

O. A. MILES & E. R. LOVETT.

Bottle-Washer.

No. 213,583.

Patented Mar. 25, 1879.

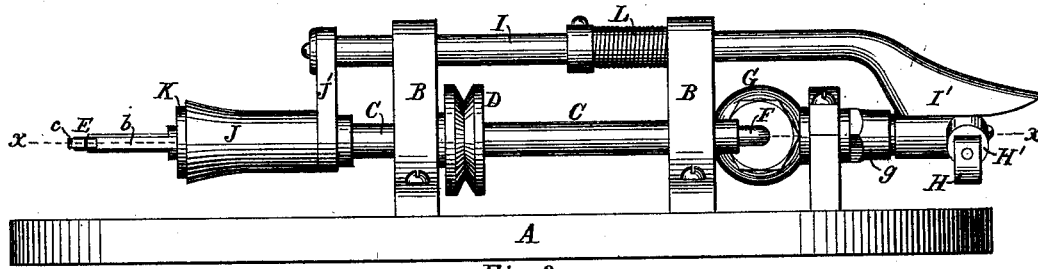


Fig. 2.

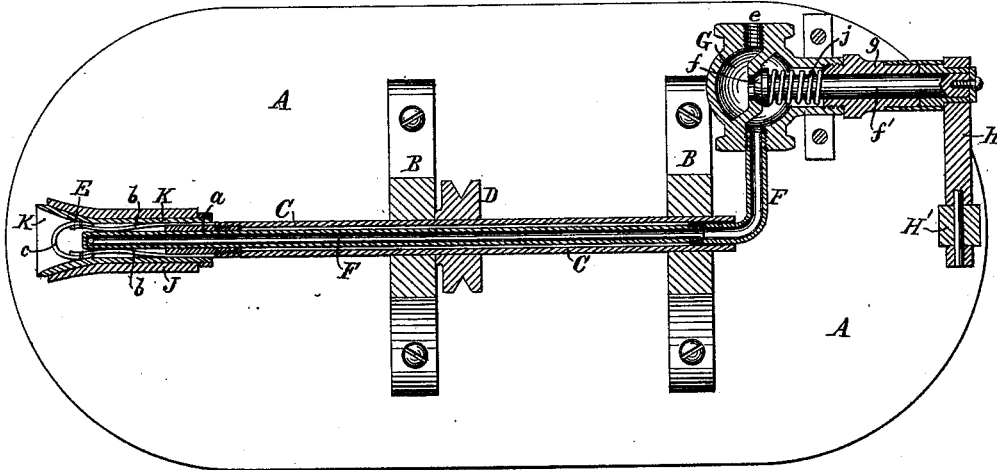


Fig. 3.

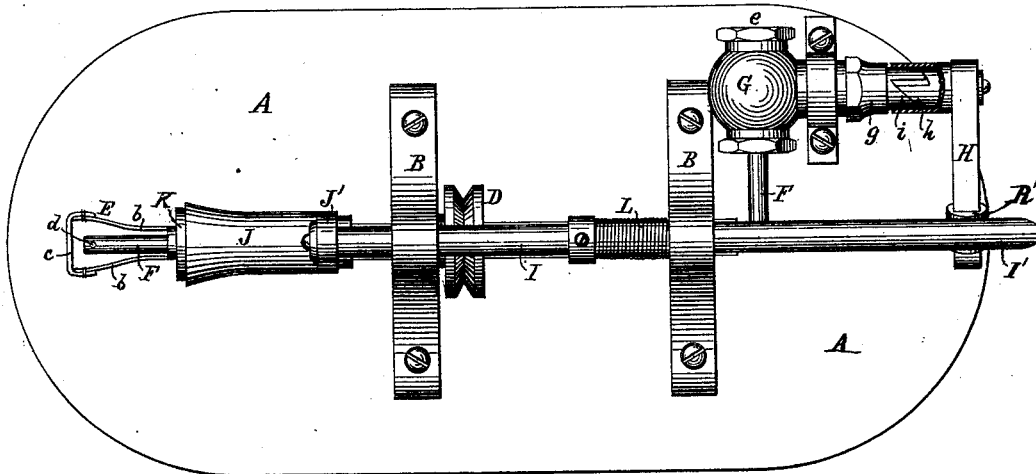


Fig. 1.

