(No Model.)

J. H. STREHLI.

GATE VALVE.

No. 299,594. Patented June 3, 1884.

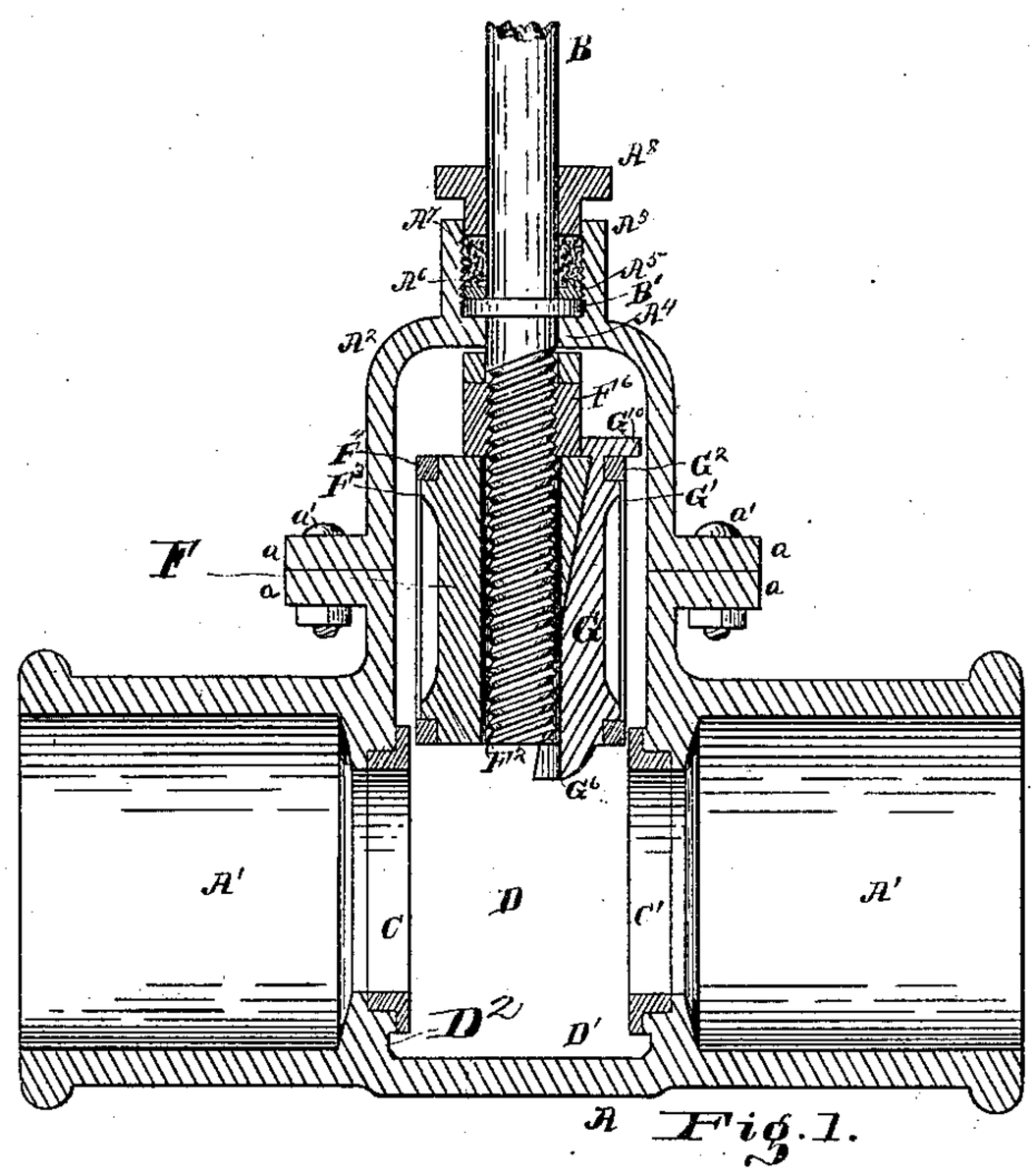

Fig. 1.

