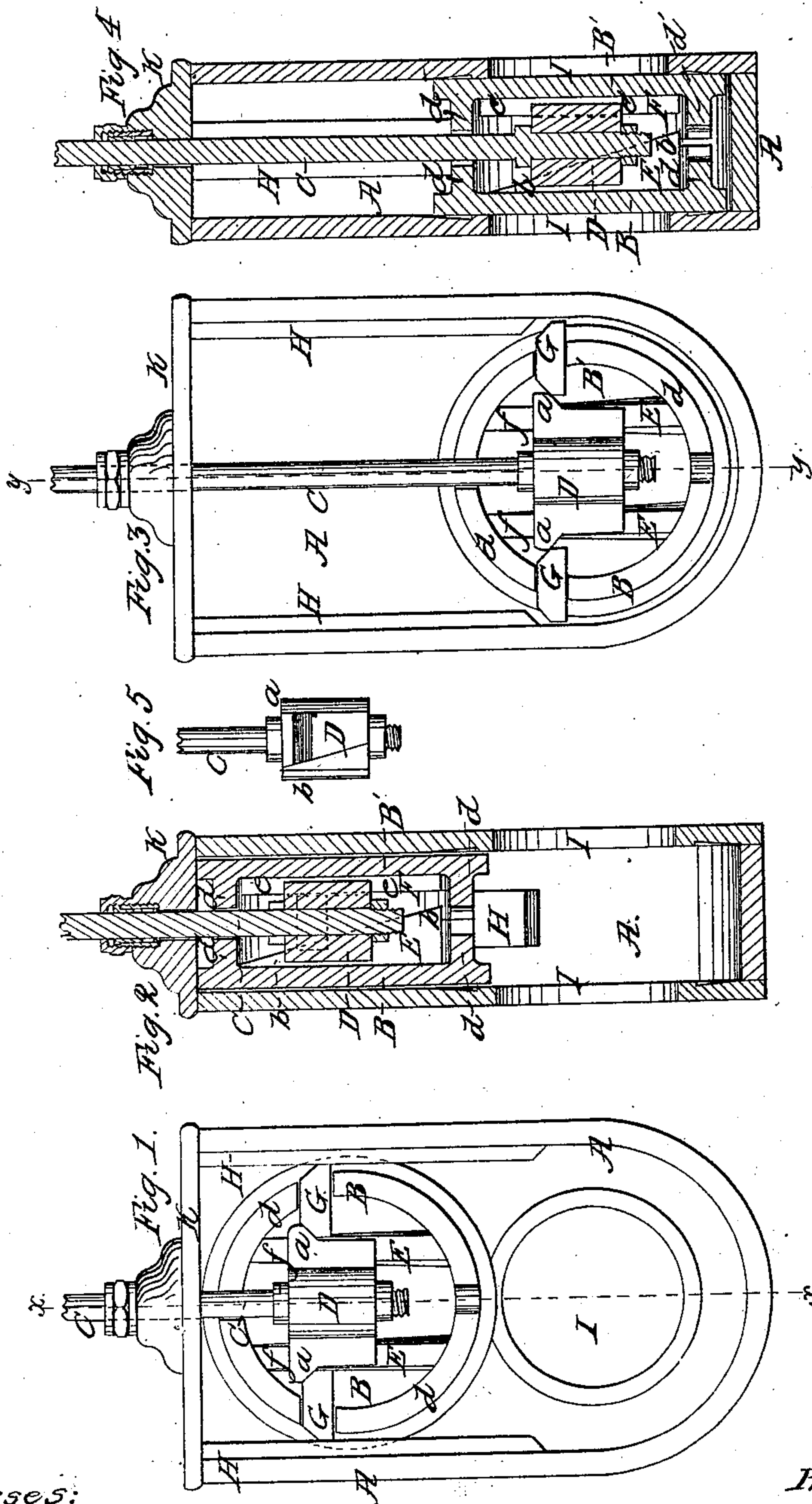


H. G. Ludlow,

Stop Cock,

No 85,263,

Patented Dec. 22, 1868.



