

2 Sheets—Sheet 1.

Patented Dec. 26, 1893.

Fig. 1.

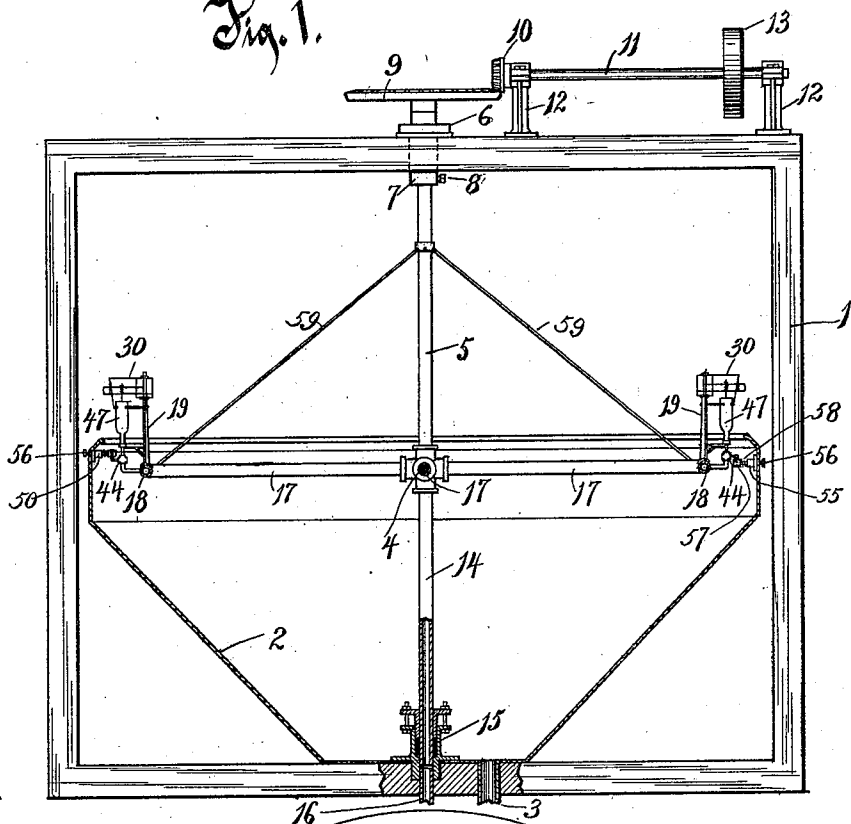
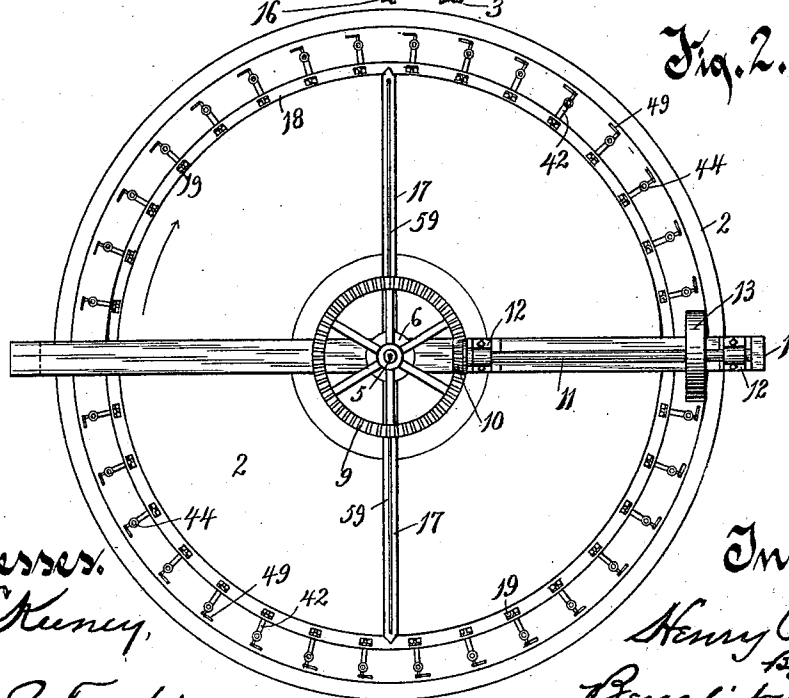


Fig. 2.



Fitnesses.

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(No Model.)

2 Sheets—Sheet 2

H. REUTER.
MACHINE FOR WASHING BOTTLES.

No. 511,361.

Patented Dec. 26, 1893.

Fig. 3.

