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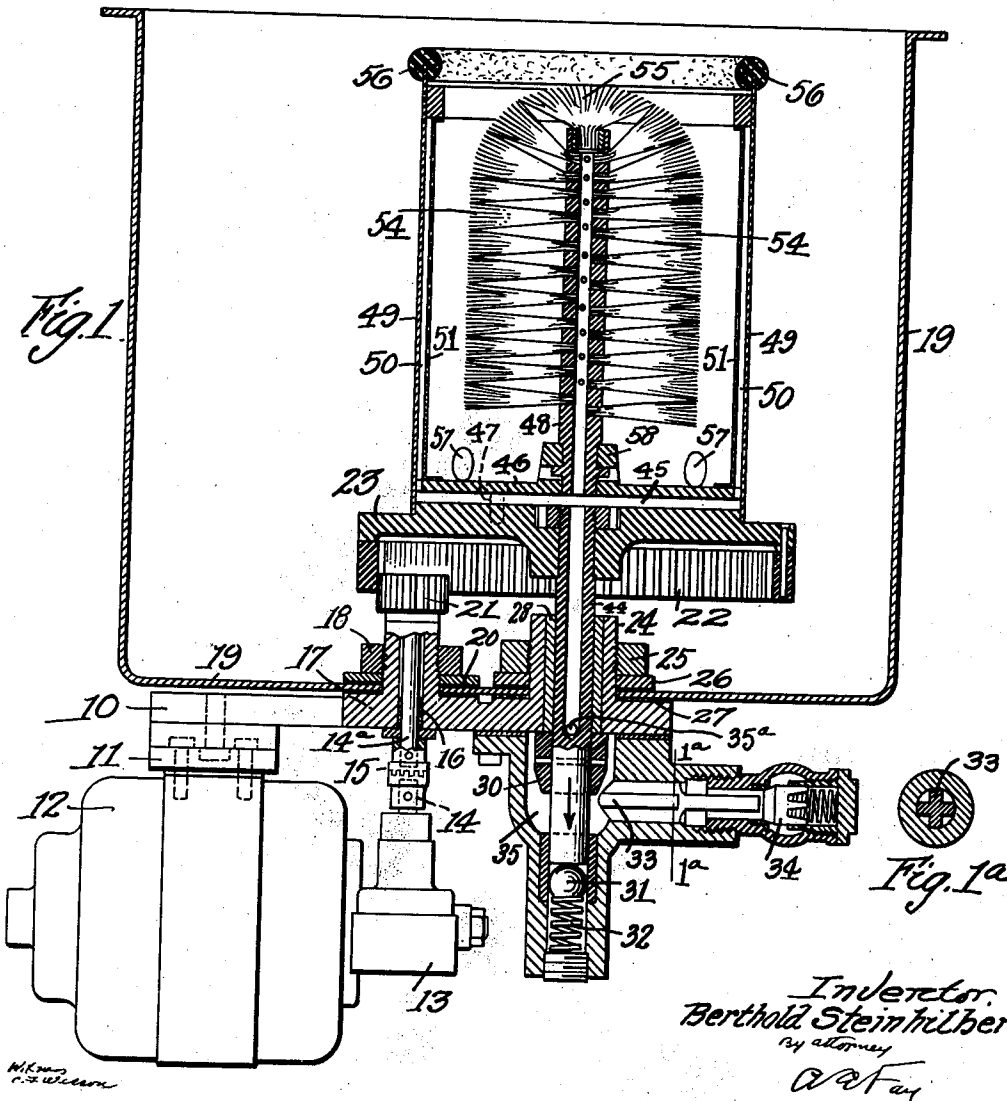
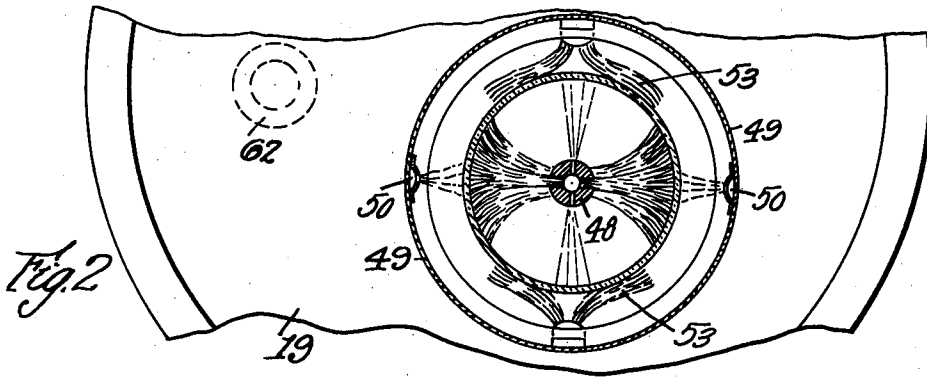
B. STEINHILBER

