June 26, 1934. S. BLICKMAN 1,964,423

DRAIN FITTING FOR SINKS AND THE LIKE

Filed June 18, 1932

Fig. 1

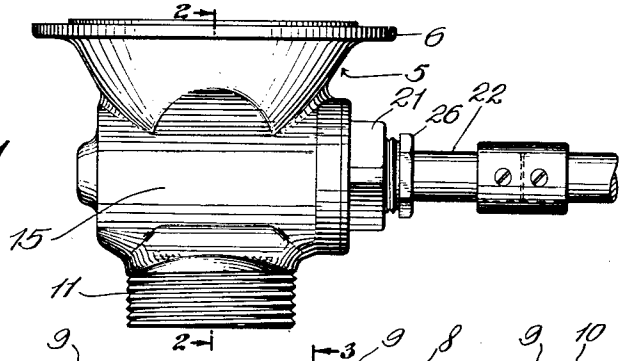


Fig. 2

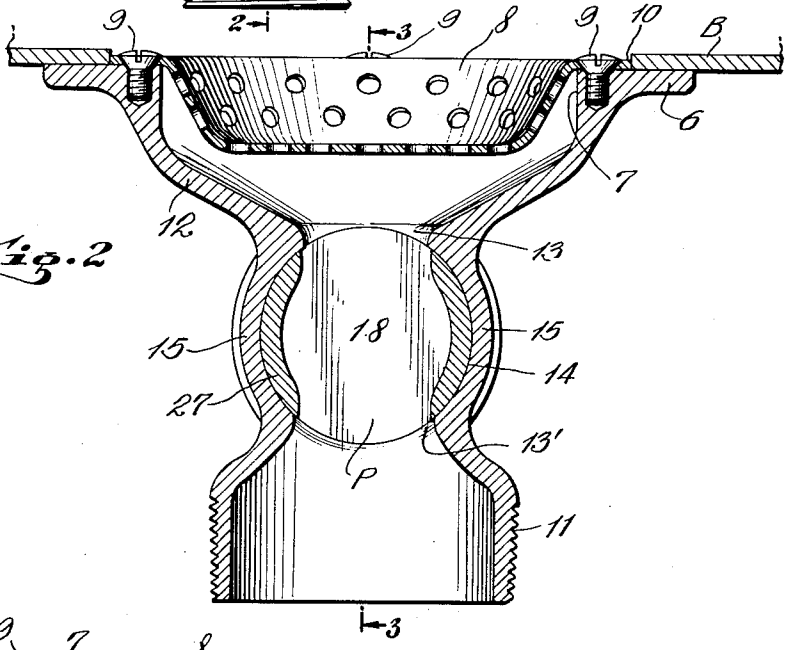
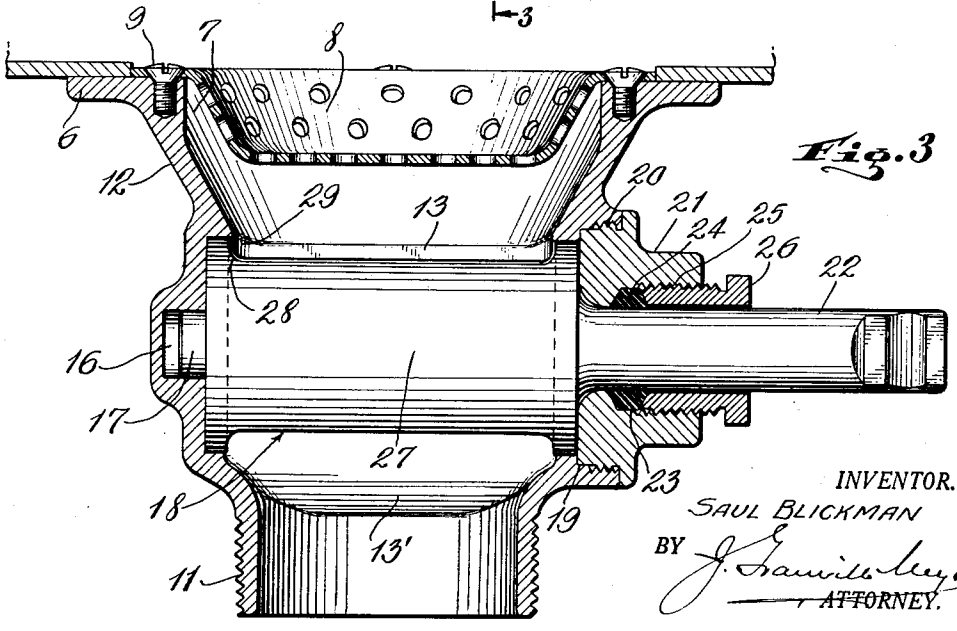