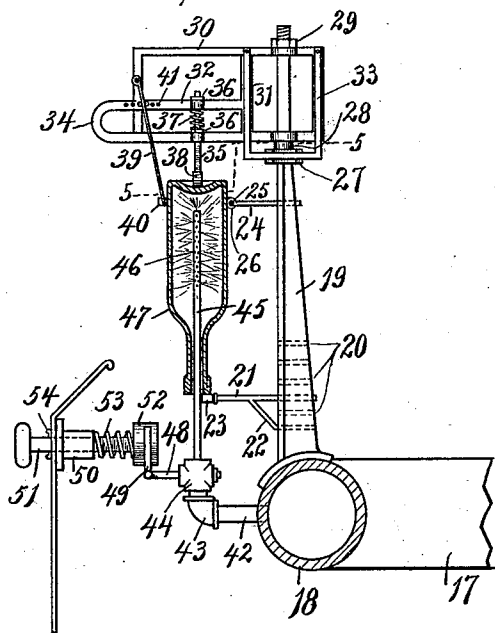


Fig. 4.

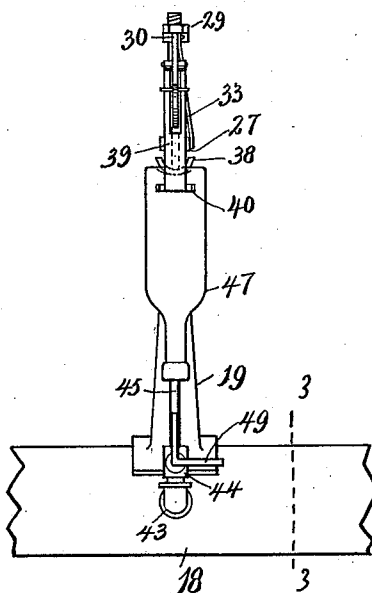


Fig. 5.

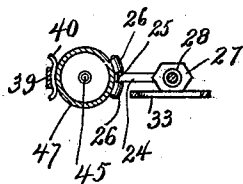


Fig. 6.

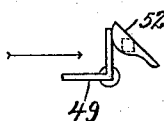


Fig. 7.



Witnesses.

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UNITED STATES PATENT OFFICE.

HENRY REUTER, OF RICE LAKE, WISCONSIN.

MACHINE FOR WASHING BOTTLES.

SPECIFICATION forming part of Letters Patent No. 511,361, dated December 26, 1893.

Application filed May 15, 1893. Serial No. 474,189. (No model.)

To all whom it may concern:

Be it known that I, HENRY REUTER, of Rice Lake, in the county of Barron and State of Wisconsin, have invented a new and useful Improvement in Machines for Washing Bottles, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention has relation to improvements in machines for washing bottles, preferably by the application of hydraulic pressure.

The object is to provide a rotary machine capable of forcing the water into the bottle during a partial rotation, and shutting off the supply of water, to permit the bottle to drain, during the completion of the revolution.

With the above primary object, and others, in view the invention consists in the improved construction as hereinafter more fully set forth.

In the accompanying drawings, Figure 1, is a side elevation of the device, with the annular pipe and drip tub or basin in vertical section, certain other parts being broken away for clearer illustration. Fig. 2, is a plan view. Fig. 3, is a vertical section through the line 3—3 of Fig. 4, also showing the supported bottle in section. Fig. 4, is a view looking at right angles to Fig. 3. Fig. 5, is a horizontal section on the line 5—5 of Fig. 3, and Figs. 6 and 7 are details of the valve opening and valve closing mechanisms, respectively.

Like numerals of reference denote like parts throughout the several views.

Referring to the drawings, the numeral 1 indicates the frame of the machine. Supported upon the bottom of this frame is a drip tub or basin 2, provided with a suitable outlet opening 3, and having its upper circumferential edge flaring inwardly, to prevent water from passing over the same.

The numeral 4 indicates a coupling provided with six ways, four of which extending laterally, and two vertically in opposite directions. Connected to the upward-extending way, is a solid shaft 5, which has its bearing in the upper cross-beam of the frame. A large collar 6 is carried by the shaft, said collar adapted to rest on the top of the cross beam, and thereby support the weight of the machine. Bearing against the under side of

