

(No Model.)

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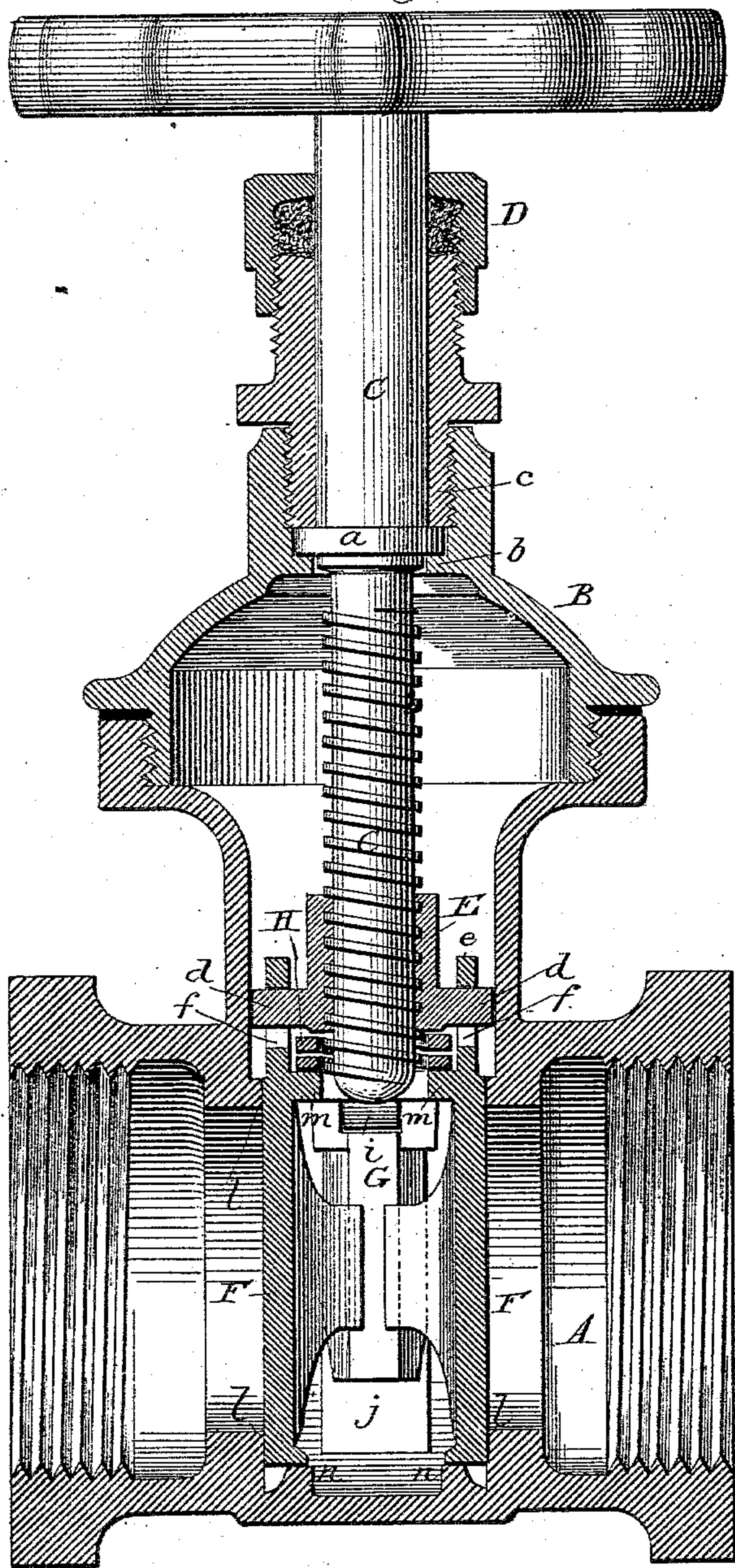
T. & J. GALVIN.

VALVE.

No. 283,479.

