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DRAIN

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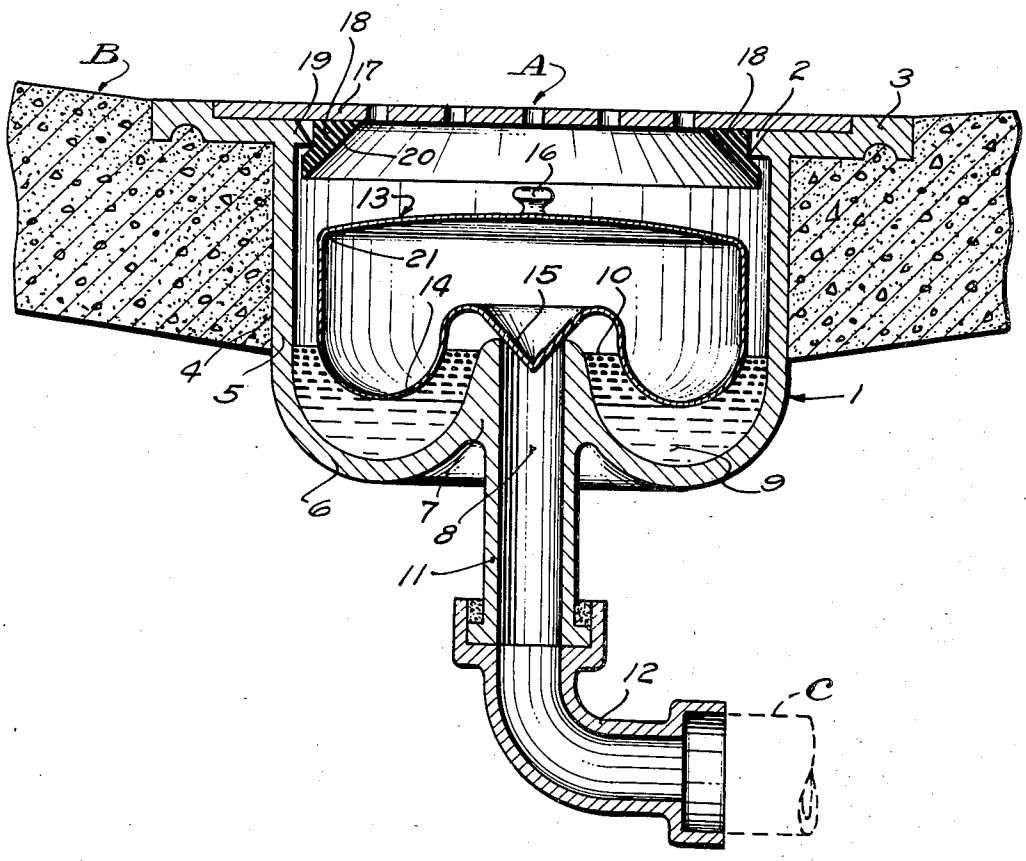

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DRAIN

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Original application April 25, 1938, Serial No. 204,062. Divided and this application December 6, 1939, Serial No. 307,789

4 Claims. (Cl. 182—14)

This invention relates to improvements in drain devices such as used in floors, sinks, tubs and other places for draining off waste water to the sewer system.

The primary object of the invention is to provide a drain which will provide a water seal against the escape of gases or odors from the sewer and which in addition will provide a positive valve action to not only assist in excluding gases but to prevent the egress of water insects of any kind from the sewer system.

Another object is to provide a device of this kind which also includes means for positively sealing to prevent water from backing up through the drain from the sewer, due to trouble in the sewer system or to abnormally heavy rains.

Another object is to provide a drain device of this kind which is simple and inexpensive in construction and installation and which is so arranged that the foregoing actions are all entirely automatic and require no attention from the user.

These and other more detailed and specific objects will be disclosed in the course of the following specification, reference being had to the accompanying drawing.

The drawing shows a vertical and diametrical cross section through my improved drain device, showing it installed in a floor and with connection for the sewer system.

It may be noted that this application is a division from my parent application for patent on Drain, Serial No. 204,062, filed April 25, 1938.

Referring now more particularly and by reference characters to the drawing, A designates my improved drain device as mounted in and through a floor B (which may be the basement floor, tub bottom, or other structure) to carry water to a sewer pipe C, the latter being shown in dotted lines.

The drain device A comprises a body portion, housing, or bowl 1 formed of metal or other suitable material with an open top 2 marginally flanged as at 3 to seat in and on an opening 4 formed in the floor B. The bowl thus depends through the opening and is supported therein by the flange 3. The bowl has the annular side wall 5 and rounded bottom 6 at the center of which is an upwardly formed boss 7 bored out to provide a drain water outlet 8. The combination of the side wall 5, rounded bottom 6, and central upwardly drawn or extended boss 7 forms an annular water chamber 9 around the bottom of the bowl which chamber will normally stand full of water up to about the level of the upper end of the outlet bore 8, as indicated at 10.

