

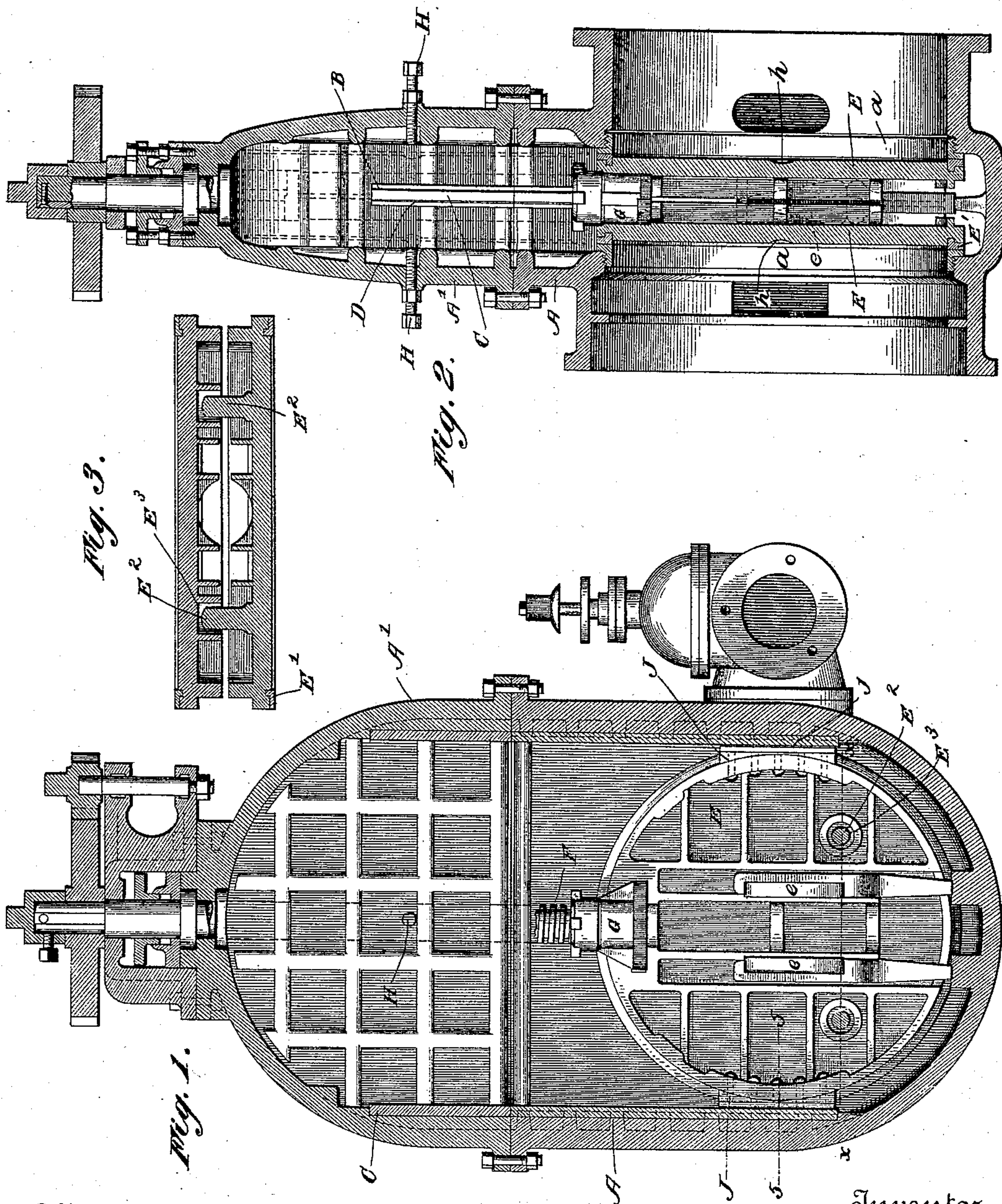
(No Model.)

2 Sheets—Sheet 1.

E. L. ROWE.
VALVE.

No. 572,451.

Patented Dec. 1, 1896.



Witnesses
Edw. S. Durall Jr.
James R. Mansfield.

Inventor
Ellis L. Rowe.
By *Alexander Dowell*
Attorneys

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Fig. 4.