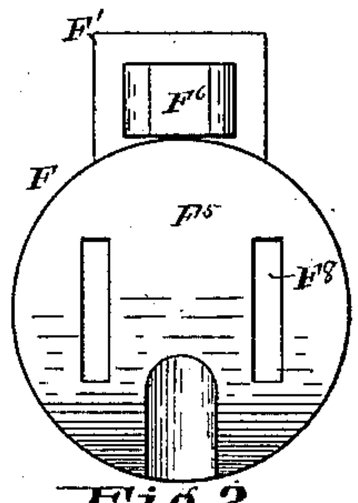

Fig. 2.

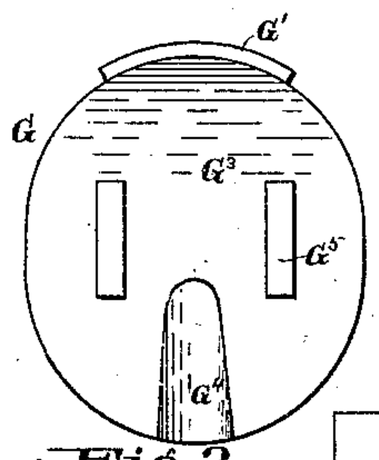

Fig. 3.

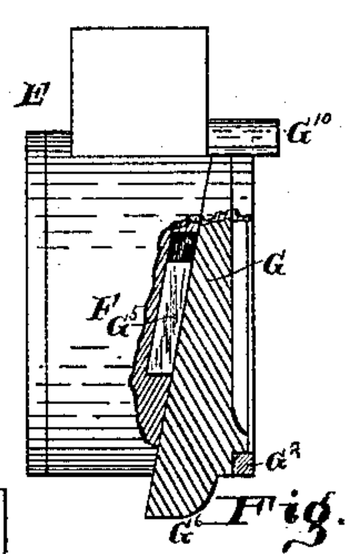

Fig. 4.

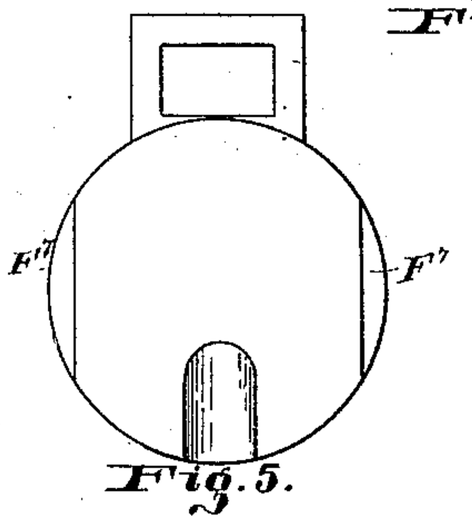

Fig. 5.

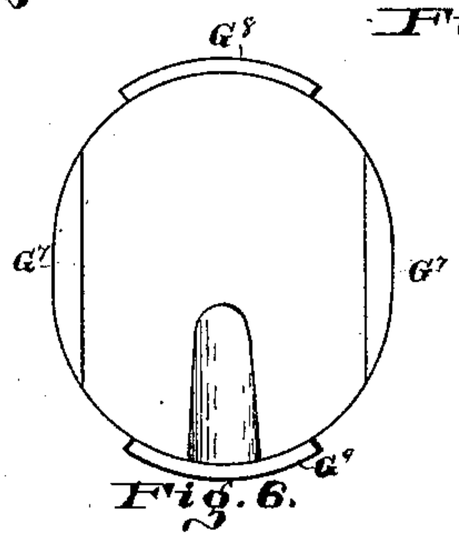

Fig. 6.

