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CLOTHES RECEPTACLE FOR A WASHING MACHINE

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2 Sheets-Sheet 1

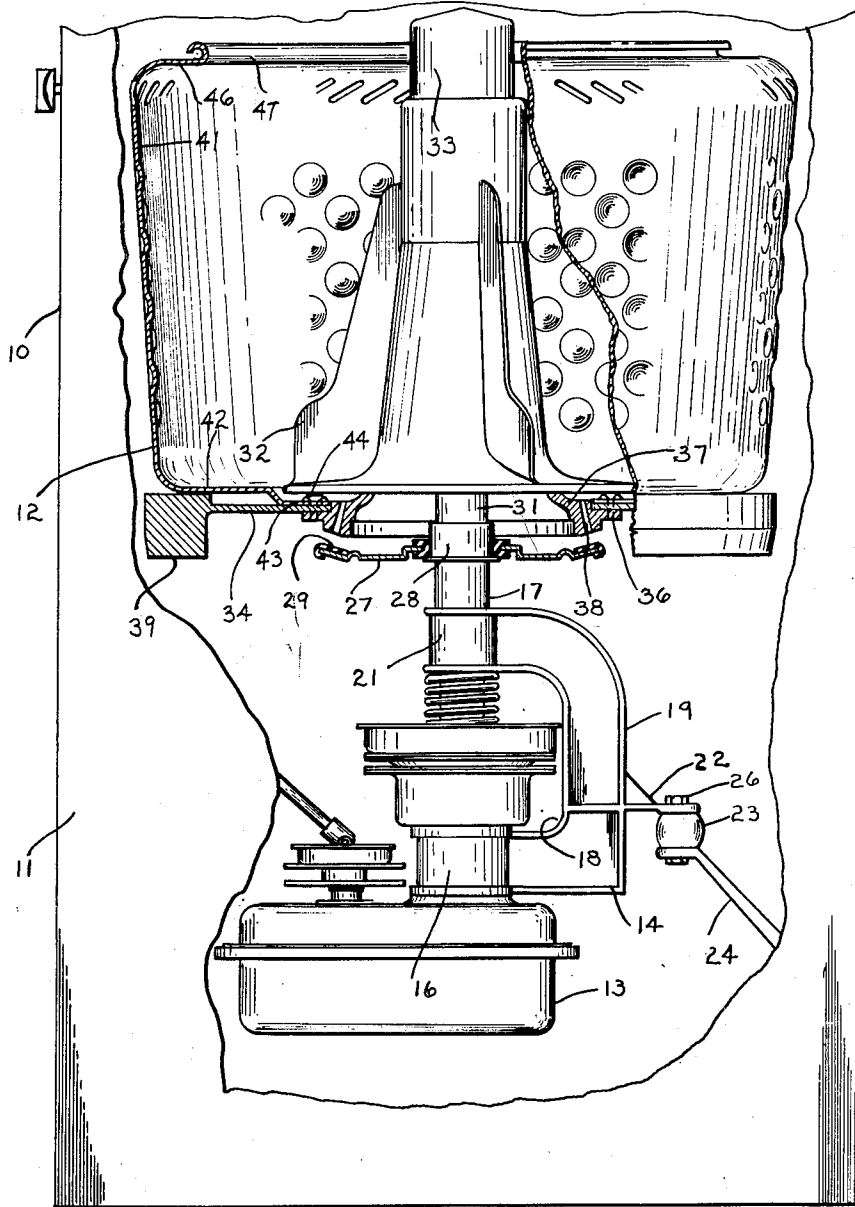


Fig. 1

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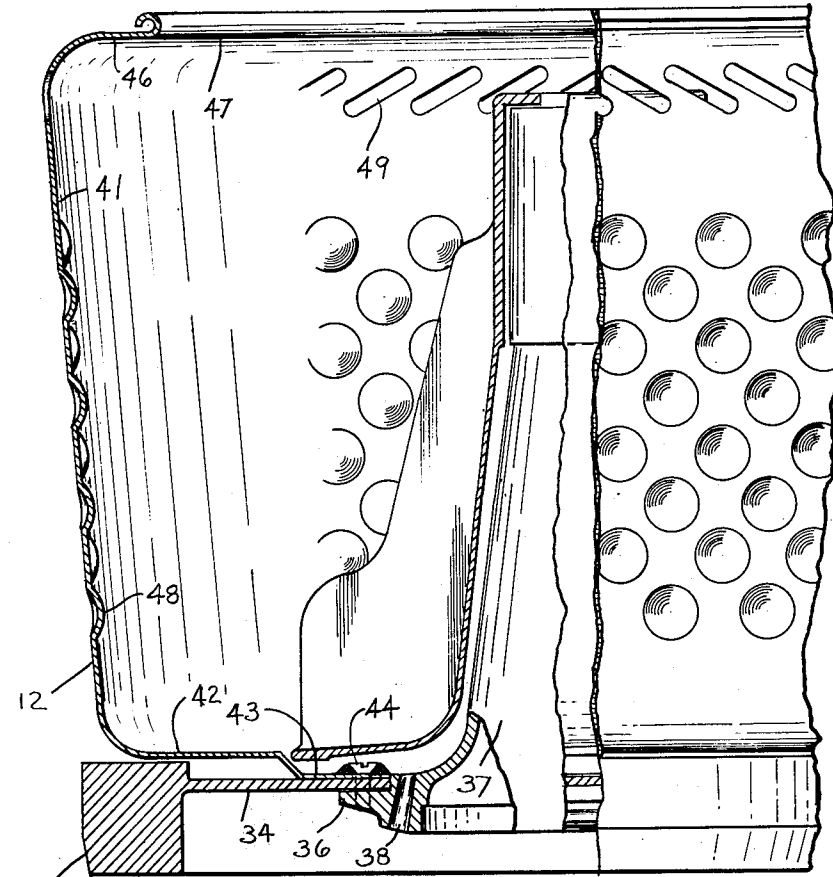


Fig. 2

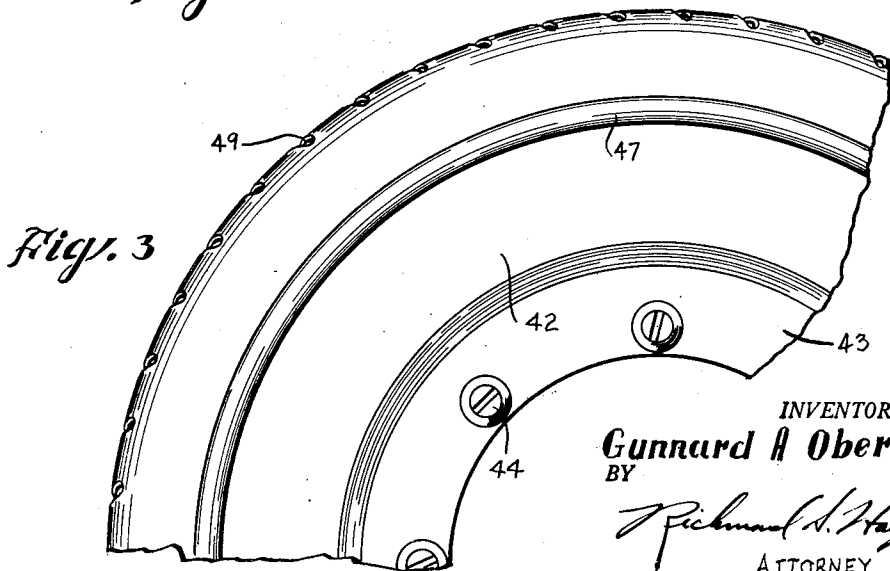


Fig. 3

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## CLOTHES RECEPTACLE FOR A WASHING MACHINE

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5 Claims. (Cl. 68—23)

This invention relates to domestic washing machines of the type in which a single receptacle is utilized for the operations of washing, rinsing and centrifugally drying clothes. More particularly, the invention is directed to improvements in the structure of the receptacle for carrying out these various operations.

