

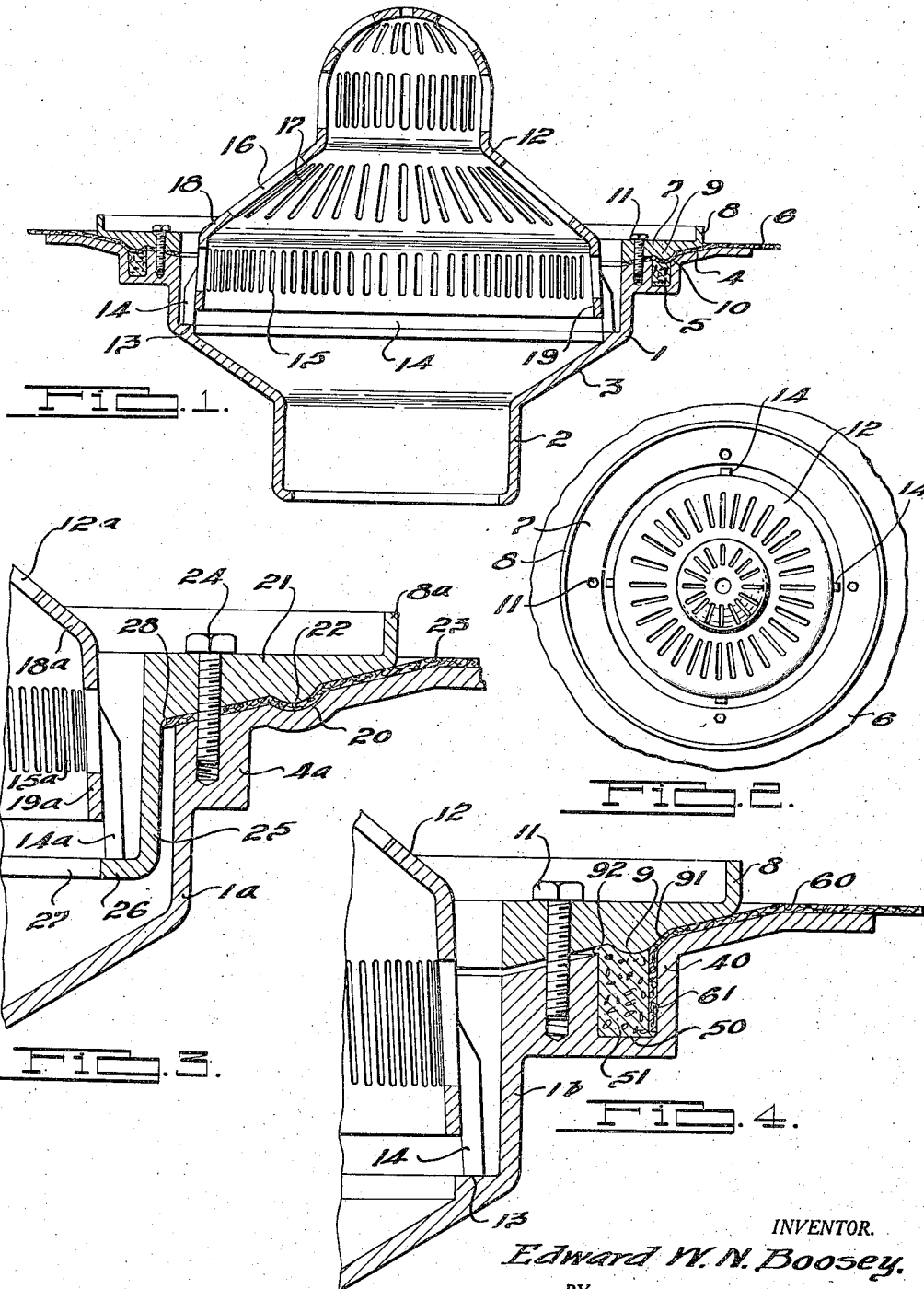
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ROOF DRAIN

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# UNITED STATES PATENT OFFICE

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## ROOF DRAIN

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6 Claims. (Cl. 182—31)

This invention relates to roof drains, the object being to provide a new and improved construction of body formed with a flange to receive the edge of the roof flashing or pan about the drain opening and providing for an efficient sealing of the flange of the body to the flashing by means of a clamping ring formed to provide a gravel stop and associated with which is a removable slotted head supported in spaced relation with the wall of the body and of a specific character of construction as is hereinafter described.

