(No Model.) 2 Sheets—Sheet 1.

H. F. WARD.

MACHINE FOR WASHING LAGER BEER BOTTLES.

No. 393,675. Patented Nov. 27, 1888.

Fig 1.

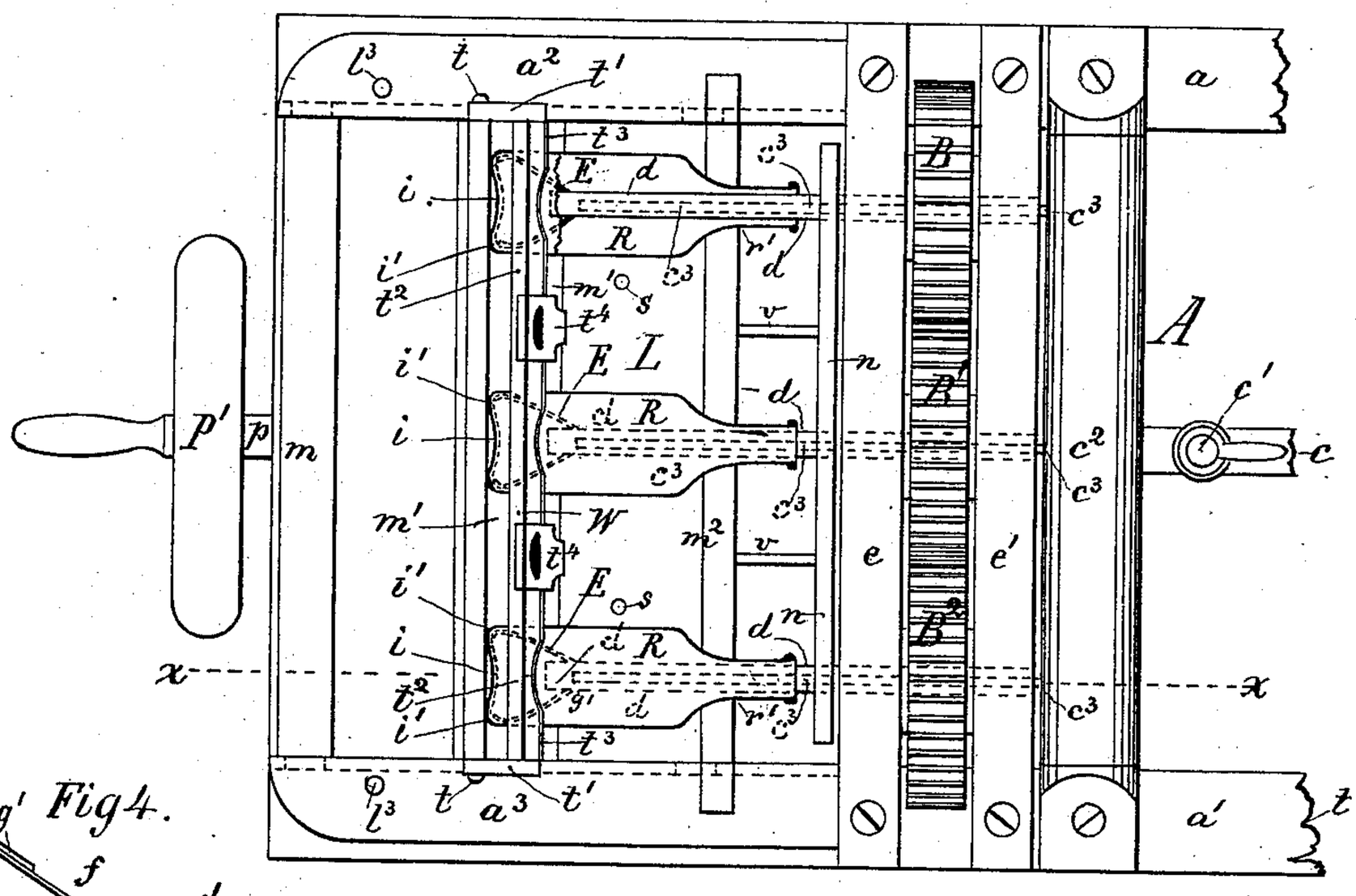


Fig 4.

