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DRINKING UTENSIL CLEANING APPARATUS

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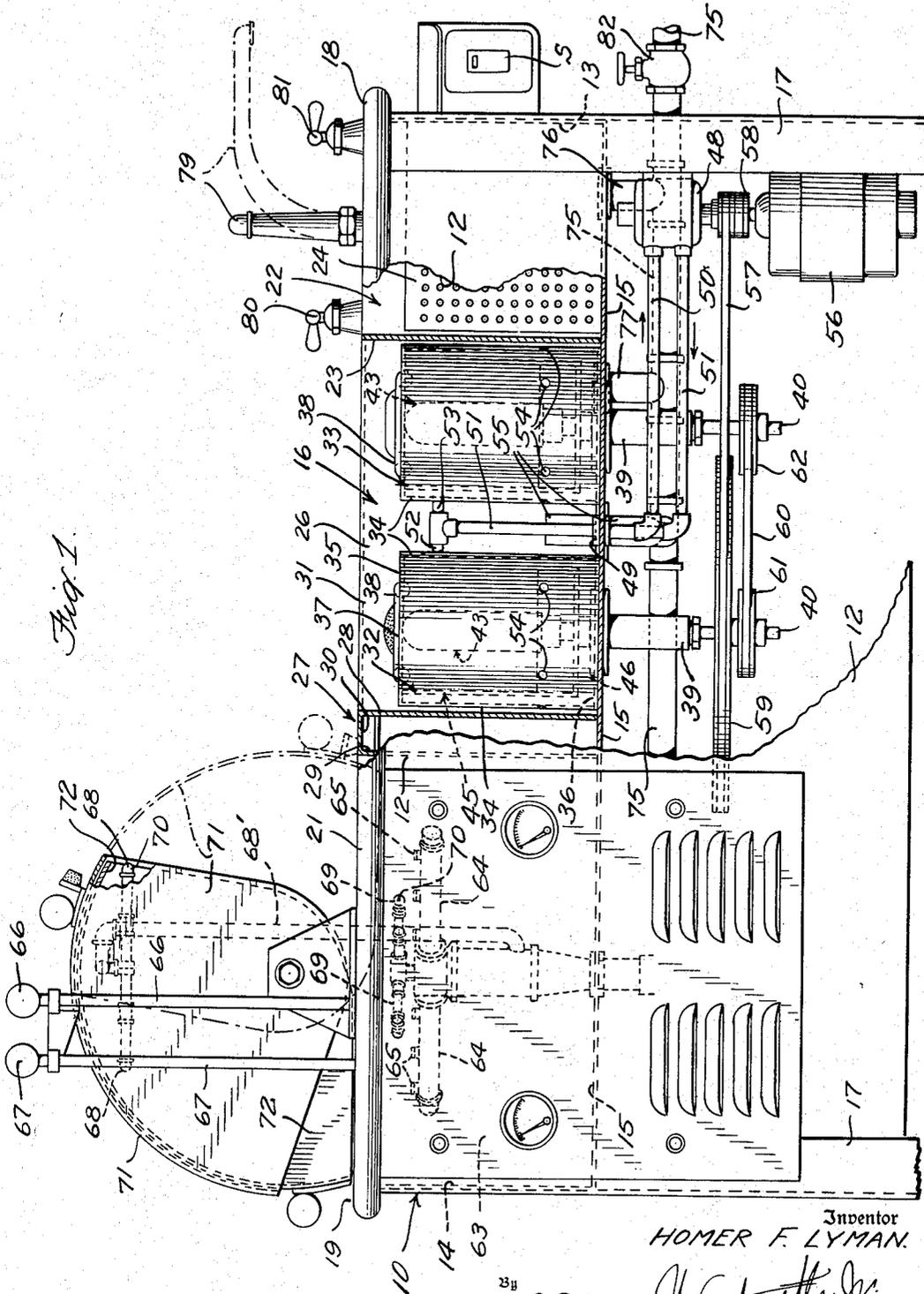


Fig. 1.

