

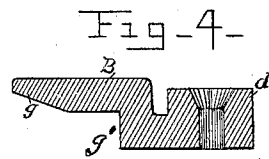
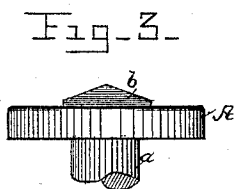
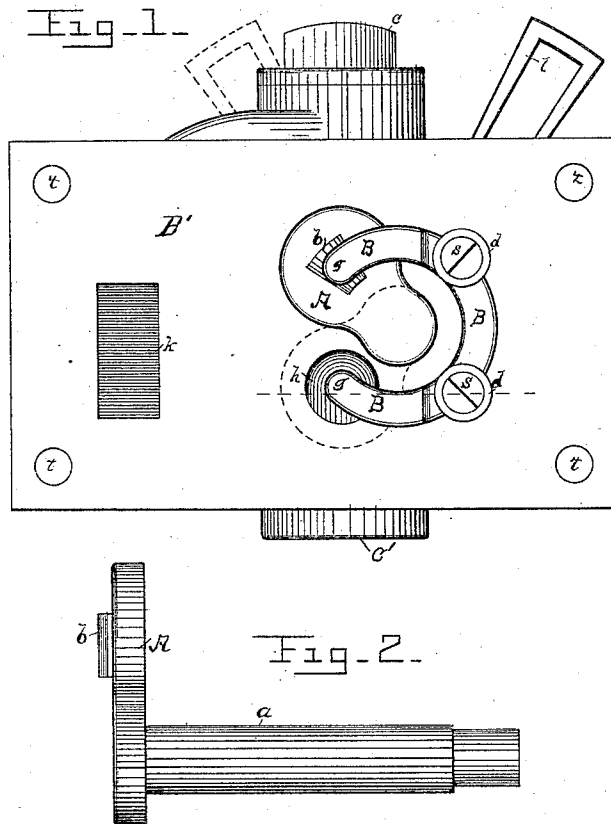
(No Model.)

F. A. BURNHAM.

STEAM, WATER, OR FLUID VALVE.

No. 469,230.

Patented Feb. 23, 1892.



Witnesses,

D. M. Metcalf

O. Scott Clark

Inventor,

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By Martin Metcalf, atty.

UNITED STATES PATENT OFFICE.

FRANK A. BURNHAM, OF BATTLE CREEK, MICHIGAN, ASSIGNOR TO THE
BATTLE CREEK MACHINERY COMPANY, OF SAME PLACE.

STEAM, WATER, OR FLUID VALVE.

SPECIFICATION forming part of Letters Patent No. 469,230, dated February 23, 1892.

Application filed September 17, 1891. Serial No. 405,940. (No model.)

To all whom it may concern:

Be it known that I, FRANK A. BURNHAM, a citizen of the United States, residing at Battle Creek, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Steam, Water, or Fluid Valves; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to steam, water, or fluid valves, and the improvement herein illustrated and described is particularly designed for use in connection with a certain invention described and shown in Letters Patent issued to Foster M. Metcalf, bearing date May 12, 1891, and numbered 452,312, the better adapting said patented invention to certain circumstances and conditions hereinafter appearing.

The objects attained by this improvement are twofold, viz: first, to provide means whereby the valve shall be forcibly held or locked fast to the face of the valve-seat upon both ports thereof, instead of being flexibly held by means of a spring or equivalent device, as in said patent shown, in order that the slight lifting of said valve at times when the pump is subjected to high or varying atmospheric pressure, as when a high lift of water is encountered, may be obviated.

The second part of the present improvement consists in the substitution of a solid valve in place of the perforated disk-valve in said patent employed, so constructed, arranged, and operating that room within the valve-chamber is secured for fixing therein a valve-engaging locking-plate, whereby the throw of the valve is fixed and controlled at the same time that the valve-face is forcibly fixed or locked tightly on its seat at each extremity of the throw of its operating-lever, as hereinbefore indicated.

