(No Model.)

A. McCANN.

CHECK VALVE FOR SEWERS.

No. 592,814. Patented Nov. 2, 1897.

Fig. 1.

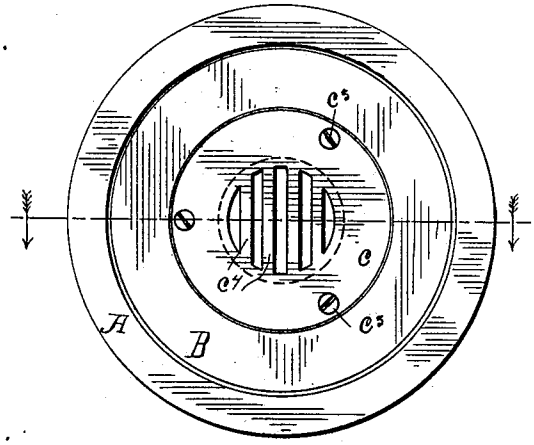


Fig. 2.

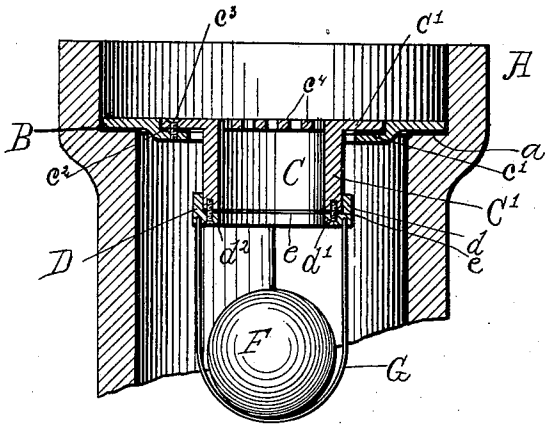


Fig. 4.

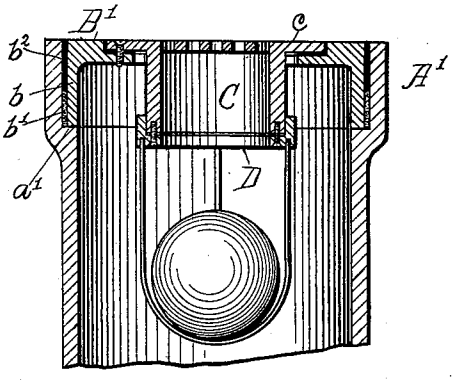
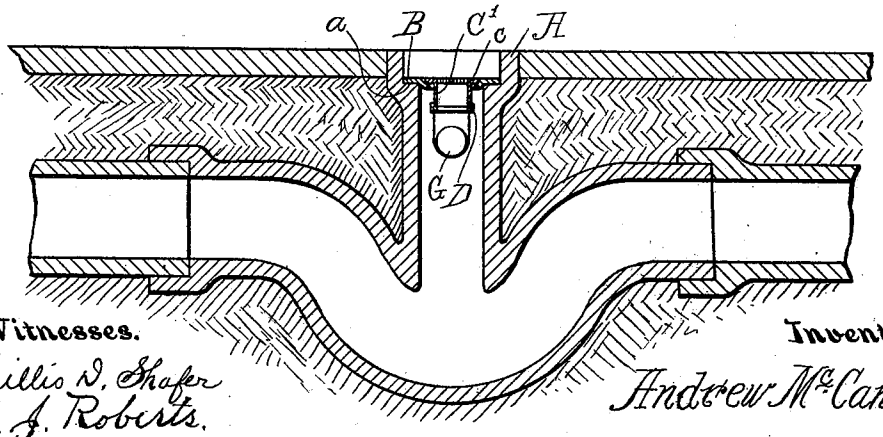


Fig. 3.



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UNITED STATES PATENT OFFICE.

ANDREW McCANN, OF CHICAGO, ILLINOIS.

CHECK-VALVE FOR SEWERS.