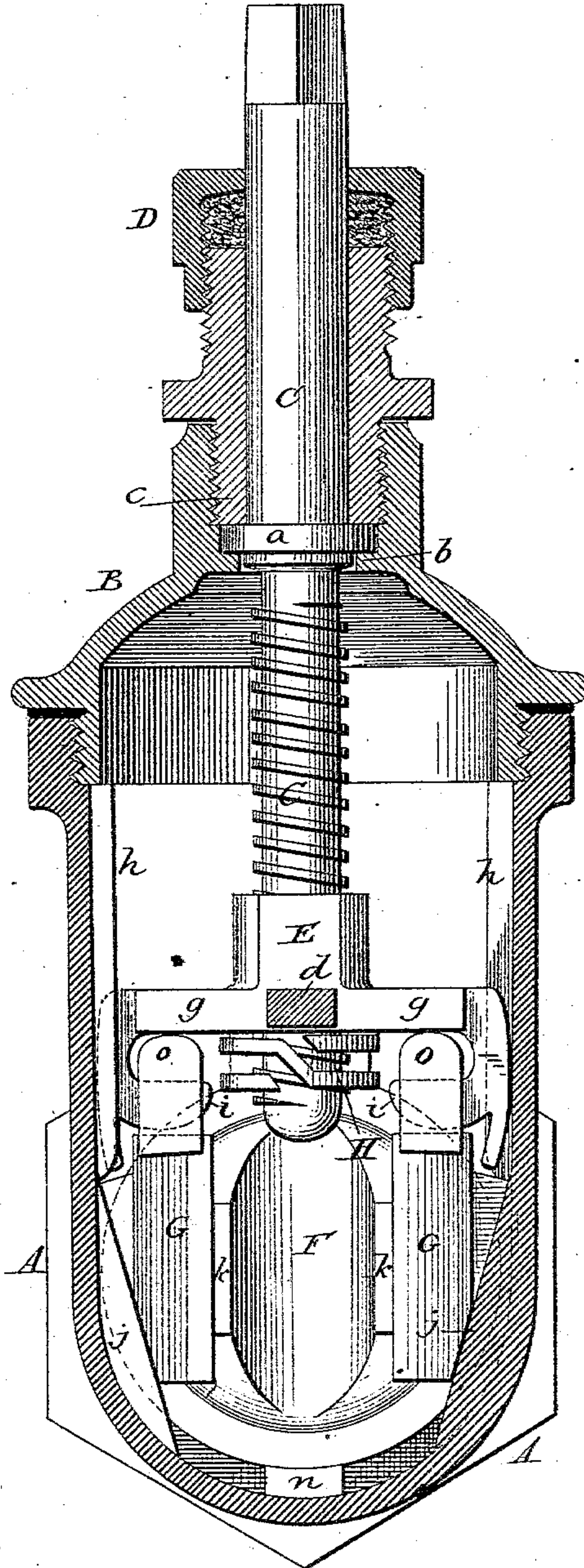
Patented Aug. 21, 1883.

Fig. 1.



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Fig. 2.



