No. 678,271. Patented July 9, 1901.

P. MUELLER.

CHECK VALVE.

(Application filed Feb. 20, 1901.)

(No Model.)

Fig. 1.

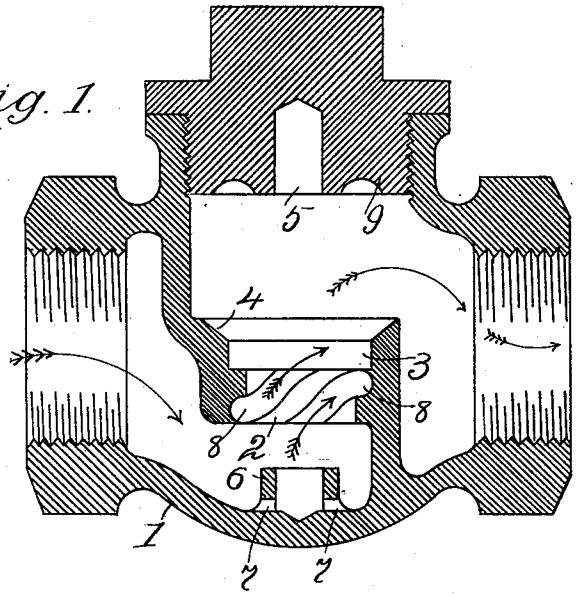


Fig. 3.

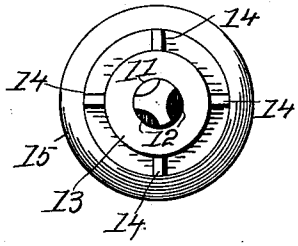


Fig. 4.

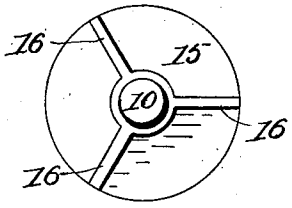


Fig. 2.

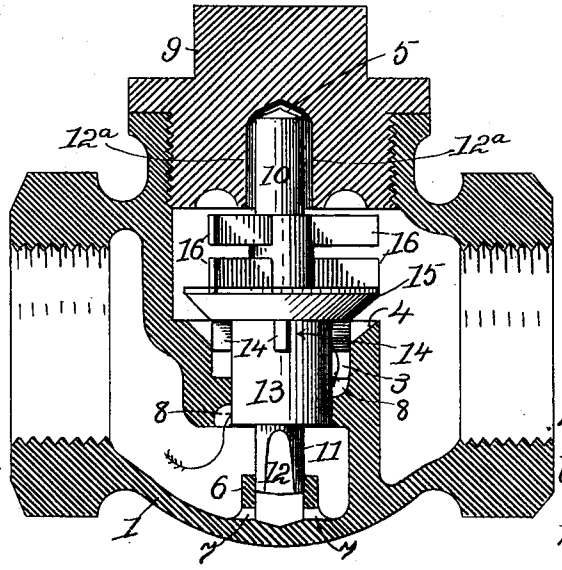


Fig. 5.

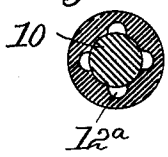
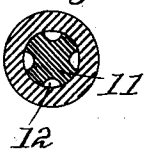


Fig. 6.



Witnesses
Nora Graham.
Lua Graham

Inventor.
Philip Mueller.
by L. P. Graham
his attorney.

UNITED STATES PATENT OFFICE.

PHILIP MUELLER, OF DECATUR, ILLINOIS, ASSIGNOR TO H. MUELLER MANUFACTURING CO., INCORPORATED, OF SAME PLACE.

CHECK-VALVE.

SPECIFICATION forming part of Letters Patent No. 678,271, dated July 9, 1901.

Application filed February 20, 1901. Serial No. 48,079. (No model.)

To all whom it may concern:

Be it known that I, PHILIP MUELLER, of the city of Decatur, county of Macon, and State of Illinois, have invented certain new and useful Improvements in Check-Valves, of which the following is a specification.

This invention provides against the fouling of check-valves by the deposit of sediment, and also precludes the binding of valve-stems by accumulation of gummy substance thereon. It is exemplified in the structure hereinafter described, and it is defined in the appended claims.