A sleeve or coupling tube 11 depends from the bottom center of the bowl forming a continuation of the outlet bore 8, and this sleeve is conventionally connected, as by means of an elbow 12, with the sewer pipe C.

A float device 13 is arranged within the bowl 1 and in the form here shown is of hollow construction, for purpose of buoyancy, and is of a diameter substantially less than that of the interior of the bowl. This float has an annular rounded, depended margin or rim portion 14 and, coaxially therewith, a downwardly pointed conical valve member or projection 15. In installation this annular rim portion 14 is caused to dip into the water in the chamber 9 of the bowl and the buoyancy as well as physical dimensions are initially so calculated that, with this rim 14 substantially submerged in the water, the conical member 15 will penetrate the open upper end of the outlet bore 8 forming a mechanical valve-acting seal around the margin thereof, as clearly shown.

The float device has a knob 16 on its upper side for convenience in removal from the bowl.

Thus, as the drain water is allowed to flow into the bowl 1 for the first time, it will form first the water seal in the chamber 9 so that gases arising from the sewer will be effectively prevented by the water seal from escaping to the interior of the bowl 1 around and above the float device 13. At the same time these gases will be further cut off by the sealing action of the member 15 in the bore 8, which latter condition will also effectively prevent water insects of any kind from making their way up out of the sewer system into the basement.

As further water enters it raises the float device 13 of course, and this water may flood its way down to the sewer through the outlet bore 8 until it has all escaped, the water seal, however, remaining at all times as will be understood.

The open upper end 2 of the bowl 1 is fitted with a removable perforated cover plate 17 and to the underside of this plate is vulcanized, or otherwise secured, a soft rubber valve or sealing ring 18. The outer diameter of this ring 18 is such that it will just enter the open upper end 2 of the bowl, and this bowl end is provided with an inwardly turned narrow lip 19 beneath which the sealing ring may expand as the cover is put in place to thereby releasably and tightly retain the cover. The inner edge of this lip 19 is bev-

eled off as indicated, to facilitate the introduction of the sealing ring therethrough.

The inner margin of the sealing ring 18 is beveled off in an upwardly tapering direction, as indicated at 20, and this tapered opening thus defined is adapted to be engaged and closed by the upper marginal corner 21 of the float device 13, should water attempt to back up from the sewer system for any reason. Further escape of water from the sewer would then be positively prevented by the tightly sealed condition of the float device against the ring, and the annoying flooding of the basement due to sewer stoppage or heavy rains becomes a thing of the past.

The above action, however, will not take place, as might appear, when water is poured into the drain, since such water will be continuously escaping and the float device cannot rise to sealing position.

The water in the chamber 9 may of course evaporate during long periods when not in use, but the seal afforded by engagement of member 15 with the outlet opening 8 will maintain its effectiveness to prevent escape of gases or insects from the sewer.

It is understood that suitable modifications may be made in the structure as disclosed, provided such modifications come within the spirit and scope of the appended claims.

Having now therefore fully illustrated and described my invention, what I claim to be new and desire to protect by Letters Patent is:

1. A drain device, comprising a bowl for receiving fluid and having an outlet means spaced upwardly and centrally from its bottom and side walls forming a fluid retaining chamber, a float disposed in the bowl and arranged to float at its margins in fluid retained in said chamber, the said float having a central depression in its underside to engage and close the said outlet means, and sealing means at the upper end of the bowl adapted to be engaged by the float in a raised position thereof to prevent upward flow of fluid from the bowl.

2. A drain device comprising, a bowl having an open upper end, a drain water outlet below this upper end, a float disposed in the bowl over the said outlet and adapted to close the same in a lower position of the float, a perforated cover plate for the bowl, and an annular rubber valve ring on the cover having a seat for sealing engagement by the float responsive to upward movement thereof by the accumulation of water in the bowl, the said valve ring being adapted to engage the open upper end of the bowl to retain the cover in place.

3. A drain device comprising, a bowl having an open upper end, and a drain water outlet below this open upper end, a float member arranged over the said outlet, a perforated cover for the upper end of the bowl, a resilient ring attached to the cover and adapted to be forced into the upper end of the bowl to thereby releasably retain the cover in place thereon, and the said ring having a seat for sealing engagement by the float when the float is raised by accumulation of water in the bowl.

4. In a drain device, a bowl having an open upper end and a drain water outlet below this open upper end, a perforated cover plate for the bowl, a beveled lip turned inwardly from the upper end of the bowl, a resilient ring secured to the cover plate and adapted to be forced past the lip to expand therebeneath and thereby releasably retain the cover plate in place, the said ring having a beveled inner edge, and a float disposed in the bowl and adapted to seat against the beveled edge of the ring responsive to the accumulation of water in the bowl and thereby form a closure for the upper end of the bowl.

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