

[54] **STRAINER DEVICE FOR USE IN DRAINAGE RECEPTACLES**

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[58] Field of Search 210/163-166, 169, 210/447, 451, 455, 463, 464, 469; 4/190; 52/14

[56]

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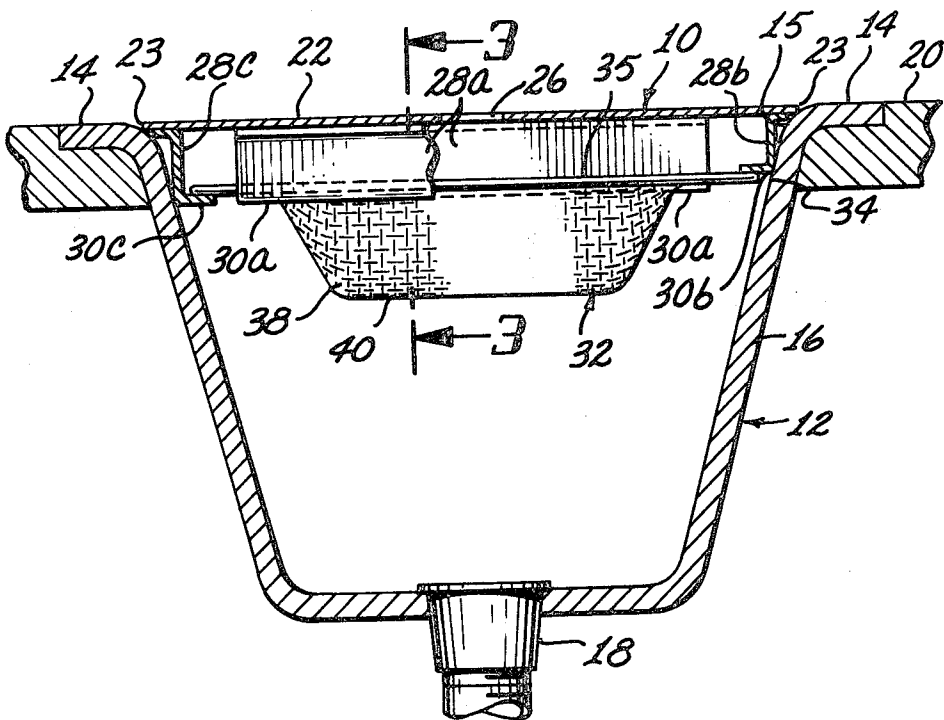
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[57]

ABSTRACT

A strainer device is disclosed for use in floor sinks, roof drains, and other similar drainage receptacles. The strainer device is removably mounted adjacent to the upper portion of the drainage receptacle and is adapted to captively retain foreign material entering therein.