SPECIFICATION forming part of Letters Patent No. 592,814, dated November 2, 1897.

Application filed September 14, 1896. Serial No. 605,712. (No model.)

To all whom it may concern:

Be it known that I, ANDREW McCANN, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Check-Valves for Sewers, of which the following is a specification.

This invention relates to improvements in check-valves for sewers, and pertains more particularly to a check-valve adapted for use in the drain-pipe leading from the basement to the sewer, its purpose being to prevent the backflow of water into the basement in case of stoppage of the sewer or flooding of the latter.

The object of the invention is to provide a simplified and improved construction more convenient both of installation within the drain-pipe and of removal therefrom for inspection, cleaning, or repair than those heretofore known. At the same time its construction is such as to reduce the cost of the device as a whole.

The invention consists in the matters hereinafter described, and more particularly pointed out in the appended claims, and will be readily understood by reference to the accompanying drawings, in which—

Figure 1 is a plan view of the device set within the upper end or hub of a drain-pipe. Fig. 2 is a vertical axial section of the same. Fig. 3 is a similar view reduced in size showing the usual connection of the drain-pipe with the sewer-trap. Fig. 4 is a view similar to that of Fig. 2, showing a slight modification.

As shown in said drawings, A designates the upper end of a vertically-arranged drain-pipe, such as is usually arranged to lead from the bottom of the basement or floor to the sewer-pipe below. The drain-pipe is interiorly enlarged at its upper end to provide the usual rabbet or seat a, which serves as a convenient support for the check-valve.

Upon the seat a is mounted an annular disk-shaped supporting-ring B, forming the support within which the body C of the valve proper is mounted. The valve-body consists of a cylindric or tubular part C', arranged to depend centrally within the drain-pipe and provided at its upper margin with an integral radially-extending flange c, which is arranged to rest within an annular rabbet or seat c', formed around the margin of the aperture of the supporting-ring B. The depth of the rabbet c' is somewhat greater than the vertical thickness of the radial flange, so as to accommodate a packing ring or gasket c^2, preferably of rubber, between said flange and its seat and still permit the upper surface of the radial flange to lie flush with the upper surface of the supporting-ring, as indicated clearly in the drawings. The valve-body is conveniently secured within the supporting-ring by means of a plurality of screws c^3, inserted through the radial flange and engaging screw-threaded apertures tapped through the rabbet-ledge c'.

In order to prevent larger obstructions—such as sticks, lumps of dirt, and the like—from dropping into the drain-pipe, the upper end of the cylindric valve-body is shown as provided with a grating c^4, in the present instance cast integral with the main body.

The supporting-ring and valve-body hereinbefore described may be practically and satisfactorily made of ordinary cast metal—such, for instance, as cast-iron—and require no special finishing or dressing to render them ready for use, so that these parts of the device may be very cheaply constructed. In order, however, to afford a suitable non-corrosive valve-seat provided with an accurately formed and dressed seat upon which the valve will fit closely, the lower end of the valve-body is shown as provided with a removable valve-ring D, preferably made of brass or other non-corrosive metal, which may be suitably finished to provide a smooth and true valve-seat. As herein shown, said ring is suitably conformed to telescope at its upper margin d over the lower end of the valve-body and is provided at its lower margin with an inturned flange d', adapted to underlie the end margin of the valve-body, the inner margin of said flange terminating flush with the interior of the valve-body passage. The valve-ring is removably secured to the lower end of the valve-body conveniently by means of a plurality of screws inserted vertically through the inturned flange thereof and threaded into the lower end of the valve-body, and in order to provide a liquid and gas tight union between the valve-ring and the valve-body a rubber gasket or washer e is inserted between said parts. The lower surface of the

valve-ring is preferably arranged horizontally or at right angles to the passage through the valve-body, so as to form a right-angled corner d^2 at the inner margin of the ring, which serves as a valve-seat against which a hollow float-ball F is adapted to rest to close the passage. The ball is normally suspended a short distance below the end of the valve-body by means of a suitable cage G, herein shown as conveniently composed of two U-shaped wire loops arranged to cross each other at right angles and the upper ends of which are suitably secured to the removable valve-ring D by being inserted and soldered within suitable sockets formed in said ring.

