(No Model.)

D. KENNEDY.

STOP VALVE.

No. 338,275. Patented Mar. 23, 1886.

Fig: 1.

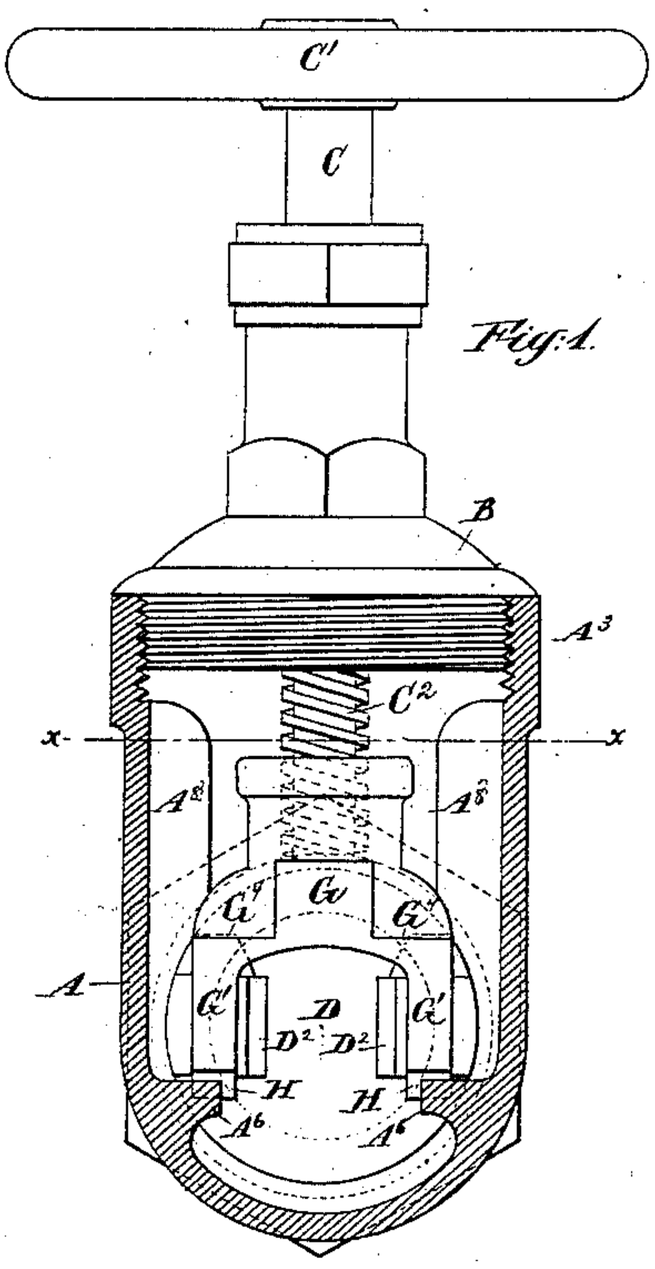


Fig: 2.

