

No. 832,079.

PATENTED OCT. 2, 1906.

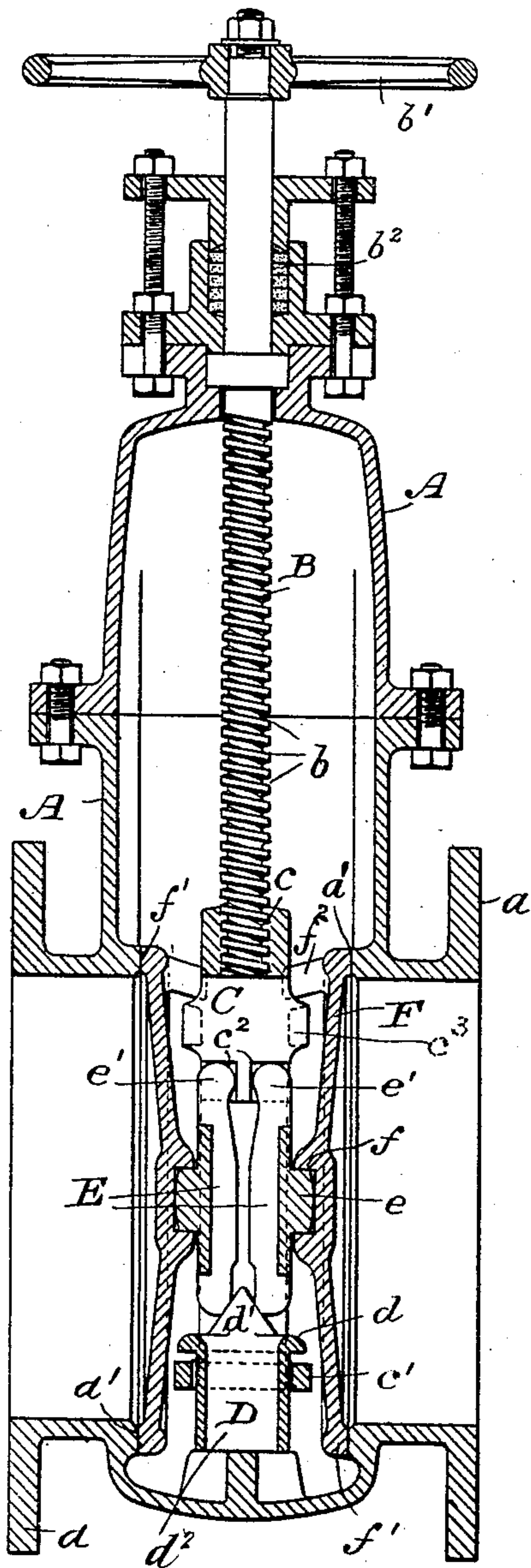
P. PLANTINGA.

GATE VALVE.

