

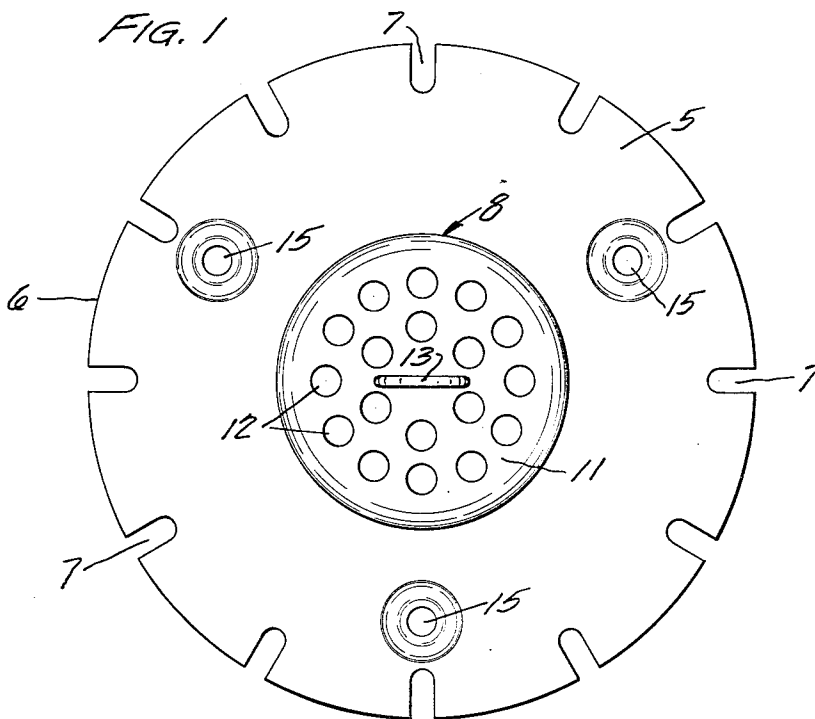
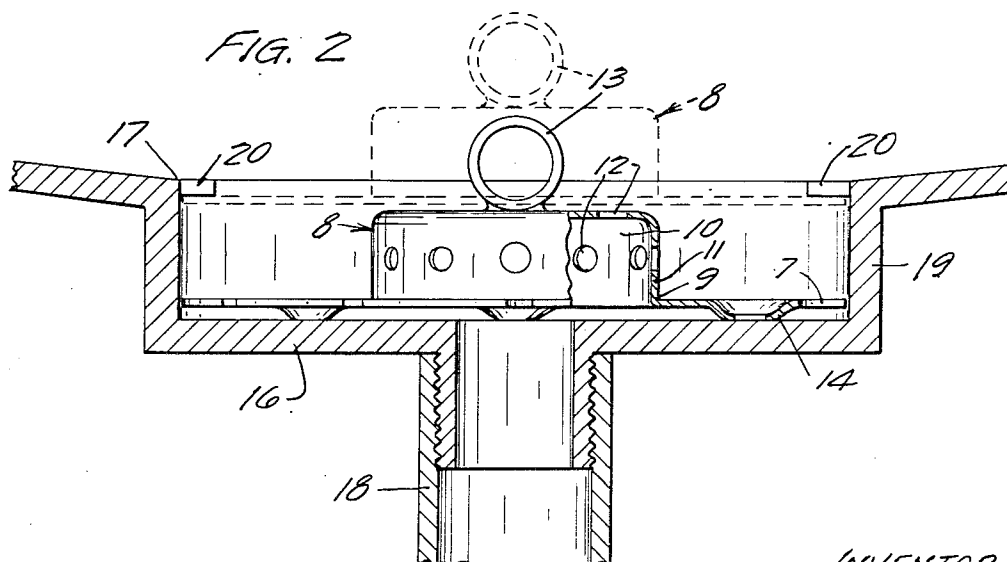
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NONPLUGGING DRAIN CAP

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NONPLUGGING DRAIN CAP

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5 Claims. (Cl. 4—287)

This invention relates to drain strainers. More particularly, it relates to drain strainers adapted to be readily inserted into or removed from the drain itself.

It is a general object of my invention to provide a novel and improved drain strainer of cheap and simple construction and improved efficiency.

Another object is to provide a novel and improved removable drain strainer constructed to prevent the all too frequent plugging which is experienced with the various types of drain strainers previously known.

Another object of my invention is to provide a novel and improved drain strainer constructed with a broad, flat base and to permit the same to move upwardly and downwardly relative to the receiving end of the drain pipe and to maintain it in such a position as to prevent plugging beneath the plate.

These and other objects and advantages of my invention will more fully appear from the following description made in connection with the accompanying drawings, wherein like reference characters refer to similar parts throughout the several views, and in which:

Fig. 1 is a plan view of a drain strainer made in accordance with my invention and positioned for use within the receiving end of a drain pipe;

Fig. 2 is a vertical sectional view of the same with the upstanding central portion shown in side elevation and a part thereof broken away to show the construction thereof.