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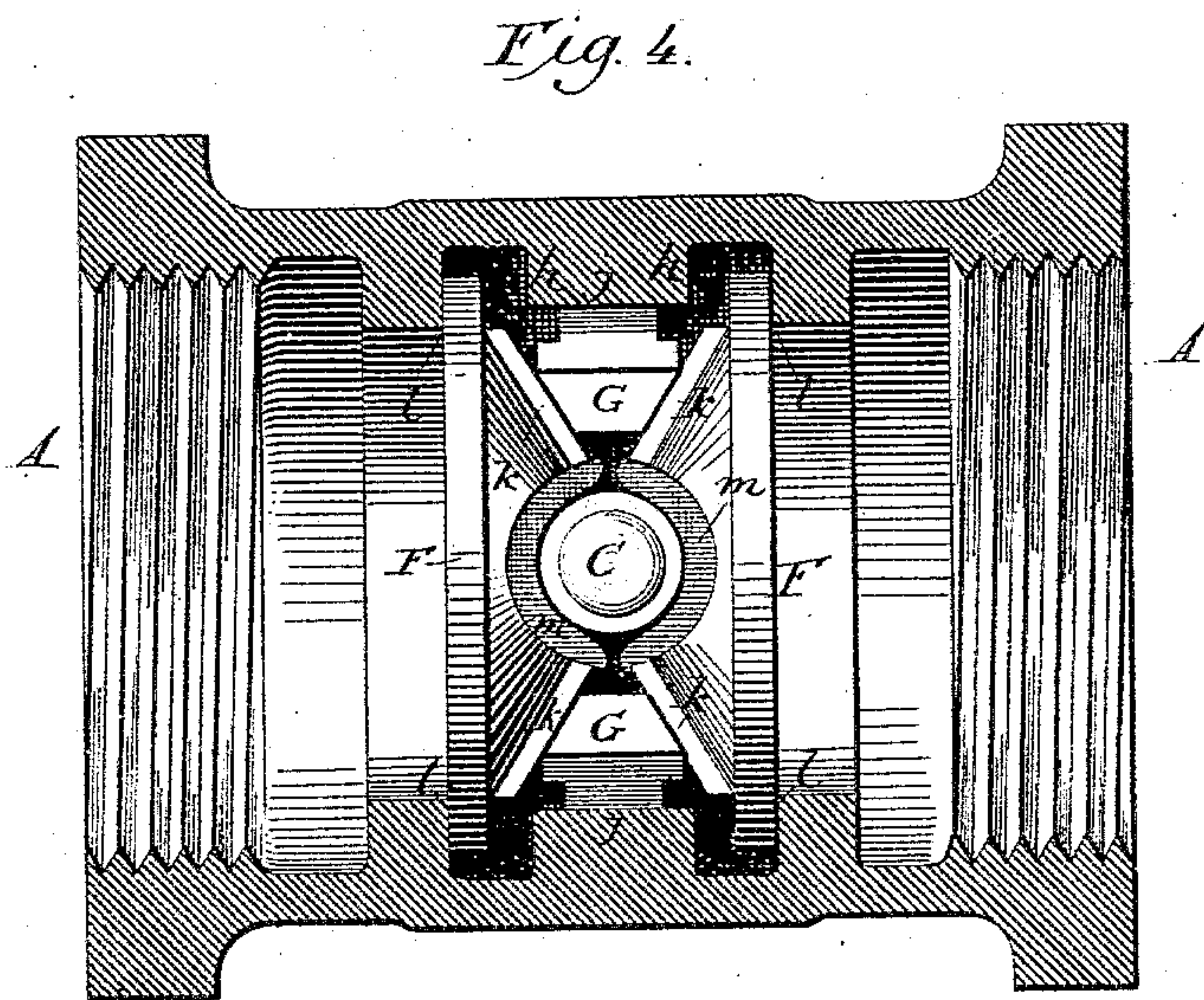