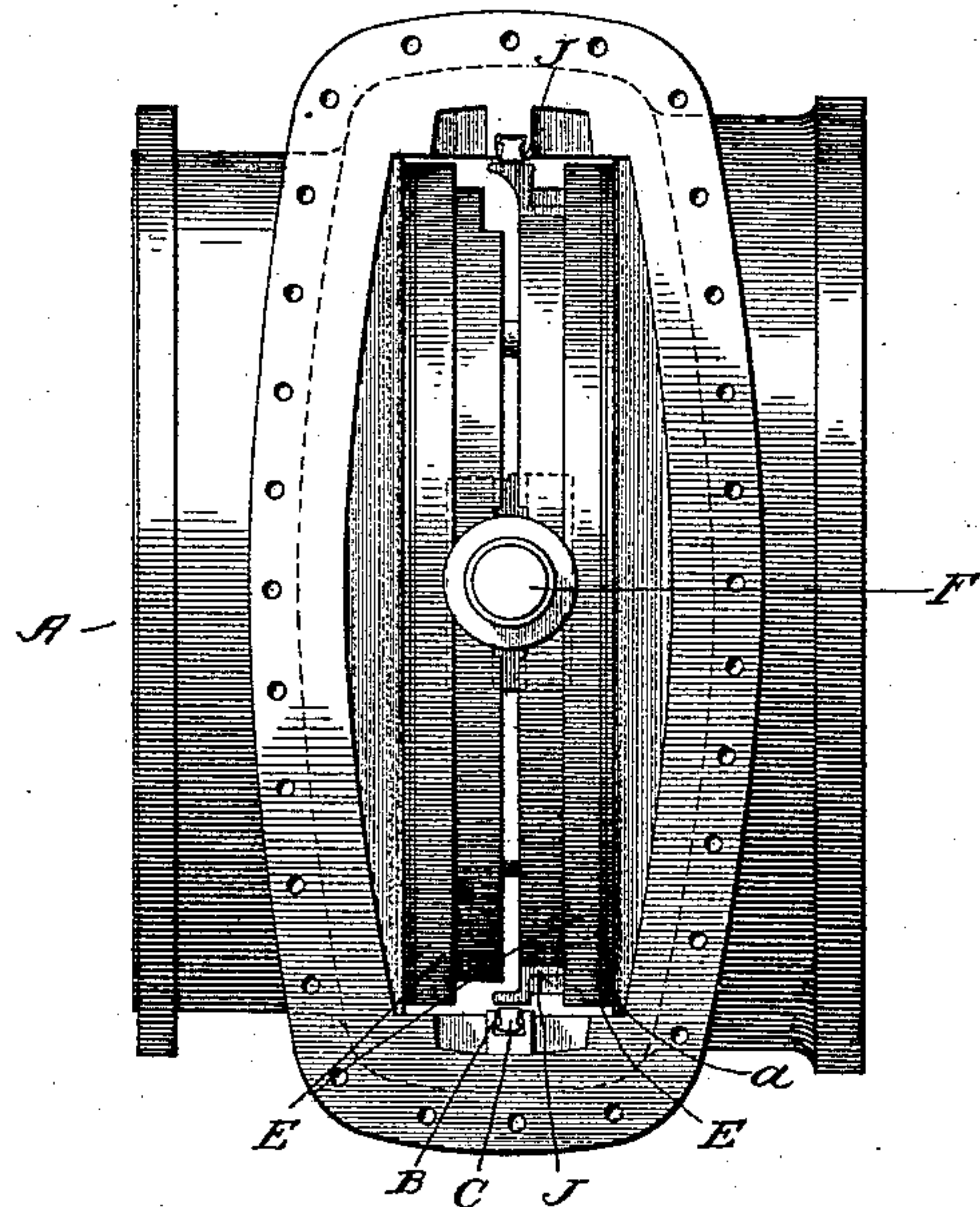
