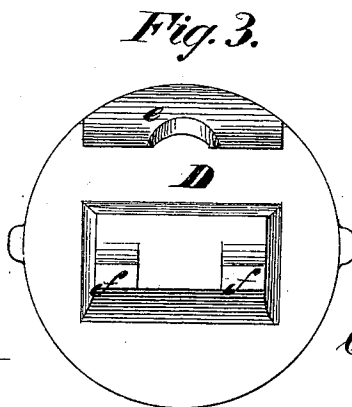
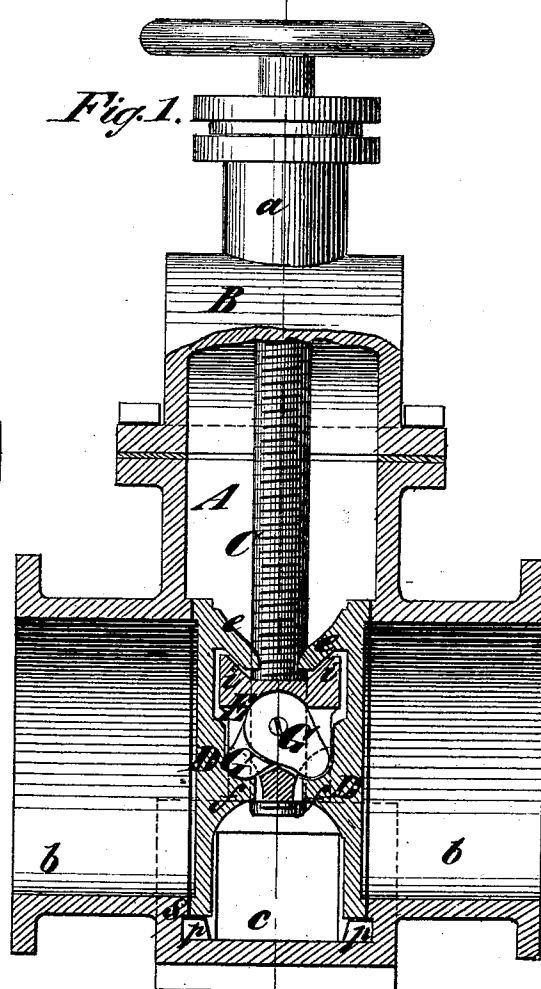
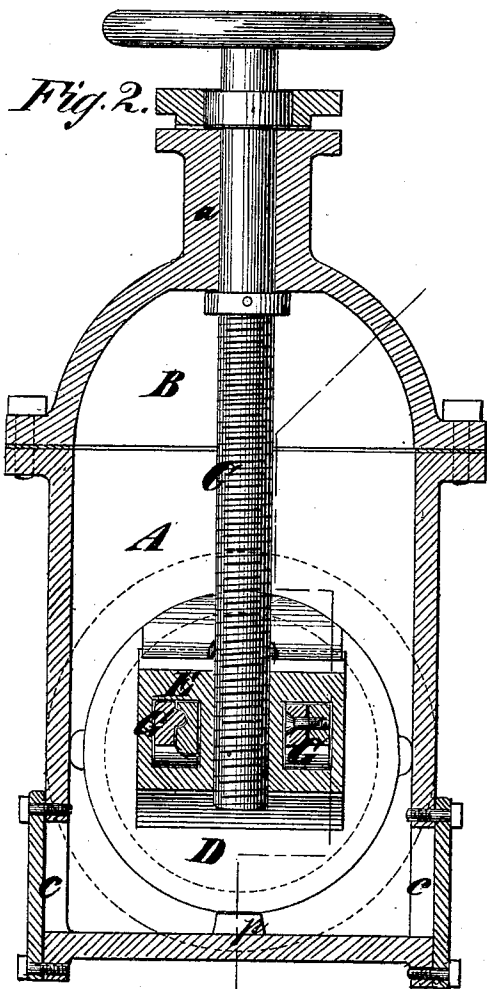


C. W. ISBELL.

Stop-Valves for Water and Gas Mains and other  
Purposes.

No. 142,700.

Patented September 9, 1873.



Witnesses  
John Becker  
Fred Haymes

Chas. W. Isbell  
by his Attorneys  
Brown & Allen

# UNITED STATES PATENT OFFICE

CHARLES W. ISBELL, OF NEW YORK, N. Y.

