Dec. 1, 1959 G. P. KUNKEL ET AL 2,915,083

CATCH BASIN BACKUP CONTROL

Filed April 11, 1958

Fig.1

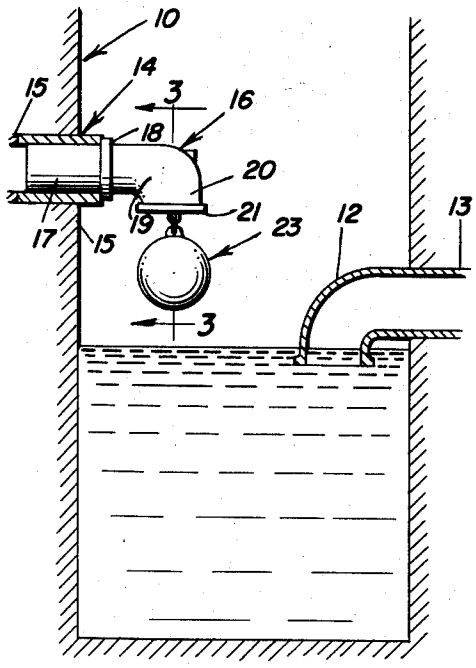
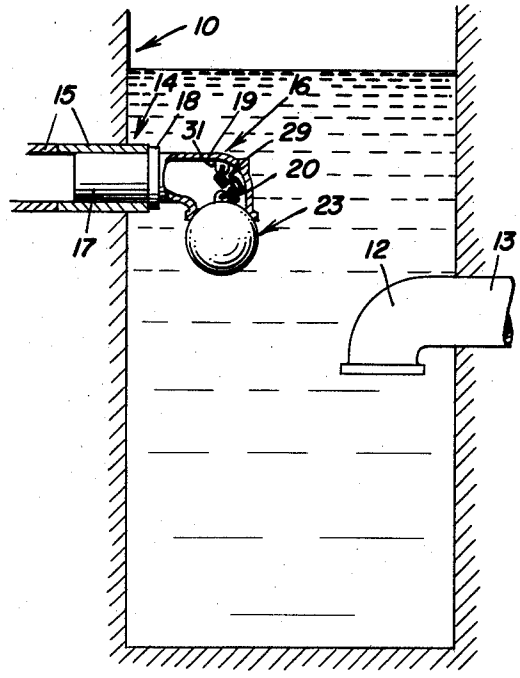


Fig.2



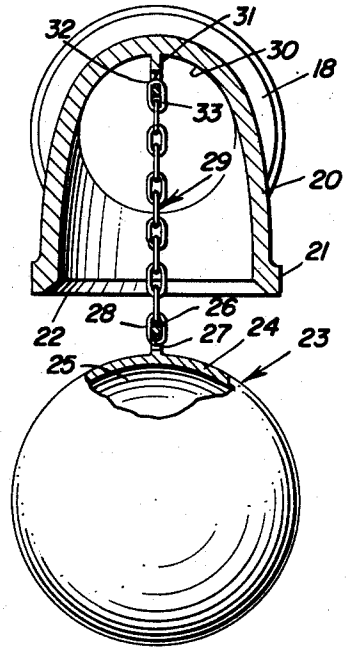


Fig.3

Gerhardt P. Kunkel

Fred K. Koeppel

INVENTORS

BY Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

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CATCH BASIN BACKUP CONTROL

Gerhardt P. Kunkel, Bellwood, and Fred K. Koeppel, Forest Park, Ill.

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This invention relates in general to sewage systems and pertains more particularly to improvements in catch basin systems.

The usual catch basin system includes a catch basin assembly having connection with a main sewer line and a drain tile system discharging into the catch basin, which drain tile system extends from the catch basin to a point within the confines of the floor plan of the house for connection to a drain in the basement floor. Particularly in older houses, the drain tile systems comprise simply a series of end to end loosely abutted drain tiles of clay or the like material, and in the event that the sewer becomes flooded and the water level rises within the catch basin, the pressure head will be immediately transferred to and through the drain tile system causing water to spray outwardly through the loose joints between the individual tiles and in such a manner as to flush out the gravel beneath the basement floor and to exert a pressure head underneath the basement floor. This eventually will cause cracking and heaving of the basement floor whereafter the situation is further aggravated by seeping of water into the basement through the crack in the floor thereof. It is therefore a primary object of this invention to provide means effectively isolating the drain tile system from the catch basin in the event the latter becomes flooded.

Another object of this invention is to provide a valve assembly which may be attached to an existing drain tile system within a catch basin and which includes a float valve which will travel with the water level within the catch basin to effectively isolate and seal off the drain tile system from the catch basin should the latter become flooded.

