Sept. 7, 1937. A. E. AKERS 2,092,492

CATCH BASIN FOR SEWERAGE SYSTEMS

Filed Dec. 19, 1936

FIG. 1

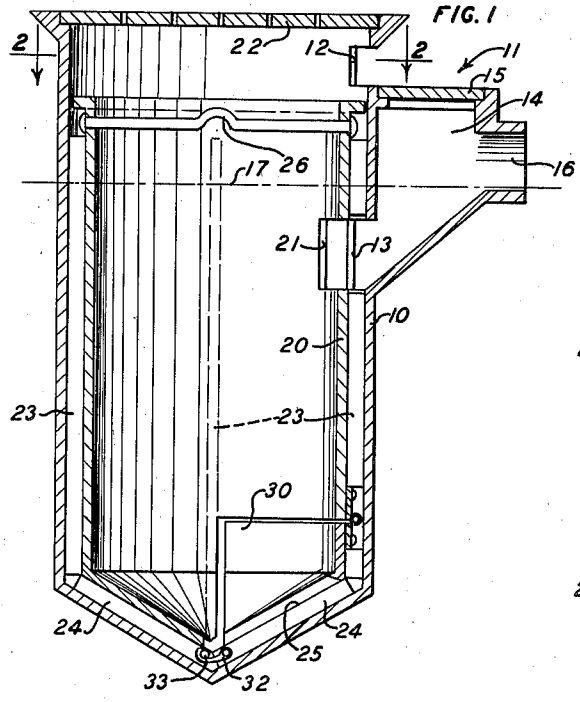


FIG. 3

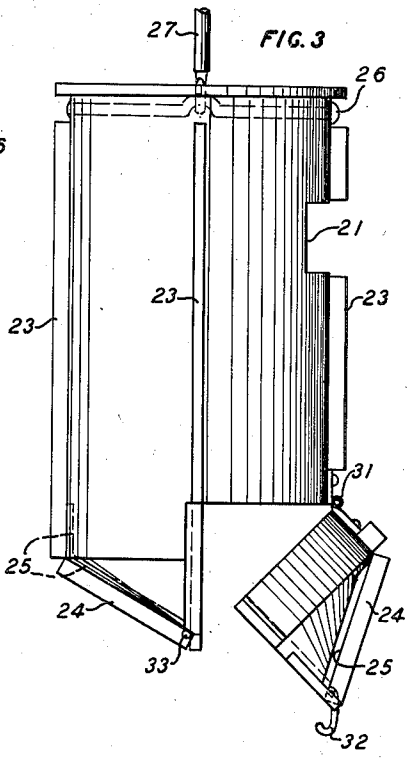
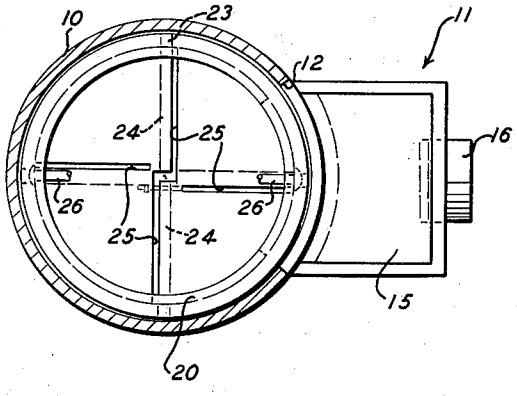


FIG. 2



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CATCH BASIN FOR SEWERAGE SYSTEMS

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9 Claims. (Cl. 182—2)

This invention relates to sewer constructions, and more particularly to improvements in catch basins for facilitating the cleaning of sewerage systems.

Among the objects of the invention are the provision of a removable inner catch basin or receptacle which separates and retains the silt and solid substances from sewage, whereby such refuse can be readily removed in a single lifting operation by a derrick and dumped through a lower hinged trap door in the removable basin into a truck; the provision of means so that upon rotation or oscillation of the empty inner catch basin within the outer basin any remaining sand and silt will be forced from the outer basin into the inner catch basin which will then drop into place without further cleaning; the provision of means for expediting the centering of the inner catch basin in the outer basin and for overcoming and disrupting any suction with the walls of the outer basin to readily permit the removal of the inner catch basin; and the provision of a combination street inlet and sewer catch basin which is of simple, efficient, and inexpensive construction for accomplishing a plurality of functions with a minimum of parts.

Other objects of the invention will become apparent from the following description when taken in conjunction with the drawing, wherein like reference numerals denote corresponding parts throughout the several views.

