

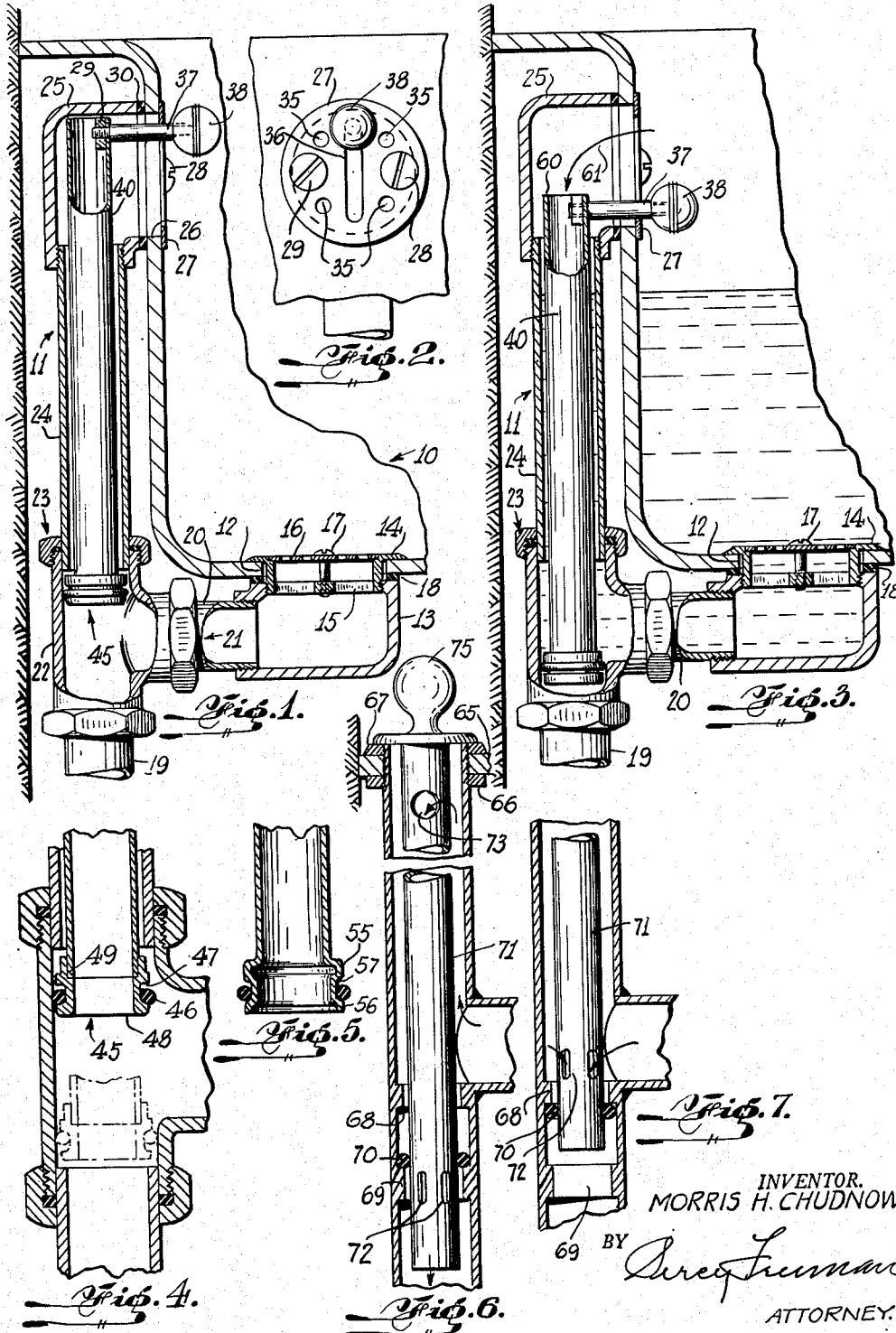
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DRAIN ASSEMBLY

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DRAIN ASSEMBLY

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The present invention relates to improvements in drain structures for sinks, tubs, basins, or the like.