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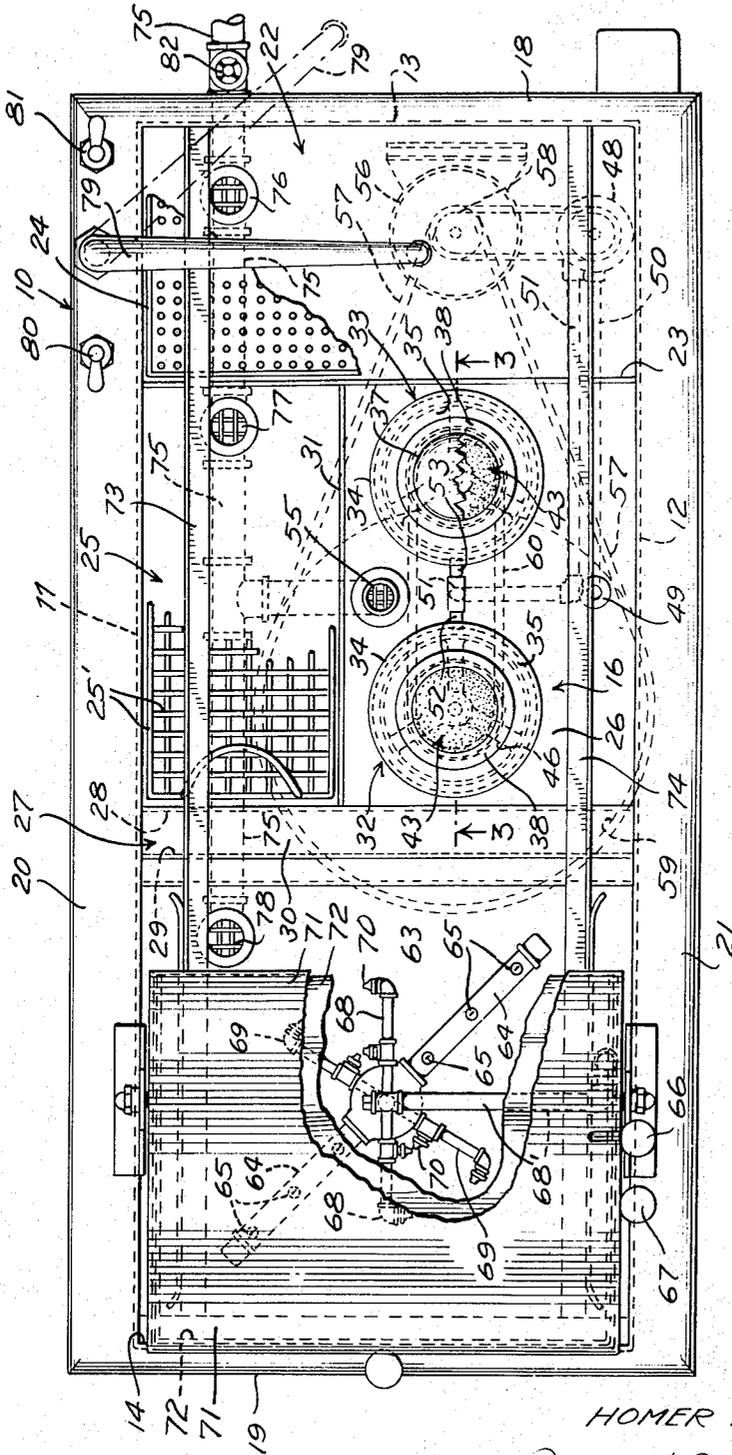
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Fig. 2.