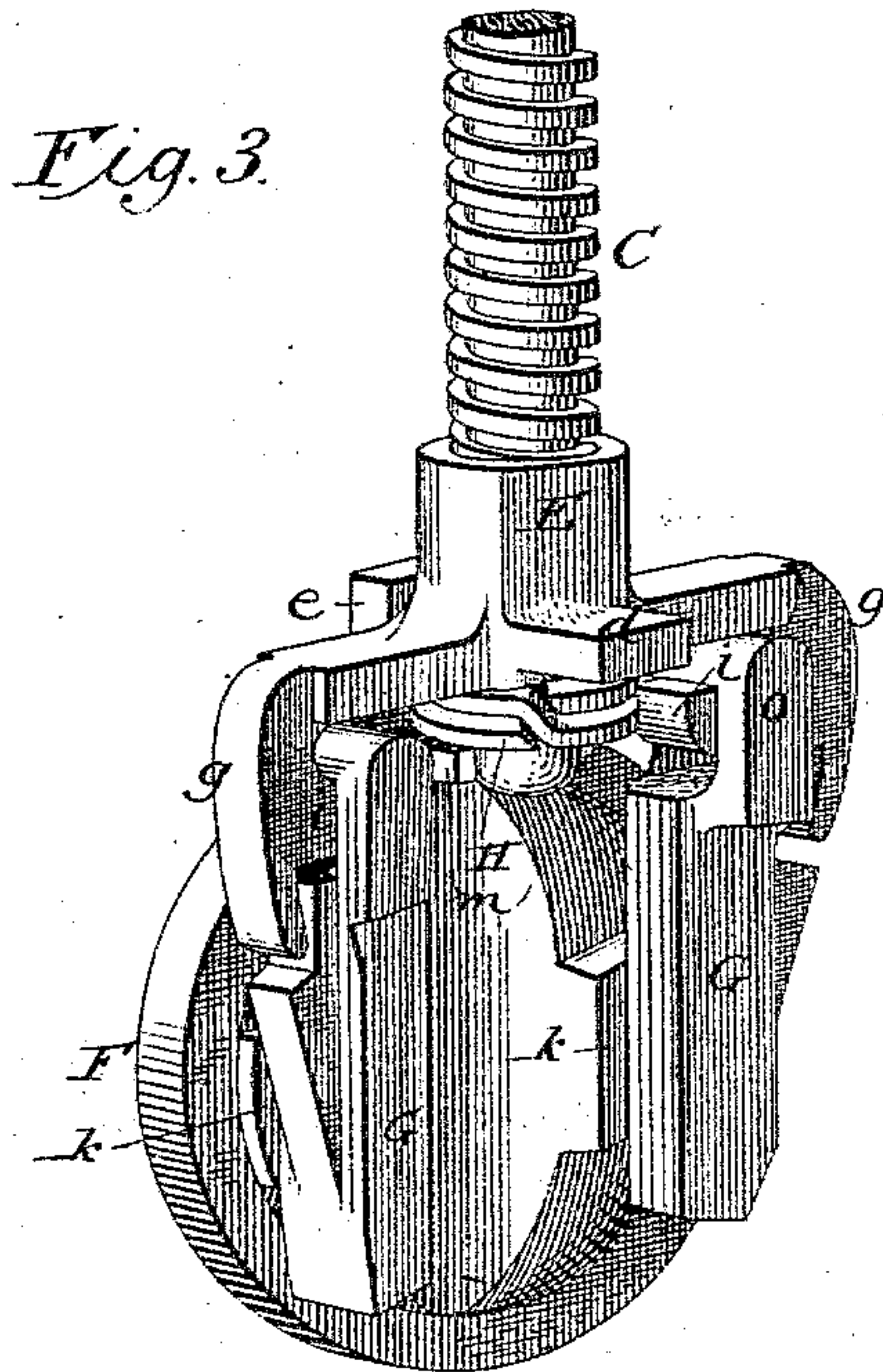
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Fig. 5

