

D. McKENZIE, Jr.
GLOBE-VALVE.

No. 174,551.

Patented March 7, 1876.

Fig. 1.

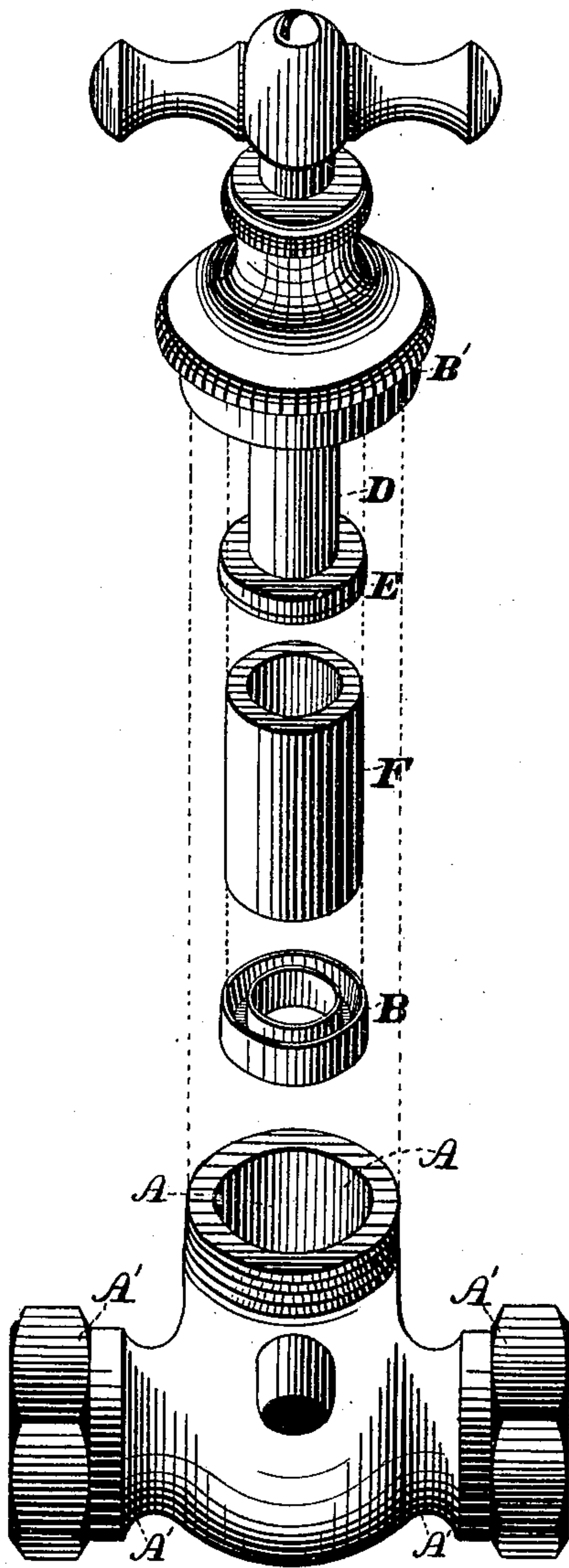


Fig. 2.

