July 16, 1929. W. R. ROSE 1,721,472

SELF CLEARING ROOF DRAIN STRAINER

Filed March 22, 1927

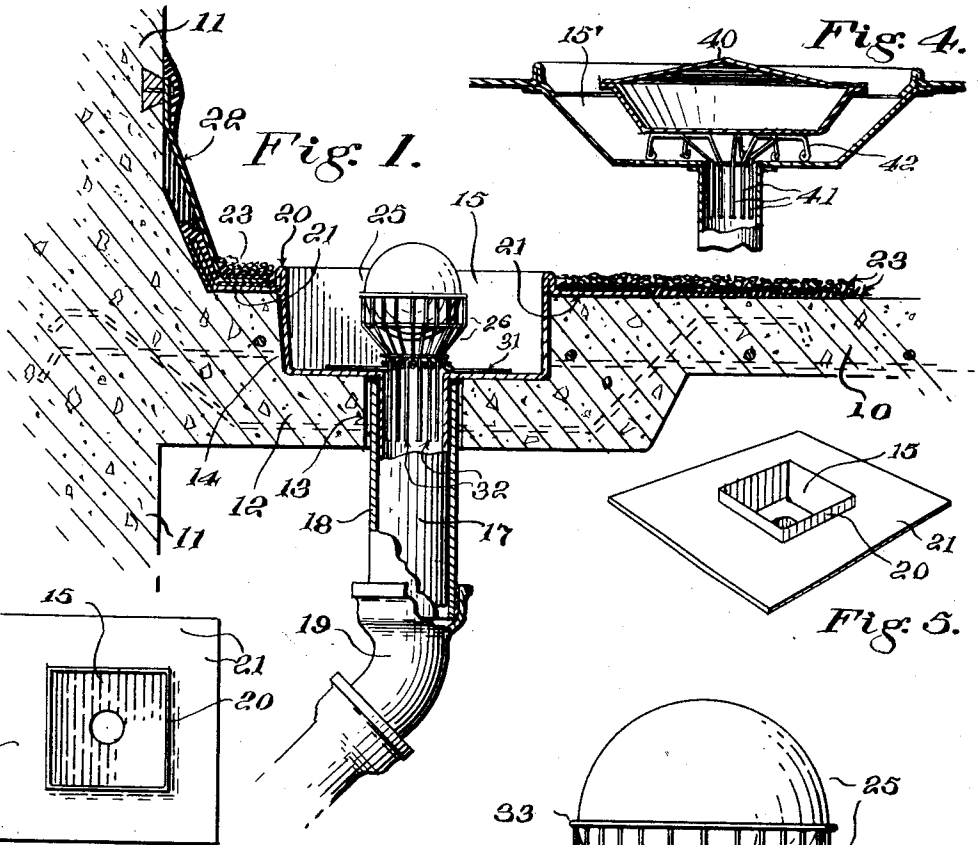


Fig. 1.

Fig. 4.

Fig. 5.

Fig. 6.

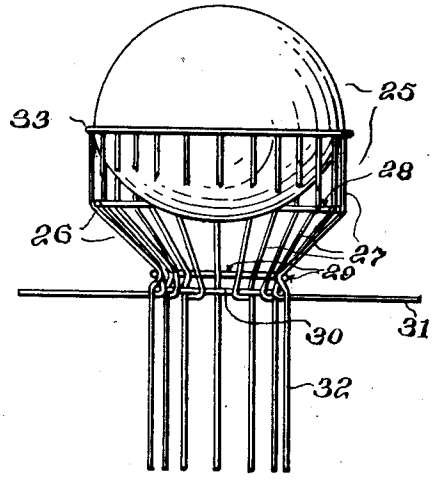


Fig. 2.