The invention has for its object to provide a new and simplified overflow pipe construction for drains of the above character. More specifically, it is an object of the invention to provide a novel valve assembly therefor.

The invention consists in providing an overflow pipe at its lower end with an external rubber O ring having a circular cross section, which ring is capable of making sliding and, if desired, rolling contact with the walls of the enclosing pipes. This valve is simple to construct and easy to assemble, and represents a marked improvement over existing valve constructions.

A further object is to provide a valve construction for a waste which serves the dual function of valve and lock, the lock serving to retain the overflow pipe in raised position when desired.

The invention will be better understood after reading the following detailed description taken in connection with the accompanying drawings, in which:

Fig. 1 is a vertical sectional view of a waste or drain constructed in accordance with my invention, showing the overflow pipe in the raised or draining position.

Fig. 2 is a front view of the overflow outlet.

Fig. 3 is a view similar to Fig. 1, but showing the overflow pipe in lowered or stoppered position.

Fig. 4 is a fragmentary vertical sectional view of the valve detail of the drain showing the overflow pipe in draining position in full lines, and in stoppered position in phantom lines.

Fig. 5 is a fragmentary vertical sectional view of the lower end of the overflow pipe showing a modification in the construction thereof.

Fig. 6 is a diagrammatic vertical sectional view of a waste or drain representing another embodiment of my invention and showing the overflow pipe in stoppered position.

Fig. 7 is a fragmentary view similar to Fig. 6, showing the overflow pipe in draining position.

Referring now to Fig. 1, there is represented by the numeral 10 a sink or basin to which my improved drain 11 has been applied. The sink is provided in its bottom with an opening 12 to which is connected a drain shoe or elbow 13, by means of a threaded ferrule 14 which is provided with a spider 15 to which is connected a strainer 16 by means of screw 17. A gasket 18 is interposed between the shoe and the basin. This out-

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let connection to the basin is conventional in character, and may take any other well-known form.

A section of pipe 20 at one end threadedly engages the free end of the shoe and at its other end is connected by a slip joint union 21 to a waste and overflow T 22. The lower end of the T is connected with the waste pipe 19. The upper end of the T is connected by a slip joint union 23 to the stand-pipe 24 which forms the outer wall of the drain. The free end of standpipe 24 is threaded into the lower end of another shoe 25. The free end of shoe 25 is, in turn, connected to an opening 26 in the rear wall of the basin near the top thereof by means of an overflow plate 27 and screws 28 and 29. Gasket 30 is provided between the shoe 25 and the basin to make the connection water tight.

The details of overflow plate 27 may be seen in Fig. 2. Circular openings 35 and slotted opening 36 are provided therein. The openings are provided primarily as an outlet for the overflow from the basin, slot 36 serving additionally to permit the emergence of handle or operating rod 37.

Operating rod 37 is provided at its external end with a suitable knob 38, and threadedly engages with its other end a boss 39 provided at the upper end of overflow pipe 40. Overflow pipe 40 is provided at its lower end, which extends into T 22, with valve 45.

Referring now to Fig. 4, valve 45 is seen to consist of an O-ring 46 having a circular cross-section which is mounted in an annular channel 47 in collar 48. Collar 48 is provided with an enlarged end 49 which fits over the end of overflow pipe 40. The collar may be attached to the overflow pipe by soldering, brazing, or in any other well known manner.

An alternative method of construction is shown in Fig. 5, wherein the end of the overflow pipe is provided with a pair of annular shoulders 55 and 56, by spinning or by any other known process in order to provide the channel 57 for the O-ring.

Operation of the drain will now be explained with the aid of Figs. 1 through 4. In Fig. 1 and in solid lines in Fig. 4, the overflow pipe is shown in draining position. It was raised by grasping knob 38 and lifting until further movement was prevented either by the top of pipe 40 abutting the inner wall of shoe 25 or by rod 37 reaching the upper extremity of slot 36. It is merely a matter of design choice as to which method of limiting travel is employed. In this position, the

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liquid in the basin drains out through strainer 16, shoe 13, and pipe 20, into T 22, from which it exits to unobstructed waste pipe 19.