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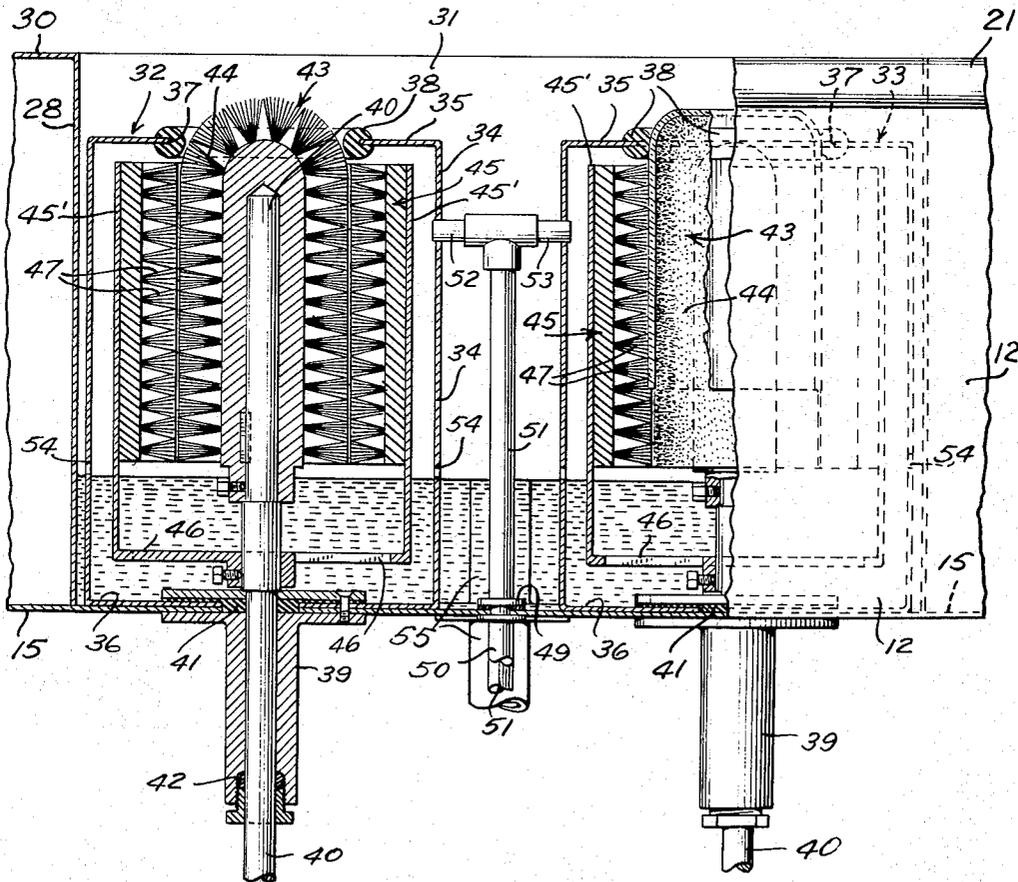
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Fig. 3.



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DRINKING UTENSIL CLEANING APPARATUS

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6 Claims. (Cl. 15—75)

This invention relates to eating and drinking utensil washing apparatus and more particularly to apparatus for washing and cleansing glassware, silverware and dishes.

The present invention provides apparatus conveniently and compactly arranged in a unit in which waste material may be removed from eating utensils and disposed of, in which silverware may be soaked, in which glassware may be washed and in which dishes may be washed and rinsed.

This invention provides drinking glass washing apparatus wherein the inner and outer surfaces and the edge of glasses are washed and cleaned by brushes and in which the brushes, when not in use after the cleaning operation, are permitted to dry thereby prolonging the life thereof.

The present invention provides a machine comprising a rectangular-shaped frame, the opposite sides of the frame being of greater length than the opposite ends thereof. A rectangular-shaped, liquid-tight tank is supported in the frame and comprises opposite side members attached to opposite sides of the frame, opposite end members attached to opposite ends of the frame and extending transversely thereof and a bottom extending in a horizontal plane intermediate the top and bottom of the frame and between the opposite side and end members, the opposite side members and end members being in liquid-tight relationship with one another and the bottom being in liquid-tight relationship with the opposite side and end members. The tank is divided into a plurality of conveniently and compactly arranged compartments separated from one another in a liquid-tight manner. A rectangular-shaped prewash and garbage disposal compartment extends transversely of the tank at the forward end thereof while a rectangular-shaped silverware soaking compartment having a removable tray therein in which silverware is placed which compartment is of a width somewhat less than the width of the tank extends along one side of the frame longitudinally thereof from the prewash and garbage disposal compartment to a dishwashing compartment at the opposite or rearward end of the machine. The dishwashing compartment has revoluble wash water and revoluble rinse water arms by means of which wash water and rinse water is provided for washing and rinsing the dishes, the compartment being covered by segmentally-shaped hoods during the washing and rinsing operations. Disposed laterally of the silverware soaking compartment and also extending longitudinally of the frame between the prewash and garbage disposal compartment and the dishwashing compartment is a glasswashing compartment in which is disposed glasswashing apparatus comprising cylindrically-shaped drinking glass containers into which glasses in an inverted position are placed for cleansing. Each of the containers has a rotatable inner brush which engages the inner surface of the glass and a rotatable outer brush which engages the outer surface of the glass and which washes and cleans the glass as it is held station-