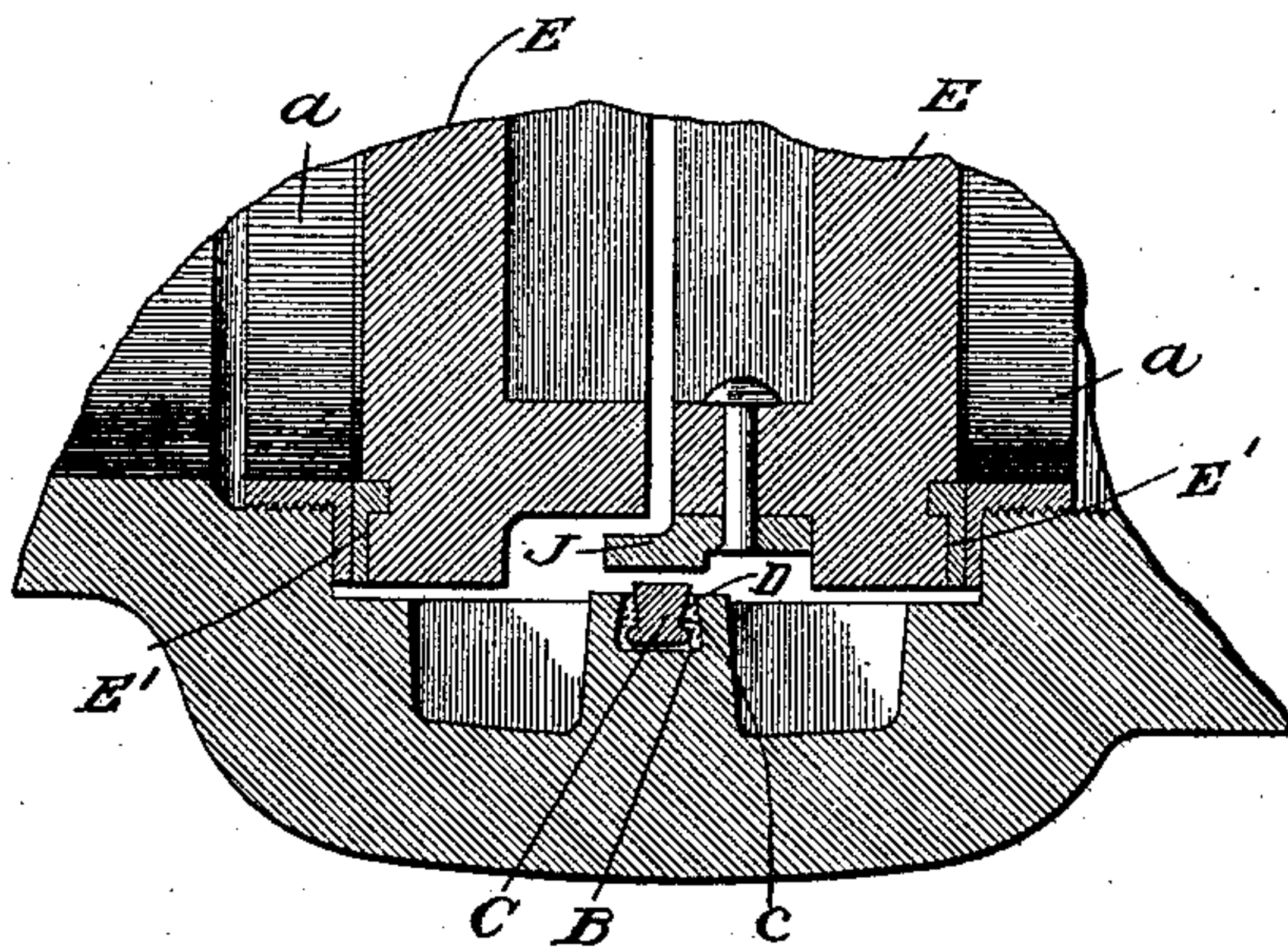


