

No. 751,005.

PATENTED FEB. 2, 1904.

F. D. PHILP.
GLOBE VALVE.

APPLICATION FILED AUG. 1, 1903.

NO MODEL.

Fig. 1.

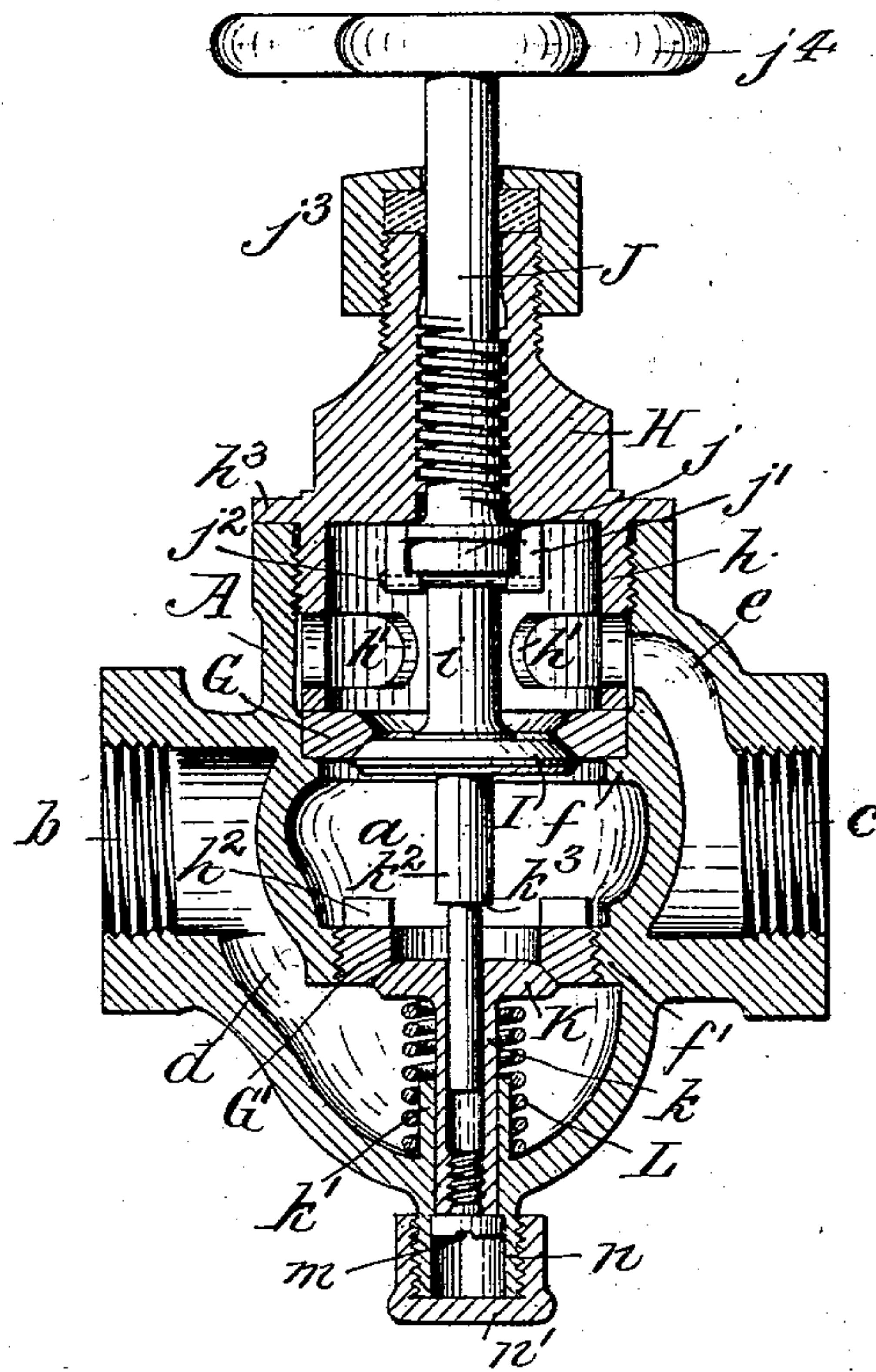


Fig. 2.