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ary. The containers have liquid outlets below the level of the brushes so that water will drain therefrom after the washing operation so that the brushes will thereafter dry. Wash water is recirculated from the glasswashing compartment into the glass containers while water from the dishwashing compartment, silverware soaking compartment, glasswashing compartment and prewash and garbage disposal compartment may be drained therefrom through a common drain after the cleaning and washing operations are completed. Water for the silverware soaking compartment, glasswashing compartment and prewashing compartment is supplied through a pivoting spigot. A track by means of which a tray of dishes to be washed is conducted from the forward end of the machine to the dishwashing compartment at the opposite end thereof is provided and extends along the top of the machine.

The invention will be understood from the following description when considered in connection with the accompanying drawings forming a part thereof and in which:

Fig. 1 is a side elevational view of the apparatus of the present invention with parts thereof broken away;

Fig. 2 is a plan view of the apparatus shown in Fig. 1, and

Fig. 3 is a vertical view taken on the line 3—3 of Fig. 2 but on an enlarged scale.

Like characters of reference refer to like parts throughout the several views.

Referring to the drawings, particularly Figs. 1 and 2, the reference numeral 10 designates the frame of the utensil cleaning and washing apparatus of the present invention which is rectangular-shaped and comprises opposite side members 11 and 12, opposite end members 13 and 14 and a bottom 15. The opposite sides and ends are so joined as to form a liquid-tight, rectangular tank or chamber 16. Tank 16 is supported at its four corners on vertically extending legs 17 which project below the bottom 15. A table top is formed on the top of frame 10 by flanges 18, 19, 20 and 21 which extend outwardly at right angles from opposite side members 11 and 12 and opposite end members 13 and 14 respectively.

Tank or chamber 16 is divided into a plurality of compartments separated from one another in a liquid-tight manner. A rectangular-shaped prewash and garbage disposal compartment 22 is formed at one end of tank 16 by positioning a partition 23 so that it extends transversely of the tank in spaced relationship with end member 13 between side members 11 and 12 against which the opposite ends of the partition abut in a liquid-tight manner. The upper side edge of partition 23 is at a level substantially flush with the upper surfaces of the flanges of the table top while the lower side edge of the partition abuts in a liquid-tight manner against the bottom 15 of tank 16. A removable garbage strainer box 24 of a length, width and depth slightly less than the length, width and depth of compartment 22 is positioned in said compartment.

A silver soaking compartment 25 and a glasswashing compartment 26 are formed in the central portion of tank 16 adjacent to compartment 22. Compartments 25 and 26 are also rectangular in shape and extend longitudinally of tank 16, the compartments being disposed laterally of one another. Partition 23 forms one end of the compartments 25 and 26 while a substantially inverted U-shaped partition 27 longitudinally spaced laterally from partition 23 forms the opposite end of said compartment. The legs 28 and 29 of partition 27 extend transversely of tank 16, the opposite end edges of legs 28 and 29 abutting opposite sides 11 and 12 of tank 16 in a liquid-tight manner while the lowermost edges of legs 28 and 29 abut against the bottom 15 of the tank in a liquid-tight

relationship. The joining portion 30 of the uppermost edges of the legs is flush with the top of the table. A longitudinally extending partition 31 separates compartments 25 and 26 from one another, one end edge of partition 31 abutting partition 23 and the opposite end edge thereof abutting leg 28 of partition 27 in liquid-tight relationship. The lower edge of partition 31 abuts the bottom 15 in a liquid-tight manner while the uppermost edge is substantially flush with the top of the table of the apparatus. The opposite ends of compartments 25 and 26 are, therefore, formed by partition 23 and leg 28 of partition 27 while longitudinal partition 31 forms one side of both of said compartments. The opposite side of compartment 25 is formed by the side 11 of tank 16 and the opposite side of compartment 26 is formed by side 12 of said tank.

Silversozaking compartment 25 has a mesh tray 25' of a dimension slightly less than that of the compartment so that the tray with silver therein may be readily inserted and removed from the compartment.