APPLICATION FILED SEPT. 26, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

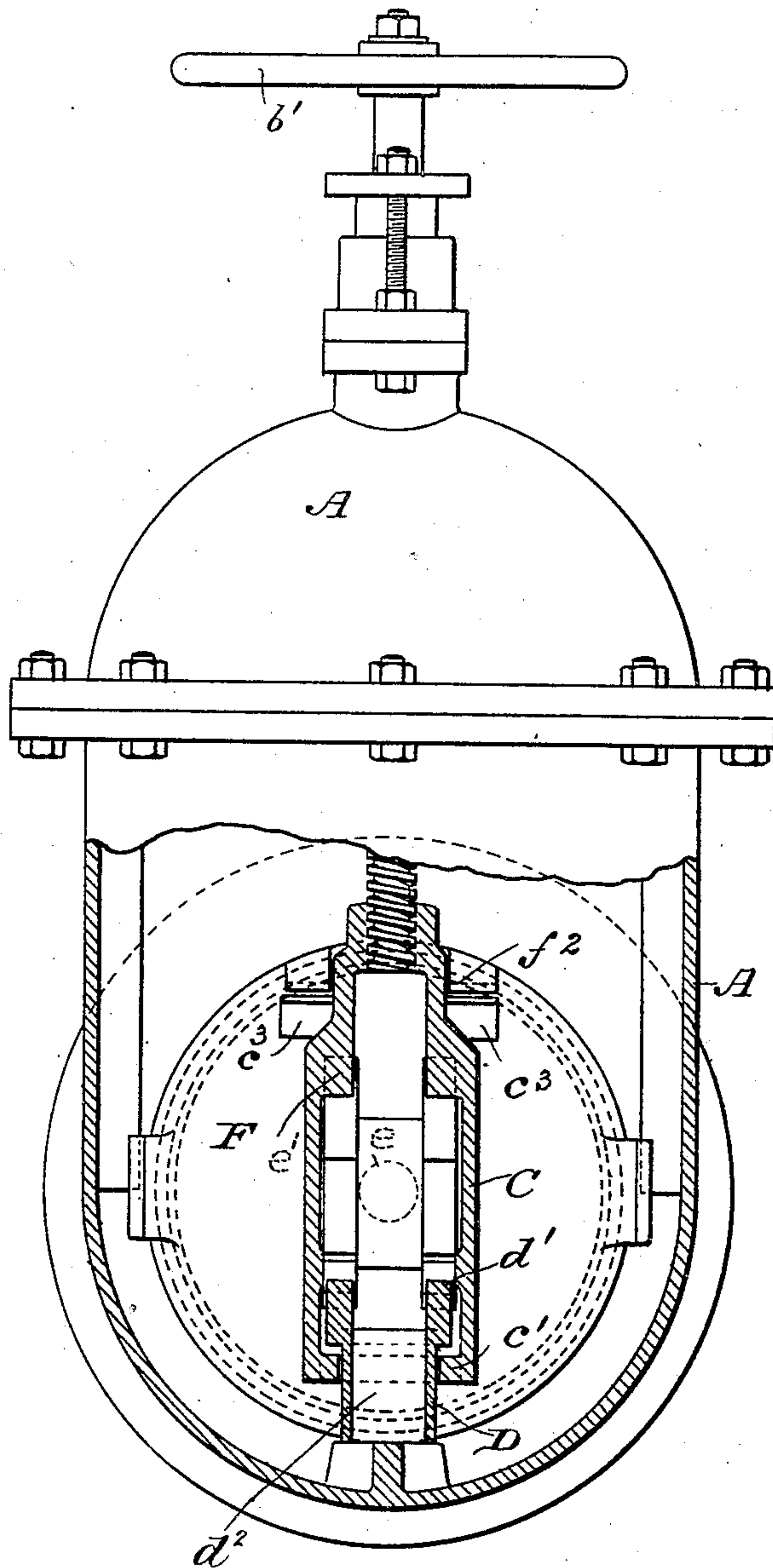


WITNESSES:

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Fig. 2.



INVENTOR:

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by his attorney J. B. Fay.

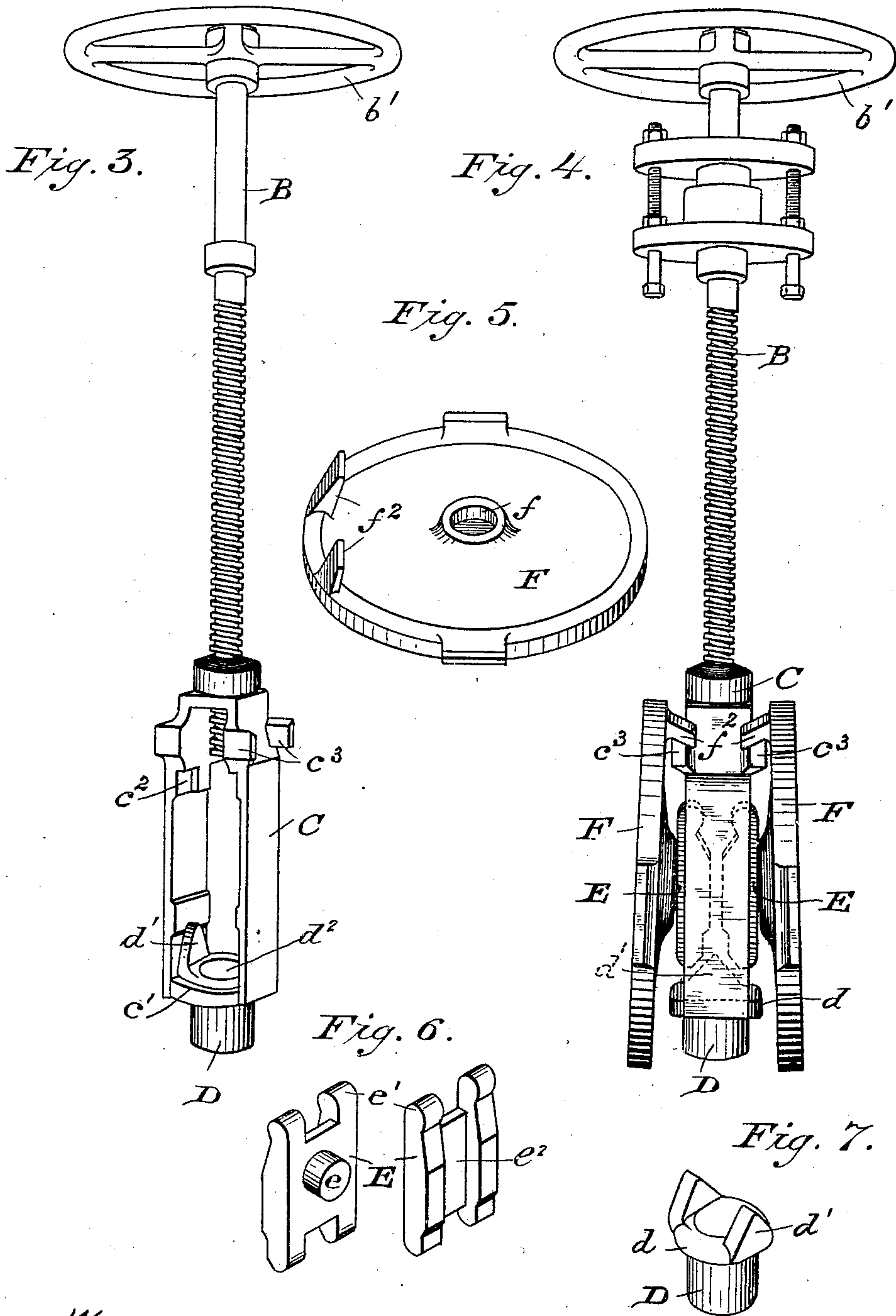
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WITNESSES:
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INVENTOR:
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UNITED STATES PATENT OFFICE.

