T. F. BUTLER.

TRAP.

APPLICATION FILED APR. 24, 1915.

1,211,283. Patented Jan. 2, 1917.

Fig. 1.

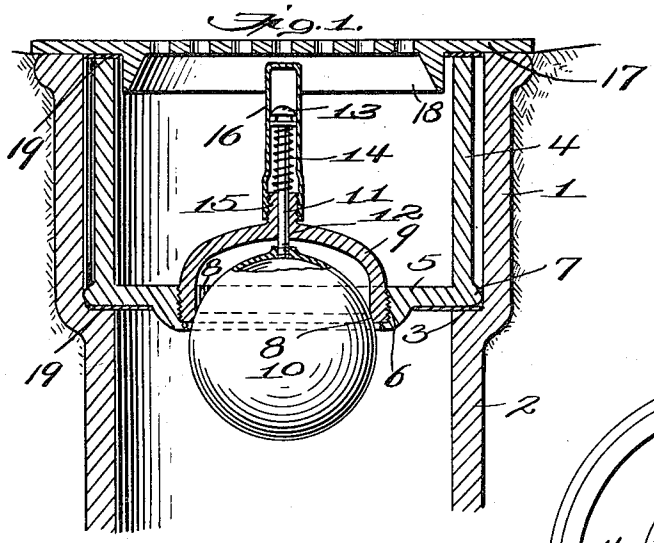


Fig. 2.

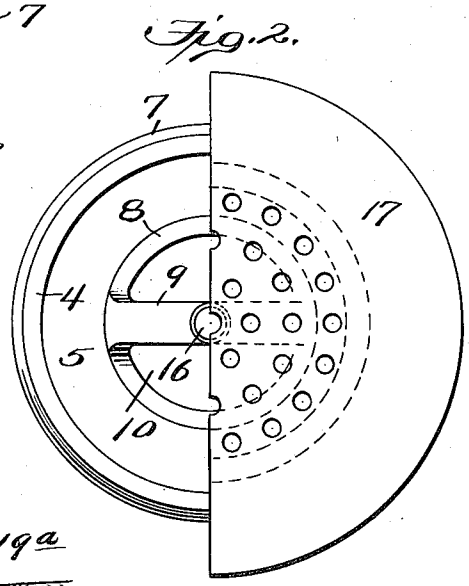
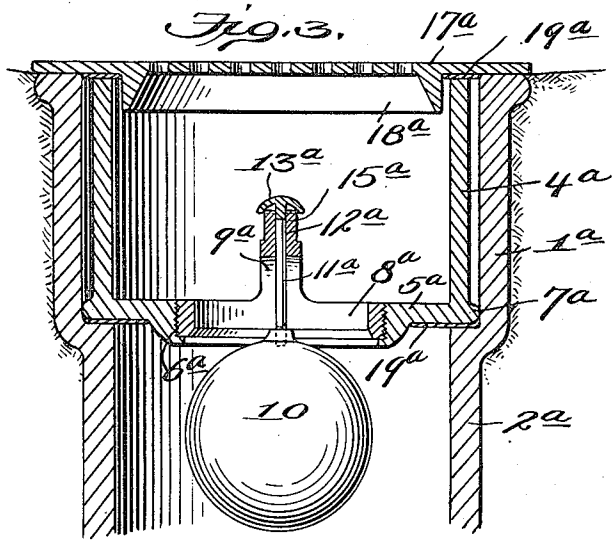


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

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TRAP.

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Application filed April 24, 1915. Serial No. 23,754.

To all whom it may concern:

Be it known that I, THOMAS F. BUTLER, a citizen of the United States, residing at Lorain, in the county of Lorain and State of Ohio, have invented new and useful Improvements in Traps, of which the following is a specification.

The present invention relates to drain traps and more particularly to traps of the character stated which are to be used in connection with sewer pipes.

It comprehends, briefly, an improved device of the general character specified which is so constructed as to effectively prevent back-flow of sewage and the escape of sewer gases from the sewer.

It further comprehends a construction such that the valve mechanism may be readily detached from the associated basin or body member of the trap whenever it is desirable or necessary to clean or repair said mechanism or to inspect the same for any other purpose, such removal, however, in no way requiring the withdrawal of the aforesaid basin either prior to or simultaneously with the removal of the valve mechanism.

In the drawings: Figure 1 is a vertical sectional view of the invention showing the same in combination with the hub end of the usual sewer pipe; Fig. 2 is a plan view of the parts constituting the invention, only half of the cover being shown so that the other parts of the invention may appear; Fig. 3 is a vertical sectional view at right angles to that shown in Fig. 1 and illustrating a slightly modified construction of the invention.

Similar reference characters denote similar and like parts throughout the specification and drawings.

