

May 21, 1940.

E. W. ROUCH

2,201,790

DRAIN ASSEMBLY FOR WASHING MACHINES AND THE LIKE

Filed June 29, 1937

3 Sheets-Sheet 1

Fig. 1

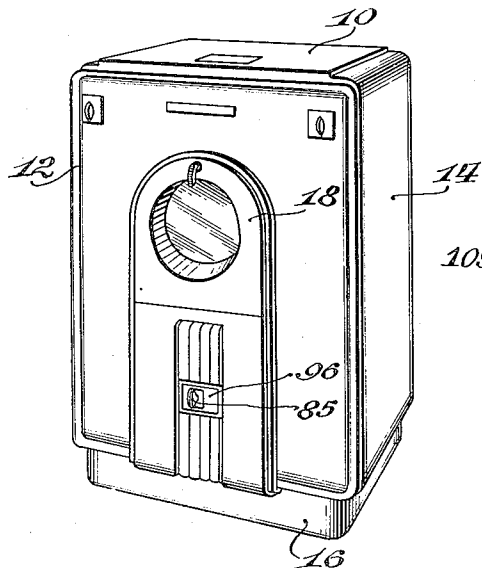


Fig. 7.

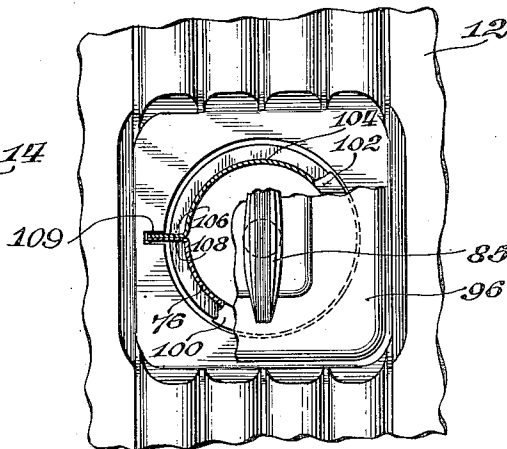


Fig. 5

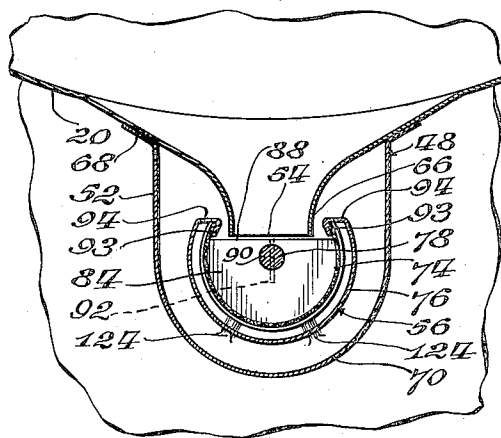
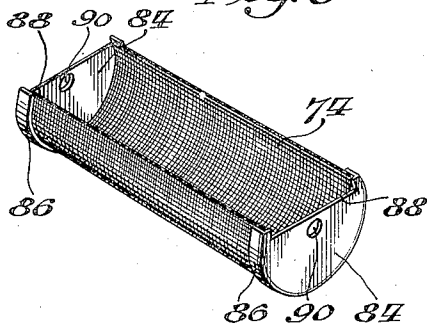


