

No. 772,796.

PATENTED OCT. 18. 1904.

A. C. FORD & R. T. MOSELEY.

BOTTLE WASHER.

APPLICATION FILED JUNE 11, 1904.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 2.

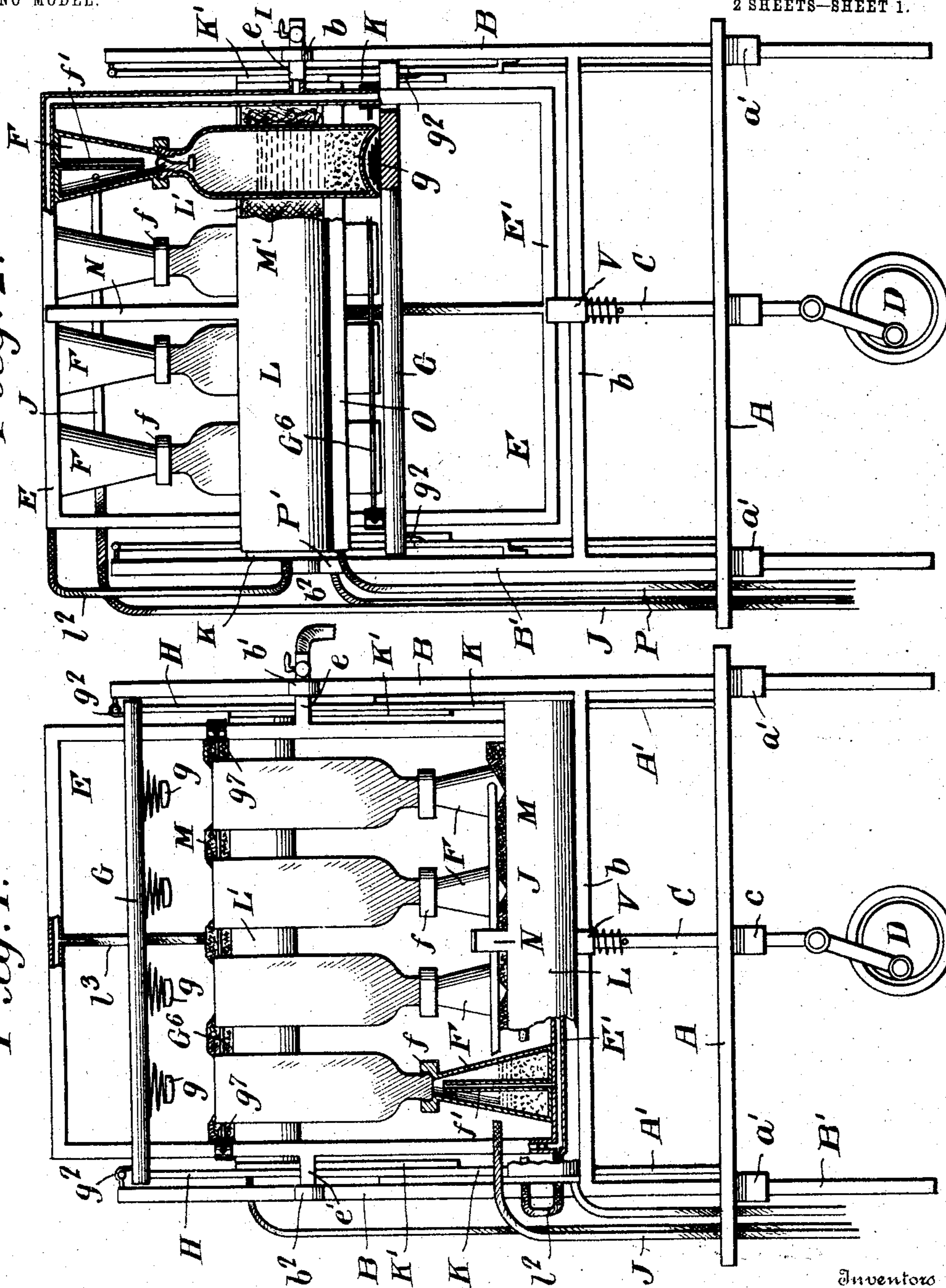
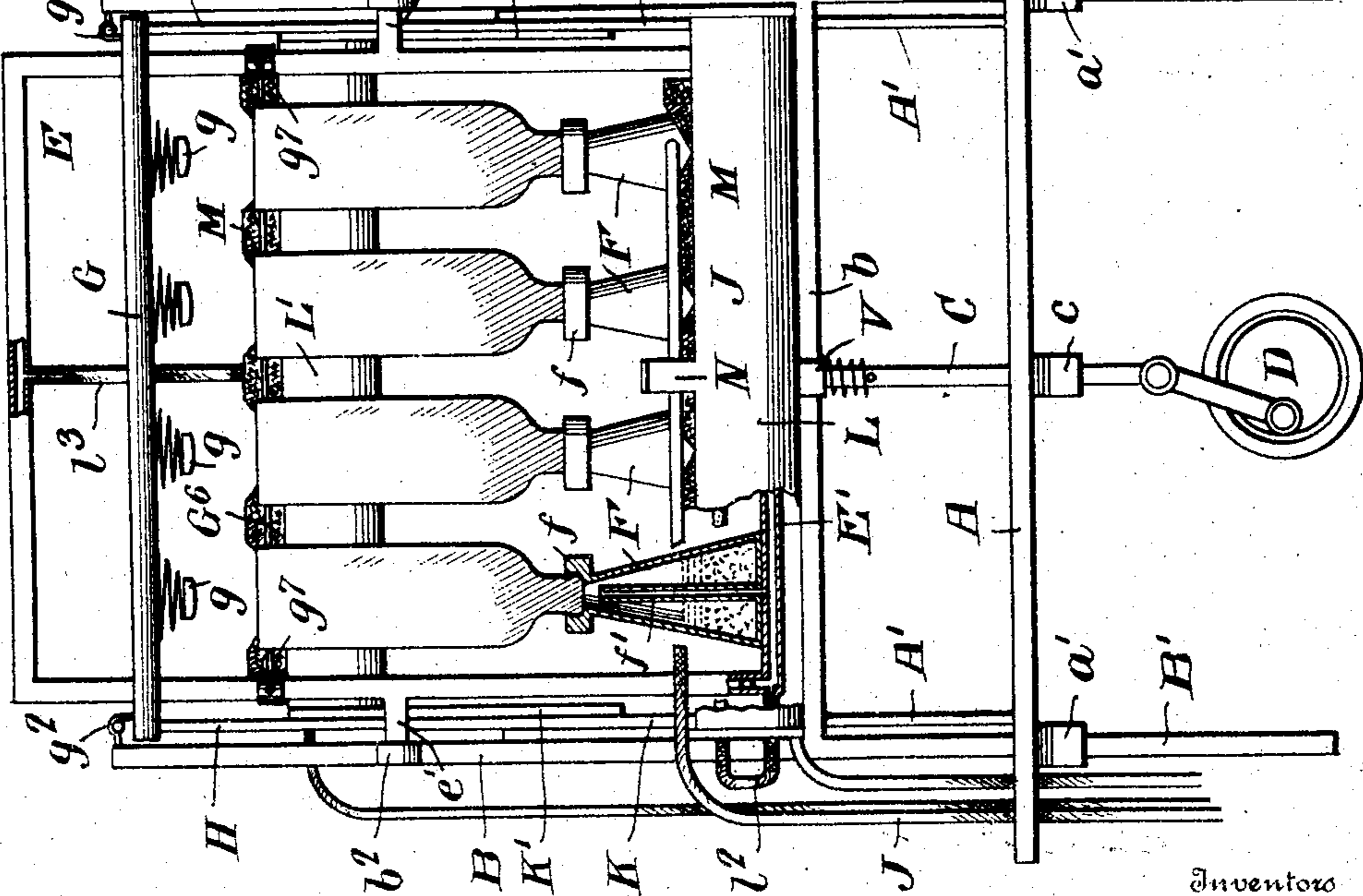


Fig. 1.



