L. C. RODIER.
Gate-Valves.

No. 197,227. Patented Nov. 20, 1877.

Fig. 1

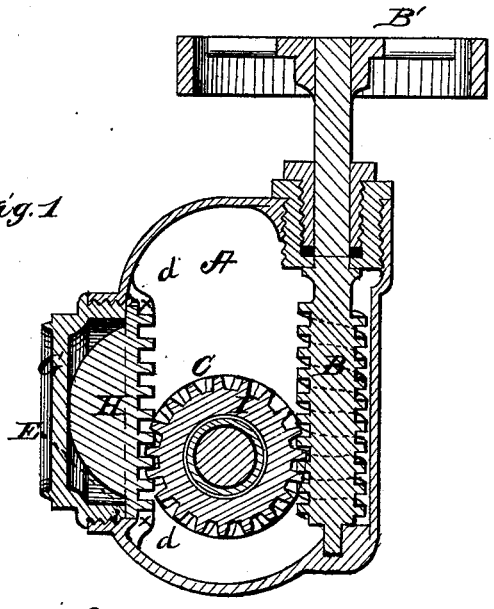


Fig. 2.

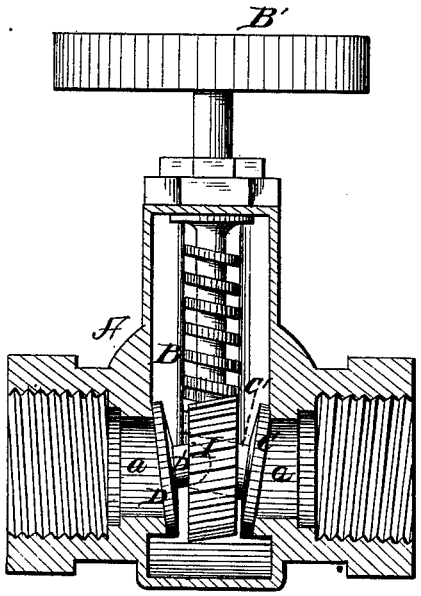
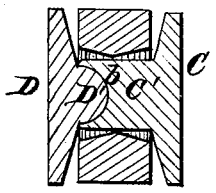


Fig. 3.



WITNESSES
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LOUIS C. RODIER, OF SPRINGFIELD, MASSACHUSETTS.

IMPROVEMENT IN GATE-VALVES.

Specification forming part of Letters Patent No. **197,227**, dated November 20, 1877; application filed October 30, 1877.

To all whom it may concern:

Be it known that I, LOUIS C. RODIER, of Springfield, in the county of Hampden, and in the State of Massachusetts, have invented certain new and useful Improvements in Gate-Valves; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

My invention relates to that class of gate-valves in which the valve is operated by means of a worm-shaft, and a worm-gear in the valve taking into said worm-shaft and a stationary rack in the casing; and the nature of my invention consists in the construction of the valve, in providing the shell with a side opening closed by a screw-plug, or its equivalent, and in the combination of parts, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a transverse vertical section of a gate-valve embodying my invention. Fig. 2 is a longitudinal section of the same. Fig. 3 is a section through the valve proper.

A represents the shell of the valve, with inlet at one end and outlet at the other. Within the shell are formed the two valve-seats *a a*, between which the valve moves, said seats being made inclined in opposite directions, so that their lower sides will be closer together than their upper sides, as shown in Fig. 2. B represents the worm-shaft, by which the valve is raised and lowered, as required.

The valve is composed of two circular disks, C and D, of equal size. The disk C is formed on its inner side with a central round projection, C′, in the end of which is made a semi-spherical concavity, *b*, and on the inner side of the disk D is formed a semi-spherical projection, D′, to fit in the concavity *b* of the post C′, the two forming, as it were, a complete ball-and-socket joint.

On the post C′ is placed a loose circular worm-gear, I, which meshes with the worm-shaft B. The inner edge of this worm-gear is made convex, or beveled from the center toward both sides, as shown in Fig. 3, so as to cause it to work properly when the two disks of the valve are at different angles.

In the side of the shell A is made an opening, at E, of circular form, and provided with interior screw-threads for the attachment of a screw-plug, G. In this opening E are inwardly-projecting lugs *d d*, upon which rests a rack-bar, H, for the worm-gear I to engage with. This rack-bar is provided with small lips *x x*, to fit against the lugs *d*, and the screw-plug G then holds the rack-bar firmly in its place.

By means of the opening E and the screw-plug G the interior parts of the valve can be put in and removed whenever required. This part of my invention is applicable to all straight-stem valves.

By my construction of the valve the worm-gear I always has a firm bearing on the post or projection C′ without kinking or binding on the two disks of the valve, and the convex and concave joint between the disks causes the bearing at all times to be in the center.

The worm-shaft B is, on its upper end, provided with a hand-wheel, B′, which is constructed, in the ordinary manner, with interior braces. In my case, however, I make the upper edges of these interior braces flush with the edge of the rim of the wheel, so that the wheel can be easily wiped off, which cannot be done when said braces are dropped down below the surface of the rim.

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

1. In a straight-stem valve, the shell provided with a side opening directly opposite the valve-seat, having a screw-plug, or its equivalent, for closing the same, as herein set forth.

2. A gate-valve composed of two disks, C and D, the disk C being provided with cylindrical post C′, having concave seat *b*, and the disk D, provided with semi-spherical projection D′, substantially as and for the purposes herein set forth.

3. The loose circular worm-gear I, having

ts inner edge convex, as described, in combination with the two disk-valves C D, having concave and convex joint, substantially as herein set forth.

4. The combination of the shell A, with inclined seats *a a*, worm-shaft B, valve C D, with loose worm-gear I, the rack H, opening E, and screw-plug G, all constructed substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 29th day of October, 1877.

LOUIS C. RODIER.

Witnesses:
FRANK GALT,
H. A. TOULMIN.