Fig. 3



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DRAIN FITTING FOR SINKS AND THE LIKE

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6 Claims. (Cl. 4—287)

My invention relates to drain fittings and particularly to such fittings for wash tubs, sinks and receptacles.

Prior to my invention there have been proposed and provided drain fittings comprising combined valve casings and strainers for connection between a washing receptacle and drain pipe and operable to control the flow of fluid from the receptacle, but all of those with which I am familiar are objectionable because the valve structure is so constructed and/or arranged as to be very difficult of operation, to be incapable of quick opening, not affording an adequate passage for unrestricted and fast flow of fluids. Then too, it frequently happens that the space between the receptacle and the drain pipe available for the fitting is relatively small, and the drain fittings with which I am familiar and used before my invention could not generally be connected with the tank and drain pipe without considerable alterations and work, in many cases it being necessary to connect the fitting to the drain pipe at a point not convenient to the operator.

One object of my invention is to provide a drain fitting having a casing of relatively short dimension so that the same may be connected to a tank and drain pipe without great labor or alterations even when the available space is small. This is accomplished chiefly by providing the casing with a horizontal chamber in which a valve is located and operated from a remote point, as will be more particularly hereinafter pointed out.

It is very desirable in a valved drain fitting for use in connection with washing receptacles, in which the water becomes quite greasy and contains solid particles of food after the washing operation, to have a quick action when the valve is opened and to have the cross sectional area of the passage through the valve and fitting substantially equal to the cross sectional area of the drain pipe to obtain a free and fast flow. A valve constructed in accordance with my invention affords both of these features.

Other objects and advantages of the invention are the provision of a drain fitting of the above type of simple construction, having a minimum number of parts and a minimum amount of materials, including a rotatable valve head constructed and mounted to have free turning movement to facilitate its operation.

The foregoing and other objects and advantages of the invention will become apparent and will be pointed out during the course of the following detailed description of the accompanying drawing wherein

Fig. 1 is a side elevation of a drain valve embodying the invention;

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1; and

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2.

Referring to the drawing the numeral 5 generally designates a casing which is preferably a single casting provided at its top with a flange 6 bordering the inlet opening 7. A strainer 8 which may be of dished formation is mounted over the opening 7 and may be secured to the casing 5 by means of the screws 9 which pass through openings in the flange 10 of the strainer 8 and engage in threaded openings in the top of the casing. The lower end of the casing is of tubular formation and is provided with screw threads 11 to receive a coupling (not shown) to connect the casing with the drain pipe, not shown, it being understood that the drain pipe is substantially of the same cross sectional area as the screw threaded end of the casing. Below the flange 6 of the casing the walls 12 may incline downwardly and inwardly to the opening 13 to provide a dished inlet end to receive strainer 8. The casing is provided with a valve chamber 14 preferably formed by the curved walls 15 elongated transversely of the casing and of relatively short height, and which extend between the walls 12 and the lower or outlet end of the casing.

It will be noted by reference to Fig. 2 that the opening 13 is not as wide as the tubular end of the casing which connects with the drain pipe, but as shown in Fig. 3 the length of the opening 13 is greater than the diameter of the lower end of the casing so that the total cross sectional area of the opening is substantially the same as the cross sectional area of the end 11 of the drain pipe to which it may be connected. A similar opening 13' is provided at the outlet side of chamber 14.

