

J. S. GLENN.  
Stop-Valve.

No. 208,808.

Patented Oct. 8, 1878.

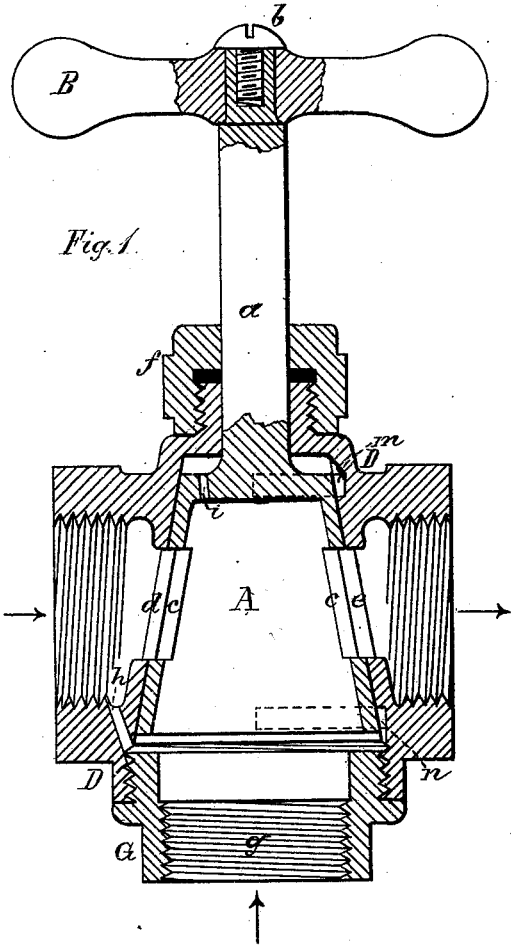


Fig. 1.

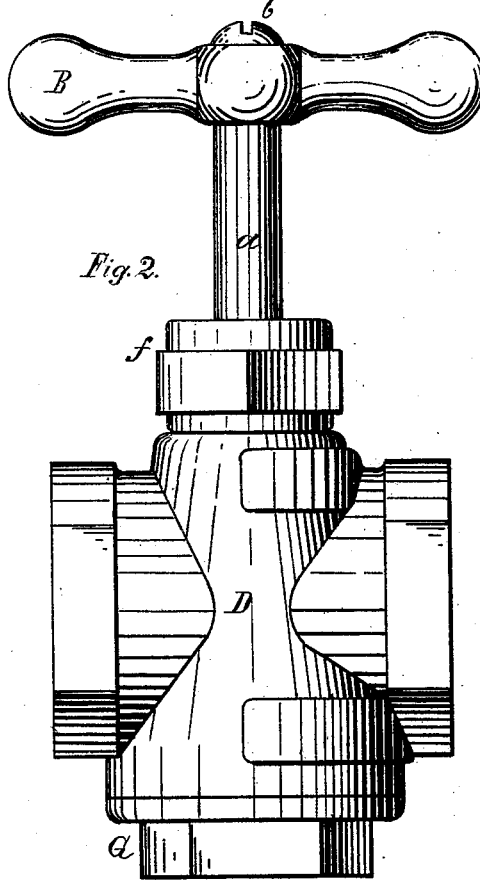


Fig. 2.

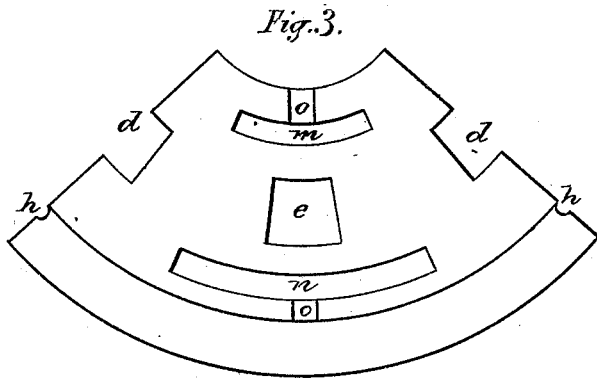


Fig. 3.

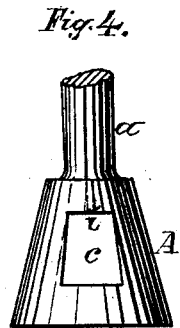


Fig. 4.

Witnesses:  
*Jacob Richter*  
*Louis Kleinkefer*

Inventor:  
*John S. Glenn*  
*by Wm H. Lotz*  
*his Attorney.*

# UNITED STATES PATENT OFFICE

JOHN S. GLENN, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF HIS RIGHT TO GEORGE W. HOTCHKISS AND ROBERT CHARLES LYONS, OF SAME PLACE.

## IMPROVEMENT IN STOP-VALVES.

Specification forming part of Letters Patent No. **205,808**, dated October 8, 1878; application filed April 3, 1878.

### *To all whom it may concern:*

Be it known that I, JOHN S. GLENN, of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Stop-Valve, as fully set forth in the following specification.

The nature of my invention relates to valves by which to shut off or to regulate the supply of steam or water; and the object of my invention is to construct a valve in which the pressure of the steam or water will hold the joining faces in contact with each other, and the pressure in which is so counterbalanced that its faces will wear evenly, and that it is easy to operate.

My invention consists in the peculiar construction of the valve and casing, as more fully hereinafter explained.

