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R. SMALLBROOK

FLOOR DRAIN

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Fig. 1.

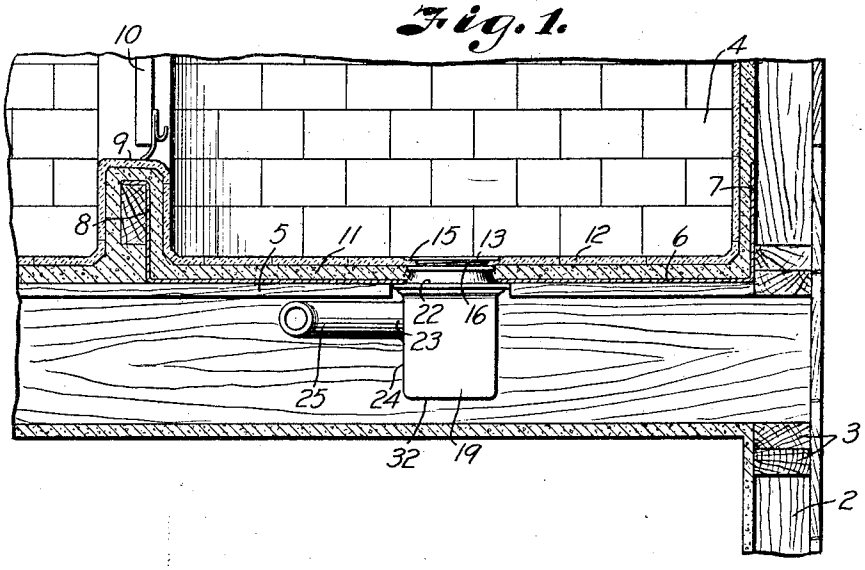


Fig. 2.

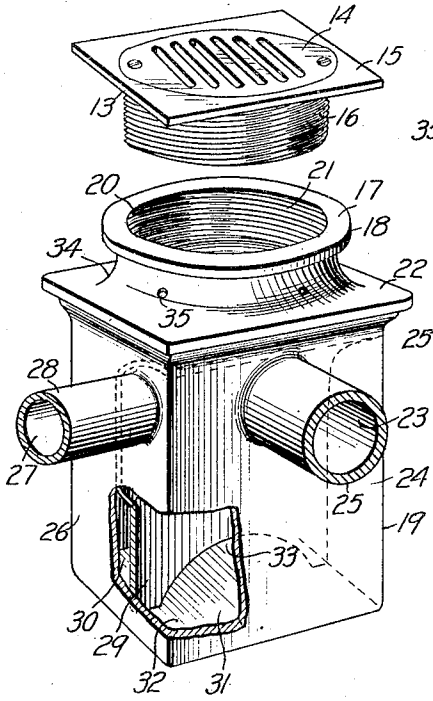
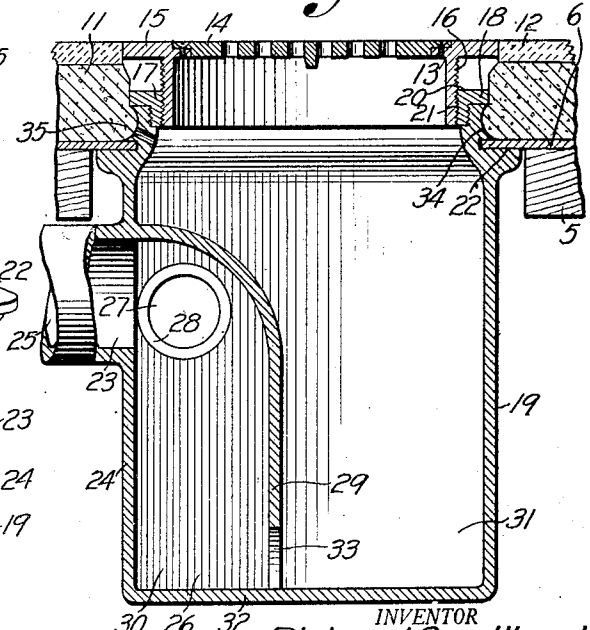


Fig. 3.



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UNITED STATES PATENT OFFICE.

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FLOOR DRAIN.

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My invention relates to floor drains and more particularly to the traps serving floor drains and the combination of such a trap with the drain elements of the floor.

My object is to provide a trap for use in combination in the drains and fittings applied to a shower bath stall that will have improved features of service over the present art and that will be more easily installed.

