Jan. 19, 1954 A. GORDON 2,666,493

THREE-WAY, ALL-PURPOSE DRAIN

Filed Nov. 24, 1950 3 Sheets-Sheet 1

FIG. 1

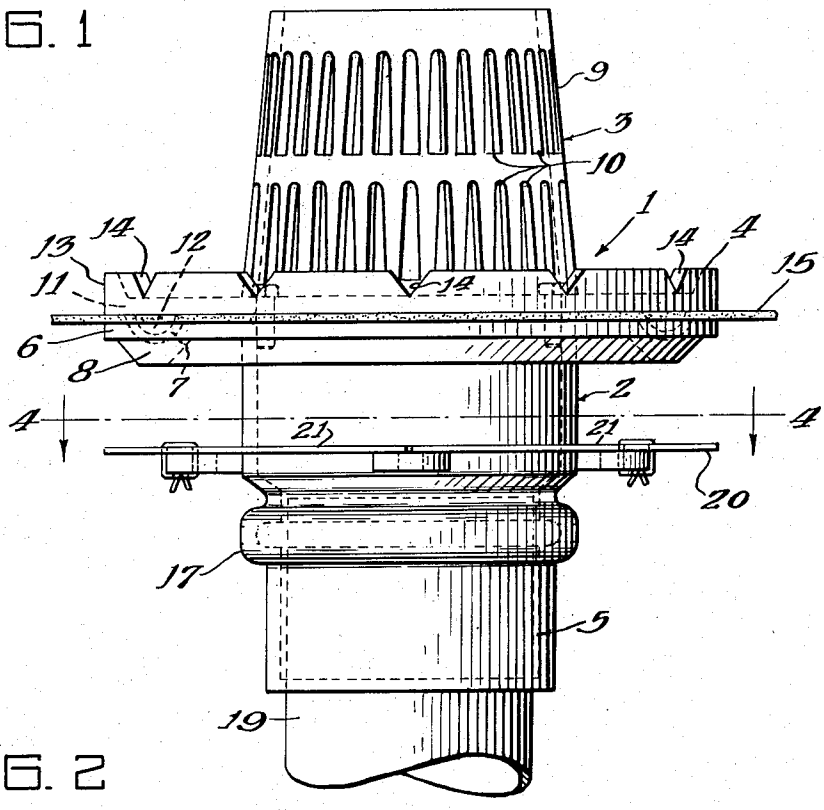
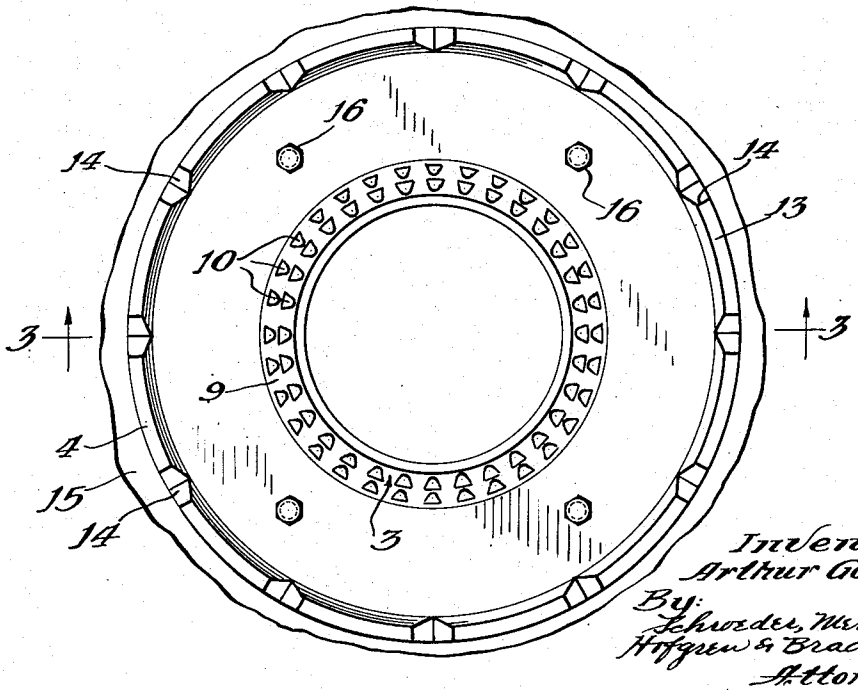


