United States Patent [19]

Thompson

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[54] **STREET DRAIN FOR USE WITH A SEWER SYSTEM**

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[51] **Int. Cl.** **E03d 1/00**

[58] **Field of Search** 210/163–166, 210/532; 404/2, 4, 5, 25; 61/10, 11, 16, 17

[56] **References Cited**

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FOREIGN PATENTS OR APPLICATIONS

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Primary Examiner—Theodore A. Granger
Attorney, Agent, or Firm—Oltsch & Knoblock

[57] **ABSTRACT**

A street drain which is to be used with a sewer system and which includes a water collection basin, positioned in the street, and a dry well generally located adjacent the street. The collection basin has two discharge openings. One of the openings is placed in communication with the dry well and the other of the openings is placed in communication with the sewer system. The basin discharge opening which is connected into the sewer system is so located relative to the dry well-connected discharge opening that water, such as storm water, entering the collection basin will first pass into the dry well until the dry well is filled and thereafter will pass into the sewer system.

1 Claim, 5 Drawing Figures

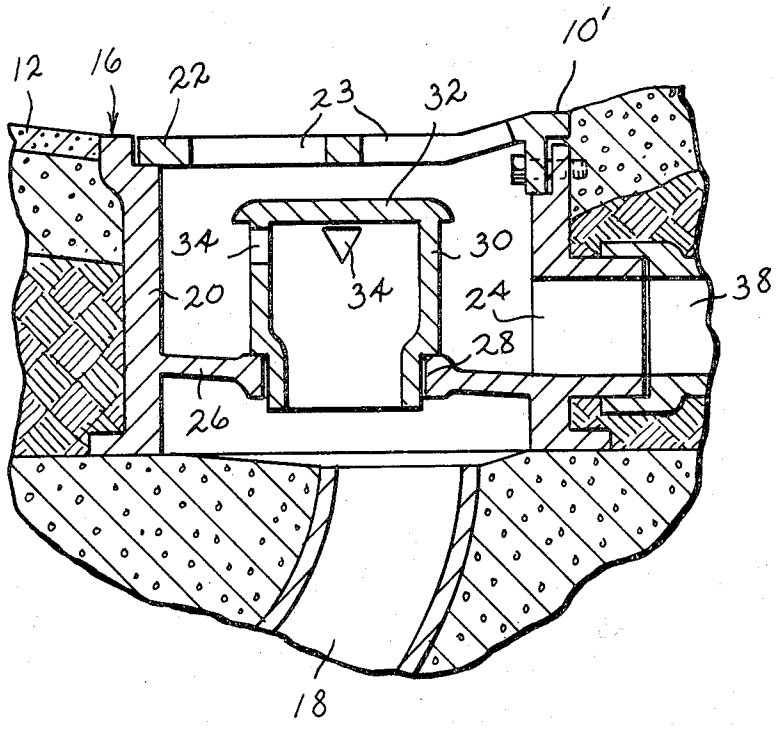
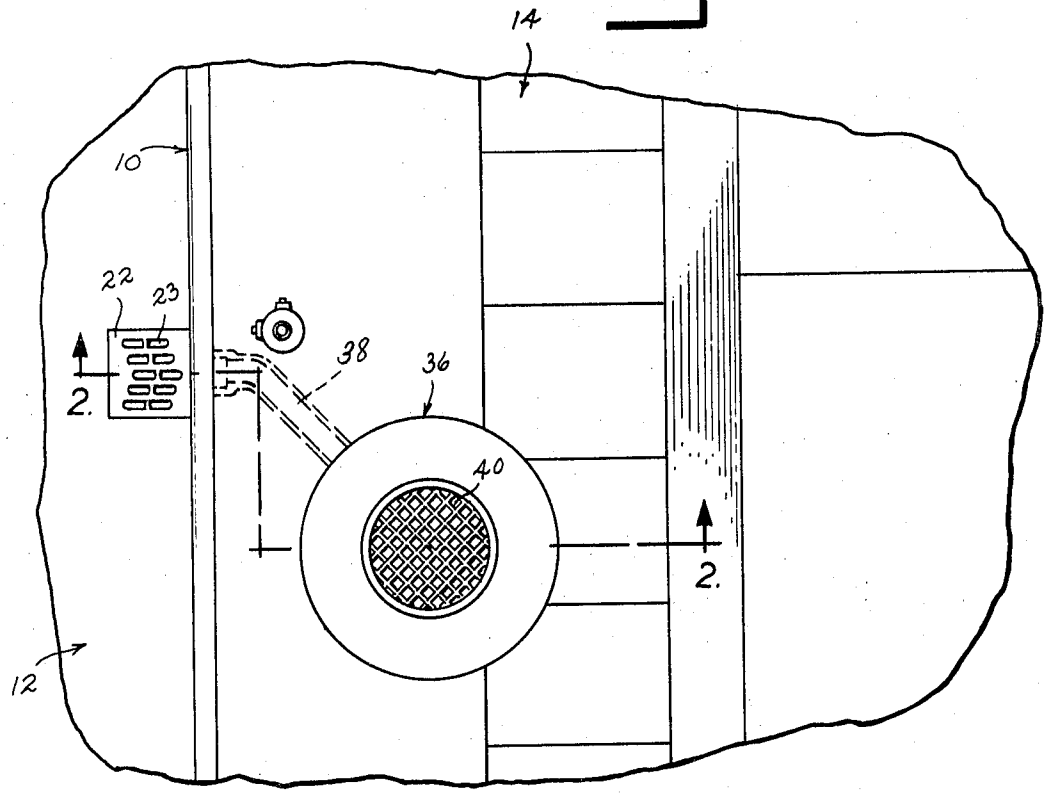