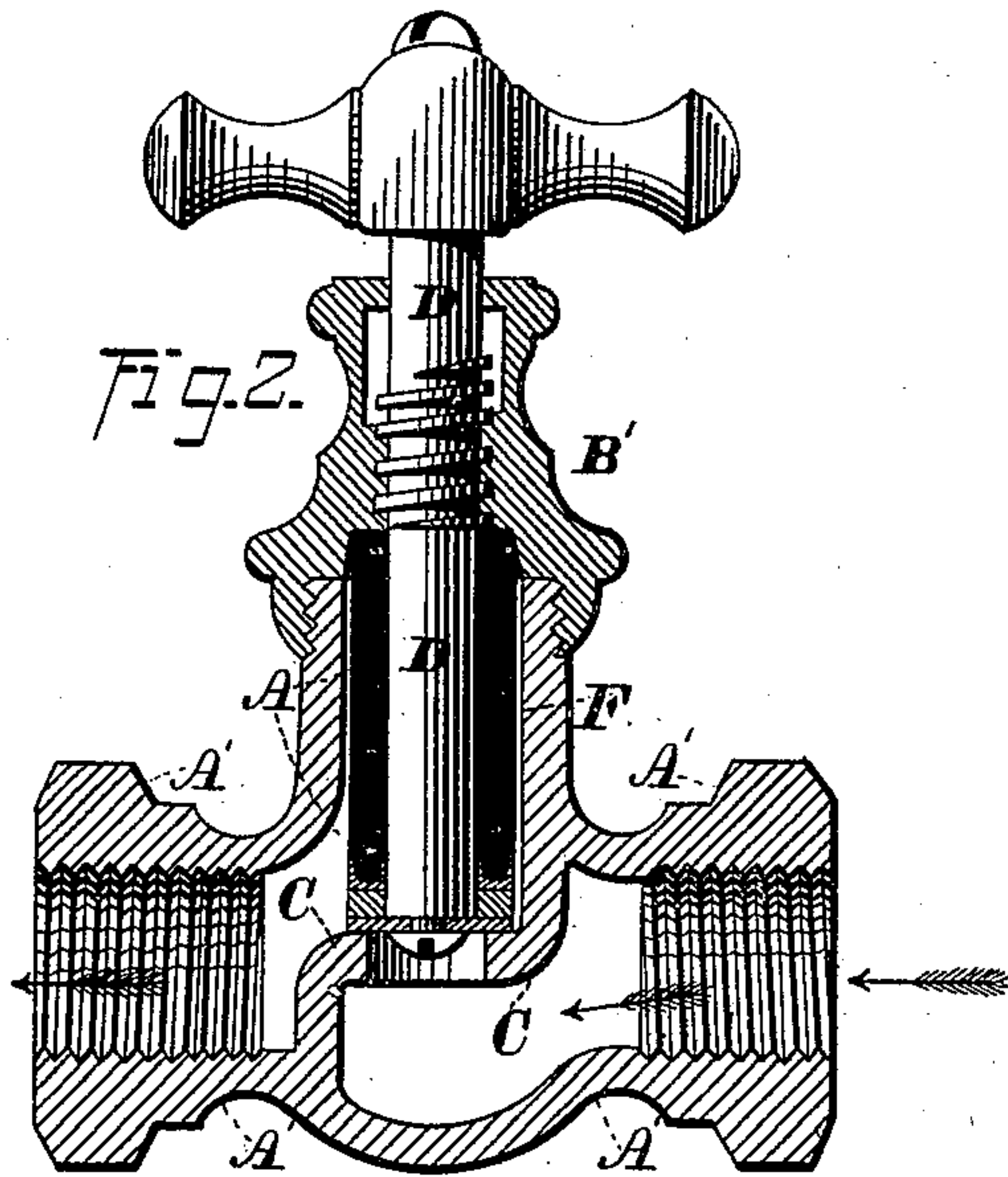
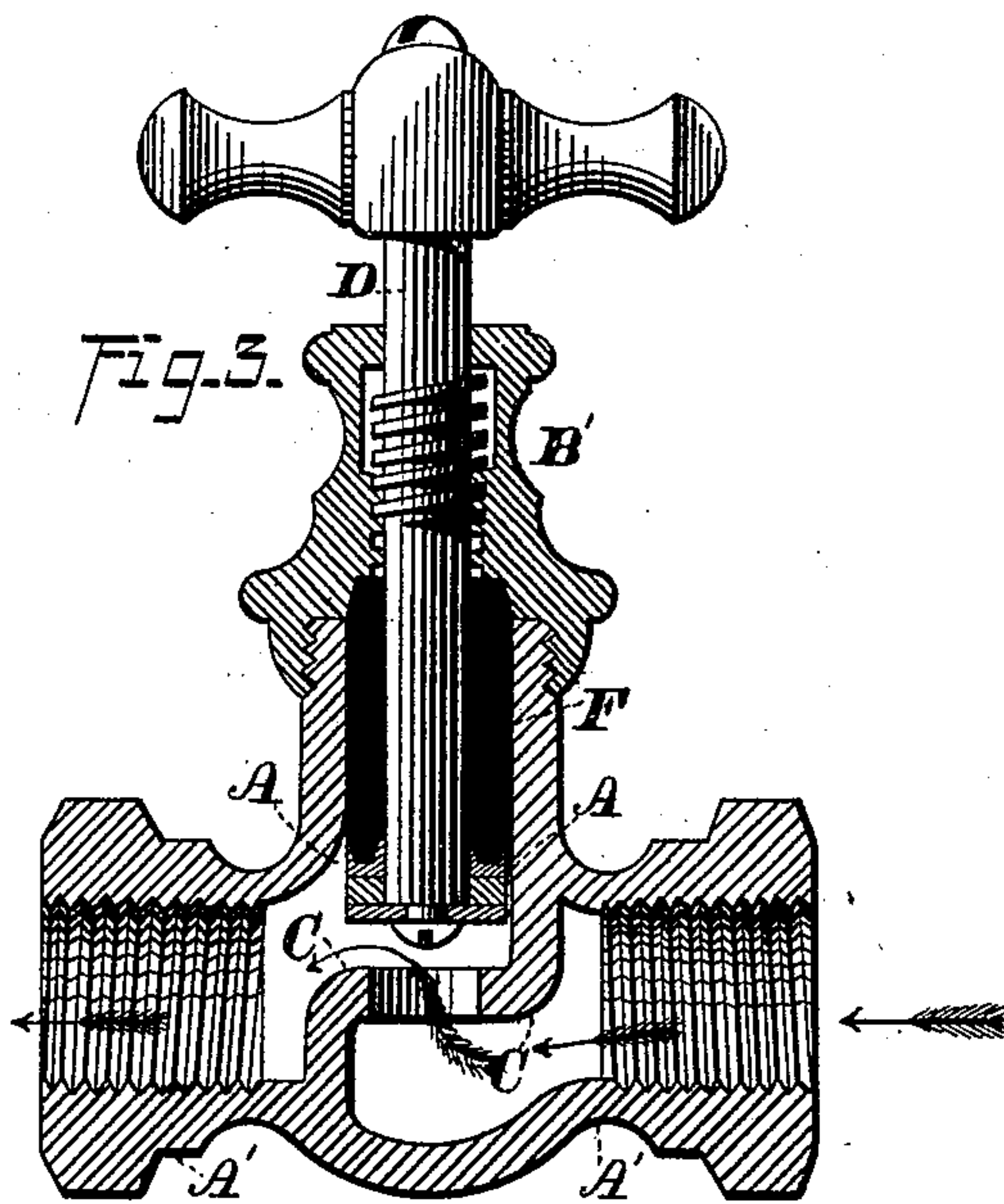