As can be clearly seen in Fig. 4, the upward travel of the overflow pipe is limited so that valve 45 does not completely obstruct the upper end of T 22. This clearance is provided to permit any liquid which has entered the space between the standpipe 24 and the overflow pipe 40 to drain out when the pipe 40 is raised. When it is desired to stopper the basin, rod 37 can be urged downward so as to lower pipe 40 into the position shown in Fig. 3, and in phantom lines in Fig. 4. In this position, the O-ring 46 contacts the inner cylindrical surface of the lower end of the T 15 and creates a water-tight seal. It should be noted that in lowering the overflow pipe, the O-ring has been caused to roll from the lower edge of channel 47 to the upper edge thereof. This rolling action tends to reduce the resistance offered to operation of the drain and more important tends to decrease the wear of the O-ring. The O-ring is preferably made of resilient material such as rubber. If desired, the width of channel 47 may be made equal to the cross-sectional diameter of the O-ring, in which case, rolling action will be prevented. In normal use, the presence of water, grease and other waste matter within the T element will provide sufficient lubrication to permit ease of operation.

It should be pointed out at this time that the T is provided with a smooth cylindrical bore extending over the entire length of travel of valve 45. The O-ring 46 over its entire periphery, makes positive contact with the walls of said bore except for portions adjacent the opening which leads to the horizontal leg of the T when the ring is aligned therewith. Therefore, there is substantial surface contact between the O-ring and the T bore when the overflow pipe is in its raised position, and the friction thereby created is adequate to maintain the pipe in said elevated position.

By the above arrangement, it will be obvious that the need for an independent latch arrangement to hold the overflow pipe in its raised or draining position has been entirely eliminated by providing valve 45 which performs that function in addition to controlling the waste flow.

In the stoppered position as shown in Fig. 3, the liquid rises in the space between the standpipe 24 and the overflow pipe 40, seeking the level of the fluid in the basin. If the liquid should rise above the upper end 60 of the overflow pipe, it will overflow through the outlet 27 and through the center of pipe 40 to the waste pipe 19, as shown by arrow 61.

The modification shown in Fig. 5 operates in the same manner as the above, but may be preferred from a manufacturing standpoint. In both forms, the annular shoulders forming the channel for the O-ring are constructed so as to fit loosely within the bore of the T.

Now referring to Figs. 6 and 7, I have shown diagrammatically another form of my invention. In this embodiment, the waste is shown as having been designed for connection to the horizontal flange or shelf of the basin rather than to the rear wall thereof. As shown, the stand pipe may be threaded at its upper end and connected to the basin flange 65 by means of nuts 66 and 67. The lower end of the stand pipe is connected to a T which in turn is connected to the bottom of the basin and to the waste pipe in the same manner as shown in Fig. 1. As seen in Figs. 6

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and 7, the lower end of the T is provided with two annular shoulders 68 and 69, between which rides an O-ring 70 similar to O-ring 46 in the previous embodiment. Fitting snugly within the O-ring 70 is the overflow pipe 71, which is provided with a plurality of slotted openings 72 at its lower end and an opening 73 at its upper end. The upper end of pipe 71 is provided with a knob 75 above the sink by means of which the operator can raise and lower the overflow pipe.

As seen in Fig. 6, the overflow pipe is in the stoppered position. In this position, the pipe has been lowered by means of knob 75 until the flange on the knob rests on nut 67. As can be seen, O-ring 70 rests against lowermost shoulder 69, and openings 72 in pipe 71 lie below ring 70. Thus waste liquids cannot pass beyond the O-ring and, therefore, rise in the basin as well as within the space between pipe 71 and the stand pipe. In this modification, opening 73 acts as the overflow outlet, permitting the liquid to reach the inside of pipe 71 and exit through the bottom thereof to the waste pipe.