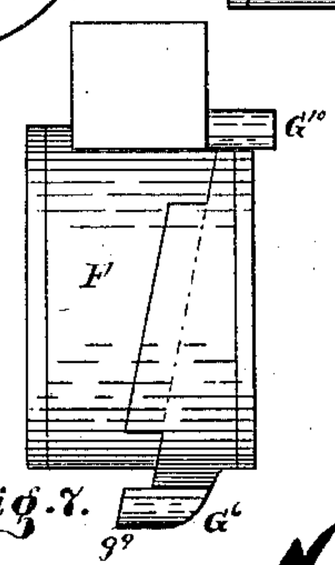

Fig. 7.

Attest:

J. H. Strehli.

E. R. Hill

Inventor:

Joseph H. Strehli,

per Wm. Hubbell Fisher.

Atty.

UNITED STATES PATENT OFFICE.

JOSEPH H. STREHLI, OF CINCINNATI, OHIO.

GATE-VALVE.

SPECIFICATION forming part of Letters Patent No. 299,594, dated June 3, 1884.

Application filed July 11, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH H. STREHLI, of the city of Cincinnati, county of Hamilton, and State of Ohio, have invented certain new and useful Improvements in Gate-Valves, of which the following is a specification.

My invention relates in general to that class of gate-valves which are employed to regulate the passage of steam, water, gas, or any other fluids through conduits, and relates more particularly to that description of such valves where the case contains a flat-faced valve fitting loosely within said case, and provided with mechanism for causing, at the will of the operator, each face of the said valve to press against its respective seat.

My invention, in general, consists of a novel construction of the valve and of the mechanism for operating it, whereby it can be readily and efficiently opened and closed.

The precise nature of my invention will be fully apparent from the following description.

In the accompanying drawings, making a part hereof, Figure 1 represents a vertical longitudinal section taken through the center of a valve and case, illustrating my invention. Fig. 2 represents a side of one portion of the valve, and Fig. 3 a side of the other portion of the valve, the sides thus shown in elevation being those which impinge against each other when the valve is in operating position, as shown in Fig. 1. Fig. 4 represents an elevation of the edge of the valve apart from the case, the view being taken from the same direction as it is in Fig. 1, and the edge of the valve being partially broken away to exhibit certain portions of the interior construction. Figs. 5 and 6 illustrate a modification of the construction shown in the preceding figures, those sides of the two portions of the valve which are shown in Figs. 5 and 6 being adapted to come against each other when the valve is in operating position. Fig. 7 represents an elevation of the edge of the valve shown in Figs. 5 and 6.

A indicates the valve-case, having suitable extensions, A′, whereby connection can be made with the conduits of the fluid whose flow is to be regulated. The upper portion of the case has a cap, A^2, connected to the main part of the case by any suitable means, as by the flanges *a* and bolts *a′*. The cap carries the usual stuffing-box, A^3, through which passes the operating-stem B, provided with flange or arms B′, resting on the annular flange A^4, which latter is rigidly fixed to the cap. The stem is prevented from rising out of place, preferably by the ring A^5, whose periphery is provided with a screw-thread engaging a screw-thread located on the interior of the stuffing-box, the ring A^5 being screwed down to place by suitable means—as, for instance, the projections A^6. Above the ring and within the stuffing-box is the packing A^7, held down by the customary stuffing-box cap, A^8. When desired, the ring A^5 may be omitted, in which event the packing will keep the stem from rising.

C indicates a circular valve-seat at one side of the valve-chamber D, and C′ indicates another circular valve-seat at the opposite side of the valve-chamber.

The valve E proper is composed of the portions or sub-valves F G. Portion F is provided with an extension, F′, which contains a nut, F^6, or equivalent device having a female screw, whose threads engage the screw-thread formed on the periphery of the stem B. The latter passes down through an orifice, F^2, in the valve. This portion F has a circular face, F^3, usually provided with a ring or facing, F^4. The inner face, F^5, is beveled, lying in a plane oblique, as shown, to the plane of face F^3. The portion G has a circular face, G′, usually provided with a ring or facing, G^2, and the inner face, G^3, of the portion G is beveled, lying in a plane oblique, as shown, to the plane of the face G′. This portion G has a suitable recess, as G^4, to allow the portion G to rest against the portion F without interfering with the action of spindle B. The oblique face of portion F makes the same angles with the face F^3 as the oblique face of portion G makes with the face G′, the obliquity running in opposite directions, as shown. Thus when the two oblique faces F^5 and G^3 are brought together the plane of the faces F^3 and G′ will be at all times parallel.

