May 18, 1926. 1,584,913

G. W. WILSON

BOTTLE AND TEST TUBE WASHER

Filed Sept. 14, 1922 2 Sheets-Sheet 1

Fig. 1

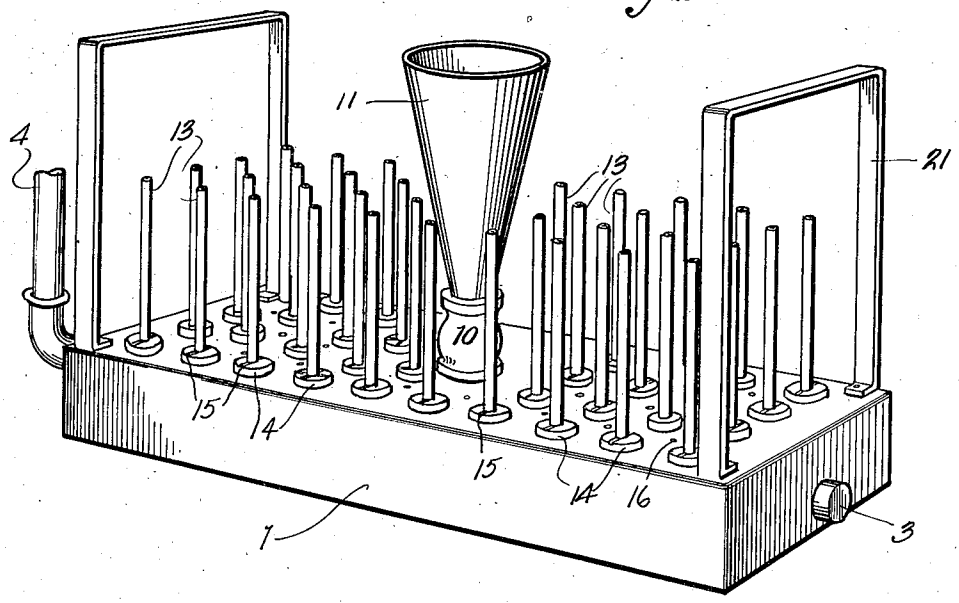
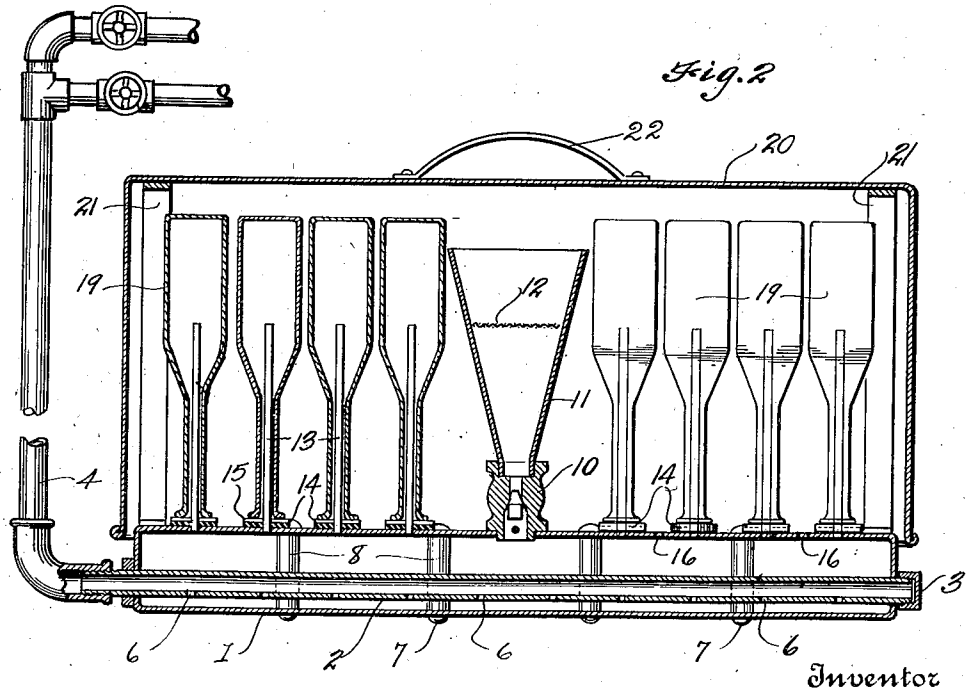