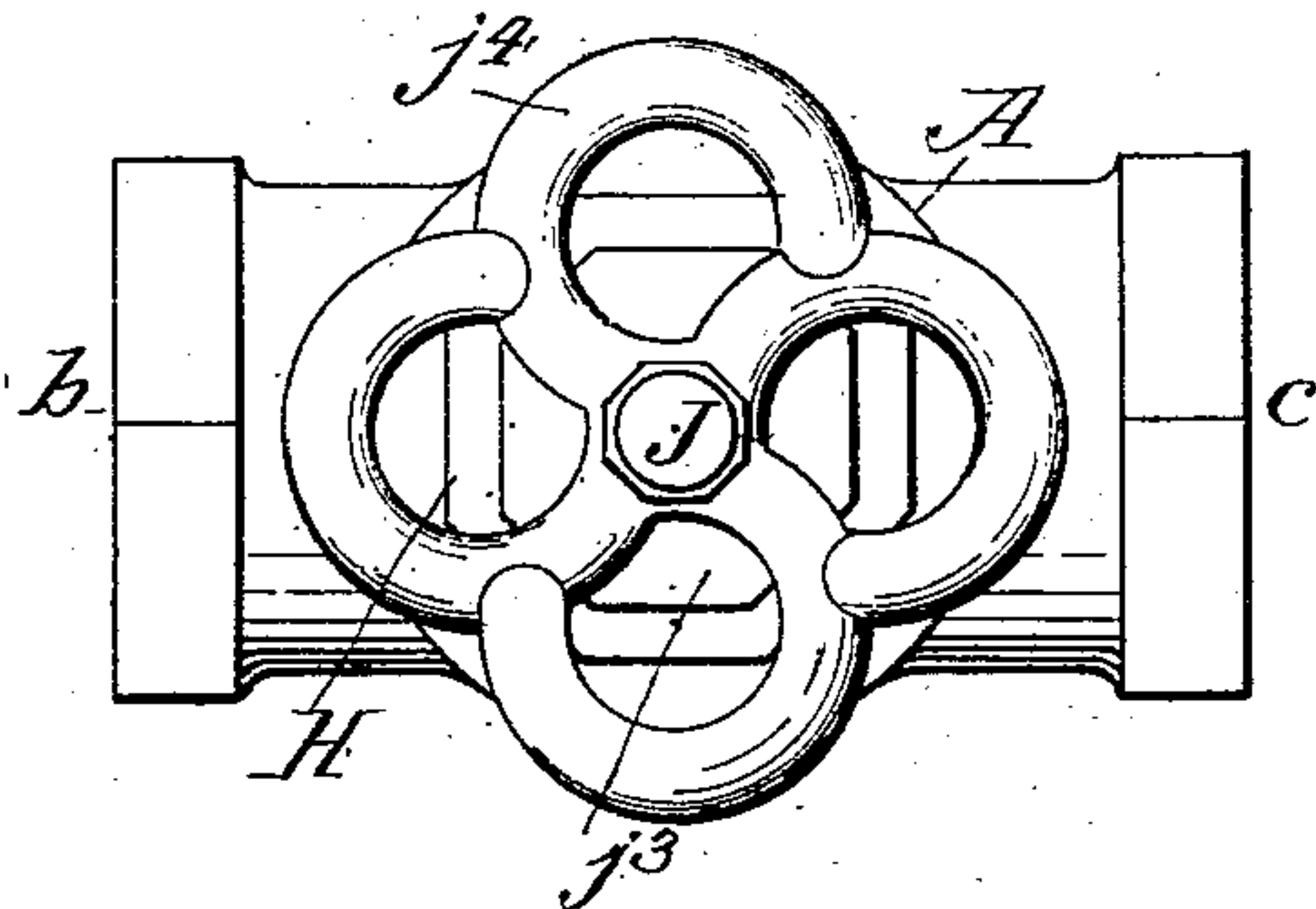