Fig. 3.



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Fig. 4.

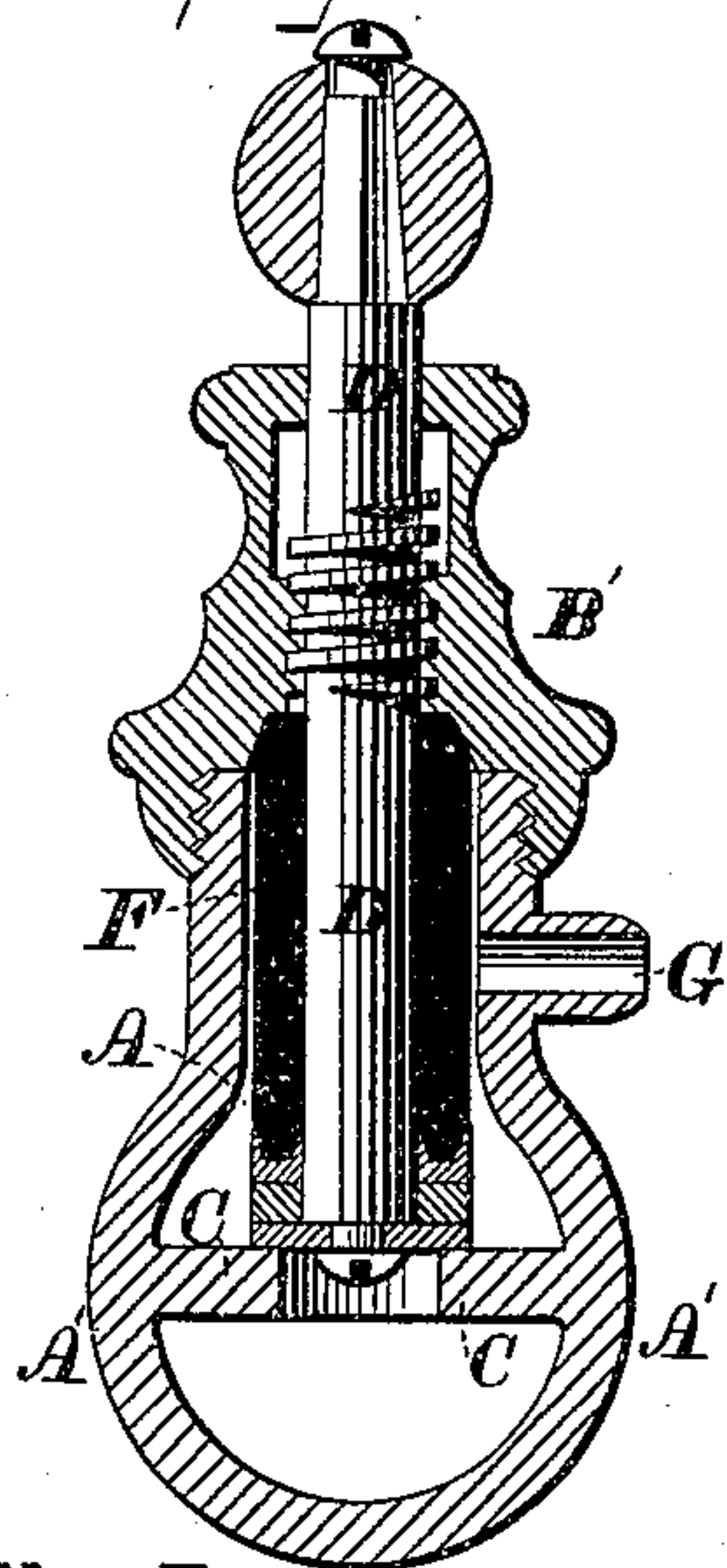


Fig. 5.