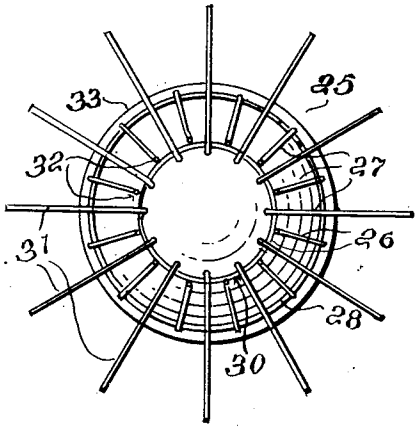


Fig. 3.

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UNITED STATES PATENT OFFICE.

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SELF-CLEARING ROOF-DRAIN STRAINER.

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The invention has for an object to effect improvements in roof drainage systems and appliances, and particularly to provide means for preventing stoppage of drain openings in roofs by accumulations around or adjacent the strainer customarily used in such situations. It is a particular aim of the invention to provide a construction which will include means tending to automatically clear a strainer device of small trash and dirt when ordinary trash accumulates therearound.

A further important aim is to provide a strainer device which, in the event of an accumulation of trash tending to prevent proper outflow of water from the roof, and damming the water so that it accumulates to an undesirable depth on the roof, the device will automatically operate to afford a greater clearance through the strainer at such exceptional times and operate with additional effect in tending to clear the strainer for unobstructed drainage flow.

It is also an important aim of the invention to present a device of this kind which will be extremely simple and involve a minimum of expense for installation and maintenance, so that the device may be readily available within ordinary appropriations for roof constructions. A further important aim of the invention is to provide a device of this character which may be used in ordinary drainage outlets, in place of simple cage strainers now in use.

Additional objects, advantages and features of invention reside in construction, arrangement and combination of parts, as will be understood from the following description and accompanying drawings, wherein

Figure 1 is a vertical sectional view of one manner of installation where a built-up slag roof is shown upon a concrete deck;

Figure 2 is an enlarged elevation of the strainer device, partly in section;

Figure 3 is a bottom view of the strainer device;

Figure 4 is a view of a roof outlet with a modified strainer construction.

Figure 5 is a perspective of the drain box.

Figure 6 is a top view of the box.

There is illustrated a concrete roof deck 10, and a supporting wall 11, the deck having a deepened or thickened part 12 around the drain opening 13 of the roof. A shallow pit or well 14 is also formed in the deck concentric with the opening 13, and receiving a drain box 15, preferably formed of a corrosion-resistant metal, and adapted to be formed of sheet copper by ordinary practices in the sheet-metal worker's art, although various other constructions are practicable, as will be readily understood. The box 15 is provided with a central outlet opening, from which there depends a preferably seamless pipe 17, which will ordinarily also be of copper. This pipe is joined integrally or welded or soldered to the box 15. The pipe 17 is of a size much smaller than that of the opening 13 in the deck, so as to afford ample clearance to receive therearound with a sliding fit the upper end of a vertical drain pipe 18, which would ordinarily be of cast iron. This pipe 18 comprises a plain cylindrical section, the lower end of which in the present instance is set in the bell of a 45 degree bend 19, although in other instances a straight stand-pipe is continued from the pipe 18, instead of the bend, the continuation of the drain system from the pipe 18 comprising no essential feature of my invention, and being well understood in the art. The box 15 is shown as formed with a gravel-stop 20 at the upper edge, and at a proper distance below the upper edge of the stop 20 a flashing flange 21 is continued outwardly from the box. In ordinary practice the flange 21 is formed of sheet copper. In the installation of the box the well 14 is preferably formed in casting of the deck with the necessary opening 13, and the box then set in the well with a suitable grouting, to effect a snug support and joint. Under the flanges 21 hot bitumen is applied and the flanges hot mopped down, so as to effect a snug joint against the deck. A flashing 22 is provided between the wall 11 and the deck, extending to a suitable height, the box flange 21 receiving the flashing 22 thereover. Hot bitumen is applied under the lower part of the flashing 22 and upon the flashing 21 and the lower part of the flashing 22 secured snugly in position over the box flange, as shown. The flange may be secured to the wall in any customary manner with an approved seal 22'. A roof covering is shown upon the deck which may consist of plies of felt or the like, embedded in hot bitumen and covered with gravel or slag, as indicated at 23. The flange 21 may have a portion of the felt laid thereunder and a portion thereover, if desired, this being a matter of discretion in roof construction not involving novelty in my invention. A combined strainer and clearer device 25 is installed in the box 15, in and upon the

