witnesses:

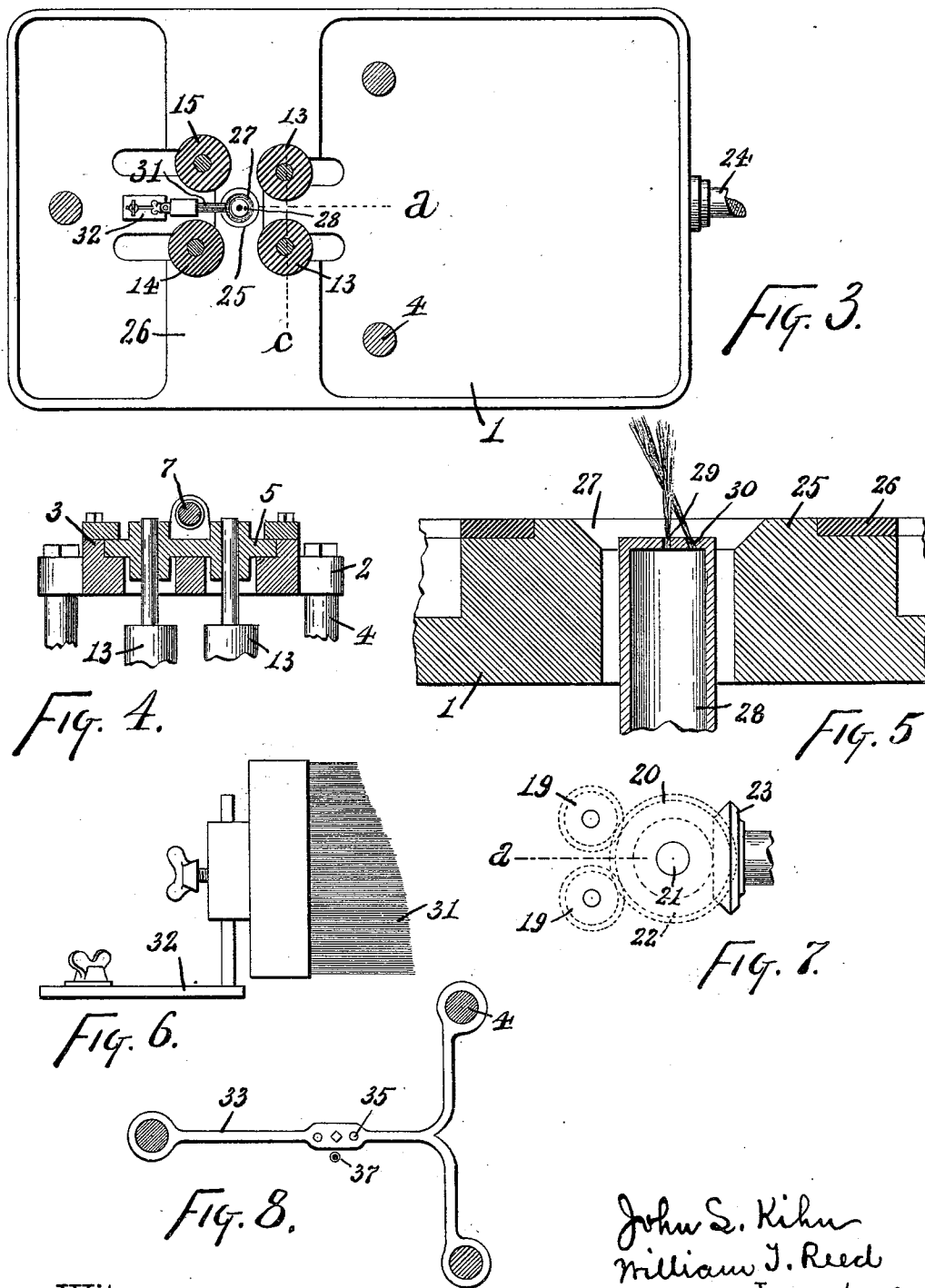
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UNITED STATES PATENT OFFICE.