FIG. 2



Inventor:
Arthur Gordon
By:
Schroeder, Mersiam,
Hofgren & Brady
Attorneys

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FIG. 3

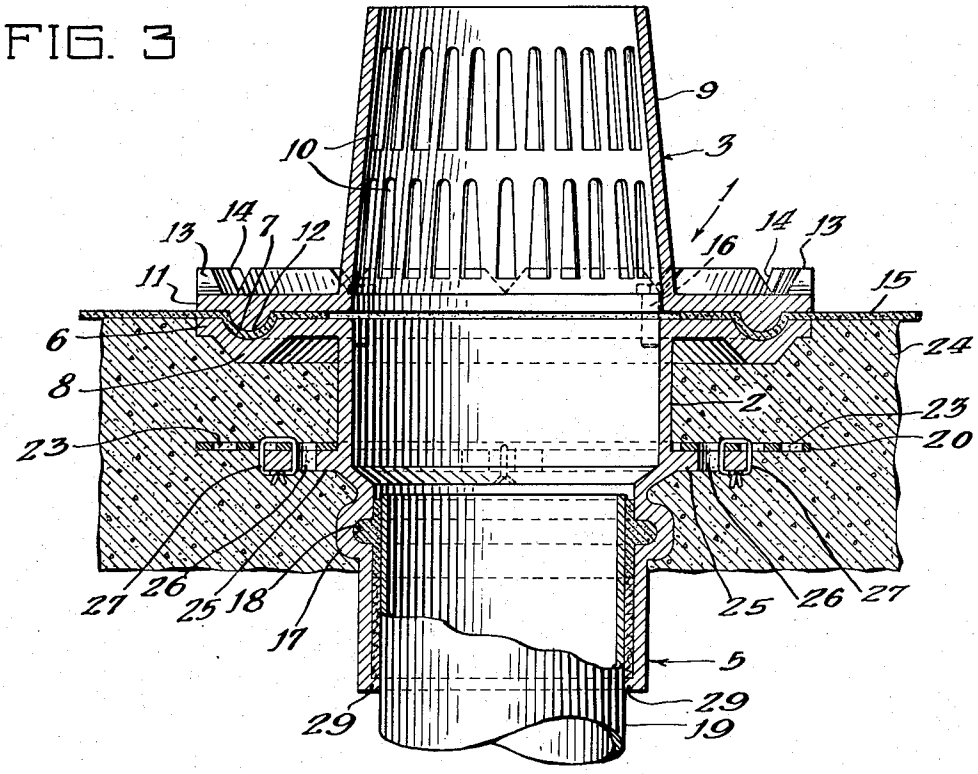
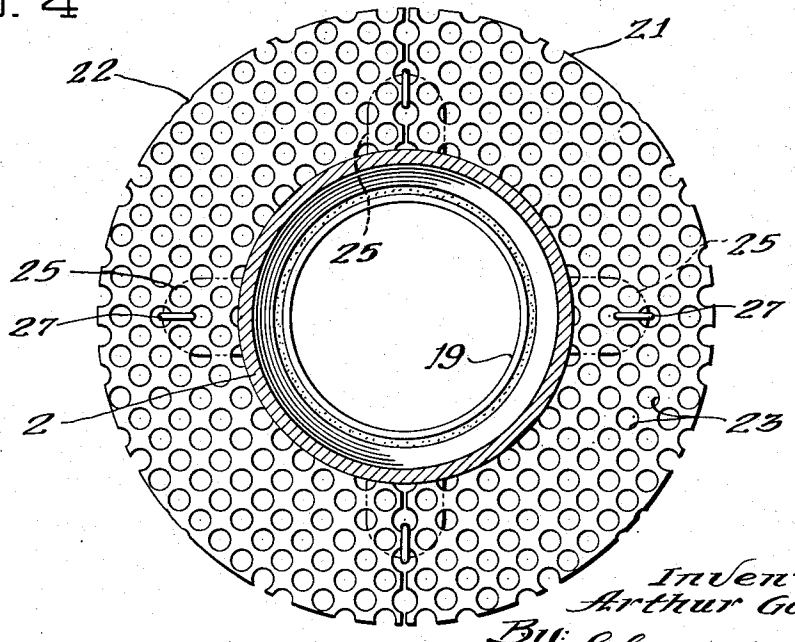