Fig. 6



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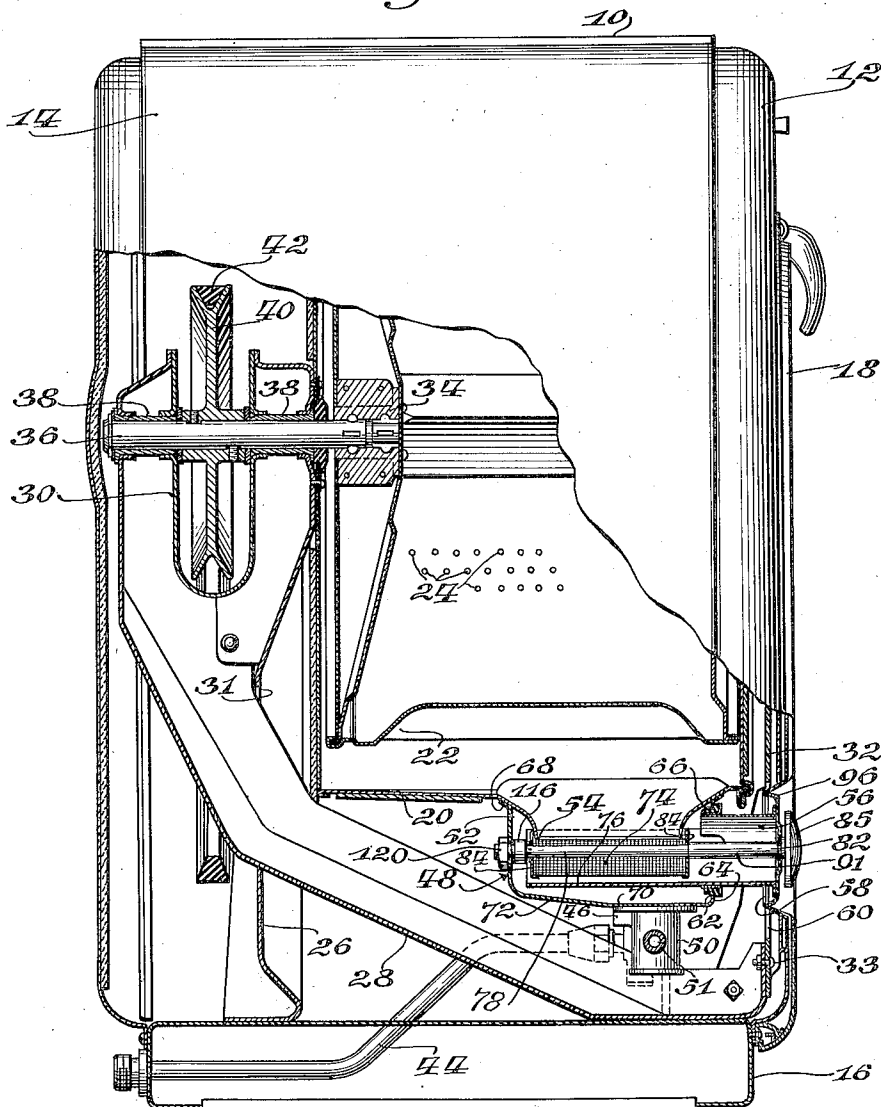
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3 Sheets-Sheet 2