In order to open the drain, the pipe 71 is raised by grasping knob 75. Raising the pipe causes the O-ring to roll down the body of the pipe while at the same time rolling up the wall of the T until it abuts shoulder 68.

Fig. 7 shows the overflow pipe in the draining position in which openings 72 are now above O-ring 70 and, therefore, provide an outlet for the fluids surrounding the pipe. Passage of the waste liquids is shown by the arrows.

In this modification, the action of the O-ring is shown as substantially entirely rolling with a minimum of sliding. It should be obvious that the shoulders 68 and 69 can be placed closer together in order to restrain the rolling action and provide a sliding valve arrangement. In either case, there is sufficient resistance to motion provided by the O-ring valve to maintain the overflow pipe in elevated position for draining. The rolling arrangement for the ring is usually preferable because of reduced wear of the ring.

I desire it to be understood that although I have shown and described my invention in connection with specific embodiments, it is not to be limited thereto for it may be modified in various ways. For example, the valve 45 on the overflow pipe in Figs. 1 through 5 may be replaced by the valve structure shown in Figs. 6 and 7, while the latter valve structure may be replaced by valve 45.

The overflow plate 27, as well as the openings therein, as shown in Fig. 2, may take various configurations. In the construction shown in Figs. 1 and 3, the operating lever 37 may be lengthened so as to extend through pipe 40 to the opposite wall thereof, thereby providing increased rigidity. Other alterations will appear obvious to those skilled in the art.

It will be seen that I have provided a drain which is efficient in operation, simple to construct, and has a minimum of parts.

Having now described my invention in detail, I desire to secure by Letters Patent, and claim:

1. A waste of the character described comprising a waste and overflow T having an upper, a lower, and a horizontal leg; a stand pipe connected to said upper leg; an overflow pipe positioned within said stand pipe for axial movement therein, the lower end of said overflow pipe extending into said T; and valve means connected between and in yielding contact with said over-

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flow pipe and with the inner walls of said T for selectively sealing and unsealing the lower leg of said T, said valve means comprising a resilient O-ring positioned about the overflow pipe near its lower end to maintain said contact with both said overflow pipe and said walls of the T for all positions of said overflow pipe, and movable to seal off slotted drain openings in the lower end of the overflow pipe, from said horizontal leg, when the overflow pipe has been moved to its lowered position and means spaced along the walls of the lower leg of said T for limiting the axial movement of said O-ring relative thereto.

2. A waste as set forth in claim 1 wherein said last named means comprises a smooth cylindrical bore extending between a pair of spaced annular shoulders located in said lower leg of the T whereby the rolling movement of said O-ring is constrained within limits.

3. In a drain assembly wherein an axially movable overflow pipe is positioned within a stand-pipe, its lower end extending into a drain and overflow T, the latter being connected to said stand-pipe, said T having an upper, a lower, and a horizontal leg, a valve arrangement for selectively sealing and unsealing the lower leg of said T, said valve arrangement comprising a smooth annular cylindrical recess along a portion of the passage below the mouth of the lower leg of said T, said smooth recess being of greater diameter than that of said lower leg, at least a portion of

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said overflow pipe at the lower end thereof being smooth, cylindrical, concentric with and spaced from the wall of said smooth recess, a resilient O-ring rollingly embracing said overflow pipe within the limits of said smooth portion, said O-ring having a circular cross-section, the diameter of which is greater than the concentric space between said smooth portion of the overflow pipe and the cylindrical wall of the recess in the drain T, the wall of the overflow pipe being provided with slotted holes therethrough, said slotted holes being spaced upwardly from the bottom end of said overflow pipe, the arrangement of said assembly being such that when the overflow pipe is in the upward position, said slotted holes provide communication between the horizontal leg of the T and the inside of the overflow pipe; and when the pipe is in the lowered position the O-ring seals off the slotted holes from the horizontal leg.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
80,066	Gibson	July 21, 1868

FOREIGN PATENTS

Number	Country	Date
5,521	Great Britain	of 1888
615,974	Great Britain	Jan. 14, 1949