FIG. 4



Inventor:
Arthur Gordon

By: Schroeder, Merriam, Hofgren & Brady
Attorneys

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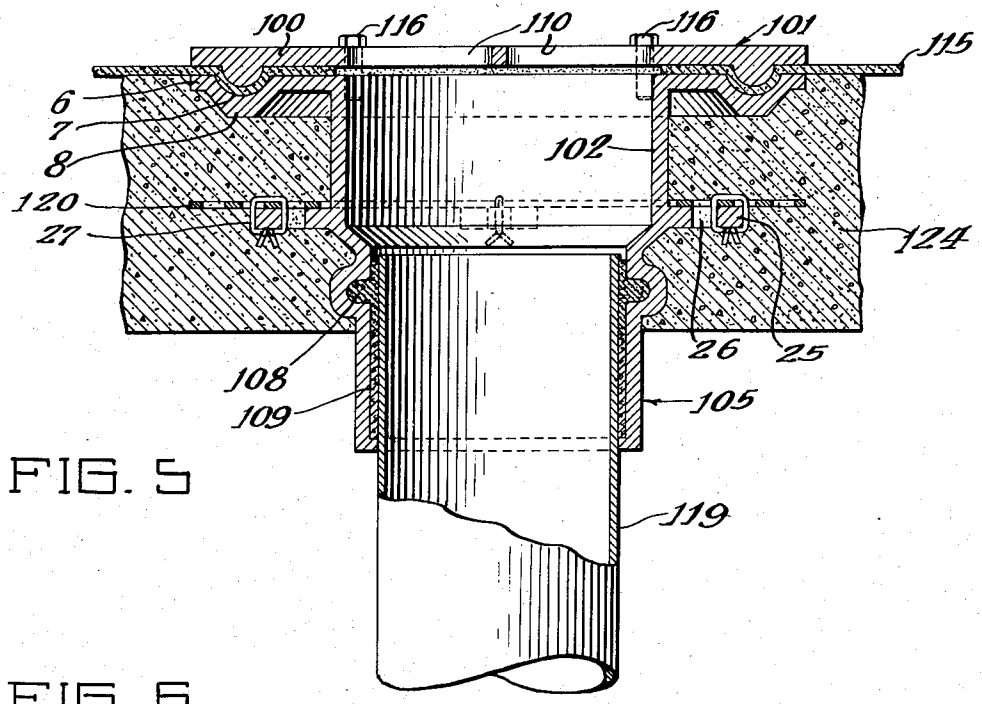
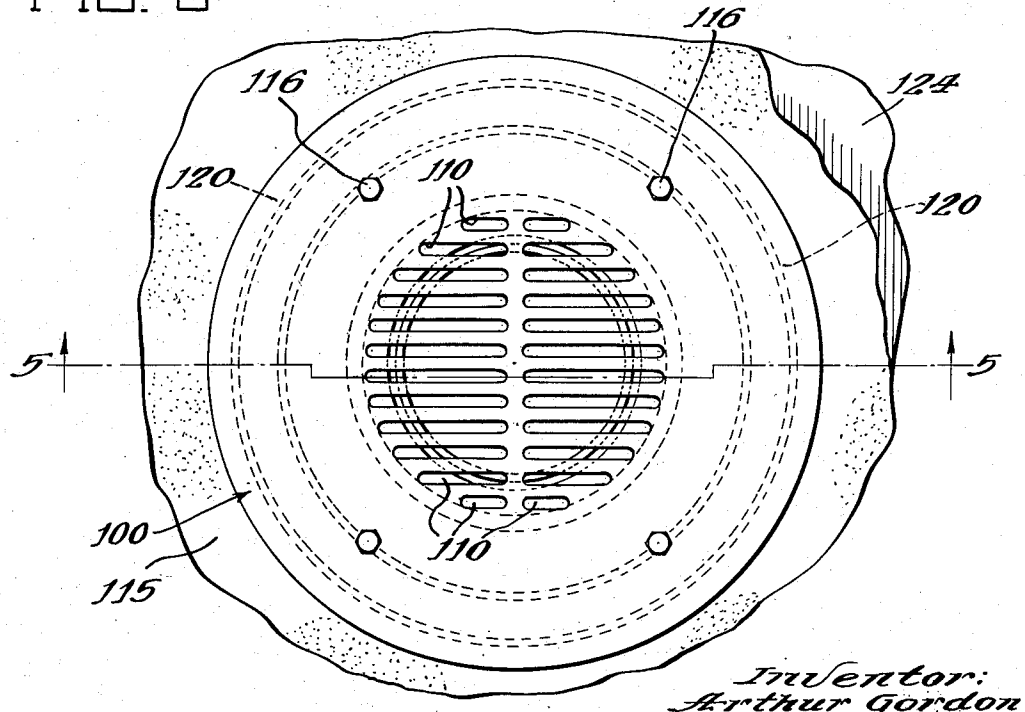


