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S. S. HOLLAND

2,112,290

RECEPTACLE FILLING AND EMPTYING DEVICE

Filed Oct. 16, 1936

Fig. 1.

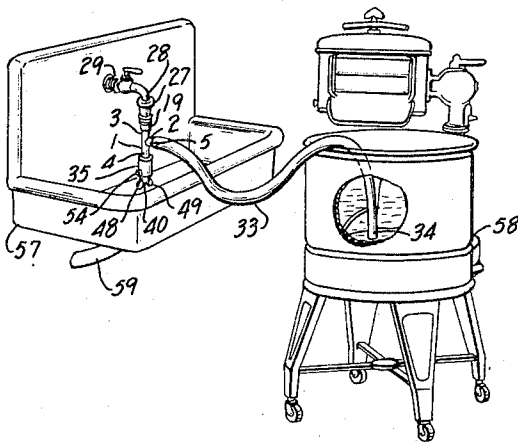


Fig. 4.

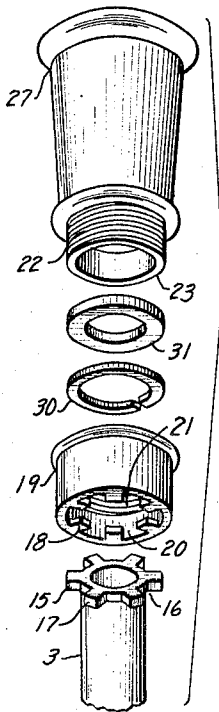


Fig. 2.

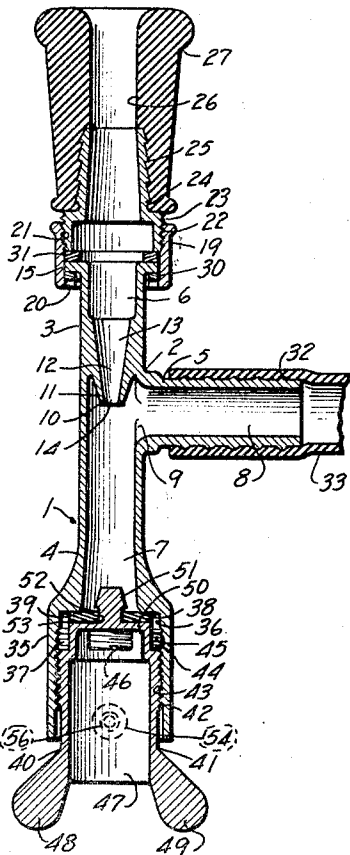


Fig. 3.

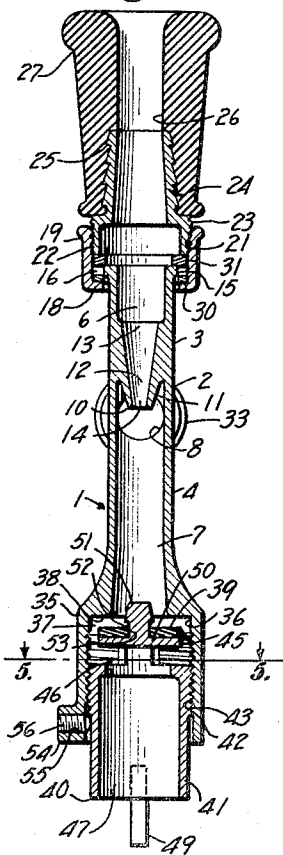
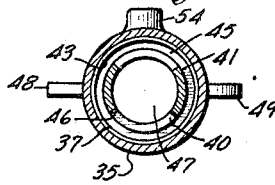


Fig. 5.



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RECEPTACLE FILLING AND EMPTYING
DEVICE

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corporation of Ohio

Application October 16, 1936, Serial No. 105,941

4 Claims. (Cl. 103—262)

This invention relates to a receptacle filling and emptying device, particularly one attachable with a faucet wherethrough liquid is discharged into a receptacle such as a tub or washing machine and from which wash liquid is withdrawn incidental to an entraining action of liquid flowing from the faucet.

The principal objects of the invention are to provide a device of this character that is of simple and inexpensive construction; to provide a device that is readily convertible for filling or withdrawing operation; to provide the device with a readily operable valve for controlling the drain outlet thereof; and to provide the device with a swivel connection so constructed that the body of the device may be formed of a single piece.

In accomplishing these and other objects of the invention, as hereinafter pointed out, I have provided improved details of structure, the preferred form of which is illustrated in the accompanying drawing, wherein:

Fig. 1 is a perspective view of a receptacle filling and emptying device embodying the features of the present invention and showing it in operating condition for filling a washing machine tub from a faucet, and for withdrawing the wash liquid for discharge into a sink.

