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Janiszewski

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[54] **DISH WASHING MACHINE DRAIN UNIT**

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[52] **U.S. Cl.** **137/242,** 4/201, 137/590, 222/80, 251/144, 251/257

[51] **Int. Cl.. E03c 1/232,** F16k 25/00, F16k 31/524

[58] **Field of Search** 251/144, 251, 257, 258, 251/260, 325, 153, 155; 4/60, 198–201, 206; 137/242, 585, 590; 222/80, 525

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Assistant Examiner—Richard Gerard
Attorney, Agent, or Firm—Johnson, Dienner, Emrich & Wagner

[57] **ABSTRACT**

The drain unit housing has a bottom wall with a drain opening therein. A vertical sleeve member, secured at its lower end in the drain opening, presents an interior cylindrical surface and has at least one drain port in the side thereof. A vertical flow-control member extends downwardly into the sleeve member and has a bottom end. Seal means are carried by the flow-control member adjacent the bottom end thereof and have sealing engagement with the interior cylindrical surface of the sleeve member. The flow-control member is vertically movable between a first position wherein the bottom end thereof and the seal means are disposed below the drain port for closing the latter and a second position wherein the bottom end thereof and the seal means are substantially disposed above the drain port for opening the latter.

4 Claims, 5 Drawing Figures

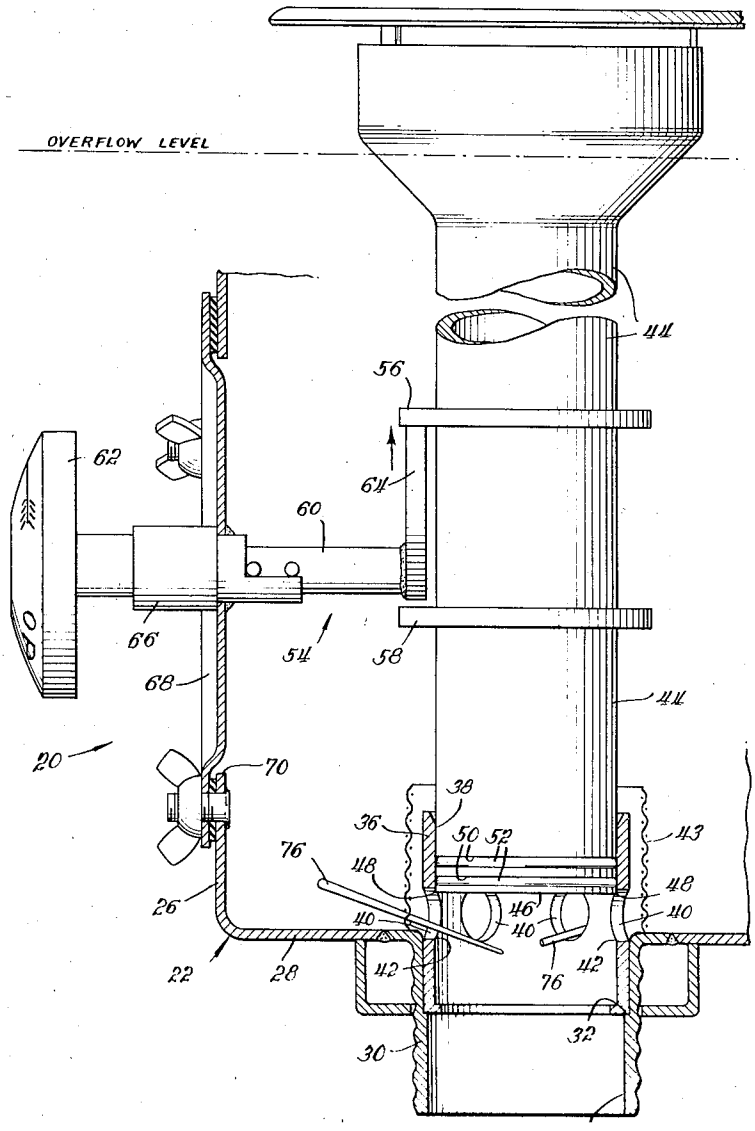


Fig. 1

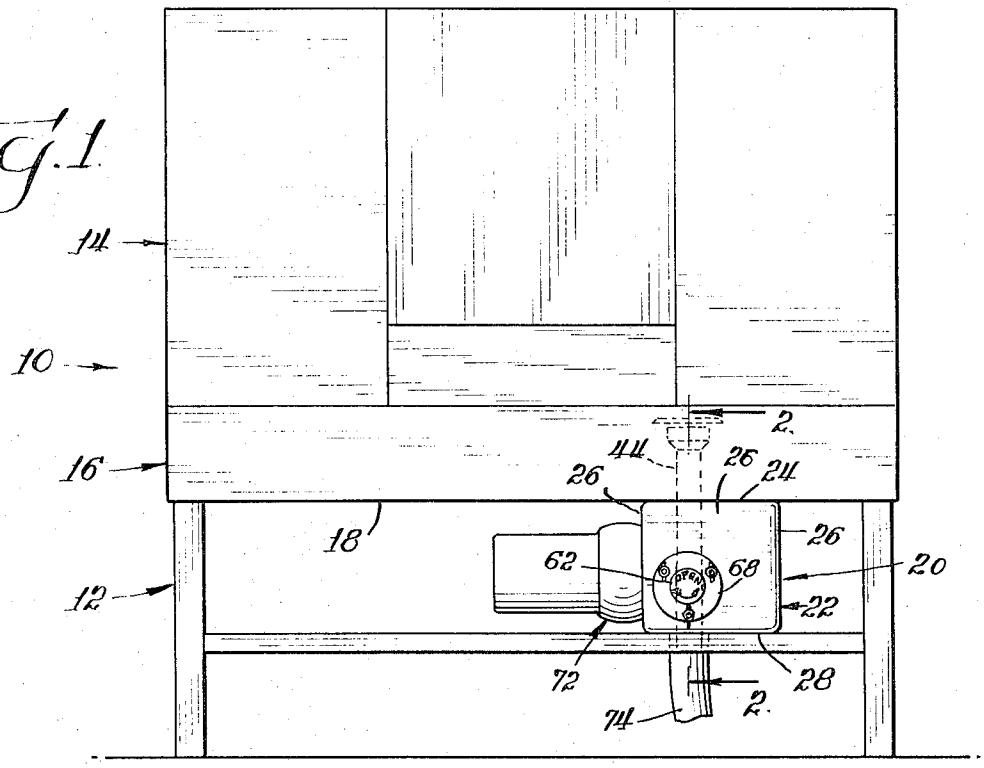


Fig. 5

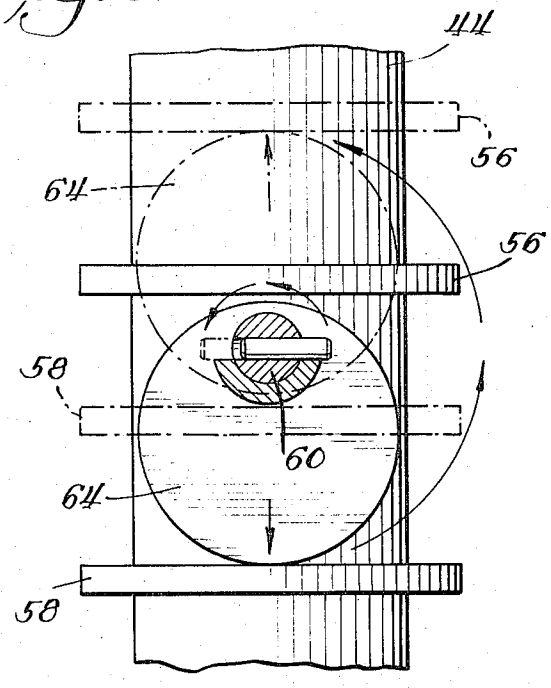


Fig. 4

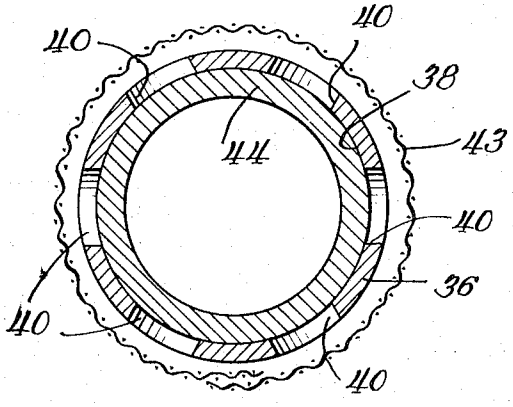


Fig. 2.