6 Claims, 6 Drawing Figures



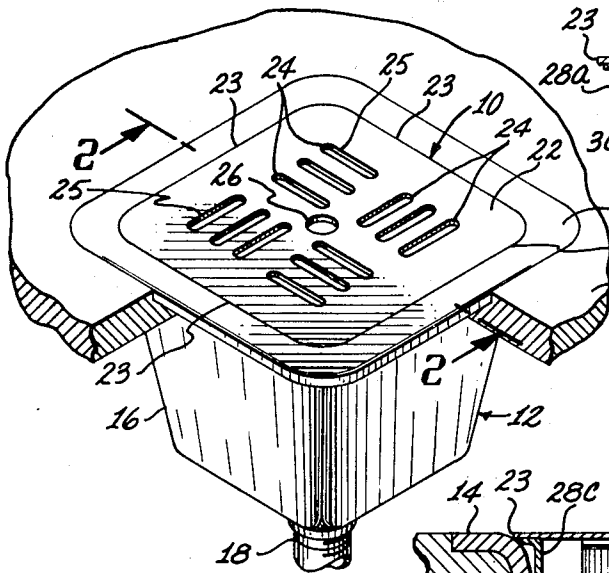


FIG. 1

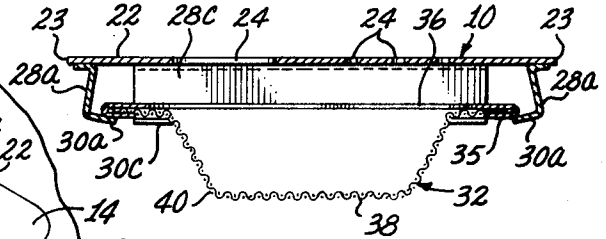


FIG. 3

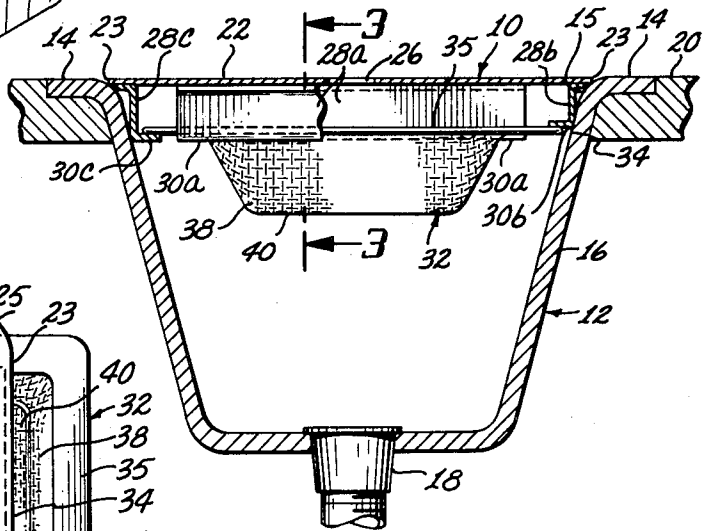


FIG. 2

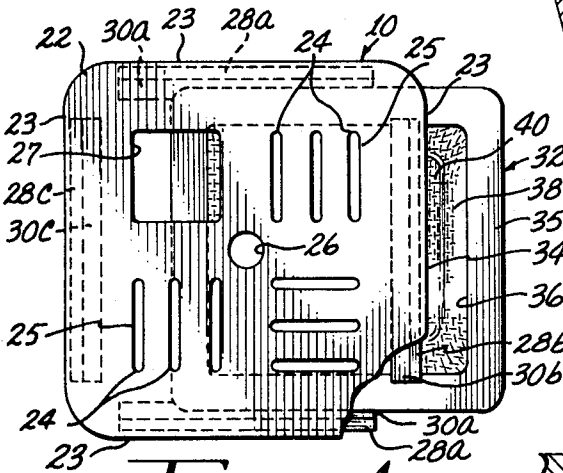


FIG. 4

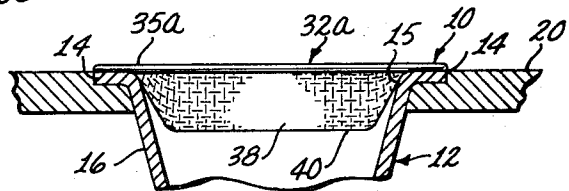


FIG. 6

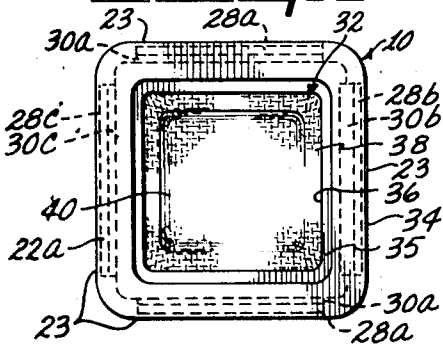


FIG. 5

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STRAINER DEVICE FOR USE IN DRAINAGE RECEPTACLES

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to strainers and more particularly to a strainer mechanism for use in a drainage receptacle.

2. Description of the Prior Art

Drainage control receptacles such as floor sinks, roof drains, and the like have long been employed in areas having heavy drainage requirements. By way of example, floor sinks are in common use in kitchens of restaurants where the need for hygienic conditions necessitates the use of large quantities of water for the cleansing of equipment and food. This type of an area also generates large quantities of debris such as vegetable trimmings, food packaging materials, and other foreign objects. The obvious result of this combination being repeated clogging of the drainage receptacle.