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CLEANING AND DISINFECTING MACHINE

Filed Aug. 24, 1938

2 Sheets-Sheet 1



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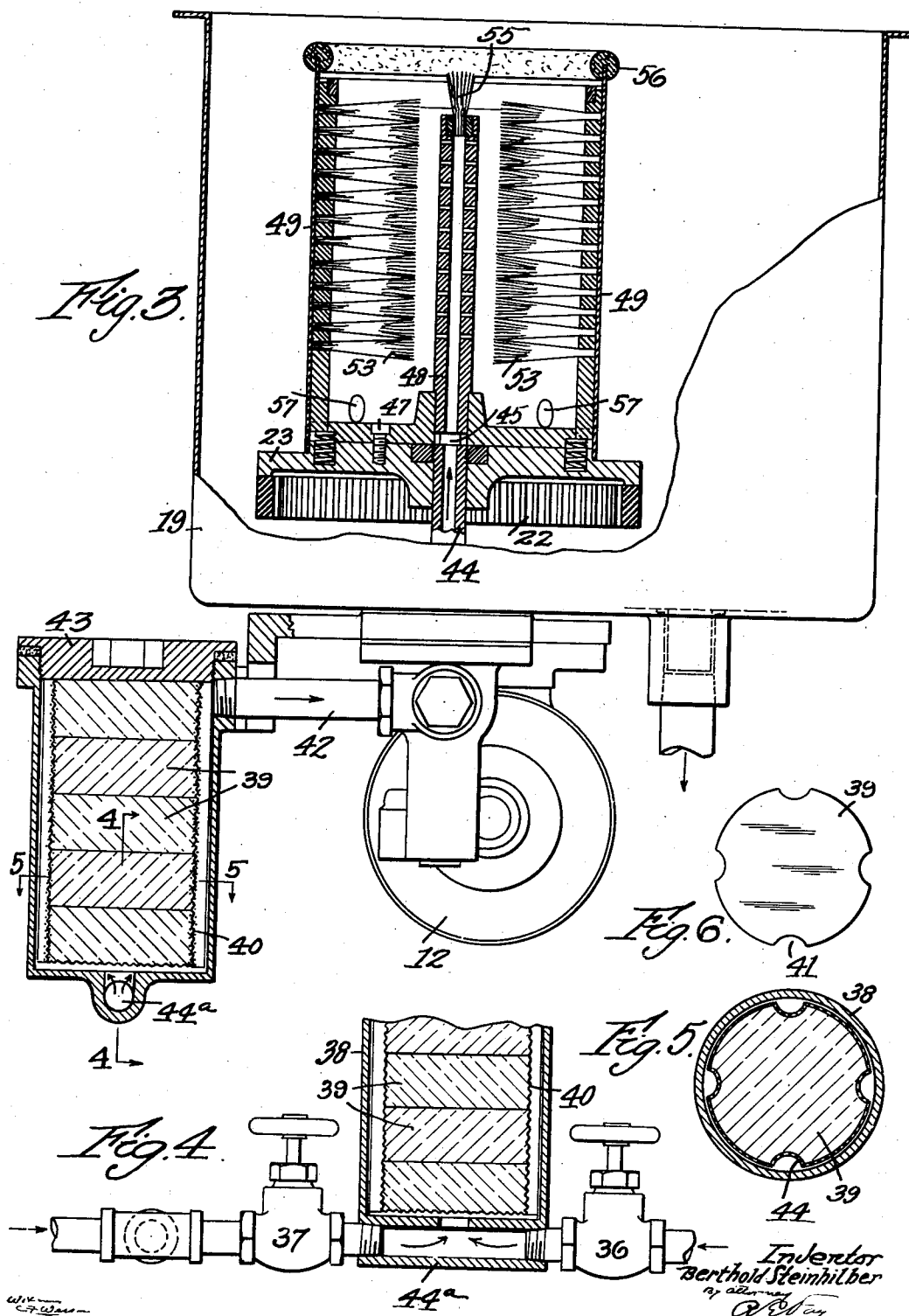
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UNITED STATES PATENT OFFICE

2,253,539

CLEANING AND DISINFECTING MACHINE

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Application August 24, 1938, Serial No. 226,524

9 Claims. (Cl. 15—75)

This invention relates to a machine for cleaning, disinfecting, washing and rinsing glasses, particularly glasses used for beer, and the like.

