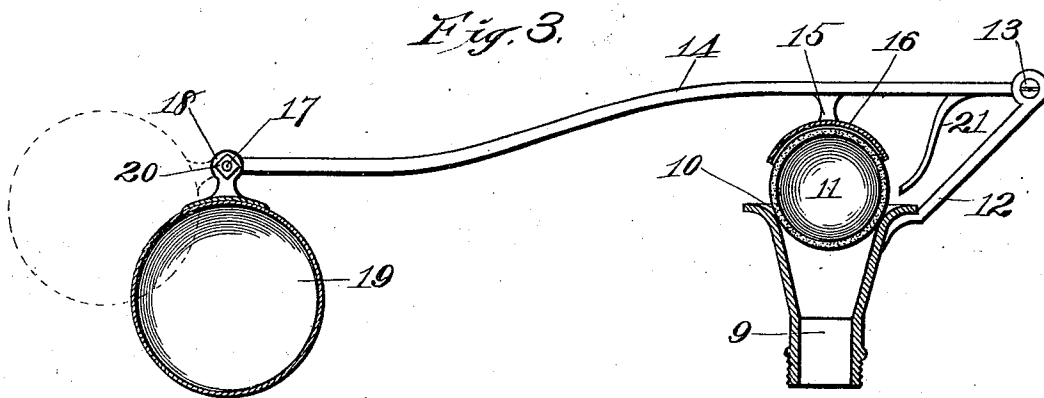
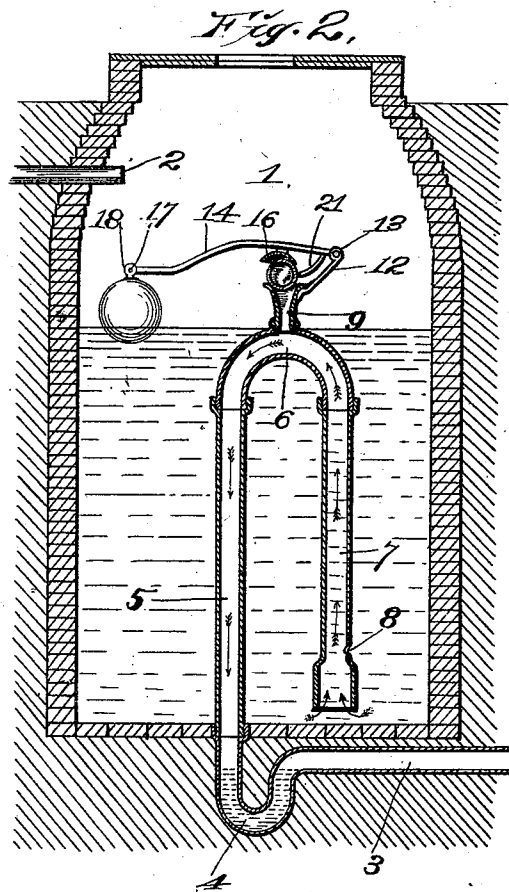
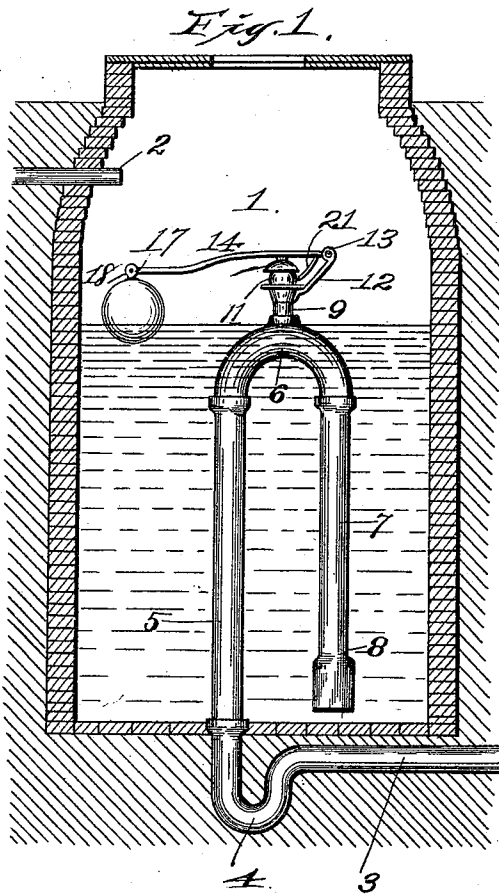


(No Model.)

J. A. CATTANACH.
VALVE.

No. 517,093.

Patented Mar. 27, 1894.



Witnesses:
Mr. Smith.

Inventor:
John A. Cattanaach.

By *W. P. Hooper* Attorney.

UNITED STATES PATENT OFFICE.

JOHN A. CATTANACH, OF FORT RENO, OKLAHOMA TERRITORY.

VALVE.

SPECIFICATION forming part of Letters Patent No. 517,093, dated March 27, 1894.

Application filed August 10, 1893. Serial No. 482,800. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. CATTANACH, of Fort Reno, in the county of Canadian, Oklahoma Territory, have invented certain new and useful Improvements in Valves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to valves, and more particularly to that class of valves operated by a float and used in connection with siphons.

The objects of my invention are to produce a valve of this character which is simple, durable and inexpensive of construction, which is easily applied in or removed from position, and which is positive and reliable in operation.

My invention essentially consists in a tube having a valve-seat, a soft and pliable rubber ball occupying said seat, a hinged-lever having a float, and a cup resting upon the ball to hold it down upon and adapted to allow it to be raised from its seat at times, as hereinafter referred to; and a persuader to insure the proper raising of the ball should it fail to leave its seat when the float moves upward.