Fig. 5.



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UNITED STATES PATENT OFFICE.

ELLIS L. ROWE, OF TROY, NEW YORK, ASSIGNOR TO THE RENSSELAER MANUFACTURING COMPANY, OF SAME PLACE.

VALVE.

SPECIFICATION forming part of Letters Patent No. 572,451, dated December 1, 1896.

Application filed March 5, 1895. Serial No. 540,610. (No model.)

To all whom it may concern:

Be it known that I, ELLIS L. ROWE, of Troy, in the county of Rensselaer and State of New York, have invented certain new and useful
5 Improvements in Valves; and I 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, which form
10 part of this specification.

This invention is an improvement in valves or water-gates for mains, &c., and valves for smaller work, and is an improvement upon the valves shown in Letters Patent No. 330,322,
15 dated November 10, 1885, and No. 384,906, dated June 19, 1888, the improvements in question relating more especially to the construction shown in the last-named patent, and especially applicable to vertically-arranged
20 valves.

In the practical construction and operation of valves for large mains especially a great many difficulties have been encountered, among which are accidental breaking or twisting
25 of the valve-stem by reason of lodgment of obstructions, such as stone or timbers, on the ways or between the gates and their seat, so that as the gates descend they meet the obstruction and are thereby caused to rotate or
30 turn, and as the valve-stem is not strong enough to stand the lateral pressure without bending or breaking the valve is permanently disabled or the gates wedged so tightly that it is impossible to operate them.

35 Another accident to which vertically-set valves having double gates are liable is the breaking loose or disconnection of one gate from the stem while the other remains attached thereto, and while this makes no noticeable difference in operating the valve-stem the broken gate obstructs partially or
40 wholly the water-passage, and there is great difficulty in locating the trouble and repairing the damage. Again, it is sometimes necessary to remove the stem for repairs, and in the usual constructions of vertical valves the gates must stay closed while the stem is removed, as they are suspended on the stem, and there is no other means for holding them
45 open. Another great trouble is the liability of the gates to "rust" to the casing, because of the corrosive action of the water on the

metals, or clogging of the guides by deposits on the guideways. This is in a measure remedied by securing non-corrosive ways or tracks
55 in the casing by bolts, rivets, &c., but these fastenings materially weaken the casing, are hard to fit in the first instance, and eventually render repairs of the ways impossible or exceedingly costly. 60

Knowing by experience of these several defects and liability to accidental injury of the ordinary water-gates, my present invention is designed to obviate them all, and therefore the objects of this invention are, first, to prevent the gates rolling or turning within the valve-casing, so as to strain the valve-stem laterally and possibly break or bend it, which is accomplished by guides attached to the opposite sides of gates; second, to enable
65 the gates to be raised and upheld to permit the removal of the valve-stem without closing the gates; third, to provide the gates with interlocking devices whereby if one gate should become detached from the stem it will be suspended on the other gate, and thus the danger of one gate becoming detached and choking the valve without being noticeable to the operator is prevented; fourth, and of great
70 importance, are the ways or tracks at the sides of the valve-casing, which are made separately from the valve of bronze or other non-corrosive metal and secured in the casing in the novel manner as hereinafter described. 75

The invention therefore consists in the novel constructions and combinations of parts hereinafter claimed and described in detail, as follows: 85

Referring to the accompanying drawings, Figure 1 is a central transverse vertical section through the improved water-gate, the valve-stem being broken out. Fig. 2 is a vertical longitudinal section through the same. Fig. 3 is a horizontal section on line 3 3, Fig. 1. Fig. 4 is an enlarged top view of the valve
90 with the upper part of casing and valve-stem removed. Fig. 5 is a greatly-enlarged detail transverse section of the gates, casing, tracks, and guides. 95

The valve-casing is made of a lower part A, having the waterway and valve-seats, and the upper part A', there being no particular novelty in the shape or fitting of these parts together to form the casing. At opposite sides 100

of and within the casing are vertical grooves B, which are dovetailed in horizontal cross-section and widest at the base of the groove. Within these grooves are set vertical tracks 5 or ways C, which project slightly from the grooves and are formed of bronze or other non-corrosive metal. The ways are recessed in their sides, as at *c*, and after they are accurately seated in the grooves B molten lead 10 or other soft packing-metal is poured in the groove around the ways, as indicated at D, this lead being tamped, so that the ways are securely fastened in place within the casing, yet without cutting or boring the walls of the 15 casing or using any nuts or bolts apt to corrode and difficult to fit in the cramped space within the casing. This method of securing the ways within the casing I consider one of the most valuable features of the invention.

20 The gates E E are raised and lowered by a rotatable threaded stem F, which passes through a nut G, on which the gates are hung, so that as the stem is rotated the gates will be raised or lowered. When lowered, the 25 gates are spread apart by wedges *e e*. These parts are constructed substantially as described in the patents above mentioned or in other suitable manner.