It is further an object of the invention to provide a circular recess or well in the flange of the body to which the flashing is secured to be filled with a sealing material in conjunction with a clamping ring formed to produce a pressure upon the sealing material when the ring is clamped in place.

It is also an object of the invention to provide a body member having a peripheral inclined flange to receive a flashing and a clamping ring having a circular raglet for tightly clamping the flashing place, the ring being secured by means of the bolts positioned within the raglet.

These and other objects and several novel features of the invention are hereinafter more fully described, claimed and shown, in preferred form, in the accompanying drawing in which—

Fig. 1 is a vertical section of my improved roof drain showing the relationship of the body, head, and clamping ring.

Fig. 2 is a plan view of the device on a smaller scale.

Fig. 3 is a section taken through one side of the drain body and head showing a modified form of construction.

Fig. 4 is a similar section showing another modified form of construction.

In Fig. 1 the cylindrical body 1 has the outlet end 2 of less diameter than the main open end of the body with which the outlet end is connected by the inclined wall 3. The body 1 has at its upper edge an upwardly and outwardly extending inclined flange 4. In the form shown in Fig. 1, the flange is provided with a recess 5 opening through the open face of the flange to receive a cement or other sealing material. The roof flashing or plate 6 lies on the inclined flange 4, the flashing having a central aperture of a diameter preferably somewhat greater than the diameter of the body 1. This edge of the flashing 6 about the central opening is securely held in place by a clamping ring or flange 7 which has an upturned peripheral rib 8 providing a gravel

stop. The under face of the ring 7 is inclined to lie approximately parallel to the inclined face of the flange 4 of the body and further has a depending rib 9 of rounded form and in such relation to the recess 5 as to cause a tight engagement of the flashing at the point 10 with the edge of the recess 4.

This rib 9 serves also to produce pressure upon the filling in the recess 5 tending to cause it to extrude into the space between the flashing and the flange 4 each side of the recess and further seal the plate 6 in place. The series of bolts 11 are provided for drawing the clamping ring or flange to tight engagement with the flashing. The ring 7 has an internal diameter preferably about equal to the diameter of the body 1. This provides a recess to receive the slotted head 12 here shown as being of a turret type. In the form of the invention shown in Fig. 1, there is a ledge 13 formed preferably at about the junction of the inclined wall 3 with the vertical portion of the body 1. The turret top 12 has a series of lugs 14 formed thereabout as shown in Fig. 2 which may rest upon the ledge 13. The lugs extend below the lower edge of the head 12 and thus support the said edge above the ledge permitting a free movement of the liquid to between the head and the body 1 and to beneath the head into the outlet end of the body 1.

The turret top shown is of peculiar form, it having a series of vertical slots 15 in its vertical side wall which are below the upper face of the clamping ring and therefore within the cylindrical wall of the body. The turret top has the inclined wall 16 having a series of apertures or slots 17 therein.

Between the slots 17 and 15 is an imperforate wall section 18 which extends below and above the upper face of the clamping ring 7. Water flowing into the drain and over the clamping ring thus strikes the imperforate wall 18 and is deflected downward to between the lower cylindrical end of the drain indicated at 19 and thence through the slots 15 and also beneath the lower edge of the portion 19 into the outlet end of the body. This wall 18 prevents the water entering one side of the drain from flowing across the drain head thus preventing a heavy body of water accumulating in the center but, on the contrary, by causing it to flow downward the space between the portion 19 and the body 1 reduces its velocity instantly and maintains it in a distributed and comparatively thin evenly flowing sheet.