the cross beam is a second collar 7, which may be made adjustable by means of a set-screw 8. The upper extremity of the shaft carries a bevel gear 9, which is adapted to mesh with a beveled pinion 10, carried upon the inner end of a horizontal shaft 11, said shaft mounted in bearings 12, 12, and carrying intermediate said bearings a pulley wheel 13, which is driven from any suitable source of power. Connected to the downward-extending way of the coupling 4 is a pipe 14, which enters the stuffing-box 15, secured to the lower cross beam of the frame, and is free to revolve with the entire machine. Pipe 14 communicates with a second pipe 16 also entering a stuffing box, and through which the water is fed by hydraulic pressure from a suitable source of supply. The stuffing box is packed as shown in Fig. 1, to prevent the water from escaping at the point where pipe 14 enters the stuffing box. Connected to the lateral ways of the coupling 4 is a series of radially extending pipes 17, which at their outer ends connect with a circular pipe 18. Secured to and extending up from the circular pipe, preferably equi-distances apart, is a series of standards 19. Near the base of each standard is provided a series of apertures 20 to receive a supporting arm 21, said supporting arm provided with a branching arm 22, the end of which is adapted to enter the standard in order to prevent the support from turning. The outer end of the support is preferably supplied with round rubber 23 to avoid any danger of damage to the bottle. By providing the standard 19 with a series of apertures, the arm 21 can be adjusted, so as to accommodate itself to bottles of different lengths. Secured in an aperture in the standard, above the supporting arm 21, is a second arm 24, which carries at its outer end a curved extension 25, receiving thereon tubular rubber pieces 26. This curved portion is made to conform to the contour of the bottle, and bears against one side of the same, near the bottom thereof. Each standard is formed medially, nearest the upper end, with an enlargement 27, preferably of hexagonal shape. Above this enlargement is placed a collar 28. From the hexagonal enlargement to the upper extremity, the standard is made round in form, and said upper extremity is threaded to receive a nut 29.

The numeral 30 indicates a rectangular swinging frame, the top and bottom bars thereof provided with apertures through which the rounded portion of the standard passes, said frame adapted to turn upon the standard, and being confined between the collars 28 and the nut 29. This frame is provided with an intermediate vertical bar 31, and a horizontal bar 32. A substantially U-shaped spring 33 is secured at its upper ends to the vertical bar 31, and the adjacent side bar of the frame, the lower portion of said spring extending below the frame and bearing against one of the plain faces of the hexagonal enlargement, and thereby holding the frame against accidental turning. The frame is also provided with a laterally-extending handle 34, by means of which it may be swung upon its pivot.

The numeral 35 indicates an arm which passes through bearings formed in the horizontal bar 32 and in the bottom bar of the rectangular frame, collars 36, 36 resting upon the tops of said bottom and horizontal bars, respectively, and serving to retain the arm in position. Encircling the arm, and confined between the bottom bar and the intermediate horizontal bar, is a spring 37. The lower end of arm 35 is formed with a curved extension 38, which is adapted to bear upon the bottom of the bottle yieldingly by the action of the spring.

The numeral 39 indicates a spring plate, which is provided with a bifurcated upper end, as clearly shown in Fig. 4, and with an extension 40 at its lower end, said extension having a medial outward curve and terminal inward curves, as clearly shown in Fig. 5. The upper furcated end of spring plate 39 straddles the rectangular frame 30, its extremities being secured to the end piece of said frame. The horizontal bar 32 of the frame is provided with a series of apertures 41, into which pins may be inserted, the furcate arms of the spring plate 39 fitting between these pins. In this way, the tension of the spring plate may be readily adjusted.

Extending out from the circular pipe 18 is a series of short pipes 42, which are coupled by elbow joints 43 to valve-chambers 44. These pipes, and connected parts, correspond in number to the standards 19, and extend out from the circular pipe at right angles to said standards. Extending up from each valve chamber is a pipe 45, provided in its upper end with a series of spraying apertures 46. The bottle 47 fits over this pipe, as clearly shown in Fig. 3, and the outer end of each supporting arm 21 extends in close enough proximity to this pipe to afford a support for the upper end of the bottle when inverted over the spraying pipe.

The valve, not shown, within each valve chamber is controlled by means of a valve stem 48, formed or provided upon its outer end with a bell-crank 49.

On the left of Fig. 1 is arranged the valve opening mechanism, and on the right, at a

diametrically opposite point, is arranged the valve closing mechanism, both of which will now be described in the order named.

The numeral 50 indicates a rectangular bearing box, formed at its outer end into a rectangular flange, which is adapted to be secured to the inner side of the drip tub or basin, near the upper edge thereof. Passing through the rectangular opening of this bearing box is the rectangular portion of a bolt 51, the inner end thereof formed with a cam-head 52, the lateral edge of this head which faces the bell crank 49 being formed into a cam surface of the contour clearly shown in Fig. 6. Between the cam head and the inner end of the boxing 50 the bolt is preferably made rounded, and carries between these parts a coiled spring 53. A key 54 passes through the bolt upon the outer side of the basin.

The normal position of the bell-crank, when the valve is closed, and before acted upon by the cam head 52, is illustrated in Fig. 6. In the revolution of the circular pipe 18, the bell crank, in the position shown in Fig. 6, will come in contact with the cam head 52, passing beneath the same, and be thereby turned to the position shown in Fig. 7, opening the valve.