Witnesses:

C. A. Kemmenway.
C. H. Dobb.

Inventors:

Orrin A Miles
Eliphalet R Lovett
by N. C. Lombard Attorney.

O. A. MILES & E. R. LOVETT.

Bottle-Washer.

No. 213,583.

Patented Mar. 25, 1879.

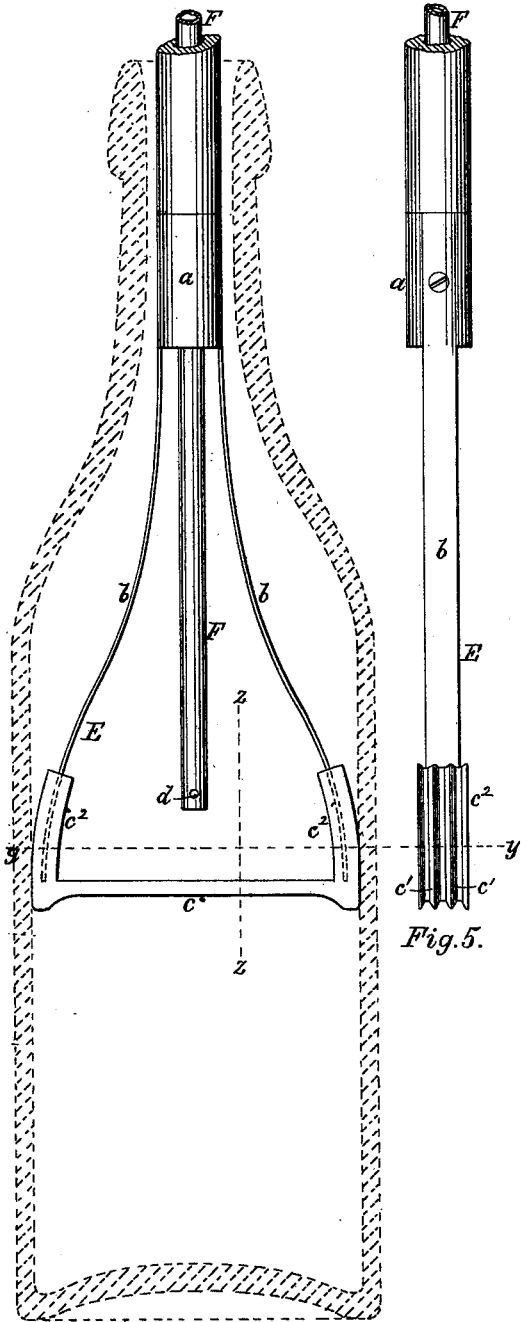


Fig. 4.

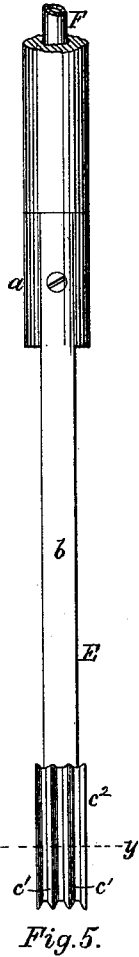


Fig. 5.

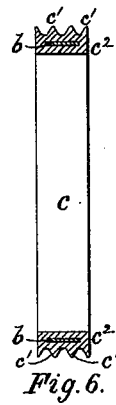


Fig. 6.

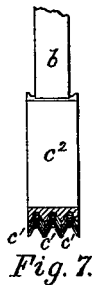


Fig. 7.