A particular prior art strainer in common usage in drainage receptacles is a hollow hemispherical structure having a plurality of slots formed therethrough. This hemispherical structure is placed over the outlet located in the bottom of the receptacle. When the receptacle is located in an area such as under a counter or work table, the hemispherical structure alone may be employed. If the drainage receptacle is located in an area of heavy foot traffic, such as the middle of a kitchen floor, a perforated plate is removably mounted flush with the upper surface of the receptacle to provide a continuous walking surface. The perforated cover plate will stop the passage of comparatively large foreign objects and allow intermediate and small foreign objects to enter the receptacle. The hemispherical structure will in turn allow passage of only the water and the small foreign objects, thus retaining the intermediate sized foreign objects within the drainage receptacle.

When a drainage receptacle employing this particular prior art strainer arrangement becomes clogged, the cover plate is removed and the clogging material must be removed by hand so that the foreign material will not enter the drainage system. Therefore, it may be seen that cleaning of the drainage receptacles has heretofore been a very undesirable and time consuming operation.

In view of the foregoing a need exists for a new and useful strainer device for use in drainage receptacles which captively retains foreign material entering into the drainage receptacle to allow easy and rapid cleaning thereof.

SUMMARY OF THE INVENTION

In accordance with the invention, a new and useful strainer device for use in a drainage receptacle is disclosed.

Drainage receptacles of the type in which the strainer device of the present invention may be employed are either located in areas of heavy foot traffic or are located in inaccessible areas. Therefore, two embodiments of the present invention are disclosed.

In areas where it is desirable to cover the open drainage receptacle, the strainer device comprises a perforated cover plate having a debris retainer basket removably suspended therefrom. Holding means are

provided on the lower surface of the plate for removably positioning the strainer device flush with the upper surface of the receptacle. The holding means are also employed for removably supporting the debris retainer basket. The debris retainer basket is provided with a frame having a centrally located opening formed therethrough. Sieve means in the form of a mesh of wire having a centrally located depression formed therein is affixed to the frame.

When this embodiment of the present invention is employed in areas having heavier than normal drainage requirements, enlarged openings may be formed in the cover plate to increase the flow handling capabilities of the strainer device.

When the drainage receptacle is located in relatively inaccessible areas where there is no danger of anyone stepping into the receptacle, such as under work tables, counters, and the like, a debris retainer basket alone may be employed. This is accomplished by enlarging the previously described basket so that the frame thereof is of substantially the same configuration as the flange of the drainage receptacle, upon which it is removably positioned.

Accordingly, it is an object of the present invention to provide a new and useful strainer device for use in drainage receptacles.

Another object of this invention is to provide a new and useful strainer device for use in drainage receptacles, the device being adapted to captively retain debris therein for easy and rapid cleaning of the drainage receptacle.

Another object of the present invention is to provide a new and useful strainer device for use in drainage receptacles, in which the strainer device employs a perforated cover plate having a debris retainer basket removably suspended from the lower surface thereof.

Another object of the present invention is to provide a new and useful strainer device for use in drainage receptacles, the strainer device employing a perforated cover plate which is adapted to be mounted flush with the upper surface of the drainage receptacle. Holding means are provided on the lower surface of the cover plate for rigidly removably positioning the strainer device within the drainage receptacle and for removably supporting a debris retainer basket suspended therefrom.

A further object of this invention is to provide a new and useful strainer device for use in drainage receptacles, in which a debris retainer basket is removably supported upon the upper flange of the drainage receptacle for captively containing foreign material which may enter into the receptacle.

