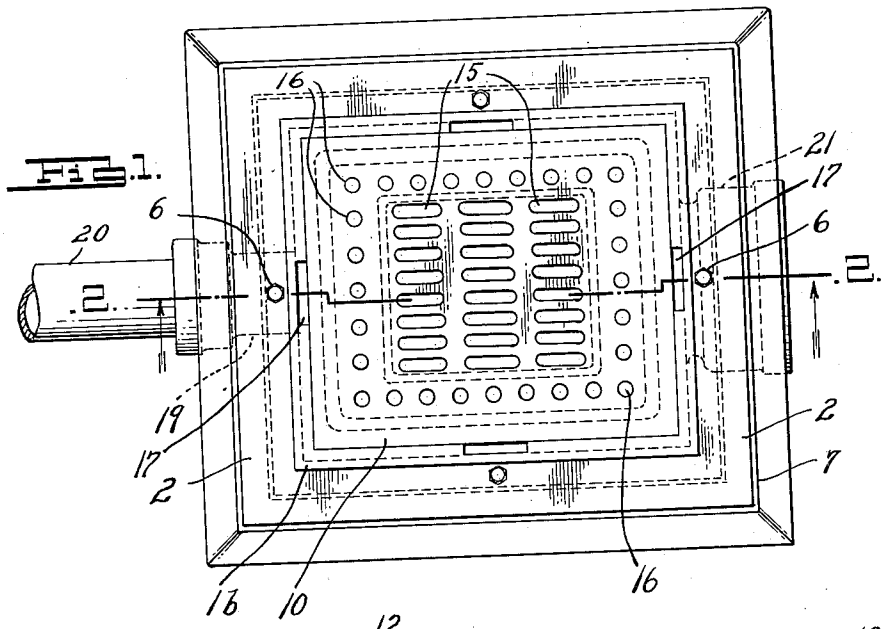
Dec. 14, 1937. E. W. N. BOOSEY 2,101,978

FLOOR DRAIN

Filed Aug. 7, 1936

Fig. 1.



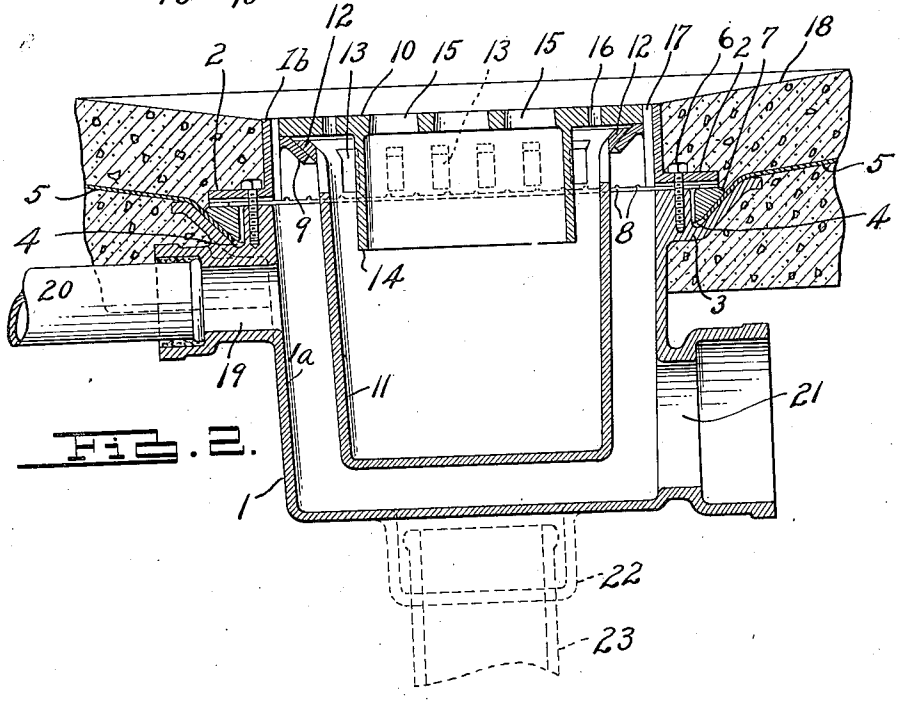


Fig. 2.