JOHN L. KIHN AND WILLIAM T. REED, OF HAMILTON, OHIO.

BOTTLE-WASHER.

SPECIFICATION forming part of Letters Patent No. 544,308, dated August 13, 1895.

Application filed April 13, 1895. Serial No. 545,566. (No model.)

To all whom it may concern:

Be it known that we, JOHN L. KIHN and WILLIAM T. REED, of Hamilton, Butler county, Ohio, have invented certain new and useful Improvements in Bottle-Cleaning Machines, of which the following is a specification.

This invention pertains to improvements in machines for rapidly cleaning the inside and outside of bottles, such as wine and beer bottles and the like. The bottle stands upright, neck down, in the grasp of four rotating vertical rubber-covered rolls, which turn the bottle rapidly, streams of water jetting up inside of the bottle and a stream of water going from above the bottle, while the exterior of the neck of the bottle is acted upon by a stationary brush, a second stationary brush at the same time acting upon the bottom of the bottle, which is uppermost, owing to the fact that the bottle is inverted. The rolls are spread apart by means of screws to receive and discharge bottles, and the rolls grasp the bottle by spring-pressure, and adjustments are provided to suit various sizes of bottles.

Our invention will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a plan of a machine exemplifying our invention; Fig. 2, a front elevation of the same, certain portions below the table appearing in vertical section in the plane of line *a* of Fig. 1; Fig. 3, a horizontal section of the machine in the plane of line *b* of Fig. 2; Fig. 4, a vertical transverse section in the plane of line *c* of Figs. 1, 2, and 3; Fig. 5, a vertical longitudinal section, enlarged, of the central portion of the table in the plane of line *a* of Figs. 1 and 3; Fig. 6, a front elevation, enlarged, of the neck-brush and its holder; Fig. 7, a plan of the gearing by which motion is transmitted from the driving-shaft to the driven rolls; and Fig. 8 a plan of the holder of the bottom brush, the supporting-columns appearing in horizontal section in the plane of line *b* of Fig. 2.

In the drawings, 1 indicates a table properly supported by legs at convenient working height, its sides being dished and its mid-portion being covered with rubber to prevent

damage to bottles; 2, a head-plate parallel with and some distance above the table, far enough to permit of the proper reception of the tallest bottles to be dealt with; 3, horizontal guideways in the head-plate and in the table; 4, supporting-columns rigidly uniting the table and head-plate; 5, a bearing-plate sliding in the guideways of the head-plate; 6, a much similar plate also sliding in the head-plate; 7, a right-and-left-hand screw, threaded into nuts on the plates 5 and 6 and serving to adjust those plates to and from each other in the head-plate; 8, a bearing-plate sliding in the guideway of the table; 9, the second bearing-plate sliding in the table; 10, the screw for moving the bearing-plates of the table; 11, a bearing on the head-plate 2 for the screw 7, holding that screw against endwise motion; 12, a similar bearing at the table for screw 10; 13, a pair of rolls having rubber jackets and journaled at their upper ends in sliding plate 5 and at their lower ends in sliding plate 8, the table and the head-plate 2 being slotted for the shanks of the rolls, so that the plates 5 and 8 may move these rolls to the right or left; 14, a third roll carried in bearing-plates 6 and 9; 15, a fourth roll carried in plates 6 and 9, the four rolls thus forming a group or cluster within which a bottle may be grasped; 16, bearings for the rolls 14 and 15, these bearings sliding in slots in the plates 6 and 9, so that the rolls carried by those plates may move to and from the rolls 13 independent of the movement of any of the bearing-plates; 17, set-screws carried by lugs on bearing-plates 6 and 9, these screws being provided with lock-nuts for securing them after adjustment; 18, bow-springs with their ends engaging the bearings 16 and with their centers engaged by screws 17, these springs tending to press rolls 14 and 15 toward rolls 13, regardless of the adjustment of the bearing-plates, and the set-screws serving to adjust the pressure with which the springs act; 19, spur-gears at the lower ends of rolls 13; 20, a spur-gear engaging the gears 19; 21, the shaft of spur-gear 20 journaled in bearing-plate 8; 22, a bevel-gear fast on this shaft; 23, a bevel-gear meshing with gear 22 and having its hub journaled and confined endwise in a bearing formed in bearing-plate 8; 24, the driving-shaft of the machine jour-

