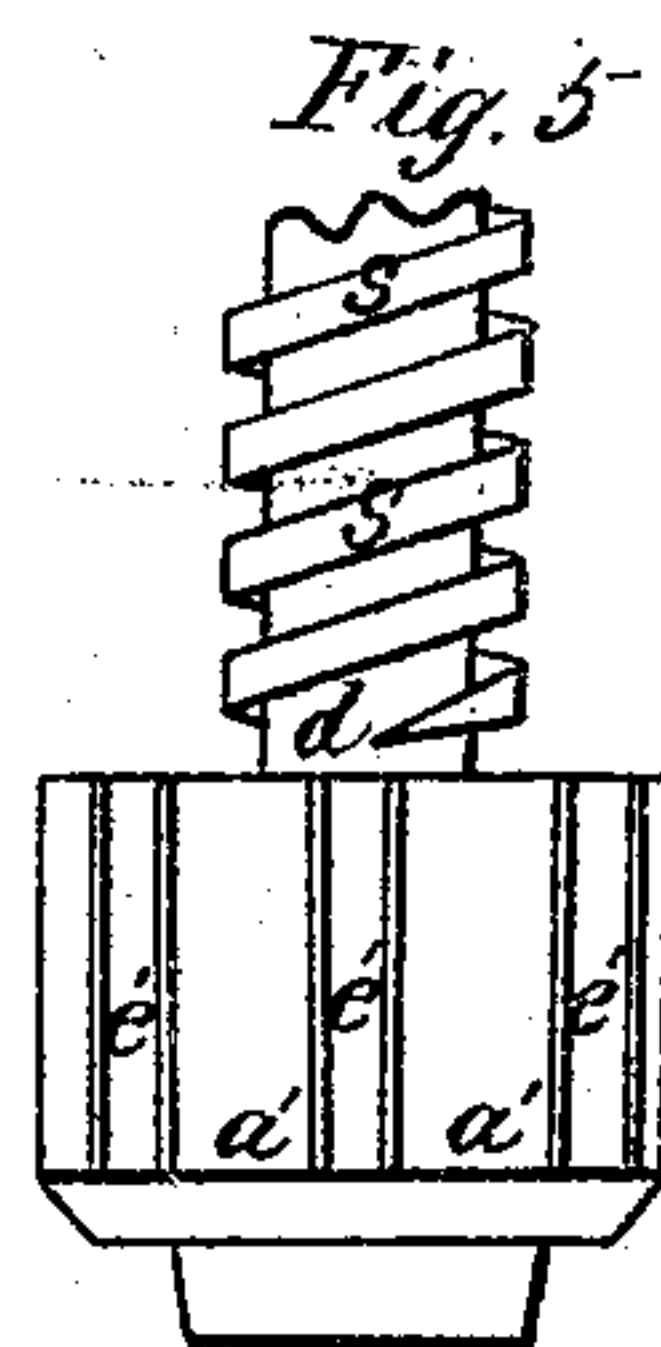