Glasswashing compartment 26 has glasswashing apparatus therein which apparatus, as shown, comprises two cylindrically-shaped glass containers 32 and 33 mounted with the longitudinal axis thereof extending vertically in the compartment. Each of the containers comprises a metallic housing 34 having a top 35 and a bottom 36 closing opposite ends thereof. The top has a central opening 37 with a rubber ring 38 extending therearound the opening and the ring being of such diameters that a glass may be inserted therethrough to project into the containers and the rubber ring will engage the outer surface of the glass to prevent rotation thereof. Each of the containers is secured in position in compartment 26 by a mounting 39 which fastens the bottoms 36 of the containers to bottom 15 of the tank 16. Mountings 39 have a longitudinal bore therein the center of which is in substantial vertical alignment with the center of opening 37 and ring 38. Vertical shafts 40 are rotatably mounted in mountings 39 and extend vertically upwardly into containers 32 and 33 and downwardly below bottom 15 of tank 16. Suitable packing 41 and 42 is used to prevent leaking of liquid around shafts 40. An inner brush 43 which is of such diameter that the bristles 44 thereof will bear against the inner surface of a glass inserted through openings 37 into containers 32 and 33 is mounted on shafts 40 so as to rotate therewith while a circular outer brush 45 comprising a cylindrical upright 45' mounted on a spoked fitting 46 which is fastened to shafts 40 to turn therewith has bristles 47 which project outwardly from upright 45' a sufficient distance to bear against the outer surface of a glass inserted through opening 37. The bristles of the brushes 43 and 45 extend outwardly of their mounting from a point adjacent the tops of the containers to a point in spaced relationship with the bottoms 36 of containers 32 and 33. Water for washing glasses in containers 32 and 33 is circulated from compartment 26 by a pump 48 which has a suction in communication with compartment 26 through an outlet 49 in compartment 26 and a suction pipe 50 and has its outlet in communication with the interior of containers 32 and 33 through pipe 51 and branch pipes 52 and 53. Water from the containers 32 and 33 drains into compartment 26 through openings 54 while, after the washing operation, water drains from said compartment through a drain outlet 55 which has an opening at a level below the level to which the brushes 43 and 45 extend, the openings 54 being at this level also. The pump 48 is driven by electric motor 56 which motor also drives shafts 40 through a belt 57 engaging drive pulley 58 on the motor shaft and sheave 59 on one of the shafts 40, sheave 59 being of substantially greater diameter than pulley 58 so that the speed of rotation of shaft 40 will be less than that of the motor shaft. A pulley 61 on the first-mentioned shaft 40 drives the other shaft 40

through a pulley 62 on the last-mentioned shaft and a drive belt 60 engaging said pulleys 61 and 62.

A dishwashing machine compartment 63 is formed by the leg 29 of partition 27 at one end thereof and end member 14 of tank 16 at the opposite end thereof and by opposite side members 11 and 12 of said tank. The dishwashing compartment, as shown, has dishwashing and dish rinsing apparatus therein of a well-known type which comprises a rotatable or revolving dishwashing arm 64 extending in a horizontal plane which has a plurality of spaced water outlets 65 that project water outwardly and upwardly therefrom causing the arm to revolve and the water to be sprayed against the dishes thereabove the water thereafter passing into compartment 63. Water is pumped into the arm 64 by a circulating pump, not shown, which pump circulates water from compartment 63 into arm 64. After washing the dishes, the pump is stopped by actuation of control lever 66 which stops the revolving of arm 64. Thereafter, the dishes are rinsed by operating control lever 67 which actuates a valve, not shown, permitting rinsing water to enter upper and lower rinsing arms 68 and 69 and causing them to revolve by the emission of water therefrom through outlets 70 which project the water toward and onto the dishes. During the washing and rinsing operations, the segmentally shaped hood members 71 and 72 are in closed position as shown in dotted lines in Fig. 1. Water is conducted to rinsing arms 68 and 69 through pipe 68' having a valve, not shown, therein controlled by lever 67 which pipe 68' is connected to a source of water. Dishwashing compartment 63 is connected by a connection, not shown, to a source of dishwashing water.

L-shaped track members 73 and 74, Fig. 2, extend longitudinally of tank 16 at the top thereof, the member 73 being adjacent to side member 11 while the track member 74 is adjacent side 12. The track members are provided so that a tray of dishes may be slid thereon from the end 13 of the apparatus longitudinally thereof to the dishwashing compartment after the washing and rinsing operations, hood segment 71 is raised and the tray of dishes is removed at the end of the apparatus adjacent end member 14.