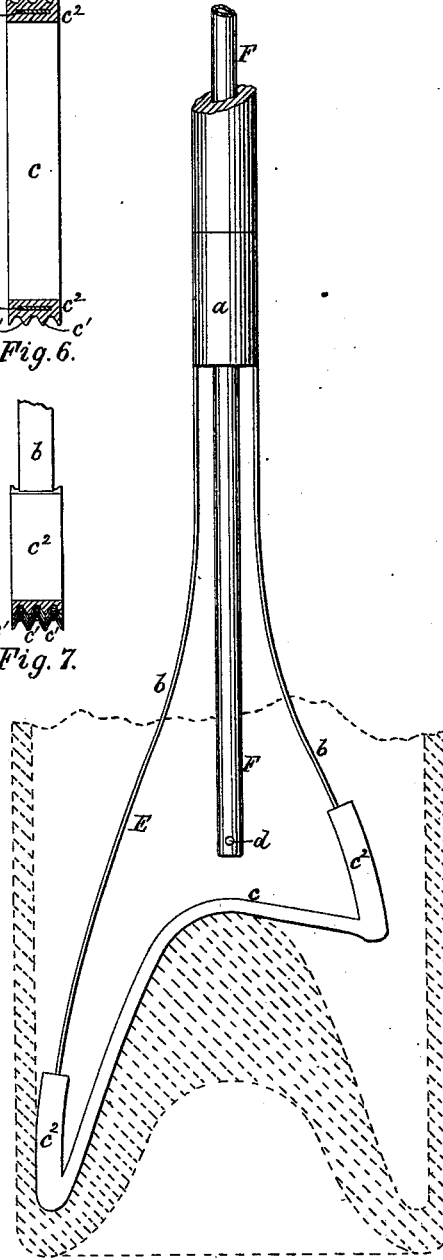


Fig. 8.

Witnesses:

C. A. Hemmenway.
C. H. Dodd.

Inventors:

Orrin A. Miles
Elephat R. Lovett.
by N. C. Lombard Attorney.

UNITED STATES PATENT OFFICE.

ORRIN A. MILES AND ELIPHALET R. LOVETT, OF LYNN, MASSACHUSETTS.

IMPROVEMENT IN BOTTLE-WASHERS.

Specification forming part of Letters Patent No. **213,583**, dated March 25, 1879; application filed November 8, 1878.

To all whom it may concern:

Be it known that we, ORRIN A. MILES and ELIPHALET R. LOVETT, both of Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Bottle-Washers, of which the following, taken in connection with the accompanying drawings, is a specification.

Our invention relates to a machine for washing the interior of bottles; and it consists in the use of a revolving brush or scraper made of rubber or other elastic and flexible material, adapted to be compressed so as to enter the mouth of the bottle, and to expand automatically as it reaches the enlarged part of the bottle, so as to act upon all parts of the inner surface of the walls of the bottle, in combination with a means of automatically supplying water to the interior of the bottle, as will be described.

It further consists in the combination, with a fixed or stationary pipe adapted to convey water to the interior of the bottle, of a sleeve-shaft encompassing said pipe and mounted in suitable bearings, in which it may be revolved at a high rate of speed by means of a pulley affixed thereon and a belt leading from it to any suitable driving-shaft, and a spring-supported brush or scraper secured to the end of said sleeve-shaft and extending a short distance beyond, and adapted to revolve about the discharge end of said water-supply pipe.

It further consists in the combination, with a stationary water-supply pipe and a compressible revolving brush or scraper, both adapted to enter the interior of a bottle, of a sleeve provided with a funnel-shaped mouth mounted loosely upon the brush-carrying sleeve-shaft in a position to encompass said brush or scraper and compress it to a suitable size to enter the mouth of the bottle, and adapted to be moved endwise on said shaft to uncover the brush or scraper by placing the nozzle of the bottle in the funnel-shaped mouth of said sleeve, and applying force to the bottle to move it onto the brush in line with the axis of motion of said brush.