A recess 16 is provided in one end of the chamber 14 to receive the projection or gudgeon 17 on the end of the cylindrical valve plug indicated generally by the numeral 18, and at the other end of the chamber the casing is provided with an opening 17 of sufficient diameter to permit insertion of the valve plug 18 therethrough into the chamber 14. The opening 19 is screw threaded as indicated at 20 to cooperate with the screw threads on the plug 21 having a central opening through which the valve handle or operating stem 22 extends. The plug 21 also has a bore 23 to receive the packing 24, and the bore is screw threaded as indicated at 25 to cooperate with the

screw threads on the packing nut 26 which is mounted around the stem 22.

I have referred above to the areas of the openings 13 and 13' relative to the discharge end of the casing which connects with the drain pipe. It will be noted by reference to Figs. 2 and 3 that the arcuate wings or panels 27 on valve 18 are of a width and length sufficient to cover the openings 13 and 13' when the valve stem 22 is turned to rotate the valve in the chamber 14. Between the wings or panels 27, there is a passage P through valve 18 of substantially the same cross sectional area and shape as that of the openings 13 and 13' to register therewith when the valve is turned to the position shown in Figs. 2 and 3, so that fluids from the tank or receptacle can flow fast and freely through the valve casing and drain pipe.

Referring to Fig. 3, it will be noted that on each end of the valve head the panels 27 are curved as at 28 so as to conform the valve passage to the openings 13 and 13' which are shown as having curved corners 29, and beyond the ends of openings and valve passage the solid ends of the valve head are disposed in the ends of chamber 14.

An important feature of the invention resides in making the diameter of the valve head 18, that is, the distance between the outer surfaces of the opposite wings 27 and the solid ends slightly less than the inner diameter of the chamber 14. This difference in diameter may be .006 of an inch to avoid frictional contact between the outer surfaces of the valve head and wings 27 and the inner surfaces of the walls 15 when the valve is rotated, the only contact being between the gudgeon 17 and recess 16 and the stem 22 and packing 23. I have found that such a construction and arrangement affords the free or easy turning of the valve head and does not noticeably affect the utility of the valve in shutting off communication between the tank and the drain pipe when the valve is used on washing receptacles and that the water can be maintained in the receptacle under a pressure of several pounds. This is due to the fact that the water drained from washing receptacles carries so much grease and foreign matter, and this grease and matter forms a coating on the outer surfaces of the wings 27 and the inner surface of chamber 14 sufficient to prevent leakage through the closed valve to any extent which would interfere with the washing operation by materially diminishing the supply of water during the washing operation. If there is any leakage through my fitting the fluid will run down into the drain pipe and not drip or run out on the floor as in the case of other drain fittings. The accumulation on the surfaces of the wings 15 and the chamber 14 also acts as a lubricant, and with the relatively slight surface contact between the parts 16 and 17, and 22 and 23, the valve is turned very easily and very quickly. A lubricant may be applied between the contacting surfaces if desired.

It should be apparent from the foregoing that fittings embodying the invention can be readily produced by making the entire casing 5 including the shallow inlet end formed by the walls 12, the horizontal chamber 14 formed by the short curved walls 15, and the threaded end for connection with a drain pipe all of a single casting or shell in standard sizes and relatively short from inlet to outlet ends to enable fitting the valve in small spaces between the tank or receptacle and the drain pipe therebeneath. The valve head will have its axis of rotation substantially parallel to the bottom of the tank and it can be quickly and easily turned in its chamber to open and closed positions relative to the opening 13 due to the small amount of surface contact, and when it is established in open position the liquid can flow out of the tank through the valve with little or no restriction due to the relative areas of the openings 13 and 13', valve passage P, and drain pipe coupling end.

The fitting may be connected to the tank bottom B by bringing the flange 6 into contact with the bottom around an opening provided in the bottom of the tank or receptacle and then engaging bolts or screws not shown through the flange and bottom. Regardless of how the valve is secured it is always accessible for repairs if necessary because the plug 21 can be removed to give access to the interior of the casing or horizontally disposed chamber and permitting removal of the valve head without disconnecting the casing from the receptacle or drain pipe. The gudgeon 17 and stem when placed in their journals will center the valve head relative to the walls of the chamber to provide for easy and quick turning under the construction and arrangement above described.

