May 31, 1960 B. J. DALEY 2,938,437

SURFACE DRAINAGE RECEIVERS

Filed May 22, 1958

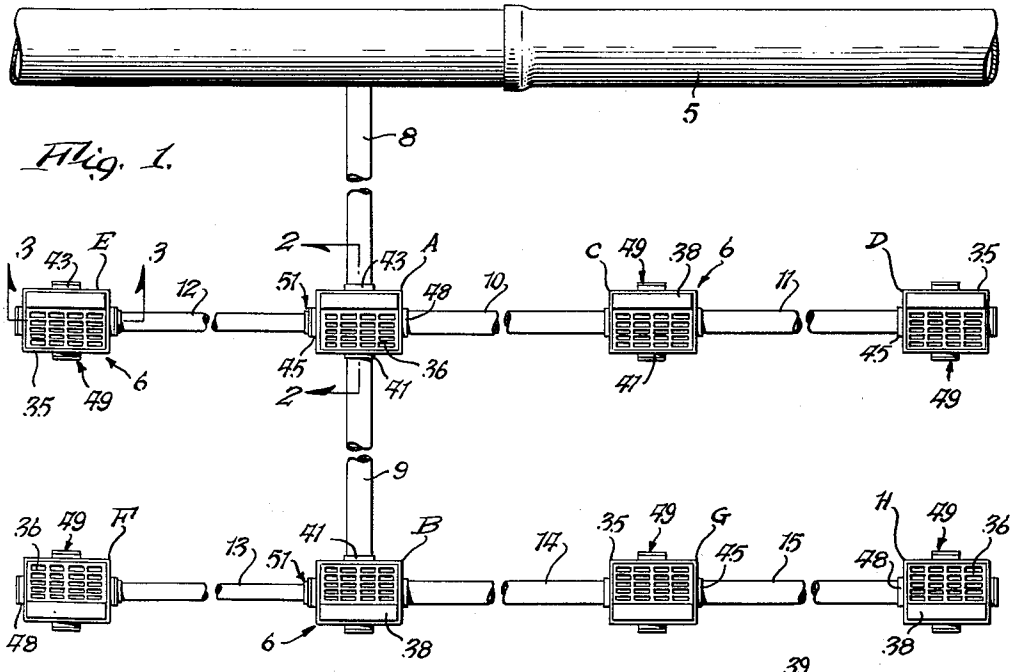


Fig. 1.

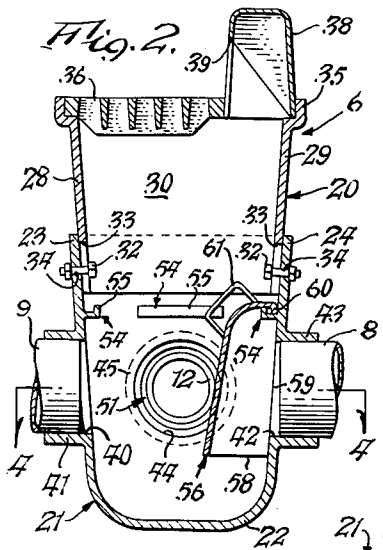


Fig. 2.

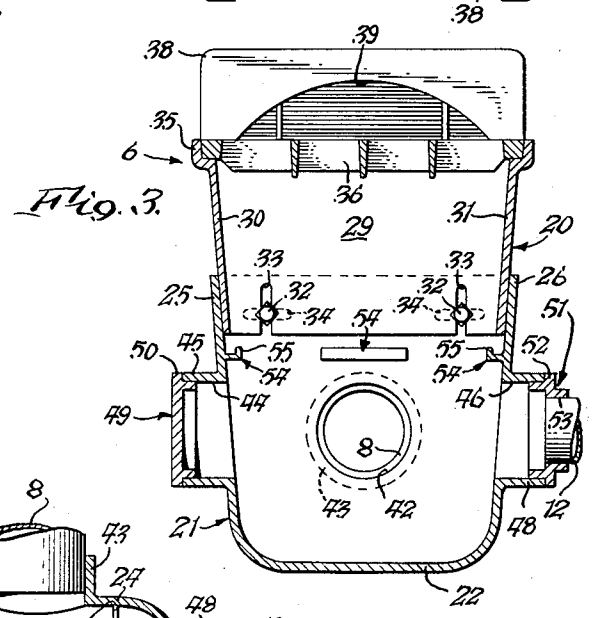


Fig. 3.