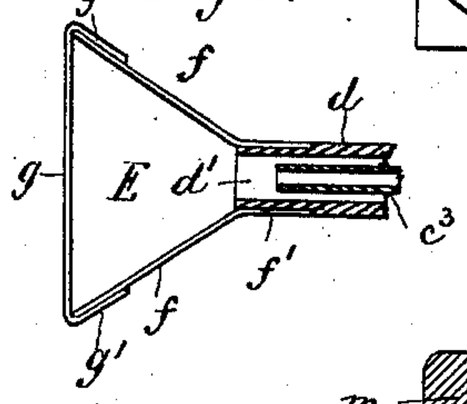


Fig 2.

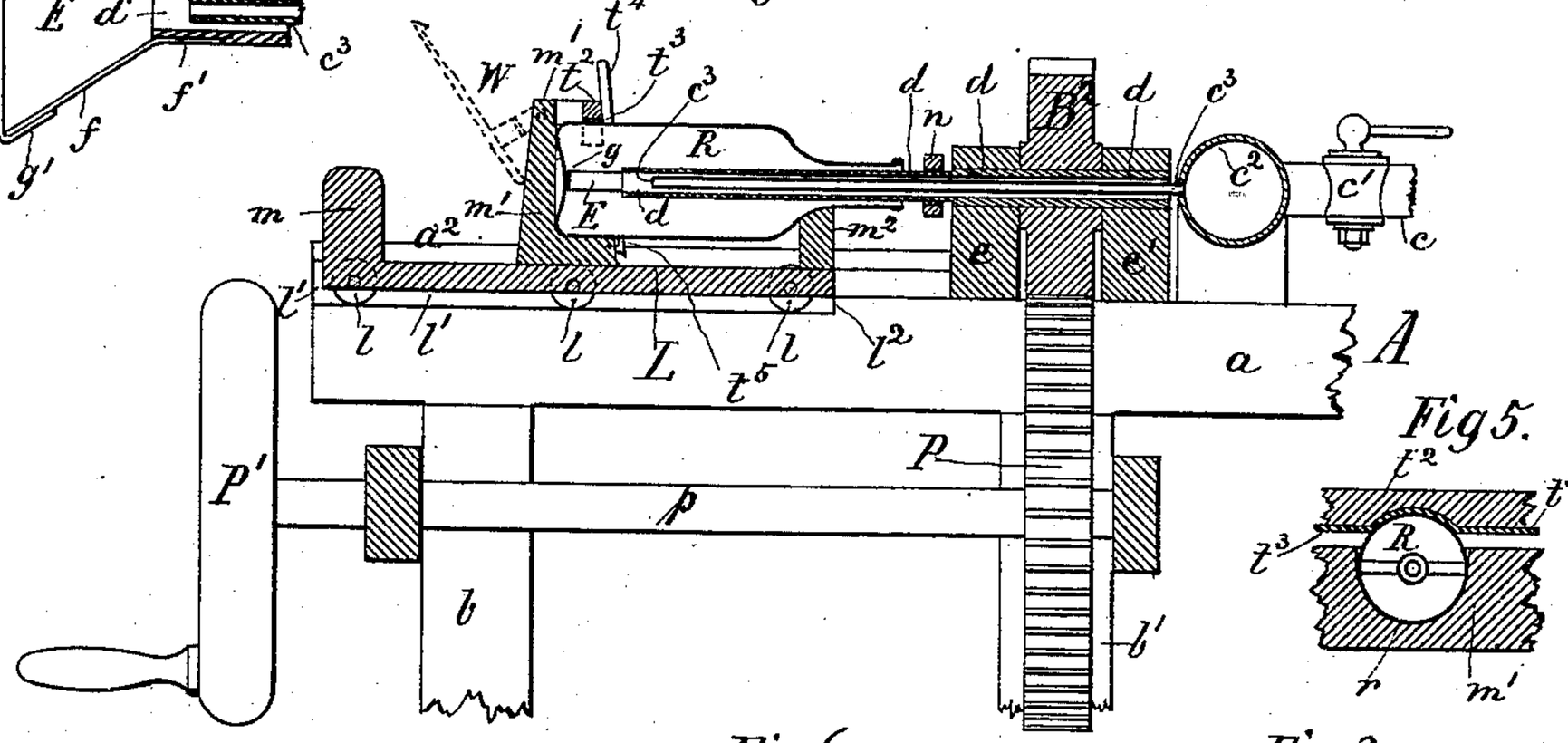
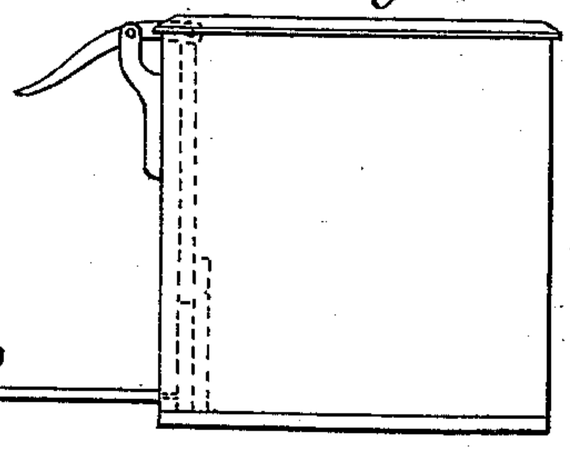
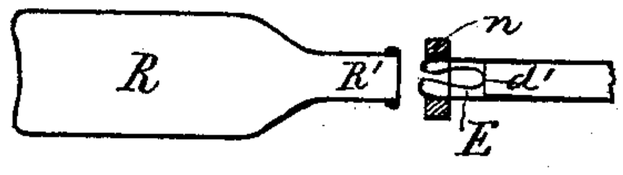


