E. SCHLAEPFER, FILS.

BOTTLE WASHING APPARATUS.

APPLICATION FILED JAN. 18, 1913.

1,094,168. Patented Apr. 21, 1914.

Fig. 1

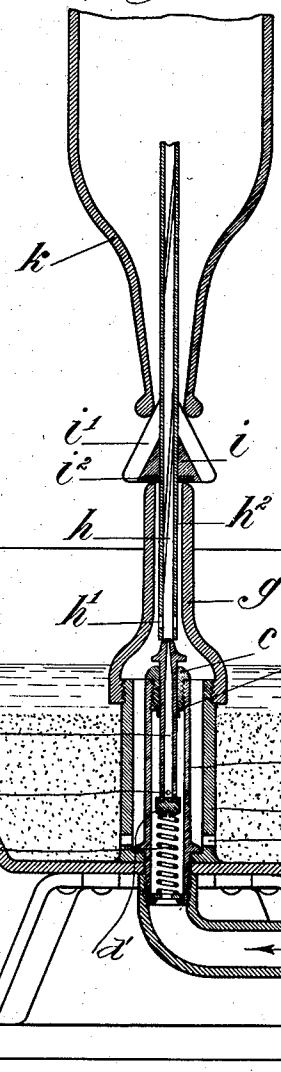


Fig. 2

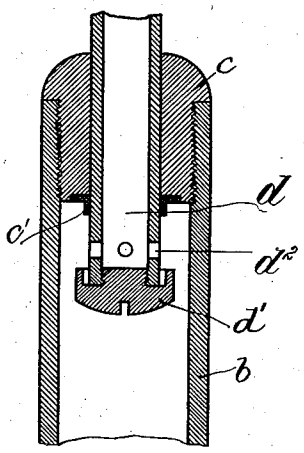


Fig. 3

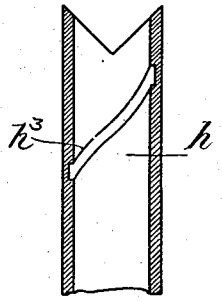


Fig. 4

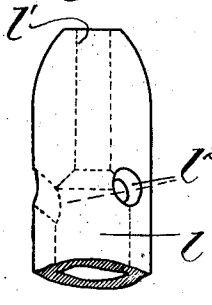


Fig. 6

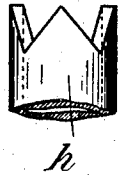
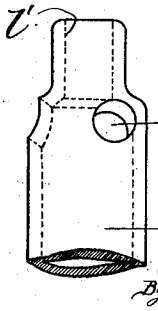


Fig. 5



Witnesses:
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UNITED STATES PATENT OFFICE.

EDOUARD SCHLAEPFER, FILS, OF LAUSANNE, SWITZERLAND, ASSIGNOR TO LOUIS BLANC, OF LAUSANNE, CANTON OF VAUD, SWITZERLAND.

BOTTLE-WASHING APPARATUS.

1,094,168. Specification of Letters Patent. Patented Apr. 21, 1914.

Application filed January 18, 1913. Serial No. 742,803.

To all whom it may concern:

Be it known that I, EDOUARD SCHLAEPFER, fils, manufacturer, a citizen of Switzerland, residing at Lausanne, Canton of Vaud, in the Confederation of Switzerland, have invented certain new and useful Improvements in Bottle-Washing Apparatus, of which the following is a specification.

The present invention relates to an apparatus for washing bottles and glasses, and its object is the provision of an improvement in washing machines, in which a mixture of water and sand is projected against the articles to be washed. Generally in such apparatus, these articles are first subjected to the mixture of sand and water which is thrown against them, and then to pure water for rinsing purposes. In the use of a machine of this character, it is desirable that the operator should know when the mixture of sand and water ceases to flow and the pure water begins to run.

The apparatus made in accordance with my invention, operates on the principle of the injector and is controlled by the movement of the rinsing pipe, so that by the movement and the position thereon of the bottle, glass or other article being washed, the operator knows whether the mixture of sand and water is being employed for cleansing purposes or whether water alone is being used for rinsing, and can determine in the handling of the article to be cleaned when one operation ceases and the other begins and vice versa.

In the drawing—Figure 1 is a vertical section of the apparatus comprising my invention. Fig. 2 is a vertical section on an enlarged scale showing the valve on the pipe *d*. Fig. 3 shows the top end of the pipe *d* on an enlarged scale. Figs. 4 and 5 are detailed views of nozzles adapted to be used with the apparatus. Fig. 6 shows a modification of the nozzle.

The bottom of a reservoir *a* is provided with a water supply pipe *b* which passes through this bottom and at its end is provided with a stuffing-box *c* at a predetermined height in the reservoir. A pipe *d* passes through the stuffing-box *c* and is closed at its lower end by a valve d^1 which acts to shut off the water supply when it bears against the lower portion c^1 of the stuffing-box *c*. The pipe *d* is provided with side openings d^2 for permitting the water to pass from the pipe *b* into the pipe *d*, as soon as the valve d^1 is removed from its seat c^1. The orifice at the top end of the pipe *d* is restricted so as to form a nozzle so as to work as an injector, in conjunction with a delivery pipe *h* placed thereon and having lateral openings h^1 in its lower portion. Surrounding the pipe *b* is a larger pipe *f*, on which a fitting *g* is secured and into and through a portion of which the pipe *h* passes. At its lower end the pipe *f* has side openings f^1 for the passage of the sand a^1 and water a^2 contained in the reservoir *a*. The pipe *h* which is freely placed on the end of the pipe *d* is provided, like a gun barrel, with helical grooves h^2, in order to give to the liquid which flows through this pipe a rotating motion. The pipe *h* carries a valve *i* which is provided with ribs i^1 and a washer i^2 and which is adapted to close the orifice surrounding the pipe *h* at the upper end of the fitting *g*. In the pipe *b* a spring *e* is arranged in such a manner, that it raises the pipe *d* sufficiently to lift the valve *i* off from its seat at the end of the fitting *g*.