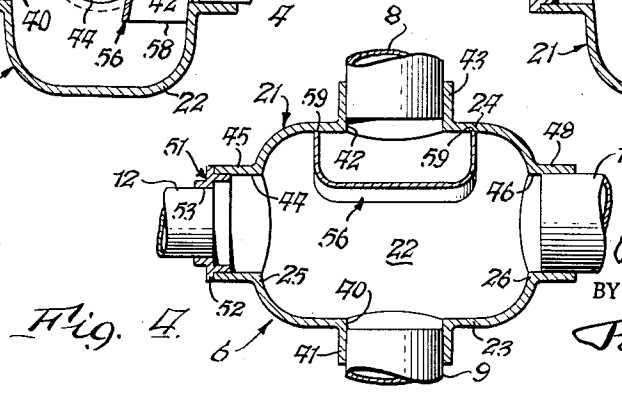


Fig. 4.

INVENTOR.
Bernard J. Daley
BY
Popp and Sommer
Attorneys.

United States Patent Office 2,938,437 Patented May 31, 1960

2,938,437

SURFACE DRAINAGE RECEIVERS

Bernard J. Daley, 81 Colton Ave., Lackawanna, N.Y.

Filed May 22, 1958, Ser. No. 737,088

2 Claims. (Cl. 94—31.1)

This invention relates to surface drainage receivers and is more particularly shown as embodied in a curb receiver adapted to be set into a highway along the curb thereof to receive the water draining from the pavement and to conduct it to a sewer.

The principal object of the present invention is to provide such a receiver which is adapted to be connected in various combinations with underground piping through which the water is conducted to the sewer. Thus the receiver of the present invention is adapted to be connected at any of its four sides with an outlet pipe, such as the underground pipe leading to the sewer in which event a water seal is provided over its outlet to prevent sewer gases from backing up through and escaping from the receiver. Any or all of the remaining three sides can be connected to intake underground pipes leading to other receivers whereby the drainage from these other receivers are discharged into the receiver having its outlet line so connected with the sewer. Further, receivers made in accordance with the present invention can be used in tandem or in or at the end of any branch line by connecting the underground pipes to corresponding sides of the receivers, only the final receiver requiring the provision of a water seal over its outlet to prevent the back up of sewer gas, although each receiver is provided on all four sides with a means for attaching such a water seal.

Other objects and advantages of the invention will be apparent from the following description and drawings in which:

Fig. 1 is a diagrammatic representation of a group of receivers each constructed in accordance with the invention and arranged along opposite sides of a street and showing the manner in which they can be interconnected to all drain into a common receiver at the downstream end of the group and which in turn discharges into a sewer.

Fig. 2 is a vertical transverse section taken generally on line 2—2, Fig. 1, through the final receiver at the downstream end of the system as shown in Fig. 1 and showing the manner in which the side used as an outlet to the sewer is provided with a water seal.

Fig. 3 is a vertical section taken generally on line 3—3, Fig. 1 and showing the manner in which the receiver of the present invention can be used at the end of a branch pipe of reduced diameter.

Fig. 4 is a horizontal section taken generally on line 4—4, Fig. 2.

In the diagrammatic representation, Fig. 1, the numeral 5 represents a large underground sewer pipe into which the water from the various receivers, each indicated generally at 6, shown in Fig. 1, discharge. Of these receivers 6 the one designated at A is common to all of the receivers at the downstream end of the system and receives the drainage therefrom and discharges through a large diameter outlet pipe 8 into the sewer 5. Another side of the receiver A is shown as connected through a large diameter pipe 9 with a receiver B on

the opposite side of the street. Another side of the receiver A is shown as connected by a large diameter pipe 10 with a receiver C on the same side of the street, this receiver being shown as connected in tandem through a large diameter pipe 11 with a terminal receiver D on the same side of the street as the receiver A. The last of the four sides of the receiver A is shown as connected by a small diameter pipe 12 with a terminal receiver E on the same side of the street as the receiver A.

The receiver B is shown as having one of its sides connected by a small diameter pipe 13 with a terminal receiver F while the other side of the receiver B is shown as connected through a large diameter pipe 14 with a receiver G which in turn is shown as connected through a large diameter pipe 15 with a receiver H.

The principal object of the present invention is to provide a single receiver which can be adapted for use as any one of the receivers A to H having for this purpose necks on each of its four sides any one of which is adapted to be connected to an inlet or outlet pipe of large or small diameter; any one of which is adapted to be closed or blanked off; and any one of which is adapted to be covered with a bell or hood to provide a water seal over its outlet neck when this outlet neck is connected to the sewer in which obnoxious gases may accumulate.

