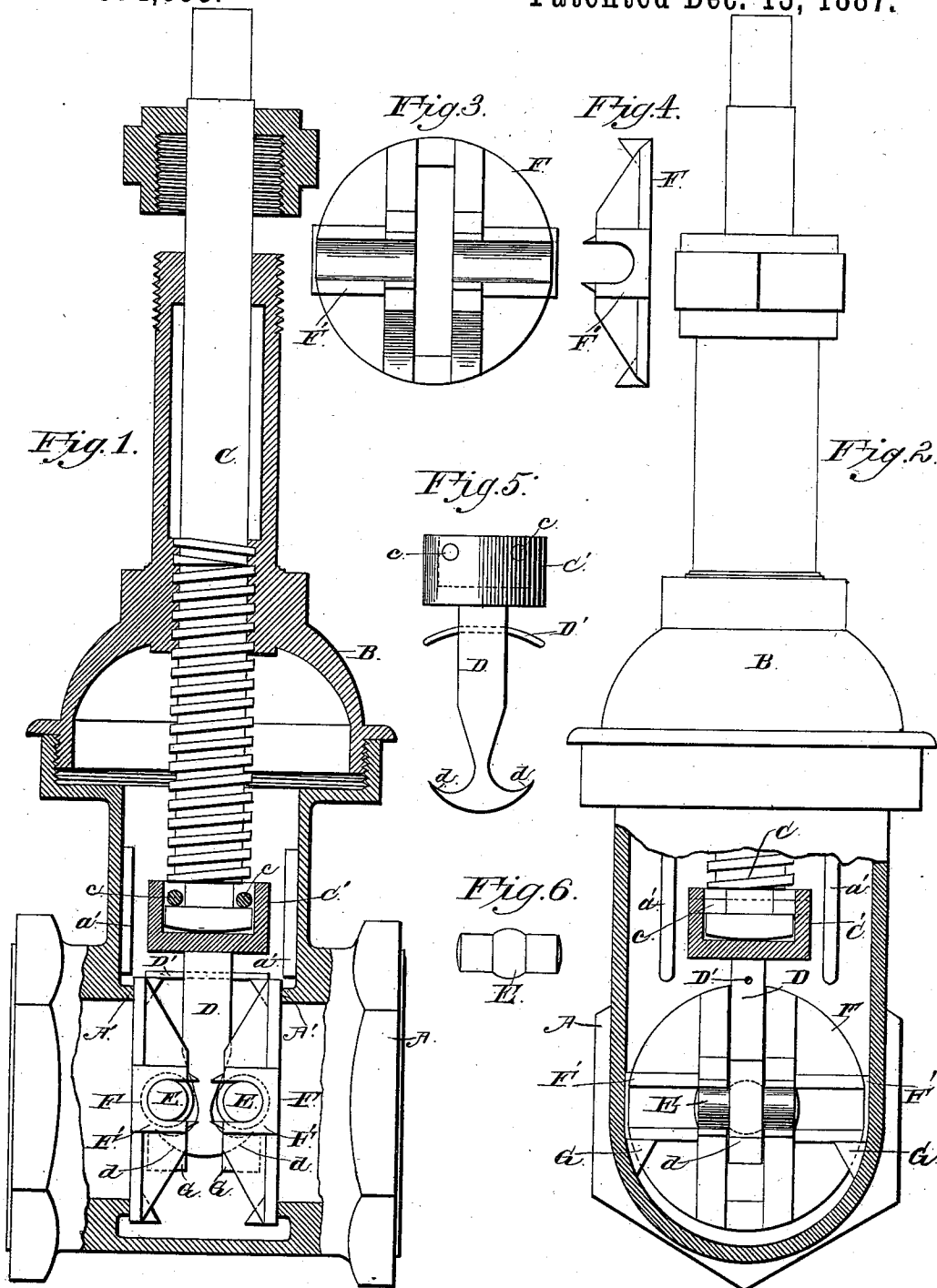


(No Model.)

W. S. PAYNE.
GATE VALVE.

No. 374,695.

Patented Dec. 13, 1887.



WITNESSES

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UNITED STATES PATENT OFFICE.

WALTER S. PAYNE, OF FOSTORIA, OHIO.

GATE-VALVE.

SPECIFICATION forming part of Letters Patent No. 374,695, dated December 13, 1887.

Application filed May 19, 1887. Serial No. 238,784. (No model.)

To all whom it may concern:

Be it known that I, WALTER S. PAYNE, a citizen of the United States, residing at Fostoria, in the county of Seneca and State of Ohio, have invented a new and useful Improvement in Gate-Valves, of which the following is a specification.

My invention relates to an improvement in gate-valves; and it consists in the construction and arrangement of the parts of the same, which will be more fully described hereinafter, and pointed out in the claims.

The object of my invention is to produce a novel form of gate-valve which is simple and effective in its construction and operation, strong and durable, and positive in its results. I attain this object by the construction illustrated in the accompanying drawings, wherein like letters of reference indicate similar parts in the several views, and in which—

Figure 1 is a sectional elevation of my improved valve. Fig. 2 is a similar view looking at the valve in another position. Fig. 3 is a front elevation of the valve-disk. Fig. 4 is an edge elevation of the same. Fig. 5 is a front elevation of the wedge. Fig. 6 is an elevation of one of the rollers.

