Nov. 6, 1928. 1,690,630

W. S. FLEMING

ROOF DRAIN

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Fig. 1

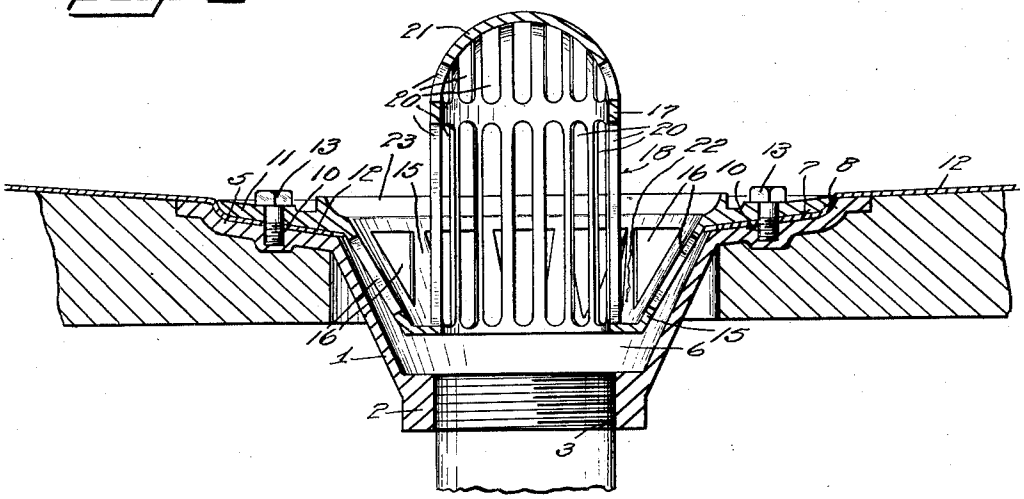
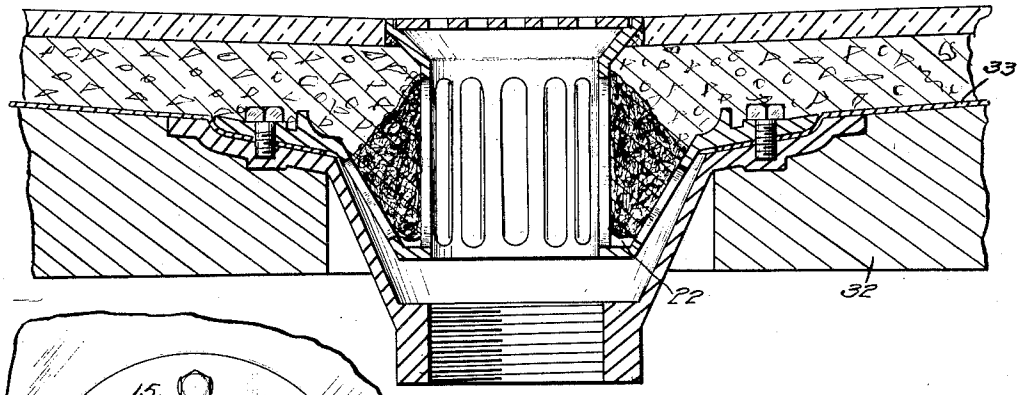


