

H. G. Ludlow,

Stop Cock,

No 33,309,

Patented Sept. 17, 1861.

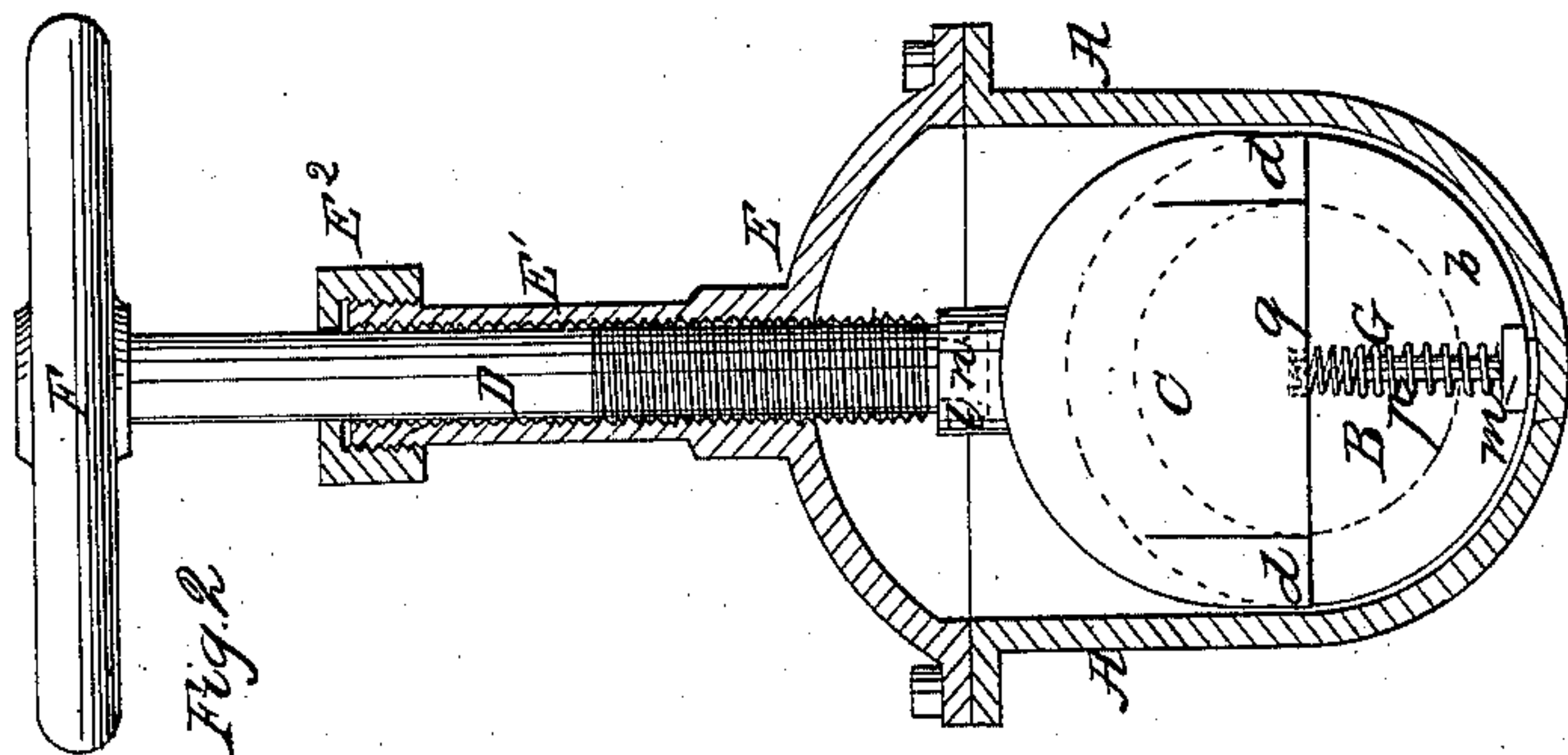


Fig. 2

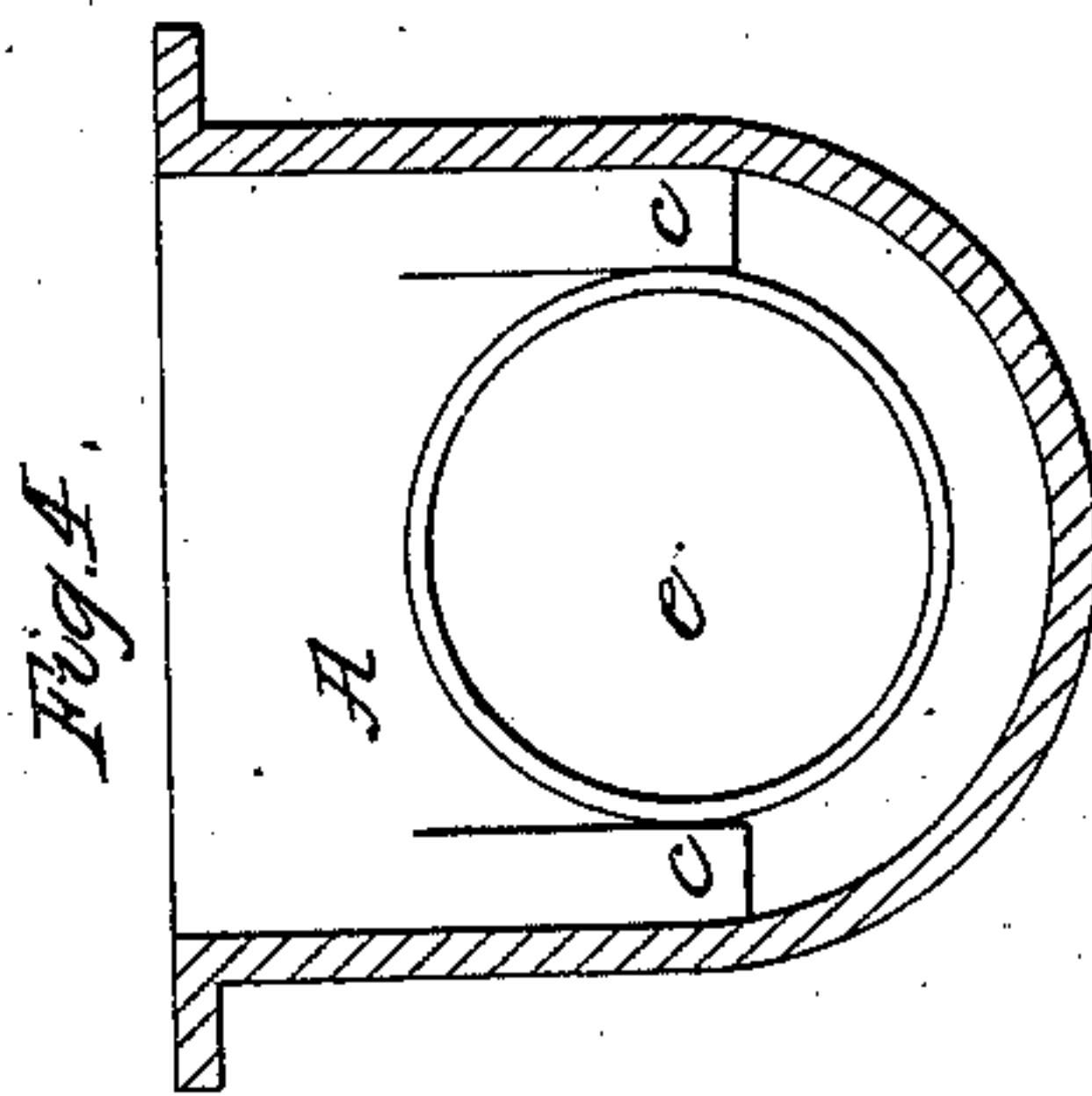


Fig. 3

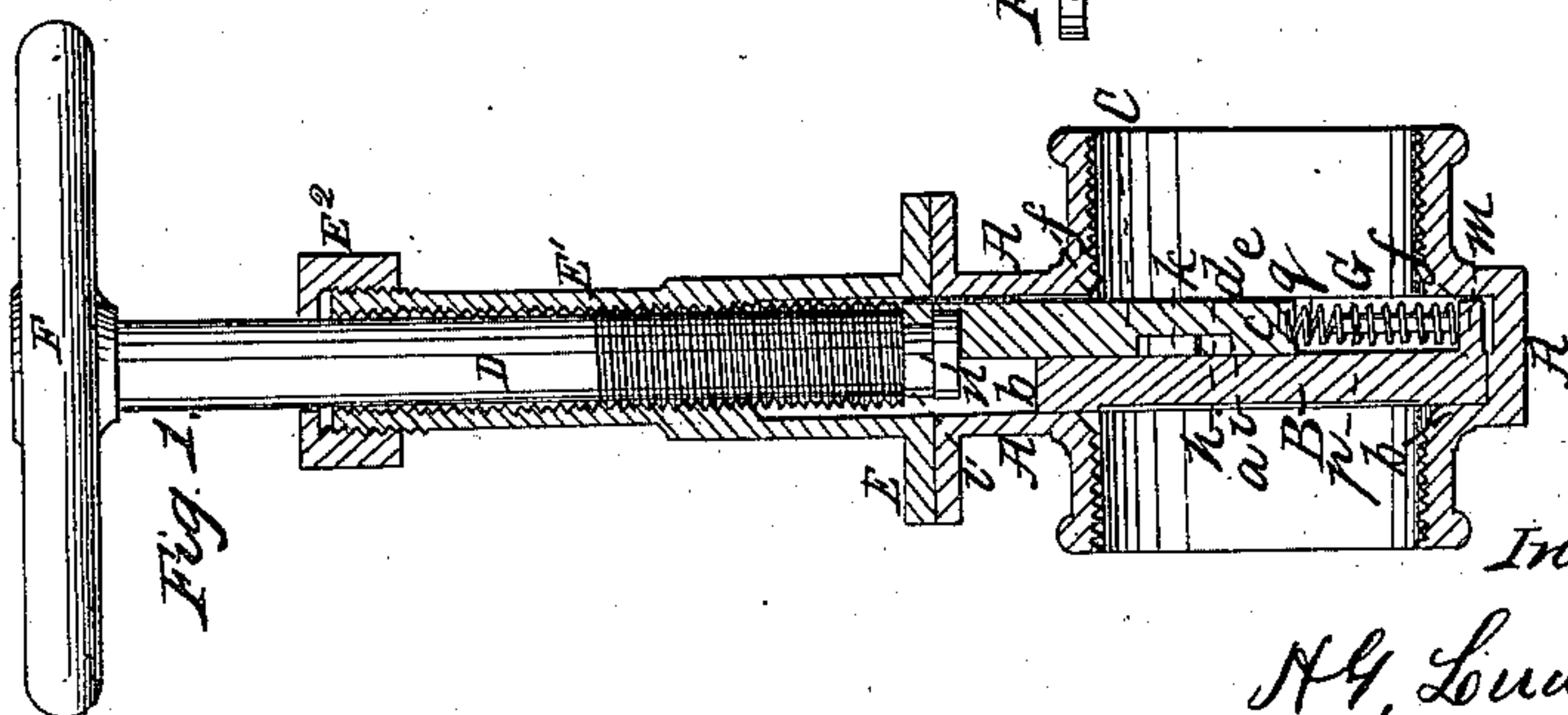


Fig. 1

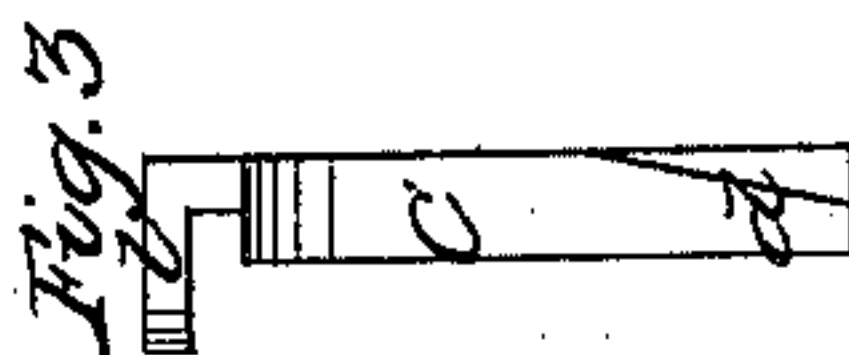


Fig. 4

Witnesses:

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Inventor:

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UNITED STATES PATENT OFFICE.

H. G. LUDLOW, 2D, OF WATERFORD, NEW YORK.

IMPROVEMENT IN SLIDING STOP-VALVES.

Specification forming part of Letters Patent No. 33,309, dated September 17, 1861.

To all whom it may concern:

Be it known that I, H. G. LUDLOW, 2d, of Waterford, in the county of Saratoga and State of New York, have invented a new and useful Improvement in Sliding Stop-Valves; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figures 1 and 2 are vertical sectional views, taken at right angles to each other, of the valve and its casing; Fig. 3, a side view of the wedge-plate, which constitutes the principal feature of my invention, and Fig. 4 an inside view of the back of the valve-casing.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to that kind of valve variously known as the "sliding stop-valve," "sliding gate," and "sluice-valve." It consists, principally, in so applying a wedge or wedges in combination with such valve as to bring the valve tight against its seat after it has completed its closing movement, but to enable the valve to work free of its seat in its opening and closing movements, and so prevent entirely or in a very great degree friction between the face of the valve and the seat, thus obviating almost entirely the wear of the face and seat and the necessity for re-grinding.