INVENTOR.
Edward W.N. Boosey
BY
Charles E. Wilson
ATTORNEY.

Patented Dec. 14, 1937

2,101,978

UNITED STATES PATENT OFFICE

2,101,978

FLOOR DRAIN

Edward W. N. Boosey, Detroit, Mich.

Application August 7, 1936, Serial No. 94,842

8 Claims. (Cl. 182—31)

This invention relates to floor drains, the object being to provide a drain for positioning in a floor and having a body containing a basket for the collection of sediment whereby a major portion at least of the sediment is separated from the liquid flowing through the drain and in association therewith of means providing for a minimum flow through the drain when the basket becomes so choked with sediment as to prevent a flow of the major portion of the fluid directly thereinto. By such an arrangement, liquid accumulating in the depressed area of the floor about the drain still will seep away and by its slowness of flow through the drain indicate necessity for removing the sediment.

The feature of the invention is in the provision of apertures in the grating provided at the floor line through which the liquid flows from the floor, of drain apertures which may lead directly into the body of the drain or apertures that may discharge into the basket above the possible sediment level therein. Apertures are shown in the drawing for performing each of the said functions but in many cases one or the other set of auxiliary apertures permitting drainage through the drain head when filled with sediment may be utilized.

These various objects and novel features of the invention are incorporated in the preferred form of structure shown in the accompanying drawing in which—

Fig. 1 is a plan view of a floor drain embodying my invention.

Fig. 2 is a section taken on line 2—2 of Fig. 1 showing the drain head set in a concrete floor.

The drain as here shown comprises a body 1 formed of two parts—namely, a base part 1*a* and a cap part 1*b*, the part 1*b* having a flange 2 and the base part 1*a* having a flange 3 providing a V recess 4 peripherally about the body into which an apron 5 may extend. Bolts 6 extend through the flange 2 and into the flange 3 and there is also provided a ring 7 positioned in the recess 4 and clamping the edge of the apron 5 in place by pressure contact therewith by the bolts extending through the flange 2 of the cap element 1*b*. The under face of the flange 2 is ribbed or corrugated to provide seepage apertures 8 which open to above the apron at the top of the recess 4 whereby any liquid accumulating on the apron may pass directly into the body of the drain through the seepage apertures.

The cap member 3 is preferably provided with an inwardly extending and thence downwardly inclined flange 9 near the upper end. The inwardly extending portion of the flange provides a support for a grating element 10 which rests thereon and the inclined portion of the flange extends below the grating as shown in Fig. 2 and provides a support for the basket 11 which has an outturned flange 12 resting thereon whereby it is supported with its bottom above the bottom wall of the base portion 1 of the body. The basket 11 has a series of apertures 13 through the wall at the upper end and the grating has a skirt 14 depending from the under side thereof and terminating at a point below the lower edge of the apertures 13.

The skirt 14 is preferably, although not necessarily, formed integrally with the grating. There are apertures or slots 15 provided in the grating within the area defined by the inner surface of the skirt 14 and these apertures are sufficiently large to allow fluid and sediment to pass readily therethrough into the basket, the liquid when at sufficient height flowing through the apertures 13 into the drain body. Upon an accumulation of sediment in the drain body to a point to engage or cover the lower edge of the skirt 14, the apertures 15 are sealed to flow therethrough but in order to prevent liquid continuing to accumulate on the floor, auxiliary apertures are provided which permit the liquid to drain off from the floor even though the drain is clogged and the rapidity with which the liquid flows from the floor indicates to an observer whether the drain is clogged or not—that is, if liquid does not run freely but tends to stand for a period of time the attendant is thereby notified that the drain should be cleared of sediment.

For the purpose of permitting liquid on the floor to continue to pass into the drain, I provide auxiliary apertures, there being two series in the form here shown. One series of apertures 16 open through the grating outside the area defined by the skirt and within the area defined by the basket.

Inasmuch as the sediment which collects in the basket 11 to a point to cover the lower edge of the skirt, liquid flowing through the apertures 16 may pass through the apertures 13 of the basket into the drain body and thus with this series of apertures, liquid will drain from the floor line although slowly in comparison to the rapidity of flow that otherwise occurs through the apertures 15 when the drain is not clogged.