Fig. 2



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DRAIN ASSEMBLY FOR WASHING MACHINES AND THE LIKE

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3 Sheets-Sheet 3

Fig. 3

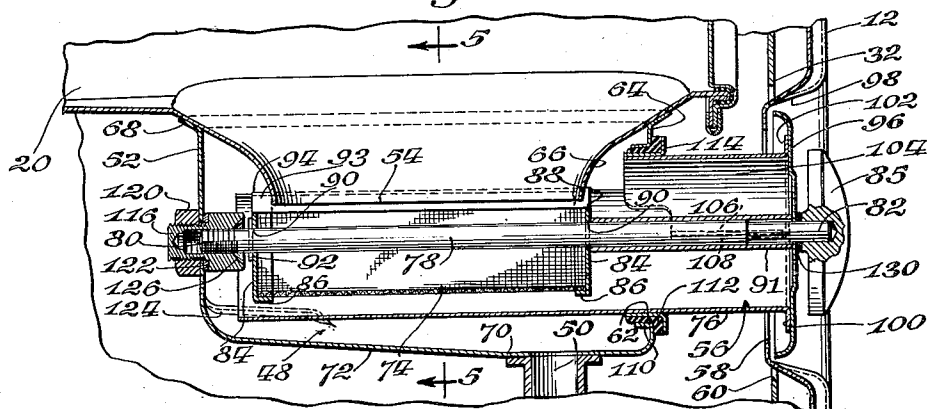


Fig. 4

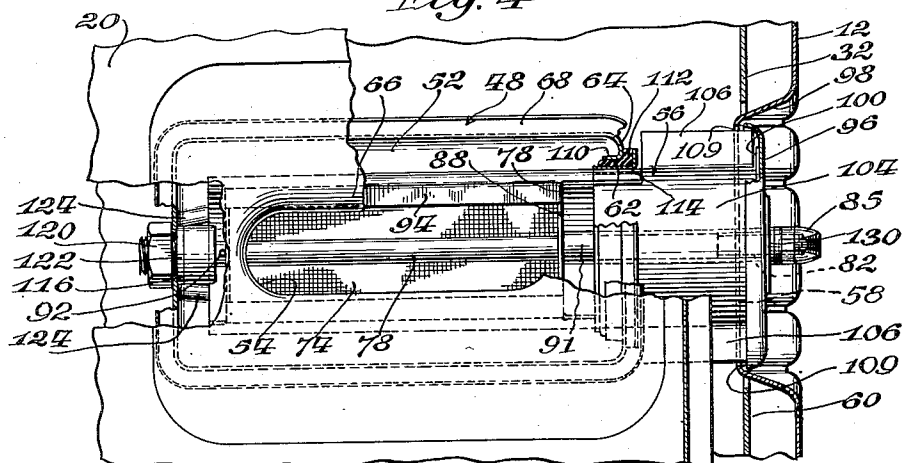
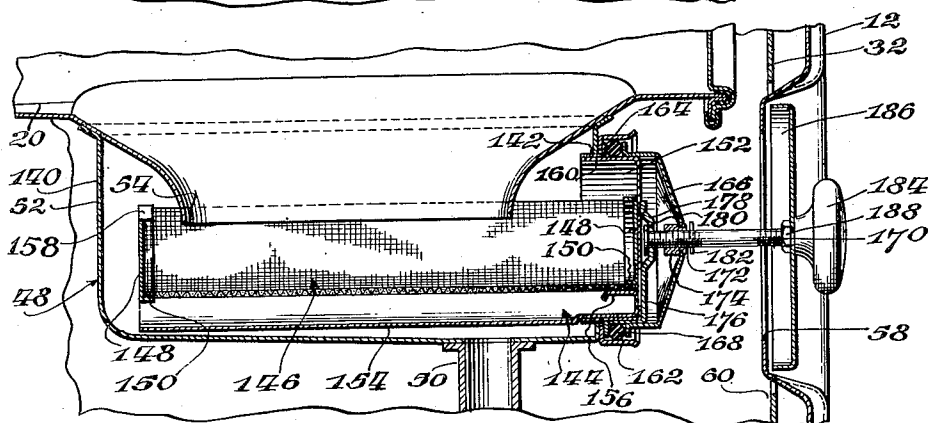


Fig. 8

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UNITED STATES PATENT OFFICE

2,201,790

DRAIN ASSEMBLY FOR WASHING
MACHINES AND THE LIKE

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Application June 29, 1937, Serial No. 150,973

17 Claims. (Cl. 210-149)

The present invention relates to improvements in drain assembly for washing machines and the like. Washing machines and similar apparatus are usually provided with liquid outlets through which the liquid is drained after completion of certain operations by the machine. In order to prevent buttons or the like from escaping through the outlet, the latter has been provided with drain screens having relatively coarse mesh. These screens, however, do not prevent the passage of small diameter articles such as pins which, particularly in automatically controlled machines, may cause considerable trouble by getting into valves or fluid impellers arranged in the outlet conduit.

It is the primary object of the present invention to provide a new and improved drain assembly for washing machines and the like constructed and arranged to prevent the escape of relatively small size articles, such as pins.

A more specific object of the invention is to provide a drain assembly for washing machines and the like comprising a screen and a shield spaced a relatively short distance therefrom so as to permit the ready flow of liquid, but to prevent the passage of pins, buttons or the like which may be loosened from the goods being treated, or otherwise deposited in the washing chamber of the machine.

A further object of the invention is to provide a new and improved drain assembly that may be easily and economically fabricated.

A still further object of the invention is to provide a drain assembly with a drain screen and guard constructed as a unit and adapted easily to be removed from the drain outlet of the machine.

A further object of the invention is to provide a new and improved drain screen unit in which screen and shield are readily separable from each other to permit thorough cleaning of the screen.

Further objects and advantages of the invention will become apparent from the ensuing description thereof, in the course of which reference is had to the accompanying drawings in which:

Fig. 1 is a perspective view of a washing machine provided with a drain assembly constructed in accordance with the present invention;

Fig. 2 is a side elevation view, partly in section, of the machine shown in Fig. 1 showing the location and details of construction of the drain assembly and the screen unit;

Fig. 3 is a fragmentary longitudinal section view of the drain assembly;

Fig. 4 is a top plan view, partly in section, of the drain assembly shown in Fig. 3;

Fig. 5 is a transverse section through the drain assembly taken along the line 5-5 of Fig. 3;

Fig. 6 is a perspective view of the drain screen;

Fig. 7 is a fragmentary plan view, partly in section, and upon an enlarged scale, of a portion of Fig. 1; and

Fig. 8 is a fragmentary longitudinal section view of a drain assembly constructed in a slightly different manner.

The washing machine illustrated in Figs. 1 and 2 comprises an outer cabinet consisting of a top, front and side panels, 10, 12 and 14, respectively, removably mounted in any suitable manner upon a base 16. A hinged door 18, is mounted on the front panel of the cabinet so that the user may have easy access to the washing machine itself, which is mounted within the cabinet.