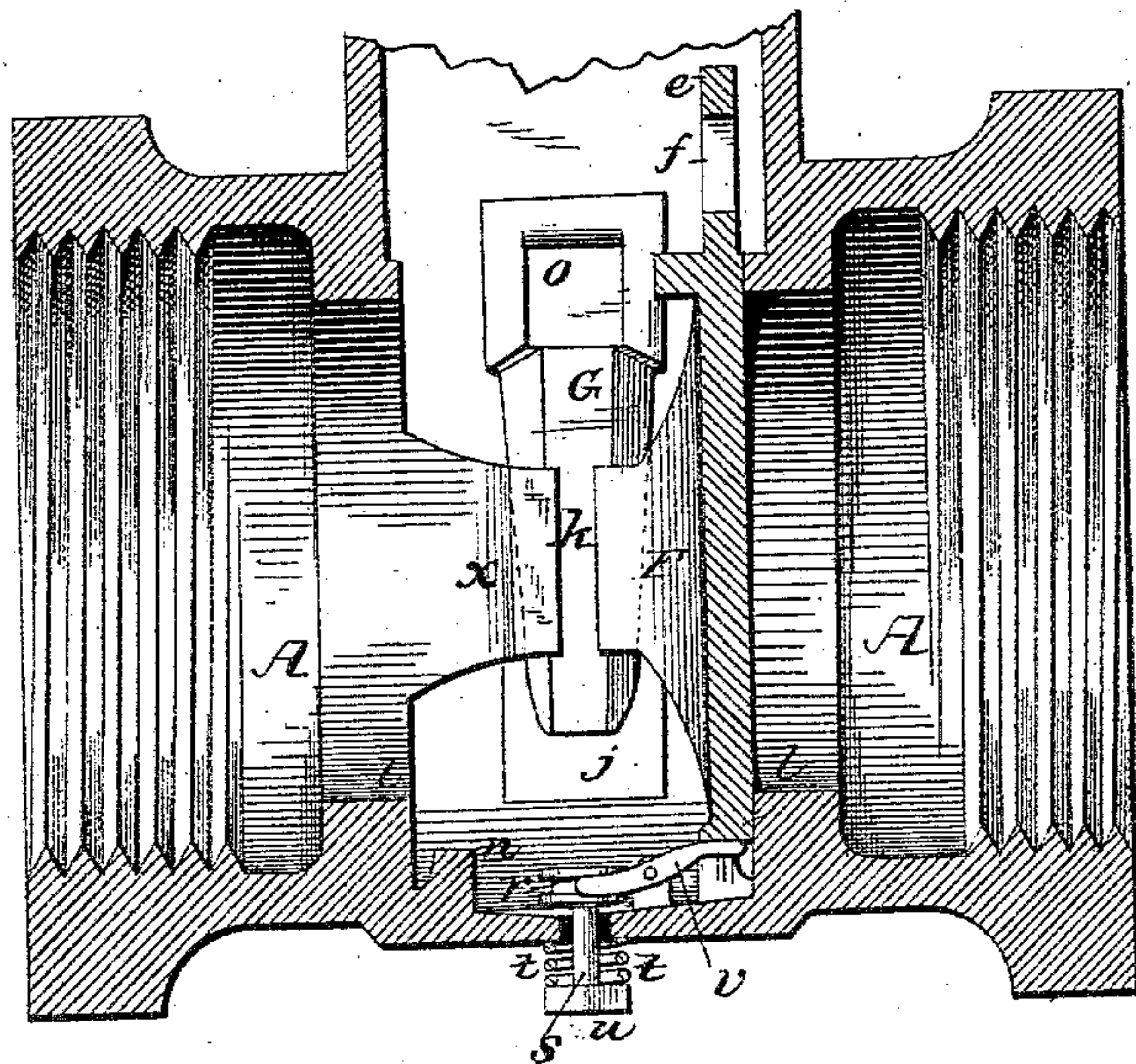
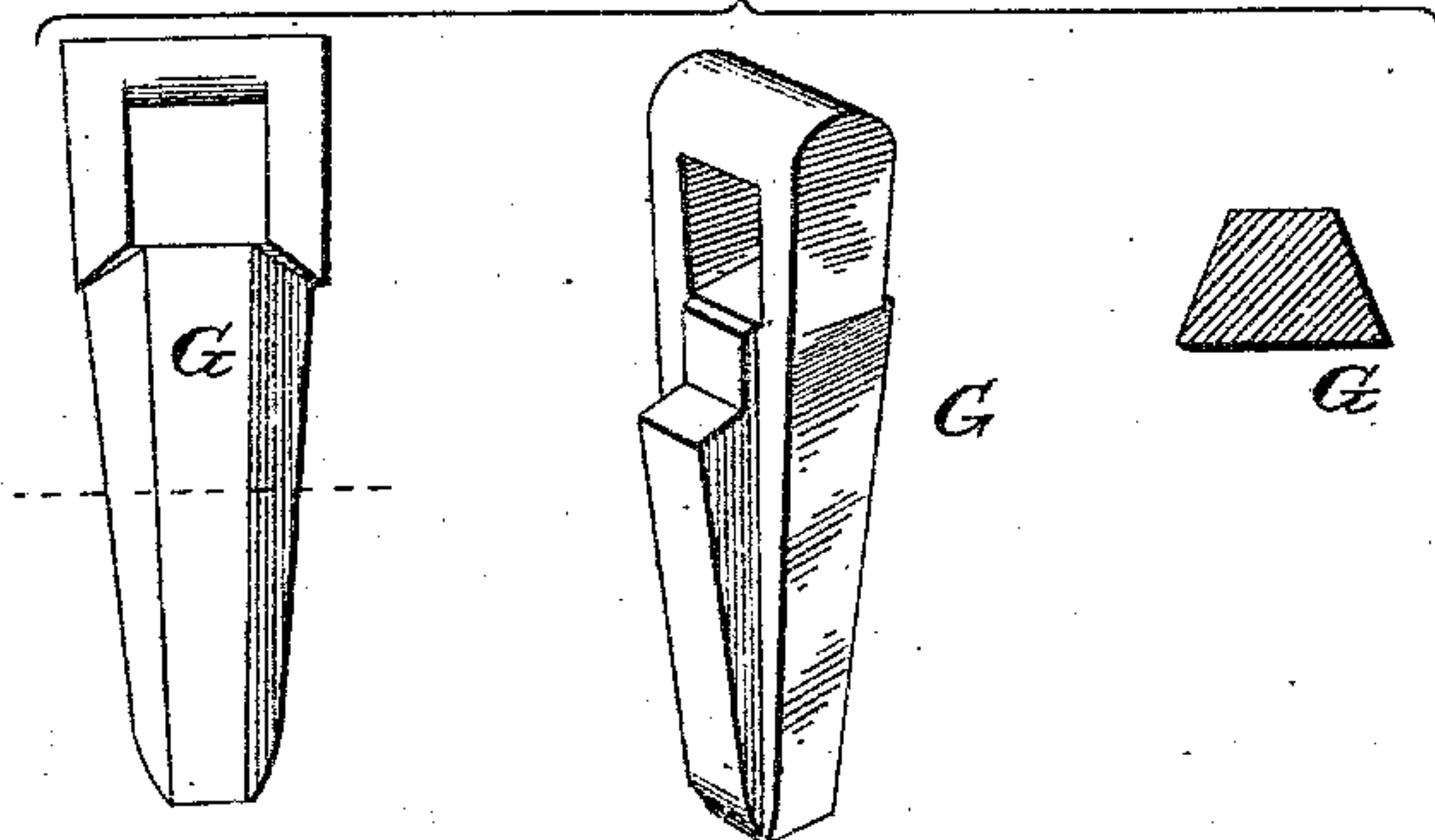


