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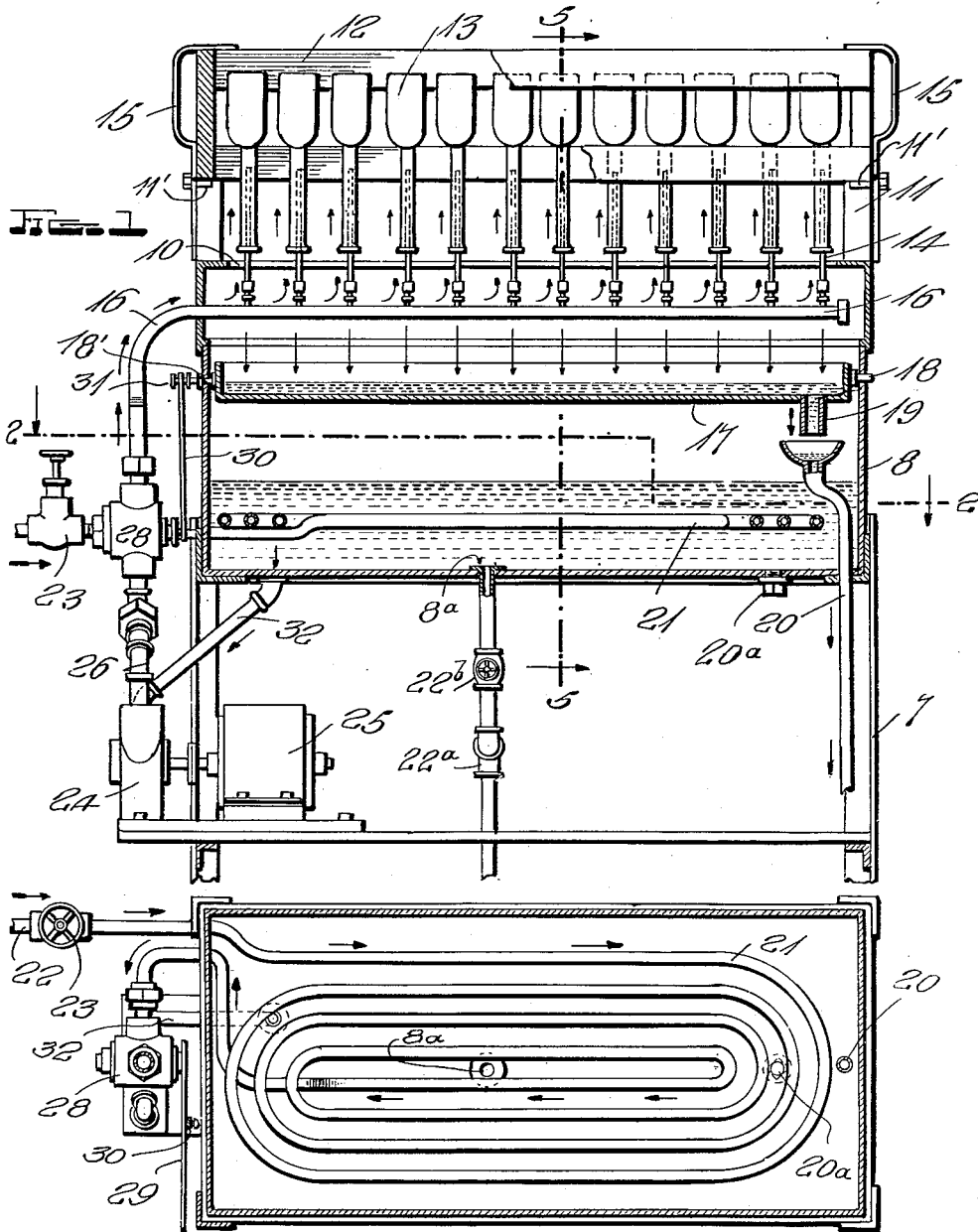
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2,263,367