The foregoing and other objects of this invention, the various features thereof, as well as the invention itself may be more fully understood from the following description when read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fragmentary perspective view of a drainage receptacle having the strainer device of the present invention employed therein;

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

FIG. 3 is a sectional view taken on the line 3—3 of FIG. 2 and showing the strainer device of the present invention removed from the drainage receptacle;

FIG. 4 is a plan view partially broken away and having the debris retainer basket partially removed therefrom;

FIG. 5 is a plan view of a modification of the strainer device of the present invention; and

FIG. 6 is a sectional view of another modification of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring more particularly to the drawings, FIG. 1 illustrates a strainer device 10 of the present invention installed within a drainage receptacle 12. The drainage receptacle 12 is of the type commonly referred to as a floor sink which is employed in areas of heavy drainage requirements such as in the kitchen of a restaurant or food preparation room of a supermarket. A similar device in which the strainer mechanism of the present invention may be employed is sometimes called a roof drain.

The drainage receptacle 12 is formed with substantially horizontally disposed flange 14 which circumscribes a drainage inlet or opening 15. A receptacle body 16 is formed integral with the flange 14 and depends therefrom. In the bottom of the receptacle body 16 there is provided a drain outlet 18.

The drainage receptacle 12 is normally recessed in a mounting surface 20 such as a floor and is flush therewith to provide a continuous surface.

When the drainage receptacle 12 is located in an area of heavy foot traffic, such as the middle of a kitchen floor, a perforated cover plate 22 is provided to eliminate the hazard which would result from an uncovered opening in a walking surface.

The perforated cover plate 22 is provided with four side edges 23 and has a plurality of elongated slots 24 formed therethrough which are positioned in groups or clusters 25. The slots 24 which make up each of the clusters 25 are directionally oriented so that the slots 24 of each cluster 25 are perpendicular with respect to the slots of the adjacent clusters. This perpendicular disposition of the slots of adjacent clusters permits drainage through the perforated cover plate 22 while maintaining structural rigidity of the plate.

The cover plate 22 is provided with a centrally located lifting hole 26 formed therethrough which allows easy removal of the strainer device 10 from the drainage receptacle 12.

When the strainer device 10 is employed in areas requiring more than normal drainage, one or more of the clusters 25 may be eliminated from the cover plate 22 to provide an enlarged opening 27 (FIG. 4) in which a drainage hose (not shown) may be directly inserted into the receptacle 12.

As best seen in FIGS. 1 and 2, the strainer device 10 is designed to be mounted flush with the flange 14 of the drainage receptacle 12 to provide a continuous walking surface. Positional stability of the removably mounted strainer device 10 is provided by a plurality of channels 28 or holding means which are affixed to the lower surface of the perforated cover plate 22 and depend therefrom.

The holding means 28 is illustrated as Z-shaped bars, however other shapes could be employed such as C-shaped members and the like.

At least one channel 28 is positioned adjacent to each of the side edges 23 of the cover plate 22. Each of the channels 28 is adapted to biasingly engage the receptacle body 16 when the strainer device 10 is installed within the drainage receptacle 12. The normal or relaxed position of the channel 28 is shown in FIG. 3 wherein the strainer device 10 of the present invention is shown removed from the drainage receptacle 12. When the strainer device 10 is installed within the drainage receptacle 12, the lower portions of the channels 28 will be deflected inwardly and will exert an outwardly directed biasing force on the receptacle body 16.

A debris retainer basket 32 is slidably removably suspended from the holding means 28.

Each of the channels 28 is provided with an inwardly disposed lip 30 or leg formed on the lower end thereof. A pair of the channels 28, designated as 28a, are oppositely positioned with respect to each other so that their lips 30a serve as guideways upon which the debris retainer basket 32 is installed or removed from the strainer device 10. One of the channels 28, designated as 28b, has its lip 30b positioned above the plane of the lips 30a to provide an access opening 34 through which the basket 32 may be moved. The remaining channel 28, designated as 28c has its lip 30c positioned in the same plane as the lips 30a to act as a stop and provide support for the basket 32 when it is in the installed position.

The debris retainer basket 32 is provided with a rigid frame 35 having a centrally located opening 36 formed therethrough. A sieve means 38, which in the preferred embodiment is a screen, or mesh of wire has its peripheral edges suitably attached to the lower surface of the frame 35 by such means as crimping, welding or other suitable methods. The screen 38 is preformed with a centrally located depression 40 for straining and captively retaining foreign material therein.