Fig. 6



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UNITED STATES PATENT OFFICE.

THADDEUS GALVIN AND JOHN GALVIN, OF DETROIT, MICHIGAN.

VALVE.

SPECIFICATION forming part of Letters Patent No. 283,479, dated August 21, 1883.

Application filed May 21, 1883. (No model.)

To all whom it may concern:

Be it known that we, THADDEUS GALVIN and JOHN GALVIN, of Detroit, in the county of Wayne and State of Michigan, have invented certain Improvements in Valves, of which the following is a specification.

This invention relates to gate-valves; and it consists, primarily, in a novel arrangement of wedges acting in a plane parallel with the faces of the gate and serving to force the latter to its seat.

The invention further consists in various features and details of construction hereinafter fully set forth.

In the accompanying drawings, Figure 1 represents a longitudinal vertical section of a valve constructed in accordance with this invention; Fig. 2, a vertical transverse section of the same; Fig. 3, a perspective view, showing the working parts of the valve, one of the disks being removed; Fig. 4, a horizontal longitudinal section through the body of the valve; Fig. 5, a sectional view, showing certain details, and in which one disk only is employed; Fig. 6, a view of one of the wedges detached.

The object of this invention is to construct a valve in which the disk or disks may be firmly forced against the seat or seats provided in the shell or case without the sliding or grinding action common to most constructions where wedges are employed, and to effect the accurate seating of the disk or disks, while at the same time producing a cheap and simple valve.

To this end the invention consists in constructing the valve as represented in the accompanying drawings, in which A represents a shell or case of substantially usual form, provided with a removable cap, B, a screw-stem, C, for raising and lowering the gates or disks, and a packing-gland or stuffing-box, D, applied to the cap B and encircling the screw-stem to prevent leakage, these parts being common to all valves of this class.