Fig. 1


14
10
22
23
38
36
2.
40
2.
12

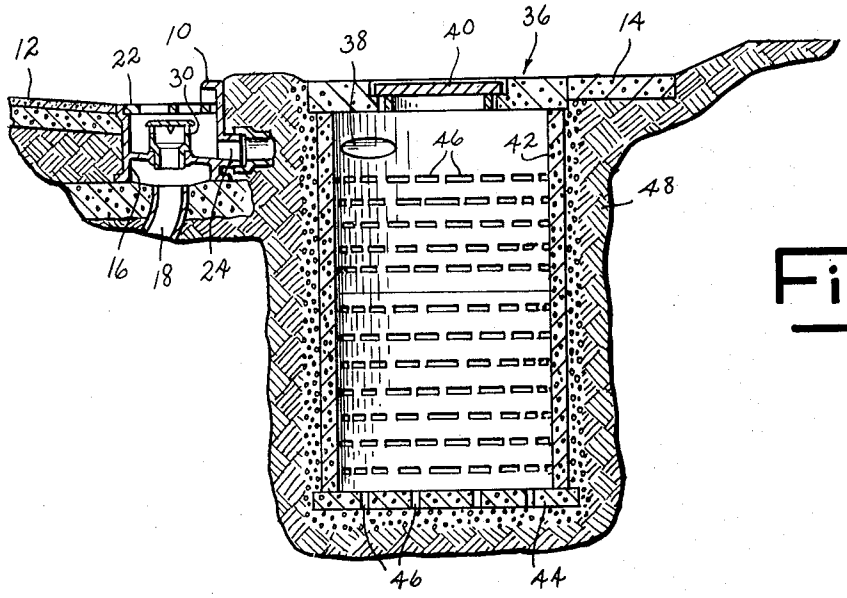

12
22
10
30
38
40
36
14
46
42
48
16
18
24
46
44

Fig. 2

Fig. 3

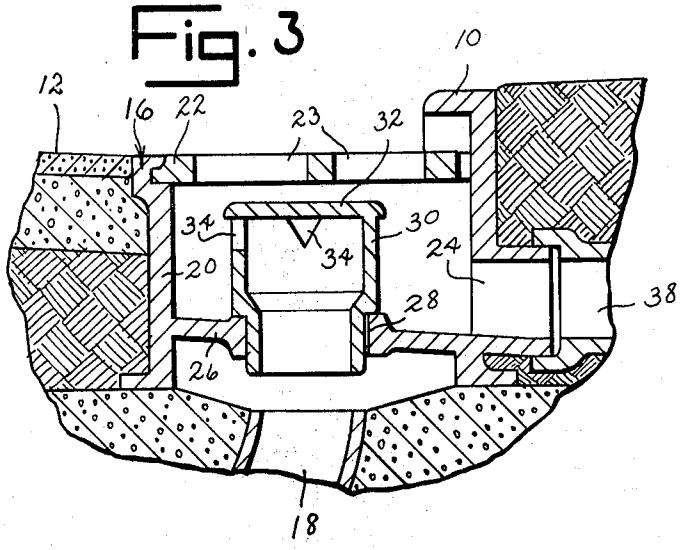


Fig. 4

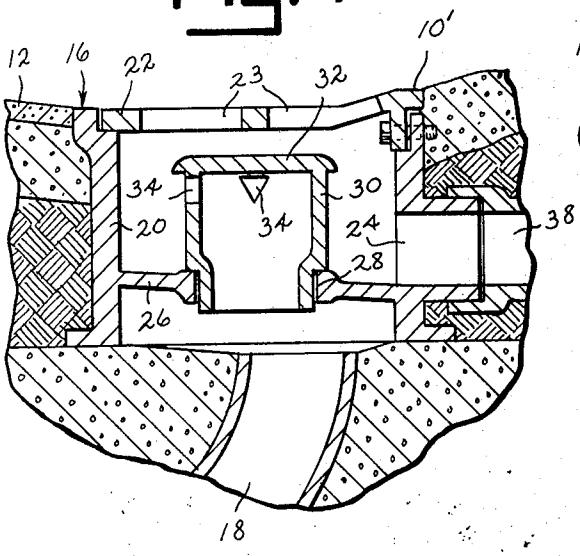
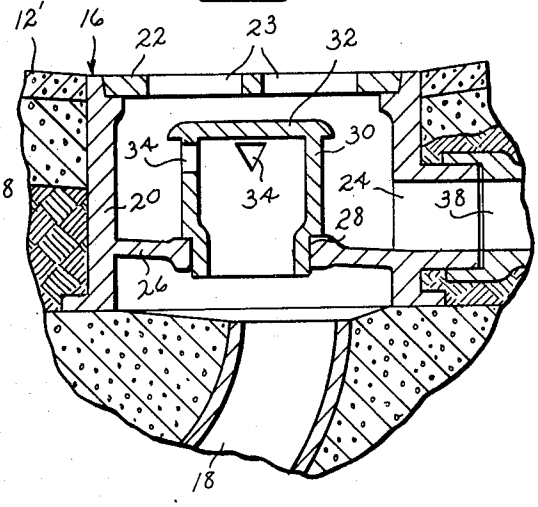


Fig. 5



STREET DRAIN FOR USE WITH A SEWER SYSTEM

BACKGROUND OF THE INVENTION

This invention relates to street drains which are used in conjunction with a sewer system and will have particular application to drains utilized to collect storm and other types of surface water for deposit within existing sewer systems.

Heretofore, communities having combined sanitary and storm sewers have been continually troubled with storm water which passes from streets into the sewer system, causing a mixing of the storm water and sewage water and a resulting overloading of the sewer system with overflow of the mixed sewage and storm water into streams and rivers. Additionally, the diversion of rain and storm water from streets into municipal sewer systems causes silt, debris and similar matter to be washed into the systems, thereby necessitating their frequent cleaning.

As illustrated in U.S. Pat. No. 3,626,823, it has been heretofore suggested to provide streets with storm water drains which are connected solely into separate dry wells located preferably in conjunction with paralleling sidewalk systems. This type system for storm water collection makes no provision for overflow should the dry wells fill during heavy rain storms. Additionally, the system envisioned in U.S. Pat. No. 3,626,823 incorporates the dry wells into the sidewalk system, thereby necessitating the construction of new sidewalks in situations where there may be existing usable sidewalks.

This invention, the description of which follows, makes use of and supplements existing storm water drains by substantially reducing the water flow into the sewer system, as well as substantially reducing the flow of silt, debris and other similar material into the sewer system.

SUMMARY OF THE INVENTION