For the purpose of describing the present invention, the washing machine has been illustrated as comprising a cylindrical, stationary, imperforate tub 20, and a cylinder 22, rotatably mounted therein. The cylinder is provided, in accordance with well known principles, with peripheral perforations 24, so that the liquid within the tub may enter the cylinder and contact the goods disposed therein during performance of the washing operation.

The tub and cylinder are conveniently mounted upon supporting means of the type disclosed in the copending application of Alfred H. Haberstump, Serial No. 135,955, filed April 9, 1937, comprising a triangular, vertically disposed front bearing support 26, and a generally diagonally disposed relatively narrow rear bearing support 28, connected together by a U-shaped intermediate member 30. The peripheral portion of the triangular support 26 is provided with a channel section to give it the desired strength and rigidity. The diagonal support 28 is made of a narrow channel section that extends through an aperture 31, located substantially centrally of the triangular support, to a point of attachment at the front end of the base 16. A second vertically disposed support 32 is secured to the front end of the diagonal support 28 by suitable securing means, such as bolts 33.

The cylindrical tub 20 is rigidly mounted upon the supports 26 and 32, and the cylinder 22 is mounted upon a hub 34, suitably fixed to the front end of a shaft 36 that is journaled in a pair of bearings 38, carried by the upper vertical portions of the bearing supports. The shaft and cylinder are rotated by means of a pulley 40, suitably fixed upon the shaft 36 intermediate the bearing supports and rotated by a belt 42, driven by a motor (not shown), which may be mounted upon the base 16.

It should be understood at this point that the present invention is not limited to the washing machine specifically described above. It may be applied equally well to other types of washing machines, whether these be manually or motor

driven, or whether they be manually or automatically controlled.

Liquid is supplied to the tub 20 through a pair of inlet pipes 44 (only one of which is shown), under the control of electromagnetically actuated valves 46 (only one of which is shown). These valves may be controlled in desired manner to regulate the flow of liquid to the tub and, if desired, may be controlled in the manner shown and described in the copending application of John W. Chamberlin and Rex Earl Bassett, Jr., Serial No. 129,429, filed March 6, 1937.

Liquid is drained from the tub through the drain assembly of the present invention, indicated generally by the reference numeral 48, to the bottom of which is secured a sump 50, from which there leads an outlet conduit 51. The flow of liquid through the outlet conduit may be regulated by a suitable electromagnetic valve (not shown), and, if desired, the rate of flow may be increased by suitable fluid impelling means located in the outlet conduit, also as illustrated in the aforementioned application of Chamberlin and Bassett.

The drain assembly to which the present invention is directed, and which is about to be described in detail, comprises a housing 52, surrounding and located below a drain opening 54, provided at the bottom of the tub 20, and a removable drain screen unit indicated generally by reference numeral 56, adapted to be inserted into the housing through aligned apertures 58, 60 and 62 in the front panel 12, the front support 32, and the front wall 64, of the housing 52, respectively. The drain opening 54 is preferably formed integrally with the side panel of the tub 20, and is stamped in such manner that the downwardly depending portion 66 forms a substantially oval opening. The drain opening is substantially surrounded by the previously mentioned housing 52, which will hereinafter be referred to as the drain collar, formed as an integral stamping. It is provided with a peripheral flange 68, whereby it may be secured to the under side of the tub 20, as by welding. The drain collar has a length somewhat greater than its width in order to conform to the shape of the drain opening 54, and has a substantially circular bottom 70, the rear portion 72 of which slopes forward to the sump 50.

The drain screen unit 56 is constructed to prevent articles, such as pins, buttons and the like, from passing through by surrounding a substantially semicircular screen 74 by a relatively closely spaced shield 76, concentrically arranged with respect to the screen. The screen and guard are both loosely mounted upon a shaft 78, extending through the screen and provided with a threaded end portion 80 and a reduced forward portion 82, upon which is mounted a knob 85, for manually rotating the shaft for a purpose hereinafter to be described.

The construction of the drain screen itself is best illustrated in Fig. 6, from which figure it may be seen that the screen is, as stated above, substantially semicircular in section and is provided with end plates 84, having oppositely disposed peripheral flanges 86, to which the screen may be suitably secured, as by welding or soldering. The flat top portions of the end plates are cut away, as indicated at 88, in order that the screen may be inserted beneath the downwardly extending portion 66 of the drain opening, as illustrated in Fig. 5. The end plates are also provided with central openings 90 through which the shaft 78 extends.