PIERRE PLANTINGA, OF CLEVELAND, OHIO.

GATE-VALVE.

No. 832,079.

Specification of Letters Patent.

Patented Oct. 2, 1906.

Application filed September 26, 1904. Serial No. 225,934.

To all whom it may concern:

Be it known that I, PIERRE PLANTINGA, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Gate-Valves, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to gas-valves, and particularly to a double gate-valve, and has for its object the production of a valve of such character which shall embody tightness, durability, strength, and ease of operation.

Said invention consists of means hereinafter fully described, and specifically set forth in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying my invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of my invention may be used.

In said annexed drawings, Figure 1 represents a vertical axial section of my improved gate-valve with a suitable casing and a hand-wheel for operating the valve. Fig. 2 represents a partial side elevation and a partial transverse section of the apparatus shown in Fig. 1. Fig. 3 represents a perspective view of the hand-wheel, stem, yoke, and wedge. Fig. 4 represents a front elevation of the apparatus shown in Fig. 3 with the valve-disks and gibs attached thereto. Fig. 5 represents a perspective view of one of the valve-disks. Fig. 6 represents perspective views from both sides of one of the gibs, and Fig. 7 represents a perspective view of the wedge.

My improved gate-valve is provided with a suitable casing A, having suitable flanges *a*, adapted to make a connection with the main gas-conduit, and suitable valve-seats *a'* *a'* for a double gate-valve. A stem B is mounted in the casing, and is provided with a screw-thread *b* and a hand-wheel *b'*. A yoke C has an internal screw-thread *c* adapted to engage with the thread *b*. The yoke is provided near its lower end with an annular shoulder *c'*, forming a bearing for a wedge D, having a flange *d* adapted to rest upon said shoulder when the parts are in the relative positions illustrated in Fig. 3. It will thus be seen that the wedge D is carried by the yoke C, but is loosely mounted therein and vertically movable rela-

tively thereto. The wedge D is hollow and carries upon its upper portion two upwardly-projecting ears *d'*, substantially triangular in vertical section, the purpose of which will be hereinafter explained. Mounted in suitable slideways *c²* in the yoke C by means of the four ears *e'* are two gibs E, which are provided with studs *e*, adapted to be received by two conical valve-disks F in the suitably-flanged apertures *f*. Each gib is formed with a vertical groove *e²*, such grooves being opposed to each other, so as to form a vertical way adapted to receive the threaded stem B when the valve-yoke is raised during the opening operation of the valve. The bore *d²*, it will be noted, is in vertical alinement with this way. These disks form the valves proper and are adapted to contact, by means of suitable flanges *f'*, the valve-seats of the casing to form a tight joint. The yoke C is provided with four inclined lugs *c³*, upon which the disks F are hung by means of four inclined lugs *f²* upon the disks.