Fig 5.

Fig 3

Fig 6.





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(No Model.) 2 Sheets—Sheet 2.

H. F. WARD.

MACHINE FOR WASHING LAGER BEER BOTTLES.

No. 393,675. Patented Nov. 27, 1888.

Fig 7.

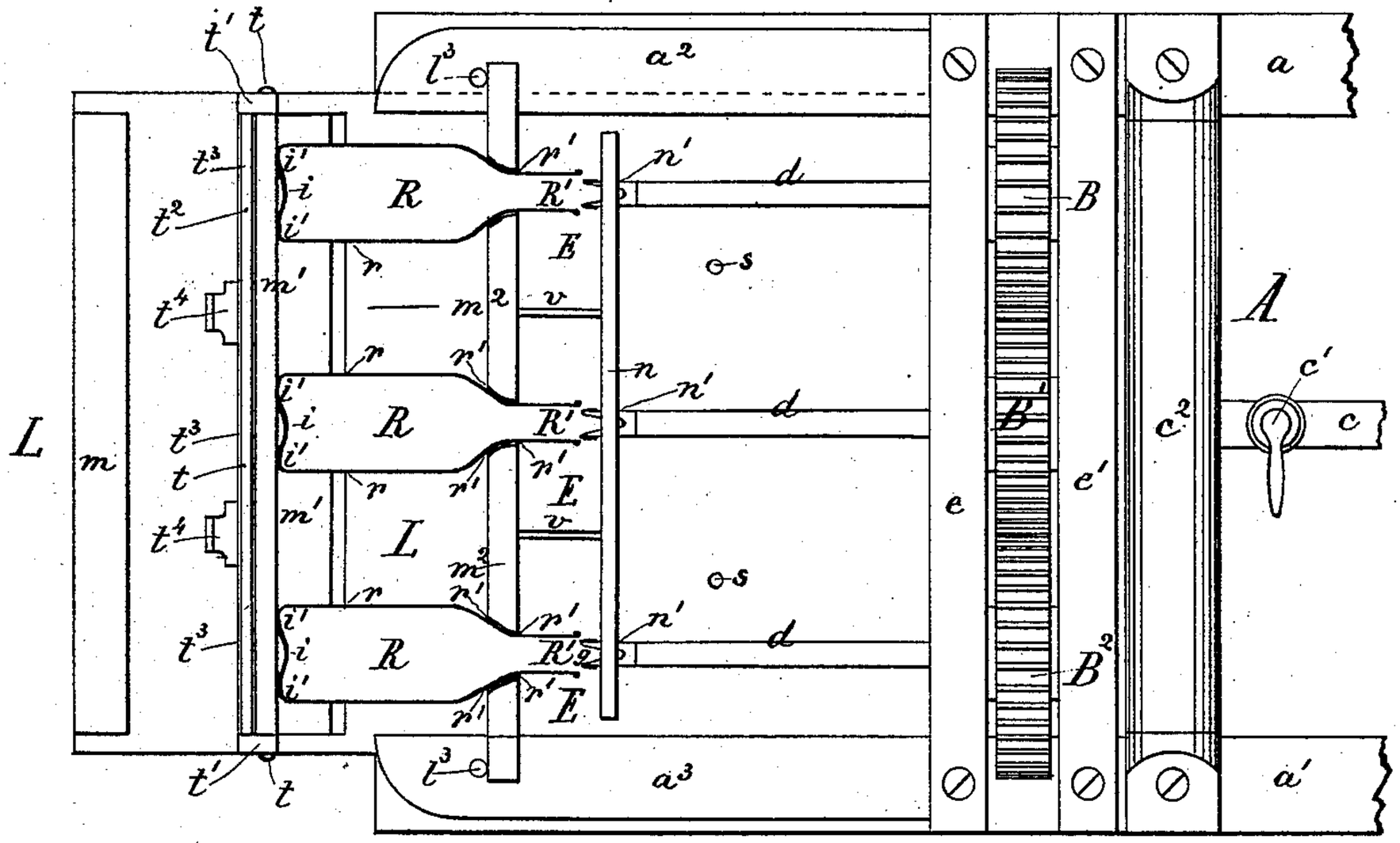
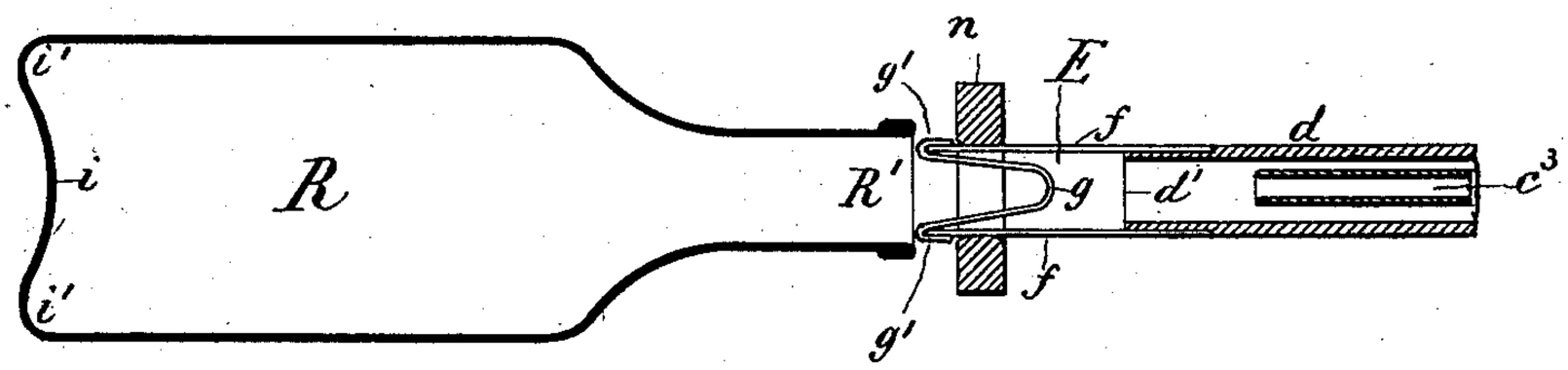