The receiver shown is made of cast iron and is adapted to be set into the ground along the curbs of the street and has an upper part 20 telescopically fitted within a bottom part 21. The bottom part 21 is in the form of a bowl-shaped receptacle and has a rounding bottom 22 and is of generally rectangular shape in horizontal section, the edges of the rounding bottom merging into a front wall 23, a rear wall 24 and end walls 25 and 26. These walls are flat at their centers and diverge upwardly so that the bottom part is of square funnel-shaped form having a top opening for the admission of surface water. The upper part 20 telescopes into this top opening and is of generally rectangular form in horizontal section having a front wall 28, a rear wall 29 and end walls 30 and 31, these walls being made as a single casting and diverging upwardly so that the upper part is also of square funnel-shaped form. It is apparent that the upper part 20 can be set at different elevations with reference to the lower part 21 and to secure the two parts together in any selected relation bolts 32 can be provided in the front and rear walls of the two parts 20, 21 and which are shown as each extending through a vertical slot 34 extending upwardly from the lower edge of the upper part 20 and through a horizontal slot provided in the bottom part 21. It will be seen that these slots permit of considerable flexibility in aligning the parts 20, 21 in different relations to each other to suit the depth of piping laid, the surface of the highway and any angular conditions of piping or surface encountered.

The mouth of the upper part 20 is enlarged to provide an offset rim 35 into which is set a cast metal rectangular grate 36. The rear part of this grate is shown as extending upwardly to form a hood 38 which conforms to the curb (not shown) of the highway and is provided with a large arcuate opening 39 in its front wall so that in the event the horizontal grate 36 is covered with debris the surface water can escape through the arcuate opening 39 of the curb part 38 of the grate. This curb part 38 can be made integral with or separate from the horizontal grate 36.

The present invention is essentially embodied in the lower or bowl-shaped receptacle part 21 of the receiver to permit this lower part to be connected in various ways with outlet and inlet piping of different sizes and in different patterns and to permit the outlet pipe, where required, to be provided with a water seal. The invention is also

directed to blocking off such portions of the lower part 21 of the receiver as are not used.

To this end the front wall 23 is provided with an opening 40, this opening being arranged along the vertical center line of this wall and spaced a substantial distance above the bottom 22. This opening 40 is surrounded by an outwardly projecting horizontal cylindrical neck 41. Axially in line with the opening 40, the rear wall 24 is provided with an opening 42 of the same diameter and which is surrounded by a similar outwardly projecting horizontal neck 43. The side wall 25 is provided with opening 44 which is in horizontal axial alinement with the axes of the openings 40, 42 and is of the same size. This opening 44 is surrounded by a horizontal outwardly projecting cylindrical neck 45. Axially in line with the opening 44 the wall 26 is provided with a circular opening 46 which is of the same size as the other openings and is similarly surrounded by a horizontal outwardly projecting neck 48. The necks 41, 43, 45 and 48 are all cast integrally with the lower part 21 and their axes are in rectangular cruciform arrangement, that is, their axes are horizontal and intersect one another at right angles at the center of the receiver.

It will be seen that any of these four necks 41, 43, 45 and 48 can be used to connect with the underground piping in the different relations as illustrated in Fig. 1. Thus, if any of the necks are to be blocked off, as occurs with all of the receivers illustrated in Fig. 1, except the receiver A, the plugs 49 illustrated in Figs. 1 and 3 can be employed. These plugs are in the form of simple cylindrical plugs fitting within any of the necks 41, 43, 45 or 48 and each having a radially enlarged rim 50 which seats against the end of the neck. From Fig. 1 it will be seen that the terminal receivers D, E, F, and H at the ends of the supply branches to the system illustrated are provided with three such plugs; the receivers C and G are provided with two such plugs; the receiver B is provided with one such plug and no plugs are used for the receiver A because all of those four necks are in service.

As indicated, the internal diameter of the necks 41, 43, 45 and 48 are all the same and are adapted to receive the largest diameter pipe to be used, such as the pipes 8, 10, 11, 14 and 15. While this large diameter pipe is used the pipe is merely fitted within the corresponding neck, such as is illustrated by the pipes 8, 9 and 10, Fig. 4. It will be seen that the receivers A, B, C, D, G and H all have such large pipe connections.

Where a smaller diameter pipe, such as the pipes 12 and 13 are to be used, the adapter 51 illustrated in Figs. 1, 3 and 4 is employed. This adapter is in the form of a cast iron ring having a large diameter end adapted to fit within any of the necks 41, 43, 45 or 48 and having an enlarged rim 52 which seats against the end of the neck. On the opposite side of the rim 52 the adapter 51 is of reduced diameter to provide a bore 53 of a size adapted to receive the small diameter pipes 12 or 13 with a snug fit. It will be seen that such adapters are used in conjunction with the receivers A, B, E and F, Fig. 1, to accommodate the relatively small diameter pipes 12, 13.