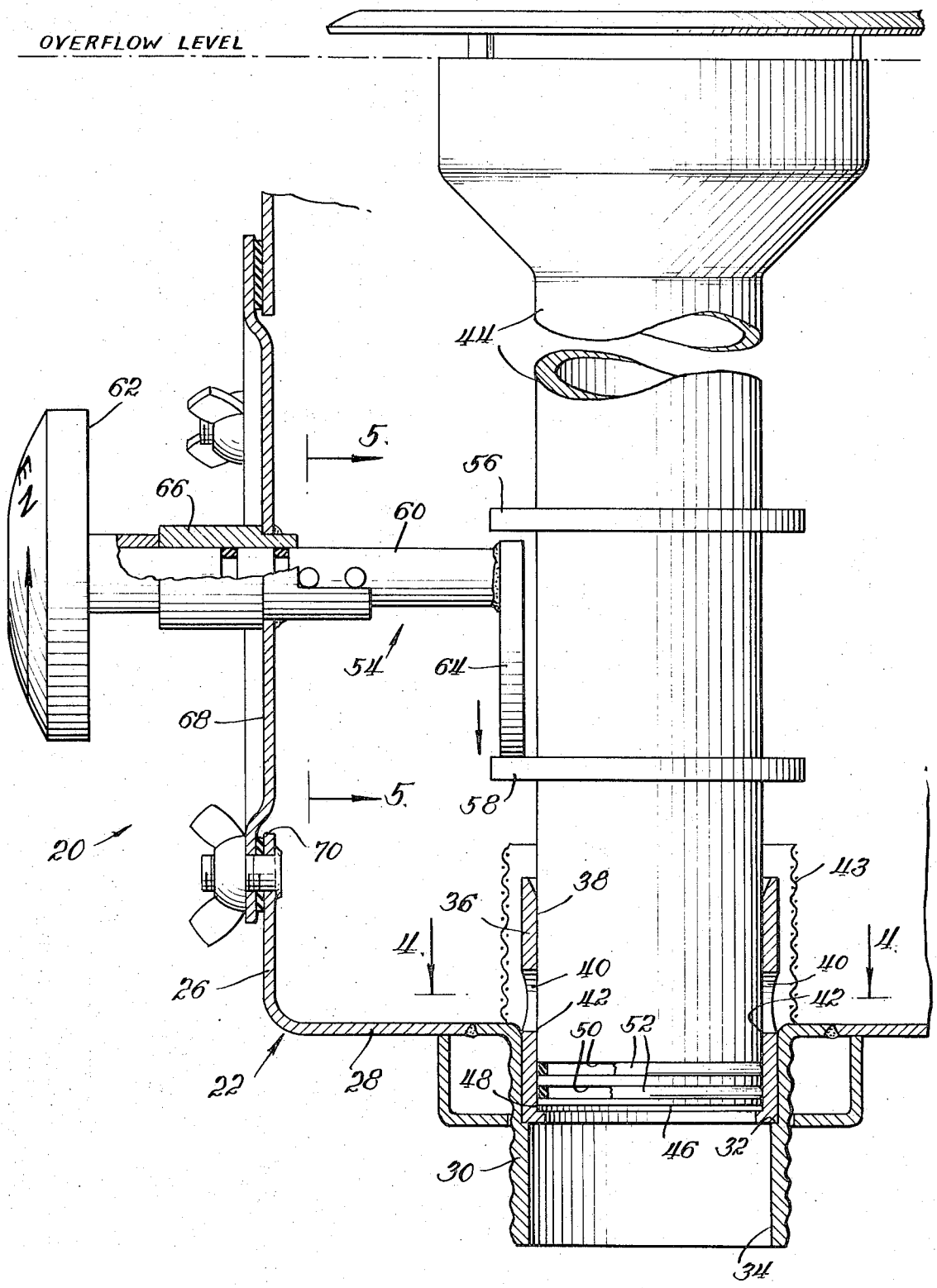