The stem may be operated in large valves 30 by the gears, as indicated in the drawings.

The valve-seats are faced with bronze rings *a* and the gates with bronze rings E' to prevent rusting.

On the inner face of one gate are projecting studs E², which enter corresponding sockets E³ on the inner face of the opposed gate. Said interlocking studs and sockets not only 35 prevent one gate rotating in relation to the other, but in case either gate breaks away from the stem or nut, as sometimes happens, it will be accurately suspended by and move with the other gate, so the loose gate cannot close the waterway until both gates break 40 loose or the accident is discovered.

45 In the outer face of each gate is a recess *h*, which when the gates are raised to their full extent, as indicated in dotted lines, Fig. 2, comes opposite bolts H H, tapped through the end walls of part A' of the casing, and if it 50 is desired to remove the stem these bolts are screwed in until their ends engage recesses *h*. Then the stem can be removed while the gates are secured in raised position and the waterway remains unobstructed.

55 On opposite sides of one gate are fastened bronze wings J, (see Figs. 4 and 5,) which have straight bearing edges *j* opposite the ways C and fitting closely thereto. These wings are of such length that they effectually 60 prevent the gates rotating so as to strain the stem or nut, and if any obstruction gets in the way of the gates and obstructs their passage instead of rotating they are compelled to move straight ahead, and if the ob- 65 struction cannot be pushed out of the way the movement of the gates will be stopped

without their becoming jammed or the stem being broken, for the stem is strong enough to stand any vertical pressure thereon, while lateral pressure would bend or break it. 70 These wings and ways are not merely for guiding the gates, that is, their incidental function, but their main object in my invention is to prevent rotation of the gates or lateral stress on the stem, and with this object 75 in view they are constructed, proportioned, and arranged in the manner shown and described.

The valves thus constructed are free from liability to annoying accidents above enumerated, and by my invention the practical utility and value of the valves are greatly enhanced. 80

The by-pass valve shown in Figs. 1 and 2 is not part of this invention. 85

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

1. The combination of the valve-casing, the gates therein, the nut on which the gates 90 are hung, and the stem engaging said nut for raising and lowering the gates, with means for holding the gates in raised position when the stem is removed, substantially as described. 95

2. The combination of the casing, the valve-stem for raising and lowering the gates, and the pair of opposed gates suspended on the stem having pairs of interlocking lugs and sockets on their opposed faces, with the diametrically opposite guide-wings between the gates, for the purpose and substantially as described. 100

3. The combination of the valve-casing, the valve-stem, and the opposite gates suspended on said stem; having recesses in their outer faces; with the bolts tapped through the casing and adapted to engage the recesses in the gates and hold them raised, substantially as described. 105

4. In combination with the valve-casing, the ways on opposite sides thereof, the gates, and the devices for raising and lowering the gates; of the sockets E³ on one gate and the studs E² on the other whereby the two gates 110 are so connected together that one cannot rotate without the other; of the non-corrosive diametrically opposite guide-wings between the gates adapted to prevent rotation of the gates within the casing, and the connections 115 between the guide-wings and the gates, substantially as and for the purpose described. 120

5. The combination of the valve-casing having vertical grooves as B, the ways placed in said grooves, and the soft-metal 125 packing securing the ways in the grooves, with the valve-stem, the gates hung thereon and the diametrically opposite guide-wings adapted to engage the ways and prevent rotation of the gates within the casing; the 130 sockets E³ on one gate and the studs E² on the other whereby the two gates are so con-

5 nected together that one cannot rotate with-
out the other, all substantially as and for the
purpose described.

6. In a straightway valve, the combination
5 of the two-part casing, the vertical grooves
B, on opposite sides thereof the ways in said
grooves, the valve-stem, and its operating
devices; with the gates suspended on said
stem having interlocking lugs and sockets on
10 their opposed faces and the diametrically op-

posite wings to prevent rotation of the gates
by contact with the ways, substantially as and
for the purpose described.

In testimony that I claim the foregoing as
my own I affix my signature in presence of 15
two witnesses.

ELLIS L. ROWE.

Witnesses:

JAS. J. EDDY,

WILLARD I. WIDNER.