

W. F. THACHER.

STOP-VALVE.

No. 187,329.

Patented Feb. 13, 1877.

Fig. 2.

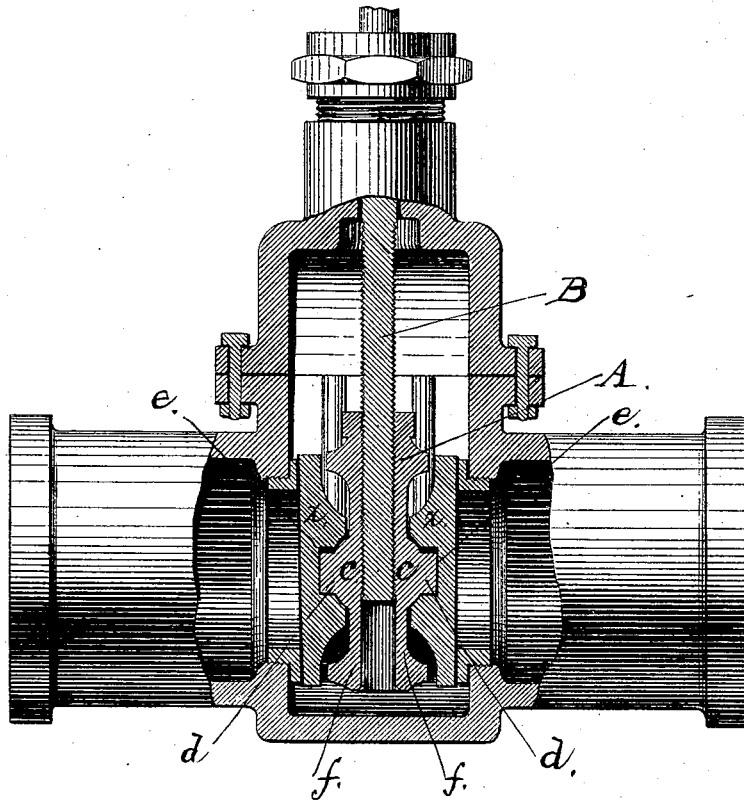
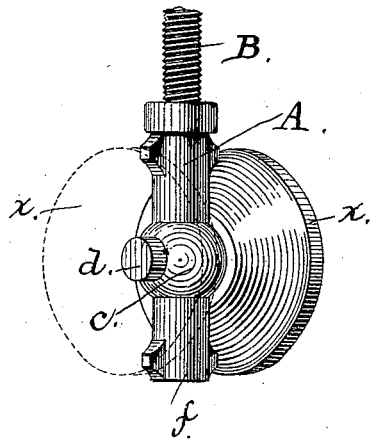


Fig. 1.



Attest:

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UNITED STATES PATENT OFFICE

WILLIAM F. THACHER, OF FLORENCE, NEW JERSEY, ASSIGNOR TO WALTER WOOD, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN STOP-VALVES.

Specification forming part of Letters Patent No. 187,329, dated February 13, 1877; application filed July 13, 1876.

To all whom it may concern:

Be it known that I, WM. F. THACHER, of Florence, in the county of Burlington and State of New Jersey, have invented certain new and useful Improvements in Stop-Valves for fluids, gas, or steam; and I do hereby declare that the following is a full, clear, and exact description thereof, which 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.

My invention relates to that class of stop-valves having two opposite valve-plates simultaneously operated to open and close the inlet and outlet ports; and it consists in a special construction of the device which serves to lower, and spread, and lift the valves; and it combines within itself, and in a single piece, provision not only for such movements, and a provision for making a tight joint when seated, but also a provision for preventing an improper binding of the upper parts of the valve-plates against the walls of the valve-case, by the pressure of the fluid against their lower parts, when they are partially lifted from their seats; and also a provision for permitting the universality of motion of the valves to the needed extent, so desirable in seating and unseating.

Figure 1 represents my improved lifter and spreader; and Fig. 2 shows its application in a valve, the latter being mainly in vertical section.

A is my improved device for lowering, spreading, lifting, and controlling the valve-plates. It is, as usual, adapted at its top to receive the threaded stem or spindle B; and is constructed near its center with a spherical part or ball, *c*, adapted to repose in corresponding cavities, if desired, in the inner face of each valve *x*; or at least so as to allow them all the freedom of motion required upon and about such ball. On opposite sides of the ball are the nipples or bosses *d d*, adapted, respectively, to enter a central opening, *e*, in each of the valve-plates; and projecting downward from the ball, but integral with it, is the prolongation *f*, of sufficient length to serve as a posi-

tive stop or bearing for the inner faces of both valve-plates at any juncture when the pressure of the water forces the lower parts of the valves inward, thus arresting such tipping of the valves, holding them to proper place, and preventing their upper parts being forced outward against the valve-case and binding when they should be free. This prolongation is provided with lateral nibs or projections *g g* at its opposite sides, of such length as to arrest the tilting of the valves or disks at the proper juncture, the remainder of the prolongation not coming into contact with the valve; consequently, this limited line or point of contact, while serving all the required purpose of a stop to prevent the undue inward tilting of the disks at their bottom, and their undue outward tilting at the top, also serves another valuable purpose—namely, it prevents any extended frictional contact of the disk with the prolongation, which would tend to prevent that ready turning of the disk about its center which is so essential in order to secure a smooth wearing of the disk-face against its seat, and the avoidance of the liability to wear grooves in such faces when grit, sand, &c., get between them. Similar nibs or projections *h h* extend laterally from the upper projection or shank of the ball, performing a kindred duty. This construction also allows the spreading device to be made much lighter than otherwise.

It will now be seen that no supplemental appliances—such as collars, disks, swivel, or other devices—are needed to complete this lifting and spreading piece, inasmuch as it unites in itself all the functions necessary for insuring the proper movements and action of the valve-plates under all conditions; that while the ball, when lifting would, without the prolongation, act as a wedge to spread the plates apart at the top, this prolongation, at that important juncture, comes in play, and positively prevents such spreading, and it also resists the action of the passing liquid, which tends to spread the plates at the top; but when the valves are forced downward by the ball upon the turning of the stem this prolongation affords no impediment to the wedging of the ball, and the consequent spreading

of the valves to insure a close fit upon their seats.

The advantages of uniting all these properties and features in a single piece or casting are manifest, as there is nothing to be displaced or lost, and no inconvenience is experienced, or labor or skill required, either in constructing different parts, or in afterward adjusting and putting them together, the ball, on the contrary, being integral both with the threaded socket, and with the prolongation, as well as with the nipples; in fact, the de-

vice is the minimum of simplicity with the maximum of efficiency.

I claim—

The described lifting and spreading device *A* for stop-valves, as made with the ball *c*, bosses *d d*, and prolongation *f* below the ball, having lateral projections *g g* thereon, as and for the purposes set forth.

WILLIAM F. THACHER.

Witnesses:

WALTER WOOD,
CHARLES W. SPARHAWK.