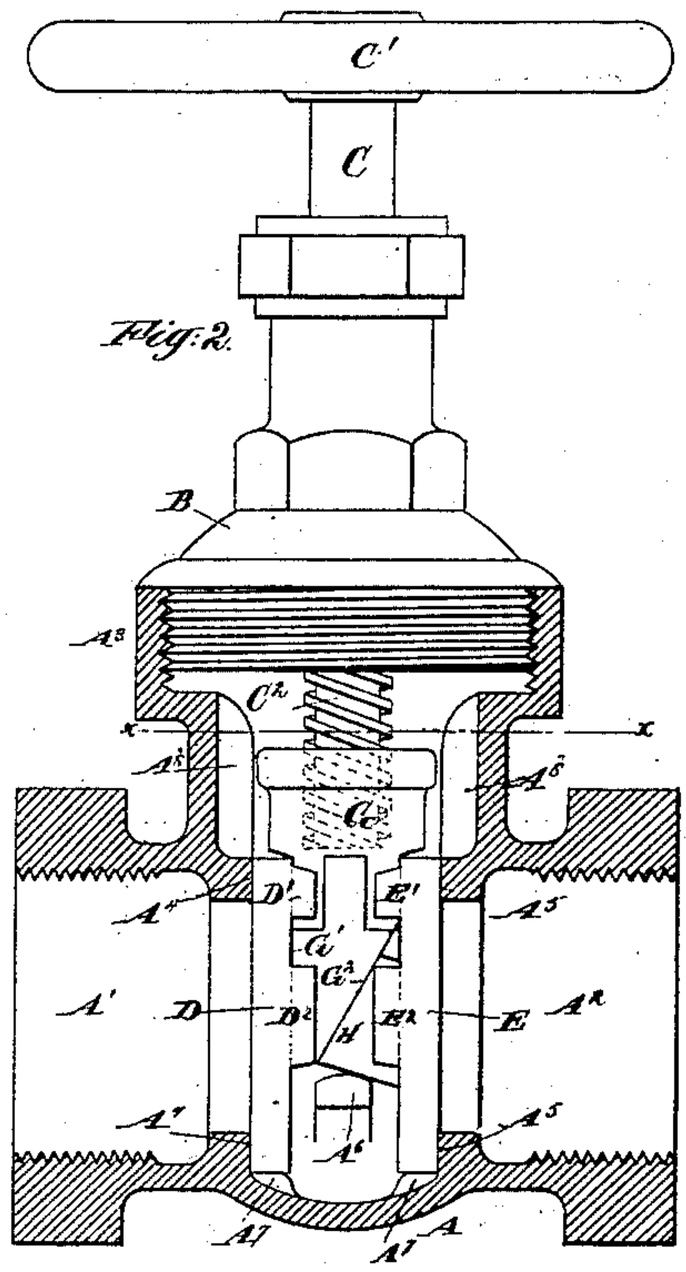


Fig: 3.

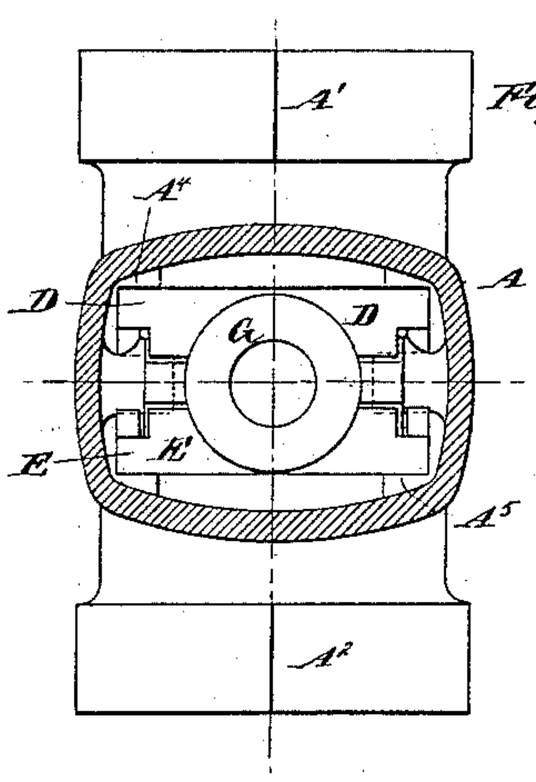


Fig: 5.

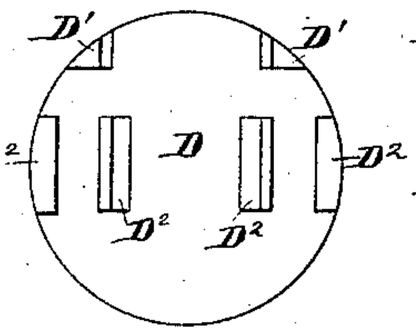


Fig: 4.