FIG. 5

FIG. 6



Inventor:
Arthur Gordon
By: Schroeder, Merriam, Hofgren & Brady
Attorneys

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UNITED STATES PATENT OFFICE

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THREE-WAY, ALL-PURPOSE DRAIN

Arthur Gordon, Chicago, Ill.

Application November 24, 1950, Serial No. 197,247

3 Claims. (Cl. 182—31)

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This invention relates in general to improvements in drainage devices and more particularly to an improved combination roof and floor drain.

A principal object of this invention is to provide a leak proof safety drain which may be used with equal advantage as either a roof drain or a floor drain, and which has incorporated therewith improved means for reinforcing concrete into which the drain is set.

Still another object of this invention is to provide a combination roof and floor drain adapted to be set into concrete and having thereon means for connecting the drain to reinforcements which have previously been incorporated in the concrete, to prevent cracking and crumbling of concrete adjacent to and surrounding the drain.

Yet another object of this invention is to provide a drain with an interchangeable strainer top portion either of the cone shaped beehive type for roof drains, or of the flat type for floor drains.

Yet another object of this invention is to provide a leak proof combination roof and floor drain having an improved leak proof slip joint for attaching the drain to standard drain pipe.

Another object of this invention is to provide a leak proof combination roof and floor drain characterized by versatility of application, simplicity of construction and efficiency of operation.

Other objects and advantages of this invention will be readily ascertained from the following specification and drawing in which:

Fig. 1 is a vertical front view of the roof type drain;

Fig. 2 is a top view of the roof type drain;

Fig. 3 is a vertical section taken along the lines 3—3 of Fig. 2;

Fig. 4 is a horizontal section taken along lines 4—4 of Fig. 1;

Fig. 5 is a vertical section of the floor type drain; and

Fig. 6 is a top view of the floor type drain.

While this invention is susceptible of various modifications and alternative constructions, it is shown in the drawings and will hereinafter be described in preferred embodiments. It is necessarily intended, however, that the invention is to be limited thereby to the specific construction disclosed. On the contrary, it is intended to cover all the modifications and alternative constructions falling within the spirit and scope of the invention as defined in the appended claims.

This application represents improvements in my roof drain described and claimed in my Patent No. 2,284,416 of May 26, 1942.

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The drain generally designated at 1 comprises a main body portion 2, a top portion 3 through which fluids are strained before entering the drain, a gravel and trash stop 4 intermediate the main body portion and the top portion, and a lower portion 5 which is adapted for connecting the drain to an ordinary standard drain pipe.

The main body portion of the drain is of cylindrical shape having its top portion formed into an outwardly extending flange 6, said flange being parallel to either the roof or floor into which the drain is to be set. Intermediate the main body portion and the periphery of flange 6 is a rounded depression 7 having directly below it a relatively thick portion 8 of the flange 6. The uppermost edge of the flange 6 is adapted to fit flush with the top of the concrete roof or floor.

The upper part of this drain comprises a dome like or beehive structure 9 having a plurality of apertures 10 therein for straining out foreign materials in the fluid to be drained. The lower portion of the beehive structure has an outwardly extending flange 11 having a rounded depending bead 12 thereon, and is adapted to fit snugly against the outwardly extending flange 6 of the main body portion. Around its periphery, the flange 11 has an upraised edge 13, said edge having formed therein a plurality of notches 14 which are adapted to prevent the entry of gravel, trash and the like into the drain.