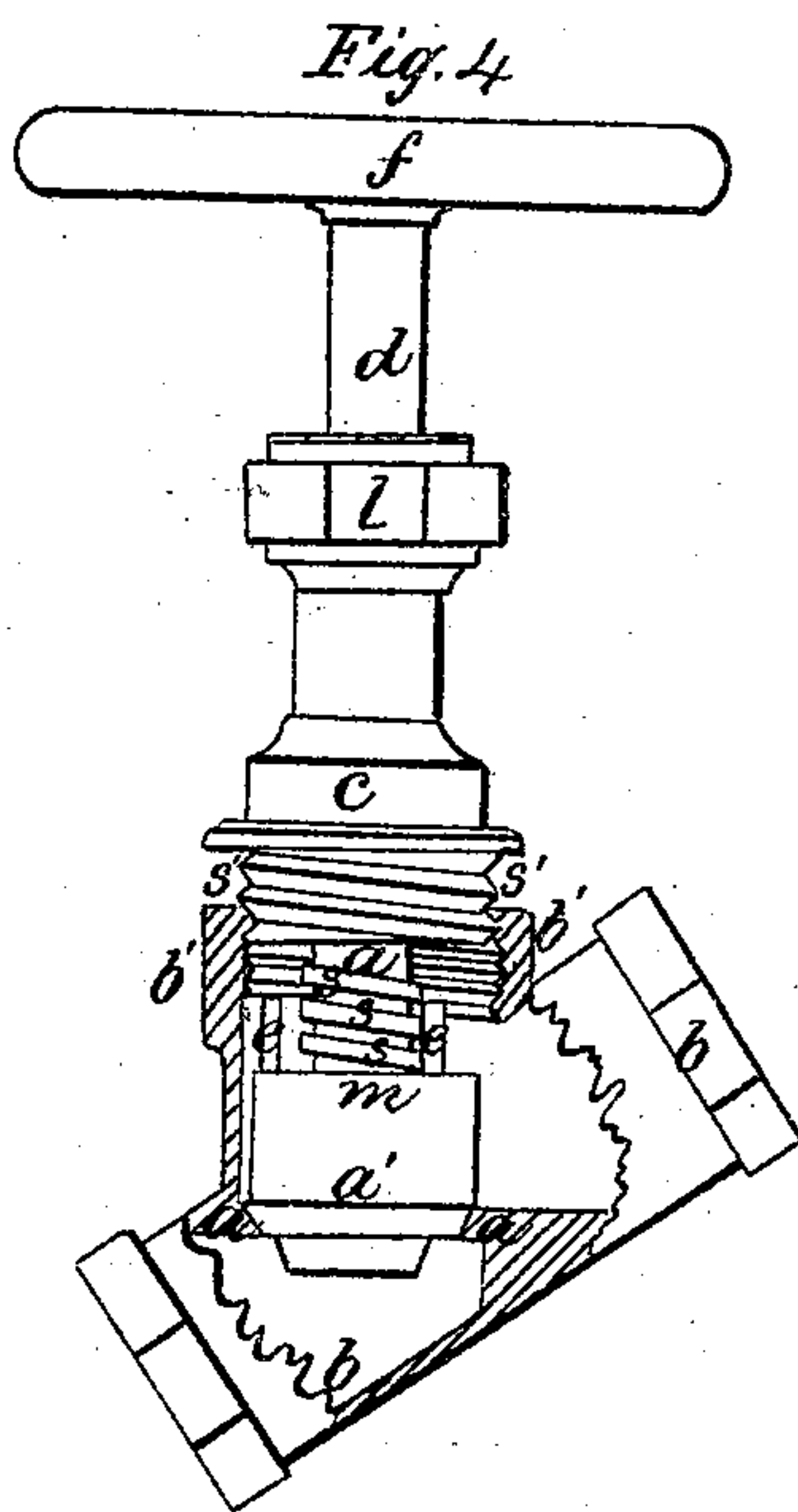
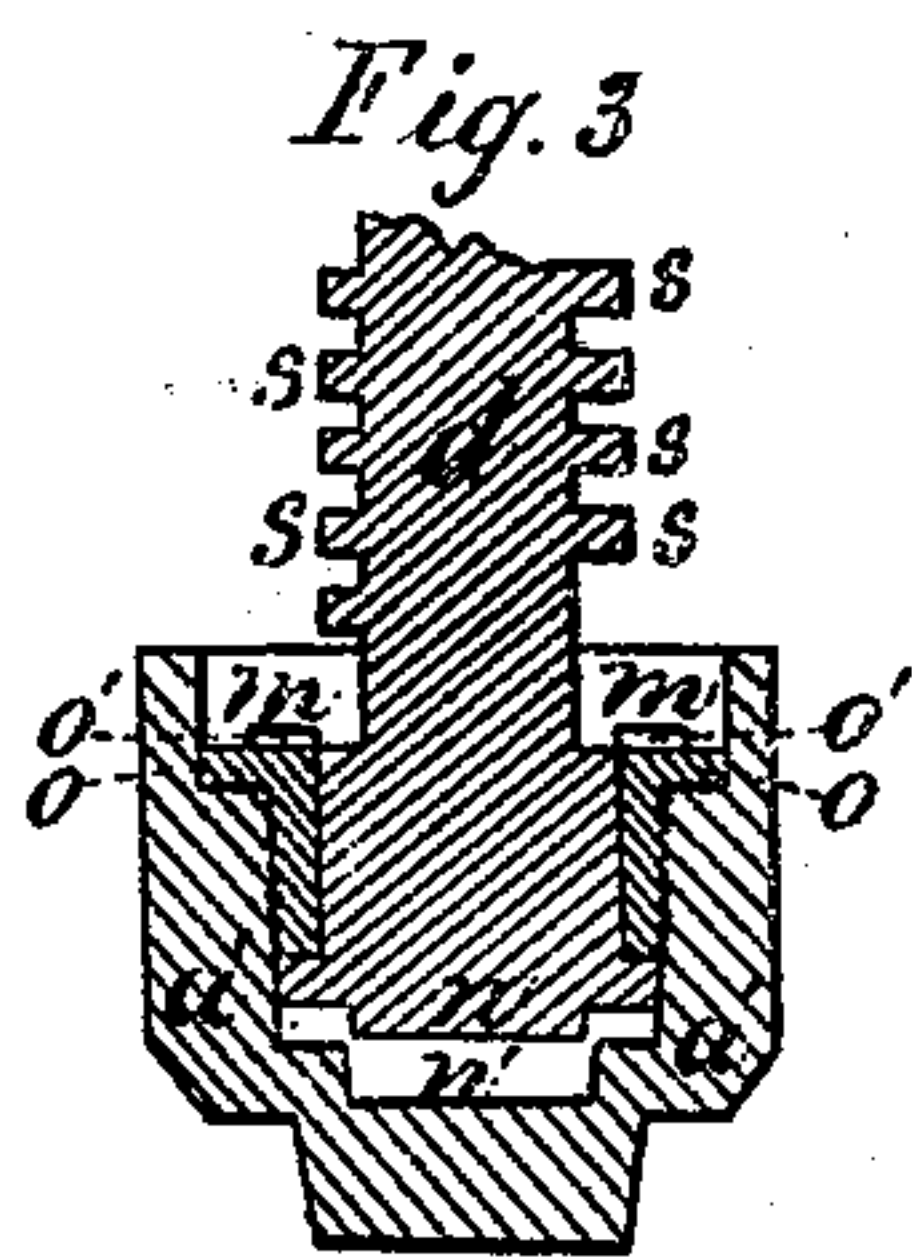