The art aims to provide a trap and a drain that can be economically installed in the shower bath stall floor, and after installation will remain in functioning position for a reasonable length of time. At present the traps provided are usually iron devices having flanges of various types and of various numbers, the traps and flanges being associated with one or another kind of sealing elements and arrangement. Despite the various means devised for preventing leakage around the lines of jointure of the drain with the floor and with the trap, improvements are still being offered to the art to attain more secure sealing, and usually providing for a multiplicity of flanges and sealers. The rusting of the bolts and flanges, the gradual loosening of the connections that are joined by screws, and the separation of the parts due to the sagging of the floor as the building settles or to other reasons, present one problem. Another problem is involved in the venting of the trap and the drain, provision for insertion of a vent usually being made in the trap as manufactured but which may require supplementing for adaptation to a particular location by the installation of joint and elbow.

I provide a trap that may be installed with a minimum of expense and labor and a minimum use of supplementary fittings compared with the traps ordinarily installed; that provides securely sealed joints between the trap and the floor, and that offers an increased degree of permanence in the sealing of the drain in relation to the floor. For this purpose I offer a trap that is constructed of lead having a shoulder adapted for welding or soldering to the drip pan of the shower bath stall, and having an arrangement of parts integral with said trap and associated therewith for convenient and secure adjustment in relation to the elements of the floor of a bathroom stall. The features of my device and their purposes will be more fully disclosed in the description, and in the drawings in which:

Fig. 1 is a vertical sectional view through the floor portion of a shower bath stall.

Fig. 2 is a vertical sectional view of my trap, a part being broken away to illustrate the trap construction.

Fig. 3 is an enlarged longitudinal sectional view of the trap and the adjacent parts of the floor of a shower bath stall.

Referring more in detail to the drawings;

1 designates a floor joist, 2 the studding, and 3 the headers of a building immediately supporting a shower bath-stall 4. 5 designates the wooden sub-floor of the stall, and 6 a lining of lead or like material laid on the sub floor aud extended into the walls as at 7, and at 8 into the sill 9 of the stall door 10; the lining constituting a drip pan to receive and detain seepage and guide same to a suitable outlet. The drip pan is laid on the main floor element 11, such as concrete, the tiles 12 being applied to finish the surfaces of floor and walls.

Openings in the tile and the concrete floor and the wooden sub-floor are provided approximately at the center of the floor; and the drip pan has an opening in a similar position coinciding with said openings, which constitutes the outlet for the waste from the showerbath stall through cap 13 comprising a drain plate 14 and a flange 15 the surface of which in functional position is aligned with the surface of the shower bath stall floor, the cap having the externally threaded neck 16. A brass collar 17 is provided which upon installation in the floor is engaged with the concrete permanent element of the floor either by provision of shoulders on the concrete as laid or otherwise as may be desired, the collar being internally threaded for engagement with the drain plate cap element. The collar 17 is provided with laterally extending shoulders 18 which contact the outer vertical edges of the concrete floor on the circumference of the opening in said concrete floor. The collar is provided with external threads on its lower portion for engagement with and support of the trap 19 through the internally threaded upper edge 20 of said trap as indicated at 21 in Fig. 3. The trap is provided with a shoulder 22 extending laterally and outwardly therefrom and adapted for seating against the under surface of the lead pan 6 adjacent the drain opening of said pan. The trap is provided

with an outlet opening 23 in a side wall 24, a drain connection 25 being provided to serve said opening. The side wall 26 is provided with an opening 27 constituting a vent, a suitable connection 28 connecting the trap with a desired extremity of such vent not shown. The vent is provided preferably for service as an anti-siphon means. A baffle 29 divides the trap into chambers 30 and 31 through the extension laterally of said baffle from an upper portion of side wall 24 inwardly toward bottom wall 32 of the trap, the side walls of the baffle contacting the walls of the trap. The baffle is provided with an inset opening 33 on its lower edge which constitutes the opening between the chamber 31 which communicates with the showerbath stall through the trap cap and chamber 30 which communicates with the outlet of the drain. The vent opening 27 is provided in a position on the wall of the trap within the chamber 30 that communicates with the outlet of the drain.

The body of my trap, with its shoulder 22 and its internally threaded upper portion 21, is constructed of lead, in the preferred arrangement herein described, though the material of which the trap is made may be a material identical with or having affinity for the material of which the pan of the showerbath stall is constructed, for the purposes of my invention.

The installation and function of my device will now be described.