Still another object of this invention is to provide a valve assembly of the character described above wherein the valve assembly includes a shank portion of an external diameter suitable for snug insertion within a drain tile projecting into the catch basin and permitting the same to be effectively sealed therewith so as to isolate the drain tile system from the catch basin when the same becomes flooded.

Another object of this invention is to provide a device of the character described which may be easily and readily installed by a home owner, plumber or a catch basin serviceman and which may be applied to any existing system.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a vertical sectional view taken through a catch basin and illustrating the operative association of the valve assembly constructed in accordance with this invention with the existing drain tile system;

Figure 2 is a view similar to Figure 1 but illustrating the catch basin in a flooded stage; and

Figure 3 is an enlarged vertical section taken substantially along the plane of section line 3—3 in Figure 1 and illustrating the details of internal construction of the control valve assembly.

Referring at this time more particularly to Figure 1, the reference character **10** indicates in general a catch basin assembly which may be constructed in accordance with any conventional practice. Reference numeral **12** indicates the elbow of main sewer line **13** which extends into the catch basin **10** and which elbow is downturned as shown to communicate directly with the catch basin assembly.

The reference numeral **14** indicates in general a drain tile system which includes a plurality of end to end abutted individual clay tiles **15**, one of which projects into the catch basin at a level above the main sewer line **13** and which system extends from the catch basin beneath an associated basement floor, not shown, for eventual connection to a drain, not shown, in the basement floor, as is conventionally provided.

The reference character **16** indicates in general the attachment which forms this invention and which consists of a control valve assembly for association with the drain tile system **14**. For this purpose, the assembly **16** includes a shank portion **17** having an external diameter of a size to fit snugly within that drain tile **15** which projects into the catch basin **10** and which is sealed suitably thereto as by means of an appropriate cement, not shown, such as sewer pipe cement. For the purpose of properly locating the assembly **16** relative to the drain tile **15** and to more appropriately form an effective seal therewith, the assembly **16** may be provided with a radially projecting collar **18** at the juncture between the shank **17** and the elbow portion **19** of the valve assembly **16**.

The elbow portion **19** terminates in a downturned bell portion **20** having, at its mouth, a radially outwardly projecting reinforcing or rigidifying flange **21** and which is also provided on its inner side with a beveled or tapered valve seat surface **22**, see particularly Figure 3.

Operatively associated with the valve seat **22** is a ball float valve assembly indicated generally by the reference character **23** and which includes a spherical hollow body portion **24** defining a chamber **25** therewithin of such physical dimensions as to readily float the body portion **24** when the water level rises within the catch basin **10**. On the upper side of the body portion **24** is provided an ear **26** having an aperture **27** therein through which is projected the lowermost link **28** of a chain indicated generally by the reference character **29**. Depending from the roof portion **30** of the bell **20** is a tab or ear **31** having an aperture **32** therein receiving, therethrough, the uppermost link **33** of the chain **29**, the length of the chain being such as to normally permit the body portion **24** to hang free and clear of the tapered valve seat **22** at the mouth of the bell **20**.

During normal operation of the system, when the water level is at its normal height as is illustrated in Figure 1, the body portion **24** hangs free and clear of the valve seat **22** and permits water entering the system through the drain in the basement floor to flow therefrom through the tile system **14** and thence outwardly through the assembly **16** for discharge into the catch basin **10**. However, if the main sewer system **13** becomes flooded as illustrated in Figure 2 causing the water level to rise within the catch basin **10**, the body portion **24** is floated so that it seats and seals against the seat portion **22**, thus effectively isolating and sealing the drain tile system **14** against the pressure head developed within the flooded catch basin **10**. Therefore, there will be no pressure head within the tile system **14** which would normally cause water to spray from between the loose joints between adjacent

tiles 15 and flush away the gravel beneath the basement floor and permit a pressure head to develop beneath the basement floor to buckle, crack and heave the same upwardly to the ultimate destruction thereof.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In a catch basin system including a catch basin having a main sewer line connected thereto, and a drain tile system extending into the catch basin at a level higher than the main sewer line, a ball check valve assembly connected to the drain tile system within said catch basin and effective to seal the drain tile system against the effect of a pressure head within the catch basin when the same

becomes flooded, said check valve assembly including a shank portion fitted within that drain tile extending into the catch basin and being sealed thereto, a downturned elbow portion on said shank portion terminating in a bell portion having an open mouth provided with a tapered valve seat thereat, a spherical float valve for seating against said seat, and a flexible member terminally fixed to said float valve and in said elbow portion above said seat and suspending said float valve below said seat.

2. The combination of claim 1, said elbow portion having a tab therein to which said flexible member is terminally fixed.

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