A street drain used in conjunction with a sewer system and including a dry well and a water collection basin disposed in the street to collect the water therefrom. The collection basin includes a first discharge opening which is placed in fluid communication with the dry well and a second discharge opening which is placed in fluid communication with the sewer system. The first and second discharge openings in the collection basin are so located relative to each other that substantially all water flow into the basin passes first into the dry well until the dry well is filled, at which time any additional water flow into the basin will pass in a regulated manner into the sewer system.

Accordingly, it is an object of the invention to provide a street drain which is for use with a sewer system and which serves to divert storm water into a dry well until the dry well is filled, at which time such water flows into the sewer system with much of the silt, debris and similar material carried by the water being deposited in the dry well during its initial filling.

Another object of this invention is to provide a street drain having a dry well for the collection of storm water and being usable in conjunction with an existing sewer system.

Another object of this invention is to provide an economical means of preventing pollution and contamination through the overloading of an existing sewer system by converting all of a portion of the existing combined sanitary and storm sewer system into a sanitary sewer system only.

Other objects of this invention will become apparent upon a reading of the invention's description.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top plan view of a street drain constructed in accordance with the teachings of this invention and utilized with a raised curb system.

FIG. 2 is a sectional view taken along line 2—2 of FIG. 1.

FIG. 3 is a detailed view of the collection basin utilized in the street drain shown in FIG. 1.

FIG. 4 is a detailed view of the collection basin in this invention utilized with a roll-type curb.

FIG. 5 is a detailed view of the collection basin in this invention utilized in the near center of a street.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The preferred embodiments illustrated are not intended to be exhaustive or to limit the invention to the precise forms disclosed. They are chosen and described in order to best explain the principles of the invention and its application and practical use to thereby enable others skilled in the art to best utilize the invention.