Referring now more particularly to Figs. 3, 4 and 5, it may be seen that the length of the screen is less than that of the shaft but slightly longer than that of the drain opening 54 so that all the water flowing through the latter is discharged into the screen.

The screen 74, together with the end plates 84 to which it is secured, is removably mounted upon the shaft in such manner that when properly assembled it constitutes a part of the drain screen unit 56. It is spaced from the front end of the unit by a tubular spacer 91, one end of which abuts against the front plate 84 and the other against a portion of the shield 76 to be described later. The screen is held against longitudinal displacement along the shaft 78 by a pin 92 extending through the shaft and abutting against the rear plate 84. This construction provides an arrangement whereby the screen may be removed from the shaft for cleaning simply by removal of the pin 92. Any lint or dirt collecting on the shaft is scraped off the latter into the screen when the screen is slid off the shaft.

When the screen is properly assembled on the shaft 78 it is prevented from being displaced angularly with respect to the shaft by a pair of flanges 93 projecting downward from opposed horizontal extensions 94 formed at the sides of the rear portion of the shield. When the screen is mounted upon the shaft the upper portions of its sides extend between the flanges and side wall of the shield, as clearly illustrated in Fig. 5.

The construction of the screen, the surrounding shield and the shaft upon which these are mounted is such that the unit formed thereby may be readily mounted within and removed from the drain collar 52 by rotation of the shaft 78 by means of the knob 85 extending outside the cabinet.

The shaft is rotatably mounted in the end plates 84 of the drain screen and in a cup shaped front plate 96. The front plate 96 is substantially square and is adapted to seat in a recess 98, provided in the front panel 12, of the cabinet in order to provide a cabinet structure of pleasing appearance. The front plate 96 also abuts against the front end of the spacer 91 and closes the front end of the semicircular shield 76. It is welded to a transverse peripheral flange 100, provided at the front end of the shield and to a similar flange 102, provided on a substantially semicircular plate 104, forming with the front end of the shield 76 a substantially cylindrical front end. The plate 104 is provided with horizontal flanges 106, welded to similar flanges 108, provided at the front end of the shield.

The welded flanges 106 and 108 serve, with opposed slots 109 formed in the front panel 14, as guides for the drain screen unit so that the latter may be more readily positioned in the drain collar.

Leakage of liquid from within the drain collar along the aperture 62 provided therein is prevented by constructing the aperture with an annular internally extending flange 110, adapted to receive a gasket 112 having portions of lesser and greater diameter than the aperture. The gasket is carried upon an annular flange ring 114, suitably secured, as by welding, to the front end of the cylinder formed by the shield 76 and plate 104.

The drain screen unit is secured with the screen 74 directly beneath the drain opening 54, so that the liquid must pass through the screen and the open rear end of the shield 76, by the 75

flanged opening 62 and the threaded end portion 80 of the shaft which is adapted to enter an internally threaded bushing 116. The bushing 116 is secured in place by a nut 120 and leakage of liquid along the bushing is prevented by a gasket 122, placed between the bushing and the rear wall of the drain collar. The rear end of the shaft 80 is guided into the bushing by a pair of inwardly projecting ridges 124, formed in the rear end of the bottom of the drain collar, and by constructing the bushing with a beveled surface 126, surrounding the internally threaded opening in the bushing.

In order to make the insertion and removal of the drain screen unit somewhat easier, the unit is so constructed that the initial outward movement and the final inward movement are accomplished by rotation of the shaft 78 when in threaded engagement with the bushing 116. The initial outward movement results from the fact that the pin 92, when moved longitudinally upon rotation of the shaft 78, transmits the longitudinal movement to the drain screen unit. The movement is transmitted through the screen 54 and spacer 91 to the front plate 96 of the unit. The final inward movement results from the fact that a bearing collar 130, disposed between the knob 85 and plate 96, transmits longitudinal movement to the unit as the shaft is threaded into the bushing 116.

In order to remove the drain screen unit from the position in which it is indicated in the drawings, it is necessary manually to rotate the knob 85 in a predetermined direction to move the shaft 78 outwardly. This rotation effects relative movement between the threaded portion 80 of the shaft and the bushing 116 and, because the pin 92 engages the end plate 84 of the drain screen, this outward movement of the shaft results in the outward movement of the drain screen unit. Consequently, the pressure upon the gasket 112 is diminished and, after the shaft has been rotated an amount sufficient entirely to disengage the threaded portion 80 of the shaft from the bushing, only a slight amount of pulling effort is required to complete the removal of the drain screen unit. After the drain screen unit has been removed, it is relatively easy to remove any foreign articles collected therein.