The principal objects of the invention are to provide a machine for accomplishing these results, which can be installed in a sink, on a stand or table, or the like to support it; to provide a construction for this purpose in which the liquid is instantaneously discharged through means provided therefor and not capable of leaking over the holding device or foundation for it; to provide means whereby no dirty, infected or previously used water can get back into the machine; to provide a construction in which the insides and outsides of the glasses can be washed and disinfected at the same time, thus avoiding two steps in the operation; to provide a means for attaching a power unit to the bottom of the base plate where it will be out of the way under it and connecting it to the means for rotating a rotor, which is a hollow cage in which the glass can be inserted for washing and disinfecting; to provide means for protecting this rotor at the top so that the glasses will not become broken in contact therewith; to provide means for introducing hot and cold water, both regulated so as to be of the right temperature; to provide a cleaner and disinfectant container in combination with cakes of the material arranged and shaped in such a way that the water will pass through or around the same at all times and avoid the necessity for replacing them until the container is practically emptied; to provide means for pushing the glass into operative position and quickly removing the same; and to provide double acting rotary cleansing brushes in contact with the glass throughout and on the inside and outside and a special brush for cleaning the bottom of the glass inside.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings, in which

Fig. 1 is a diametrical sectional view of a container or sink, mounted on a supporting plate and showing a preferred form of the cleanser and the motor in position;

Fig. 1a is a sectional view on the line 1a—1a of Fig. 1;

Fig. 2 is a fragmentary plan of the sink and cleanser showing the way in which the brushes engage the inside and outside of the glass;

Fig. 3 is a view similar to Fig. 1 of the rotor taken in section on a line at right angles to Fig. 1, thereby showing the outside brushes and also

illustrating the container for the soap and disinfecting material;

Fig. 4 is an elevation of the pipes at the bottom for the cold and hot water with the soap container in section on the line 4—4 of Fig. 3;

Fig. 5 is a sectional view of the soap container on the line 5—5 of Fig. 3; and

Fig. 6 is a plan of one form of soap and disinfectant block which it is preferred to use in this device.

The washing of the glasses, particularly beer glasses, and the like, is a matter that is often done with little care and with poor results. This invention is designed to wash each glass carefully fully inside and out and at the same time apply a mild disinfectant and, as stated above, pass the washing water through in such a way that it will not be used over twice.

In the form shown in the drawings, the machine is shown as supported by a stationary base plate 10, which might be the bottom of a sink, table, or any suitable base. It is provided under it with a motor liner 11 securely fixed removably in position and supporting the power unit which is shown here in the form of a Dumore $\frac{1}{8}$ H. P. 6000 R. P. M. motor 12. The motor is provided with a speed reducing gear 13 in the ratio of 11 to 1 to transmit power to a vertical shaft 14 having a coupling 15 capable of being released for the loosening of the motor and withdrawing of the motor downward. The continuation of this shaft extends through the base plate where it is provided with a needle bearing 16 mounted in an element 17. It is fixed in position by a nut 18 which also fixes it to the bottom of a sink, or other container 19, through which the shaft passes. Packings 20 are provided to prevent leakage at this point.

On the top of the shaft 14^a is a pinion 21 which meshes with an internal gear 22. As the teeth are vertically adjustable in these two parts they keep them in geared relation to each other, irrespective of any up or down motion of the rotary head 23.