Fig. 2 is a longitudinal section through the device particularly illustrating the faucet connection, entraining nozzle, and the valve controlling the drain outlet.

Fig. 3 is a similar section taken at right angles to the section illustrated in Fig. 2.

Fig. 4 is a perspective view of the faucet connecting socket and the coupling for connecting it with the body portion of the device, the parts being shown in disassembled spaced relation.

Fig. 5 is a cross-section through the device on the line 5—5 of Fig. 3, particularly illustrating the valve ports.

Referring more in detail to the drawing:

1 designates a receptacle filling and emptying device including a T-shaped body member 2 having tubular branches 3, 4 and 5 preferably formed as a single piece and provided with inlet and discharge channels 6, 7 and a flow channel 8 respectively. The flow channel 8 communicates directly with the discharge channel 7 through a lateral port 9 and the inlet channel 6 aligns with the discharge channel 7 to communicate therewith through an inducing or entraining nozzle 10 having a conical end 11 terminating substantially adjacent the axis of the flow channel 8. The nozzle 10 is provided with a substantially conically shaped bore 12 having its inlet end 13 of

slightly smaller diameter than the channel 6 and its outlet 14 of a size to effect material increase in velocity of a fluid discharged through the nozzle so as to induce a siphoning or entraining action through the port 9 in the direction of the discharge channel 7.

The terminal end of the branch 3 has a laterally extending annular flange 15 provided with a series of notches 16 to form spaced lugs 17 that are engageable with similar lugs 18 extending inwardly from the inner periphery of a coupling ring or union 19. The lugs 18 are spaced apart as at 20 to permit passage of the lugs 17 when the ring 19 is projected over the branch 3 as shown in Fig. 2. The inner periphery of the ring, above the lugs 18, is threaded as at 21 to engage the external threads 22 on the head 23 of a nipple 24. The nipple 24 includes a neck portion provided with a series of annular corrugations 25 to engage the bore 26 within a socket member 27. The socket member 27 is preferably formed of rubber or similar material adapted to securely grip the nipple and the outlet end 28 of an ordinary faucet 29 as later described.

In order to swivelly retain the coupling ring 19 on the branch 3, I provide a split ring or washer 30 of suitable inner diameter to loosely engage the outer periphery of the branch 3 and having an outer diameter to freely enter the coupling ring so as to engage between the lugs 16 and 18 and thereby prevent disengagement of the body portion of the device from the coupling ring. To prevent leakage between the nipple 24 and flanged end of the branch 3 I provide a gasket washer 31 adapted to seat therebetween as best illustrated in Figs. 2 and 3.

The periphery of the branch 5 is provided with a series of ribs or corrugations 32 to frictionally engage within one end of a hose 33 having sufficient length so that its opposite end 34 may be located in the receptacle to be filled or drained as later described.

The branch 4 terminates in an enlarged bell-like end 35 having an axial recess 36 aligning with the channel 7 to form a valve chamber 37. The valve chamber 37 is of larger diameter than the flow channel 7 to form an annular shoulder or seat 38 for a packing disk 39 carried by a valve member 40. The valve 40 includes a hollow cylindrical body 41 having external threads 42 threadingly engaged within internal threads 43 formed within the interior of the valve chamber 37. The upper end of the tubular body is inset as at 44 to cooperate with the wall of the valve chamber to provide an annular passageway 45

communicating with outlet openings 46 formed in the sides of the offset portion so that when the valve is unseated liquid flows from the channel 7 into the annular passage 45, through the openings 46 into the interior of the valve member and through the open lower end 47 thereof. The valve member has an unthreaded portion of sufficient length to project from the valve chamber for accommodating wings 48 and 49 whereby the valve member is rotated to move the packing disk 39 to and from seating engagement with the annular seat 38.

The packing disk is retained on the closed end 50 of the valve member by a centrally arranged stud 51 projecting upwardly within the channel 7 and having an annular groove 52 to form a neck portion extending through an opening 53 in the center of the disk and an overlying head portion to cooperate with the closed end of the valve member in limiting movement of the disk but to permit free rotation thereof in assuring a tight seal with the seat 38 in controlling flow through the discharge channel 7.

In order to limit retractive movement of the valve member, the side wall of the valve chamber is provided with a radially extending boss 54 having a threaded opening 55 to accommodate a set screw 56 having its inner end projecting within the bore to engage the threaded portion of the valve body when the valve is moved to the limit of its open position illustrated in Fig. 3.