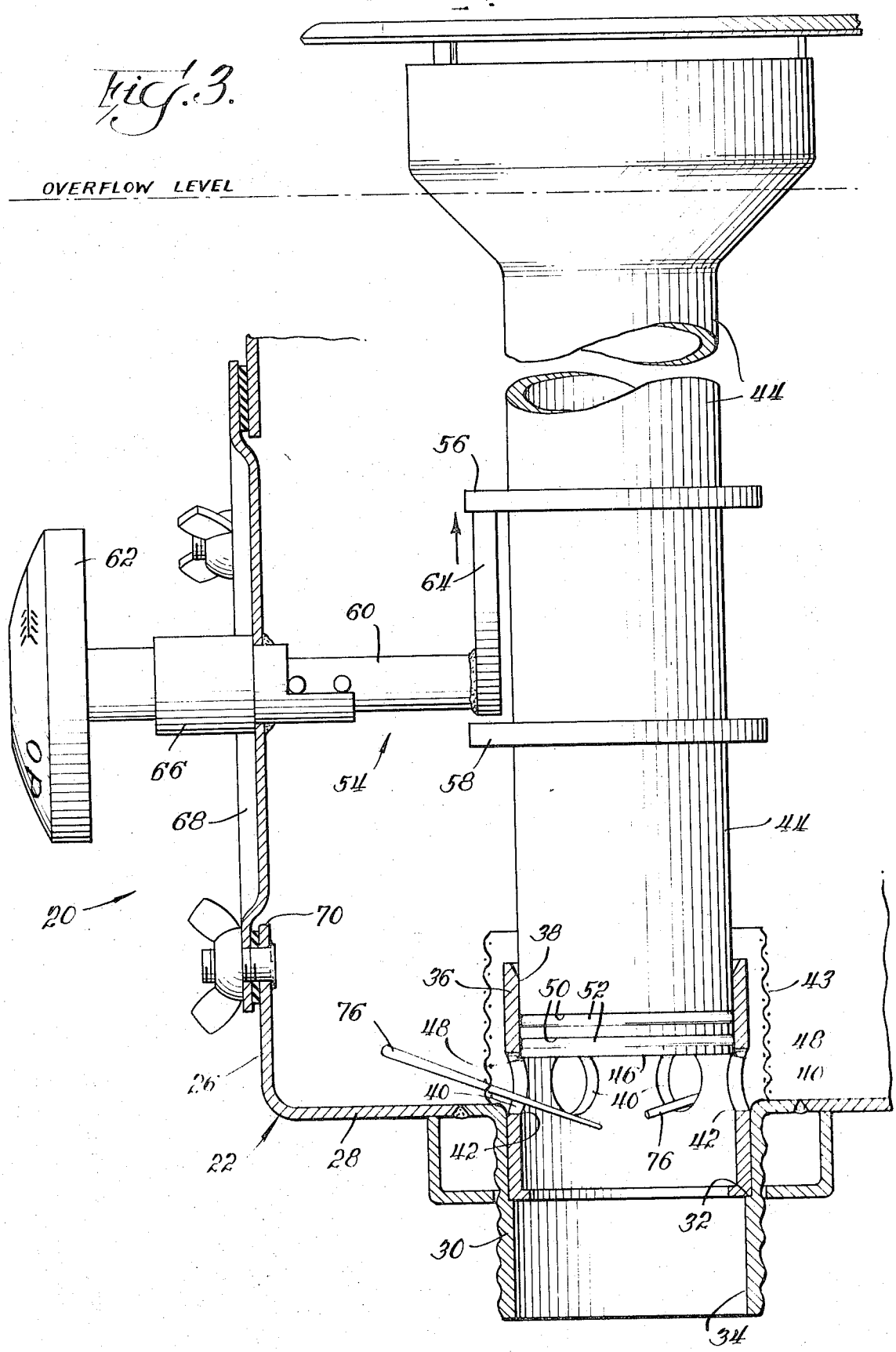