naled below the table and splined into the hub of gear 23, so that the movement of plate 8 and the parts carried by it is not interfered with, this driving-shaft to have rotary motion transmitted to it by any suitable means; 25, that top portion of the table at the central point in the cluster of rolls, a vertical opening being provided in the table at this point; 26, that rubber-covered portion of the table to the front and rear of the cluster of rolls; 27, a conical seat at the top of the opening referred to adapted to support the tip of the neck of a bottle inverted upon it; 28, a spray-pipe projecting up through the central opening in the table to near the top of the table, this pipe to convey washing-water under pressure; 29, a jet-hole in the top of pipe 28, spouting directly upward, so that when a bottle is inverted upon seat 27 the water jetted from hole 29 will go directly upward into and against the bottom of the bottle; 30, a second jet-hole in the top of pipe 28, to one side of hole 29, and at such angle that the jet spouting from it will pass up angularly and impinge against the inner surface of the neck of the bottle, this angular jet passing behind the vertical jet, so as to clear it at the intersection of the two jets; 31, a vertical brush supported by the table and presenting the ends of its bristles to the outer surface of the neck of the bottle, the brush being given a dimension and contour suited to the shape of the bottles in hand; 32, the holder for this brush, consisting of a slotted base-piece clamped by a screw to the table, and of a post to which is clamped a socket on the brush by means of a screw, the arrangement being such that the brush can be adjusted to and from the bottle and raised and lowered and also turned upon the post; 33, a support clamped to the posts 4 and adjustable up and down those posts to suit the heights of the bottles, this support reaching inwardly between the rolls for the support of a brush within the cluster of rolls; 34, a brush supported by the holder 33 within the cluster of rolls at such height as to properly engage the bottom of the inverted bottle; 35, guide-stems on the brush 34 adapted to slide up and down a limited distance through holder 33; 36, a spring interposed between brush 34 and its holder 33 and tending to press the brush downwardly, a set-screw above the spring permitting the tension of the spring to be adjusted; 37, a jet-pipe delivering water upon the bottom of the inverted bottle alongside brush 34, and 38, a hose conducting water to this jet-pipe.

Attention is called to the fact, referring to Fig. 3, that roll 15 is to the rear of the vertical plane of the rear one of rolls 13, and that it is also inwardly beyond the plane of roll 14, the consequence being that when the rolls are open the distance between the front rolls will be greater than the distance between the rear rolls.

The rolls being in motion and the machine

ready for use, with the brushes adjusted to suit the bottles to be dealt with, screws 7 and 10 are turned to open the rolls sufficiently to permit an inverted bottle to be passed between the front rolls and set with the tip of its neck in seat 27. The rolls are then closed upon the bottle, which becomes grasped and rapidly rotated by the rolls, whose peripheries grip and turn and polish the bottle, springs 18 rendering the grip of the rolls elastic independent of the elasticity of the roll-jackets. While the bottle is revolving it is flooded by water from jet-pipe 37, and the bottom of the inverted bottle is cleaned by brush 34 working elastically against the bottle and in the water supplied by jet 37. At the same time the interior of the bottle is washed by the jets from pipe 28 and the neck is cleaned by brush 31. When the bottle is clean the rolls are to be opened sufficiently to permit the bottle to leave the rolls rearwardly and be followed by a new bottle to be cleaned. Brush 31 is to be adjusted to suit the neck of the bottle, and holder 33 is to be adjusted to bring brush 34 into position to suit the height of the bottle.