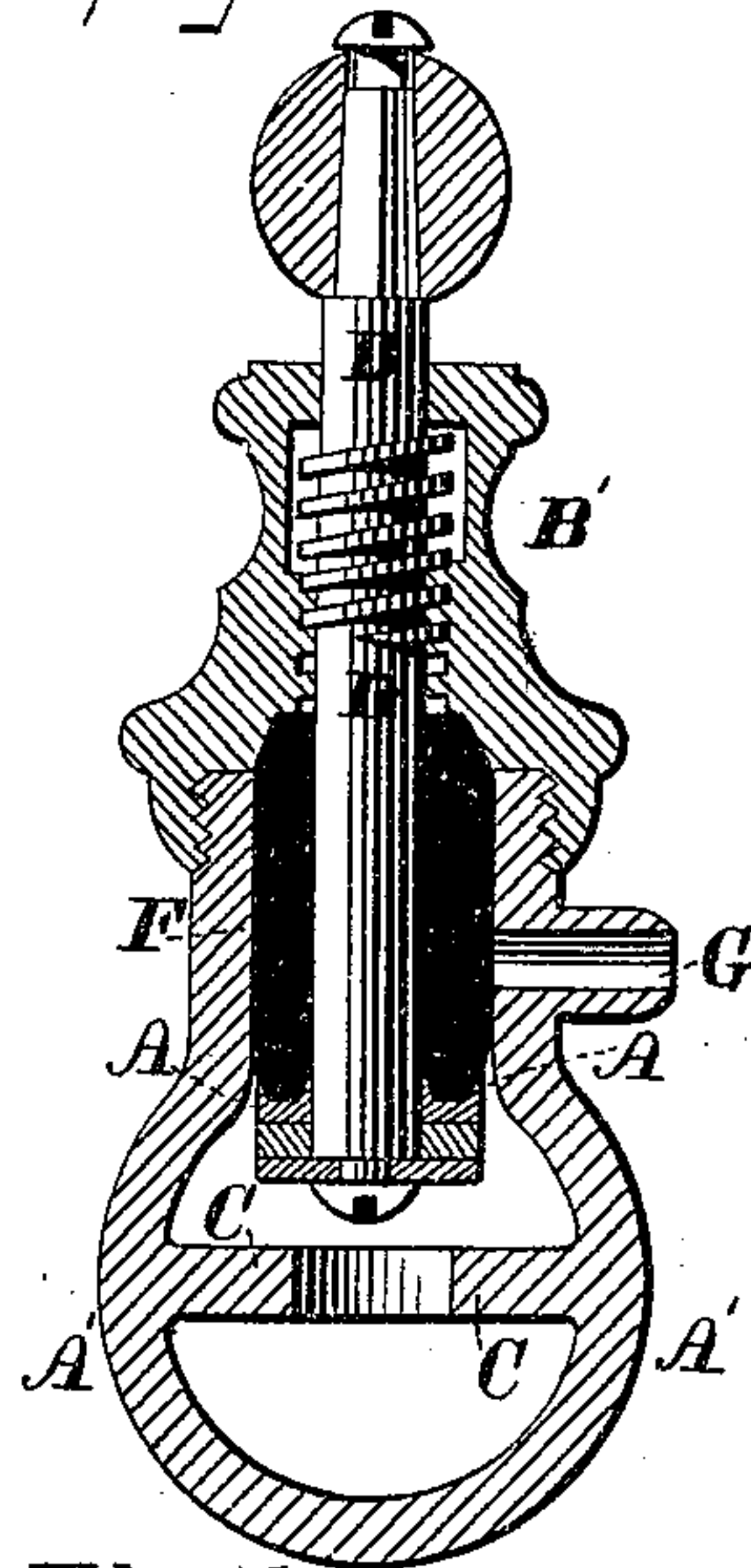


Fig. 6.