OVERFLOW LEVEL
62
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26
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Fig. 3.


OVERFLOW LEVEL
44
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DISH WASHING MACHINE DRAIN UNIT

FIELD OF THE INVENTION

The present invention relates generally to a drain unit of the type adapted to serve as a sump in association with a dishwashing machine.

SUMMARY OF THE INVENTION

Conventionally, dishwashing machines have a drain or sump unit which is provided with a drain opening and manually-operable flow-control means therefor. It is an object of the present invention to provide flow-control means which is efficient and effective in operation and which is subject to minimum wear.

In accomplishing this object, there is secured in the drain opening the lower end of a vertical sleeve member having at least one drain port in the side thereof. Extending downwardly into the sleeve member is a vertical flow-control member which carries seal means having sealing engagement with the sleeve member. The flow-control member is vertically movable to open and close the drain port.

Because the seal means have continuous sealing engagement with the interior cylindrical surface of the sleeve member, the flow-control means is efficient and effective in closing the drain port. And, because the seal means move with the flow-control member, intrusion and collection of foreign material at the seal means are substantially eliminated thereby minimizing damage and wear of the seal means.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front elevational view of a dishwashing machine incorporating the drain unit of the present invention;

FIG. 2 is a partial vertical sectional view, on an enlarged scale, taken substantially along the line 2—2 in FIG. 1 looking in the direction indicated by the arrows, and shows the drain unit in a closed condition;

FIG. 3 is a partial vertical sectional view corresponding generally to FIG. 2, and shows the drain unit in an open condition;

FIG. 4 is a horizontal sectional view taken substantially along the line 4—4 in FIG. 2 looking in the direction indicated by the arrows; and

FIG. 5 is a partial elevational view taken substantially along the line 5—5 in FIG. 2 looking in the direction indicated by the arrows.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIG. 1, there is shown a dishwashing machine 10 comprising a base frame 12 and a main housing 14 supported thereby. The main housing 14 includes a lower tank portion 16 having a bottom wall 18.

Mounted below the main housing 14 is a drain unit 20 which embodies the principles of the present invention and which serves as a sump. The drain unit 20 comprises a housing 22 having a top wall 24, four side walls 26, and a bottom wall 28. The top wall 24 of the drain unit housing 22 is secured in a conventional manner to the bottom wall 18 of the main housing 14.

As shown in FIG. 2, the bottom wall 28 of the drain unit housing 22 is provided with a depending tubular extension 30 which is formed with an intermediate annular shoulder 32 and which defines a drain opening 34. A vertical sleeve member 36 is secured at its lower

end in the drain opening 34 with the bottom edge thereof seated against the extension shoulder 32. The sleeve member 36 presents an interior cylindrical surface 38, and is formed with six circumferentially spaced apart drain ports 40 each of which presents a sharp lower inner edge 42. Disposed about the sleeve member 36 is a cylindrical screen or strainer 43.

Extending generally through the drain unit housing 22 is a vertical tubular stand pipe 44 which serves as a flow-control member. The stand pipe 44 extends upwardly into the lower tank portion 16 (FIG. 1) through suitable aligned openings in the top wall 24 of drain unit housing 22 and in the bottom wall 18 of the main housing 14. The stand pipe 44 also extends downwardly into the sleeve member 36, and has a bottom end 46 which presents a sharp outer circumferential edge 48. Formed in the stand pipe 44 adjacent the bottom end 46 thereof are a pair of circumferential grooves 50 in which are carried resilient seal rings 52 serving as seal means. The seal rings 52 have sealing engagement with the interior cylindrical surface 38 of the sleeve member 36.

The stand pipe 44 is vertically movable, between a first position shown in FIG. 2 and a second position shown in FIG. 3, by manually-operable means 54. More specifically, a pair of vertically spaced lateral projections or collars 56 and 58 are provided on the stand pipe 44 intermediate of the ends thereof. Associated therewith is a horizontal control shaft 60 having an outer operating knob 62 and an inner cam 64 located intermediate of the lateral projections 56 and 58. The control shaft 60 is rotatably supported in a bushing 66 secured in a panel 68 removably mounted over an opening 70 formed in the front side wall 26.

In normal operation, the stand pipe 44 is disposed in the first position shown in FIG. 2 wherein the bottom end 46 thereof and the seal rings 52 are disposed below the drain ports 40 for closing the latter. Because the seal rings 52 have continuous sealing engagement with the sleeve member 36, the closing of the drain ports 40 is efficient and effective. The drain or sump unit 20 and the tank portion 16 are filled with a washing solution. In a conventional manner, washing solution is drawn from the unit 20 by a fluid pump assembly 72 (FIG. 1), is directed through tubing to spray means within the main housing 14, and is sprayed onto dishware and the like. Excess liquid in the tank portion 16 flows through the stand pipe 44 and the drain opening 34 and is directed by a hose 74 (FIG. 1) to the sewer.