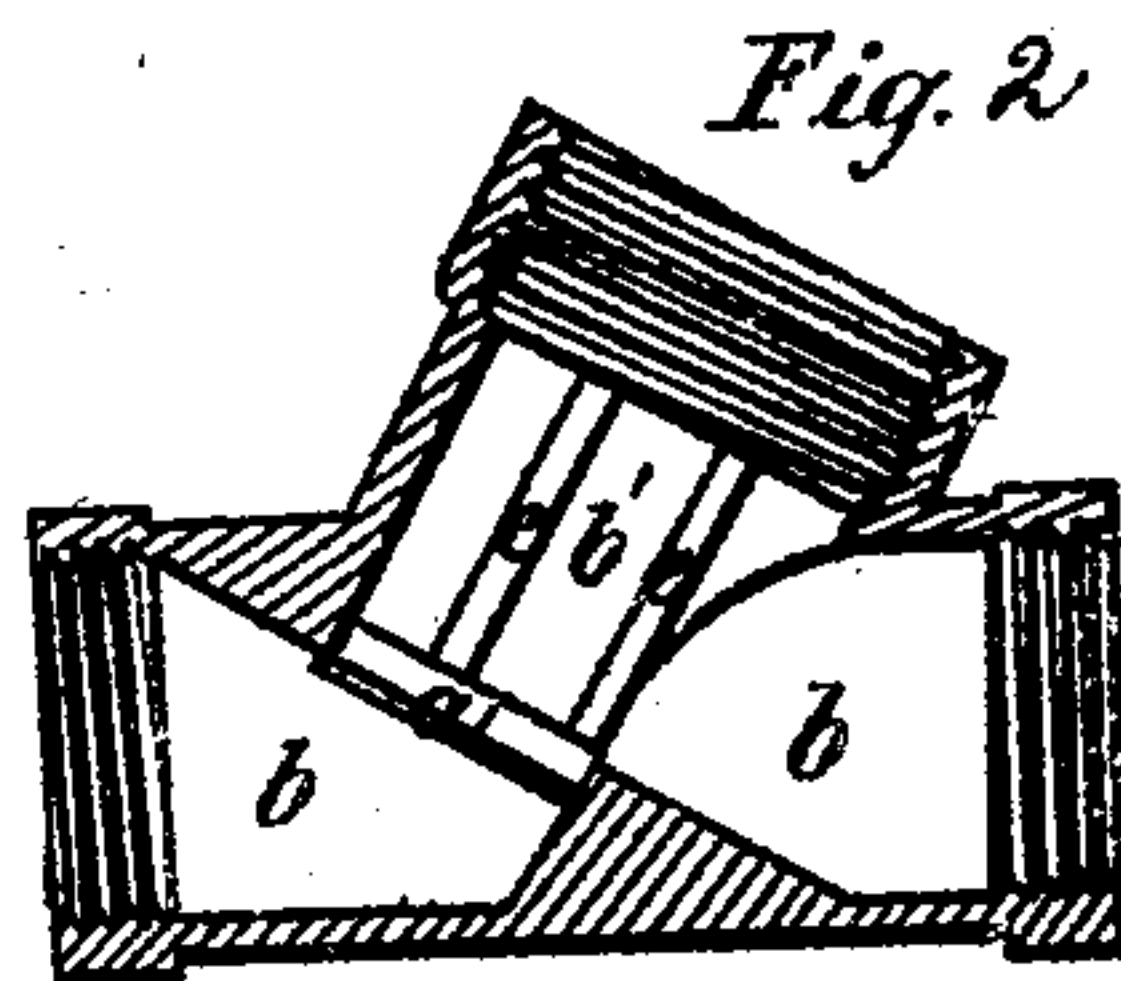