Fig 8.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR WASHING LAGER-BEER BOTTLES.

SPECIFICATION forming part of Letters Patent No. 393,675, dated November 27, 1888.

Application filed April 23, 1888. Serial No. 271,580. (No model.)

To all whom it may concern:

Be it known that I, HEZEKIAH F. WARD, a citizen of the United States, residing at Sudley, in the county of Anne Arundel and State of Maryland, have invented certain new and useful Improvements in Machines for Washing Lager-Beer Bottles and other Bottles; 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 an improved machine for expeditiously and effectively cleansing lager-beer bottles of the sediment of the beer which remains in the bottles after the same have been emptied of their contents. Ordinarily such bottles, after having been emptied, are set upright and allowed to stand for considerable time before they are refilled, and hence the usual washing of the bottles prior to refilling is insufficient to thoroughly remove the sticky sediment which has more or less collected upon the inner body surface of the bottles, but particularly in the circular valley around their inwardly-bulging bottoms; and my invention consists in certain constructions, combinations, and arrangements of parts hereinafter set forth and specifically claimed.

Figure 1 is a plan view of my improved machine for washing lager-beer bottles. Fig. 2 is a vertical longitudinal section in the line *x x* of Fig. 1. Fig. 3 is a detail view, partly in section, showing the relative position of a beer-bottle to the wiper just prior to the entrance of the latter into the mouth or neck of the bottle. Fig. 4 is a detail view, partly in section, of the wiper when fully expanded from its compressed condition shown in Fig. 3. Fig. 5 is a sectional detail view showing a beer-bottle in position while being washed, as signified in Fig. 2, and held to its work on a rest-bar beneath and by a band-bar above a portion of its length. Fig. 6 is a view in elevation, but of reduced size, of a water tank or reservoir for supplying water to the machine when the same cannot be connected directly with water-works which afford a supply of water under pressure. Fig. 7 is a plan view of my improved machine for washing beer-bottles, showing a series of bottles in position ready to be entered by their respective wipers, while Fig. 8 shows more clearly a detail and enlarged view, partly in section, of the position of one of said bottles and its wiper at the moment the machine is operated to thrust the wiper into the bottle, and also part of one of the wiper-tubes and water-jet tubes in connection therewith.