BOTTLE WASHER

Filed Oct. 20, 1939

2 Sheets-Sheet 1



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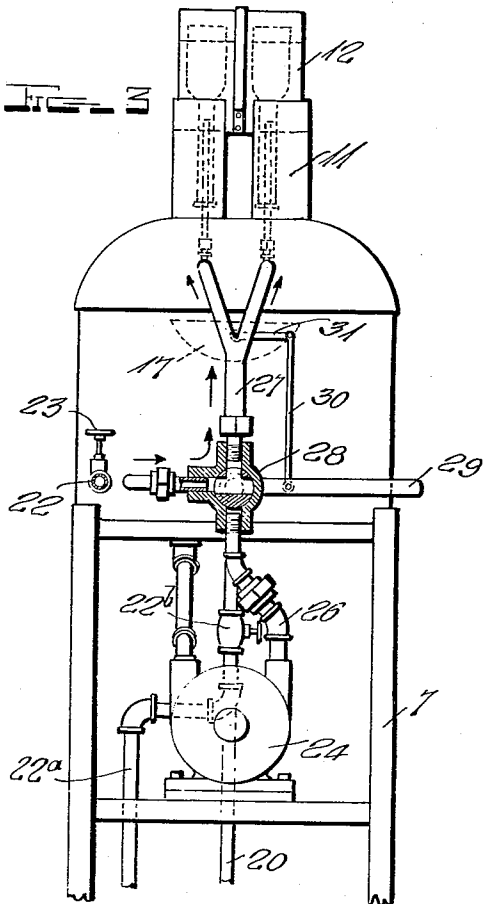
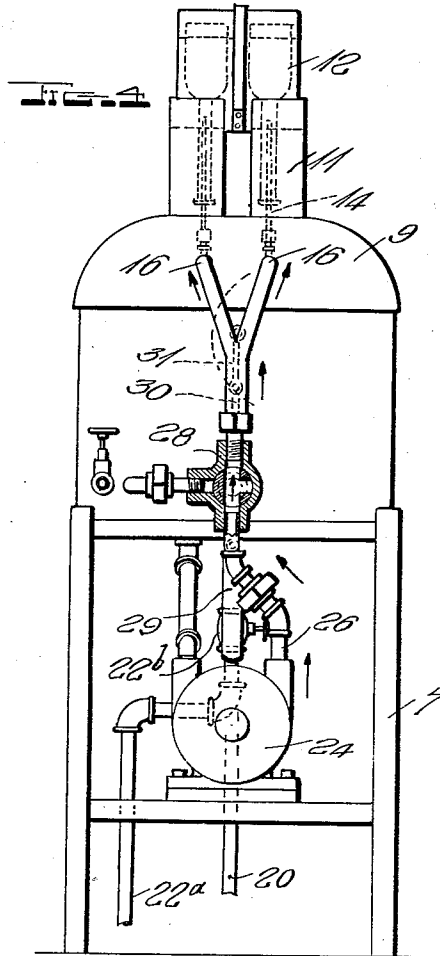
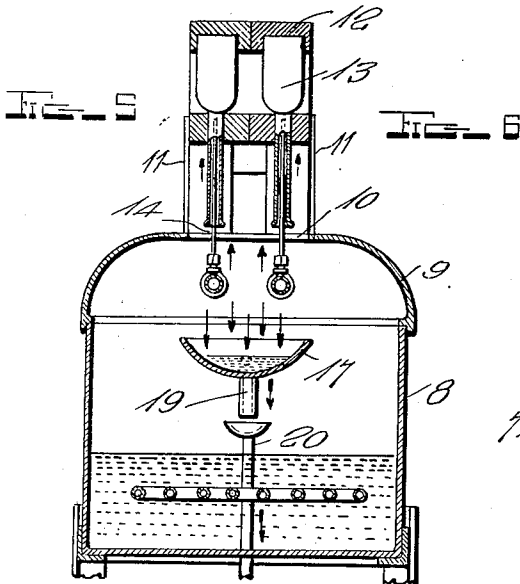
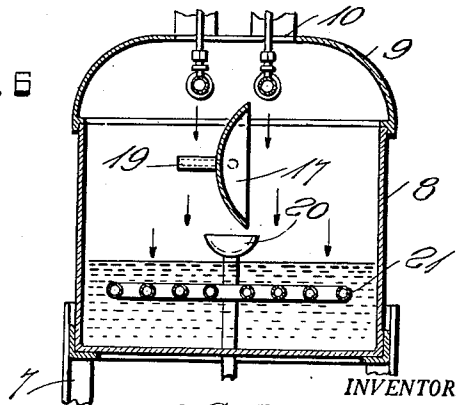
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BOTTLE WASHER

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2 Sheets-Sheet 2



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BOTTLE WASHER

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5 Claims. (Cl. 141—7)

My invention relates to bottle washing machines and particularly to test tube bottle washing machines.