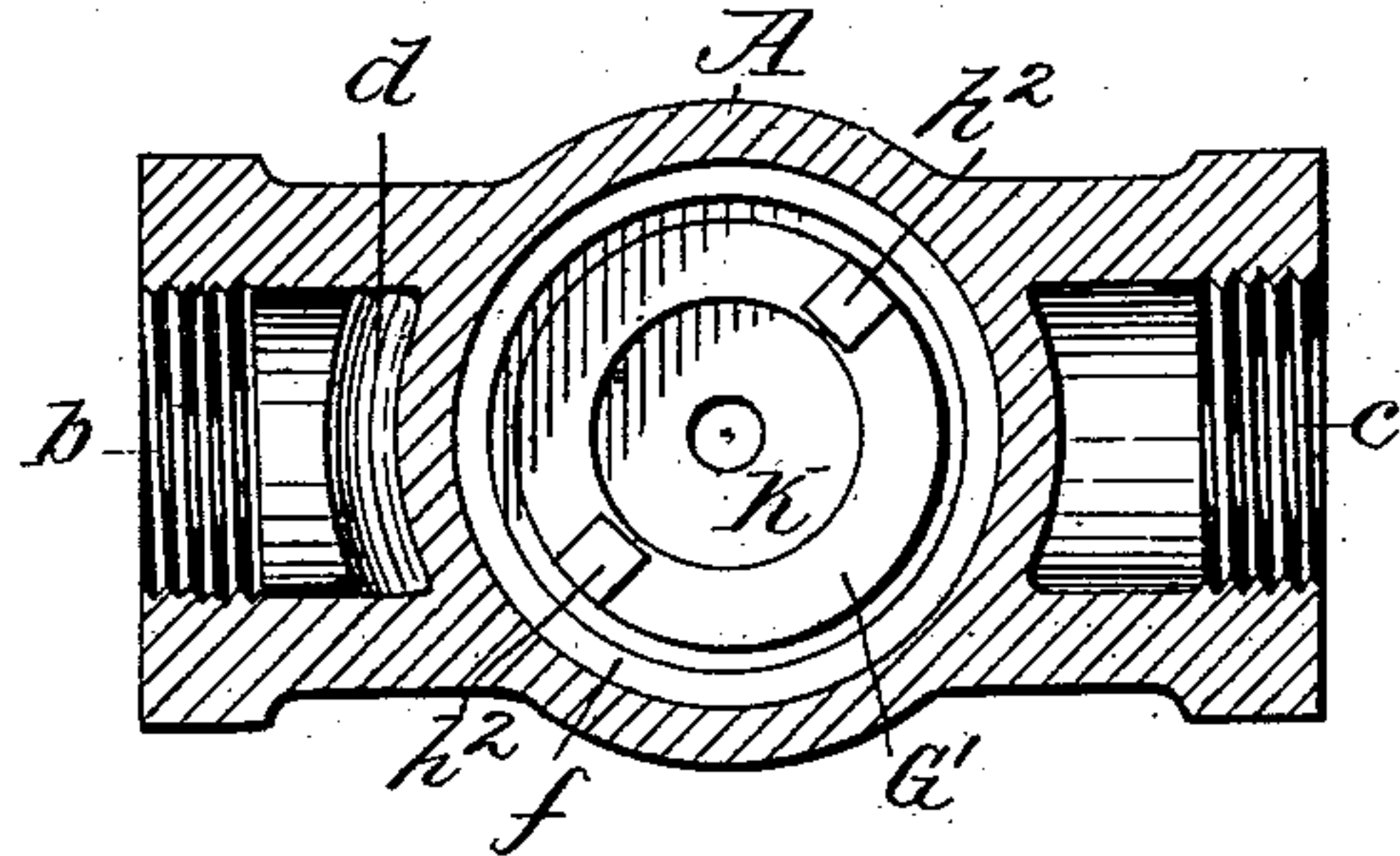