Witnesses:

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H. G. LUDLOW, OF TROY, NEW YORK.

Letters Patent No. 85,263, dated December 22, 1868.

IMPROVEMENT IN STOP-VALVES FOR STEAM AND OTHER ENGINERY.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, H. G. LUDLOW, of Troy, in the county of Rensselaer, and State of New York, have invented a new and useful Sliding Stop-Valve; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a side view of the interior of the gate, one side of the gate and gate-box being removed, the gate being represented as opened;

Figure 2 is a vertical section, taken in the line *x x* of fig. 1;

Figure 3 is a side view of the interior of the gate, one side of the gate and gate-box being removed, the gate being represented as closed;

Figure 4 is a vertical section, taken in the line *y y* of fig. 3; and

Figure 5 is a side view of the sliding wedge.

The nature of my invention consists in a peculiar construction and arrangement of parts, by which a stop-valve is opened and closed, without subjecting it to the great friction incident to its motion in opening and closing, while being forcibly pressed up against the face of the valve-seat, or the surface against which it works; and also making the operation of opening and closing a positive one, which no contingencies can prevent.

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the drawing—

A represents the valve-box, which may or may not be cast in one piece, except its top, K, which may be made in any other shape, and may be attached in any ordinary way. Inside of this box is the gate or valve, made in two parts, B B'.

C is a rod, which passes through the top, K, of the box A, being made tight by means of an ordinary stuffing-box, or in any other way desired. This rod, instead of revolving freely in the wedge, may be fastened rigidly to it, or be a continuation of the wedge, and instead of being a plain rod, it may have a thread on it, and turn on its axis, or rise and fall with the gate, in or through a revolving sheath or nut. This rod passes, when made as in the drawing, inside the gates B B'.

On the lower end of said rod is secured the wedge D, in such a manner as will allow the rod to turn freely in the same, or otherwise, and at the same time carry the wedge with it in its longitudinal movement, when forced inward or drawn outward of the box A. This wedge is made with an inclined plane on each wing, marked *b b*, as seen in the edge view in fig. 5.

On the opposite side of the wings are planes, parallel to the rod C, as seen at *c* in fig. 4.

At the top of the wedge, and just outside of the said planes, are two projections, *a a*, the under sides of which are bevelled, as seen in figs. 1 and 3.

On the inside of that part of the gate or valve marked B, are two inclined ways, E E, shown in figs. 2 and 4, and opposite these, on the other part of the valved, marked B', are two ways, F F, as shown in the same figures, the faces of which are parallel to the side of the gate.

The wedge D is placed between the ways E E and F F, so that its inclined planes *b*, fig. 5, work on and correspond with those on the ways E E, of the part of the gate marked B.

It is immaterial whether the wedge is made as in the drawing, with inclined planes on one side of each way, or on both sides, provided the ways E E and F F are made to match; or the wedge may press upon one way on each gate, both of these ways, or only one, inclining; or the wedge may press upon one way on one gate, and upon two ways on the other gate; provided always, that the wedge shall not be a cone, or frustum of a cone, revolving between the gates.

The wedge may also be fast to one gate, or a part of it, and press against one or two inclined ways on the opposite gate; the stops G G being in this case set in such a way that the gate, with the wedge, cannot crowd the other gate till the openings I I are covered.

In the flange, represented at *d*, in figs. 1, 2, 3, and 4, are openings, for the reception of the blocks or stops G G, as seen in figs. 1 and 3. These stops are bevelled at each end of their upper side, those on the inner ends corresponding with the bevels on the under side of the projections *a* of the wedge D; those on the outer ends, with the bevels on the lower ends of the strips or guides H H, which are placed in the inside of the box A, as shown in figs. 1, 2, and 3. These strips or guides stand out from the inner surface of the box A, a distance about equal to the projections *a a*, on the upper and outer corners of the wings of the wedge D, so that when the gate is in such position as to bring the stops G above the lower ends of the strips H, they will be held inward, and prevent the wedge D from passing them, but when the gate is forced down, until the stops G G pass below the strips H H, the inclined surfaces of the projections *a*, on the wedge D, operating on corresponding surfaces on the inner end of the stops G, will force them outward, and allow the wedge partially to pass them.