A primary object of my invention is to provide a novel bottle washing machine especially adapted for use in laboratories where Babcock tests are made to determine the amount of butter-fat in cream.

A still further object is to wash and rinse a plurality of bottles without moving the same from the machine for the two separate operations.

Another object is to provide means whereby the washing solution is not diluted by the rinse water.

A still further object is to provide a novel arrangement whereby the washing solution is sprayed out through a series of jets or the like into the bottles by pressure created by a centrifugal water pump or by other means of pressure.

Another object is to provide a novel arrangement whereby the rinse water automatically enters the piping system when the washing solution is cut off.

A still further object is to provide a novel and simply designed washer which is compact and easily and cheaply operated.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings forming a part of this application, like numerals are employed to designate like parts throughout the same.

Figure 1 is a central vertical longitudinal view of the machine set for rinsing the bottles.

Figure 2 is a section on line 2—2 of Figure 1.

Figure 3 is an end view with valve set for rinsing purposes.

Figure 4 is a similar view with valve set for spraying the bottles with a wash solution.

Figure 5 is a section on line 5—5 of Figure 1, and

Figure 6 is a similar view but set to wash bottles with a solution.

In the drawings wherein for the purpose of illustration is shown a preferred embodiment of the invention, the numeral 7 designates the frame support. Mounted on the frame is the tank 8 for containing a washing solution and having a cover 9 provided with a longitudinal opening 10 therein. Guides 11 are angle irons provided with stops, 11', and are carried by the cover 9, and a test tube rack or holder 12 is fitted within said guides, its downward movement limited by the stops on the angle irons. Test tube bottles 13 are

inverted in said rack and suitably supported thereby, the ends of the bottles registering with spray nozzles 14 through the opening 10 for washing and rinsing purposes. The rack carries handles 15 whereby after the washing and rinsing operations the rack and bottles may be easily raised off of the washer and out of the guides 11.

Any suitable bottle rack may be used in combination with the apparatus disclosed, but it is preferable that the rack be capable of holding and clamping at least 24 or 36 test bottles.

Arranged within the tank 8 are the spray pipes 16 to which are attached the tubular spray nozzles 14 which extend up through the opening 10 in the cover 9.

Below these pipes is a rinse pan 17 pivotally mounted at 18 and 18'. This pan is provided with an outlet 19 and its purpose and operation will be hereinafter referred to. A drain pipe 20 is arranged in said tank below said outlet 19 as shown in Figures 1 and 3 whereby rinsing water caught by the pan 17 may flow out to a floor drain or the like instead of being retained in the tank 8.

A coil 21 is arranged in the tank 8 and is connected directly to the water pipe 22. A valve 23 controls the entry of the water into the coil 21.

A steam line 22a regulated by the valve 22b leads to the bottom of the tank 8 at 8a and supplies steam to keep the solution hot. Thus the water in the coil 21 is kept hot by the hot solution in tank 8. The valve 23 is open at all times so that the coil is kept full of water. When valve 28 is moved in rinse position the hot water is released from the coil 21 by pressure from the water line to spray nozzles and hot water from the coil is sprayed into the bottles for rinsing. Valve 23 only serves as a shut-off valve on water line for coil 21. 20a indicates a drain plug provided in the bottom of the tank 8.

A conventional centrifugal or other fluid pump is shown at 24 mounted on the lower portion of the washer frame 7 and operated by the electric motor 25. A pipe line 26 connects to said pump and leads to the pipe 27 which is provided with a branch forming the angularly arranged spray pipes. Interposed between the pipes 27 and 26 is the three way valve 28.

Connected to the valve 28 is a lever 29. A control arm 30 is pivotally connected to the lever 29 and a link 31 is rigidly attached to the pivot pin 18' of the water pan 17 and its opposite end is pivoted to the arm 30. When the lever is lowered it is obvious that the rinse water pan will be

positioned as shown in Figure 6, so that none of the solution is caught therein.