Fig. 2



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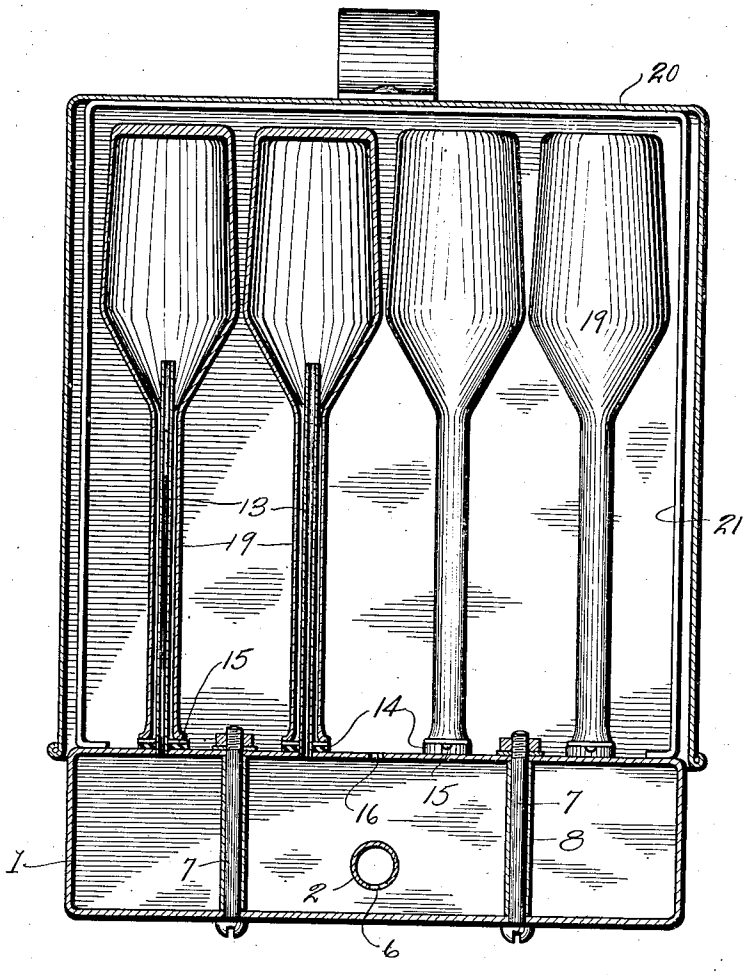
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FIG. 3



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1,584,913

UNITED STATES PATENT OFFICE.

GEORGE W. WILSON, OF SEATTLE, WASHINGTON.

BOTTLE AND TEST-TUBE WASHER.

Application filed September 14, 1922. Serial No. 588,188.

This invention relates to a glassware washing device and more particularly to a device which has for its purpose to facilitate the washing of glassware used in the testing of milk and cream by the well known Babcock method; also for washing test tubes, culture tubes, vials, small dilution bottles and the like used in chemical and bacteriological laboratories.

Up to the present time the tedious and unsatisfactory hand method of washing with brushes has been generally used for cleaning such bottles but, due to the general character of construction of test bottles and tubes, it is a very difficult matter to force water into the bottles or to dry them after being washed. It has also been difficult to remove scale from the Babcock bottles even by brush washing because a brush of suitable size can not be inserted through the narrow necks of the bottles.

It has therefore been the principal object of this invention to provide means whereby glassware of the above mentioned character can be cleaned and washed rapidly and in the most satisfactory manner without brushing or handling in any way.

More specifically stated the invention resides in the provision of a washing device consisting of a flat topped box or container wherein a cleaning solution may be poured and having a plurality of vertical tubes of small diameter extending from the top thereof over which the bottles or tubes to be cleaned may be placed, and a pipe entering the box through which steam or hot water may be injected under pressure to first cause the discharge of the cleaning solution forcibly through the tubes into the bottles and then the washing and drying by the injection of hot water and steam.

Other objects of the invention reside in the details of construction of the various parts of the device which provides for both interior and outside washing and for the safety in handling during the washing process.

In accomplishing these objects I have provided the improved details of construction, preferred forms of which are illustrated in the accompanying drawings, wherein—

Figure 1 is a perspective view of a bottle and test tube washing device constructed in accordance with the present invention, the view being without the box cover.

Figure 2 is a longitudinal, sectional view of the same.

Figure 3 is an enlarged, transverse section of the device.

Referring more in detail to the several views of the drawings where like reference numerals designate the same or like parts, 1 designates a sheet metal box, preferably rectangular in form, with a horizontal top wall, the box being steam and water tight at all points except where outlets are intended. Extending longitudinally through the box, centrally between its side walls and preferably nearer the bottom wall than the top, is a pipe 2 which at one end is closed by a cap 3 and at its other end is connected with a pipe 4 which in turn is connected with both steam and water pipes with separate control valves. At spaced intervals along the underside of the pipe 2 are small openings 6 through which the steam and water can enter the box when the control valves are open.