In the drawing, Figure 1 represents a longitudinal vertical section, and Fig. 2 an exterior side elevation, of the valve complete. Fig. 3 represents the internal conical face of the valve-casing developed, and Fig. 4 an exterior view of the conical or bell-shaped valve.

A is the valve, it being a shell, shaped like the frustum of a cone, open at its lower large annular end, while its opposite end has formed to it the cylindrical stem *a*, having a squared extremity to enter a corresponding hole in handle B, in which it is secured by a screw, *b*. Through the shell of this valve or hollow plug A are cut two openings, *c c*, diametrically opposite and of equal size.

D is the valve-casing, bored out conically to make a tight fit with the conical valve A, and having two ports, *d* and *e*, diametrically opposite, and of a shape and size to correspond with the openings *c c* in valve A, port *d* of which is for the entrance and port *e* for the exit of the steam or water, and an externally screw-threaded socket is formed exteriorly around each of these ports *d* and *e*, for connecting the pipe ends therewith.

The top end of the valve-casing is bored for the valve-stem *a* to pass through, and is arranged with a screw-cap stuffing-box, *f*, while its bottom end is internally screw-threaded for holding the pipe-connecting sleeve G, which forms a second steam or water inlet port, *g*, so that the steam or water may be admitted

through either port *g* or *d* by closing the other pipe-connection by means of a screw-block; or it may be admitted through both these ports at the same time, thus adapting said valve for both a straight and a rectangular pipe-connection.

As will be noticed, the conical bore in the valve-casing is longer than the shell of valve A, so as to leave an open space under and above the ends of said valve A, the object of which is partly to provide spare room for farther advancing of the valve into its seat by the wearing off of the valve-faces, and partly for admitting steam or water into the shell of the valve through a small hole, *h*, which opens communication between port *d* of the valve-casing and the interior of the valve, and thence into the space above said valve through a small hole, *i*, bored through the upper end of the valve-shell, whereby the shell of the valve, the space above the valve, and the port *d* in the valve-casing are continuously filled with steam or water under the same pressure as in the supply-pipe, no matter if the same is admitted to the valve through port *g* or *d*; and because of the surface presented to the water or steam by the valve A at its bottom, the valve will be pushed and held to its seat by the overpressure thus obtained, which offers the advantage that the valve-faces can be made with greater inclination, whereby the wedging of the valve tight into its seat is obviated, and that no screw or other device is requisite for holding the valve-faces in contact with each other. The amount of overpressure endwise to the valve can be regulated to a certain extent by the size of the valve-stem *a*.

Into the upper and lower end of the valve-casing, vertically in line with the port *e*, are formed semi-circumferential cavities *m* and *n*, the joint area of which is equal to about two-thirds the area of one of the ports *d* and *e*, which cavities communicate with the interior of the valve and with the space above the same by short channels *o o*, so as to fill with water or steam under pressure, and to counterbalance, in whole or part, the pressure against the valve A from port *d*, while said valve is shut or partly open, thereby insuring a more even wearing of the valve-faces, and making

the movement of the valve easy under a pressure of water as much as three hundred pounds to the square inch, as the result has proved.

This stop-valve, as will be noticed, is very simple in its construction, and yet it combines all the good qualities desirable for the purpose for which it is designed—that is, it can be coupled between pipes in line with each other or with rectangularly-placed pipes. It is self-holding to its seat, and the pressure to the valve being counterbalanced, its joining surfaces will wear even on all sides, while at the same time it requires but little power for opening and closing.

What I claim as my invention is—

1. The hollow conical valve A, open at the bottom, having stem *a*, diametrically-opposite ports *c c*, and top-end port *i*, in combination with the casing D, having inlet-port *d*, diametrically-opposite exit-port *e*, and the communicating-port *h*, all constructed and arranged substantially as and for the purpose shown and specified.

2. The hollow conical valve A, open at the bottom, having stem *a*, diametrically-opposite ports *c c*, and top-end port *i*, in combination with the casing D, having inlet-port *d*, diametrically-opposite exit-port *e*, inlet-port *g*, and communicating-port *h*, all constructed and arranged substantially as and for the purpose described and shown.

3. The valve-casing D, having in the dis-

charge-port side of the valve-seat, and vertically in line with said port, the semi-circumferential cavities *m* and *n*, arranged to communicate with the diametrically-opposite entrance-port, in combination with a conical valve having diametrically-opposite ports *c c*, substantially as and for the purpose set forth.

4. The hollow conical valve A, having stem *a*, diametrically-opposite ports *c c*, and communicating-port *i*, in combination with the casing D, having inlet-port *d*, communicating-port *h*, and diametrically-opposite exit-port *e*, and, vertically in line with the latter, the semi-circumferential cavities *m* and *n*, and communicating-channels *o*, all constructed, arranged, and operating substantially as described, for the purpose specified.

5. The hollow conical valve A, open at the bottom, having stem *a*, diametrically-opposite ports *c c*, and communicating-port *i*, in combination with the casing D, having bottom inlet port *g*, inlet-port *d*, communicating-port *h*, and diametrically-opposite exit-port *e*, and, vertically in line with the latter, the semi-circumferential cavities *m* and *n* and communicating-channels *o*, all of which to be constructed, arranged, and operating substantially as and for the purpose set forth.

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Witnesses:

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