The operation is as follows: The valve is closed by turning the hand-wheel *b'* to lower the yoke C, which carries with it the wedge D until the latter contacts with the valve-casing. The yoke then is lowered relatively to the wedge, and the gibs E are forced apart by the ears *d'* of the wedge and carry outwardly with them the valve-disks F, which contact with the valve-seats. The two upper ears of each gib upon which such gib turns as a fulcrum it will be observed are rounded so as to eliminate friction as much as possible, there being sliding contact with the lower wedging end only. At the same time the correct positioning of the valve-disks on their seats is assured, since they are supported during this closing operation on the studs of the gibs, and the latter of course are forced to occupy relatively fixed positions at the upper ends of slideways *c²*. The valve is opened by turning the hand-wheel *b'* to raise the yoke C, thus removing said wedge completely from the bottom of the valve. When the gibs are thus released by the wedge, the pressure upon the disks is relieved and the latter slide inwardly toward each other by reason of the inclined lugs *c³* and *f²*, so that the disks are thus prevented from scraping their ground seating-surfaces against the inside surfaces of the valve-cap and becoming burred, which is the usual cause of leakage in valves which are frequently operated. I am not aware

that the features of allowing the disks to move away quite a distance from the valve-housing during the opening of the valve, thereby obviating the principal cause of leakage and also connecting the wedge with the yoke, so that the former may be carried upwardly with the latter out of the conduit, have been present in valves of this character heretofore used, and they render my improved gate-valve materially more reliable and durable than previous devices.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the means herein disclosed provided the means stated by any one of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention—

1. In a gate-valve, the combination of a casing provided with a valve-seat; a valve adapted to register therewith; a member transversely movable with respect to the valve-axis and adapted to engage said valve; a gib mounted in said member and engaging said valve, said gib being fulcrumed at its upper end; and means adapted upon movement of said member to engage the lower end of said gib and thrust the same outwardly.

2. In a gate-valve, the combination of a casing provided with a valve-seat; a valve adapted to register therewith; a yoke transversely movable with respect to the valve-axis and adapted to engage said valve; a gib mounted in said yoke and engaging said valve, said gib being fulcrumed at its upper end; and means adapted upon movement of said yoke to engage the lower end of said gib and thrust the same outwardly.

3. In a gate-valve, the combination of a casing provided with a valve-seat; a valve adapted to register therewith, said valve being provided on its rear side with inclined lugs; a member transversely movable with respect to the valve-axis and bearing inclined lugs adapted to engage the lugs on said valve whereby said valve is both axially and transversely moved with respect to said seat; a gib mounted in said member and engaging said valve, said gib being fulcrumed at its upper end; and means adapted upon movement of said member to engage the lower end of said gib and thrust the same outwardly.

4. In a gate-valve, the combination of a casing provided with a valve-seat, a valve

for engaging the same; a yoke transversely movable with respect to the valve-axis and adapted to normally sustain said valve out of contact with its seat; a gib mounted in said yoke and engaging said valve, said gib being fulcrumed on its upper end; and a wedge adapted upon movement of said yoke to engage the lower end of said gib and thrust the same outwardly.

5. In a gate-valve, the combination of a casing provided with a valve-seat; a valve for engaging the same; a yoke transversely movable with respect to the valve-axis and adapted to normally sustain said valve out of contact with its seat; a gib slidably mounted in said yoke and engaging said valve, said gib being fulcrumed on its upper end; and a wedge borne by said yoke and adapted upon movement of the same to engage the lower end of said gib whereby said gib is actuated to free said valve from engagement with said yoke and to hold the same against its seat.

6. In a gate-valve, the combination of a casing provided with two oppositely-disposed valve-seats; valve-disks respectively adapted to engage the latter; a vertically-movable yoke between said disks adapted to normally sustain the same out of contact with their seats; two gibs mounted in vertical slideways in said yoke and respectively engaging said disks, the ends of said gibs being rounded; and a wedge adapted upon downward movement of said yoke to engage the lower ends of said gibs.

7. In a gate-valve, the combination of a casing provided with two oppositely-disposed valve-seats; two valve-disks respectively adapted to engage the latter; a vertically-movable yoke between said disks adapted to normally sustain the same out of contact with their seats; two gibs mounted in vertical slideways in said yoke and respectively engaging said disks, the ends of said gibs being rounded; and a wedge carried by said yoke and adapted upon downward movement thereof to engage the lower ends of said gibs whereby said gibs are actuated to free said valves from engagement with said yoke and to hold the same against their seats.

Signed by me this 16th day of September, 1904.

PIERRE PLANTINGA.

Attest:

E. M. NORLING,
G. W. SAYWELL.