Witnesses

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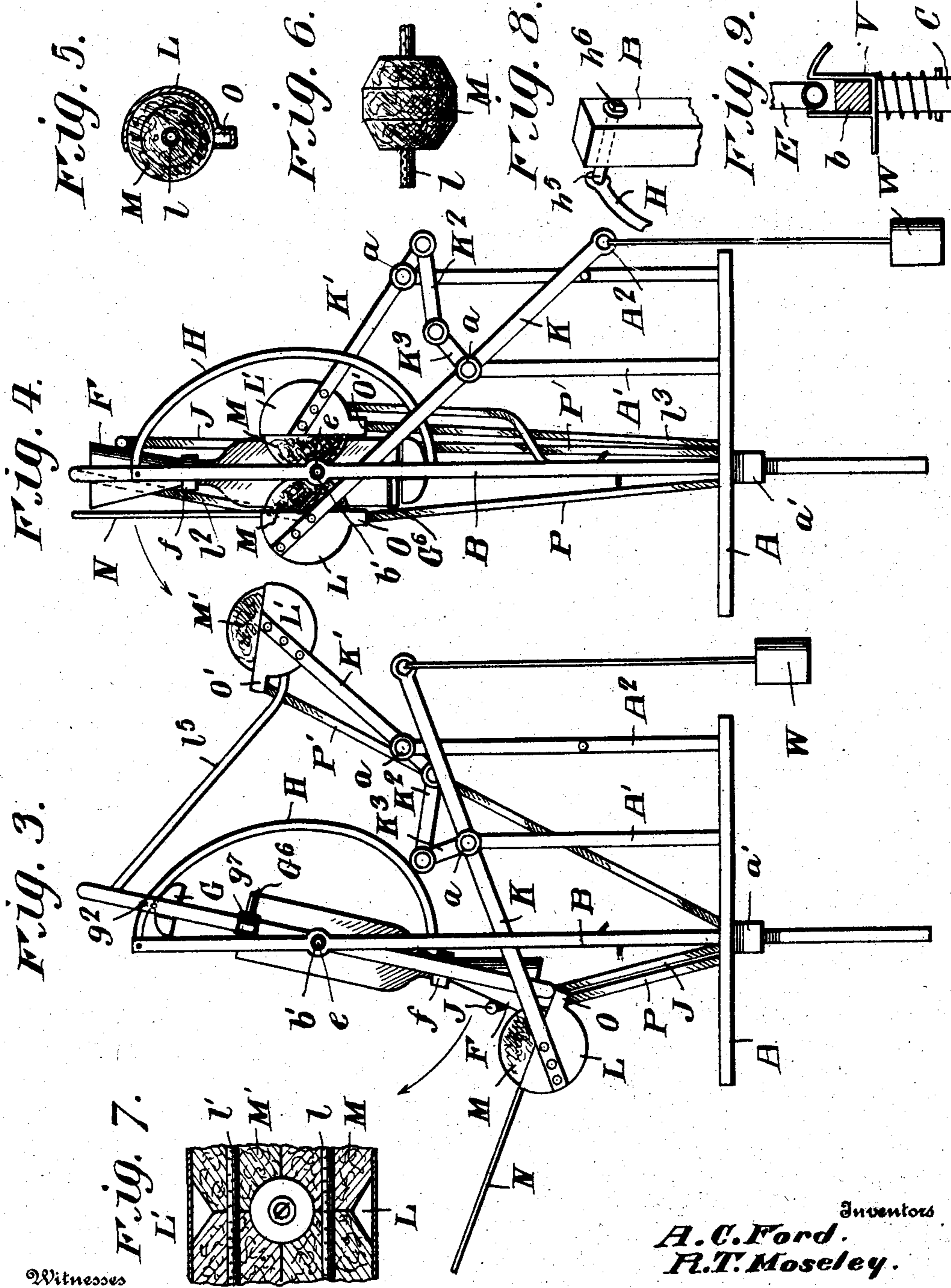
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# UNITED STATES PATENT OFFICE.