Fig. 3



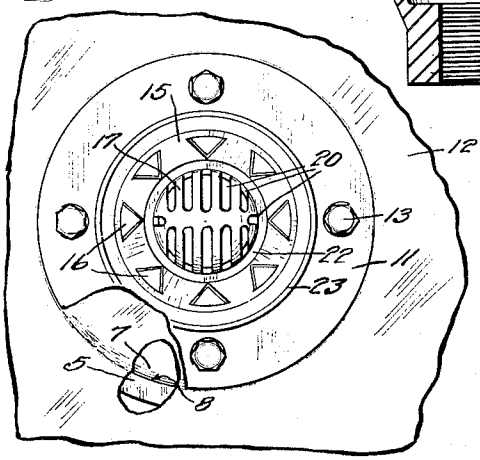


Fig. 2

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Fig. 4

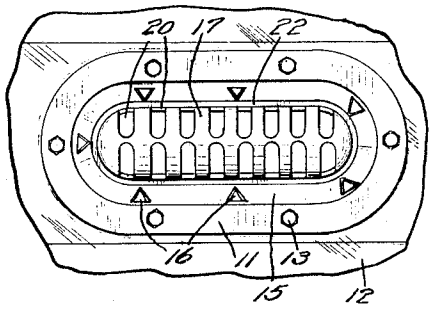


Fig. 5

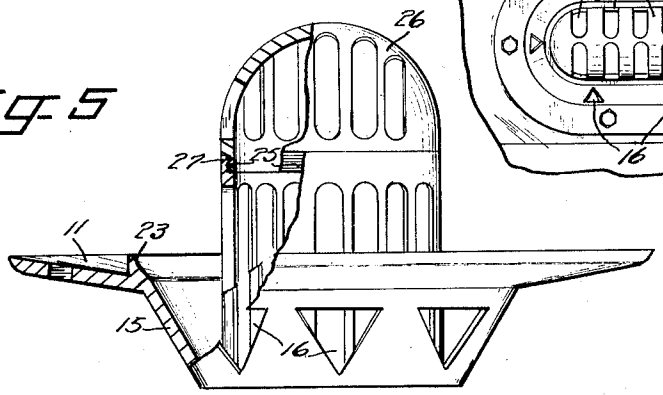
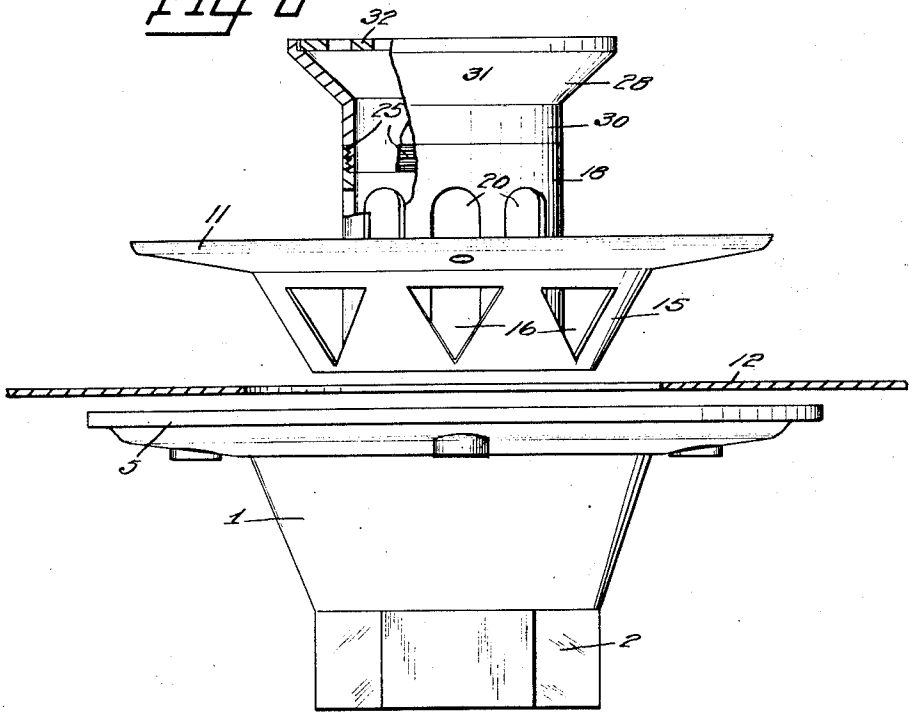


Fig. 6



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Patented Nov. 6, 1928. 1,690,630

UNITED STATES PATENT OFFICE.