In use the supporting-ring B will be secured in the upper end of the drain-pipe, usually by cementing permanently therein, so as to form a tight joint around the ring. The valve-body may then be secured in position in the supporting-ring by simply setting it in place therein and inserting the securing-screws. If it be desired to remove the valve-body so as to afford access to the interior of the drain-pipe, this may be done by simply removing the screws and lifting it out bodily. It is to be noted in this connection that the diameter of the aperture through the supporting-ring is greater than the external diameter of the valve-ring or any part of the cage, so that the valve-body and connected valve-ring and cage may be lifted out together when disconnected from the seat of the supporting-ring.

I am aware that similar check-valves have been invented before—as, for instance, that set forth in Patent No. 486,177, issued November 15, 1892, to C. Couzens, or that shown in Patent No. 526,649, issued to Hallock September 25, 1894; but none known to me possesses the features of improvement set forth herein. The provision of a removable valve-ring of non-corrosive material is a feature of importance, inasmuch as it enables me to produce a reliable and perfectly-operating valve at a minimum cost. Furthermore, the cage may be removed to afford access to the interior of the valve-body with the greatest facility, since it is carried or supported by the removable valve-ring. The making of the valve-seat in the form of a relatively sharp angular corner is important, because such a construction prevents the possibility of the rubber valve-ball from sticking fast, and also because this conformation is conducive to a more perfect shutting off or closing of the passage by the ball. By reason of the fact that the valve-body depends some distance below the upper end of the device the grating may be employed without interfering with the action of the ball. By reason of the fact that the supporting-ring need not be disturbed from its setting when the valve is removed the services of a plumber are not requisite in order to clean or inspect the drain or valve.

In Fig. 4 I have shown a modification more particularly adapted for use in an iron drain-pipe A′ instead of the ordinary tiling-pipe heretofore described. In this form the valve is identical with that previously described, except that its supporting-ring B′ is provided with a cylindric depending flange b, the lower edge of which is adapted to rest upon the ledge a' of the somewhat-deeper rabbet of the iron hub. The exterior diameter of the supporting-ring is a little less than the interior diameter of the enlarged part of the hub, and the annular space formed between these parts will usually be filled by a tamping of oakum b', occupying the lower part, and a filling of lead or cement b^2, run in on top of the oakum. Obviously these fillings will serve to form a close joint and hold the ring firmly in place.

I claim as my invention—

1. In a backflow check-valve for sewers and the like, the combination with a tubular valve-body provided with an annular flange adapted to support the valve-body vertically within a drain-pipe and a grating covering the upper end of said valve-body, of a combined removable valve-seat ring and cage comprising a ring of non-corrodible material removably secured upon the lower end of the tubular valve-body and a cage secured to said ring and arranged to depend below the latter, whereby both valve-seat ring and cage are removable together, and a float-ball confined within the cage and adapted to coöperate with the valve-seat ring to close the passage through the valve-body, the length of the valve-body being sufficient to prevent any part of the ball from rising above the upper end thereof.

2. In a check-valve for drain-pipes and the like, the combination of a tubular valve-body provided with a radially-outturned flange, a supporting-ring with which said flange is adapted to be removably connected, a removable valve-seat ring composed of non-corrosive material mounted upon the lower end of the valve-body, a buoyant valve-ball and a cage within which said ball is confined, secured to and depending from said valve-seat ring, the interior of the supporting-ring being such size as to permit the valve-body and connected valve-seat ring and cage to be withdrawn therethrough.

In testimony that I claim the foregoing as my invention I affix my signature, in the presence of two witnesses, this 9th day of September, A. D. 1896.

ANDREW McCANN.

Witnesses:
ALBERT H. GRAVES,
WILLIS D. SHAFER.