Having reference to the drawings, A indicates the frame-work of my improved machine for washing lager-beer bottles, consisting mainly of upper horizontal parallel beams *a a'*, each of which are connected to corresponding foundation-beams beneath (not shown in the figures) by intermediate uprights, *b b'*, two only of which are indicated in the figures. This frame practically may be made in square form, as indicated, and suitably braced for steadiness and strength, at the option of the builder; and longitudinally beyond the broken lines of the beams *a a'* may be extended for the support of a water-tank when water under pressure from city water-works is not available for use in connection with the machine. In this instance the water is supposed to be supplied to the machine under pressure from the water-works of the city, from which works, through the pipe *c* and cock *c'*, it enters into and fills a water-chamber, c^2, which is built across the machine and permanently fixed in place upon the upper longitudinal beams, *a a'*, of the frame A, as shown, and from which chamber c^2, and communicating therewith, small water-jet tubes, as c^3 c^3 c^3, project and extend into and nearly through the rotating wiper-tubes *d d d*, as shown.

In the present case I have only shown a machine having a capacity of washing three bottles at one operation; but it is manifest that the capacity of the machine may be increased so as to wash any desired number of bottles at one operation.

Forward of the water-chamber c^2, and fixedly attached to the frame A, as shown, are two axle-beams, *e e'*, through which the wiper-tubes *d* pass, and which serve as axle-bearings for the cogged wheels B B' B^2. These wheels at their axes are firmly fixed to their respective tubes *d* between the beams *e e'*, and the wheel B' has its cogs meshing into the cogs of B and

B^2, and at the same time with the cogs of a power-wheel, P, beneath, which is driven by the hand-wheel P′ through a connecting-shaft, *p*. Thus when the hand-wheel P′ is rotated each of the wheels P B B′ B^2 is also made to rotate, the wiper-tubes *d d d* being also made to rotate in unison with the rotation of their respective wheels B B′ B^2. At their forward ends the wiper-tubes *d d d* (shown in Fig. 1 in dotted lines and in Fig. 2 in solid lines) are supplied with wipers E, one of which (shown in enlarged detail view in Fig. 4) I will now describe. It consists simply of two light narrow flexible plates, *f f*, of steel or other suitable springy material, which extend outwardly and opposite to each other from a base-collar, *f″*, which is slid onto or encircles the end of the tube *d*, as shown, and is thereon firmly fastened, the normal position of said springs *f f* being that clearly shown in said Fig. 4. The outer sides of these springs are connected by a band of india-rubber, *g*, the ends *g′* of which lap over and are secured upon the ends of the springs, as shown, thus constituting an improved wiper for wiping away from the interior of the bottles being washed the sticky sediment of the beer. In Fig. 1 these wipers are shown in each bottle in dotted lines, and in operation at the interior base of each bottle, the action of the rubber *g* being such as to impinge upon the inner surface of the bulge *i*, as well as wipe the circular valley *i′* around such bulge when the same are in action, as illustrated in Figs. 1 and 2.

As shown in Figs. 1, 2, and 7, the longitudinal beams *a* and *a′* are provided with cleats, as a^2 a^3, beneath which a platform, L, is made to travel forward and back when the machine is in operation. This platform may travel on wheels, as *l l l*, on either side of the platform beneath the cleats a^2 a^3, and on a track, *l′*, cut out longitudinally in the beams *a a′*, as signified in Fig. 2, and so that the shoulder or stop, as l^2, will limit the forward movement of the platform L, while also stops, as at l^3, (shown in Figs. 1 and 7,) will limit the rearward throw or travel of the platform L. The platform L at its outer end is made into a cross hand-bar, *m*, by which the operator may move the platform forward and back, and with scalloped cross-rests *m′* and m^2, upon which to rest the body and neck portions of the bottles when in place, as shown.

The platform L is connected at its inner front edge with a compressor-bar, *n*, by connecting-rods *v v*, the compressor-bar being made with perforations at the points *n′*, through which the wiper-tubes *d* may freely pass when the platform is moved forward and back, the holes at *n′* through the compressor-bar *n* and the ends *d′* of the wiper-tubes *d* being precisely in line with the mouths of the bottles R when the latter are in position to be washed, as shown in the figures.