The drain illustrated in FIGS. 1–3 is utilized in conjunction with a curb **10** bordering a street **12.** It is to be understood that the term "street" as utilized in this description and in the following claims also includes roadways, alley-ways, and similar areas open to vehicular and even pedestrian traffic and having storm sewer manholes or drains formed therein. A sidewalk **14** may parallel street **12.** A collection basin **16** is located within street **12** adjacent curb **10** and over a conduit **18** which connects into a sewer system (not shown) which may be of the sanitary type or combined storm and sanitary type.

Collection basin **16** includes a side wall **20** which is preferably annular and which may be integrally formed with curb **10.** A cover **22** having a plurality of drain openings **23** formed therein is carried by the upper end portion of basin side wall **20.** Cover **22** is removable so as to permit repair and cleaning of basin **16.** A discharge opening **24** is formed in basin side wall **20.** Basin **16** includes a lower end wall **26** which has an opening **28** formed therein. Opening **28** is preferably located directly over conduit **18** leading to the sewer system. A tubular member **30** fits within opening **28** and is supported by end wall **26** of the basin. Tubular member **30** extends upwardly from end wall **26** and terminates in an upper end which is located spacedly below cover **22.** A cap **32** spans the upper end of tubular member **30** and is located below cover **22.** Cap **32** is preferably integrally formed with tubular member **30.** The upper end of tubular member **30** has a plurality of openings **34** formed therein under the cap **32.** Openings **34** are located at an elevation which is above the elevation of discharge opening **24** in collection basin side wall **20.**

For ease of manufacture, repair and exchangeability of components, it is preferred that tubular member **30** be of separate construction and removably seated upon lower end wall **26** of collection basin **16.** The size and number of openings **34** can be varied, such as by ex-

changing tubular members **30** having different openings **34,** so as to regulate the rate of water flow into conduit **18** and the connected sewer system. Openings **34** are designed, by size and number, so as to prevent overloading of the sewer system after the dry well has filled.

A dry well **36** is provided, preferably in close proximity to collection basin **16.** A conduit **38** is connected at one end to discharge opening **24** in the collection basin and extends into dry well **36,** near the top thereof. Dry well **36** may be of a variety of constructions and is provided with a removable cover **40** which allows access into the dry well for purposes of cleaning and repair. The dry well **36** illustrated in the drawings includes a cylindrical concrete side wall **42** and a concrete bottom wall **44.** Each wall **42** and **44** has a plurality of openings **46** formed therein which allow the water which is accumulated within the dry well to seep into and be absorbed by the surrounding soil **48.**

FIGS. **4** and **5** are illustrative of modified collection basin constructions. In FIG. **4** collection basin **16** is modified so as to accommodate a rolling curb **10'.** Cover **22** with the collection basin of FIG. **4** is designed so as to form a portion of curb **10'.** In FIG. **5,** collection basin **16** is designed so as to be utilized in the center of a street **12'** having a drainage surface which tapers toward the collection basin. In each of the collection basins shown in FIGS. **4** and **5,** openings **34** in tubular member **30** are formed slightly below the upper edge of the tubular member.

During a storm, water will drain into collection basin **16** of the above described embodiments, flow through discharge opening **24** and conduit **38** into dry well **36.** If the rain is not sufficiently hard or of long enough duration to cause dry well **36** to fill, no water will pass into conduit **18** and into the sewer system. But should dry well **36** become filled during a prolonged or heavy storm, all additional water flowing into collection basin **16** will then pass through openings **34** into tubular member **30,** down into conduit **18** and into the sewer system. During the filling of dry well **36,** the silt and other debris upon street **12** or **12'** will be deposited in dry well **36** so that the water, which passes through tubular member **30** and into conduit **18** after the dry well is filled, will be relative clean and free from silt and such other debris. Periodically, cover **40** of the dry well can be removed to permit the cleaning of the dry well. The designed capacity of each dry well will depend upon the amount of rain fall and period of rain fall duration for a given geographical area.

It is to be understood that the invention is not to be limited to the details above given, but may be modified within the scope of the appended claims.

What I claim is:

1. A drain adapted for connection with a sewer and with subsurface water collection means independent of said sewer and from which water collected therein is absorbed into the ground, comprising a basin having side and bottom walls and a cover having an aperture therein through which said water enters said basin, said basin having a discharge opening at a lower part thereof, conduit means connected to said discharge opening for connecting said discharge opening with an upper part of said water collection means, said basin bottom wall having an opening therein defined by an upwardly extending open ended tubular member which extends to a level at or above the level of the uppermost part of said discharge opening and which terminates below the level of said cover aperture, and second conduit means connected to said tubular member for directing into said sewer water discharged from said tubular member.

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