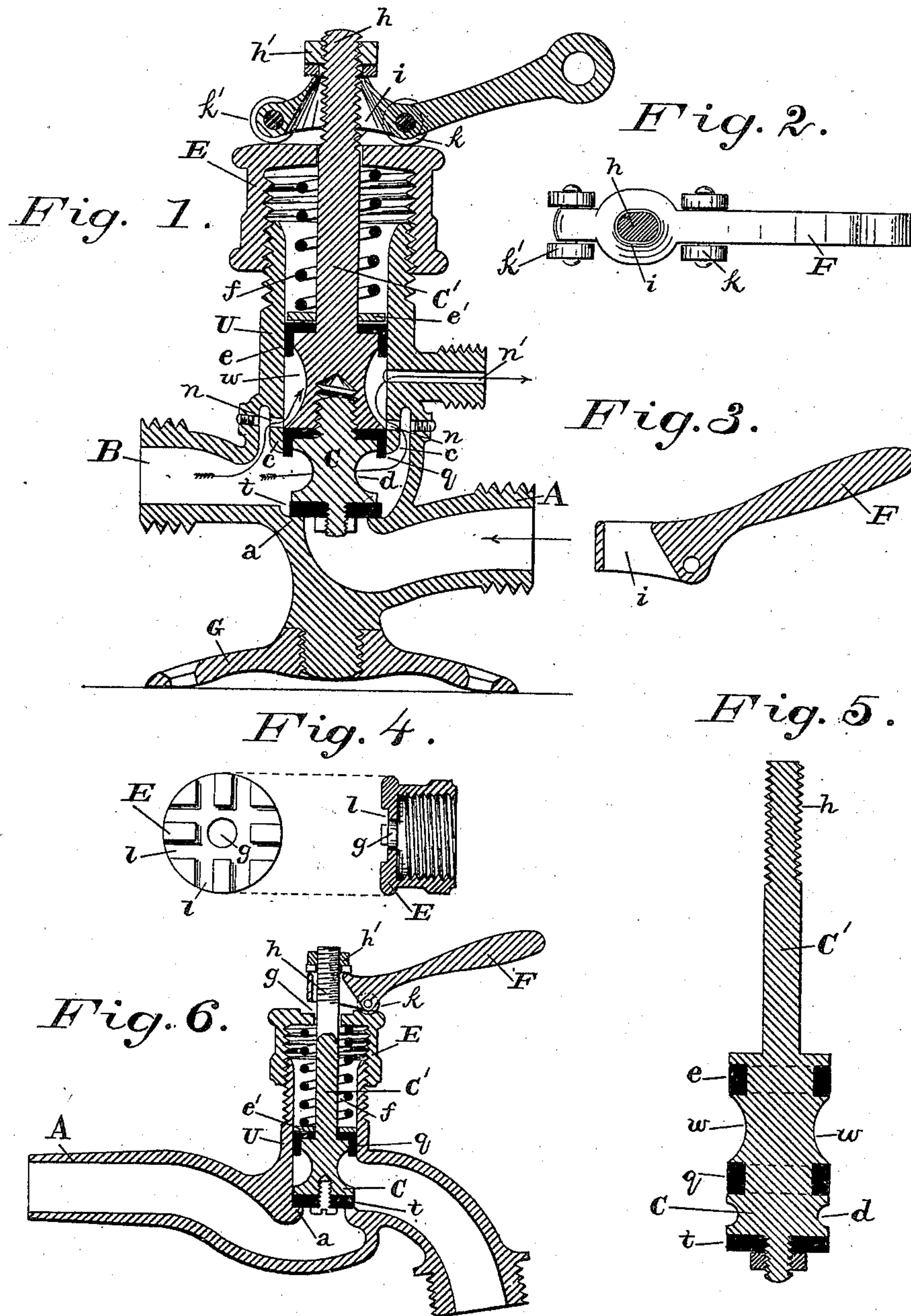


(No Model.)

W. KAISER.
VALVE FOR WATER PIPES.

No. 369,528.

Patented Sept. 6, 1887.



WITNESSES:

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WILLIAM KAISER, OF WILKES-BARRÉ, PENNSYLVANIA.

VALVE FOR WATER-PIPES.

SPECIFICATION forming part of Letters Patent No. 369,528, dated September 6, 1887.

Application filed February 2, 1885. Serial No. 154,715. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM KAISER, a citizen of the United States, residing at Wilkes-Barré, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Valves for Water-Pipes, of which the following is a specification.

My invention relates to an improved valve such as are used for water-closets and similar purposes. It is a reciprocating valve of that class which closes by the action of a spring, forcing it to its seat against the flow or pressure of the water.

The valve will first be described and then claimed.

In the drawings hereto annexed, Figure 1 is a sectional view of the complete valve. Fig. 2 is a top view of the lever. Fig. 3 is a sectional side view of the lever modified. Fig. 4 is a top and also a sectional view of the screw-cap whereon the lever fulcrums. Fig. 5 is a view, separately, of the valve proper and its stem, showing the two made in one piece. Fig. 6 is a view of this form of valve and my improved lever shown applied to a bib-cock.