WELLS S. FLEMING, OF PORTLAND, OREGON.

ROOF DRAIN.

Application filed February 10, 1926. Serial No. 87,281.

This invention relates to improvements in drain-fittings for roofs, gutters, and the like.

The object of my invention is to provide a fixture for installation on roofs or in any suitable location, particularly when the fitting is not subject to frequent inspection, simple in construction, and composed of but few parts to conduct liquids into a drain-pipe, and that will be substantially self-clearing to avoid obstructions and admit of a free opening at all times to the drain-pipe from the area to be drained equal in amount to the capacity of the drain-pipe.

Another object of the invention is the provision of a drain-fitting of the type described wherein a cover-plate is provided having an annular drain-depression formed below the level of the area drained and with inclined or vertical walls upon each side of said depression apertured to admit of a wide margin of capacity over that of the drain pipe, and wherein an axially disposed apertured dome is formed integral in said cover-plate extending above the said area-level whereby a rigid structure is provided and danger of dislocation and consequent risk of stoppage of the pipe is avoided.

A further object of my invention is to provide a drain fitting adapted to have the water proofing material of the roof clamped firmly and permanently between its cover-plate and body member, thereby to provide a water-tight seal, and to provide supplemental draining apertures disposed about the base of the dome in the web circumferentially surrounding the same.

A still further object of the invention is the provision of a drain-fitting of the type outlined having a dome-like central portion wherein a plurality of terminals are provided to surmount said dome to better adapt it to various classes of work and having means to interchangeably attach and use either of said terminals as occasion warrants.

Other objects and advantages residing in my invention. and objects relating to details of construction and arrangement of parts will be readily apparent in the course of the detailed description to follow.

The accompanying diagrams illustrate the various forms of the invention thought to be required to indicate the principle of my invention in which:

Figure 1 is a view in vertical section of a roof drain-fitting of my invention mounted in operative position.

Fig. 2 is a plan view of the same.

Fig. 3 is a view similar to Fig. 1 illustrating a slightly modified form of the drain-fitting applied to a floor or wall.

Fig. 4 is a plan view of a drain-fitting similar to that shown in Fig. 2 except that it is of ovate form suitable for use in roof gutters or valley-drains.

Fig. 5 is a detached view of the cover-plate element of the invention shown in side elevation partly broken away.

Fig. 6 is a view similar to Fig. 5 showing the several parts of the invention unassembled and having a variant style of dome to that shown in Fig. 5.

Referring to said views, wherein similar characters of reference indicate like parts in the several views, the reference numeral 1 designates a downwardly sloping conical body of my improved roof drain having a tubular, integral collar 2 at its lower end provided with an axial screw-threaded bore into which the drain-pipe 3 may be threaded. The upper portion of said body extends in an annular flange 5 at a relatively slight downward angle to provide drainage toward the conical chamber 6 of said body. The upper face of said flange is recessed, as at 7, to provide a wall 8 at its marginal edge. Threaded bolt-recesses 10 are formed in said flange at spaced intervals medially about said recess.

A cover-plate, see Fig. 5, is formed with an annular portion 11 to overlie the flange 5 of the body and with the underside shaped to fit within the recess 7 with a sheet of water-proof material, as 12, therebetween. Bolt-holes are provided in said annular portion in register with the reccesses 10 whereby bolts 13 may be employed to draw said cover-plate into rigid watertight connection with said flange with the material 12 interposed therein.

Centrally of the annular portion of the cover-plate an integral inwardly inclined skirt 15 is provided that is spaced from the

inclined side walls of said body and extends relatively deeply within the chamber 6. Said skirt is apertured, as at 16, about its perimeter, said apertures being of any suitable form affording an outlet through the said skirt and from the depression formed thereby into the chamber 6 of the body portion.