A represents the valve-body; B, the hood-and-stem connection; C, the valve-stem, and D a steel wedge. The steel wedge D is connected in a metallic box, C', secured to the lower end of the valve-stem C by means of pins c passing therethrough, as shown in the drawings. The stem C is adapted to be operated by a suitable hand-wheel, or, if desired, by means of a key.

Resting against the seats A', as shown in Fig. 1, are two chisel-edged disks, F F, which are provided with integral cross-bars F', arranged on their inner faces and projecting slightly outward from the ends thereof and adapted to rest upon the stops G, formed integrally with the internal portion of the valve-body, when the said disks are in a closed position, as shown in Figs. 1 and 2. On the face of the said disk adjacent to the said cross-bars F' a recess is formed, in which frictional rollers E E are mounted, and are adapted to be engaged by the two horns formed with the lower portion of the steel wedge D. In the upper portion of the valve-body adjacent to the box C' two ribs, a', are formed with the sides thereof and act as

guides for the said disks F F when raised to open the valve. The projecting portions of the bars F' on the disk also act as a guide for the same when they are raised by touching the side of the valve-body and preventing them from becoming displaced from their proper line of elevation. When the valve-stem C is raised to open the valve, the horns d on the steel wedge D catch under the rollers E and draw the disks F upwardly, causing them to bear against the ribs a', causing them to preserve their line of separation in direct alignment with the valve-seats. When the said disks are adapted to be closed, the stem C is screwed down, forcing the steel wedge D between the two disks and pressing them apart, and causing them to be forced against their seats A' and close the valve. As an auxiliary to aid the steel wedge D in pressing the disks F to their places against the seats A', a flat spring, D', is secured in the upper portion of the steel wedge D, projecting outwardly on each side thereof, and is adapted to engage with the top portion of each of the said disks F and force them down against their seats and retain them thereagainst by means of the spring action brought to bear on their upper edges through the medium of the spring D'. In the descent of the steel wedge D it continues to go down between the friction-rollers E and forces the disk against the valve H, closing them tightly. In opening the said disk the first part of a turn of the stem C releases the wedge D, and the disks are perfectly free and are drawn up by the two horns on the said wedge. By this construction there is no wear or sliding of the disk against the valve-seats, and, if desired, the disk may be formed with countersunk faces with the portion thereof which touches the valve-seat raised, so that it can be turned off and reground without turning off the whole face of the disk.

Through the stuffing-boxes and other watertight constructions the packing may be inserted as desired.

The novelty and utility of my improved device being obviously apparent, it is unnecessary to further enlarge upon the same herein.

Having thus described my invention, I claim—

1. In a gate-valve, the combination of the two chisel-edged disks F, having cross-bars

- integrally formed with their central portion and projecting slightly outward from the sides thereof, and having depressions or recesses formed therein, the frictional rollers E, mounted in said depressions or recesses of the disks, and the wedge D, secured to the valve-stem and provided with the horns *d*, which are adapted to engage with the rollers E, as set forth.
2. In a gate-valve, the combination of the chisel-edged disks F, having the cross-bars F' integrally formed therewith, the frictional rollers E, mounted in said disks, the wedge D, having the horns *d* integrally formed with the lower end thereof, and the stops G, substantially as described.
3. In a gate-valve, the combination of the disks F, having the cross-bars F', the frictional rollers E, mounted in said disks, the wedge D, having the horns *d* integrally formed with the lower end thereof, the box C' on the upper end of the wedge, the valve stem C, the spring D, the stops G, and the guide-flanges *a'*, substantially as described.
4. In combination with the disks F, having the cross-bars F', provided with projecting portions or ends which extend beyond the disks and act as guides for the disks when the same are raised by touching the sides of the valve-case, and thereby preventing the disks from becoming displaced from their line of elevation, the wedge D, adapted to be inserted between the disks to press them apart in opposite directions, the friction-rollers E on each disk, and against which rollers the wedge acts, the horns *d* on the lower end of the wedge to catch around the rollers when it is desired to raise the disks out of place, and the screw C, pressing the wedge in place, as set forth.
5. In a gate-valve, the disks F, in combination with the wedge D, having the horns *d* at its lower end, the rollers E on the disks F, and around which rollers the horns catch, and the spring D', mounted on the shank of the wedge and adapted to bear on the disks F to act as an auxiliary in holding the same in place, as set forth.
6. In a gate-valve, the combination, with the disks F, having the rollers E, of the wedge having the horns *d* at its lower end to engage around the rollers, and a screw, C, to force the wedge D between the two disks and their corresponding rollers, as set forth.
7. In a gate-valve, the disks F, separated from and independent of each other, combined with the wedge D, to be inserted between the disks to press them apart in opposite directions, and horns *d*, integrally formed on the wedge to engage with each disk, so as to withdraw the latter along with the wedge, the box C', from which the wedge is suspended, and the screw C, connected to the box C', as set forth.
- In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.
- WALTER S. PAYNE.
- Witnesses:
W. S. ADAMS,
G. G. SILL.