One embodiment of my invention, as shown in Figs. 1-2, may include a broad, flat, annular member 5 which is formed of a light weight metal. As best shown in Fig. 1, the circumferential portions 6 of this annular member 5 have a plurality of recesses 7 formed therein and extending inwardly toward the center of the member. A hollow upstanding dome-like shell 8 is mounted upon the plate or annular member 5 by its lower peripheral portions 9. The interior 10 of the shell is hollow and its thin walls 11 have a plurality of drain apertures 12 formed therein, both in its top and side walls. A ring member 13 is rigidly secured to the top of the shell 8.

The annular plate member 5 has a plurality of depressed portions arranged around the shell member 8 and intermediate the peripheral edges 9 of the shell and the circumferential portions 6 of the plate. These depressions form teats 14 which extend downwardly from the lower surface of the member 5 and are perforated as at 15, as shown in Fig. 1. These teats 14 extend downwardly sufficiently far to maintain the plate member 5 in elevated position with respect to the horizontal shoulder 16 formed in the receiving end 17 of the drain pipe, which is indicated generally as 18. It will be noted that the drain pipe has an enlarged receiving end and vertical walls 19 which, together with the shoulder 16, define the receiving opening. Extending inwardly from and spaced around the inner circumference of the vertical walls 19 are a plurality of inwardly extending retaining ears 20, these retaining ears being arranged and of such size that they will pass through recesses 7 simultaneously when the plate member 5 is turned so that the recesses correspond therewith.

The shell 8 is also preferably made of a light weight metal so that the entire strainer will tend to float when the sewage acquires a density substantially over that of water. In other words, the plate member 5 and the shell 8 are free to move upwardly and downwardly within the receiving opening and between the limits of the retaining ears 20 and the horizontal shoulder 16.

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To insert or remove the strainer from the receiving opening of the drain pipe 18, the plate member 5 is turned so that the recesses 7 will correspond with the ears 20. When in this relative position, the strainer may be readily removed or inserted into the receiving opening. To lock the entire structure within the receiving opening, the plate member 5 is rotated slightly so that the ears 20 will abut against the peripheral portion 6 of the plate in the event that it rises to such elevation.

In operation, the sewage passes through the apertures 12 of the shell 8 and through recesses 7 in the plate member 5. Since the sewage is of a relatively dense nature as compared to water, it will normally float a strainer which would ordinarily sink in pure water. As a result, the entire strainer structure shown will tend to float and will rise upwardly to a position abutting against the retaining ears 20. When the amount of sewage lessens, or for other reasons, the plate member 5 moves downwardly toward abutting position with respect to the shoulder 16, the teats 14 maintain the plate in slightly elevated position with respect to the shoulder. As a result, the accumulation of sludge and the like which would otherwise collect between the shoulder 16 and the plate 5 and thereby cut off the drainage effectiveness of the recesses 7, is never permitted to collect beneath the plate. A continuous flow between the plate 5 and the shoulder 16 and around the teats 14 prevents such sludge from accumulating and from destroying the effectiveness of the drain. I have found that by maintaining the plate 5 in slightly elevated position with respect to the shoulder 16, the draining efficiency of such a strainer is greatly increased. The use of the teat members 14 provides a non-plugging feature for any drain strainer which is highly desirable and which is a substantial improvement over drain strainers previously known.

It should be noted that when the density of the sewage is relatively high, the entire strainer structure tends to float and thereby increases the space available for flowage between the plate member 5 and the shoulder 16. At the same time, the retaining ears 20 prevent the drain strainer from floating away and out of position.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the parts without departing from the scope of my invention.

What I claim is:

1. A drain strainer for use in conjunction with a drain having an enlarged circular intake opening defined by a vertical annular wall having a plurality of inwardly extending retaining ears and a substantially horizontal annular wall located below the horizontal plane of said retaining ears, said strainer comprising a broad, flat substantially horizontal annular member having a plurality of small inwardly extending drain recesses formed in its outer periphery, a hollow upstanding dome-like member fixedly mounted upon the inner peripheral portions of said annular member and extending thereabove, said dome-like member having a plurality of drain perforations formed in the side and top portions thereof, said drain recesses in said flat annular member being of sufficient size to receive said retaining ears therethrough, said flat annular member having a plurality of downwardly extending teat-like portions on its under surface adapted to maintain said annular member in at least slightly elevated relation to the horizontal annular wall of the drain whereby sludge and similar material will be washed away from beneath the annular member and thereby prevented from accumulating thereunder and stopping the draining operation through said recesses.