Axially of the cover-plate and integrally connected to the lower edge of the skirt 15 is a circular dome 17 with vertical peripheral walls 18 perforated by slots 20 extending above the cover-plate portion 11 and surmounted by a perforated extremity 21 which may be of hemispherical configuration as seen in Fig. 1 or as in a plane, as shown in Fig. 3. Thus the dome 17 extends for about one-half of its height within a depression 22 formed by the depressed skirt 15 and its other half-portion extends above the level of the annular portion 11.

An annular rib 23 is formed in said portion 11 adjacent the inner edge thereof to serve as a stop or dam to prevent any plastic material used as a roofing material, as tar, from flowing into the depression 22. When constructed and installed in the manner substantially as illustrated in Fig. 1 my roof drain will be seen to afford many advantages. It is especially important in this type of drain that it be practically immune from danger of clogging or the drainage thereinto be stopped from any cause as they are usually not inspected with frequency, and lie in situations not coincident to observation, while damage to the building may be of serious effect should they become stopped. With the drain located upon the roof or other selected location, with proper regard to drainage thereinto from the roof, it will be practically impossible for such accidents to occur. In the present instance I have provided a drain having a relatively deep annular depression 22 formed by the sunken skirt 15 and the dome 17 in which all drainage water may flow, affording a species of sump for the collection of the drainage water. The provision of the apertures in the opposite side wall of said depression, and inclined in the case of those in the skirt 15 and vertical with respect to those in the dome 17, and which are collectively of area twice as great as the cross-section area of the drain-pipe, renders the danger of the access of the water to the drain-pipe being stopped as practically negligible.

Similarly a safeguard against accidental displacement of the several parts of my roof drain is provided in that the dome, 17, is formed integral with the cover-plate and the said cover-plate is bolted securely to the body member with the water-proof material firmly secured between, forming a permanent water-proof seal so that frequent inspections will not be necessary.

The provision of the heightened dome 17, extending above the level of the area drained and of the other parts of the drain apparatus provides an added assurance that all surface water will be carried off before damage to property ensues. The water-proofing material 12, which may be roofing-felt, sheet tin-plate, or the like, is connected between the flange 5 and the cover-plate in water-tight condition so that no leakage about the drain may occur.

In Fig. 4 I have shown drain-fitting similar in all respects with the form already described with the exception that it is made in a form elongated in a horizontal plane whereby it is particularly adapted for installation in eaves-troughs, gutters, and valley-drains.

Referring to Figs. 5 and 6, the dome 17 is divided into two sections, the lower portion 17 being formed with the described integral connection with the cover-plate and extending upwardly slightly above the upper level of the cover-plate when provided with interior screw-threads 25. The upper portion of said dome, 26, see Fig. 5, is attachable thereto by corresponding external screw-threads 27. A variant form of said upper dome-portion is illustrated in Fig. 6 at 28 having a tubular part 30 in which the screw-threads 27 are formed and an outwardly flaring upper extremity 31 in which a plane grille-plate 32 is secured. The purpose of such interchangeable dome-forms will be readily apparent in affording two separate and distinctly different types of outlet, the latter of which will be more fully described.

In Fig. 3 I have illustrated a form of my invention substantially similar to that shown in Fig. 6 excepting that the upper portion of the dome is not detachable. These types of drain-fittings are adapted for use as floor drains in horizontal surfaces or wall drains to be utilized in swimming-pools and the like. Exemplifying its use as a floor drain in Fig. 3 I show the drain structure set within a floor-frame 32 and connected to a water-proof membrane 33 in the manner set forth. In the depression 22 I place a filler 35 of fibrous material extending upwardly to cover the slots 20. Then a layer of plastic cement material 36 may be laid over the floor in which the tiling 37 may be set substantially flush with the grille-plate 32.

Therefore, by this construction and arrangement of the parts of my roof drain, I have provided a fixture which will not become clogged for, all danger of the cover-plate being lifted off, and forgotten to be replaced—thus leaving the drain pipe exposed to become filled with refuse—is avoided, and a permanent water-tight seal is assured at all times between the water-proof material of the roof and the drain fixture.