In the drawings forming part of this specification, Figure 1 is a section through a valve-shell constructed in accordance with my invention. Fig. 2 is a section through the valve-shell, and it shows the valve in operative position in the shell. Fig. 3 is a plan of the under surface of the valve. Fig. 4 is a plan of the upper surface of the valve. Figs. 5 and 6 are details of the means employed to insure free action of the valve-stem in its bearing.

The valve shell or body 1 is made in any desirable manner, except for the details hereinafter specified, and it has a central bore 2 crosswise of its axis. The bore 2 is cylindrical in general conformation, and in its inner wall or surface it has oblique passage-ways 8, preferably in the form of spiral grooves. Above the oblique passage-ways 8 the bore 2 is enlarged, as shown at 3, and above the enlargement 3 is the valve-seat 4. A plug 9 is screwed into a threaded opening in the body of the valve in axial alinement with the bore 2, and in the plug is formed a circular hole 5, which forms a bearing for the upper end of the valve-stem. Below bore 2 and in line therewith is a tubular recess 6, the walls of which are slotted laterally at the base thereof, as shown at 7.

The valve 15 has an axial stem the upper end 10 of which journals in hole 5, while the lower end 11 thereof journals in recess 6. The lower end of the valve-stem is fluted lengthwise, as shown at 12. Below the valve the stem is enlarged, as shown at 13, to conform to the bore 2 of the valve-body, and on the enlargement immediately below the valve is a set of radial wings 14, which rests in the enlargement 3 of the bore when the valve is closed. Above the valve is a set of radial wings 16 of any desired shape and proportion.

Water passes through the body of the valve in the direction indicated by the arrows in Fig. 1, and as the part 13 of the valve-stem closes the bore 2 the water is forced to travel through the oblique or spiral passage-ways 8. In traveling around the valve-stem the water acquires a circular motion, and when it rises above bore 2 it strikes the wings 14, as shown by the arrow in Fig. 2, and imparts rotary motion to the valve-stem. As the stem is rotated by the whirling action of the water the wings 16 stir the water above the valve and effectually prevent the accumulation of sediment.

The tubular wall of recess 6 is bored laterally at its base to permit the escape of sediment and the lower end of the valve-stem is fluted, as shown, to form wings that act forcibly to expel the sediment centrifugally through the side openings 7 and permit unobstructed seating of valve 15.

The fluting of the valve-stem provides passage-ways between the stem and its bearing, through which water may flow freely and wash away the gummy substance present in water and prevent such substance from cementing the stem to its bearing. The edges of the flutes form scrapers to act on the bearing-surface when the stem rotates, and this also tends to prevent the accumulation of the sticky substance. As a mechanical equivalent of the fluted valve-stem the surface of the stem-bearing may be fluted, as shown at 12^a in Figs. 2 and 5, in which case the water-passages and the scraping edges are provided the same as by fluting the valve-stem.

I claim—

1. In a check-valve, the combination of a valve-body having a bore the internal surface of which is grooved obliquely, a valve-stem in the bore and wings on the stem beyond the discharge side of the bore, whereby the stem is rotated by whirling motion developed in the fluid by the oblique passages and imparted to the wings, substantially as described.

2. In a check-valve, the combination of a valve-body having a bore crosswise of its axis, such bore being grooved obliquely in its internal surface, a valve-stem extended through

the bore and having both rotary and longitudinal motion therein, a valve on the stem beyond the discharge side of the bore, wings on the under side of the valve to receive rotary motion from the fluid passing through the oblique grooves, and wings on the upper side of the valve to act as stirrers, substantially as described.

3. In a check-valve, the combination of a valve-body, a vertical valve-stem rotatable by the passage of fluid through the body and longitudinally movable, such stem being longitudinally fluted at its lower end, and a tubular recess for the lower end of the stem having side openings, whereby sediment may be forced through the side openings of the recess when the stem rotates, substantially as described.

In testimony whereof I sign my name in the presence of two subscribing witnesses.

PHILIP MUELLER.

Witnesses:
LOUIS MILLER,
H. F. CLARK.