In many machines of the type to which the present invention is directed, difficulty is encountered in obtaining a thorough rinsing of clothes following a washing operation. The rinsing operation involves subjecting washed clothes to agitation while immersed in continually changing water. This change is accomplished by feeding fresh water into the receptacle during operation of an agitator, the water overflowing through ports or openings adjacent the receptacle rim and carrying with it any dirt or soap residue loosened from the clothes by agitation. Satisfactory removal of this residue can only be obtained if the flushing overflow is rapid. This, of course, would require ports or openings of considerable size and number, and it is believed that such a design would structurally weaken the receptacle rim. Also, difficulty has been encountered in machines of this type in preventing the clothes from creeping or climbing up the walls of the receptacle during a spin drying operation. Many receptacles are formed with somewhat outwardly flared walls for the purpose of aiding in the removal of liquid during such an operation, and the flare of these walls appears to aid or augment upward movement of the clothes to an undesirable extent wherein they rise to the top of the receptacle, close the outlet ports and create an unbalance leading to unnecessary or excessive vibration.

The present invention is directed to and has for one of its objects the provision of a washing machine receptacle that is so constructed as to enable rapid, unimpeded overflow flushing during, and as a part of, a clothes rinsing operation.

Another object of the invention lies in the provision of a series of outlet ports or openings so arranged and proportioned as to give maximum egress of liquid during a rinsing operation without structurally weakening the rim of the receptacle.

Another most important object of the invention lies in the provision of a receptacle having side walls so constructed as to prevent clothes from creeping or climbing up these walls and plugging the outlet ports during a spin drying operation.

A further important object of the invention lies in the provision of side walls in the receptacle that serve, during a spin drying operation, to hold the clothes sufficiently away from these walls to allow unimpeded passage or flow of liquid to and through the outlet ports or openings adjacent the rim.

Other and further objects and advantages of the invention will be more fully understood from a consideration of the following specification, taken in conjunction with the accompanying drawings; in which

Fig. 1 is a side elevational view of a washing machine, partly broken away and sectioned to show a clothes receptacle embodying one form of the invention;

Fig. 2 is an enlarged fragmentary side elevational view of the receptacle shown in Fig. 1, parts being in section and broken away to disclose structural details; and

Fig. 3 is a fragmentary top plan view of the receptacle shown in Fig. 2.

Referring more particularly to Fig. 1 of the drawings, the reference numeral 10 is employed to generally designate a single receptacle washing, rinsing, and centrifugal drying machine in which one form of the invention is embodied. The machine is enclosed within a rectangular cabinet, indicated at 11. No details of the cabinet structure are disclosed inasmuch as it constitutes no part of the invention. Within the upper part of the cabinet is located a receptacle 12, whereas the lower part of the cabinet contains the receptacle supporting and operating structure. The supporting and operating structure constitutes no part of the present invention and is merely disclosed and briefly described to provide proper association of parts and to indicate that the receptacle 12 is intended as a combined washing and spin drying receptacle. A drive mechanism is contained within a gear housing 13. A fixture 14 has a lower central portion that is formed to provide a hub 16 in which a sleeve 17 is supported. The fixture 14 includes multiple radially extending portions 18 which, at their ends, project upwardly to form arms 19. These arms are curved inwardly and meet to form an upper integral hub 21 which serves as an additional and uppermost mount for the sleeve 17. Adjacent their lower ends, arms 19 are provided with radially extending brackets 22 which rest on resilient blocks 23 that in turn are supported by inclined members 24, supported in any suitable manner by the cabinet. Bolts 26 serve to join brackets 22, blocks 23 and members 24. The gear housing is, of course, carried by the lower end of the hub 16 that forms a part of the fixture 14.