It further consists in the combination, with a stationary water-supply pipe and a compressible revolving brush, both adapted to enter the interior of a bottle, of a revolving

sleeve encompassing the revolving-brush or scraper and the discharge end of the water-supply pipe, and adapted to be moved endwise in one direction by the movement of the bottle in the act of introducing the brush or scraper into said bottle, and in the other direction by means of a spring or equivalent self-acting device, a valve for controlling the flow of water through said pipe, and a reciprocating cam-shaped shoe connected with and moved by said sleeve, and adapted to open said valve when the bottle is forced onto the brush or scraper, as will be hereinafter described.

Figure 1 of the drawings is a plan of a machine embodying our invention. Fig. 2 is a side elevation. Fig. 3 is a horizontal longitudinal section on line *xx* of Fig. 2. Fig. 4 is a plan of the flexible and elastic brush or scraper, illustrating its application to an ordinary beer-bottle, (shown in dotted lines.) Fig. 5 is an edge view of the brush. Fig. 6 is a transverse section on line *yy* of Fig. 4. Fig. 7 is a section on line *zz* of Fig. 4; and Fig. 8 illustrates a modification of the brush or scraper and its application to the cleaning of a champagne-bottle, or a bottle whose bottom projects upward into the interior of the bottle, as indicated in dotted lines.

A is the bed of the machine, which may be mounted upon legs, or it may be secured upon a bench or table of suitable height for convenient operation. From the upper side of this bed rise the two standards B B, provided with suitable bearings, in which is mounted the tubular or sleeve shaft C, having firmly secured thereon a pulley, D, by means of which and a suitable belt leading thereto from any suitable driving-shaft (not shown in the drawings) rotary motion may be imparted thereto.

To the front end of the shaft C is screwed the brush or scraper E, composed of the tubular hub *a*, spring-arms *b b*, and the elastic and flexible connecting-tie *c*, made preferably of rubber, molded and provided with sockets to receive the ends of the spring-arms *b* and *b*, as shown in Fig. 4, and also having its outer surface corrugated or composed of a series of projecting ribs, *c' c'*, as shown in Figs. 5, 6, and 7.

A water-supply pipe, F, leads from the valve-

chamber G, through the tubular shaft C, to a point near the front end of the brush E, as shown in Fig. 1. The front end of this pipe is closed, and a series of small perforations, *d*, are made in its side near the end, so as to discharge the water radially in small jets against the walls of the bottle.

The valve-chamber G receives the water at *e*, and is provided with the valve *f*, the stem *f'*, which projects through a stuffing-box, *g*, and has secured to its outer end the lever H, in the outer end of which is mounted the truck or roll H', and the hub of said lever has formed upon its inner end two or more inclined or cam-shaped surfaces, *h*, fitted to and adapted to act upon correspondingly-shaped surfaces *i*, formed upon the outer end of the stuffing-box or hub *g*, through which the valve-stem *f'* passes, all so arranged that a depression of the outer or movable end of the lever will cause the valve to be drawn away from its seat and allow the passage of water to the pipe F, the valve being again forced onto its seat when the force is removed from the lever by the spring *j*.

I is a rod or bar mounted in bearings in the standards B B, and having formed upon or secured to its rear end the shoe I', the under surface of which is made cam-shaped for the purpose of acting upon the roll H', to depress the lever H and open the valve *f*, the opposite end of said rod I being connected to the ear J', formed upon or secured rigidly to the exterior funnel-mouthed sleeve J in such a manner that an endwise movement of said sleeve will cause a corresponding movement of the bar I and shoe I'.

Within the sleeve J is another sleeve, *k*, of corresponding shape, so connected thereto that the sleeve K may revolve with the brush or scraper at times, while the sleeve J cannot revolve. Both sleeves must move endwise together when the bottle is presented to the action of the brush.

The inner sleeve, K, is designed to revolve with the brush when the bottle is removed, and the water is shut off to prevent unnecessary wear to the brush.

In the modification shown in Fig. 8 one of the spring-arms *b* of the brush E is made shorter than the other, so that the rubber tie *c* may fit down into the annular ring in the bottom of the bottle and act upon all parts of the conical inward projection of said bottle-bottom without subjecting the rubber scraper to too great a strain.