For this same and an additional reason, I provide a series of apertures 17 which are formed in the edge of the wall of the cap member 1*b* at several points, four being provided in the rectan-

gular form of drain here shown. These apertures 17 open through the flange 9 of the cap member and lead from the floor surface directly into the drain body. These apertures 17 particularly do not readily become covered with sediment that accumulates on the surface of the grating as such sediment will tend to accumulate on the main apertures—that is, sediment that is too large in size or in accumulated mass to pass through the apertures 15 and thus the apertures 17 under normal conditions of service will not so quickly become clogged as the main apertures centrally disposed in respect thereto and where liquid is changing its direction of flow from all sides. Usually the floor line is sloped as indicated at 18 in Fig. 2 on all sides toward the drain which occupies the lowest point of the recessed or inclined portion of the floor line.

The apertures 17 or the apertures 16 alone may be sufficient in many installations and the structure may be so built without departing from the spirit and scope of this invention as set forth in the appended claims. However, in many cases where there is a considerable amount of liquid flowing on the floor, both series of apertures 16 and 17 may be utilized and in number and area sufficient to properly provide for slow seepage of water from the floor surface.

The apertures 17 are in the wall of the cap member 1b at the edge of the grating 10 and thus provide for access to the edge of the grating for removal thereof. The grating element tends to rust in place and these apertures 17 enable one to hammer the edge of the grating from the several sides and thus break the grating away from the seat in the cap member.

The apertures 17 may be used in conjunction with a basket into which fluid flows through the apertures of the grating and function when the basket becomes clogged. The invention therefore is not, in its broadest sense, depending upon the use of the skirt as the basket eventually will become clogged with sediment wherever the apertures may be provided in the wall thereof and the apertures 17 provide passage for liquid directly into the drain body outside the area of the grating.

The base portion 1a of the drain body has provided on one side thereof a hub 19 with which a vent line 20 may be associated. This vent, which usually extends upwardly in a stack from the position here shown, and due to its being positioned above the level of water determined by the outlet 21, will take air and odors from the sediment out of the drain to the outside of the building. Otherwise, the apertures 16 and 17 opening directly to the body of the drain from the floor surface would permit the odors to rise from the drain and where such occurrence is not undesirable the vent could be dispensed with.

I have shown a hub 21 providing an outlet from the bottom of the base member 1a which may lead to a sewer through a trap line as usual in structures of this character.

Where an outlet at one side of the drain body is not desirable, a hub 22, indicated by dotted lines in Fig. 2, may be provided to open through the bottom wall of the base member 1a and adapted to receive a vertical pipe indicated by the dotted lines 23 leading to the sewer.

In the plan view Fig. 1, I have not shown the concrete floor 18 purposely in order that the assembled structure may appear in full lines. While I have shown the seepage apertures as being provided in the under face of the flange 2 or cap member 1b they may be otherwise formed as is well known in the art as such seepage apertures form no particular inventive feature of the structure herein disclosed.

From the foregoing description it will be observed that the various features and objects of the invention are attained by the structure described and that, by the described structure, particularly the skirt on the grating and the basket, a sediment intercepting trap is provided which provides a seal for a flow of fluid directly to the grating through the interior of the body except such as may flow through the auxiliary apertures 16 or 17 or both such series of apertures in the event both are utilized.

Only one form of the drain head is here shown but other forms may be utilized with which may be incorporated my improved features of construction as set forth in the appended claims. For instance, there are often provided, especially in large buildings, covered drains—that is, the cover is an imperforate cover in order that the janitors will not use the drain constantly or let a hose run on the floor to drain therethrough. In reality, these compartments below a floor line contain valve control mechanisms and the like and yet have an outlet to a drain at some other point in the building. However, it is often desirable that water accumulating on a floor, as in cleaning operations, should seep away. For this reason, the apertures 17, which are provided outside the cover element which has heretofore been termed a "grating", permits drainage and are so inconspicuous as not to indicate a normal drain head.

Having thus fully described my invention, its utility and mode of operation, what I claim and desire to secure by Letters Patent of the United States is—

1. In a floor drain, a drain body having an open upper end and an outlet at the bottom, a grating supported at the upper end, a sediment intercepting trap comprising a basket supported centrally in relation to the grating and of less area than the grating, a skirt depending from the grating into the basket and having an open lower end, said basket having apertures in its wall above the lowermost point of the skirt and providing for a flow of material from the basket into the drain body, said grating having a series of apertures within the area defined by the skirt, and a series of apertures outside the area of the skirt providing for a flow of liquid through the grating into the drain body, the combined area of said last named apertures being less than the combined area of the apertures opening to within the skirt.