When the strainer device 10 of the present invention is employed in an area having very heavy drainage, or where a multiplicity of drainage hoses must be installed within the strainer device 10, a modified cover plate 22a as shown in FIG. 5 may be employed. The cover plate 22a is similar in structure to the cover plate 22 and has the entire central area removed therefrom.

When a drainage receptacle 12 is employed in an inaccessible area, that is, an area of no foot traffic, and this same area does not require a rigid flush mounted strainer device, an enlarged debris retainer basket 32a may be employed as seen in FIG. 6. The basket 32a is formed in the same manner as the previously described debris retainer basket 32, with the exception that the basket is enlarged and its frame 35a is configured to substantially conform to the configuration of the flanges 14 of the drainage receptacle 12. With the debris retainer 32a fabricated in this manner, it may be removably positioned on the flange 14 of the receptacle 12.

While the principles of the invention have now been made clear in an illustrated embodiment, there will be immediately obvious to those skilled in the art many modifications of structure, arrangement, proportions,

the elements, materials, and components, used in the practice of this invention, and otherwise, which are particularly adapted for specific environments and operating requirements without departing from those principles. The appended claims are therefore intended to cover and embrace any such modifications within the limits only of the true spirit and scope of the invention.

What we claim is:

- 1. A strainer device for use in a drainage receptacle of the type having a horizontally disposed upper flange which surrounds a central opening from which a sink-shaped receptacle body depends and is integrally formed therewith to provide a radiused juncture between the inner surface of the body and the upper surface of the flange, said device comprising:
 - a. a perforated plate having four laterally disposed side edges which are restingly positionable upon the radiused juncture of the drainage receptacle to position said plate flush with the upper surface of the flange thereof;
 - b. a strainer basket which includes a flat rigid four sided frame; and
 - c. a pair of channel elements dependingly affixed to the lower surface of said plate, each of said channels parallel with and adjacent to a different one of an opposing pair of the side edges of said plate for positioning said channels in a spaced apart parallel relationship, each of said channels having an inwardly facing lip formed on the lower portion thereof upon which an opposing pair of the side edges of said strainer basket are slidably supportingly positioned for demountably suspending said strainer basket in a mounted position adjacent to the lower surface of said plate, each of said channels biased outwardly to engagingly contact the inner surface of the receptacle body to removably retain and stabilize said plate when it is mounted flush with the flange thereof.

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2. A strainer device as claimed in claim 1 wherein the frame of said strainer basket has a central opening formed therethrough, said strainer basket further including a porous sheet rigidly affixed to the frame and having a centrally located depression formed therein which is positioned adjacent to the central opening of the frame of said strainer basket.

3. A strainer device as claimed in claim 1 wherein the frame of said strainer basket has a central opening formed therein, said strainer basket further comprising a mesh of wire affixed to the lower surface of the frame and having a centrally located depression formed therein.

4. A strainer device as claimed in claim 1 and further including a second pair of channel elements dependingly affixed to the lower surface of said plate and each positioned parallel and adjacent to a different one of a second opposed pair of the side edges of said plate, each of the channels of said second pair biased outwardly for contactingly engaging the inner surface of the receptacle body when said plate is positioned flush with the flange thereof, one of the channels of said second pair having an inwardly facing lip on the lower portion thereof for supportingly engaging a third side edge of said strainer basket, the other channel of said second pair having an inwardly facing lip formed on the lower portion thereof and depending from said plate a distance which positions its lip between the mounted position of said strainer basket and the lower surface of said plate to provide clearance through which said strainer basket is slidingly demountably movable.

5. A strainer device as claimed in claim 1 wherein said channel elements are each formed of an elongated Z-shaped in cross-section member.

6. A strainer device as claimed in claim 1 wherein said perforated plate is provided with at least one enlarged opening formed therethrough for increasing the flow handling capability of said strainer device.

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