The sleeve 17, at its upper end, mounts a plate 27 through a suitable collar 28. The plate is circularly ribbed, substantially as shown, to give desired rigidity, inasmuch as it constitutes, under certain conditions of operation, a seat and support for the receptacle 12 and its contents. The outer edge of this plate terminates in an upwardly inclined flange which mounts a liquid seal gasket 29 that prevents drainage from the receptacle under certain conditions of operation. Above the collar 28 is shown a sleeve 31 which mounts the receptacle 12. The particular association of this sleeve with the receptacle forms no part of the invention and it is only necessary to point out that the sleeve is rotatable about its axis for the purpose of spinning the receptacle during a drying operation and is also axially movable for the purpose of raising or lowering the receptacle away from or onto the plate 27. Extending through the sleeve 31 is an oscillatable shaft that mounts the agitator 32. A clutch mechanism is contained within the enclosure 33 by means of which the agitator may be caused to oscillate through suitable drive means, not shown. One form of this clutch structure may be found in the Alvin Lodge application, Serial No. 237,251, filed July 17, 1951.

The receptacle 12 includes a base 34 that has a central circular aperture, the edge of which rests on and has water-tight securement to an annular flange 36 of the center post or hub 37. It is with this post that the sleeve 31 is engaged in a manner to support the entire receptacle. Adjacent the flange 36 of the hub base are a series of drain openings 38 which are so located as to be engaged by the gasket 29 when the receptacle is in its lowermost position. The gasket 29 and openings 38 constitute valves for controlling withdrawal of liquid from the base of the receptacle. The base 34 of the receptacle includes an

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annular rim 39 which is of considerably increased stock and weight and thereby acts in the nature of a balance or fly-wheel during rotation of the receptacle. The receptacle proper consists of an annular side wall 41 that is flared slightly radially outwardly from bottom to top. The bottom of this annular wall terminates in an inturned, horizontal flange 42 which, by means of an offset rim 43, is secured to the base 34 by studs 44 which are also utilized to secure this base to the base of the post 37. The upper edge of the annular wall 41 is curved inwardly, as at 46, and terminates in a rolled rim 47 which defines the top opening of the receptacle.

The annular side wall 41, commencing from adjacent the bottom flange 42, is formed with vertical rows of inwardly directed, spaced bumps or projections 48. In the present disclosure, these bumps take the form of blisters and are arcuate, thus leaving no sharp divergence as between the wall and the edge of the bump. The bumps of each row are staggered with respect to the bumps of the next adjacent rows and may, to a slight extent, overlap in their relationship in order to provide somewhat zigzag courses in the flat surface of the wall 41, from bottom to top. Somewhat above the uppermost bumps or blisters, and immediately beneath the inturned flange 46, is a series of outlet ports or openings 49. These ports are of the nature of elongated slots and are shown to be arranged at approximately a sixty degree angle to the vertical. The actual angularity of these slots is important only to the extent that the slots may be of considerable length, will overlap one another and will provide a considerable area for liquid outlet without in any way weakening the upper portion of the receptacle defined by the flange 46 and rim 47. It will be apparent that if the same area of opening for each slot was produced as a round hole, an infinitely lesser number of such holes could be made in the perimeter of the receptacle. Thus, the area of outlet ports would be greatly restricted and, as has already been brought out, the deficiency of a rinsing operation depends largely on the rapidity with which overflow of washing residue may be taken care of. In this connection, it is well to point out that should ports other than of the nature presently disclosed be provided in sufficient number to give an adequate area of outlet, these openings would be so close together, and would have so little material therebetween, that the top of the receptacle would be greatly weakened and subject to bending or distorting, even with normal handling.

For a fuller understanding of the advantages of the structure herein described, a brief description of a rinsing and spin drying operation is set out. The washing operation is carried out with the receptacle seated on the supporting plate 27, the receptacle being partially filled with liquid and suitable detergent, and the agitator oscillated. Upon completion of the washing operation, the receptacle is raised by suitable means from off the plate 27, thus allowing the liquid to drain out of the receptacle through openings 38. All of the liquid does not leave the clothes, and it is therefore necessary to rotate the receptacle at a relatively high rate of speed in order to centrifugally force the remaining liquid from the clothes. Ordinarily, during such a centrifugal operation, the clothes have a tendency to climb or creep up the side walls of the receptacle, and if the speed of rotation of the receptacle is sufficient to properly dry the clothes, they may even reach the receptacle rim, thus blocking off the liquid exit ports near the rim. In the present disclosure, the bumps or blisters 48 serve the dual purpose of holding the clothes from climbing or riding upwardly of the inclined wall 41 and also provide zigzag passages between the bumps for the water forced from the clothes to move upwardly of the wall and out through the ports 49. The next operation in the course of laundering clothes is to rinse them. The receptacle is now returned to its position of rest on the plate 27, thus closing the