outlet from the box to the pipe 17. The strainer cage 26 comprises principally longitudinal bars 27 mounted upon wire rings 28, 29 and 30. The upper ends of all the bars are soldered or otherwise secured to a ball float 34, as shown in Figures 1 to 3, although this float may be formed in various shapes and sizes relatively to the cage, as experience dictates. The ball in the present instance is one of a familiar kind ordinarily formed of sheet metal and having a bead 33 thereabout, against which the ends of the bars 27 may abut. The upper ring 28 is of a diameter equal to that of the body of the float, and the bars 27 are extended rectilinearly from the bead 33 downwardly and outwardly of the ring 28, bent inwardly and within a ring 29, the bars being joined to these rings in a suitable manner. Below the ring 29 the ring 30 is provided, and the lower parts of the bars 27 are alternately extended inwardly and outwardly of this ring 30, those at the inner side of the ring 30 being turned outwardly and extended horizontally to form rests by which downward movement of the cage is checked by their engagement with the bottom of the box 15. Those bars passing outwardly of the ring 30 are extended vertically and rectilinearly downward in parallel relation, and are arranged to lie loosely within the pipe 17 as guides and strainer, so that the strainer device may easily be set in place, and may be lifted when water reaches a predetermined depth around the ball 34, as will be explained.

In use, the device being set loosely in the outlet of the box 15, in case trash and the like should accumulate around the cage so as to obstruct free movement of water, when the water level has risen sufficiently, the float element will be jarred by the movement of water about it and also buoyed up, and the outturned bars 31 will stir the trash so as to loosen it and cause the smaller particles to work into the pipe, preventing complete obstruction of the strainer. In case the water level rises sufficiently, the complete cage will be lifted, so as to expose the openings between the downwardly extending bars 32, affording additional clearance for the passage of water and preventing the device from becoming completely closed.

If desired, the lateral arms 31 may be omitted, and the device arranged to be otherwise supported at a suitable level, one method for this being indicated in Figure 4, where the box 15′ may be either circular or square, and may be mounted in a roof in accordance with any approved practice, or as shown in Figure 1. The float 40 in this instance is considerably larger than the one shown in Figure 1, in proportion to the size of the outlet, and upon the bottom of the float there are secured in a suitable manner a plurality of bars 41 having lower end portions extended vertically and set loosely in the outlet from the box, while their upper portions extend outwardly and upwardly against the bottom of the float 40 to which they are attached, and their upper outer extremities turned downwardly, as at 42, to form legs or stops by which the float is supported in suitable spaced relation to the bottom of the box.

I claim:

1. The combination with a roof drain and a vertically movable strainer operatively associated therewith and extending above the drain for normal initial drainage of surface water, of a buoyant element spaced from the drain, connected to and adapted to lift the strainer by displacement of water when the water reaches a predetermined level thereabout.

2. The structure of claim 1 in which the strainer comprises a strainer part slidably set in the opening of the drain and extending downwardly thereinto a distance normally, and adapted when lifted to present additional strainer parts above said opening.

3. The article of claim 1 in which agitator devices are combined with the strainer for loosening sediment adjacent the outlet opening.

4. An article of the character described comprising a strainer cage having a multiplicity of section vertical bars adapted to be set slidably in a drain opening and having laterally extending trash agitating arms to rest outwardly of such a drain opening, a cage portion extending above said lateral arms, and a float attached to the upper part thereof.

In testimony whereof I affix my signature.

WILLIAM R. ROSE.