The operation of our invention is as follows: The rod I, shoe I', and sleeves J and K being moved toward the front end of the machine, and held in the position relative to the brush or scraper E shown in Fig. 3 by the tension of the spring L, and the pulley D, shaft C, and brush E being made to revolve, the friction of the brush upon the inner surface of the sleeve K will cause said sleeve to revolve with the brush. If, now, the mouth of the bottle to be washed be inserted into the flaring

mouth of the sleeve K, and the bottle be pressed forward in the direction of the length of the brush-shaft, and with its longitudinal axis substantially coinciding with the axis of revolution of the brush, the sleeves J and K, together with the rod I and its shoe I', will be moved toward the rear end of the machine, and the curved or inclined portion of the under surface of the shoe I', acting upon the truck H', will depress the movable end of the lever H, thereby moving the valve *f* away from its seat, and permitting the water to flow through the pipe F and be discharged at its front end, through the orifices *d d*, into the bottle, the brush having in the meantime entered the mouth of the bottle while revolving at a high rate of speed. As the bottle continues to be pushed forward the tension of the spring-arms *b b* causes the brush E to expand, to adapt it to the varying diameter of the interior of the bottle and cause the corrugated outer surfaces of the socket portions *c'* of the rubber tie *c* to rub against the inner periphery of the bottle, as illustrated in Figs. 4 and 8. When the bottle, after being washed, is removed from the machine, the spring L, acting by its tension upon the rod I, causes it (the shoe I') and the sleeves J and K to be moved toward the front of the machine till the parts assume the positions shown in Fig. 3, when the valve *f* is closed and the supply of water is shut off, thus preventing all waste of the water until it is desired to wash another bottle, when the operation is repeated.

What we claim as new, and desire to secure by Letters Patent of the United States, is—

1. A brush or scraper for cleaning the interior of bottles, composed of a tubular hub or shaft, two spring-arms, and a flexible tie connecting said spring-arms, made of rubber or other suitable elastic material, substantially as and for the purposes described.

2. A brush or scraper for cleansing the interior of bottles by being revolved therein, composed, essentially, of a hollow hub or shaft, a pair of spring-arms, *b b*, and the flexible and elastic tie *c*, and rubbing-pads *c'*, constructed and combined substantially as described, for the purposes specified.

3. The rubbing-pads *c'* and tie *c*, formed of rubber, in one piece, and having their working-faces corrugated or provided with a series of ribs, *c' c'*, substantially as and for the purposes described.

4. The combination, in a bottle-washer, of a fixed or stationary water-supply pipe, a sleeve-shaft mounted upon and adapted to be revolved about said stationary pipe, a brush or scraper attached to the end of said sleeve-shaft, and adapted to be revolved therewith about the end of said pipe, and to be compressed to enter the neck of the bottle, and to expand to the largest interior diameter of the bottle, and a funnel-mouthed sleeve mounted upon and surrounding said sleeve-operating shaft, and inclosing the brush, and adapted

to be moved endwise on said driving-shaft to uncover the brush, and to be revolved with said shaft by frictional contact therewith, or be prevented from revolving by frictional contact with the neck of the bottle, substantially as and for the purposes described.

5. The combination, in a bottle-washer, of the fixed or stationary water-supply pipe F, valve *f*, lever H, the tubular or sleeve shaft C, mounted upon and adapted to be revolved about the pipe F, the compressible brush or scraper E, attached to and adapted to be revolved with said shaft C, the two funnel-mouthed sleeves J and K, arranged one within the other, and concentric with the shaft C

and pipe F, and adapted to be moved endwise together, as set forth, the rod I, attached at one end to the sleeve J, and having formed upon or secured to its other end the cam-shaped shoe I, and the spring L, all arranged and adapted to operate substantially as and for the purposes described.

Executed at Boston, Massachusetts, this 5th day of November, A. D. 1878.

ORRIN A. MILES.
ELIPHALET R. LOVETT.

Witnesses:

N. C. LOMBARD,
E. A. HEMMENWAY.