AMBROSE C. FORD AND RANDOLPH T. MOSELEY, OF CLIFTONFORGE,  
VIRGINIA.

## BOTTLE-WASHER.

SPECIFICATION forming part of Letters Patent No. 772,796, dated October 18, 1904.

Application filed June 11, 1904. Serial No. 212,220. (No model.)

*To all whom it may concern:*

Be it known that we, AMBROSE CARRINGTON FORD and RANDOLPH TALCOTT MOSELEY, citizens of the United States, residing at Clifton-  
5 forge, in the county of Alleghany and State of Virginia, have invented new and useful Improvements in Bottle-Washers, of which the following is a specification.

This invention relates to bottle-washing  
10 machines of that type in which a vertically-reciprocating frame carrying cups or receptacles for holding the cleaning medium, such as shot, support the bottles to be washed. The bottles are placed in the frame mouth  
15 downward on the cups and the frame reversed, which movement automatically clamps the bottles in place and turns them to an upright position, the shot in the cups falling by gravity into the bottles. The same movement of  
20 the frame also brings into position on each side of the bottles groups of sponges or other cleaning media, which wash the exterior of the bottles at the same time the interior is being cleaned. Water for washing is carried  
25 through one of the pivots of the reciprocating frame, which latter is made hollow, and from thence by means of small tubes or nozzles to the interior of the bottles and through flexible tubes to the sponges.

30 In the accompanying drawings, Figure 1 represents a front elevation of our improved bottle-washing machine in position to receive the bottles to be washed, a portion of the machine being broken away and parts being  
35 shown in sections. Fig. 2 is a similar view showing the washing mechanism in reversed position. Figs. 3 and 4 are end elevations of our machine in the positions indicated in Figs. 1 and 2, respectively. Figs. 5, 6, and 7 illustrate details of the cleaning-sponges. Fig. 8  
40 is a detail view illustrating the attachment of one of the cam-guides to a guide-rod. Fig. 9 is a detail view of the latch for locking the bottle-frame against movement when in position.  
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Similar letters of reference indicate similar parts in the several figures.

A indicates a fixed portion of the machine—

such as a table, shelf, or other support—to the upper surface of which and at each side there-  
50 of are fixed two uprights or standards  $A' A^2$ , each standard having a bearing  $a$  at its top. Beneath the table  $A$ , at each side of the machine, is secured a slide-bearing  $a'$ , through which bearings two guide-rods  $B B'$  are adapted  
55 to reciprocate in a vertical direction. The guide-rods  $B B'$  are connected by a cross-brace  $b$ , from which a rod  $C$  extends downwardly below the table and is there attached to a crank  $D$  or other suitable mechanism for  
60 reciprocating it.

A rectangular reciprocating frame  $E$ , constructed preferably of metal tubes, is provided with horizontal pivots  $e e'$ , (the pivot  $e$  being  
65 hollow and connected to the tubular reciprocating frame  $E$ ,) which are journaled in bearings  $b' b^2$  near the upper ends of the guide-rods  $B B'$ . Through the hollow pivot  $e$  water for washing the bottles is conducted to the tubes forming the frame  $E$ , and from thence  
70 it is distributed, as hereinafter described. To one of the horizontal tubes  $E'$  of the frame  $E$  is secured a series of cups or receptacles  $F$ , conical in form, their bases being attached to the frame  $E$ , while their smaller ends, extend-  
75 ing toward the pivotal center of the reciprocating frame, are provided with collars  $f$ , each collar opening into its cup  $F$  and so shaped as to closely fit the mouth of a bottle when the latter is placed therein. Extending upwardly  
80 through each cup or receptacle  $F$  to a point near the collar  $f$  is a small tube or nozzle  $f'$ , the same being connected to the frame-tube  $E'$ . Within each receptacle  $F$  is placed a quantity of shot, which when the reciprocating frame holding the bottles to be washed is  
85 reversed enter said bottles and, with water remaining in the cups  $F$ , cleans the interior of said bottles.