E represents a nut or yoke, through which the screw-stem C passes, said stem being provided with a collar, *a*, which, working between a flange or shoulder, *b*, in the cap B and the end of a thimble or sleeve, *c*, prevents longitudinal movement of the screw-stem, from which construction it will be seen that as the stem is rotated the yoke or nut E will be raised or lowered. As more plainly shown in

Fig. 3, this nut or yoke is formed with lateral shoulders or lugs *d*, upon which are hung the disks F, which form the gate or cut-off of the valve, said disks being furnished with ears *e*, having vertical elongated eyes or openings *f*, through which the lugs *d* pass, the elongation of the eyes permitting a movement of the nut or yoke independently of the disks, as presently explained. The nut or yoke E is further formed with arms *g* at right angles to the lugs *d*, the outer ends of which arms are arranged to work between guiding-ribs *h*, formed in the body of the shell A at each side of the water-way, the arms *g* being turned inward to form hooks or hangers *i*, upon which are hung or suspended wedges G, which are forced inward toward each other by coming in contact with beveled or inclined bearing-surfaces *j*, formed in the outer shell or case below the guiding-ribs *h*, the wedges G being formed with perforated ears, as shown in Figs. 3 and 6, to fit upon the hooks or hangers *i*.

The wedges G are arranged between the disks F, which disks are formed with inclines *k* on their inner faces, against which the wedges bear for the purpose of forcing the disks apart. It will thus be seen that with the parts constructed and arranged as explained, if the screw-stem C be turned in the proper direction to cause the descent of the nut or yoke E, with its disks F and wedges G, the wedges, coming in contact with the inclines *j*, and being thereby forced inward toward each other against the inclined faces *k* of the disks F, will force said disks apart, causing them to be firmly pressed against the bearing-faces *l* of the valve-case.

In order that the yoke may continue its downward movement after the disks F reach their lowest position, for the purpose of further crowding the wedges together, and thus spreading apart the disks F, the eyes in the ears *e* of the disks F are vertically elongated, as above mentioned, and a spring, H, is interposed between the block and lugs or shoulders *m*, formed upon the inner faces of the disks F, said spring serving to normally press the disks downward in advance of the nut or yoke E and in advance of the wedges G, but yielding when the disks come in contact with stops *n* at the bottom of the case or shell, and permitting the yoke or nut E to continue its down-

ward movement independently of the disks F. Thus it will be seen that after the disks F reach their final position (until which time no pressure is applied to force them apart) the wedging action takes place without any movement of the disks, except the separation or movement of the disks apart, due to the spreading or wedging action mentioned. So, too, when the screw-stem is turned in the reverse direction for the purpose of opening the valve, the wedges G first rise independently of the disks F, which latter are urged or pressed downward by the spring H until the wedges have sufficiently withdrawn and swung back from the disks to relieve their faces of pressure and consequent friction, by which time the lugs *d* of the nut E will have reached the upper ends of the eyes or openings *f*, whereupon the disks will begin to rise with the block or nut E.

In some cases, for the purpose of giving a quicker action to the valve, the wedges are made of a gradual taper from end to end, as shown in Figs. 5 and 6, so that after the disks come to rest the downward movement of the wedges, as well as the inward movement, shall operate to spread the disks apart.

It is desirable in this class of valves to discharge the water and sediment which may collect in the space behind the gate or between the disks when two are used, and to accomplish this result there is provided a valve, *r*, the stem *s* of which is encircled by a spring, *t*, one end of which bears against the valve case or shell and the opposite end against a head, *u*, on the lower end of the valve-stem *s*, as shown in Fig. 5.

The stem works through an opening of larger diameter in the lower side of the shell or case, which is closed by the valve *r* whenever the water-way of the main valve is opened, the valve *r* being raised, however, in the act of closing said water-way, by reason of one of the disks F coming into contact with the end of a pivoted lever or yoke, *v*, the opposite end of which carries the valve *r*, as shown.

The spring *t* serves to close the valve *r*.