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openings 38, fresh liquid is directed into the receptacle through the top opening, and as the level of liquid in the receptacle rises, the agitator is oscillated and such action serves to dislodge any dirt or other residue that was previously loosened in the washing operation but not entirely removed from the clothes. The level of the liquid continues upwardly and the effect of the agitator is to slosh the residue carrying liquid out through the ports 49. By reason of the fact that the ports represent a considerable outlet area, the inlet of water may be of the nature of a heavy and strong stream, and the constant change of water in the receptacle will be very rapid and most adequately effects a satisfactory rinsing operation.

Although applicant has shown and described only one form of bumps or blisters in the annular side wall of a clothes washing receptacle and a specific arrangement of outlet ports, it will be understood that the bumps may be varied both as to contour arrangement and number without in any way affecting their efficiency and that such variation, along with variations in the ports, is contemplated as being within the scope of the invention as set out in the annexed claims.

Having thus set forth my invention, what I claim as new and for which I desire protection by Letters Patent is:

1. In a washing machine, a receptacle mounted for rotation about a vertical axis, said receptacle comprising a base, the rim of said base being of added thickness to effect balance of said receptacle during rotation, an annular side wall extending upwardly from said base adjacent said rim, an inwardly curved flange on the top edge of said wall defining the access opening to said receptacle, multiple inwardly directed projections on said wall, said projections being so arranged as to provide staggered flat paths from adjacent the bottom to the top of said wall, that portion of said wall directly adjacent said flange having a series of outlet ports.

2. In a washing machine, a receptacle mounted for rotation about a vertical axis comprising a base, an annular side wall extending upwardly from said base at a slight outward inclination from bottom to top, an inwardly curved flange on the top edge of said wall defining the access opening to said receptacle, multiple inwardly projecting rounded bumps on said wall, said bumps being so arranged as to provide an irregular flat path of travel for liquid from the bottom to adjacent the top of said receptacle, that portion of said wall directly beneath said flange having a series of inclined liquid outlet slots.

3. In a washing machine, a receptacle mounted for rotation about a vertical axis comprising a base, an annular side wall extending upwardly from said base at a slight outward inclination from bottom to top, an inwardly curved flange on the top edge of said wall defining the access opening to said receptacle, staggered uniformly distributed rows of inwardly directed projections on said wall, said rows extending from adjacent said base to a point well beneath said flange, that portion of said wall directly beneath said flange having a series of outlet ports in the shape of inclined elongated slots.

4. In a washing machine, a receptacle mounted for rotation about a vertical axis, said receptacle comprising a base, an annular side wall, an inturned bottom flange on said wall being secured to said base, an inturned rim at the upper edge of said wall defining the access opening to said receptacle, uniformly distributed vertical rows of inwardly directed rounded bumps on said wall, the bumps of one row being staggered with respect to the bumps of the next adjacent rows, said bumps providing a non-smooth surface to prevent upward creeping of clothes during rapid rotation of said receptacle and unimpeded passage for liquid up said wall and through suitable ports adjacent said rim.

5. In a washing machine, a receptacle mounted for

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rotation about a vertical axis comprising a base, an annular side wall extending upwardly from said base at a slight outward inclination from bottom to top, an inwardly curved flange on the top edge of said wall defining the access opening to said receptacle, multiple inwardly projecting rounded bumps on said wall, said bumps being so arranged as to provide an irregular flat path of travel for liquid from the bottom to adjacent the top of said receptacle and a non-smooth surface to deter upward creeping of clothes during rapid rotation of said receptacle, that portion of said wall directly be-

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neath said flange having closely arranged elongated slots, said slots being inclined in a common direction with the upper end of one slot vertically overlying the lower end of a next adjacent slot.

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