A feature of my invention resides in the pro-

vision of a clamping ring with apertures to receive the bolts 11 and threaded apertures aligning therewith in the flange of the body 1, said bolts and threaded apertures therefor being within the sealing point of the ring and flange whereby any possible leakage about the bolt from the surface of the flashing or ring must pass into the body 1. It is common to provide a flashing where the bolts extend through the flashing at a point exteriorly of the sealing point or raglet and these in many instances provide leakage and thus it is a feature of this invention to provide a clamping ring cooperative with a flange of the body of the drain secured adjacent its inner periphery to the body and within the sealing line or raglet between the ring and flange of the body.

A modified form of the invention is shown in Fig. 3. In this case the flange 4<sup>a</sup> of the body 1<sup>a</sup> has an arcuate groove 20 and the clamping ring 21 has a similarly shaped bead or raglet 22. The flashing 23 is clamped therebetween to form a seal, the shape of the ring 22 being such as to insure tight contact under pressure between the flashing and the flange at the point where the groove 20 merges with the face of the ring. In this case the retaining bolts 24 are positioned within the circumferential raglet. Cement may be placed in the groove 20 to insure the sealing of the flashing to the flange.

A feature of construction shown in Fig. 3 is in the provision on the clamping ring having a cylindrical depending flange portion 25 provided with an inturred edge portion 26 forming an opening 27 in the bottom of the element 25 which is integral with the ring or flange 21. This flange 25 extends downwardly into the body 1<sup>a</sup> of the drain and is spaced from the cylindrical wall thereof as shown while the edge of the flashing at 28 extends into contact with the cylindrical flange 25. By means of the clamping bolts 24 the edge portion 28 of the flashing is firmly clamped and prevents the forming of an opening between the upper or lower faces of the flashing and the contiguous metal parts.

A feature of this construction of Fig. 3 is in the provision of the cylindrical flange 25 on the clamping ring having the inturred edge 26. The apertured drain head at 12<sup>a</sup> has its lugs 14<sup>a</sup> resting on the flanged edge 26 and not in the body of the drain proper as is the case in Fig. 1.

By this construction a drain head of the standard width of the bottom end portion 19<sup>a</sup> can be used with various vertical heights of the upper portion of the body. The drain head 12<sup>a</sup> in all essential respects may be the same as more fully shown in Fig. 1, it having the apertures 15<sup>a</sup> below the upper face of the clamping ring and the non-apertured ring like portion 18<sup>a</sup> corresponding to the part 17 of Fig. 1. The clamping ring may also have a peripheral upwardly extending flange or rib 8<sup>a</sup> providing a gravel stop as in the structure shown in Fig. 1. In the structure Fig. 3, water flowing over the roof and flashing 23 flows over the flange 8<sup>a</sup> (which is here somewhat exaggerated in size) and across the ring and into the space between the base 19<sup>a</sup> of the head and the downwardly extending cylindrical flange 25 of the clamping ring and thence through the apertures 15<sup>a</sup> and beneath the bottom edge of the portion 19<sup>a</sup> into the outlet end of the body.

The invention is not limited to a construction in which the flashing extends to the inner face of the body. As is shown in Fig. 4, the flashing 60 may have its inner edge downturned into the

annular recess 50 of the flange 40 of the body 1<sup>b</sup>. The clamping ring shown in Fig. 4 is substantially the same as that shown in Fig. 1 having the gravel stop 8, the rib 9, the bolt 11 and the head 12 which rests on the ledge 13 all of which parts function the same as those in Fig. 1.

The departure in the construction shown in Fig. 4 from the structure shown in Fig. 1 consists of the inner edge of the flashing being downturned into the recess 50 and forcing the same into contact with the outer face of the recess by forcing the sealing material 51 into the recess 50. With the parts assembled as shown, the turning of the bolts 11 home draws the rib 9 into tight engagement with the flashing at the point 91 and further also forces the cement at 92 into the space between the clamping ring and flange of the body.