Fig. 3.



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UNITED STATES PATENT OFFICE.

FREDERICK D. PHILP, OF BUFFALO, NEW YORK.

GLOBE-VALVE.

SPECIFICATION forming part of Letters Patent No. 751,005, dated February 2, 1904.

Application filed August 1, 1903. Serial No. 167,924. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK D. PHILP, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Globe-Valves, of which the following is a specification.

This invention relates to a globe-valve for steam, water, and other pipes.

One object of the invention is to provide a globe-valve having main and auxiliary valve disks located in a common casing and having a common operating stem or device, but which act independently of each other in controlling the fluid-passage, whereby the auxiliary valve acts automatically to control the fluid-pressure and enables the main valve, together with its seat, to be removed from the casing while the pipe is under pressure.

Another object of the invention is to so construct the valve that the main-valve disk is moved completely off of its seat and a free passage for the fluid opened before the other valve-disk is moved from its seat, thereby preventing "wiredrawing" and cutting of the main valve.

Another object of the invention is to provide a valve having two independent valve-disks which mutually guide each other in their movements and which, together with their seats, can be readily removed from the valve-casing.

Another object is to provide means whereby the auxiliary-valve disk and its seat can be ground without removing them from the casing.

In the accompanying drawings, Figure 1 is a central vertical section through a globe-valve embodying the invention. Fig. 2 is a plan view thereof. Fig. 3 is a horizontal section thereof, the main valve, its seat, and the hood being removed.

Like letters of reference refer to like parts in the several figures.

A represents the valve-casing, which is provided with a central upright valve-chamber *a* and at opposite sides with coupling-nipples *b* *c*, which respectively communicate with the lower and upper ends of the valve-chamber by inlet and outlet passages *d* and *e*. The valve-

chamber is provided at its upper portion with an internal annular shoulder or flange *f* and below said shoulder with a contracted screw-threaded portion *f'*.

G represents a ring which is supported by the annular shoulder and is provided in its under side with a conical face or seat for the main-valve disk, and G' represents a ring screwed into the contracted threaded portion of the casing and having a conical face or seat on its under side for the inner or auxiliary valve. The seat-ring for the main valve is removably but firmly held between its supporting-shoulder and a hood or cap H, which is provided with a hollow shell or portion *h*, which is screwed into the upper cylindrical portion of the casing and abuts at its lower end against the upper face of said seat-ring. The shell is provided with openings *h'*, through which the fluid passes to the outlet-passage. The auxiliary seat-ring G is of sufficiently small diameter to enable it to be inserted and withdrawn through the upper cylindrical portion of the casing when the hood is removed and is preferably provided with lugs *h²* or other means for the engagement of a tool to turn said seat-ring in attaching and detaching the same. The outer portion of the hood, as usual, is preferably polygonal in cross-section to enable the engagement of a wrench or tool for screwing and unscrewing the hood and has an annular flange or shoulder *h³*, which abuts against the upper end of the valve-casing to form a tight joint.

I represents the main or outer valve disk, which is provided with a conical upper face which seats upwardly against the conical seat on its seat-ring G. The valve-disk is secured to a vertical stem *i*, the upper end of which is loosely coupled to the lower end of an operating screw spindle or shaft J, which is provided with a threaded lower portion working in a threaded hole in the hood H. In the construction shown the valve-stem is provided at its upper end with a head or enlargement *j*, which is loosely seated in a socket *j'* at the lower end of the operating-spindle, the head being held in its socket by a cross pin or key *j²*, inserted in holes in the socket below the head on the valve-stem. This connection per-

mits the valve to be moved toward and from its seat without rotating with the operating-spindle. Any other suitable connection may be employed. The valve-operating spindle
5 extends out through a stuffing-box j^3 of any usual or suitable construction and is provided at its outer end with a hand-wheel or handle j^4 .

K represents the inner or auxiliary valve disk, which is arranged below its seat-ring and
10 is provided with a conical face which coöperates with the conical seat on its seat-ring. The auxiliary-valve disk is provided with a depending hollow cylindrical stem k , slidably engaging in a vertical cylindrical boss k' on
15 the lower portion of the casing. The main or outer valve disk is provided with a depending stem k^2 , having a lower cylindrical portion of reduced diameter which telescopes into the auxiliary-valve disk and its hollow stem,
20 the two valve-stems thus mutually acting to properly guide each other in their movements. The depending stem of the main-valve disk is provided above the auxiliary-valve disk with a shoulder or enlargement k^3 , which when the
25 valves are seated is above and out of contact with the auxiliary-valve disk. The auxiliary-valve disk is held normally against its seat by a coiled spring L, surrounding its hollow stem between the disk and the bottom of the
30 valve-casing.