2. A drain strainer for use in conjunction with a drain having an inwardly extending horizontal shoulder formed around its inner walls inwardly of its receiving end, said strainer comprising a rigid hollow upstanding dome-like shell having relatively thin walls with lower peripheral edges, said shell having a plurality of drain perforations formed in its walls, and a broad, flat, substantially horizontal annular flange connected to said peripheral edges and extending outwardly therefrom, the circumference of said flange being slightly less than the inner circumference of the receiving end of the drain and freely

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movable bodily vertically therein, said flange having a plurality of inwardly extending drain recesses formed in its circumferential portions and having portions intermediate the peripheral edges of said shell and said circumferential portions depressed at spaced intervals around said shell to form downwardly extending teats to bear against the shoulder of the drain whereby said drain recesses and the major portions of said flange may be maintained in elevated position relative to said shoulder to insure that sludge and similar material will not collect beneath said flange and limit or stop the drainage effectiveness of said drain recesses.

3. A drain strainer for use in conjunction with a drain having inwardly extending retaining ears formed on its inner walls at its receiving end and having an inwardly extending horizontal shoulder formed around its inner walls inwardly of its receiving end below the horizontal plane of said retaining ears, said strainer comprising a rigid hollow dome-like shell having relatively thin walls with lower peripheral edges, said shell having a plurality of drain perforations formed in its walls, and a broad, flat, substantially horizontal annular flange connected to said peripheral edges and extending outwardly therefrom, the circumference of said flange being slightly less than the inner circumference of the receiving end of the drain, the flange being freely movable vertically bodily within the drain between said shoulder and said retaining ears, said flange having a plurality of inwardly extending drain recesses formed in its circumferential portions and spaced therearound, said drain recesses being arranged and of dimensions to accommodate the retaining ears of the drain so that said flange may be inserted into the receiving end of the drain to rest upon the shoulder of the drain and so that the retaining ears will retain the flange therebelow when the flange is turned so that its drain recesses do not correspond with the ears, said flange having a plurality of teat-like structures extending downwardly and spaced around said shell to maintain the major portions of said flange in spaced relation to the shoulder of the drain to insure a free flow of sewage through said drain recesses and between said flange and the drain shoulder at all times and to prevent the accumulation of sludge therebetween and the consequent stopping of flow through said drain recesses.

4. A drainage system having in combination a drain pipe having a receiving end and a plurality of inwardly extending retaining ears formed on its inner walls at said receiving end and having an inwardly extending horizontal shoulder formed around its inner walls inwardly of its receiving end, and a strainer member received within the receiving end of said drain pipe, said member including a rigid hollow dome-like shell having relatively thin walls with lower peripheral edges, said shell having a plurality of drain perforations formed in its walls, said member also including a broad, flat, substantially horizontal annular flange fixedly secured upon the peripheral edges of said shell and extending outwardly therefrom, the flange being freely movable bodily vertically between said retaining ears and said shoulder, the circumference of said flange being slightly less than the inner circumference of the receiving end of said drain, said flange having a plurality of inwardly extending drain recesses formed in its circumferential portions and spaced therearound, said drain recesses being spaced to conform with the spacing of said retaining ears and of dimensions to accommodate the same so

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that said member may be inserted into or withdrawn from the receiving end of said drain by aligning some of said drain recesses with said retaining ears and so that said member may be retained by said ears when the latter are not aligned with some of said recesses, said flange having a plurality of downwardly extending teats on its lower surface spaced around said shell to maintain the major portions of said flange in spaced relation to the shoulder of said drain to insure a free flow of sewage through said drain recesses and between said flange and said drain shoulder at all times and to prevent the accumulation of sludge therebetween and the consequent stopping of flow through said drain recesses.

5. A drain strainer for use in conjunction with a drain having inwardly extending retaining ears formed on its inner walls at its receiving end and having an inwardly extending horizontal shoulder formed around its inner walls inwardly of its receiving end, said strainer comprising, a rigid, hollow dome-like shell having relatively thin walls with lower peripheral edges, said shell having a plurality of drain perforations formed in its walls, and a broad, flat, substantially horizontal annular flange connected to said peripheral edges and extending outwardly therefrom, the circumference of said flange being slightly less than the inner circumference of the receiving end of the drain, the flange being freely movable bodily vertically between said retaining ears and the shoulder of the drain, said flange having a plurality of inwardly extending drain recesses formed in its circumferential portions and spaced therearound, said drain recesses being arranged and of dimensions to accommodate the retaining ears of the drain so that said flange may be inserted into the receiving end of the drain to normally rest upon its shoulder and so that the retaining ears will retain the flange therebelow when the flange is turned so that its drain recesses do not correspond with the ears and when the flange floats upwardly, said flange having a plurality of teat-like structures extending downwardly and spaced around said shell to maintain the major portions of said flange in elevated relation to the shoulder of the drain to insure a free flow of sewage through said drain recesses and between said flange and the drain shoulder at all times and to prevent the accumulation of sludge therebetween with the consequent stopping of flow through said drain recesses, said shell and said flange being each comprised of light weight material so that the entire strainer will float upwardly to a position where the retaining ears will abut against said flange when sewage which is relatively heavy as compared to water passes into the receiving end of the drain.

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