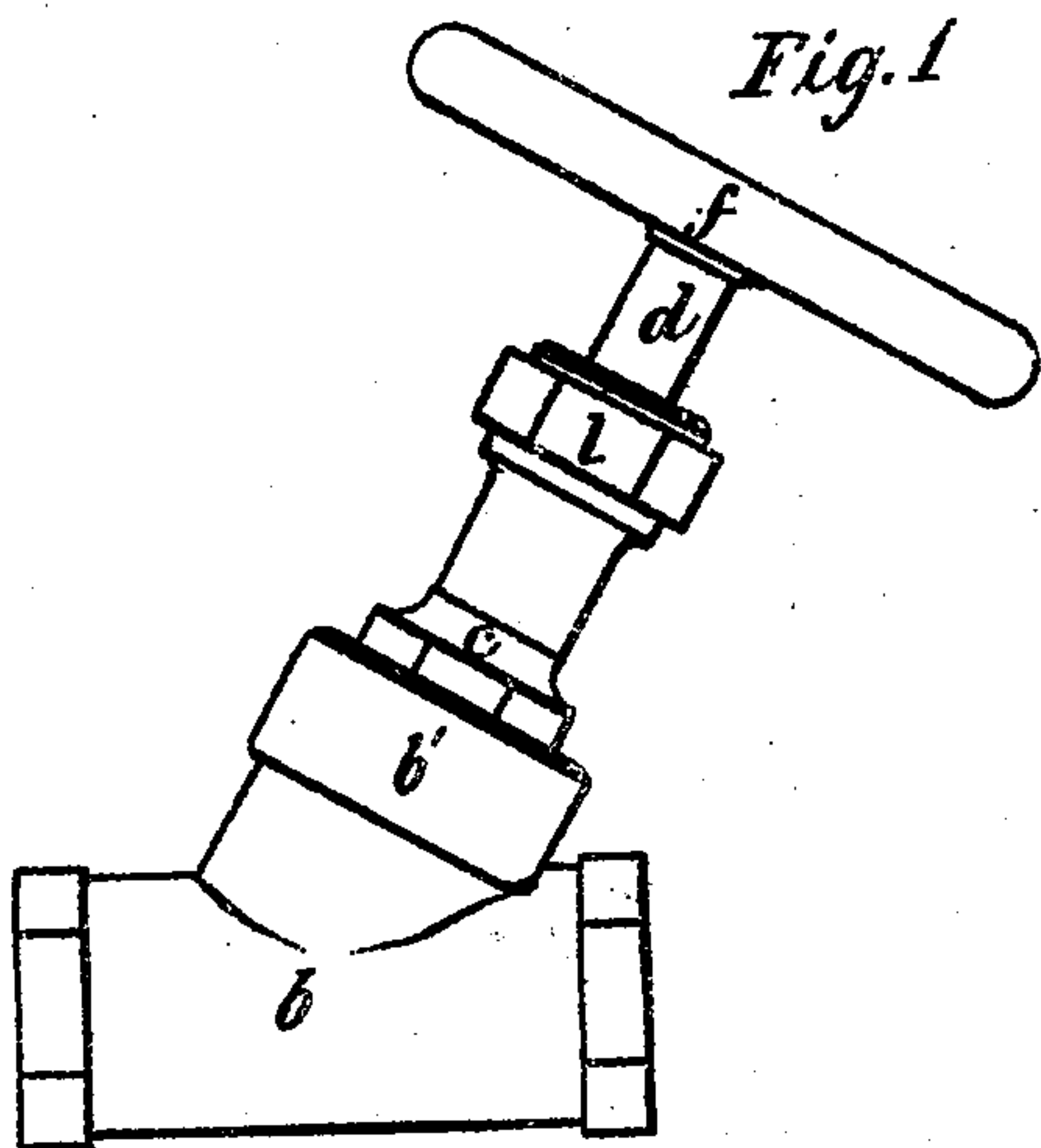