A drain pipe 75 is in communication with prewash compartment 22 through drain outlet 76, with silver soaking compartment 25 through drain outlet 77, with glass washing compartment 26 through drain outlet 55 and with dishwashing compartment 63 through drain outlet 78.

Water for compartments 22, 25 and 26 is supplied through pivoting spigot 79 which receives water from taps 80 and 81.

In operation, prior to cleaning eating and drinking utensils in the apparatus of the present invention, valve 82 in drain pipe 75 is closed so that water will not flow through the drain pipe and will, therefore, be retained in compartments 22, 25, 26 and 63. Water for washing the glasses is provided to compartment 26 by turning the spigot 79 so that water therefrom runs into said compartment while water for soaking silver is provided by turning spigot 79 so that water therefrom will run into compartment 25. Control levers 66 and 67 are set so that water will not run into rinsing arms 68 and 69 and washing arm 64. Hood segment 71 is set in its open position as shown in Figs. 1 and 2. The silverware soaking compartment 25 and the glass washing compartment 26 are then filled with wash water, the normal level of the water in compartment 26 being somewhat below the level of the tops 35 of containers 32. Waste matter is scraped from the dishes to be washed over prewash and garbage disposal compartment 22, water from spigot 79 being used to assist removal of said waste. The dishes are then placed in a tray or basket of any well-known type which tray or basket is placed on track members 73 and 74 and, when the tray is filled with dishes to be washed and rinsed, is slid on the track

members into a position under the segmental hood members 71 and 72 and over dishwashing compartment 63. Hood member 71 is then moved in a clockwise direction from its open position, as shown in full lines in Fig. 1, into its closed position as indicated by dotted lines in Fig. 1. Control lever 66 is then actuated to start the dishwashing pump, not shown, so that dishwashing water is pumped into washing arm 64 from compartment 63 and emitted under pressure from outlets 65 therein causing wash water to be sprayed upwardly onto the dishes and causing the arm 64 to revolve. When the washing operation is completed, lever 66 is operated to stop actuation of the pump and water ceases to flow from outlets 65 and revolving of arm 64 stops. Control lever 67 is then actuated to permit the flow of water into rinsing arms 67 and 68 causing them to revolve and spray water onto the dishes thereby rinsing the dishes. When the rinsing operation is completed, lever 67 is operated to stop the flow of water into arms 67 and 68 thereby causing the revolution of the arms to cease. Segmental hood section 72 may then be moved in a clockwise direction and the tray of dishes which have been washed and rinsed are removed at the end 14 of the apparatus. If desired, however, hood section 71 may be opened by moving it into the position shown in full lines in Fig. 1 and the tray of dishes removed by sliding it over track members 73 and 74 toward end 13 of the apparatus.

Prior to or during the dishwashing and rinsing operations, silverware is placed in tray 25 and the tray is then disposed in compartment 25 so that the silverware therein will be soaked in the water in said compartment. Glassware may also be washed in the glasswashing compartment 26 at this time.

In washing glasses in the glasswashing compartment, motor 56 is set in operation by turning switch S to its "on" position thereby causing pump 48 to operate. Operation of pump 48 draws water from compartment 26 through outlet 49 thence through pipe 50 into the suction inlet of the pump thereafter to be discharged through pipe 51 and branch pipes 52 and 53 into containers 32 and 33 and around brushes 43 and 45. Operation of motor 56 rotates drive pulley 58 which in turn rotates sheave 59 through belt 57. Rotation of sheave 59 revolves shaft 40 of container 32 which turns pulley 61 on said shaft thereby driving belt 60 and rotating shaft 40 of container 33 through pulley 62. Rotation of shafts 40 causes inner and outer brushes 43 and 45 to rotate. A drinking glass to be cleansed is inserted in inverted position into opening 37 of containers 32 and 33 and is gripped by rubber rings 37 which holds the glass against rotation. A glass in such position is shown in container 33; Fig. 3. Rotation of inner brush 43 cleanses the inner surface of the glass while rotation of the outer brush 45 cleanses the outer surface thereof, the bristles of said brushes also contacting the top edge of the glass so that it is also cleansed. As the brushes rotate, water is circulated through containers 32 and 33, entering said containers through branch pipes 52 and 53 and flowing therefrom into compartment 26 through openings 54. When a glass is cleaned, it is removed from a container and replaced with a glass to be cleaned. When glasswashing operations are completed, the switch S is turned to its "off" position causing operation of motor 56 to cease. Action of pump 48 is thereby stopped as is the rotation of shafts 40. When all washing and cleaning operations are completed, valve 82 in drain pipe 75 is opened so that water will drain from compartment 22 through drain outlet 76, from compartment 25 through drain outlet 77, from compartment 26 through drain outlet 55 and from compartment 63 through drain outlet 78. Water from containers 32 and 33 flows outwardly through outlets 54 into compartment 26 and water from compartment 26 drains therefrom through outlet 55 to the level shown in Fig. 3 which is below the level of brushes 43