As will be seen, the gear 22 is mounted on a rotary head 23 which is centered on a threaded projection 24 held by a nut 25 against washers 26 and also packings 27. This nut fastens the washer to the bottom of the sink in another place and holds within it an oilless bearing 28 which carries inside it a hollow shaft 44 extending up above it. At the bottom this shaft 44 has a conical valve opener 30 and the bottom of the shaft 44 abuts against a ball bearing 31 in a step bearing and upheld by a spring 32. By placing the

glass in position for washing, which will be described later, this conical member 30 engages another conical member 33 at right angles to it, which pushes an automatic check valve 34 backwardly and opens a supply of water into the tubular member in which the member 33 is located. Therefore, water enters a space 35 and through an opening 35^a into the shaft 44 and up the shaft. The valve 34 is of such a nature as, in the position shown in Fig. 1, to close the entrance of water to the machine.

The water enters through a hot water valve 36 and a cold water valve 37, either or both of which may be opened, by separate valves, into a pipe 44a. The water, hot or cold, preferably warm, enters through this pipe 44a upwardly into a cleaning and disinfecting container 38. This is simply a cylindrical casing closed at the top and provided inside with a series of cakes 39 of a combined cleanser and disinfectant, such as soap and an antiseptic. This container is filled with a series of the cakes 39 and each is shown as provided with a series of vertical grooves 41 around it. These cakes with the grooves 41 are brought into registration. These cakes, or the like, are also covered with a single wire textile cake 40 which encloses the cakes but allows the water to get to the cake, especially through the grooves 41 in the edges which are brought into registration in filling. Thus the water brought in through the pipe 42 from this container is already provided with soap and disinfectant and brought up to the valve 34 by this pipe 42, which is not shown in Fig. 1. The moving of the valve 34 opens the flow of treated water to the pipe 44. The top of the container 39 is closed by a removable cap 43 which has a socket hole for a wrench and suitable packing. It is removed to repack the container with additional cakes 39 and it will be seen that the water flowing through the container from the inlet to the outlet will pass along the outside edges of the cakes of soap and wear them down from the outside to a point where it is necessary to replace them.

The liquid thus used with the soap and disinfectant passes up through the pipe 44 through the rotary head 23 into ducts 45 in the top of the rotor head 23 under a bottom disc 46 which is secured to the head 23 by screws 47. This liquid also passes into a hollow vertical pipe 43 inside the bottom disc 46 which is secured to the base 23 around the same. It passes up from the two opposite narrow spaces 45 in circular side spaces 50. Around each space 50 is a perforated wall 51 and sprays of water pass out through the perforations between the halves of a brush 53 on each side. These halves with these brushes, as shown in Figs. 2 and 3, engage the outside of the glasses at opposite points which are being washed and the spray, of course, is directed from the outside. The water also passes to the top of the central hollow shaft 48 and is sprayed on the inside of the glass through perforations shown therein. This shaft 48 supports two opposite brushes 54 which spread outwardly and engage the inside surface of the glass, the operation being practically the same on the inside as on the outside. This inside brush is provided with a convex top removable brush 55 for brushing the bottom of the glass or other object.

It will be noticed that the top of the circular wall 49 is provided with a circular soft rubber member 56 which is secured in place on the

outside cylindrical wall and is for the purpose of preventing the breakage of the glass when it is put into the washing receptacle.

The glasses will get both the spray and brushing on the inside and outside and the very bottom of the glasses will be perfectly washed by pressing down on them. All the water will immediately drop out to pass out through holes 57 into the waste receptacle or pipes and there is no possibility of using the water over. The support of the shaft 48 from the bottom is reinforced by a joint or the like 58. The rotary head 23 is capable of reciprocating up and down without getting out of mesh with the gear 21. The spring 32 resists this reciprocation and tends to return the shaft to normal position when it is pushed down but it will work properly all the time.

For the purpose of rinsing the glasses after they have been washed and disinfected, the bottom of the sink 19 is provided at one side with a cold water or hot water connection (as may be desired) extending up through it and having a valve and valve casing 62 to control the passage of the water upwardly therethrough.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

1. In a machine for washing and disinfecting glasses and the like, the combination with a base plate, of a shaft passing vertically through said base plate, a motor depending from the base plate and operatively connected with said shaft for running it, a gear on said shaft, a reciprocable rotary head, an internal gear on said head meshing with the first named gear and driven thereby, said gears forming a sliding connection between said head and the gear on the shaft, and a rotor for receiving the glasses to be washed located on said head.