When it is desired to re-insert the drain screen unit in place, the unit is first inserted into the housing through the aligned apertures in the front panel, front support and drain collar until the front end of the shaft strikes the bushing. Thereafter, it is necessary to rotate the shaft through the knob to move the unit inwardly and, as the shaft is rotated, the inward movement of the unit applies a considerable pressure to the gasket 112, thereby to prevent the possibility of any leakage of liquid from within the drain collar even after the rubber gasket takes a permanent set.

Once installed in the position indicated in the drawings, the flow of liquid through the drain screen unit is in a path substantially transverse to the screen. The liquid first passes through the screen 74 and then strikes the shield 76, and thereafter flows into the space inside the drain collar through substantially annular outlets defined by the shield 76 and the end plates 84 of the screen.

Thus, any buttons or similar articles are caught within the semicircular screen, and pins and the like are prevented from passing through the screen by the shield. The spacing between

the screen and shield should be designed in such manner that pins are prevented from sliding through the screen. This is accomplished by so spacing the two that the pin can not move to an angle from the horizontal that will permit it to fall through the screen.

In the modified form of construction illustrated in Fig. 8, the construction of the drain screen unit has been simplified to permit easier separation of the screen and drain for cleaning purposes and the arrangement for securing the unit in position in the drain collar has been modified by omission of the shaft 78 found in the previously described modifications.

The drain opening 54 remains the same as in the previously described modification, but the drain collar 52 has been changed somewhat. The rear wall 140 of the drain collar is entirely closed and the front wall is provided with a circular aperture 142 through which the drain screen unit 144 may be inserted into position within the drain collar.

The drain screen unit comprises a screen 146 having a substantially circular transverse section and secured at its ends to end plates 148 provided with opposed flanges 150 to which the screen is welded. The front end plate 148 is suitably secured, as by welding, to an imperforate cup-shaped closure member 152 having an outer diameter substantially equal to the diameter of the aperture 142.

The shield 154 is mounted for ready separation from the screen by providing the forward end thereof with a peripheral reverse bend 156. The bend and shield wall constitute a channel adapted to be inserted between the screen and side wall of the closure member, whereby the front end of the shield is properly positioned. The rear end of the shield is properly positioned with respect to the screen by providing it with a pair of opposed turned-over ears 158 (only one of which is shown) which support the shield from the screen.

When the shield is properly positioned with respect to the screen the two are disposed in concentric relationship with the shield a relatively short distance from the screen. Thus, pins or other foreign objects are caught either by the screen or in between the screen and shield, just as in the previously described modifications.

To insure proper position of the drain screen unit within the drain collar, the aperture 142 is provided with a narrow slot adapted to receive a flanged guiding arm 160 welded to the side wall of closure member 152.

The drain screen unit is secured in the position indicated in Fig. 8 by means of an expansible rubber gasket 162 surrounding the closure member 152 of the unit and adapted to be compressed into engagement with an annular axially extending flange 164 welded to the drain collar. The gasket 162 is adapted to be compressed by means of a cup-shaped member 166 provided with a peripheral outwardly extending flange 168 engaging the gasket and adapted to be moved axially upon rotation of a shaft 170. The shaft is provided with an intermediate threaded portion 172 adapted to impart axial movement to a threaded bushing 174 to which the cup-shaped member 166 is suitably secured.

The shaft 170 is rotatably mounted by the aforementioned bushing 174 and by a right-angled arm 176 welded to the circular wall of the closure member 152 and provided with a hollow boss 178 adapted to receive a collar 180 fixed to

the end of the shaft 170. Axial movement of the gasket compressing cup-shaped member 166 is limited by the boss 178 and by a pin 182 disposed on the opposite side of the bushing from the boss 178.

The shaft 170 is adapted to be rotated from outside the cabinet by a knob 184. The aperture 58 in the cabinet wall through which the drain screen unit is removable is closed by a circular cup-shaped plate 186 affixed to the shaft by means of a nut 188.

In operation when it is desired to remove the drain screen unit from the drain collar, it is necessary to rotate shaft 170 in a direction to move the bushing 174 axially to the right, as viewed in Fig. 8. The movement of the bushing in this direction results in a similar movement of the cup-shaped member 166, thereby releasing the pressure on the gasket 162. The releasing of the pressure upon the gasket permits axial movement of the drain screen unit so that the latter may be removed from within the drain collar by a pulling action. As the shaft is pulled outwardly, the closure member, screen and shield comprising the drain screen unit are removed from within the drain collar as a unit. After removal the shield is easily separated from the remainder of the unit and the screen easily cleaned. After the screen is cleaned, the unit may be re-assembled simply by inserting the front end of the shield into the space between the screen and side wall of the closure member.