Referring to Fig. 1, the numeral 1 designates the hub end of the usual pipe section 2 which is provided with the usual annular internal shoulder 3 at a point near the extremity of the pipe, and within which hub end the sewer trap, forming the present invention, is disposed. As here shown, the end 1 of the pipe lies flush with the surface of the ground to provide a sewage drain. The trap or basin 4 is preferably cylindrical so as to facilitate its insertion into the round pipes now generally used. The bottom 5 of the basin member has a threaded opening 6 formed substantially in the center thereof and of a less diameter than the opposite or upper end of the trap. The trap or basin 4 has a depth substantially equal to the length of the hub end 1 of the pipe, in which it is designed to enter and rest upon the shoulder 3, in the manner shown in Figs. 1 and 3. The bottom 5 of the trap has an annular external bead 7 which acts as a spacing member and thus provides a clearance between the walls of the trap and the hub end 1 of the pipe. This clearance permits access to all sides of the trap and facilitates the removal of the latter from the pipe 2. In other devices of this character rubber valve seats have been used and have been found to be impracticable since the same become worn and broken after a very short time. In the present invention it is proposed to use an annular valve seat 8 made of brass, or other suitable metal, externally threaded to be received in the threaded opening 6 in the bottom of the basin 4. The yoke or bridge member 9 formed on the valve seat 8, spans the opening therein, and is raised therefrom to extend upwardly within the trap and thereby provides a grasp for facilitating the removal of the valve-seat from the trap 4, by the hand or a wrench. A float-ball valve 10 is suspended from the yoke 9 by means of a valve stem 11 slidably extending through a suitable opening 12 in the yoke. To prevent the free end of the valve stem 11 from passing through the opening 12 and to hold the valve 10 in operative position relatively to the seat, the free end of the valve stem is provided with an enlarged head 13. The helical spring 14 surrounds the valve stem 11 between the head 13 thereon and the boss 15 on the yoke for normally holding the valve 10 upon its seat 8, thereby preventing the emanation of sewer gases from the sewer pipe or a back-flow of water into the trap member 4.

Threaded or otherwise secured to the boss 15 is a cylindrical housing 16 inclosing the valve stem and the helical spring 14, this housing being of such length as to accommodate the valve stem 11 when the valve is seated and being closed at its upper end to prevent dirt or other matter passing through the sewer from clogging or otherwise interfering with the proper operation of the valve mechanism. It will be obvious from the above that the yoke member 9 formed with the boss 15 and opening 12 provides a support for the valve and also a guide for

directing the movement of the valve upon the seat, all of which is integral with the latter. When it is required to replace the trap with a new valve seat, or to clean the valve mechanism, it is only necessary to unscrew the valve seat from the opening 6 of the basin and without necessitating the removal of the basin 4 from the sewer pipe end 1.

The trap is especially designed to be used in connection with drainage pipes at places such as basement floor drains, areaway drains, or the like, where there is liability of the sewer backflowing into the basement, etc. This type of trap, as shown in Fig. 1, is also designed particularly to prevent the escape of sewer gases therefrom. However, it will be apparent from the drawing that the arrangement of parts is such as will allow the drained water to pass freely into the sewer, the weight of the drain acting upon the valve 10 against the pressure of the spring 14 for opening the valve.

In Fig. 3, there is shown a slightly modified construction of the invention. This modified form is identical and similar to the preferred embodiment shown in Fig. 1, with the exception of the exact valve mechanism wherein the helical spring 14 and the spring housing 16 is dispensed with. The numerals designating the parts of Fig. 1 designate similar parts of Fig. 3, the exponent "a" being used to distinguish the two sets of numerals.

Referring particularly to Fig. 3, the yoke member 9^a has the valve stem 11^a of the valve 10 slidably extending through an opening 12^a therein, and the free end of the valve stem is formed with a wide flanged head 13^a, which sheds the downflowing drainage (when the valve is opened as shown) and thus prevents dirt or other substances from entering between the valve stem 11^a and the walls of the opening 12^a and impeding the operation of the valve 13. In this form of the invention, the float valve 10 may be held closed by water standing in the pipe 2^a or may be used in cases where it is only desired to have the valve to close when the water or sewage rises in the pipe 2^a.

In both forms of the invention a perforated cover 17 is provided which covers the entire upper end of the pipe 2 and has a downwardly extending annular flange 18 which is adapted to lie within the trap, thereby holding the cover 17 in position against lateral or sidewise movement. It may be found desirous to interpose suitable washers 19 between the bearing points of the trap 4 and the pipe 2 and cover 17, as is clearly shown.

I claim:—

1. As a new article of manufacture, a drain-trap for drain pipes, comprising a basin member adapted to be mounted in the end of the drain pipe, a removable perforated cover for the basin, said basin having an opening in the bottom thereof, a valve-seat consisting of an annular member disposed in the opening in said basin member, a yoke spanning and integral with said annular member, a float valve for said seat, and a valve stem projecting from the valve and slidably mounted in said yoke and having an enlarged head at its free end, said annular member being removably threaded in the opening in said basin for facilitating the removal of the valve and valve-seat from the basin without necessitating the removal of the latter from the drain pipe.

2. A drain trap for drain pipes, comprising, a basin member adapted to be inserted in the end of said pipe and a removable perforated cover therefor, said basin member having an opening in the bottom thereof, a valve seat consisting of an annular member, a yoke integral with said annular member and spanning the same, a valve for said seat, a valve stem projecting from the valve and slidably mounted in said yoke and having an enlarged head at its free end, a helical spring surrounding the valve stem between said yoke and said enlarged head for normally seating said valve, and a casing enveloping said valve stem and said spring and threadedly secured to said yoke, said annular member being removably threaded in the opening in said basin member for facilitating the removal of the valve and valve-seat from the basin member without necessitating the removal of the latter from the drain-pipe.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

THOMAS F. BUTLER.

Witnesses:
F. J. STARK,
WM. BURFORD.