(No Model.)

E. ALLT.

Gate Valve.

No. 233,180. Patented Oct. 12, 1880.

Fig: 1

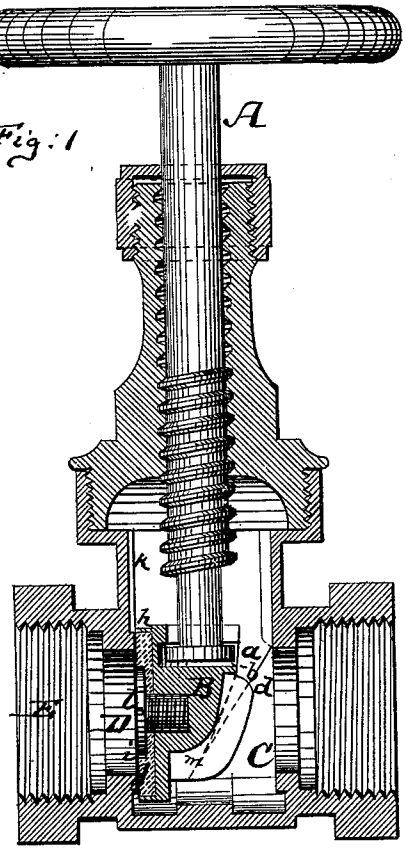


Fig: 2

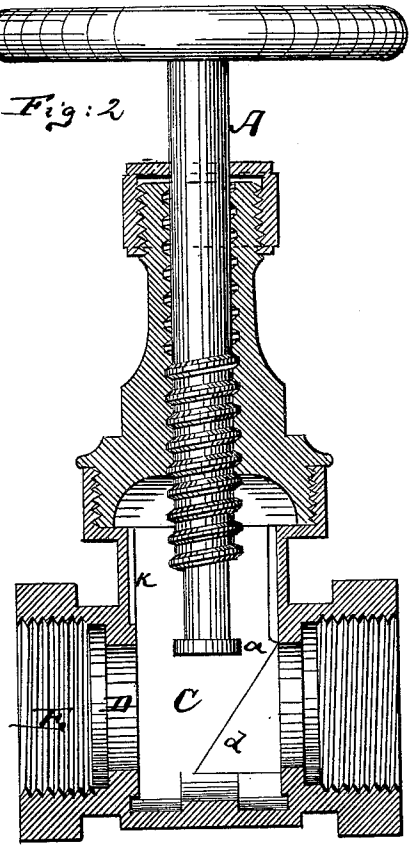


Fig: 3

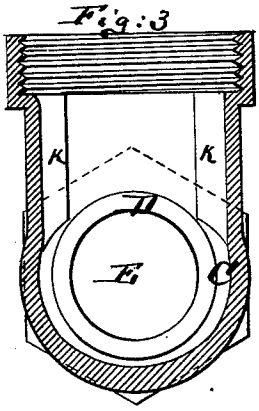


Fig: 4

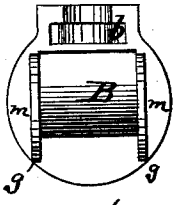


Fig: 5

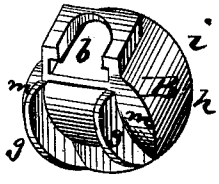
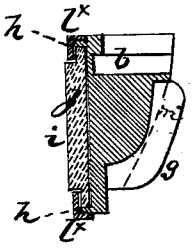


Fig: 6



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UNITED STATES PATENT OFFICE.

EDMUND ALLT, OF BROOKLYN, NEW YORK.

GATE-VALVE.

SPECIFICATION forming part of Letters Patent No. 233,180, dated October 12, 1880.

Application filed June 24, 1880. (No model.)

To all whom it may concern:

Be it known that I, EDMUND ALLT, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Gate-Valves, of which the following is a specification.

Heretofore in those gate-valves which are forced to their seats by means of oppositely-inclined planes or adjoining surfaces two valve-disks have been used. One method has been to arrange the planes of the disks to slide laterally or obliquely upon each other. The objection to this is, that it causes the disks to separate laterally and bind against the sides of the recess in which they move. Another method was to move the disks vertically; but as two disks were used there was a lack of simplicity and strength.

The object of my improvements is to avoid the above objections and produce a sliding gate-valve simpler, stronger, and more readily adjustable than has heretofore been known or used. I attain this object by using only one valve-disk, so arranged, however, as to slide upon a fixed incline-plane surface or surfaces formed on the interior of the recess, in which the valve-disk is moved upward or downward by the valve-stem, and sliding in such a manner that it moves vertically, and when it reaches the bottom of the inclined plane presses firmly against its valve-seat.