In the drawing,

Fig. 1 is a vertical central section of the assembled cylindrical outer and inner catch basins with a combination street inlet and outlet constructed according to a preferred embodiment of the invention;

Fig. 2 is a transverse section thereof taken on line 2—2 of Fig. 1; and

Fig. 3 is a side elevational view of the inner catch basin shown removed from the outer basin and held in dumping position with its trap door or hinged gate swung open.

The sewer construction in accordance with the embodiment of the invention shown in the drawing comprises an outer catch basin 10 provided with a combination inlet and outlet, designated generally by the reference numeral 11. The combination inlet and outlet has a curb inlet opening 12 and an outlet 13 which opens into a chamber 14. The chamber 14 is provided with a removable cover 15, the upper surface of which is flush with the street level. The chamber 14 also has a tubular portion 16 which connects with an underground sewerage system (not shown).

A cylindrical inner catch basin or receptacle 20 is placed within the outer catch basin so that an outlet opening 21 in the removable basin 20 coincides with the outlet opening 13 of the outer basin, after which a cover 22 is placed in position so as to be on a level with the sidewalk. The openings 21 and 13 are completely below the water level, which level is indicated by a horizontal line 17 in Fig. 1, to effect a water seal and prevent the leakage of sewer gas. As shown in the drawing, the inner removable basin 20 is provided with four sets of vertical vanes 23 fastened to or integral with the outside walls of the removable basin 20. Also four vanes 24 are fastened to or are integral with the bottom of the inner basin and extend from the lower ends of the vanes 23 to the inverted apex of the conical bottom of the inner basin 20.

Adjacent the vanes 23 and 24 in the bottom portion of the inner basin are four openings 25 through which water and silt are forced from the outer basin into the inner basin when the later is rotated or oscillated. These vanes 23—24 keep the inner basin 20 properly centered within the outer basin 10 and scrape the muck and silt from the outer basin. Moreover, the muck and water sometimes form a suction between the walls of the inner and outer basins and make it difficult to remove the inner basin from the outer basin in cleaning operations. This suction is readily disrupted by the movement of the vanes 23—24 when the inner basin 20 is slightly oscillated or rotated thus permitting the ready removal of the inner basin when so desired without application of any destructive forces.

Secured within the top of the inner basin or receptacle 20 is a bail 26 whereby upon engagement with a hook 27 of any suitable elevating means (not shown), such as a derrick, boom, or crane, which may be mounted on a truck, the removable basin 20 is lifted out over the vehicle into which the muck and silt is to be dumped. The bail 26 is also used to rotate or oscillate the inner basin.

The lower portion of the inner basin as disclosed in Figs. 1 and 3 includes a trap door or gate 30 which is hinged at 31 so that when unlatched the door swings into an open dumping position as shown in Fig. 3. This trap door is normally held closed by a latch 32 which engages a catch 33.

In operation the refuse, silt, sand and other dirt mixed with the surface water runs into the gutter against the curb and then through the inlet 12 into the inner basin or receptacle 20 where the

solid material, such as sand and silt, sinks or settles to the bottom and the liquid passes out through outlets 21 and 13 into the chamber 14 and thence through the tube 16 into the underground sewerage system. The surface water from the street in passing over the cover 15 of the combination inlet and outlet 11 deposits silt in any cracks or openings and effects a seal between the cover and the supporting frame of the combination inlet and outlet to prevent the leakage of sewer gases.

In the event the sewer becomes stopped or clogged up the cover 15 may be removed to thus permit easy access into the chamber 14 and through the tube 16 into the underground sewerage system without resorting to the old expensive method of tearing up the city streets with subsequent costly repairs.

In cleaning the sewerage system disclosed herein, the cover 22 is removed and the hook 27 of any suitable lifting device is engaged with the loop in the bail 26 whereby the inner basin or receptacle 20 is removed and swung over a truck; whereupon the latch 32 is released and the muck, silt, sand and other refuse is dumped through the gate or door 30 into the vehicle for carting it away. If the muck has formed a suction between the walls of the inner and outer basins thus making it difficult to raise the inner basin 20, this suction may be disrupted and readily overcome by slightly rotating the basin or receptacle 20 by engagement of any suitable rotating mechanism with the bail 26 to move the vanes 23—24.

After the refuse is dumped into the truck, the trap door or gate 30 is swung back into closed position and the latch 32 locked over the catch 33. Before the empty inner basin is returned the street cover 15 is removed to give access to the chamber 14 whereupon any silt or refuse therein is pushed into the outer basin 10. The empty inner basin is then lowered into the outer basin and rotated therein, whereby the vanes 23—24 scrape away muck or silt from the walls and the conical bottom of the outer basin 10 and force such refuse and silt through the four openings 25 into the inner basin or receptacle 20. Thus the catch basin is completely cleaned in a very simple and extremely quick operation and the inner basin 20 drops into its lowermost position inside the outer catch basin 10 without resorting to the expensive manual cleaning operations by a number of laborers with buckets and shovels heretofore necessary.