and 45. The brushes may, therefore, dry when the apparatus is not in use.

Inasmuch as various modifications may be made in the form of the invention herein disclosed without departing from the principles thereof, it will be understood that the invention is not to be limited excepting by the scope of the appended claims.

What is claimed:

1. In utensil washing and cleansing apparatus comprising a rectangular-shaped, liquid-tight tank open at the top thereof, said tank having a glasswashing compartment therein, the glasswashing apparatus comprising a cylindrically-shaped, vertically extending fluid-tight container mounted within said compartment, the bottom edge of said container being in fluid-tight relationship with the bottom of said compartment, the container having an opening in the top thereof to receive a cylindrically-shaped glass in an inverted position, the container being of such height that the top thereof is below the top of said compartment, means associated with the opening to maintain the glass against rotation, a vertically extending inner brush in the container and having bristles projecting toward the periphery of the container, said inner brush being rotatable on a vertical axis and adapted to engage the inner periphery of said glass, a vertically extending outer brush in the container and having bristles projecting toward said inner brush in the container and rotatable on a vertical axis and disposed to engage the outer periphery of the glass, the bristles of the brushes extending from a point adjacent the top of said container to a point in spaced relationship with the bottom thereof, means for rotating said brushes, and a conduit communicating with said container to conduct wash fluid thereinto, said container having a fluid outlet therein at a level below the bristles of said brushes through which wash fluid drains into said glasswashing compartment and a drain for said compartment at a level below the bristles of the brushes and through which the wash fluid drains from the glasswashing compartment.

2. In utensil washing and cleansing apparatus comprising a rectangular-shaped, liquid-tight tank open at the top thereof, said tank having a glasswashing compartment therein, the glasswashing apparatus comprising a cylindrically-shaped, vertically extending fluid-tight container mounted within said compartment, the bottom edge of the container being in fluid-tight relationship with the bottom of said compartment, the container having an opening in the top thereof to receive a cylindrically-shaped glass in an inverted position, the container being of such height that the top thereof is below the top of said compartment, means associated with the opening adapted to frictionally engage the glass and to maintain the glass against rotation, a vertically extending inner brush in the container and having bristles projecting toward the periphery of the container, said inner brush being rotatable on a vertical axis and adapted to engage the inner periphery of said glass, a vertically extending outer brush in the container and having bristles projecting toward said inner brush in the container, said outer brush being rotatable on a vertical axis and disposed to engage the outer periphery of the glass, the bristles of the brushes extending from a point adjacent the top of said container to a point in spaced relationship with the bottom thereof, means for rotating said brushes, and a conduit communicating with said container to conduct wash fluid thereinto, said container having a fluid outlet therein at a level below the bristles of said brushes through which wash fluid drains into said glasswashing compartment and a drain for said compartment at a level below the bristles of the brushes and through which the wash fluid drains from the glasswashing compartment.