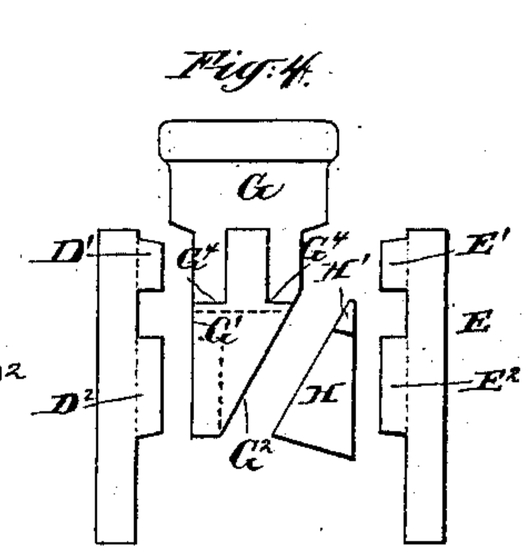
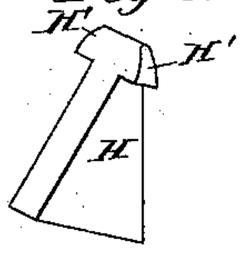


Fig: 6.



Witnesses:
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L. P. Smith.

Inventor:
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by his attorney
Thomas Dyer Stetson

UNITED STATES PATENT OFFICE.

DANIEL KENNEDY, OF NEW YORK, N. Y.

STOP-VALVE.

SPECIFICATION forming part of Letters Patent No. 338,275, dated March 23, 1886.

Application filed October 29, 1885. Serial No. 181,304. (No model.)

To all whom it may concern:

Be it known that I, DANIEL KENNEDY, of the city and county of New York, in the State of New York, have invented a certain new and useful Improvement relating to Stop-Valves for Water and other Fluids, of which the following is a specification.

The invention is intended more particularly for valves for controlling large water-pipes in the streets of cities and in other situations. The improved construction acts on a principle long known and much approved of moving two plane-faced disks simultaneously across the water-way, and when they are fully across giving them an axial movement, separating them one from the other, and thereby forcing each plane face against a suitable plane seat. The movements occur in the reverse order in opening the valve. This mode of operating allows an easy movement, because the gates are not in contact with their seats while the valve is being opened and closed, gives two water-tight annular contacts when the valve is closed and a straight water-way when the valve is open; but as heretofore constructed and operated difficulties have been involved. One of these is encountered in the commencement of the opening movement. With the construction heretofore ordinarily employed there is a strong tendency to slide the gate on its seat in the act of commencing the opening movement. Any such movement before the pressure on the gate is relaxed tends to abrade the surfaces. The improved construction insures that the movements shall take place in the required order in opening the valve. First the force holding the gates apart, and consequently pressing them against their seats, is relaxed and the valves are allowed to move together, and then after such relaxing of the pressure against the seat the force commences to be applied to lift the gate, and thereby actually opens the valve. I have wrought out the invention in practice with provisions for insuring accurate working both in opening and closing movements.

The accompanying drawings form a part of this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 is a vertical section at right angles to the axis of the water-pipes, the nearest gate being removed. Fig. 2 is an edge view of the valve, with a section of the casing in the plane of the axis of the pipe. Fig. 3 is a plan view on the line *x x* in Figs. 1 and 2. The remaining figures show details detached. Fig. 4 shows the back and face of one of the gates. Fig. 5 is an edge view corresponding to Fig. 2, and with the parts slightly separated. Fig. 6 is a perspective view of one of the loose wedges. Two of these are employed—one on each side of the water-way.

Similar letters of reference indicate corresponding parts in all the figures where they occur.

A is the fixed casing of the valve, certain parts being designated, when necessary, by additional marks.

A′ indicates the junction of one of the lengths of the water-pipes.

A^2 represents the junction of another length in line with the first, and A^3 the junction of a bonnet, B, which is provided with suitable bearings engaging with one or more collars on the operating-stem C. This bonnet also carries a stuffing-box, which makes a tight joint with said stem.

C′ is a hand-wheel for operating the stem C. The latter extends inward. Its inner end is formed in a double-threaded screw, C^2, which, on revolving the hand-wheel, operates the valve.