A water seal is provided for the outlet of the terminal receiver at the downstream end of the system, this being the receiver A as illustrated in Fig. 1. Since any of the four necks 41, 43, 45 or 48 may be called into service as the outlet for the terminal receiver at the downstream end of the system, provision is made on each of the four walls 23, 24, 25 and 26 to support the member which provides the water seal, the inner surfaces of these walls being identical, preferably flat, around the openings 40, 42, 44 and 46 for this purpose. These supporting means as illustrated comprise a horizontally elongated lug or shelf member 54 formed integrally with each of the walls 23, 24, 25 and 26 and projecting inwardly therefrom in centered relation and above the corresponding openings 40, 42, 44 and 46. The outboard edge of each of these lugs or shelves 54 is upturned, as illustrated at 55, to provide a hook upon which the water seal means can be hung.

The water seal means is shown as comprising a cast metal hood 56 which is open at its bottom, as illustrated at 58, and is open at one side to provide a vertical edge 59 arranged in a common plane and adapted to fit against any of the four flat walls 23, 24, 25 or 26. At its top end adjacent the edge 59 the hood is provided with an integral downturned tongue 60 adapted to fit over any of the hook-shaped lugs 54. The hood 56 can be provided near its top with an integral handle 61 for convenience in placing the hood upon any of the hook shaped lugs 54 or in removing the hood for the purpose of cleaning the receiver. The open bottom of the hood 56 is arranged, of course, below the bottom of any of the openings 40, 42, 44 or 46 so that standing water on the bottom 22 of the lower part 21 of the receiver is always above the lower edge of the hood 56 thereby to provide an effective water seal against gases from the sewer 5 backing up through the receiver A.

It will be seen that regardless of whether the pipe 8 leading to the sewer 5 is connected with the openings 40, 42, 44 or 46, that opening can be covered with the water seal hood 56 by simply hooking the hood 56 upon the corresponding hook shaped flange 54. It is only necessary to provide the final receiver on the downstream end of a system with such a hood since this is the only receiver connecting with the sewer pipe 5.

It will be seen that in accordance with the present invention the single form of receiver as illustrated can be used in many different relations, such as the terminal receivers at the upstream end of the system; the terminal receiver at the downstream end of the system and intermediate receivers which may have two, three or all four of its necks 41, 43, 45 and 48 in service. It will also be seen that any neck not used can be blocked off and that the necks can be connected with different sizes of piping and also with the terminal downstream pipe leading to the sewer in which event the hood or water seal 56 is used to prevent backing up of sewer gas from the sewer.

I claim:

1. A surface water receiver of the character described, comprising a bowl-shaped receptacle having an open top for the admission of surface water and having generally vertical front, rear and side walls, a generally circular opening in each of said side walls near the vertical centerline thereof, the inner faces of said walls around said openings being substantially identical to one another, tubular necks of substantially the same inside diameter severally surrounding said holes and projecting horizontally outwardly therefrom, each of said necks being adapted to receive an underground pipe for the movement of drain water into and out of the receiver, a removable hood having an opening in its bottom and having one side open to provide an edge conforming to each of said substantially identical inner faces, and means arranged to support said hood with said edge against any one of the corresponding inner faces and in surrounding relation to the corresponding opening, said hood extending below said opening to provide a water seal for said corresponding opening to prevent the backup of sewer gas therethrough.

2. A surface water receiver of the character described, comprising a one-piece casting having an open top for the admission of surface water and having generally flat upwardly diverging front, rear and side walls in generally rectangular relation to one another in horizontal section, a generally circular opening in each of said walls substantially at the vertical centerline thereof, cylindrical necks of substantially the same smooth, cylindrical inside diameter integral with said walls and severally sur-

rounding said holes and projecting horizontally outwardly therefrom, the axes of each opposite pair of said necks being substantially coincident and the axes of all of said necks being in horizontal cruciform arrangement, each of said necks being adapted to slidingly receive an underground pipe providing for the movement of drain water into and out of the receiver, a removable hood having an opening in its bottom and having one side open to provide an edge arranged in a common plane to fit against the inner face of either of said flat side walls, and means arranged on the inside of each of said walls above the corresponding opening therein to support said hood with said edge against the corresponding inner face and in surrounding relation to the corresponding opening to prevent the backup of sewer gas therethrough.

References Cited in the file of this patent

UNITED STATES PATENTS

196,631	Collie	Oct. 30, 1877
245,721	Henning	Aug. 16, 1881
468,141	Tomlinson	Feb. 2, 1892
623,198	Rogers	Apr. 11, 1899
834,784	Wilber	Oct. 30, 1906
1,652,702	Curtis	Dec. 13, 1927
2,518,620	Hughes	Aug. 15, 1950

FOREIGN PATENTS

721,012	Great Britain	Dec. 29, 1954