The inclined planes or surfaces of the wings of the wedge D, and the corresponding inclined planes of the part of the valve B, with the parallel ways F F, and the parallel sides *c c* of the said wings, are so constructed that when the wedge is drawn up until it comes in contact with the stop-pieces *f f*, the two parts B and B' are allowed to come together, and when the wedge is forced down partially past the stops, the said inclined surfaces of the wedge and valve will force the parts B' and B' apart.

Instead of two stops G G, there may, in some cases, be but one, passing through the wedge, or in contact with it, said stop or stops being moved by one pro-

jecting strip, H, and by a contrivance connected with the wedge, or by a combination of both, accomplishing the same object.

The operation of my stop-valve or gate is as follows:

When the valve is open, as shown in figs. 1 and 2, and it is desired to close it, the rod or stem C is forced downward or into the box A, by means of a screw-thread on it, or in any convenient way, and it carries with it the wedge D, the projections *a a* of which press upon the stops G G, and, as the outer ends of these stops press against the strips or guides H H, preventing them from being pressed outward, the whole valve is carried down with the downward movement of the rod or stem C, and, as the strips H H extend downward far enough to prevent the stops G G from being pressed outward, until the valve or gate is fairly over the openings I I, as seen in fig. 4, the wedge D cannot pass downward on the inclined planes E E; consequently the parts B and B' cannot be forced apart or against the faces of the valve-seat, but as soon as the valve is fairly over the openings I I, as seen in fig. 3, the stops G G pass the lower ends of the strips or guides H H, and are immediately pressed outward by the inclined surfaces of the projections *a a* of the wedge D, allowing it to partially pass the stops G G, and descend on the inclined planes E E, thus forcing the parts B and B' apart, and up tightly against the faces of the valve-seat or openings I I; but as this outward pressure on B and B' all takes place after they are fairly down over said openings, it obviates all the friction which would occur if B and B' were forced apart before their downward movement was completed.

Then, when it is desired to open the valve, the stem is raised, and draws with it the wedge D, which, passing upward on the inclined planes E E, allows the parts B and B' to come together, thus relieving them of all wedge-pressure against the faces of the openings I I, before any upward motion of the valve or gate occurs, and, as the wedge D continues to move upward, its projections *a a* partially pass the stops G G, and the wedge

comes in contact with the stop-pieces *f f*, and then the valve moves up with the wedge, and, as the bevels on the outer ends of the said stops G G come in contact with those on the lower ends of the strips or guides H H, they are by them pressed inward, and pass upward between them, being held in the position shown in fig. 1, until they are again carried down past the lower ends, when they are again forced outward, as before explained, allowing the wedge D to force B and B' apart and up against the faces of the openings I I, and thus the process of opening and closing the valve is carried on without the friction which always occurs when the valves are pressed up against their seats before they are fairly over the openings to be closed.

Having thus fully described the construction and operation of my invention,

What I claim, and desire to secure by Letters Patent, is—

1. The valve-box A, with its guides H H, constructed substantially as described.
2. The valve, composed of the parts B and B', constructed substantially as shown and described.
3. The combination of the strips or guides H H, the stops G G, and circular flanges *d d*, substantially as shown and described.
4. The arrangement of the rod or stem C, wedge D, with its projections *a a* and inclined planes E E, all substantially as set forth.
5. The combination and arrangement of the wedge D, inclined planes E E, projections *a a*, stops G G, and strips or guides H H, substantially as shown and described.
6. The arrangement of the wedge D, inclined planes and ways E E, F F, gates B B, stops G G, and stem C, substantially as set forth.

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Witnesses:

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G. A. C. SMITH.