When the sump 20 and tank portion 16 are to be drained, the stand pipe 44 is raised to the second position shown in FIG. 3 wherein the bottom end 46 thereof and the seal rings 52 are substantially disposed above the drain ports 40 for opening the latter. Elevation of the stand pipe 44 is effected by rotating the control shaft 60 which causes the cam 64 to engage and raise the upper collar 56. The draining liquid flows through the drain ports 40 and the drain opening 34, and is directed by the hose 74 to the sewer.

The stand pipe 44 is returned to the first position shown in FIG. 2 by rotating the control shaft 60 so as to cause the cam 64 to engage the lower collar 58 and force the same downwardly against the frictional resistance of the seal rings 52 engaged with the sleeve member 36. During downward movement of the stand pipe 44, the lower outer circumferential edge 48 thereof cooperates with the lower inner drain port edges 42 in

breaking up or severing solid foreign materials, such as toothpicks **76** (FIG. 3), which escape past the strainer **43** and extend through or lie in the drain ports **40.** In this manner, such solid foreign materials are prevented from intruding upon and affecting the seal rings **52.** Also because the seal rings **52** move with the stand pipe **44,** collection of foreign material at the seal rings **52** is substantially eliminated. As a consequence, the integrity of the seal rings **52** is preserved and damage and wear thereof is minimized.

While there has been shown and described a preferred embodiment of the present invention, it will be understood by those skilled in the art that various rearrangements and modifications may be made therein without departing from the spirit and scope of the invention.

The invention claimed is:

1. A drain unit comprising a housing having side walls and a bottom wall, a drain opening provided in said bottom wall, a vertical sleeve member secured at its lower end in said drain opening and presenting an interior cylindrical surface, said sleeve member having at least one drain port in the side thereof with said drain port presenting a sharp lower inner edge, a vertical tubular stand pipe extending downwardly into said sleeve member and having a bottom end, seal means carried by said stand pipe adjacent said bottom end thereof and having sealing engagement with said interior cylindrical surface of said sleeve member, said stand pipe being vertically movable between a first position wherein said bottom end thereof and said seal means are disposed below said drain port for closing the latter and a second position wherein said bottom end thereof and said seal means are substantially disposed above said drain port for opening the latter, and said bottom end of said stand pipe presenting a sharp outer circumferential edge which upon movement of said stand pipe from said second position to said first position cooperates with said drain port edge in breaking up solid foreign materials extending through said drain port whereby to prevent such solid foreign materials from affecting said seal means.

2. The drain unit of claim **1** including manuallyoperable means for effecting vertical movement of said stand pipe between said first and second positions.

3. The drain unit of claim **1** including at least one circumferential groove formed in said stand pipe adjacent said bottom end thereof, and wherein said seal means comprises a seal ring carried in said groove.

4. A drain unit comprising a housing having side walls and a bottom wall, a drain opening provided in said bottom wall, a vertical sleeve member secured at its lower end in said drain opening and presenting an interior cylindrical surface, said sleeve member having at least one drain port in the side thereof with said drain port presenting a sharp lower inner edge, a vertical tubular stand pipe which extends upwardly and outwardly of said housing and which extends downwardly into said sleeve member and has a bottom end, said stand pipe being formed with at least one circumferential groove adjacent said bottom end thereof, a seal ring carried in said groove and having sealing engagement with said interior cylindrical surface of said sleeve member, said stand pipe being vertically movable between a first position wherein said bottom end thereof and said seal ring are disposed below said drain port for closing the latter and a second position wherein said bottom end thereof and said seal ring are substantially disposed above said drain port for opening the latter, a pair of vertically spaced lateral projections provided on said stand pipe, a horizontally manually-operable control shaft rotatably supported in one of said side walls, a cam secured to said control shaft intermediate of said lateral projections, said cam upon rotation thereof by said control shaft effecting vertical movement of said lateral projections and said stand pipe between said first and second positions of the latter, and said bottom end of said stand pipe presenting a sharp outer circumferential edge which upon movement of said stand pipe from said second position to said first position cooperates with said drain port edge in breaking up solid foreign materials extending through said drain port whereby to prevent such solid foreign materials from affecting said seal ring.

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