After placing a bottle on each cup  $F$  it is  
90 necessary to clamp or otherwise hold the bottles in place before the reciprocating frame is reversed. For this purpose we provide a horizontal bar  $G$ , adapted to slide on the vertical tubular sides of the reciprocating frame  
95  $E$ , which bar  $G$  carries spring-actuated pads

or blocks  $g$ , arranged to bear on the bottoms of the bottles and press their mouths into close contact with the collars  $f$ . In order to support the bottoms of the bottles until the spring-bar  $G$  engages them, a horizontal bottle-rack  $G^6$ , having socketed ends, is mounted on the reciprocating frame  $E$ . The position of the bottle-rack  $G^6$  on the frame  $E$  may be changed when necessary to accommodate it to different sizes of bottles. This change is readily effected by loosening the screw-bolts  $g^7$ , moving the bottle-rack to the position desired, and again tightening the bolts. It has been found that by placing the rack  $G^6$  about one-quarter of an inch from the bottoms of the bottles successful results are obtained.

Secured to each guide-rod  $B$  and  $B'$  is a curved or cam-shaped guide  $H$ . The inner surface of each curved guide  $H$  has its upper part eccentric to and its lower part concentric with the pivotal axis of the reciprocating frame  $E$ . As thus formed the bar  $G$ , the ends of which straddle the sides of the frame  $E$  and bear against the cam-shaped surfaces of the guides  $H$ , is caused to move toward the bottles as the reciprocating frame  $E$  is turned on its pivots until said bottles are firmly clamped between the cups  $F$  and the spring pads or blocks  $g$ . The horizontal bar  $G$  will by this time have reached the concentric portion of the guides  $H$ , so that further movement of the rectangular frame may be made without affecting the position of the bar  $G$ . Hooks or other connections  $g^2$  are used to attach the bar  $G$  to the cams  $H$ . It may be at times desirable to change the cams  $H$  for those of a different size or contour. To enable this to be quickly done, the cams are attached to the rods  $B'$   $B'$  by means of posts  $h^5$ , passing there-through and secured by nuts  $h^6$ . (See Fig. 8.) The tubular frame  $E$  is held in reversed position by means of a latch  $V$  on the vertical rod  $C$ , as may be seen by reference to Fig. 9.

The operation of the machine thus far described is as follows: A bottle being placed on each cup or receptacle  $F$ , with its mouth downward, as clearly shown in Figs. 1 and 3, the reciprocating frame is turned on its axis to the position indicated in Figs. 2 and 4. This movement will cause the bar  $G$  to clamp the bottles in place and bring them into an upright position, with the cups or receptacles in reversed position over the mouths of the bottles, shot and water during the movement passing from the receptacles into the bottles. The crank  $D$  is then rotated, reciprocating the frame  $E$  with sufficient rapidity to cause the shot and water to thoroughly scour the interior of the bottles. After the bottles are cleansed and the frame  $E$  has been returned to its first position the shot reenters the cups  $F$  and with them the dirty water. The stop-cock  $I$  is now turned to admit water to the tubular frame  $E$  and pour thence through the small tubes or nozzles  $f'$  to the

interior of the bottles, which are thoroughly rinsed, the water escaping into the cups  $F$  and out through the waste-pipe and flexible tube with which all the cups are connected. Sufficient water, however, remains in the cups to wash the next set of bottles. At the same time the interiors of the bottles are washed their exteriors are also cleansed by means now to be described.