## IMPROVEMENT IN STOP-VALVES FOR WATER AND GAS MAINS, AND OTHER PURPOSES.

Specification forming part of Letters Patent No. **142,700**, dated September 9, 1873; application filed May 23, 1873.

*To all whom it may concern:*

Be it known that I, CHARLES W. ISBELL, of the city, county, and State of New York, have invented Improvements in Stop-Valves for Water-Mains, Gas-Mains, and other purposes, of which the following is a specification:

This invention consists in the combination of two valve-disks, provided with lips or lifting devices and a nut and toggle-levers, whereby not only may the disks be very effectively forced out, but, also, should they become rusted into their seats, they may be started by first relieving one point. Likewise, it consists in the arrangement in the shell of the valve of two opposite openings, constituting a passage between the valve-disks, whereby any obstruction may be seen without opening the valve, and may be readily removed.

In the accompanying drawing, Figure 1 is a central vertical section of the stop-valve taken through the main; Fig. 2 is a like view taken at right angles to the former; and Fig. 3 is a face view of the inner side of one of the valve-disks.

Similar letters of reference indicate corresponding parts in all the figures.

A is the shell of the valve. It is of rectangular form, and is furnished with a removable bonnet, B, which is provided with a bearing, *a*, for the reception of the shank of the operating-screw C. On its lower portion the shell has formed on it two arms or branches, *b b*, for connection to the main. The inner edges of these branches are made to project slightly into the shell, and constitute the seats *s s* for the valve-disks D D. Transversely to these branches are arranged openings *c c*, which are furnished with covers, and afford a means of access to the interior of the shell for the purpose of removing any obstruction, and this without opening the valve. The valve itself is composed of a nut, E, fitting upon the screw C, two disks, D D, and toggle-levers G G. The nut is of rectangular form, and is slotted on opposite sides to receive pairs of toggle-levers G G. These levers are mortised into one another at their joint, so that they occupy but little space in the nut. They may, moreover, be retained in their relative positions by means of a teaton one fitting into a recess in the other, as shown at the left-hand side of Fig. 2; or

said levers may be secured together by means of a screw or pin, as illustrated at the right-hand side of the same figure; but the former mode is preferable, as they may more readily be applied to the nut, and, likewise, their detachment is facilitated. These levers diverge in a downward direction at an angle of about forty-five degrees. On the top of the nut are inclines *i i*, of angle approximately the reverse of the angle of the toggle-levers. At the upper edge the disks D D have on their inner sides overhanging lips or lugs *e e*, which are inclined at about the same angle as the inclines *i i* on the nut, and fit thereon. These lips are recessed at the middle to fit the screw C. About the middle of the disks are shoulders *f f*, arranged to fit on opposite sides of the screw. On these shoulders the toggle-levers bear, and the distance between them and the lips *e* must be such that there will be some motion of the nut longitudinally on the screw before its inclines come in contact with the lips *e*, after the toggles have left the shoulders, or vice versa. The screw C is confined in place by collars fitting one on each side of its bearing *a* in the bonnet of the valve's shell.

The operation of the valve is as follows: The screw is turned to bring the disks D D down on projections *p p*, and when these are reached the disks are brought to their seats *s s*. The continued turning of the screw forces out the toggle-levers, and the disks are forced tightly against their seats, and very effectually stop the main.

By means of the passage between the disks D D, afforded by the openings *c c*, any obstruction may be got at and removed without opening the valve.

When desirable to open the valve the screw is turned in the reverse direction to raise the nut, and as soon as the inclines *i i* on the latter come in contact with the lips *e* the disks will be raised with the nut.

One great advantage attained by this mode of raising the valve-disks is that the inclines on the nut acting on the inclined lip will draw the upper edge of the disks away from their seats first, and thereby break the joint gradually. This is of the utmost importance, for oftentimes the disks become rusted fast, and it is a very difficult matter to detach them

bodily; but by drawing them off gradually their detachment is rendered comparatively easy.

What I claim as my invention is—

1. The valve-disks provided with the lifting-lugs *e e*, the nut *E*, and the toggle-levers *G G*, the whole combined and organized substantially as and for the purpose herein set forth.

2. The arrangement of the opposite openings *c* transversely to the valve-disks and the main, substantially as and for the purpose described.

CHAS. W. ISBELL.

Witnesses:

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