The letter A designates a passage for attachment to the service or supply pipe, and B a similar one for connection with a water-closet-hopper pipe or urinal-pipe.

C designates the movable valve, and *a* its seat, fixed at a point between the two passages. The valve is attached to a stem, C'. In Fig. 1 it is capable of disconnection from the stem.

Cast integral with the valve-case U is an interior downward-projecting rim, *c*, which, with the valve-case, is bored or finished round in a vertical direction. The valve C fits and moves easily in the bored part, and at its top has a washer, *e*, to fit close and water-tight in said bored part. At its lower extremity is a washer, *t*, to rest on the valve-seat. Just above the lower washer the valve is cut away on the sides, as at *d*, and above said cut-away is a middle washer, *g*, to fill the bored vertical part of the downward-projecting rim, and between the top washer and middle washer is an exterior circumferential groove, *w*, which forms a waste-water channel for the escape of water

from passage B after the valve has been closed. The downward-projecting rim *c* has one or more perforations, *n*, which allow the waste water to rise into the circumferential channel, and the bored vertical part of the valve-case above the said rim has an exterior perforated nipple, *n'*, through which the waste water escapes from the channel. A small pipe may lead from the nipple to the sewer. A ring-shaped plate, *e'*, sets on the washer *e* in Fig. 1 and forms a seat for the lower part of spiral spring *f*. A screw-cap, E, has a central opening, *g*, for the stem C'. This cap is attached to the valve-case and the upper part of spiral spring *f* has bearing against the said cap. It will thus be seen that the valve C is kept closed to its seat against the pressure of water by the action of the spring. If the spiral spring when first adjusted has not sufficient tension to close the valve against the existing water-pressure, the cap E may be screwed down to compress the spring and thereby make it bear harder on the valve. The top washer, *e*, on the valve prevents water from passing into the spiral-spring chamber.

The upper end of the valve-stem is oval in cross-section and has a screw-thread, *h*, cut around the oval. A lever, F, has an opening, *i*, through which the oval threaded part of the valve-stem passes. This opening constitutes a yoke, which on the upper side of the lever is oblong, its greatest dimension extending in the direction of the length of the lever. By this shape the valve-stem is prevented from turning in the opening. A threaded nut, *h'*, on the stem secures the lever, and may therefore be adjusted up or down to give the lever F the desired play without in so doing causing the stem to turn. When it is desired to raise the valve, the lifting strain of the lever comes against the nut.

From the upper side to the lower side of the lever the stem opening or yoke expands or increases in size in the direction of the length of the lever. This expansion exists both ways from the center. By this shape provision is made for a swinging or oscillating motion of the lever from its normal position either up or down. A pin or other means may be used, instead of the nut *h'*, to secure the lever on

stem. The result of this construction is that the valve C may be opened by pressing down or by lifting the lever. The lever is provided on each side of the stem-opening with two
 5 rollers, *k* and *k'*. The screw-cap is the fulcrum and the rollers bear thereon. As there is a slight endwise movement of the lever when it is tilted, these rollers obviate friction.

The top of the cap E is provided with parallel grooves *l*. Two grooves extend one way and two other grooves at right angles thereto, as seen in Fig. 4. The rollers *k* and *k'* set in two of these grooves, which serve as tracks for the rollers, and thereby the lever is stead-
 15 ied and maintained in proper position. By having grooves arranged at right angles the cap, when adjusting to compress the spring *f*, may be turned as little as one quarter and thereby suit the position of the lever.

20 In the case of water-closet-hopper valves a rod would be connected to the lever, and said rod would be provided with a knob or handle having position on a level with the seat, as usual. The valve structure is attached to a
 25 plate, G, at the bottom, by which the device may be secured in proper position.

If desired, the valve and its stem may be made in one piece, as shown in Fig. 5. In this case annular grooves should be formed
 30 around the valve and the washers, consisting of rings of rubber or other material, let in the said grooves.

In Fig. 6 this form of valve and lever is shown on a bib-cock. The only modification here

is that the provision for waste is dispensed 35 with and the lever is provided with two rollers, *k*, only and arranged to open the valve only by being depressed.

Having described my invention, I claim and desire to secure by Letters Patent of the 40 United States—

1. In a valve structure, the combination of a valve-stem having an oval-shaped screw-threaded part, a lever having an oblong opening or yoke, through which the said threaded 45 part of the stem passes, and a threaded nut on the stem, as set forth.

2. In a valve structure, the combination of a valve-stem, a fulcrum having straight grooves *l*, and a lever having a stem opening or yoke 50 which expands from the upper side to the lower side and provided with rollers which bear on the fulcrum, as set forth.

3. The valve-case constructed with inlet and outlet water-ways, a downwardly-projecting 55 rim or skirting, perforated as described, and a waste-nipple above said skirting, in combination with a valve annularly grooved and provided with washers above and below said groove, a screw-cap, E, grooved on top, and a 60 lever having fulcrum-rollers in said groove, all substantially as described.

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

WILLIAM KAISER.

Witnesses:

GEORGE A. JONES,
 MARTIN L. KAISER.