In assembling a device constructed as described, the coupling ring 19 is sleeved over the branch 3 so that the lugs 17 pass between the lugs 18 of the ring. The ring is then moved downwardly over the branch 3 a sufficient distance to permit application of the split washer 30 whereupon the ring is drawn upwardly and the lugs thereon engage against the split ring when the split ring seats against the lugs on the branch 3. The gasket washer 31 is then inserted within the ring to seat against the upper face of the lugs 17. The nipple 24 is then inserted within the bore of the socket connection 25 and the ring is screwed to the head 23 of the nipple.

In assembling the valve the packing disk 39 is pressed over the head portion of the stud 51 to engage the inner periphery thereof within the groove 52. The valve member is then screwed into the valve chamber until the seating disk seats against the shoulder 38, closing the outlet of the channel 7. The set screw 56 is then inserted to limit withdrawal of the valve body as shown in Fig. 3.

In using the device, the socket connector 27 is pushed over the spout of the faucet 29 and the lower end of the branch 7 is directed within the sink 57. One end of the hose 33 is then pushed over the branch 5 and the other end is placed within the tub of the washing machine 58, as shown in Fig. 1. When the faucet is turned on the tub may be filled with water by seating the valve member against the annular seat 38 to close flow through the channel 7. Water then flows from the faucet through the nipple 24, channel 6, nozzle 10 and into the channel 7 where it is diverted laterally through the channel 8 and hose 33 into the tub.

When it is desired to empty the tub the valve member is unscrewed to disengage the packing disk 39 from engagement with the shoulder 38. Water is then free to flow from the faucet through the bore 12 of the nozzle 10 through the channel 7 into the annular passageway 45, through the ports 46, and through the interior of the valve

body from where it flows into the sink through the open end 47. Flow of water through the nozzle 10 creates a vacuum within the channel 8 and hose 33 to induce flow of water from the tub into the channel 7 where it flows along with the faucet water into the sink for disposal through the conventional sink drain 59.

From the foregoing it is obvious that I have provided a receptacle filling and emptying device which is of simple construction and may be readily manipulated either for filling a receptacle, such as a washing machine, or draining a liquid from the receptacle incidental to control of the valve member 40. It is also obvious that by reason of the lug arrangement on the branch 3 and coupling ring 19 and split locking washer 30, the T-shaped body of the device may be formed as a single piece.

What I claim and desire to secure by Letters Patent is:

1. A device of the character described including a T-shaped body member formed as a single piece to provide axial and lateral flow channels, an entraining nozzle formed in said axial flow channel for drawing liquid through the lateral flow channel, a coupling member swivelly engaged with the body member, said coupling and body members having interengaging spaced lugs respectively formed as integral parts of said members to swivelly connect said members, and means for locking said interengaging lugs together, including a washer mounted therebetween.

2. A receptacle filling and emptying device including a body member having inlet, outlet and lateral branches, spaced radial lugs on the inlet branch, a coupling ring rotatable on said body and having inwardly extending lugs arranged to pass between the lugs on the inlet branch when the coupling is applied to the body member, a split washer encircling the inlet branch and engaged between the lugs on said branch and the lugs on the ring to form a continuous bearing surface over which the lugs are adapted to move when the body member swivels relatively to the coupling ring, and a gasket washer in said coupling ring and engaging the end of said inlet branch.

3. A receptacle filling and emptying device including a body member having inlet, outlet and lateral branches, spaced radial lugs on the inlet branch, a coupling ring rotatable on said body and having inwardly extending lugs arranged to pass between the lugs on the inlet branch when the coupling is applied to the body member, a split washer encircling the inlet branch and engaged between the lugs on said branch and the lugs on the ring to form a continuous bearing surface over which the lugs are adapted to move when the body member swivels relatively to the coupling ring, a gasket washer in said coupling ring and engaging the end of said inlet branch, and a faucet engaging socket member carried by the coupling ring.

4. A receptacle filling and emptying device including a body member formed of a single piece and having an inlet branch, an axial outlet branch and a lateral branch forming a hose connection, an inducing nozzle integral with said body member for drawing liquid through the lateral branch incidental to flow of liquid through the inlet and outlet branches, said inlet branch having spaced radial lugs, a coupling ring rotatable on said inlet branch and having inwardly extending lugs arranged to pass the lugs on the inlet branch when the coupling ring is applied

to the body member, a split ring engaging between the lugs on the inlet branch and the lugs on the coupling ring to form a continuous bearing surface over which the lugs are adapted to
5 move when the body member swivels relatively to the coupling ring, a packing washer in said coupling ring and bearing against the end of the inlet

branch, and faucet connecting means engaged by the coupling ring and cooperating with the end of the inlet branch to compress the packing washer for effecting a seal between the body member and the faucet connection.

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