3. In utensil washing and cleansing apparatus comprising a rectangular-shaped, liquid-tight tank open at the top thereof, said tank having a glasswashing compart-

ment therein, the glasswashing apparatus comprising a cylindrically-shaped, vertically extending fluid-tight container mounted within said compartment, the bottom edge of the container being in fluid-tight relationship with the bottom of said compartment, the container having an opening in the top thereof to receive a cylindrically-shaped glass in an inverted position, the container being of such height that the top thereof is below the top of said compartment, means associated with the opening to maintain the glass against rotation, a vertically extending inner brush having bristles in the container, said inner brush being rotatable on a vertical axis and adapted to engage the inner periphery of said glass, a vertically extending outer brush having bristles in the container, said outer brush being rotatable on a vertical axis and disposed to engage the outer periphery of the glass, the bristles of the brushes extending from a point adjacent the top of said container to a point in spaced relationship with the bottom thereof, means for rotating said brushes, the container having fluid outlet means at a level below the bristles of the brushes, a pump having a discharge and a suction connection, a conduit in communication with the discharge of the pump and with the interior of said container through which wash-fluid is conducted into the container, the compartment having a wash-fluid outlet below the level of said container fluid outlet means, and another conduit in communication with the compartment wash-fluid outlet and with the suction connection of said pump.

4. Drinking-glass washing apparatus comprising a liquid holding compartment, a cylindrically-shaped, vertically extending fluid-tight container mounted within said compartment, the bottom edge of the container being in fluid-tight relationship with the bottom of said compartment, the container having an opening in the top thereof to receive a cylindrically-shaped glass in an inverted position, the container being of such height that the top thereof is below the top of said compartment, means associated with the opening to maintain the glass against rotation, a vertically extending inner brush having bristles in the container, said inner brush being rotatable on a vertical axis and adapted to engage the inner periphery of said glass, a vertically extending outer brush having bristles in the container, said outer brush being rotatable on a vertical axis and disposed to engage the outer periphery of the glass, the bristles of the brushes extending from a point adjacent the top of said container to a point in spaced relationship with the bottom thereof, means for rotating said brushes, a conduit communicating with said container to conduct wash fluid thereinto, said container having a fluid outlet therein at a level below said brushes through which wash fluid drains into said liquid holding compartment, a drain for said compartment at a level below the bristles of the brushes and through which the wash fluid drains from the liquid holding compartment.

5. Drinking-glass washing apparatus comprising a liquid holding compartment, a plurality of cylindrically-shaped, vertically extending fluid-tight containers mounted within said compartment, the bottom edge of each container being in fluid-tight relationship with the bottom of said liquid holding compartment, the containers having an opening in the top thereof to receive a cylindrically-shaped glass in an inverted position, the containers being of such height that the top thereof is below the top of said compartment, means associated with the opening to

maintain the glass against rotation, a vertically extending inner brush in the containers rotatable on a vertical axis and adapted to engage the inner periphery of said glass, said inner brush being in the container and having bristles projecting toward the periphery of said container, a vertically extending outer brush in the containers rotatable on a vertical axis and disposed to engage the outer periphery of the glass, said outer brush being in the container and having bristles projecting toward said inner brush in the container, the bristles of the brushes extending from a point adjacent the top of said containers to a point in spaced relationship with the bottom thereof, means for rotating said brushes, a conduit communicating with said containers to conduct wash fluid thereinto, said containers having a fluid outlet therein at a level below said brushes through which wash fluid drains into said liquid holding compartment and a drain for said compartment at a level below the bristles of the brushes and through which the wash fluid drains from the liquid holding compartment.

6. Drinking-glass washing apparatus comprising a liquid holding compartment, a plurality of cylindrically-shaped, vertically extending fluid-tight containers mounted within said compartment, the bottom edge of each container being in fluid-tight relationship with the bottom of said liquid holding compartment, the containers having an opening in the top thereof to receive a cylindrically-shaped glass in an inverted position, the containers being of such height that the top thereof is below the top of said compartment, means associated with the opening to maintain the glass against rotation, a vertically extending inner brush in the containers rotatable on a vertical axis and adapted to engage the inner periphery of said glass, said inner brush being in the container and having bristles projecting toward the periphery of said container, a vertically extending outer brush in the containers rotatable on a vertical axis and disposed to engage the outer periphery of the glass, said outer brush being in the container and having bristles projecting toward said inner brush in the container, the bristles of the brushes extending from a point adjacent the top of said containers to a point in spaced relationship with the bottom thereof, means for rotating said brushes, each container having fluid outlet means at a level below the brushes, a pump having a discharge and a suction connection, a conduit in communication with the discharge of the pump and with the interior of said containers through which wash-fluid is conducted into the containers, the compartment having a wash-fluid outlet below the level of said containers' fluid outlet means, and another conduit in communication with the compartment wash-fluid outlet and with the suction connection of said pump.

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