It is an object of this invention to have a leak proof drain. To that end, there is inserted between the flange 11 on the top portion and the flange 6 on the main body portion, a sealing medium 15. Though this medium may comprise any one of numerous materials, it is shown in the drawings and herein described as roofing paper. The roofing paper is first inserted over the outwardly extending flange 6 of the main body portion and then the entire top structure of the drain is set down upon the roofing paper in such a manner that the depending bead 12 formed on the flange 11 forces the sealing medium downwardly into the depressions 7 of the flange 6 formed on the main body portion of the drain. In order to cause a tight seal between the top and main body portions, there are provided bolts 16 extending from the area between the beehive and the edge 13 downwardly into the main body portion of the drain.

This drain is adapted primarily for use in concrete roofs or floors. A primary advantage of the drain is that it may be set into the concrete structure at almost any stage in the construction. It may for instance be set in place just prior to

the pouring of the concrete. After the pouring of the concrete the beehive structure may then be attached.

A primary advantage of this drain is the interchangeability of the top portion thereof so that it may be attached either for use as a roof drain or a floor drain. Heretofore, drains, including the drain shown in my Patent No. 2,284,416, were constructed in such a way that the top portion and the main body portions could not be readily detached one from the other. It became necessary, therefore, to manufacture and use completely separate drainage units for roof use and floor use. In this application the main body structure 2 and the lower portion 5 of the drain are constructed as a unit, but these two sections are completely separate from the uppermost portion of the drain. For this reason, it is quite convenient to affix a different type of top to the drain depending upon the application to be made with the drain. For instance, if the drain is to be applied to a roof a beehive type top, such as is shown in Figs. 1, 2, 3 and 4 may be utilized. However, if the drain is to be used in a floor, the same basic structure may be used except that a flat top such as is shown in Figs. 5 and 6 may be affixed to the main body portion in the same manner in which the beehive structure was attached as was previously described.

This drain is provided with an efficient and quick operating slip joint between the lower portion of the drain and a standard drain pipe. To this end, the lowermost portion 5 of the drain is larger than a standard drain pipe and provided with an outwardly extending bell 17 forming within the cylindrical lower portion of the drain an enlarged circumferential recess 18. An internal flange 29 is integral with the lower end of the portion 5 and has an internal diameter just slightly larger than the O. D. of the pipe 19. A standard drain pipe 19 is first inserted upwardly through flange 29 into the lower portion of the drain leaving a circumferential space between the standard drain pipe and the drain body. Some appropriate sealing means such as oakum is compressed into the space between the standard pipe and the drain. Approximately one-half of the space is filled with oakum. The remaining space between the drain pipe and the drain is filled with lead which fills the enlarged recess 18 thereby fastening the joint.

One of the principal advantages of my invention is the provision of a combination floor and roof drain having improved reinforcing qualities when used in concrete. It is well known that when drains are installed in either concrete roofs or concrete floors the concrete immediately surrounding the drain soon begins to crumble and fall away making it possible for the drain to be moved in such a manner as to shake it loose. In order to prevent this crumbling it became necessary to provide a reinforcing means for connecting the drain to the concrete. My previous Patent No. 2,284,416 shows a type of reinforcement comprising lugs attached to the main body of the drain and having connected thereto outwardly extending reinforcing rods. The reinforcing means shown in this application are considerably improved over that shown in my previous patent. The means comprises a circumferential perforated disc 20 which is affixed to the circumference of the cylindrical main body portion of the drain. This perforated disc 20 formed of two halves 21 and 22,

having thereon a plurality of perforations 23 extends outwardly from the drain a sufficient distance to adequately reinforce the concrete into which the drain is set. It is shown in Figs. 1 through 4 as extending slightly beyond the outer circumference of the gravel stop 4. This perforated plate serves numerous advantages. If the concrete generally shown as 24 into which the drain is set has not been previously reinforced, the perforated disc will supplant the ordinary reinforcement and prevent the concrete from cracking and crumbling. If the concrete has previously been reinforced by ordinary reinforcing means the perforated disc 20 serves an important function in that it serves as a means for connecting the drain proper to the reinforcing means already in the concrete. This provides a continuous reinforcement for the concrete up to the drain and does not permit the concrete immediately surrounding the drain to be unprotected. In addition to the foregoing advantages the perforated disc also serves the function of partially supporting the weight of the concrete above it. Such support adds immeasurably to the prevention of any crumbling of concrete immediately surrounding the drain.