When the valve *i* which is connected with the pipe *h* is pressed down to seat on the fitting *g*, the spring *e* performs no function. To move the pipe *h* downwardly the operator has only to overcome the water pressure upon the narrow orifice of the pipe *d*, and the comparatively negligible resistance of the spring *e*. As soon as the valve *i* bears on the end of the fitting *g*, there is, owing to the injector effect of the pipe *d*, a vacuum or suction produced in the pipe *h* and through the openings h^1 in the fitting *g* and pipe *f*. This suction produces independently from the pressure produced by the hand of the operator an air tight joint between the valve *i* and the end of the fitting *g*, and causes a mixture of water and sand from the reservoir *a* to be drawn through the openings f^1, the pipe *f*, the openings h^1 and into the pipe *h* through which it is carried to the article to be cleaned. The valve *i* must be lifted to break the vacuum and stop the injector action, and the spring *e* is employed for this purpose, which it performs when the operator releases the pressure on the article to be cleaned, that is to say, when the operator again raises the bottle *k*, the valve *i*, which, owing to the action of the injector adheres firmly on its

seat, would not follow the movement of the bottle k, were it not for the action of the spring e. In order that the valve i may lift with the bottle, the action of the spring e is required, but this action is only necessary until the valve i is unseated. The spring may of course also be made long enough to cause the pipe d to rise to its highest position, that is, the one in which the valve d^1 is seated, and the openings or ports d^2 closed, but the use of a spring of just sufficient length to raise the valve i from its seat, enables the operator to feel by hand, when this takes place and consequently when the suction action ceases, and this is very important for the rapid and satisfactory working of the apparatus. When the bottle is again pressed on the valve, the valve closes and the suction is renewed. The rotation of the water jet leaving the pipe h may also be produced by means of one or more helical grooves h^3 provided in the upper portion of the pipe (Fig. 3).

In order to obtain the washing of the side walls of the bottle, a nozzle l (Figs. 4 and 5) may be suitably secured on the free end of the pipe h. This nozzle l is provided with an axial opening l^1 through which the water jet is thrown against the bottom of the bottle, and with side openings l^2 which are upwardly inclined relatively to the axis of the opening l^1, so that jets are produced which strike the side walls of the bottle in an oblique direction.

For washing glasses, tumblers, dishes, cups, and the like articles, the pipe h may advantageously be formed as shown in Fig. 6 owing to which form the water jets are directed to all sides against the article to be washed which is over the orifice of the pipe.

I claim as my invention:

1. An apparatus for washing bottles and the like, comprising a sand and water reservoir, a fixed pipe communicating therewith and open at its upper end, a water pipe within the said fixed pipe, a spring seated water valve provided with a jet nozzle, and a hollow spindle supported by the water valve and carrying a valve controlling the passage through the fixed pipe, whereby on depressing the spindle the water valve is operated and sand is aspirated through the spindle and on relieving the pressure on the spindle, water alone passes therethrough.

2. An apparatus for washing bottles and glasses, comprising a reservoir for sand and water, a movable supply pipe, a delivery pipe forming a continuation of the movable supply pipe and movable therewith, a pipe within the reservoir surrounding and spaced from the said supply pipe and having openings therein providing communication between the said reservoir and the space between the supply pipe and the pipe surrounding the same, a fitting connected to and extending from the said pipe surrounding the supply pipe and within which the said delivery pipe is movable, a device associated with the delivery pipe and co-acting with the end of the said fitting for closing the same to cause the said movable supply pipe and the delivery pipe, together with the liquid flowing through the same, to act as an injector to draw sand and water from the reservoir to and through the delivery pipe, and means for moving the said supply and delivery pipe to separate the said device from the end of the fitting so as to enable the operator to determine by touch when the flow of the cleaning mixture ceases to flow and the rinsing fluid begins.

3. An apparatus for washing bottles and glasses, comprising a reservoir for sand and water, a supply pipe leading to and extending up into the said reservoir, a movable supply pipe within the said supply pipe, a pipe surrounding and spaced from the said supply pipe within the reservoir and having openings therein, a fitting connected to the said pipe surrounding the supply pipe and extending above the reservoir, a delivery pipe passing into the said fitting and so associated with the movable supply pipe as to form a continuation thereof and to be movable therewith, in the lower end of which delivery pipe within the fitting there are lateral openings, a valve connected to the said delivery pipe and adapted to seat against the end of the said fitting to cause the said movable supply pipe and the delivery pipe, together with the stream flowing through the same, to act as an injector to draw the sand and water from the reservoir through the openings in the said pipe surrounding the supply pipe and through the openings in the delivery pipe to the interior thereof, and a spring acting against the end of the supply pipe to move the same, together with the delivery pipe to unseat the said valve so that the operator may determine by touch when the flow of the cleaning mixture ceases and the flow of the rinsing fluid begins.

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

EDOUARD SCHLAEPFER, Fils.

Witnesses:
Rod. de Wenstemberg,
Louis H. Munia.