Ramsden & Davis.

Globe Valve.

Nº 92,748.

Patented Jul. 20, 1869.



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Letters Patent No. 92,748, dated July 20, 1869.

IMPROVEMENT IN VALVE-COCK

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, THOMAS RAMSDEN, of the city of Allegheny, and HENRY M. DAVIS, of the city of Pittsburg, both in the county of Allegheny, and State of Pennsylvania, have invented a new and useful Improvement in Valve-Cocks; and we do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, in which—

Figure 1 is a side elevation of a valve-shell, with valve in place;

Figure 2 is a vertical longitudinal section of the valve-shell, showing the ribs on the inside of the shell;

Figure 3 is a vertical section of the valve;

Figure 4 is an elevation, partly in section, showing the arrangement of the several parts in the process of grinding the valve on its seat; and

Figure 5 is a side view of valve and stem, showing the ribs on the sides of the valve.

Like letters of reference indicate like parts in each.

Our invention relates to an improvement in valves for steam, water, or other similar pipes, in which a disk, of metal or other similar material, is seated in an aperture through which the fluid passes, so that, the valve being raised from or lowered into its seat, the flow of water or steam, as the case may be, is permitted or stopped, at pleasure.

The nature of our invention consists—

First, in constructing guiding-ribs on the inner sides of the shell, through which the valve operates, or on the outer face of the valve-disk, by which the valve shall be guided into and from its seat in a direct line;

Second, in such construction of devices, that the valve may be rotated freely on its seat while being ground, and still be held centrally thereon;

Third, in combining a T-head on the lower end of the valve-stem, with a correspondingly-shaped recess in the bottom of a cup-shaped valve, so that the valve may be caused to rotate in its seat by the revolutions of the valve-stem in grinding, and be seated in ordinary use without being rotated; and

Fourth, in making a projecting flange or rim on the upper edge of a cup-shaped disk-valve, so that the valve may be turned up against the centre-piece, and make therewith a steam-tight joint.

To enable those skilled in the art to make and use our invention, we will proceed to describe its construction and manner of use.

b represents an ordinary steam or water-pipe, having a circular valve-seat *a*.

b' is the valve-shell, *a'* is the valve, made of any suitable material or known form, but preferably of a disk-form, cup-shaped on its upper side, and ground to fit the seat *a*.

d is the stem, by which, and the hand-wheel *f*, the valve *a'* is operated.

The stem passes through a centre-piece, *c*, which screws into the upper end of the shell *b'*.

On the inside of the shell, and running lengthways of it, we make ribs, *e*, and turn their outer faces to the radius of the valve *a'*, so that the latter, as it is seated and unseated, or being ground on its seat, will always be in the axial line of the shell *b'* and seat *a*. This feature is of value, as by it we save a considerable part of the expense of boring out the entire inner face of the shell, provide for a uniform pressure on all sides of the valve, as well as guide the valve directly on to its seat, without losing any of the advantages appertaining to the ordinary loose disk-valve. But if so preferred, the guiding-ribs may be made on the sides of the valve, as at *e'*, fig. 5, and the valve-shell *b'* be bored with a plain inner face, and such variation we include in our invention. The function in either case is the same.