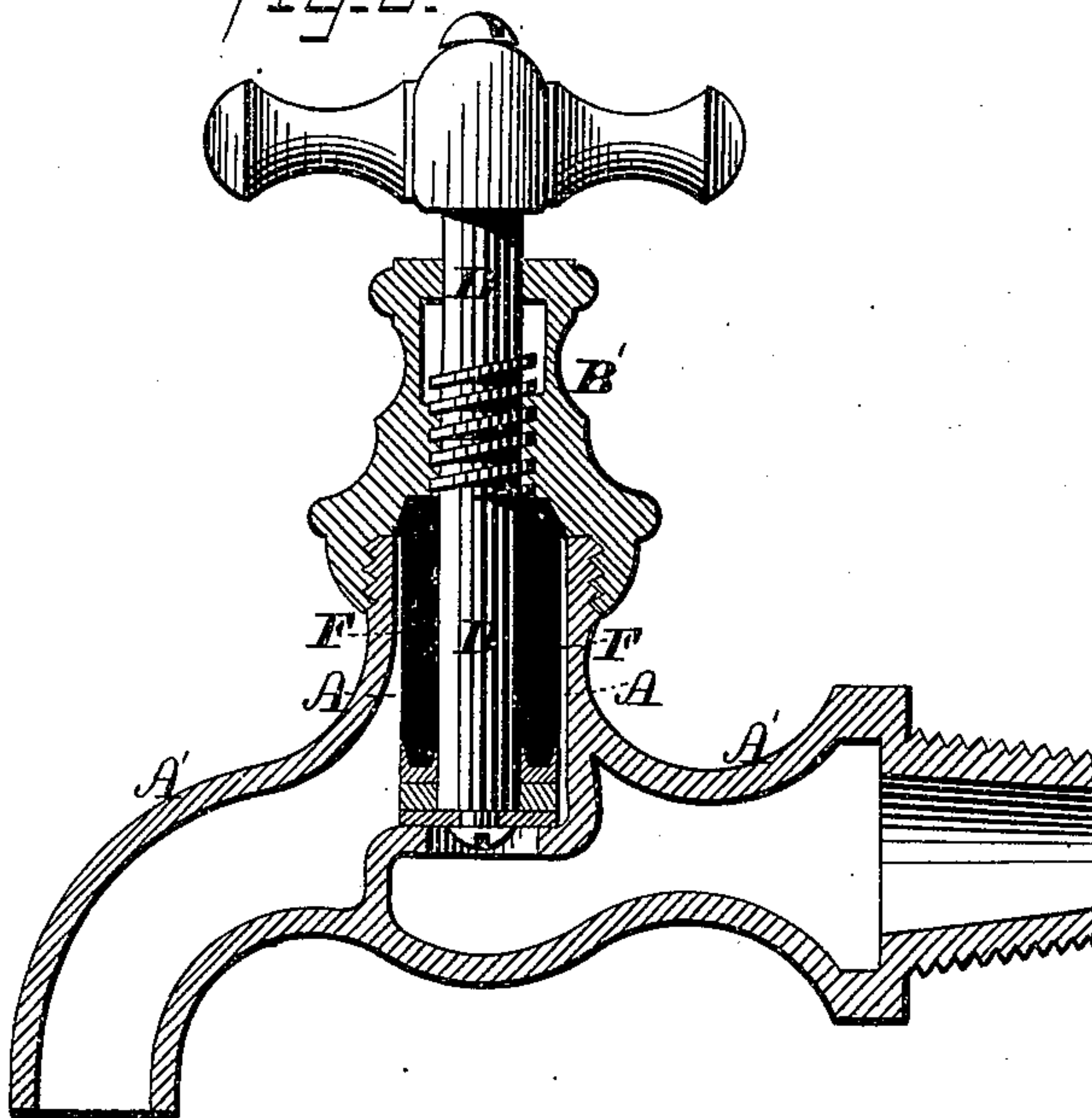