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

A is the box or casing of the valve, having its inlet-opening *a* surrounded by the flat seat *b*, against which the valve closes, and having on the opposite side two inclined surfaces *c c* projecting from the back *f* to form bearings for the two wedges *d d*, which constitute the principal feature of my invention, said surfaces being formed on opposite sides of the outlet-opening *e*. The said box or casing does not differ essentially from the box or casing ordinarily provided for such valves, except that the position of its seat is reversed, the seat generally surrounding the outlet, and that it is provided with the aforesaid inclined surfaces. B is the valve, consisting simply of a circular flat plate of metal with parallel sides, one of which is forced to

fit the seat *b* and on the other of which is a projection *k*.

C is a metal plate, which I call the "wedge-plate," applied at the back of the valve and forced on the side next the valve to work against the back of the valve. The general thickness of this plate is such that the combined thicknesses of the said plate and valve are less than the depth of the valve-box from the seat *b* to the back *f*, but its back is cut away or otherwise constructed to form the two wedges *d d* to fit the inclined surfaces *c c* on the back of the box. The said plate has formed in its face, either by making it with a recess *h* or otherwise, a shoulder *i*, below the projection *k* on the valve, and there is formed at the top of the said plate a forked lug *l*, for the reception of the neck *n* of the valve-stem D, which has a screw-thread on its exterior to fit a female screw in a socket E', that is cast with or otherwise secured to the cover E of the box A, the said socket having at its upper end a stuffing-box E², to which the plain cylindrical upper portion of the stem fits, and the said stem having at its upper and outer end a wheel F or other handle by which it is turned in the socket E².

G is a spring, which constitutes the secondary feature of my invention, of spiral form, and applied between the bottom of the wedge-plate C and a projection *m* on the lower part of the back of the valve. This spring is kept in place by being placed on a pin *p*, secured in the projection *m* and by entering a recess *q* provided for it in the bottom of the plate C.

The operation of the wedge and spring is as follows: When the valve is closed it is held to its seat by the wedges *d d* bearing against the inclined projections *c c* on the back of the box A. The shoulder *i* is some distance below the projection *k*, and the spring G is compressed. To open the valve the stem D is turned in the direction to make it move upward, and the wedge-plate C is thus drawn upward. During this movement of the said plate the valve is held down opposite to its seat by the spring G until the shoulder *i* arrives at the projection *k*, but as soon as the plate C starts the valve begins to be relieved from the pressure of the wedges *d d*, and the pressure of the water or other fluid on the face of the valve forces the latter directly

back away from its seat. On the arrival of the shoulder *i* at the projection *k* the valve moves upward with the wedge-plate C, and so opens the inlet *a* without any friction between its face and the seat *b*. When the stem is turned in the reverse direction the wedge-plate is moved downward and the valve commences descending with it, being pressed down by the spring G, and being held back from the seat by the pressure of the fluid against its face; but when the valve arrives opposite to its seat and comes in contact with the bottom of the box or with a stop provided for it it can move no farther, and the continued movement of the wedge-plate by the continued turning of the stem causes the wedges to force the valve close up to its seat with a movement perpendicular to the latter. When the valve is arranged to work vertically, as represented, as is generally the case, and is heavy enough, the spring G may be dispensed with, as the weight of the valve will keep it down in the opening movement of the stem until the shoulder *i* on the wedge-plate reaches the projection *k*, and will cause it to descend when the closing movement of the stem commences; but I prefer, generally, to use the spring, as it makes the operation more certain by preventing the accidental sticking of the valve to the wedge-plate in the opening movement.

The valve may be so constructed and arranged as to open a vent when it is itself closed and so let off the water on the back side, thus preventing freezing, and enabling it to be used as a fire-plug.

The position of the valve, the wedge-plate, and the inclined surfaces *c c* relatively to the inlet and outlet openings *a e* may be reversed, so that the valve may close toward the outlet-opening; but this would be objectionable if the valve were used for fluids at high pressures, as it would be productive of friction between the valve and seat.

Instead of using two wedges on the plate C and two inclined projections in the valve-box, a single wedge on the middle of the plate and a single inclined projection crossing the passage *a* or *e* in the valve-box A may be sufficient.

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

Combining the valve with its stem by means of a wedge-plate C, applied and operating substantially as and for the purpose herein specified.

H. G. LUDLOW, 2d.

Witnesses:

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