In the accompanying drawings, forming part of this specification, Figure 1 corresponds with the same portion of the valve-casing shown and described in Patent No. 452,312

to Metcalf, already referred to, except that in the present Fig. 1 my novel oscillating valve is substituted for the former disk-valve, and instead of the coil-spring of the aforesaid valve-stem and outside stops fixed inside stops are employed, and absolute contact of the valve with its seat at all times and determination of the throw of the valve is maintained. Figs. 2, 3, and 4 are detached details, the first two being simply side views, while Fig. 4 is a vertical section of the stop or valve engaging and locking plate, already referred to.

The letter A represents the oscillating valve, provided with stem or shaft *a*, to the outermost extremity of which the lever *l* is attached, as shown in the Metcalf patent cited, while the upper side of the said valve A is provided with the double-inclined-plane block *b*.

B is the valve-engaging plate, preferably made in horseshoe form, with its extending open ends or "heels" projecting parallel with, but suitably distant from, the valve-seat to afford room for the valve between said arms or heels and the seat of said valve. These projecting heels of the plate or stop B are suitably beveled on their under surfaces at *g g*, and about one-half part of the open arms or heels of the horseshoe-shaped plate B provides a chamber *g'* between the valve and its seat (through which latter the valve-stem *a* passes) to make room for the said valve A, stops, and locks *g g*, which engage with the top of the valve-blocks *b* at either extremity of the valve oscillations, whereby the valve is forcibly held to its seat, as by a lock. (See Fig. 1.) The valve-stem or shaft *a* passes through the casing or plate B' about centrally of said plate B', which is secured to the pump or engine by bolts or other suitable securing means passing through the holes *t*, while the "toe" part of the horseshoe-shaped plate or "stop" B is fixed firmly to the casings by means of screws *s s*, passing through the thicker toe portion of said plate B into the casing, as shown at *d d*, whereby room for the valve is secured between the arms of said stop-plate, as shown at *g'*. (See Fig. 4.)

The ports C C' N N and chamber K of the Metcalf patent, No. 452,312, having precisely similar situations and performing identical

functions with which the present improvement acts, in accord at all times and under all conditions, it only now remains to describe the mode of operation of the novel valve, hereinbefore shown in contradistinction to that of the disk-valve of said patent, as follows, to wit: With the lever *l* in the position shown in Fig. 1 the central highest point of the incline-plane block *b* of the oscillating valve *A*, impinging upon the beveled under surface of the heel of plate *B*, covering the valve and port thereunder, tightly locks the said valve-face down to its seat *N*, as is evident, so that no pressure of atmosphere or extraordinary lift of pump can cause even the slightest leak or lift of said valve.

Having thus fully illustrated and described my improvement and pointed out its peculiar advantages and mode of operation as compared with analogous devices, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The casing or "side plate" of the valve-chamber, the oscillating valve *A*, provided with shaft or stem *a* and the double-incline plane *b*, the valve-engaging plate *B*, provided with chambered and beveled arms *g g*, having

shoulder *g'*, and fastening-screws *s s*, the whole constructed, arranged, and operated through and by means of an outside lever *l*, fixed to the outer end of said oscillating valve-stem *a*, substantially as shown, illustrated, and described.

2. The casing, the solid valve provided with stem projecting through the casing and valve-seat, said valve having an inclined block, actuating-lever *l*, fixed to said stem, and the fixed stop-plate *B*, engaging said inclined block, substantially as shown, illustrated, and described.

3. In a valve, the combination, with the casing and valve opening and seat, of the solid oscillating valve having an inclined projection on one face and a stop-plate fixed to said casing and adapted to engage said inclined projection, said stop-plate being formed to provide a chamber within which said valve operates.

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

FRANK A. BURNHAM.

Witnesses:

O. SCOTT CLARK,
GEO. W. NICHOLS.