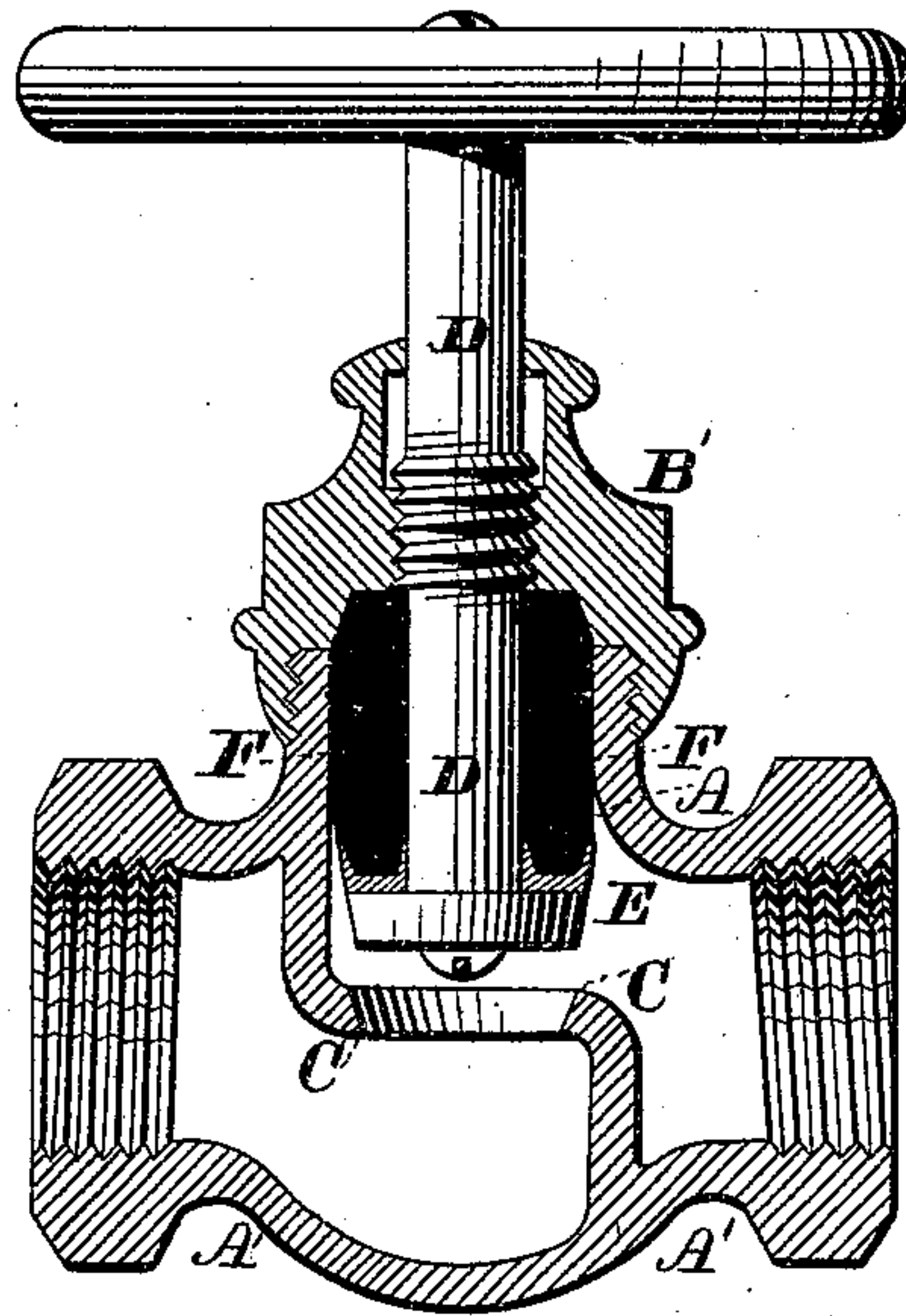