Since it is desired that the steam and water be injected under pressure, I have prevented possible warping of the box walls by connecting the upper and lower walls of the box by means of a series of bolts 7 which draw the walls tightly against the ends of sleeves 8 fitted about the bolts.

Mounted on the top wall, centrally of the box, is a vertical back check valve 10 and fitted in this is a funnel 11 by means of which a cleaning solution may be poured through the valve into the box. The check valve is for the purpose of preventing discharge through the valve when steam or water is turned into the box and a sieve or screen 12 is placed in the funnel to prevent any grit or other solid substances from entering the box.

Mounted in spaced relation and in rows upon the top wall of the box are small vertical tubes 13 and fitted about these against the outer face of the wall are pads 14 of rubber or the like provided with grooves 15 in their upper surfaces. These pads are for the purpose of preventing possible breakage of bottles when they are inserted over the

tubes and the grooves in the top of the pads are for the escape of water from the bottles or tubes while they are seated upon the pads. The tubes 13, in most instances, would be of copper about 1/8" in diameter and from 3 to 4" long, depending upon the character of bottle or tube to be washed.

Between the rows of tubes 13, small openings 16 are provided in the top wall of the box through which the washing solution, steam, or water may be discharged. When tubes or bottles are to be washed they are inverted over the tubes 13 as shown in Figures 2 and 3, and the discharge of the solution through the tubes effects a cleaning of the interior while the spray through the opening 16 washes the exterior.

During a washing operation the bottles, indicated at 19, are enclosed by means of a cover 20 that is placed over the box. This has slightly larger dimensions than the box so that there will be space for the escape of steam and water between the two. The cover 20 is supported by means of standards or brackets 21 that are fixed to the top wall at opposite ends of the box and it is provided with a handle 22 whereby it may be lifted from or placed in position.

Briefly stated, a washing operation would be as follows: First the box 1 is filled with a cleansing solution such as Oakite, Wyandotte, Gold Dust, or any other standard alkaline washing compound, which is poured into the funnel and passes into the box past the check valve 10; all undissolved particles of the solution or other foreign matter are caught by the screen 12; the bottles 19 are then placed over the tubes 13 as shown and the cover 20 is placed over the box. The steam control valve is then opened which permits the discharge of steam into the box through the pipe openings 6 and this drives the washing solution from the box through the tubes 13 and with considerable force into the bottles. It is drained from the bottles about the tubes 13 and through the grooves 15 in the top of the pads on which the bottles rest. After all the solution has been driven from the tank by the steam, hot water is then injected for the purpose of rinsing the bottles, then steam is again turned on to drive the water from the tank and from the bottles and to assist in drying the latter.

It is readily apparent that this method of washing is more satisfactory and sanitary than the hand method of brush washing. It can be accomplished more quickly and provides a means whereby scale or sediment of any character whatever will be readily cleaned from the bottles and will leave them absolutely dry and bright.

The device is also adapted for the washing of test tubes and small bottles of all types and especially is useful for washing test tubes containing agar and gelatin media.

It is further apparent that various changes in the details of construction of the box and the tubes may be made without departing from the spirit of the invention and for this reason I do not wish to be limited only to the details as herein illustrated.

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

1. A bottle washing device comprising a box-like container with a horizontal top wall provided with a plurality of spray openings, a vertical check valve on the container, a funnel mounted on the valve whereby a cleaning solution may be delivered through the valve into the container, a plurality of tubes mounted on the top wall and opening into the container, over which bottles to be washed may be placed, a pipe leading through the container having discharge ports therein through which water or steam under pressure may be delivered into the container to effect the ejection of the cleaning solution through said tubes to wash the interior of the bottles and through said openings to wash their exterior, and a removable cover for enclosing the bottles during washing operation.

2. A bottle washing device of the class described comprising a box-like container having a horizontal top wall provided with a plurality of spray openings and a plurality of vertical tubes opening into the container over which bottles to be washed may be placed, a vertical check valve mounted in the box, a funnel mounted on the valve whereby a washing solution may be poured through the valve into the container, a pipe leading through the container having a plurality of downwardly opening discharge ports therein, and having valve connection with pipes for delivering steam and water under pressure into the container to effect the forcible discharge through the tubes to clean the interior of the bottles and through said wall openings to wash their exterior, cover supporting means on the container and a cover for enclosing the bottles during washing, removably mounted on the supporting means.

Signed at Seattle, Washington, this 8th day of September 1922.

GEORGE W. WILSON.