To the cross-rest *m′*, as shown, I pivot at *t t* a swinging frame, W, the pivots *t t* passing through side arms, *t′*, of the frame and into the upper portion of the cross-rest *m′*, and which side arms are connected by a cross bar, t^2, while from the free end of one of the side arms *t′* to the free end of the other side arm *t′* an india-rubber band, t^3, is stretched and secured to the said free ends of said side arms. Thus when the bottles are in place for being washed the swinging frame W will be thrown down from its position shown in Fig. 7 to its position shown in Fig. 1, thus causing the rubber band t^3 to be pressed down upon and stretched over the body of the bottles, as indicated in said Fig. 1 and also in Fig. 5, thus holding the bottles in place in their scalloped seats *r* of the cross rests *m′*. Handles, as t^4, are attached to the cross bar t^2 for swinging the frame W forward from its position shown in Fig. 7 to its position in Fig. 1, and vice versa, and when thrown forward, as in Figs. 1 and 2, a catch, t^5, (shown in Fig. 2,) on the handles t^4, will engage in a notch in the cross-rest *m′* and so hold the bottles in place while being washed.

In the operation of this machine, which, while it is adapted especially for beer-bottles, may be used for cleaning other bottles, the platform L is first drawn out from the frame A, as shown in Fig. 7, whereupon the bottles R are placed in position, as shown in said figure, in the scallop-seats *r* and *r′* in the cross-rests *m′* and m^2, which act will bring the nozzles of the bottles in exact range with the wipers E on the ends of the wiper-tubes *d*, the compressor-bar *n* during the retraction of the platform L having been drawn forward from its position on the wiper-tubes *d* (shown in Fig. 2) to its position on the wipers E, (shown in Fig. 7,) thereby contracting the wipers from their normal expanded position (shown in Fig. 4) to their abnormal contracted position. (Shown in Figs. 3, 7, and 8.) This having been done, the platform L is now moved forward in the direction of the arrow, whereupon the wipers E are caused to enter the nozzles R′ of the bottles. The water is now let on by turning the cock *c′* from its position shown in Fig. 7 to its position shown in Figs. 1 and 2, whereupon, the platform L being further moved forward, the nozzles R′ of the bottles travel over the wipers and thence upon the wiper-tubes *d*, until the wipers have entered the necks of the bottles, whereupon the hand-wheel, being rotated by the operator, the water-tubes *d* will also be rotated, while the wipers become expanded in the necks of the bottles, thereby cleansing the same, and, further expanding as they enter the body of the bottles, will sweep around in contact with the interior surfaces as the platform L continues to be moved forward, until they finally reach the inner bulging ends, *i*, of the bottles, as in Figs. 1 and 2, pressing in contact therewith, and into the valleys *i′* of the bottles, thereby thoroughly cleansing the same from all impurities, the water meantime being jetted into the bottles through the jet-tubes c^3. The cleansing having been accomplished, the machine is now

changed from its position shown in Figs. 1 and 2 into that shown in Fig. 7, whereupon the bottles are removed and other bottles which need to be washed are supplied in their places and the operation renewed.

When the bottles are supplied to the machine, the contracted wipers E may be made to slightly enter their nozzles and so serve as a certain guide for the bottles along upon the wiper-tubes *d* in the subsequent movement of the platform L, and during the operation of washing the water will more or less escape from the bottles around the tubes *d* and thence pass off through the escape-passages, which may be provided, as at *s s*. In some cases I propose to use a wiper made of bristles and fitted to the end of the tubes *d*.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for washing bottles, a swinging frame, W, provided with an elastic or rubber band, t^3, for impact upon the bottles to hold them in place while being washed, substantially as described.

2. In a machine for washing bottles, a platform, L, provided with scalloped rest-bars m' m^2, and with a compressor-bar, *n*, which moves in unison with said platform to compress the wipers E for entrance into the nozzles R′ of the bottles R, substantially as described.

3. The movable platform L, having a compressor-bar, *n*, which moves in unison with said platform, in combination with a rotating wiper-tube, *d*, which is provided with a wiper, E, which comprises flexible plates or springs *f f*, connected by an elastic band, *g*, having its ends *g′ g′* lapped over the outer ends of the said plates or springs, and a water-jet tube, c^3, substantially as and for the purpose described.

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

HEZEKIAH F. WARD.

Witnesses:
HARRY T. HOPKINS,
JOHN LINDENBORN.