From the foregoing description it is believed that the various features, objects and novelties of the invention are made evident and that simplicity of construction and a facility in use is secured by the structure described. Also my improved roof drain, by providing for the ready withdrawal of the slotted member without necessity of removing bolts or other retaining devices, provides for quickness and ease of cleaning the head if it becomes necessary, and it is further pointed out that the invention is not confined to the specific form of the slotted head or strainer as other shapes of slotted heads or strainer members may rest upon the ledge 13 of the structures shown in Figs. 1 or 4 or the flange 26 of the form of the clamping ring shown in Fig. 3.

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 roof drain having a body open at the upper end and an outlet therebelow, a drain head of dome like form having apertures in its wall and an open lower end, the lower end of the head extending into the body in unattached and spaced relation with the surrounding wall, detachable means loosely supporting the drain head at the bottom arranged to permit flow of liquid into the body through the said space and beneath the drain head to the outlet of the body, the apertures of the drain head further providing means permitting flow of liquid into the interior of the head and thence into the body.

2. In a roof drain having a body open at the upper end and an outlet therebelow, a drain head of dome like form having apertures in its wall and an open lower end, the lower end of the head extending into the body in unattached and spaced relation with the surrounding wall, means loosely supporting the drain head at the bottom arranged to permit flow of liquid into the body through the said space and beneath the drain head to the outlet of the body, the apertures of the drain head further providing means permitting flow of liquid into the interior of the head and thence into the body.

3. In a roof drain having a body including means for securing a roof flashing thereto and having an open upper end to receive fluid and an outlet at the bottom, a hollow drain head having an aperture wall extending into the body to below the open upper end, means secured in place by the flashing securing means for loosely supporting the drain head with the lower end in peripheral spaced relation with the body wall thereby permitting removal of the head without disturbing the relationship of the body parts and

flashing, the space between the lower end of the head and the body being freely open to inflow of liquid therebetween to below the drain head and thence to the outlet, the wall of the head within the body having apertures to permit flow from the said space into the head.

4. In a roof drain having a body formed at the upper end to receive a flashing and provided with an open upper inlet end and an outlet therebelow, a drain head having an apertured dome like portion and a skirt at the lower end freely insertible into and removable from the drain head through the inlet end and when in the drain head occupying a position in spaced relation with the wall thereof below the inlet opening, said skirt having apertures, removable means extending to below the upper end of the body loosely supporting the drain head, and means preventing material lateral displacement of the drain head relative to the body, the arrangement providing that fluid entering the space between the lower end of the head and the body below the upper end may flow into the drain head and also may flow beneath the drain head to the body outlet.

5. In a roof drain, a body having an open upper end and a peripheral flange for supporting the same on a roof element, a flashing having an opening of approximately the same diameter as the open end of the body and overlying the body flange, a flange removably attached to the said body flange and securing the flashing therebetween, the flashing having an opening approximately equal in diameter to and practically registering with that of the open upper end of the body, said removable flange further having a vertical rib extending to above its upper surface and the surface of the flashing, a drain head having a dome like upper end and a skirt of

greater diameter less than the diameter of the body opening and extending into the opening in a peripheral spaced relation with the upper end of the body and said flange, said drain head having an apertured inwardly inclined wall extending from the greater to the lesser diameter portion thereof and means loosely supporting the skirt in the drain body with its lower edge in spaced relation with the body and the supporting means to thereby permit fluid entering the space between the upper end of the body and the skirt to pass beneath the drain head to the outlet.

6. In a roof drain, a body having an open upper end and a peripheral flange for supporting the same on a roof element, a flashing extending over the flange and having an opening of approximately the same diameter as the upper open end of the body, a flange removably attached to the body flange and securing the flashing therebetween, said removable flange having a peripheral vertical rib and a skirt portion extending into the body, a hollow drain head having a dome like portion extending to above the upper end of the body and flashing, an outwardly and downwardly inclined portion, and a skirt of a diameter less than the diameter of the open end, means at the lower end of the flange skirt loosely supporting the skirt of the head in peripheral spaced relation therewith, the arrangement providing that liquid may enter the space between the flange skirt and the skirt of the head at the open end of the body and pass thence downwardly to beneath the lower edge of the skirt of the head to the outlet, the arrangement providing a structure in which the drain head is freely removable from or insertible into the body without disarrangement of the body and flange parts.

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