Fig. 7.



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UNITED STATES PATENT OFFICE.

DAVID McKENZIE, JR., OF WASHINGTON, D. C., ASSIGNOR OF ONE-HALF HIS RIGHT TO ALEXANDER McKENZIE, OF SAME PLACE.

IMPROVEMENT IN GLOBE-VALVES.

Specification forming part of Letters Patent No. 174,551, dated March 7, 1876; application filed February 19, 1876.

To all whom it may concern :

Be it known that I, DAVID McKENZIE, JR., of Washington, in the county of Washington and in the District of Columbia, have invented certain new and useful Improvements in Globe or Compression Valves; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents the parts of an ordinary globe compression-valve, with my improvement in perspective. Fig. 2 is a vertical central section of the same, with the valve closed upon its seat. Fig. 3 is a vertical central section, showing the valve open. Fig. 4 is a vertical transverse section of an ordinary globe or compression valve, sometimes termed a "shower-cock," provided with a waste-pipe or opening, and the valve closed upon its seat. Fig. 5 is a view similar to Fig. 4, except that the valve is raised off its seat, and consequently open. Fig. 6 is a vertical central section of an ordinary compression faucet or spigot, provided with my improvement; and Fig. 7 is a vertical central section of an ordinary conical-seat globe-valve provided with my improvement, and with the valve open.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention is to provide means whereby globe and compression valves and spigots having flat or conical seats, whether used for steam, water, or any other liquid, may be rendered self-packing; and it consists, principally, in a ring or washer provided with a V-shaped annular groove upon its upper side, and placed at the lower end of the cylindrical chamber of a globe or compression valve, in such a manner as that the said V-shaped annular groove shall furnish a seat for and confine the lower end of an elastic tube, for the purpose substantially as is hereinafter shown and described. It consists, further, in the means provided for opening and closing the waste-pipe of a globe or compression valve automatically, in the manner and for the purpose substantially as is hereinafter shown and described.