Pivoted in the bearing  $a$  of each standard  $A'$  is a lever  $K$ , to the forward end of each of which is fastened one end of a horizontally-placed semicylindrical sponge-box  $L$ , closed at its bottom and open at its top. In the axis of the sponge-box  $L$  is a perforated tube  $l$ , on which are threaded a number of sponges  $M$  or their equivalent, shaped as shown in Figs. 5 and 6—that is to say, their ends beveled or of frusto-conical shape. The sponges  $M$  are of such length that when placed with their proximate faces touching, the beveled surfaces of adjacent sponges will be opposite a bottle. The perforated tube  $l$  is supplied with water from the rectangular frame  $E$  through a flexible tube  $l^2$ . The standards  $A^2$  have pivoted thereto levers  $K'$ , to which are attached a sponge-box  $L'$ , similar to that at  $L$  and containing a perforated tube  $l'$ , carrying sponges  $M'$ . From the levers  $K$ , at their pivotal points, short arms  $K^3$  project at right angles, which arms are connected to the levers  $K'$  by connecting-bars  $K^2$ , the arrangement being such that the movement of the levers  $K$  to and from the bottles will cause a corresponding movement of the levers  $K'$ . The perforated tube  $l'$  in the semicylindrical sponge-box  $L'$  receives water through a flexible tube  $l'^2$ .

The sponges  $M$   $M'$  are normally held out of operative position by means of the reciprocating frame  $E$ , which presses against the semicylindrical box  $L$ ; but when said frame  $E$  is reversed by turning it in the direction indicated by the arrow in Fig. 3 the sponge-boxes tend to approach the bottles as soon as the reciprocating frame passes from the sponge-box  $L$ , owing to the weight  $W$  on the rear end of the lever  $K$ . A too rapid or sudden movement of the sponge-boxes is prevented by a projecting arm  $N$  on the sponge-box  $L$ , which remains in contact with the reciprocating frame throughout its movement. When the reciprocating frame reaches its reversed position, the sponges  $M$  and  $M'$  will surround the bottles, (see Figs. 2, 4, and 7.) and as they are reciprocated their outer surfaces will be thoroughly cleaned, the sponges being stationary during the cleaning operation and supplied with water through the flexible tubes  $l^2$   $l'^2$ .

$O$   $O'$  are troughs or gutters attached to the sponge-boxes  $L$   $L'$ , into which the waste and dirty water collects and which is carried away by flexible tubes  $P$   $P'$ .

On the conclusion of the washing operation the reciprocating frame is reversed and, com-

ing in contact with the arm N, the sponge-boxes are carried away from the bottles and returned to their normal position. (Shown in Fig. 1.)

5 We do not restrict ourselves to the exact construction and arrangement herein set forth, it being obvious that changes in minor details not involving the exercise of invention may be made.

10 Having thus described our invention, we claim—

1. In a bottle-washing machine, the combination of a fixed support, vertically-movable guide-rods, a reciprocating frame pivoted on  
15 said movable guide-rods and adapted to be inverted, cups for holding a cleaning medium, means for supporting bottles to be washed on the mouths of said cups, a sliding bar mounted on said reciprocating frame, and cams fixed  
20 to the guide-rods for operating said sliding bar to clamp the bottles in position when the reciprocating frame is inverted.

2. In a bottle-washing machine, the combination of a fixed support, vertically-movable  
25 guide-rods, a tubular reciprocating frame horizontally pivoted on said guide-rods, cups attached to said tubular frame for holding the mouths of bottles to be washed and containing the cleaning medium, a rest for the bases  
30 of the bottles, a bar adapted to slide on said frame and clamp the bottles when said frame is inverted, and means for operating said sliding bar.

3. In a bottle-washing machine, vertically-movable guide-rods, a tubular frame pivoted  
35 on said rods and adapted to be inverted, cups on said tubular frame for holding the mouths of bottles and containing the cleaning medium, a rest for the bottoms of the bottles, means for clamping the bottles while said tubular frame  
40 is being inverted, and means for supplying water to said cups.

4. In a bottle-washing machine, the combination of a fixed support, vertically-movable  
45 guide-rods, and means for reciprocating them, a tubular frame, pivots on said tubular frame journaled in said guide-rods one of said pivots being hollow, cups attached to said tubular frame, means for supporting the bottles on  
50 said cup, tubes or nozzles connected to said tubular frame extending into the said cups, means for introducing water to the said tubular frame, and to said nozzles, and means for withdrawing a portion of the waste water  
55 from the cups, after the bottles have been washed.

