# J. BANISTER.

## GATE VALVES.

No. 181,899. Patented Sept. 5, 1876.

Fig. 1,

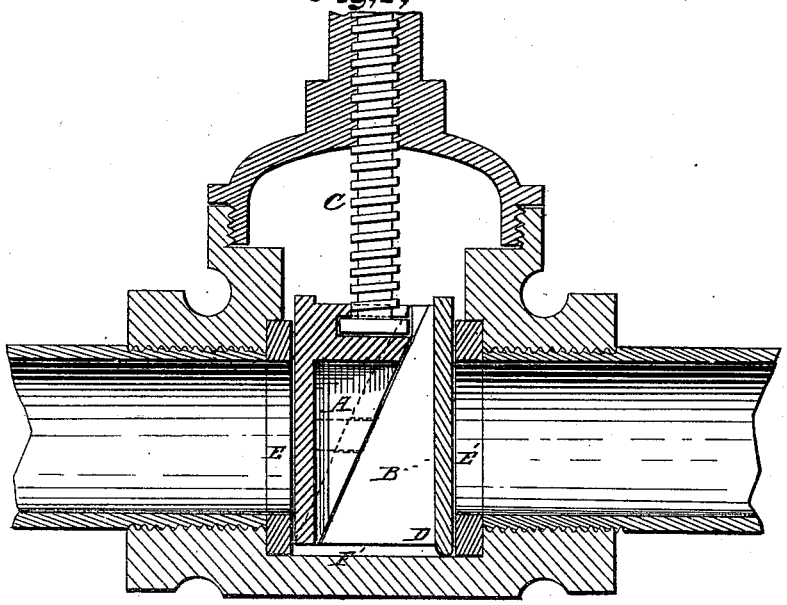



Fig. 2,

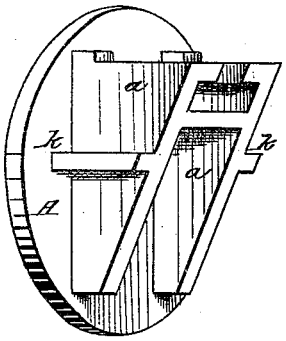
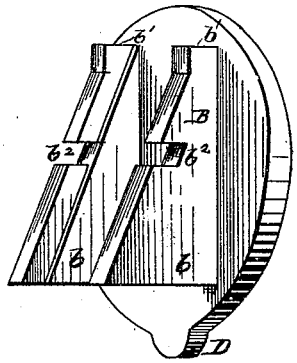



Fig. 3,




Witnesses:

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Jos. L. Coombs

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# UNITED STATES PATENT OFFICE.

JOSEPH BANISTER, OF TITUSVILLE, PENNSYLVANIA.

## IMPROVEMENT IN GATE-VALVES.

Specification forming part of Letters Patent No. **181,899**, dated September 5, 1876; application filed June 28, 1876.

*To all whom it may concern:*

Be it known that I, JOSEPH BANISTER, of Titusville, in the county of Crawford and State of Pennsylvania, have invented certain new and useful Improvements in Gate-Valves, of which the following is a specification:

My invention relates to certain improvements in that class of gate-valves in which the induction and eduction ports are closed by separate disks, having opposite inclined bearing-faces, so arranged in relation to each other that the valve-stem will force the two disks apart upon its downward movement, so as to set them firmly against their seats, and separate them when raised, so that they can easily be drawn away from the same. As ordinarily constructed, both valves have been operated directly by the valve-stem. This construction has proved objectionable, owing to the liability of the valves to jam before closing the ports, rendering it extremely difficult, if not impossible, to entirely close the same. This results from the fact that the valve-stem first starts one disk, pressing the two apart against the seats, the second valve remaining stationary until the two wedging-surfaces have exerted their full power upon each other, which binds them so firmly against the seats before closing the same that it is almost impossible to move them farther. The end of the valve-stem, in its downward movement, acts only upon one valve, the other being forced home by means of a shoulder on the valve-stem or the screw-thread thereon. This shoulder or thread only commences to act on said disk after, when the two valves begin to move together at the point where the wedging force is greatest, at which point the two disks are often so jammed against their seats that it is impossible to move them without breaking the shoulder or threads on the screw-stem.

My invention is designed to obviate this defect; and it consists in constructing the disks with inclined bearing-surfaces, in combination with a valve-stem operating directly upon one of the disks only, the other disk being operated by means of lugs on the inclined bearings of the first, which engage in slots on the second for the purpose. By this arrangement the whole strain comes upon the end of the valve-stem, and the two disks can be driven home without liability to jam or injure the valve-stem, as in valves of this class as heretofore constructed.

My invention consists in constructing the disk with inclined ways upon their adjoining faces, said ways inclining in opposite directions, and working upon each other so as to produce the proper wedging effect when the disks are forced downward. The ways on one of the disks are provided with guides upon each side, which hold the ways upon the other in place, and prevent the disks from separating laterally. Said guides are provided with slots on opposite sides, in which two lugs, formed on the ways of the other disk, are set for the purpose of moving the two disks together at the proper time.

In the drawing, Figure 1 represents a longitudinal section of my improved valve. Fig. 2 is a detached view of one of the disks, and Fig. 3 is a similar view of the adjoining disk.

A represents the disk attached to the valve-stem, and B the disk moving independently of the same. The disk A is provided with two parallel ways or projections, *a a*, extending across its rear at right angles, said projections being inclined from the top to the lower edge of the disk, and provided with lugs *k k* upon their outsides. Similar ways *b b* are formed upon the adjacent disk B. These ways, however, are provided with guides $b^1$ $b^1$, which embrace the ways on the disk A, and prevent any lateral separation of the two disks when placed together. The guides in the ways *b b* are slotted, as shown at $b^2$ $b^2$, for the reception of the lugs *k k*, which have a slight play therein, so as to allow the two disks to move independently a slight distance, in order that the wedging-surfaces may act properly. C represents a valve-stem, as ordinarily constructed, attached to the disk A only, as shown in Fig. 1. E E′ represent the ordinary induction-ports, and F′ the valve-chamber. D represents a heel or lug, attached to the lower part of one of the disks, to prevent the valve from reaching the bottom of the valve-chamber, so as to leave a space for the collection of sediment, in order that the same may not interfere with the action of the valve.

The operation of my invention will be obvi-

ous. When the valve is open, the disk A will be slightly above the disk B. When the stem C is forced downward, the valve A commences moving, forcing the inclined ways together, separating the disks, and pressing the same toward their seats. When properly set against their seats, the lugs *k k* engage in the lower edges of the slots $b^2$ $b^2$, causing both of the disks to be forced home together.

It will be seen that as soon as the wedging-surfaces have exerted their full force the upper disk begins to move the lower with it, thus preventing any farther separation of the disks, and any jamming consequent upon such farther separation.

It will be further observed that the whole force necessary to send the disk home is exerted by the extreme end of the valve-stem; consequently there is no danger of injuring the same or the screw-threads thereon.

What I claim, and desire to secure by Letters Patent, is—

The combination of the disks A and B, provided with opposite inclined ways, set at right angles to said disks, one provided with lugs *k k*, and the other with guides $b^1$ $b^1$, having slots $b^2$ $b^2$, in which the lugs *k k* set and engage, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of the subscribing witnesses.

JOSEPH BANISTER.

Witnesses:
M. E. BASSETT,
HENRY E. UNGLEY.