The valve closing mechanism on the right of Fig. 1 is exactly the same as the valve opening mechanism, excepting that the position of the cam head is somewhat changed, so as to bring the cam surface to act upon the depending arm of the bell crank, and thus passing above the same. This is attained by lowering the cam head and reversing the position of the cam surface. This valve closing mechanism consists of a bearing box 55, a bolt 56, provided with a cam head 57, and a spring 58 encircling the bolt.

The numeral 59 indicates a series of braces which extend from the central shaft down to the revolving pipe.

In the operation of the device, the water is pumped into the machine, and distributed through the nozzles into the bottles, under pressure of from sixty-five to eighty pounds. The machine is designed, preferably, to make about one revolution per minute. The operator places the bottles over the nozzles, and the frame 30 is swung around into position, so that arm 35, and spring plate 39 will engage the bottle in the manner shown in Fig. 3. The end extensions of these parts are of such shape that they will readily slip into position. The machine revolves to the left, and the first contact is made with the valve opening mechanism, which allows water to be forced into the bottle, the spraying pipes in all cases being of a size to allow the water to escape freely from the neck of the bottle. The water is thus forced into the bottle until the machine has made about half a revolution, when the bell crank comes into contact with the valve closing mechanism. After the valve is closed the bottle is allowed to drain in making the last half revolution, after which it is removed and

ready for use, and another bottle substituted therefor.

It will be noticed that the coiled springs 53 and 58 hold the bolts 51 and 56 in position to be engaged by the bell crank. Should it be desired that the valve be left closed or opened, a pull may be given to the proper bolt for accomplishing either, so as to bring the cam head out of alignment with the bell crank.

While I have shown a peculiar form for the cam surfaces of the heads 52 and 57, yet I do not wish to be understood as limiting myself to that particular conformation, inasmuch as many other forms may be used which will effectually operate the bell cranks. The form adopted by me, however, reduces the strain on the bell cranks to the minimum, and for that reason perhaps is preferable. It is also apparent that the arms 21 projecting from the standards 19 are not absolutely essential for the proper support of the bottles, inasmuch as said bottles can be slipped down over the spraying pipes 45, until the upper ends of said spraying pipes contact with the bottoms of the bottles, and thereby support the same. When the arms 21 are omitted, the side supporting arms 24 and 39 alone may be used; or said supporting arms may be used in connection with the arms 35 bearing upon the bottoms of the bottles.

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

1. In a machine for washing bottles, the combination, of a pipe for receiving water, means for supplying water thereto, pipes communicating with the water receiving pipe for spraying the bottles, standards projecting from the water receiving pipe, an arm extending from each standard and adapted to engage the mouth of the bottle, and support said bottle in its inverted position, an arm extending from each standard adapted to bear against the side of the bottle, a frame swinging on each standard, a spring plate carried by the frame and bearing against the side of the bottle, and a vertical spring-actuated arm carried by the frame, and bearing against the bottom of the bottle, substantially as set forth.

2. In a machine for washing bottles, the combination, of a coupling having a plurality of ways extending from the same, a shaft connected to one of said ways, means for revolving the shaft, a water supply pipe connected to the opposite way, pipes radiating from the other ways, a circular pipe with which the radial pipes communicate, and spraying pipes

extending from the circular pipe, and over which the bottles are adapted to be supported, substantially as set forth.

3. In a machine for washing bottles, the combination, of a revolving pipe, spraying pipes extending from the revolving pipe, valves for controlling said spraying pipes or nozzles, the stems of said valves terminating at their outer ends in bell cranks, a contact head adapted to have the bell crank pass under the same as the pipe revolves, and thereby open the valve, and a contact head at an opposite point, adapted to have the bell crank pass over the same, as the pipe revolves, thereby closing the valve, substantially as set forth.

4. In a machine for washing bottles, the combination, of a water receiving pipe, means for supplying water thereto, spraying pipes communicating with the water receiving pipe, standards projecting from the water receiving pipe, and an adjustable arm extending from each standard adapted to support a bottle arranged over the spraying pipe, substantially as set forth.

5. In a machine for washing bottles, the combination, of a pipe for receiving water, means for supplying water thereto, pipes communicating with the water receiving pipe for spraying the bottles, standards projecting from the water receiving pipe, an arm extending from each standard and adapted to bear against the side of the bottle supported over the spraying device, and a frame swinging on each standard, said frame carrying a spring plate or arm adapted to bear upon the opposite side of the bottle, substantially as set forth.

6. In a machine for washing bottles, the combination of a pipe for receiving water, means for supplying water thereto, pipes communicating with the water receiving pipe for spraying the bottles, standards projecting from the water receiving pipe, a frame swinging on each standard, attachments secured to said frame for holding the bottle in position over the spraying pipe, and a spring secured to the swinging frame and projecting below the same to bear against the standard, and hold the frame in adjusted position, substantially as set forth.

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

HENRY REUTER.

Witnesses:

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A. B. BAILEY.