Valves, such as that shown, sometimes become leaky, and in such cases the valve and seat have to be re-ground. This is done by introducing, between them, sand, emery, or other like substance, and then grinding them one on the other, by rotating the valve. To secure a perfect joint, this must be done with considerable accuracy.

The valve *a'*, it will be observed, is seated and unseated, by a screw-thread, *s*, on the stem *d*, which plays into a female screw in the centre-piece *c*, but only far enough, so that by turning it down, the valve *a'* will be forced down snugly on to its seat *a*. The centre-piece *c*, through which the stem *d* operates, must be withdrawn from the shell *b'* far enough, so that when the valve *a'* is seated, the screw-thread *s* will be clear of the centre-piece *c*. To secure this result, and still be able to use the centre-piece as a stem-barrel or guide, we cut a deep female screw in the outer end of the shell *b'*, and a male screw of like length on the centre-piece *c*, as shown at *s'*, fig. 4. Then, when the centre-piece *c* is unscrewed a short distance, as in fig. 4, it will still act as a stem-guide, and the screw-thread *s* can be screwed below or outside of the centre-piece, and be disengaged therefrom. The valve *a'* can then be rotated freely, and ground to its seat *a*. When ground, the stem *d* can be screwed up again into the centre-piece *c*, and the latter be turned down to its place, as in fig. 1, and the valve be ready for use.

But in order still further to facilitate the grinding of the valve, I make a T, *n*, on the end of the stem *d*, which, when the valve *a'* is to be rotated, is pressed down into a correspondingly-shaped recess, *n'*, fig. 3, in the bottom of the cup of the valve *a'*, and the valve can then be turned by the hand-wheel *f*.

The valve *a'* is cup-shaped, and its upper end screws on to a lock-nut, *o*, which slips over the stem *d*, *o'* being steps by which, with a suitable claw or wrench, the two are screwed together.

The cavity between the lock-nut and the bottom of the cup-shaped valve a' , is large enough so that the valve will work a little loosely, and not be rigidly fixed on the stem. It can adapt itself to any slight inequalities in the seat, or turn in its position relative thereto, so that one side will not be subject to a greater wear than another.

The shape of the T on the end of the stem may be changed to that of a square, or to any shape not circular, and the recess in the bottom of the cavity of the valve a have a corresponding form, the object being, by the insertion of the head n in the recess n' , to be able to rotate the valve a' on its seat a .

As another feature of our invention, we make a raised rim or flange, m , on the upper edge of the cup-shaped valve a' , which rim projects above the upper face of the lock-nut o . This rim m we grind, so that when screwed up against the lower face of the centre-piece c , it will make a steam-tight joint therewith.

It is sometimes necessary to change or renew the packing in the top nut l , in which case it is, with the valves in ordinary use, necessary to cut off steam entirely. By our improvement, we make a steam-tight joint below, and then repack the top nut l without further trouble.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. Guiding-ribs e , in any desirable number, on the sides of a loose disk-valve, or on the sides of that part

of the valve-shell through which the valve plays, substantially as and for the purposes above set forth.

2. The arrangement of long screw-threads on the centre-piece, and in the valve-shell of a disk-valve, in connection with threads on the stem and in the centre-piece, so combined, that by a partial unscrewing of the centre-piece out of the shell, the stem-thread may be screwed out of the centre-piece, and the valve be rotated freely, substantially as and for the purposes set forth.

3. A head, n , on the end of the valve-stem, in combination with a correspondingly-shaped recess in the bottom of the valve-cup, substantially as and for the purposes set forth.

4. A valve, a' , attached, by a lock-nut, o , to a stem, d , having the rim m projecting above the upper face of the lock-nut o , and ground, so as to operate, in connection with the centre-piece, to form a steam-tight joint, substantially in the manner and for the purposes set forth.

In testimony whereof, we, the said THOMAS RAMSDEN and HENRY M. DAVIS, have hereunto set our hands.

THOMAS RAMSDEN.
HENRY M. DAVIS.

Witnesses:

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R. C. WRENSHALL.