A^4 and A^5 are nicely-finished annular seats surrounding the water-way, and adapted to receive and form a tight contact with the two plane-faced gates D and E. Certain parts of these latter will be indicated, when necessary, by additional marks, as D′ E′. The screw C^2 is tapped through a central casting, G, certain parts of which will be designated, when necessary, by additional marks, as G′, and which performs important functions. The casting G extends downward between the gates, and is bifurcated. One face, G′, is perpendicular, and applies against a corresponding perpendicular plane face on the back of the gate D. The other face, G^2, is inclined, as plainly shown in Fig. 4, and applies against correspondingly-inclined faces of two triangular blocks or loose wedges, H, one of which lies adjacent to each arm of the forked lower end of G. The upper end of each loose wedge or block H is provided with projections H′ of limited depth,

(see Figs. 2, 4, and 6,) which are loosely received in a deeper place between projections E′ E² on the back of the valve E. (See Figs. 2 and 4.) Corresponding projections on the casting G are similarly received between corresponding projections, D′ D², on the back face of the gate D. There is liberty for vertical play between the parts. The casting G is substantially cylindrical at its upper end. The forked portion below is formed with shoulders or rectangular projections G⁴, which, when the valve is opened, engage under the projections D′ E′ and compel the lifting of the gates.

A⁶ A⁶ are internal projections in the fixed casing A, serving as stops. Each extends inward sufficiently to be struck by the corresponding block, H, as it descends in closing the valve. A⁷ are stops, which may be formed by slight swells, or even by simply the bottom of the casing A.

The loose engagement of the casting G, gates D and E, and loose wedge-blocks H insures that when the hand-wheel C′ is turned the action of the screw C², by raising and lowering the casting G, raises and lowers the several attachments. As they descend the gates D and E move loosely and easily between the seats A⁴ A⁵, until the blocks H strike the stops A⁶. Then the blocks H are arrested. About the same moment the gates D and E are arrested by striking against the swells A⁷, serving as stops at the bottom, so that they cannot descend farther; but they remain free to be moved outward against the respective seats A⁴ A⁵. The continued descent of the casting G acts by its inclined faces G² against the corresponding inclined faces of the triangular blocks H, forcing these blocks or loose wedges against the back of the gate E, and urging the latter against its seat A⁵, while the looseness of the connections allowing the casting G to be forced a little way, the perpendicular face G′ of the casting G acts against the back of the gate D, forcing the latter against its seat A⁴. The hand-wheel being operated to press the casting G down forcibly, the gates are forced against their respective seats with absolute tightness. The valve is opened by turning the hand-wheel C in the opposite direction. The first effect is to lift the casting G. The spaces under the projections D′ E′ allow this casting to rise considerably before lifting the gates D E, but the initiation of the upward movement, by the inclination of the faces G² and the adjacent faces of the blocks H, relaxes the force with which the gates are held apart. Before the shoulders G³ engage under D′ E′ and lift the gates both the latter have been released from their seats and are ready to rise easily. They rise with the casting G, and being sufficiently lifted open a straight waterway, until the hand-wheel C is again operated to depress G with its attachments, when the round of operations is repeated, the gates D and E hanging on the casting G during the first part of the motion, and being arrested when they have sunk to the proper extent, the last part of the depression of G, acting by the inclined surfaces G², forcing the gates again firmly against their seats. The vertical webs or internal wings, A⁸, guide the gates, and also the casting G, and insure their maintaining their true positions in all parts of the rising and sinking motion, notwithstanding the turning force which may be impressed by the strong rotation of the screw C².

I attach importance to the loose wedges or triangular blocks H, because they avoid all risk of prematurely crowding out the gates against their seats when the gates "stick" in closing. Gravity insures that the wedges H shall descend freely until they are arrested by striking the stops A⁶.

I claim as my invention—

1. The combination, with a suitable casing, as A, and with the gates D E, of the loose wedge-block H, supported on the gate E, and the separate wedge G, all arranged for joint operation, as specified.

2. The combination, with the gates D E and with the wedge-blocks G H, the latter supported loosely on the gate E, of stop A⁶, arranged in the casing to arrest the descent of the loose wedge H, stops A⁷ for arresting the descent of the gates, and shoulders G⁴ for lifting the gates after their release, as specified.

In testimony whereof I have hereunto set my hand, at New York city, New York, this 28th day of October, 1885, in the presence of two subscribing witnesses.

DANIEL KENNEDY.

Witnesses:
WILLIAM M. SEELY,
CLARENCE B. MITCHELL.