Suitable means are to be employed to pre-

vent the valves from sliding laterally upon one another. In Figs. 1, 2, 3, and 4 the means shown for this purpose are as follows: One of the portions carries ribs or projections, as G^5, each of which projections enters a slot or recess, as F^8, in the portion F. Each slot is made sufficiently long to allow the rib which enters it to play up and down a suitable distance to permit the portions F and G to be moved against each other and at the proper time to be firmly wedged against their respective seats. The lower end or part of portion G is usually provided with a pin or other extension, G^6, which, when the valve is raised, extends below the lower end or part of portion G. The operation of the valve is as follows: Suppose the valve to be open, by turning the stem B in the proper direction the nut F^6 is depressed, and carries down the valve E until the extension G^6 strikes the bottom D′ of the valve-chamber, when the portion G will be brought to rest, its valve-face G′ being opposite the valve-chamber seat or face C′. The stem is continued to be turned, and the portion F is continued to be depressed. As the oblique face of portion F descends against the oblique face of portion G the face F^3 of portion F will be moved against the valve-chamber face C, to which it is now opposite, and the face G′ of the portion G will be moved against the valve-chamber face C′, and the faces F^3 and G′ will be firmly wedged or forcibly fixed against their respective valve-chamber faces. The gate of the valve is now tightly closed, so that no fluid can pass through it. When it is desired to open the gate, the stem is turned in an opposite direction. The portion F will be carried up, thereby loosening the faces F^3 and G′ from the respective faces of the valve-chamber, and as soon as the rib or ribs G^5 strike the bottom of the slot or slots F^8 the portion G will rise, and the valve as an entirety is carried up out of the way, as shown in Fig. 1.

In the modification shown in Figs. 5, 6, and 7 the means for preventing the portions F and G from sliding laterally against each other consist of recesses F^7, made at the periphery of one of the said portions of the valve, and lugs or projections G^7, at the periphery of the other portion of said valve, each of the said recesses receiving its respective projection. When recesses such as F^7 are employed, it will be necessary to add suitable means whereby the portion F shall compel the portion G to rise, and, when necessary, to descend with it. A preferable means for this purpose consists in the flange or projection G^8, located at the top of the portion G, and the flange or projection G^9, located at the bottom of said portion. Thus when portion F rises it will impinge against flange G^8 and carry portion G along with it.

In certain valves, particularly large ones, where compactness is a great desideratum, the extension F′ and nut F^6 may be dispensed with, the cap A^2 be correspondingly shortened, and a female screw cut in the upper part of the portion F of the valve engage the screw-thread upon the stem.

When desired, means other than a screw-thread are to be used to elevate and depress the valves. For example, the lower end of the stem may be connected to the valve, and the stem have imparted to it a reciprocating motion by suitable mechanism—as, for instance, by a lever.

When the valve is inverted, the portion or portions G will usually be the ones to be suitably connected to the valve-stem.

What I claim as new and of my invention, and desire to secure by Letters Patent, is—

1. The herein-described valve, consisting of the portions F and G, the outer faces of said portions being at all times parallel and the inner faces being beveled in opposite directions, as shown, and in contact with each other throughout their entire extent, the portion G being provided with ribs or projections G^5, and the portion F with recesses F^8, to receive said ribs to prevent lateral motion, substantially as and for the purposes specified.

2. The herein-described valve, consisting of the portions F and G, the outer faces of said portions being at all times parallel, and their inner or meeting faces being beveled in opposite directions, the portion F being connected to the valve-stem, and the upper edge of the portion G being provided with a projection, G^{10}, to engage with the lug or projection at the upper part of the valve-box, to stop said portion G at the proper point, substantially as and for the purposes specified.

JOSEPH H. STREHLI.

Attest:
A. S. LUDLOW,
E. R. HILL.