I claim:

1. A drain fitting of the character described comprising an integral casting having a cylindrical chamber formed transversely of the body of the casing intermediate its ends, flaring walls above the chamber providing a dished portion to receive a strainer at the inlet end of the casing, a coupling portion on the casing below the chamber for connection with a drain pipe and having an outlet opening, the casting having openings above and below the chamber communicating with the dished portion and coupling portion, said openings being of substantially the same cross sectional area as said outlet opening, and a cylindrical valve head in said chamber, said valve head being provided with a passage of substantially the same cross sectional area and shape as said openings and panels of greater area than said openings, and means at the ends of said valve head and chamber rotatably supporting the valve head in the chamber.

2. A drain fitting of the character described comprising a casing having flaring walls at its inlet end providing a relatively shallow dished portion to receive a strainer, a tubular coupling portion at its outlet end for connection with a drain pipe, two opposite side walls of the casing intermediate said flaring walls and tubular portion being elongated transversely of the casing and curved to provide a horizontally disposed cylinrical chamber opening into the dished portion and tubular coupling, a cylindrical valve plug in said chamber with its longitudinal axis transverse to the longitudinal axis of the casing, said valve plug having a passage therethrough of a cross sectional area substantially the same as that of the outlet opening in the tubular coupling and of substantially the same size and shape as the opening between the chamber and dished portion for registry therewith.

3. A drain fitting of the character described comprising an integral casting providing a casing having a relatively shallow dished portion to receive a strainer at its top, a tubular coupling portion at the lower or outlet end of the casing for connection with a drain pipe, two opposite

side walls of the casing intermediate said flaring walls and tubular portion being elongated transversely of the casing and curved to provide a horizontally disposed substantially cylindrical chamber opening into the dished portion and tubular coupling, a cylindrical valve plug in said chamber with its longitudinal axis transverse to the longitudinal axis of the casing, said valve plug having a passage therethrough of a cross sectional area substantially the same as that of the outlet opening in the tubular coupling and coextensive in size and shape with the opening between the chamber and dished portion for complete registry therewith and having curved walls between said openings slightly spaced from the walls of the chamber, and means independent of the curved walls of the chamber and valve plug rotatably supporting the valve head in the chamber.

4. A combined sink drain and strainer comprising a casting including a central portion having an elongated horizontally disposed cylindrical chamber open at one end and an apertured closure for said opening, a shallow dished portion formed integral with and surmounting said central portion adapted to receive a strainer and having an elongated passage opening into the said chamber, a threaded coupling outlet formed integral with and depending from said central portion, and a plug valve rotatably mounted in said cylindrical chamber and having a journal at one end which extends through the opening in the said closure, said plug having an elongated passage substantially coextensive with said passage in the dished portion and adapted to be brought into and out of register with said elongated passage in the said dished portion and said outlet.

5. The construction defined in claim 4 and wherein the plug valve has journals at its opposite ends one of which fits in a bearing formed at the end wall of the cylindrical chamber and the other of which extends through the opening in the said closure.

6. A drain fitting of the character described comprising a casing having a relatively shallow dished inlet portion at its top adapted for connection with a sink or similar structure, the walls of said dished portion tapering downwardly and terminating at a centrally located opening communicating with a transversely disposed cylindrical chamber provided with alined openings in its top and bottom, a coupling member at the lower end of said casing beneath the chamber and communicating with the lower opening therein, a cylindrical valve head in said chamber extending thereacross and having openings coextensive with the opening communicating with the dished portion, hubs at the ends of said cylindrical valve head, seats at the ends of said chamber for said hubs, extensions on the ends of said hubs journaled in recesses in the ends of said chamber, one of said extensions being elongated and adapted for connection with a handle and a tubular nut surrounding said elongated extension and compressing a packing therearound and constituting part of the journal for said elongated extension.

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