When the valve-operating spindle is turned to the left in the usual manner for opening the valve, the upper valve-disk is lowered from its seat, but the auxiliary-valve disk re-
35 mains on its seat until the shoulder k^3 on the depending stem of the main valve strikes the auxiliary-valve disk and moves the latter downwardly off of its seat. Thus the main valve is moved completely off of its seat and
40 a large opening provided for the passage of the water or gas before the auxiliary valve is moved from its seat. There is therefore no possibility of wiredrawing or cutting of the main-valve disk and its seat. The aux-
45 iliary-valve disk is held to its seat by its spring and the fluid-pressure in the valve-chamber below the valve-disk. The main-valve disk, together with its seat-ring and the hood of the valve-casing, can be readily
50 removed from the casing for grinding the valve and its seat or renewing either part by unscrewing the hood, the main-valve disk lifting its seat-ring out of the casing with the hood. When the main valve and its seat are
55 thus removed from the casing, the auxiliary valve is held to its seat and prevents the escape of the liquid or gas. The main-valve disk and its seat can therefore be removed while the pipe or passage in which the valve is
60 located is under pressure, which is desirable, as it is often inexpedient to shut off the pipe-pressure when the valve requires attention.

When the main valve and seat have been removed, the seat-ring for the auxiliary valve
65 can be readily unscrewed and removed from

the casing through the opening in the upper cylindrical portion thereof.

The lower end of the depending hollow stem of the auxiliary-valve disk is preferably provided with a slot m for the insertion of a screw-
70 driver or is otherwise fashioned for the engagement of a tool by which the valve can be turned on its seat to grind the seat and the valve-disk without removing the same from the casing. The tool for turning the valve-
75 disk is inserted through a nipple n at the bottom of the valve-casing. The nipple is provided with a removable screw-cap n' .

I claim as my invention—

1. In a globe-valve, the combination of a
80 valve-casing provided with oppositely-disposed coupling portions, two valve-seats arranged parallel in said casing and having alined central openings for the passage of the
85 fluid and valve-seats surrounding said openings, a main-valve disk coöperating with one of said seats, a screw-spindle connected to said valve-disk for positively seating the same, an auxiliary-valve disk which is mounted in the
90 valve-casing independently of the main-valve disk and is held to its seat by the fluid-pressure, and a stem connected to said main-valve disk and which engages a part secured to said
95 auxiliary-valve disk to unseat the latter after the main valve has been moved off of its seat, said main-valve disk being removable from the
100 casing and said auxiliary-valve disk being held to its seat to prevent the passage of fluid when said main-valve disk is removed, substantially as set forth.

2. In a globe-valve, the combination of a
105 valve-casing provided with oppositely-disposed coupling portions, two valve-seat rings arranged parallel in said casing and having alined central openings for the passage of the
110 fluid and valve-seats surrounding said openings, a main-valve disk coöperating with one of said seats, a spindle connected to said main-valve disk for positively seating the same, an auxiliary-valve disk which is disconnected
115 from said main-valve disk whereby the main-valve disk can be removed from the casing independently of said auxiliary-valve disk, a spring arranged between said auxiliary-valve
120 disk and a part of said valve-casing and which acts together with the fluid-pressure to hold said auxiliary valve to its seat, and a stem connected to said main-valve disk and which is adapted to engage a part secured to said aux-
125 iliary-valve disk to unseat the latter after said main-valve disk has been moved off of its seat, substantially as set forth.

3. In a globe-valve, the combination of a
130 valve-casing provided with oppositely-disposed coupling portions, two valve-seat rings arranged parallel in said casing and having alined openings for the passage of the fluid and valve-seats surrounding said openings, a main-valve disk coöperating with one of said
135 seats, a spindle connected to said main valve

for operating the same, an auxiliary-valve disk which is disconnected from said main-valve disk and is provided with a stem, a guide on said casing in which said auxiliary-valve stem
5 works, a spring surrounding said auxiliary-valve stem between the valve and a stationary part of the casing and which acts to seat the valve, and a stem connected to said main-valve disk and having a reduced portion which works

in an opening in said auxiliary-valve disk, and 10 a shoulder which is adapted to engage said auxiliary-valve disk to unseat the latter, substantially as set forth.

Witness my hand this 30th day of July, 1903.

FREDERICK D. PHILP.

Witnesses:

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C. M. BENTLEY.