When it is desired to reinsert the drain screen unit within the drain collar, the unit is inserted into substantially the position shown, and the shaft 170 rotated in the opposite direction to compress the gasket 162. Compression of the gasket causes it to expand laterally whereby the cylindrical portion 156 of the drain screen unit is wedged in place.

The drain screen unit last described prevents the passage of buttons, pins and other foreign articles which may be found in clothes in the same manner as the previously described modification. For this reason it is not believed necessary to describe this operation again.

While only two modifications of the invention have been described, it should be understood that these modifications should not be considered as limiting the invention to the specific details thereof, and it is contemplated that the invention may be modified to adapt it for use in various environments and that the invention is limited solely by the appended claims.

I claim:

1. A drain screen unit adapted to be placed in a liquid outlet including in combination a perforate screen open at one side and closed at its other sides and at its ends, and an imperforate shield paralleling and spaced a relatively short distance therefrom, the shield having one end open and having an open side in which the screen is arranged, said screen receiving liquid at its open side so that the liquid follows a path through the screen and then between the screen and shield and out through the open end of the shield.

2. A drain screen unit for preventing the passage of articles such as pins through a liquid outlet including in combination a perforate screen curved below and about a generally horizontal axis and which is closed at both ends and an imperforate shield below and paralleling said screen and spaced a short distance therefrom, said screen and shield being separable and

so spaced from each other and the screen being of a relatively small mesh such that a pin can not pass completely through the screen into the space between the screen and shield.

3. A drain screen unit for insertion through an aperture into a liquid conduit, including in combination, a screen having an arcuate section, means including a cup-shaped member having a flange concentric to said screen and adapted to close said aperture for supporting said screen, and an imperforate shield having an arcuate section and provided with a reverse bend at one end insertable between the screen and flange of said member, whereby the shield is supported in readily removable manner with respect to said screen.

4. An arrangement for preventing the passage of articles such as pins through a liquid conduit including in combination a partially cylindrical perforate screen through which the liquid flows and which is closed at its ends, an imperforate partially cylindrical shield surrounding the screen and parallel to and spaced a short distance in the direction of liquid flow from said screen, and means for discharging the liquid flowing through the screen from one end of the shield between the screen and shield.

5. An arrangement for preventing the passage of articles such as pins through a liquid conduit including in combination a perforate screen, an imperforate shield parallel to and spaced a short distance from the screen, and means including imperforate end plates and a shaft engaging the shield and passing through openings in said end plates and supporting said screen in said spaced relationship to the shield for discharging the liquid through an opening between the shield and end plates.

6. In a receptacle adapted to contain liquid and having a drain opening in its bottom, the combination of an apertured drain collar beneath said opening, and a drain screen unit insertable into said collar through said aperture, said unit including a rotatably mounted shaft on which the remainder of the unit is mounted and extending therethrough for securing said unit within said collar, and said collar having securing means detachably engaging the end of said shaft, whereby the entire unit may be removed or inserted by disengaging the shaft from said securing means and removing the shaft or by inserting said shaft and engaging the end thereof with said securing means.

7. In a receptacle adapted to contain liquid, a drain opening in its bottom, the combination of an apertured drain collar beneath said opening, a drain screen unit insertable into said collar through said aperture, a shaft comprising a part of and extending through said unit and rotatably mounted therein, and means including a threaded portion on said shaft and a cooperating threaded element on said collar for securing said unit in position in said collar.

8. In a receptacle adapted to contain liquid, a drain opening in its bottom, the combination of an apertured drain collar beneath said opening, a drain screen unit insertable into said collar through said aperture, a shaft comprising a part of and extending through said unit and rotatably mounted therein, and means including a threaded element supported by said collar, a cooperating threaded end portion on said shaft and projecting means carried by said shaft engaging said unit for securing said unit in said collar and effecting movement thereof upon rotation of said shaft.

9. In a receptacle adapted to contain a liquid and having a drain opening in its bottom, the combination of an apertured drain collar beneath said opening, a drain screen unit insertable into said collar through said aperture, said unit comprising a screen located below said opening, an imperforate shield located in spaced relationship to said screen, an opening for the passage of liquid between the screen and shield, and a rotatably mounted shaft extending through said shield and screen for securing said unit within said collar.