In the annexed drawings, A represents a

cylindrical chamber, the side walls of which are formed by the upper part of the globe-casting A'. The lower end of said chamber A is formed by a washer or ring, B, that is provided with a V-shaped groove upon its upper side. The upper end is formed by a cap, B', that is fastened to and secured upon the globe-casting by means of screw-threads, in the usual manner. The lower end of the inner portion of said cap B' is made conical, as shown in the drawings, for the purposes that will be more fully explained hereinafter. A hole is bored through the cap B', longitudinally, and central with the valve-seat C, and said hole is provided with an internal screw, to and within which the valve stem D is fitted, by means of which arrangement the valve E is enabled to be opened and closed. The valve E is secured to and upon the lower end of the valve-stem D, either rigidly or loosely, as desired, in the usual manner, and, as thus secured, furnishes a bearing or support for the washer or ring B, the latter resting upon the former. The stem D is fitted to pass through the washer or ring B loosely, so that when said stem is screwed outward or inward, the washer will not necessarily revolve with the stem. An elastic cylindrical tube, F, composed of india-rubber or any other suitable substance or material, is caused to encircle the stem D within the cylindrical chamber A, and is made of sufficient length to fill said chamber longitudinally, but is somewhat smaller in diameter than said chamber. The lower end of the elastic tube F rests upon the washer B within the annular V-shaped groove, and the upper end of said elastic tube projects into and fills the conical portion of the cap B'.

By reference to the drawings, it will be seen that when the valve E is upon its seat there will be an annular space between the outside of the cylindrical elastic tube and the inside of the cylindrical chamber A.

As thus constructed, the chamber A and the attachments directly pertaining to the same are complete, and its operation is as follows: When the valve E is closed, as shown in Figs. 2, 4, and 6, the cylindrical elastic tube F fills the space between the

valve E and the lower end or conical portion of the cap B', leaving an annular space between the said elastic tube and the side walls of the cylindrical chamber A. At the instant the valve E is raised off its seat, the elastic tube F begins to compress longitudinally, increasing at the same time in diameter sufficiently to fill the chamber A, as shown in Figs. 5 and 7, and, by means of the conical portion of the cap B' forming the upper end of the chamber A, the elastic tube F (as the valve E continues to rise) is compressed so tightly around the valve-stem D as to effectually prevent steam, water, or other liquid from escaping outward through the hole provided in the cap B' for the valve-stem D.

Figs. 4 and 5 show the application of this improvement to hydrants for fire and domestic purposes, shower-cocks, water-cranes for railroads, &c.

By reference to the drawings, Fig. 4, it will be seen that when the valve is closed upon its seat the annular space between the elastic tube F and cylindrical chamber A affords ample space for water or other liquids that remain above the valve E to pass out through the waste-pipe G.

Fig. 5 shows the valve open, and by the compression of the elastic tube F, which is increased in diameter by the opening of the valve, the waste-pipe G is closed.

This improvement is equally applicable to all descriptions of globe and compression

valves, shower-cocks, hydrants, water-cranes &c., whether used for steam or water, and, from the fact that it enables waste-valves to be dispensed with, and furnishes a complete and reliable self-acting packing for the stem of the valve, it is believed to possess advantage superior to any in use.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. In combination with the valve-stem D and elastic tube F, the washer B, provided with the V-shaped annular groove upon its upper side, the office of which is to provide a seat for the elastic tube F, and confine the lower end of the same in position, so that said elastic tube cannot spread or become enlarged at its lower end, in the manner substantially as shown and described.

2. The combination of the valve-stem D, elastic tube F, and waste-pipe G, by means of which combination the latter is enabled to be opened and closed automatically, in the manner and for the purpose substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 19th day of February, 1876.

DAVID McKENZIE, JR.

Witnesses:

JOHN R. YOUNG,
WILLIAM FITCH.