From the foregoing description taken in connection with the accompanying drawings

the advantages of the construction and operation of my roof drain will be readily apparent, but, while I have described the principle of operation of the invention, together with the devices which I now consider to be the best embodiment thereof, it will be understood that the structure shown is merely illustrative and that such changes may be made as are within the scope of the following claims.

Having described my invention, what I claim, is:—

1. In a drain of the class described, an inwardly sloping body affording an inverted conical chamber and having means to connect a drain-pipe thereto, said body including an integral, laterally arranged flange having drainage into said chamber, a cover-plate arranged to be secured in superposed relation to said body-flange with a sheet of water-proofing material therebetween, an inverted conical skirt extending integrally from said cover-plate within said body chamber perforated to allow drainage therethrough, and a slotted dome centrally supported upon said skirt and extending above the level of said cover-plate affording an annular depression between the skirt and said dome.

2. In a drain of the class described, a body having a drainage chamber therein and having means to connect a drain-pipe thereto, said body including an integral, laterally arranged flange having drainage into said chamber, a cover-plate arranged to be secured in superposed relation to said body-flange with a sheet of water-proofing material therebetween, an inverted conical skirt extending integrally from said cover-plate within said body chamber perforated to allow drainage therethrough, and a slotted dome supported centrally of said skirt and extending above the level of said cover-plate affording an annular depression between the skirt and said dome.

3. In a drain of the class described, a body having a drainage chamber therein and having means to connect a drain-pipe thereto, said body including an integral, laterally arranged flange having drainage into said chamber, a cover-plate arranged to be secured in superposed relation to said body-flange with a sheet of water-proofing material therebetween, said cover plate having a skirt extending integrally from said cover-plate within said body chamber perforated to allow drainage therethrough, and a slotted dome connected centrally of said skirt and extending above the level of said cover-plate affording an annular depression between the skirt and said dome.

4. In a drain of the class described, a body having an annular flange extending in generally lateral directions and with a central chamber therebelow connecting with a drain-pipe, a cover-plate adapted to be bolted to said body-flange to retain therebetween a sheet of waterproofing material in watertight condition, said cover-plate extending downwardly within said body chamber with perforations in its side walls communicating with the chamber, and a slotted dome rigidly mounted axially of said cover-plate affording an annular depression thereabout, the slots of said dome affording communication between said depression and said body-chamber.

5. In a drain of the class described, a body having an inwardly sloping annular flange extending in lateral directions and with a central chamber therebelow connecting with a drain-pipe, a cover-plate adapted to be bolted to said body-flange to secure therebetween a sheet of water-proofing material in watertight relation, said cover-plate extending above said body-chamber with perforations therein communicating with said chamber, and a slotted dome rigidly mounted axially of said cover-plate.

6. A drain of the class described, consisting in a chambered body to which a drain-pipe is connected, said body having a laterally directed flange inwardly sloping affording drainage into said body-chamber, a cover-plate adapted to overlie said flange and rigidly connected thereto to secure a sheet of waterproofing material therebetween, said cover-plate extending above said body-chamber and formed with perforations to admit of drainage through said cover-plate into the chamber, and a slotted dome rigidly supported centrally upon said cover-plate.

7. In a roof drain and the like, a body having an annular, laterally extending inwardly sloping flange and provided with a central chamber below the flange connected to a drain-pipe, and a cover-plate firmly secured on said flange, said cover-plate having a base with a web surrounding same and formed with a slotted centrally arranged dome extending above but being of lesser diameter than said body chamber, said cover-plate provided with supplemental drain slots arranged circumferentially about said dome in the web surrounding the base thereof and communicating with said chamber, in combination with a sheet of waterproofing material having a drain hole cut therein, the edge of said material around said drain hole being firmly and permanently clamped in water-tight relation between the rim of said cover-plate and said flange.

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