2. In a floor drain, a drain body having an open upper end and an outlet at the bottom, a flange provided adjacent the upper end of the body extending inwardly and then being downwardly inclined, the inner edge defining an opening, a basket having an outwardly inclined part at the upper end, the basket extending through the opening in the flange with the upper inclined part resting on the inclined portion of the flange, said basket having openings to the body below the flange, a grating peripherally supported by the inwardly extending portion of the said flange with the upper surface practically flush with the upper end of the body, said grating having openings for discharge of liquid into the basket, an open ended skirt extending into the basket providing a sediment trap for preventing sediment from accumulating in the bas-

ket to above the skirt, and means providing for a flow of liquid through the grating when the trap is sealed to flow of liquid thereinto by sediment.

3. In a floor drain, a drain body having an open upper end and an outlet at the bottom, a flange provided adjacent the upper end extending inwardly and then being downwardly inclined, a grating supported at the upper end of the body on the inwardly projecting portion of the flange, a sediment receiving basket having an upper edge outwardly inclined and a body of a diameter to pass through the opening defined by the inner edge of the flange whereby the basket is removably suspended, the grating having a skirt extending into the basket in spaced relation therewith and the basket having apertures in its wall above the lower edge of the skirt, said grating having openings to pass fluid into the basket through the skirt and other openings leading directly into the space between the skirt and basket thereby providing for flow of liquid through the grating when an accumulation of sediment in the basket prevents flow through the skirt into the basket.

4. In a floor drain, a drain body having an open upper end and an outlet at the bottom, a grating supported at the upper end, a basket supported at the upper end, a basket supported in the body and having an open upper end centrally beneath the grating, a skirt depending from the under side of the grating into the basket in spaced relation with the walls thereof, the basket having openings through its wall above the lower end of the skirt and the grating having centrally disposed apertures for discharging liquid through the skirt into the basket, the grating being supported practically flush with the upper edge of the body and the body at its inner face being grooved forming drain apertures at the upper end one side of which is formed by the edge of the grating and through which liquid may pass directly into the drain body.

5. In a floor drain, a drain body having an open upper end and an outlet at the bottom, a flange adjacent the upper end extending inwardly thereof, a grating supported on the flange practically flush with the upper end, the grating having centrally disposed apertures, a basket supported by the flange and into which liquid and sediment flow through the said apertures, means associated with the basket providing a sediment intercepting trap, the inner face of the wall of the drain body at the upper end having grooves extending through the flange and providing apertures outside the grating and the area defined by the basket through which liquid may flow into the drain body when the trap is sealed by sediment.

6. A floor drain comprising a drain having an open upper end and an outlet at the bottom, a grating supported at the upper end, a basket supported by the body having an open upper end centrally disposed directly beneath the grating, a skirt depending from the under side of the grating into the basket in spaced relation with the walls thereof, the basket having openings through its wall above the lower end of the skirt and the said centrally disposed apertures discharging through the skirt into the basket, the skirt and the basket providing a sediment intercepting trap and sealing the drain to flow through the said centrally disposed apertures when the sediment accumulates to a point engaging the lower edge of the skirt, there being apertures outside the said centrally disposed apertures providing for a flow of liquid into the drain body, and a vent line opening to the upper end of the body.

7. In a floor drain, a drain body, a grating at the upper end thereof having a series of apertures therethrough, a basket suspended therebelow to receive liquid flowing through said apertures and providing for separation of sediment from the liquid, the drain body having a series of apertures outside the area of the first named, apertures providing for flow of liquid directly into the drain body thereby providing for drainage into the body when the basket is clogged with sediment.

8. In a drain, a drain body having a removable cover element at the top lying practically flush with the top in engagement with the inner face of the wall thereof, a flange extending inwardly of the body and supporting the cover element, and means providing for a flow of liquid into the body comprising drain apertures provided by grooves formed in the inner face of the wall of the body at the top and opening through the flange.

EDWARD W. N. BOOSEY.