2. In a machine for washing and disinfecting glasses and the like, the combination with a base plate having two holes therethrough, of a motor driven shaft passing vertically through one hole, a gear on said shaft, a motor depending from the base plate and operatively connected with said shaft for running it, a pipe passing up through the other hole, means for directing hot or cold water up through said pipe, a rotary head centered on said pipe and movable up and down, an internal gear on said head meshing with the first named gear and driven thereby, and a rotor, for receiving the glasses to be washed, located on said head.

3. In a machine for washing and disinfecting, the combination of a vertical shaft, a motor operatively connected with said shaft for running it, a gear at the top of said shaft, a pipe, a rotary head centered on said pipe and movable up and down, an internal gear on said head meshing with the first named gear and driven thereby, a rotor for receiving the glasses to be washed, located on said head, and means for admitting a regulated mixture of hot and cold water into said rotor through said pipe.

4. In a glass washing machine, the combination with a base plate, of a sink supported thereby, a rotary, axially slidable head in said sink, a rotor fixedly mounted on said head, stationary means for rotating said head and rotor, a driving connection between said means and said rotor effective to cause said means to drive said rotor in all positions of the latter, a duct on the head, means for admitting washing water into said duct when said head is in one position, vertical

perforated walls spaced inside the rotor to form ducts to spray water through said perforations on the outsides of glasses in the rotor, said last named ducts being connected with the first-named duct, and brushes projecting into said rotor far enough to brush the glasses while they are being sprayed.

5. In a glass washing machine, the combination with a base plate, of a sink supported thereby, a vertically slidable rotary head in said sink, a rotor fixedly mounted on said head, stationary means for rotating said head and rotor, a driving connection between said means and said rotor effective to cause said means to drive said rotor in all positions of the latter, the head having a duct, means for admitting washing water into said duct when said head is in lowermost position, vertical perforated walls spaced inside the rotor at opposite sides to spray water on the outside of glasses in the rotor, the spaces between the walls and rotor being connected with said duct, and brushes projecting inwardly from said wall far enough to brush the glasses while they are being sprayed.

6. In a glass washing and disinfecting machine, the combination of a fixed support, a sink secured thereto, a vertically reciprocable pipe extending up through both, means for introducing water containing soap and a disinfectant into said pipe, a horizontal head centered on said pipe, means for rotating said head, a sliding connection between said rotating means and said head, a hollow rotor fixed to the head and centered on the pipe, a central vertical pipe in said rotor connected internally with the top of said vertical pipe and perforated from bottom to top to spray the inside of a glass or the like inverted over it, and opposite vertical rows of horizontal bristles extending radially from bottom to top of said pipe.

7. In a glass washing and disinfecting machine, the combination of a vertically reciprocable pipe extending upwardly, means for introducing hot or cold water containing soap and a disinfectant into said pipe, a horizontal head supported on

said pipe, means for rotating said head, a sliding connection between said rotating means and said head, a hollow rotor fixed to the head and centered on the pipe, a central vertical pipe in said rotor connected internally with the top of said vertical pipe and perforated from bottom to top to spray the inside of a glass or the like inverted over it, opposite vertical rows of horizontal bristles extending from bottom to top of said pipe, and a removable fan brush at the top of said pipe to clean the insides of the extreme bottoms of glasses inverted over the pipe.

8. In a glass washing and disinfecting machine, the combination of a vertically reciprocable pipe extending upwardly, means for introducing hot or cold water containing soap and a disinfectant into said pipe, a horizontal head supported on said pipe, stationary means for rotating said head, a sliding connection between said rotating means and said head, a hollow rotor fixed to the head and centered on the pipe, a central vertical pipe in said rotor connected internally with the top of said vertical pipe and perforated to spray the inside of a glass or the like inverted over it, opposite vertical rows of bristles extending from bottom to top of said pipe, and means connected with the first named pipe for spraying the outside surfaces of said glasses.

9. In a device for cleaning and disinfecting glasses, a combination of a holder for the glasses comprising a horizontal rotary head and a cylindrical rotor supported thereby, means for introducing a mixture of hot and cold water charged with a soapy substance and disinfectant through said head into the interior of each glass to be cleaned and on the exterior of each glass to be cleaned, the water introducing means comprising a member operated by the descent of the rotary head, which is movable up and down, an automatic check valve operated by said member to open and close the means for introducing the water, and a stationary motor effective to rotate said rotary head in both up and down positions thereof.

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