A drain pipe 32 leads from the solution tank 8 to the pump 24 whereby the solution may be used over and over again.

It is to be noted that the water pressure line 22 forms the heating coil 21 and finally leads to the three way valve, where as shown in Figure 1, the bottles are rinsed thereby, the valve being positioned to permit the flow of hot water there-through.

In Figure 4 the lever 29 has been lowered and the valve is accordingly operated to permit the flow of the washing solution through the pipe and nozzles. At the same time it is noted that the pan is automatically shifted whereby the washing solution is permitted to fall back into the tank for subsequent use instead of being caught thereby, while in Figure 3 when the rinse water is being used the pan is automatically positioned under the nozzles to catch the water to prevent the dilution of the washing solution.

In the operation of the device a rack containing the test bottles to be washed is placed in the guides and the necks of said bottles register with the ends of the spray nozzles. The valve is set according to Figure 4. The electric motor is then turned on causing the washing or an alkaline solution in the tank 8 to be forced by the action of the pump through the nozzles and thus the bottles are sprayed with the solution. The solution is continuously used over and over again by reason of the outlet 32 from the tank 8 which leads to the pump 24 and upwardly through the valve 28 and out through the main pipes 16 and down into the tank 8 again.

After the test bottles have been sprayed, from thirty to sixty seconds or so, the pump 24 is stopped and the valve 28 moved into the position shown in Figure 3. The actuation of the valve to this position by the lever 29 automatically throws the pan 17 into position under the spray nozzles and as the rinse water from the hot pipe line 22 enters the nozzles it drips down and is caught by the rinse pan and flows out through the outlet 19 and pipe 20. This novel arrangement prevents the dilution of the washing solution by the rinse water.

After the rinsing thereof the water is turned off and pump is stopped by a conventional switch (not shown) and the bottles and rack are then removed from the guides 11 and are ready for use.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred embodiment of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of my invention and the scope of the subjoined claims.

Having thus described my invention, what I claim is:

1. A bottle washer comprising a frame, a solution tank carried by said frame, a bottle rack mounted on the outside top of said tank, spray pipes arranged in said tank for entering the necks of said bottles and spraying the interior of said bottles, means for supplying a washing solution from said tank to said bottles through said pipes, means for cutting out said washing solution and supplying rinse water through said spray pipes to said bottles, and means whereby said rinse water is prevented from entering the solution tank.

2. A bottle washer comprising a solution tank, a bottle rack mounted on the outside top of said tank, spray pipes arranged in said tank for entering the necks of said bottles and spraying the interior of said bottles, means for supplying the washing solution to said bottles through said spray pipes, means for cutting out the washing solution to supply rinse water to said bottles through said spray pipes, and means whereby a rinse pan is automatically thrown under the spray pipes when the rinse water is being supplied to prevent dilution of the washing solution.

3. In a bottle washer, a frame, a solution tank mounted on said frame, a cover for said tank, said cover having a longitudinal opening therein, a bottle rack arranged on said cover for holding, inverted bottles therein which extend downwardly toward the opening in said cover, spray pipes mounted in said tank and having upwardly extending nozzles, said nozzles arranged to enter the necks of said bottles, means for supplying a washing solution to said bottles through said nozzles, a source of rinse water supply communicating with said nozzles, means whereby said washing solution may be cut off to permit rinse water to spray out through said nozzles, and means arranged under said spray pipes whereby the rinse water is caught and discharged out of said tank to prevent dilution of the washing solution therein.

4. In a washer for test bottles, a solution tank, a rack for holding inverted bottles mounted on the outside top of said tank, said bottles extending downwardly toward the solution tank, spray pipes arranged in said tank and having a source of rinse water supply, means for supplying washing solution to said spray pipes from the solution tank, spray nozzles carried by said pipes and arranged to enter the necks to spray the interior of said bottles, and a rinse water pan pivotally arranged under said spray pipes and nozzles and operable only when the rinse water supply is on.

5. The structure of claim 4, characterized by a three-way valve for controlling the solution and rinse water supply, a lever attached to said valve for the operation thereof, and a control arm pivotally attached thereto and connected to said rinse water pan for the actuation thereof.

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