The details of construction may of course be varied, though this form will be found efficient.

It will be seen that all the parts of the valve are extremely simple and strong in construction, and require but little finishing to fit them for use, that the use of pivot-pins and the consequent necessity for drilling are avoided, and that a very efficient and quickly-operating valve is produced.

It will also be seen that the same principle of construction—that is to say, the employment of wedges acting in a plane parallel with the face of the gate—may be adopted in connection with a valve having a single disk, a suitable skeleton frame being provided for the wedges to act against, or inclines or bearing-lugs being formed in the body of the shell to receive the pressure of one side of the wedge, that the spring may be omitted, and that the

disks may be carried by a cylinder or frame made for the purpose without departing from the spirit of the invention.

We are aware it is not broadly new to provide a valve-case with a small outlet-valve to be operated by the main valve-gate in closing, and hence limit our claim to the construction shown. The single disk construction is shown in Fig. 5, in which the construction is in all respects the same as shown in the other figures, except that one disk is omitted, and the beveled bearing-faces *k* for one side of the wedges G to bear against are formed upon arms *x*, projecting inward from the sides of the shell. The parts act in precisely the same manner as under the construction before described.

Having thus described the invention, what is claimed is—

1. In a valve substantially such as shown, the combination of a shell or case, a sliding gate, a stem for moving said gate, and two swinging wedges arranged to swing laterally toward each other in a plane parallel with the face of the gate and behind the same, and to crowd the gate to its seat, substantially as explained.

2. In a valve substantially such as shown, the combination of a shell or case, a disk or gate, means, substantially such as described, for moving the gate, wedges tapered both in the direction of their length and in cross-section, and arranged to be moved behind the gate in a direction at right angles to the movement of the disk or gate, whereby the benefits of their taper in both directions is utilized for crowding the gate to its seat.

3. The herein-described valve, consisting of shell or case A, a rotating screw-stem, C, a yoke or nut, E, fitting upon said stem and carrying a disk, F, and wedges G, arranged in rear of said disk, adapted to move in a plane parallel therewith, but at right angles to the line of movement of the gates, and arranged to bear against the rear face of the disk as the yoke or nut E descends, substantially as explained.

4. The herein-described valve, consisting of shell A, cap B, threaded stem C, yoke E, provided with lugs *d* and arms *g*, disks F, and wedges G, all arranged and operating substantially as shown and described.

5. In a valve, the combination of a shell or case, A, provided with guides *h* and inclines *j*, cap B, stem C, nut or yoke E, provided with lugs *d* and arms *g*, disks F, and wedges G, carried by the nut or yoke E, all substantially as shown.

6. In a valve substantially such as shown and described, the combination, with a shell, A, of a movable block or yoke, E, provided with lugs *d*, disks F, having elongated eyes to receive said lugs, and formed with lugs *m*, wedges G, and spring H, interposed between the block and the lugs *m*, substantially as shown, and for the purpose explained.

7. In a valve substantially such as described, the combination of a shell or case and a vertically-moving nut or yoke, E, provided with

lateral studs or lugs *d* and arms *g*, disks *F*, having perforated ears *e*, and suspended from the lugs *d*, and wedges *G*, suspended from the arms *g*, all substantially as shown.

5 8. In a valve, the combination of a shell or case, a vertically-moving yoke, *E*, provided with arms *g*, and hooks *i*, wedges *G*, suspended from said hooks, and a disk or disks, *F*, arranged, substantially as shown, to receive the
10 pressure of the wedges *G*.

9. In combination with shell or case *A* and disks *F* *F*, having beveled faces *k*, swinging wedges located between the disks, and having

a wedge form both in the direction of their length and at right angles thereto, substantially as and for the purpose set forth. 15

10. The valve shell or case *A*, provided with escape-valve *r* and yoke or lever *v*, and with a reciprocating gate arranged to bear upon said lever, substantially as and for the pur- 20
pose explained.

THADDEUS GALVIN.
JOHN GALVIN.

Witnesses:

J. EDWIN PLAMONDON,
GEO. F. BEASLEY.