I provide the trap elements on the one hand and the floor elements on the other mutually adjusted as to dimensions. For example, the floor element openings will be provided suitable to the diameter of the trap and drain cap, the thickness of the total of the elements of the floor being designed in accordance with the vertical features of the means of securing the trap to the floor. The floor elements may be adjusted in the course of construction to the trap and drain elements, and the trap and drain elements may be adjusted vertically through the agency of the threaded engagements, to the thickness of the floor.

An important feature of my device resides in one of the factors whereby the trap is secured to the floor elements. As the drawings disclose, and in accordance with common practice, the weight of the trap is supported in and from the floor by the laterally extending flanges of the cap and drain elements. Before referring particularly to my adaptation of the elements I wish to call attention to my particular means for accomplishing my purpose of obviating the hazards of leakage existent in installations under the present art. A trap of my design made of lead is positioned so that the shoulder 22 contacts the under surface of the lead pan 6 as mentioned, and the trap is permanently secured in this situation by means of heat, the trap and lead being, for example, welded together. Additional security is provided by the application of the same or a similar joining means to the adjacent portions of the trap and the pan's upper surface, represented on the drawings as the addition of a welding or soldering material at the point 34 in Fig. 3. Such soldering contributes to the forming of the annular groove of the upper portion of the trap as indicated in Fig. 2, and which may constitute a cooperating factor for engagement with the cement floor for sustaining the trap in position.

It is apparent that the means for securing the lead pan and trap together to form a completely sealed annular joint, may be employed independently of means for suspending the trap from the floor. The brass collar 17 into which the trap is screw-threaded, may constitute the chief means of sustaining the trap in its relation with the floor.

It is apparent that I provide a trap and associated fittings which can be easily adjusted to a showerbath stall floor opening. The pan and the trap being of lead, any desired and required amount of additional material may be applied for sealing purposes, so that slight and even substantial variations from specifications in the construction of the floor may be compensated, and a perfectly sealed connection of the drain cap through the trap with the drain pipe may be established.

I provide also openings 35 through the upper portion of the trap wall, providing communication from the area above the lead pan to the trap for the purpose of conducting into the trap casual and accidental moisture that gains access to the floor around the drain cap and from other areas in the showerbath stall, the lead pan being inclined downwardly toward the drain as is the floor in ordinary practice so that accidental moisture will drain through said openings 35 into the trap.

While I have indicated specifically, and shown as preferable by illustrations in the drawings, the location of certain openings and the extent and form of material added in welding, I wish to make plain the adaptability of my device for the application of such features in any position and in any form desired; such adaptability being possible through the construction of my drain trap of lead, and general structure displayed.

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

1. A floor drain comprising a drip pan having a drain opening, a trap constructed of material having affinity for the material of the pan, a lateral extension adjacent the upper edge of the trap constituting a horizontal annular shoulder thereon, the upper edge of the trap having an exterior annular

concavity adapted to receive the floor material for supporting the trap, the under surface of the drip pan adjacent the opening engaged with the shoulder of the pan, the trap and pan being autogenously soldered together providing a seal for the edge of the pan at its contact with the trap, and a drain cap engaged with the trap and supported thereon.

2. A floor drain comprising a drip pan having a drain opening, a trap constructed of material having affinity for the material of the pan, a lateral extension adjacent the upper edge of the trap constituting a horizontal annular shoulder thereon, the upper edge of the trap having an exterior annular concavity adapted to receive the floor material for supporting the trap, the under surface of the drip pan adjacent the opening engaged with the shoulder of the pan, the trap and pan being autogenously soldered together providing a seal for the edge of the pan at its contact with the trap, a collar unaffinitive with the trap engaged therewith and a drain cap screw-threadedly engaged in said collar.

3. A floor drain comprising a drip pan having a drain opening, a trap constructed of material having affinity for the material of the pan, a lateral extension adjacent the upper edge of the trap constituting a horizontal annular shoulder, the upper edge of the trap having an exterior annular concavity adapted to receive the floor material for supporting the trap, the under surface of the drip pan adjacent the opening engaged with the shoulder of the trap, the trap and the pan being autogenously welded, and a drain cap engaged with the trap and supported thereon.

4. A floor drain comprising a drip pan having a drain opening, a trap, a lateral extension adjacent the upper edge of the trap constituting a horizontal annular shoulder thereon, the upper edge of the trap having an exterior annular concavity to receive the floor material for supporting the trap, the under surface of the drip pan adjacent the opening engaged with the shoulder of the trap, and a drain cap on the trap.

In testimony whereof I affix my signature.

RICHARD SMALLBROOK.