With these objects in view, my invention consists in the peculiar construction and arrangement of parts, as will be hereinafter described and claimed.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1, represents a vertical sectional view of a flush tank, and showing therein a siphon-pipe and a valve constructed in accordance with my invention applied thereto in operative position. Fig. 2, is a vertical central sectional view of the cistern, said section being also taken through the siphon and the valve. Fig. 3, is a vertical sectional view of the valve on an enlarged scale, and detached from the siphon and cistern.

In carrying out my invention, I have shown the valve applied to a siphon located in a flush-tank, this flush-tank being located generally at the head or highest point of each run of sewers and generally where a plurality of pipes join the main. This valve, of course may be located wherever applicable, for example, be applied to the siphon pipe of

an ordinary flush-tank or box for valve-closets, &c.

Referring now to the drawings, 1 designates a street cistern of the usual construction, and 2 designates a supply-pipe communicating with said cistern and adapted to be provided with a control-cock (not shown).

3 designates a pipe which is adapted to connect with the main, and this pipe 3 is connected to an approximately U-shaped pipe to form a water-trap 4 beneath the cistern. A pipe 5 communicates with the water-trap pipe 4 and extending vertically upward for a suitable distance into the cistern communicates at its upper end with the return bend 6, and this return bend 6 communicates in turn with the vertically depending pipe 7, the lower open end of which is a suitable distance above the bottom of the cistern. This pipe 7 a suitable distance from its lower end is also provided or formed with an opening 8, this opening being provided as a means of entrance for the air through the pipe 7, to help break the siphon, as hereinafter referred to. An opening is tapped in the upper side of the return bend 6, and communicating with this opening is the short vertical pipe or tubular casting 9 which at its upper end diverges outwardly or flares to form the valve-seat 10, upon which the hollow ball 11 rests. Projecting from the upper end of the tubular casing or pipe 9 for a suitable distance is a bracket or arm 12 and pivotally connected to the upper end of said arm by the set-screw 13 or other suitable means, is a lever 14. Vertically above the tubular casing or pipe 9, the lever 14 is provided with a depending arm 15, to the lower end of which is secured an inverted cup-plate 16; this cup-plate conforming preferably to the curvature of and inclosing the upper portion of the ball 11. Passing horizontally through the free or outer end of the lever 14, is a bolt 17; this bolt 17 also passing through an arm 18 secured rigidly and in any suitable manner to a float ball 19, and the projecting end of the bolt 17 is engaged by a clamping-nut 20. By means of the clamping-nut 20, the ball 19 may be adjusted to any desired position relative to the lever 14, as shown in dotted lines in Fig. 3. Projecting downwardly and curving forward slightly from the lower side of the lever 14 adjacent to its pivotal point, is a lift-arm 21, the free

and lower end of this arm being adjacent to the ball 11.

The operation of my invention is as follows: A certain amount of water is adapted to stand 5 in the cistern, and when the normal quantity of water is within the cistern the float 19 of course holds the valve closely upon its seat, and whatever quantity of air may be within the siphon pipe is compressed and is prevented 10 from escape as will be readily understood. Now, from rains or any other cause, as the water in the cistern rises, the air is compressed within the pipe, the water-seal preventing its escape, and when the level of the 15 water exterior of the siphon-pipe reaches a certain height, the float is raised therewith and pivotally operates the lever 14 to cause the cup 16 to rise. This action allows the compressed air to jump the ball from its seat, 20 and escape from the siphon, the ball being held from vertical displacement by the cup 16. The escape of air from the pipe, equalizes the air pressure upon the water within and exterior of the siphon, and immediately this 25 takes place, the water seeking its own level, rises within and flows through the bend 6, of the siphon; thus starting the siphonic action of the water, which flows in a continuous stream, up through the pipes 7 and 6, and 30 downward through the pipe 5 to the main. After starting the siphon, the ball is immediately sucked to its seat. The siphonic action or flow of water from the cistern is not checked until nearly all of the water is 35 drained from the cistern, or until the level of the water reaches the air-vent 8, when the air entering through said opening helps to break the siphon, in the usual manner. Should the 40 seat when the float is raised a sufficient distance, the lift-arm 21 projecting outwardly from the lever near its pivotal point will come in contact with the ball and force it from its seat, as will be clearly seen; thus insuring

a positive flush of the cistern each time the 45 water reaches a predetermined height.

I desire it to be understood, that with a slight change in arrangement, the valve above described and illustrated in the accompanying drawings may be arranged to close by 50 gravity and opened with or without float, by simply having valve immersed below water-line.

From the above description, it will be seen that I have produced a valve for siphons and 55 other purposes to which it is applicable, which is simple, and inexpensive of construction and positive and reliable in operation.

Having thus described my invention, what I claim as new, and desire to secure by Letters 60 Patent, is—

1. The combination with a pipe having a valve seat, a ball resting upon said seat, a pivoted lever having a float, and having an inverted cup-plate inclosing the upper portion 65 of the ball, and a lift-arm carried by said lever and adapted if necessary, to raise the ball from its seat, substantially as set forth.

2. In a flushing apparatus, the combination with a siphon pipe having a water-trap at its 70 lower end, and having a vent opening near its open end, of a short pipe communicating with said siphon and having a valve seat, a ball resting upon said seat, and an arm projecting from said pipe, a lever pivoted to said 75 arm, and a float adjustably carried by said lever, and an inverted cup-shaped plate carried by the lever and inclosing the upper portion of the ball, and a lift arm projecting from said lever and adjacent to the ball, substan- 80 tially as set forth.

In testimony whereof I affix my signature in the presence of two subscribing witnesses.

JOHN A. CATTANACH.

Witnesses:

J. W. HOCKADAY,
S. H. GLAY.