In the accompanying drawings, Figure 1 is a vertical central section of a gate-valve and its chamber embodying my invention. Fig. 2 is another similar vertical section, showing the same apparatus with the valve-disk removed. Fig. 3 is a cross vertical section of the valve-chamber, with the valve-disk and valve-stem removed. Fig. 4 is a view of that side of the valve-disk which comes in contact with the inclined surface. Fig. 5 is a perspective view of the valve-disk, and Fig. 6 is a vertical section of a modified form of the valve-disk.

My improved gate-valve operates as follows: The valve-stem A and the valve disk or body B are fitted together by slipping the flanged end *a* of the valve-stem into the recess *b* on the top of the valve-disk. The stem and disk are then inserted into the valve-chamber C, so that the inclined ribs *m*, Figs. 1 to 5, of the valve, and the fixed inclined surface *d* in the chamber, Figs. 1 and 2, come in contact, the surface *m* sliding on the surface *d* as the valve-stem A is screwed down until the face *i* of the valve-disk B will press firmly against its seat D in the chamber and close the aperture E. (Shown in cross-section in Fig. 3.) This aperture E is opened by an operation the reverse of that just described.

In Figs. 1 and 2 one of the fixed inclined projecting ribs forming the surfaces *d* is shown, on which surfaces the valve-disk slides. Each of these ribs is a projection of the form indicated upon the interior of the valve-chamber at or near one end thereof.

The valve-disk B (shown in the drawings, Figs. 4, 5, and 6,) has its inclined ribs *m* at the back—*i. e.*, opposite its face *i*—and has projecting lugs *g*, which hold the disk steady by fitting between the ribs *d* of the valve-chamber; but in lieu of the lugs *g* the ribs *m* may be grooved to receive the ribs *d*, or vice versa; or they (the lugs *g*) may receive the ribs *d* between them, instead of catching between said ribs *d*. But while I prefer the above form I do not limit myself to it, as any disk which is adapted to move as described to close the aperture is sufficient.

I also construct the face *i* of the valve-disk which comes in contact with the seat D in the following manner, which I consider novel with me, and preferable, though any other construction of that face which will enable it to close the aperture is sufficient: A recess is cut into this face of the metal valve, so as to leave only a narrow rim, *h*, around the outside edge. In this recess a disk, *j*, of rubber or suitable packing, is placed, so as to form an even outer surface somewhat beyond the edge of the rim *h*. This rubber is fastened in place by a screw, *l*, passed through the center of the face; but the head of said screw is let into a recess in the face of the disk *j*, so that said screw-head will not interfere with the vertical movement of the valve to and from its seat. The modification shown in Fig. 6 shows, in lieu of the central screw, *l*, an outer annular screw, $l^{\times}$, engaging over a thread of the rim *h* and fitting into a sunken annulus near the edge of the disk *j*. This construction is best adapted for larger valves having large disks *j*.

In Figs. 1 and 3 are also shown upright

guide-ribs *k k*, formed in the valve-chamber above the seat D. These are formed by cutting away the metal on the center portion of the side adjacent to and above the seat D, leaving the ribs *k* of this chamber projecting. This is advantageous in lessening the surface exposed to friction as the valve-disk descends and ascends.

Having thus described my invention, what I desire to claim and secure by Letters Patent is—

1. The combination of a single gate-valve, B, having inclined back *m* and upright face *i*, with one or more fixed inclined ribs, *d*, formed within the valve-chamber C, along which ribs the valve is moved to and off its seat, and with a stem, A, to which said valve is directly and bodily attached, and on which it can slide horizontally, substantially as herein shown and described.

2. As a new article of manufacture, a sliding valve, B, having on its face a recess and an overhanging rim, *h*, in combination with a packing-disk, *j*, and with a screw sunk into said disk *j* and uniting it with the valve B, all arranged so that the valve is capable of sliding on its vertical flush face, substantially as described.

3. The chamber C, having ribs *d* and *k* and seat D, in combination with the valve B, substantially as herein shown and described.

4. The stem A, having flange or head *a*, in combination with the single suspended valve-disk B, having packing *j*, and with the case C, having fixed rib or ribs *d* and seat D, substantially as herein shown and described.

5. The valve B, having inclined back *m*, upright face *i*, and guide lug or lugs *g*, in combination with the case C, containing the fixed inclined rib or ribs *d*, substantially as herein shown and described.

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