10. In a receptacle adapted to contain a liquid and having a drain opening in its bottom, the combination of an apertured drain collar beneath said opening, a drain screen unit insertable into said collar through the aperture, said unit comprising a screen located below said opening and an imperforate shield located a short distance below said screen, said screen being separable from the shield and comprising an apertured rear end plate, said shield comprising an apertured front end plate, and means including a shaft rotatably mounted in said apertured plates and extending into threaded engagement with said collar for removably mounting said unit in said collar.

11. In a receptacle adapted to contain a liquid and having a drain opening in its bottom, the combination of an apertured drain collar beneath said opening, a drain screen unit insertable into said collar through the aperture, said unit comprising a screen located below said opening and an imperforate shield located a short distance below said screen, said screen comprising an apertured rear end plate, said shield comprising an apertured front end plate, and means including a shaft rotatably mounted in said apertured plates provided with projecting portions engaging said plates and extending into threaded engagement with said collar for removably mounting said unit in said collar and providing an arrangement whereby rotation of said shaft effects axial movement of said unit.

12. In a receptacle adapted to contain a liquid and having a drain opening in its bottom, the combination of an apertured drain collar beneath said opening, a drain screen unit insertable into said collar through said aperture, a gasket having a portion with an outside diameter greater than the aperture secured to said unit, a shaft extending through and rotatably mounted on said unit, a threaded element supported on said collar, a threaded portion on said shaft adapted to be threaded into said element, means on said shaft for preventing relative axial movement between said shaft and unit, and means for rotating said shaft whereby the shaft is threaded into said element and the unit drawn into said collar and the gasket forced against the front wall of the collar.

13. In a receptacle adapted to contain a liquid and having a drain opening in its bottom, the combination of an apertured drain collar beneath said opening, a drain screen unit insertable into said collar through said aperture, the front end of said unit being substantially cylindrical in shape, a gasket carried by said cylindrical front end and adapted to fit about said aperture, a shaft extending through and rotatably mounted on said unit, a threaded element supported on said collar, a threaded portion on said shaft adapted to be threaded into said element, means

on said shaft for preventing relative axial movement between said shaft and unit, and means for rotating said shaft whereby the shaft is threaded into said element and the unit drawn into said collar and the gasket forced against the front wall of the collar.

14. In a washing machine including a receptacle adapted to contain a liquid and having a cabinet comprising an apertured front wall surrounding said receptacle, said receptacle having a drain opening, the combination of a housing surrounding said opening and provided with a flanged aperture in the front wall thereof, a threaded element mounted in the rear wall of said housing and aligned with said apertures, a drain screen unit removably supported in said flanged aperture and threaded element, said unit comprising a closed end screen mounted in an open ended shield below the drain opening in such manner that the liquid flows through the screen and then into the housing through the open end of the shield, a shaft threaded at its rear end and rotatably mounted in the closed rear end of said screen, a knob and panel at the front end of said shaft for rotating the shaft and closing the aperture in the front wall respectively, and an annular gasket around the front end of the cylinder adapted to engage said flanged aperture when the unit is secured in place.

15. In a receptacle adapted to contain a liquid and having a drain opening in its bottom, the combination of an apertured drain collar beneath said opening, a drain screen unit insertable into said collar through the aperture, said unit comprising a cup-shaped front portion adapted to fit into and extend outwardly beyond the collar, and means for securing said unit in place in said collar including an axially extending flange around said aperture, an expansible gasket carried by the front portion and adapted to fit therebetween and the flange, a rotatable shaft mounted upon said front portion and a member movable axially upon rotation of said shaft for compressing said gasket, whereby said gasket is wedged between the flange and front portion to secure said unit in place in said collar.

16. An arrangement for preventing the passage of articles such as pins through a liquid conduit including in combination a curved perforate horizontally-arranged screen closed at its ends and through which liquid flows from the concave to the convex side, and an imperforate curved shield underlying and closely spaced from the convex side of the screen and formed with an open end providing a discharge passage opposite one closed end of the screen whereby elongated articles such as pins cannot pass through the screen and the discharge passage.

17. In a receptacle adapted to contain liquid and having a drain opening in its bottom, the combination of an apertured drain collar beneath said opening, a closure for said aperture, a curved shield secured to said closure and extending into said collar beneath the drain opening and having a liquid outlet opening at one end, and a curved screen fitting in and spaced from the shield and underlying the drain opening and which screen is closed at its ends so that liquid from the drain opening flows through the screen and through the space between the screen and shield to the end of the shield.

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