The inner and outer basins with combination inlet and outlet may be made of any suitable corrosion resisting material, such as cast iron, nickel alloys, aluminum alloys, steel alloys, etc.

While the principles of this invention have been described with reference to the embodiment shown in the drawing and with reference to a particular case, it is to be understood that the several features of the invention may be embodied in different forms for different uses, that it is not the intention to limit the claims to the particular embodiment disclosed, and that any terms imported from the specification into the claims are to be considered as words of description rather than of limitation.

For instance, the construction shown in the drawing is adaptable for use as a catch basin or collector in a main sewer under a roadway; that is the inner basin 20 and the outer basin 10 without the openings 12, 13 and 21 and without the combination inlet and outlet 11 may be positioned under a manhole with the top of the modified outer basin flush with the bottom of the main sewer. When it is desired to clean the inner and outer basin, the manhole cover is removed and a tube or rim of sufficient height is fitted into the uppermost portion of the outer basin 10 to keep the water and sewage back until the inner basin 20 is lifted out, dumped, replaced and rotated into lowermost position to force any remaining silt or muck from the outer basin into the inner basin as hereinbefore described. After which the tube or rim is removed from the top of the outer basin 10 to permit the sewage to flow again into the inner basin to separate the solid matter from the liquid.

Also the catch basins shown in the drawing may be provided with a grating in place of the cover 22 shown in Fig. 1. In this modification, all that part of the outer catch basin 10 above a horizontal line coinciding with the lowermost part of the opening 12 is dispensed with and the grating is placed in this modified top of the outer basin 10 over the removable inner basin so that the upper surface of such grating is on a level with the street surface and flush with the cover 15. With this simple modification the catch basins can be used to embody a sewer inlet in the middle of a roadway or street whereby surface water from the street passes through the street grating into the inner basin 20 and thence through the openings 21 and 13 through the chamber 14 to the underground sewerage system connected with the pipe 16.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. In a sewer system, a catch basin, a movable receptacle adapted to be positioned therein for cleaning the catch basin, and means for turning the receptacle to force any sewage from the basin into the receptacle.

2. In a sewer system, an outer basin, a removable inner basin for collecting solid matter separated from the sewage and for cleaning the outer basin, and means for moving the inner basin within the outer basin to force any collected solid matter from the outer basin into the inner basin in a cleaning operation.

3. In a sewer system, a catch basin, removable means positioned within the basin for removing the solid matter from the sewage, and means carried by the removable means for forcing any solid matter from the catch basin into the removable means when the latter is rotated.

4. In a sewer system, a catch basin, a receptacle removably supported therein having slots, vanes secured to the receptacle adjacent the slots, and means for lifting the receptacle from the basin and for rotating the receptacle whereby the vanes force muck and silt from the catch basin into the receptacle through the slots therein.

5. In a sewer system, an outer basin, a removable inner basin having openings and vanes, the latter centering the removable basin within the outer basin, means secured to the removable basin whereby it may be rotated to permit the vanes to force any solid matter collected from the sewage from the outer basin through the openings into the removable basin and whereby it may be lifted out of the outer basin, and a trap door in the bottom of the removable basin to permit the dumping of the silt and refuse collected from the sewage.

6. In a sewer system, a drainage catch basin, and a combination inlet and outlet carried thereby including a chamber having a removable cover flush with the level of the street and the lower

edge of an inlet opening, said chamber also provided with an inlet opening through which surface water flows from the catch basin into the chamber which has an outlet opening connected to an underground sewerage system.

7. In a sewer system, a drainage catch basin having an inlet through which surface waters flow from street gutters, a cover therefor having its top surface flush with the sidewalk level, an outlet chamber into which the water flows from the catch basin, and a cover for the outlet chamber having its upper surface flush with the street level.

8. In a sewer system, a catch basin, a removable receptacle positioned within the basin for collecting solid matter separated from sewage, means protruding outwardly from the receptacle and engaging the walls of the catch basin and means for rotating the receptacle to move the said protruding means to disrupt any suction with the basin walls to expedite the easy removal of the receptacle therefrom.

9. In a sewer system, an outer catch basin having a conical bottom and an inlet and an outlet, a removable inner catch basin, having a conical bottom and an outlet in communication with the outlet of the outer catch basin, vanes carried by the inner basin on its bottom and side walls adjacent slots therein, means for moving the vanes to force solid matter from the outer basin through the said slots into the inner basin, said last mentioned means also permitting the lifting of the inner basin from the outer basin, and a hinged gate in the bottom of the inner basin which is adapted to be opened to dump the collected solid matter therethrough.

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