We claim as our invention—

1. In a bottle cleaning machine, the combination, substantially as set forth, of a support for an inverted bottle, a cluster of elastic vertical rolls in position to surround and engage the bottle, means for supporting said rolls and for adjusting the distance between them, a driving-shaft arranged to transmit motion to said rolls, and jet pipes for supplying water to a bottle engaged by the rolls.

2. In a bottle cleaning machine, the combination, substantially as set forth, of a table to support an inverted bottle, a head-plate supported above the same, bearing-plates sliding in guide-ways in said table and head-plate, a cluster of elastic vertical rolls journaled in said bearing-plates, means for adjusting said bearing-plates to move the rolls, a driving-shaft arranged to transmit motion to the rolls, and jet pipes for supplying water to a bottle engaged by the rolls.

3. In a bottle cleaning machine, the combination, substantially as set forth, of a table to support an inverted bottle, a head-plate supported above the table, bearing-plates sliding in guide-ways in the table and head-plate, a cluster of elastic vertical rolls journaled in said bearing-plates, screws for adjusting the bearing-plates and rolls, springs urging two of the rolls toward the other rolls, a shaft arranged to transmit motion to the rolls, and jet pipes for supplying water to a bottle engaged by the rolls.

4. In a bottle cleaning machine, the combination, substantially as set forth, of a support for an inverted bottle, a cluster of vertical elastic rolls arranged to engage and give motion to the bottle, a supporting framework for said rolls stationary brushes attached to said framework to engage the bottle, and water jets to supply the bottle with water.

5. In a bottle cleaning machine, the combi-

nation, substantially as set forth, of a table having an opening and a beveled seat, a cluster of elastic vertical rolls arranged around said seat, a supporting framework for said rolls a shaft arranged to transmit motion to said rolls, and a jet pipe spouting upwardly through said seat.

6. In a bottle cleaning machine, the combination, substantially as set forth, of a table, a head-plate supported above the same, a cluster of vertical elastic rolls, a shaft arranged to transmit motion to the rolls, jet pipes for the supply of cleansing water, and a brush supported adjustably by said table and presenting itself within the cluster of rolls.

7. In a bottle cleaning machine, the combination, substantially as set forth, of a table, a head-plate above the same, a cluster of vertical elastic rolls, a shaft arranged to transmit motion to the rolls, jet pipe for the supply of cleansing water, an adjustable support extending to within the cluster of rolls between the table and head-plate, and a downwardly presenting brush elastically held by such support.

8. In a bottle cleaning machine, the combination, substantially as set forth, of a table, posts rising therefrom, a head-plate supported by said posts, bearing-plates sliding in the head-plate and table, screws for adjusting the bearing-plates, a cluster of vertical elas-

tic rolls journaled in the bearing-plates, a shaft arranged to transmit motion to the rolls, brushes presenting within the cluster of rolls, and jet pipes for the supply of cleansing water.

9. In a bottle cleaning machine, the combination, substantially as set forth, of a table, posts rising therefrom, a head-plate supported by the posts, bearing-plates sliding in the head-plate and table, screws for adjusting the bearing-plates, a cluster of vertical elastic rolls journaled in the bearing-plates, a shaft arranged to transmit motion to the rolls, a support vertically adjustable on said posts and reaching to within the cluster of rolls, and a downwardly presenting brush carried by said support within the cluster of rolls.

10. In a bottle cleaning machine, the combination, substantially as set forth, of a pair of elastic vertical rolls, a third roll parallel therewith, a fourth roll parallel therewith and closer than the third roll to the vertical plane of said pair of rolls, a shaft arranged to transmit motion to said rolls, supports for the rolls a support for an inverted bottle, and jet pipes to supply cleansing water.

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