5. In a bottle-washing machine, the combination of a fixed support, a horizontally-pivoted tubular frame, means for holding bottles  
60 in said pivoted tubular frame, means for introducing water and a cleaning medium into the bottles, sponges adapted to be pressed against the bottles, and means for reciprocating the tubular frame while the sponges remain fixed.

6. In a bottle-washing machine, the combination with a pivoted reciprocating frame, levers K, K' pivoted to fixed standards and operatively connected together, means for holding  
70 bottles in said reciprocating frame, sponge-boxes containing sponges attached to said levers, and means controlled by said pivoted reciprocating frame for closing the sponges around the bottles when said reciprocating frame is turned.

7. In a bottle-washing machine, the combination with a pivoted tubular reciprocating frame, levers K, K' pivoted to fixed standards and operatively connected together, means for holding  
80 bottles in said reciprocating frame, sponge-boxes attached to said levers, a perforated pipe extending longitudinally of each sponge-box, sponges on said perforated pipes and flexible tubes connecting the tubular reciprocating frame with the perforated pipes.

8. In a bottle-washing machine, the combination with a pivoted tubular reciprocating frame, levers K, K' pivoted to fixed standards and operatively connected together, means for holding  
90 bottles in said reciprocating frame, sponge-boxes attached to said levers, a perforated pipe extending longitudinally of each sponge-box, sponges on said perforated pipes, flexible tubes connecting the tubular reciprocating frame with the perforated pipes, and  
95 similar tubes connected to the sponge-boxes for carrying away the waste water.

9. In a bottle-washing machine, the combination of a fixed support, vertically-movable  
100 guide-rods and means for reciprocating said rods, a pivoted tubular frame, cups attached to said tubular frame for holding cleaning media, means for holding bottles on said cups, nozzles connected to the tubular frame and passing into said cups, a clamping-bar slidably  
105 mounted on said tubular frame, cams fixed to the guide-rods for operating said clamping-bar when the tubular frame is turned, levers K, K' pivoted to fixed standards and operatively connected together, sponge-boxes on said levers,  
110 perforated pipes in said sponge-boxes, sponges on said perforated pipes, flexible tubes for conducting water to said perforated tubes, and similar tubes for carrying away waste water from said cups and sponge-boxes.

10. In a bottle-washing machine, the combination with a main frame, of an oscillatory frame mounted thereon, means carried by said  
115 frame for holding the bottles, means for introducing auxiliary cleaning medium into the bottles, cleaning devices adapted to be moved into and out of contact with the outer surfaces of the bottles, and means for reciprocating the bottles while in contact with the exterior-cleaning devices.

11. In a bottle-washing machine, the combination with a main frame, and a reciprocating frame mounted thereon, of an oscillatory frame embodying means for holding the bottles, means for introducing water and auxili-  
125  
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ary cleaning medium into the bottles, cleaning devices adapted to operate on the outside of the bottles, lever-controlled mechanism associated with the outside-cleaning devices and  
5 controlled by the movement of the oscillatory frame, and means for imparting movement to the reciprocatory frame.

12. In a bottle-washing machine, a reciprocating frame adapted to be inverted, means on  
10 said frame for clamping bottles to be washed, and means for washing the exterior of bottles moved into operative position when the said reciprocating frame is inverted.

13. In a bottle-washing machine, a reciprocating frame adapted to be inverted, means on  
15 said frame for supporting bottles to be washed, a device for washing the exterior of bottles brought into operative position when said re-

ciprocating frame is inverted, and means for supplying water to said device. 20

14. In a bottle-washing machine, a reciprocating frame adapted to be inverted, means on said frame for supporting bottles to be washed, means for introducing cleaning media into the interior of the bottles, and means for cleaning  
25 the exterior of said bottles moved in operative position when the reciprocating frame is inverted.

In testimony whereof we affix our signatures in presence of two witnesses.

AMBROSE C. FORD.  
RANDOLPH T. MOSELEY.

Witnesses:

B. V. W. BOOTH,  
J. F. MANN.