In order to properly affix the two halves of the perforated plate or disc in the drain, the lower portion of the main body portion 2 of the drain is provided with a plurality of outwardly extending lugs 25 having at least one hole such as is shown at 26 formed therein from top to bottom. Each half of the perforated plate is designed to rest on portions of more than one of the outwardly extending lugs as shown in Fig. 4. In order to prevent vertical or horizontal movement of the perforated disc, tie-wires 27 are used, one end of each being inserted through holes in the disc downwardly through the bore of a lug; the opposite end of the tie-wire is inserted downwardly through another hole in the disc and along the outward end of the lugs 25. The free ends of each tie-wire are then twisted together and tightened to draw the disc 20 firmly against lugs 25 and inwardly against the outer surface of the main body portion 2 of the drain.

The preceding description was primarily directed to Figs. 1, 2, 3 and 4 which show the drain in the embodiment used for roof installation. The same type drain 101 is shown in Figs. 5 and 6 except that the beehive type portion has been replaced by a flat plate 100. This flat plate which is bolted by means of bolts 116 to the main body 102 of the drain has therein a plurality of longitudinally extending apertures 110 cut therein. The remaining structure of the drain is the same as that shown in Figs. 1 through 4, the drain comprising a main body section 102 and a lower section 105 having inserted therein a standard drain pipe 119, said pipe and lower section of the drain being connected by a slip joint of lead 108 and a suitable packing 109 such as oakum.

The drain shown in Figs. 5 and 6 is a completely sealed drain pipe by virtue of the sealing tar paper 115 which is inserted between the top portion and the main body of the drain and the flat plate 100.

This drain is also provided with reinforcing means for the concrete floor 124 or with means connecting the main body of the drain to previously installed concrete reinforcements. The means comprises a circular perforated disc 120 just as the disc 20 in Figs. 1 through 4.

Though the description of both of these drains has been given in terms of a concrete base, it is to be understood that such a drain may be in-

stalled in any other suitable composition such as metal tile, marble, cement, terrazzo or wood sheathing. In the event the installation is made in wood sheathing, the top portion of the drain is provided with wood screws which are used to affix the drain to a wooden structure.

I claim:

1. A drain comprising a main body portion adapted to extend through a supporting structure; a top portion; a lower portion adapted to receive a standard drain pipe; a reinforcement extending outwardly from said lower portion to reinforce said supporting structure and a slip joint between the standard drain pipe and the lower portion of the drain comprising an outwardly extending bell on said lower portion providing an enlarged circumferential recess between the standard drain pipe and the lower portion of the drain; a flange extending inwardly from the bottom of the lower portion of the drain and being of a diameter just slightly larger than the outer diameter of the standard pipe, said bell and flange providing one continuous enlarged enclosure between the lower portion of the drain and the standard drain pipe adapted to receive oakum packing and a lead seal therein, said lead seal filling the circumferential recess provided by said bell.

2. A drain comprising a main body portion adapted to extend through a supporting structure, said main body portion having at its top edge a radial flange with an annular reinforcing bead on its under surface and an annular groove in its top surface directly over said bead, a top portion comprising a strainer having a radial flange with a bead in its under surface registering with the groove in said main portion when assembled, disengageable means for locking the portions together, lugs affixed to and extending

outwardly from said main body portion at a point to lie within the supporting structure through which said main body portion extends when installed, and a divided, perforated ring secured to said lugs and extending radially outwardly to reinforce the supporting structure, the inner circumference of said ring being only slightly larger than the outer circumference of said main body portion at said ring.

3. A drain comprising a main body portion adapted to extend through a supporting concrete structure with its upper surface approximately flush with the upper surface of the concrete structure, a removable strainer portion disposed above said main body portion, said main body portion having a lower portion adapted to receive a standard drain pipe, means for reinforcing the concrete adjacent said drain comprising a plurality of lugs affixed to and extending outwardly from the main body portion of said drain at approximately the juncture of the lower portion therewith, an annular perforated disk affixed to said lugs and extending outwardly into the concrete, and tie wires inserted through said annular plate and around said lugs to hold said annular plate against horizontal and lateral movement.

ARTHUR GORDON.

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