

(No Model.)

2 Sheets—Sheet 1.

B. FITTS.
THREE WAY VALVE.

No. 272,421.

Patented Feb. 20, 1883.

Fig. 1.
on line a.b. of Fig. 5.

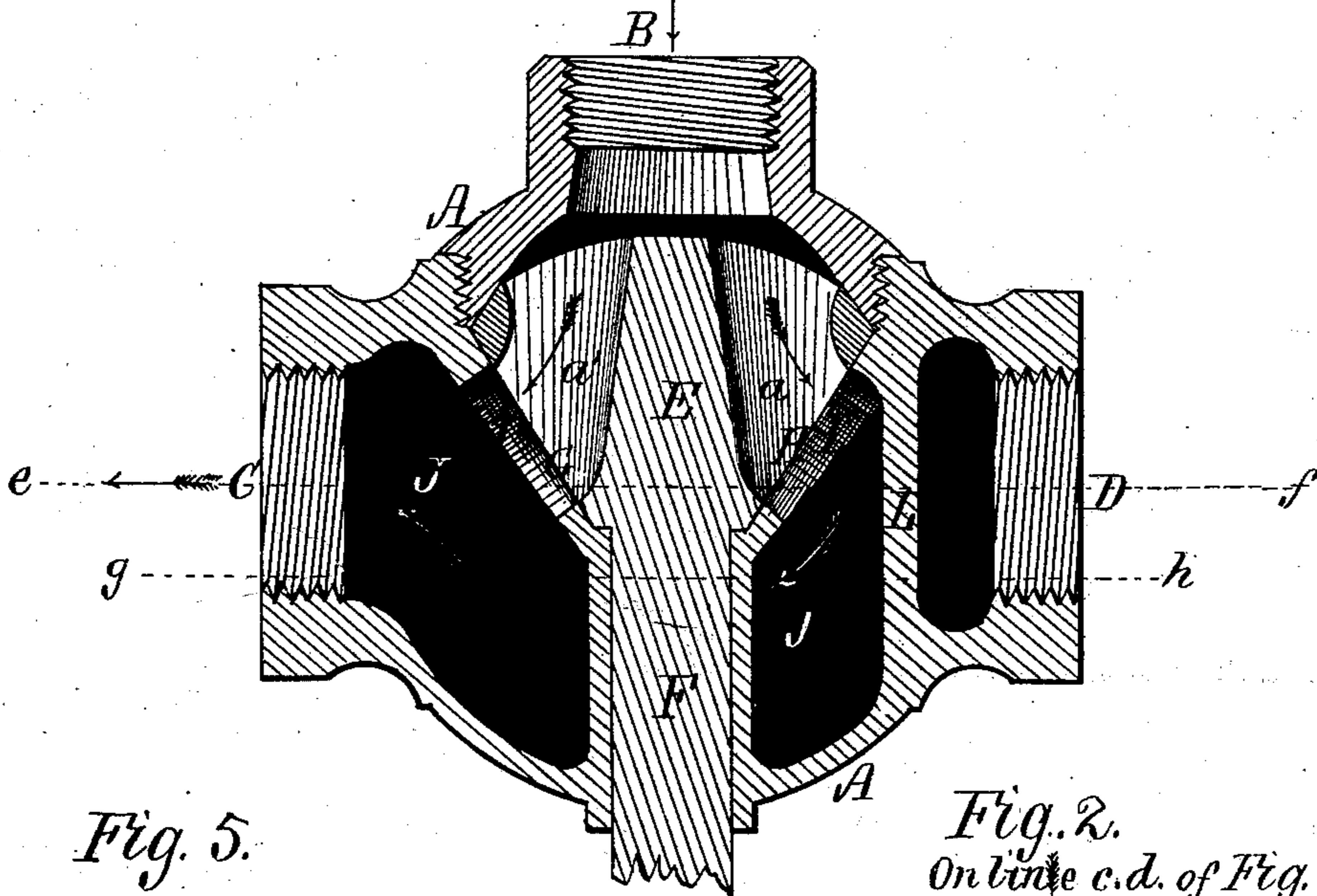


Fig. 2.
On line c.d. of Fig. 5.

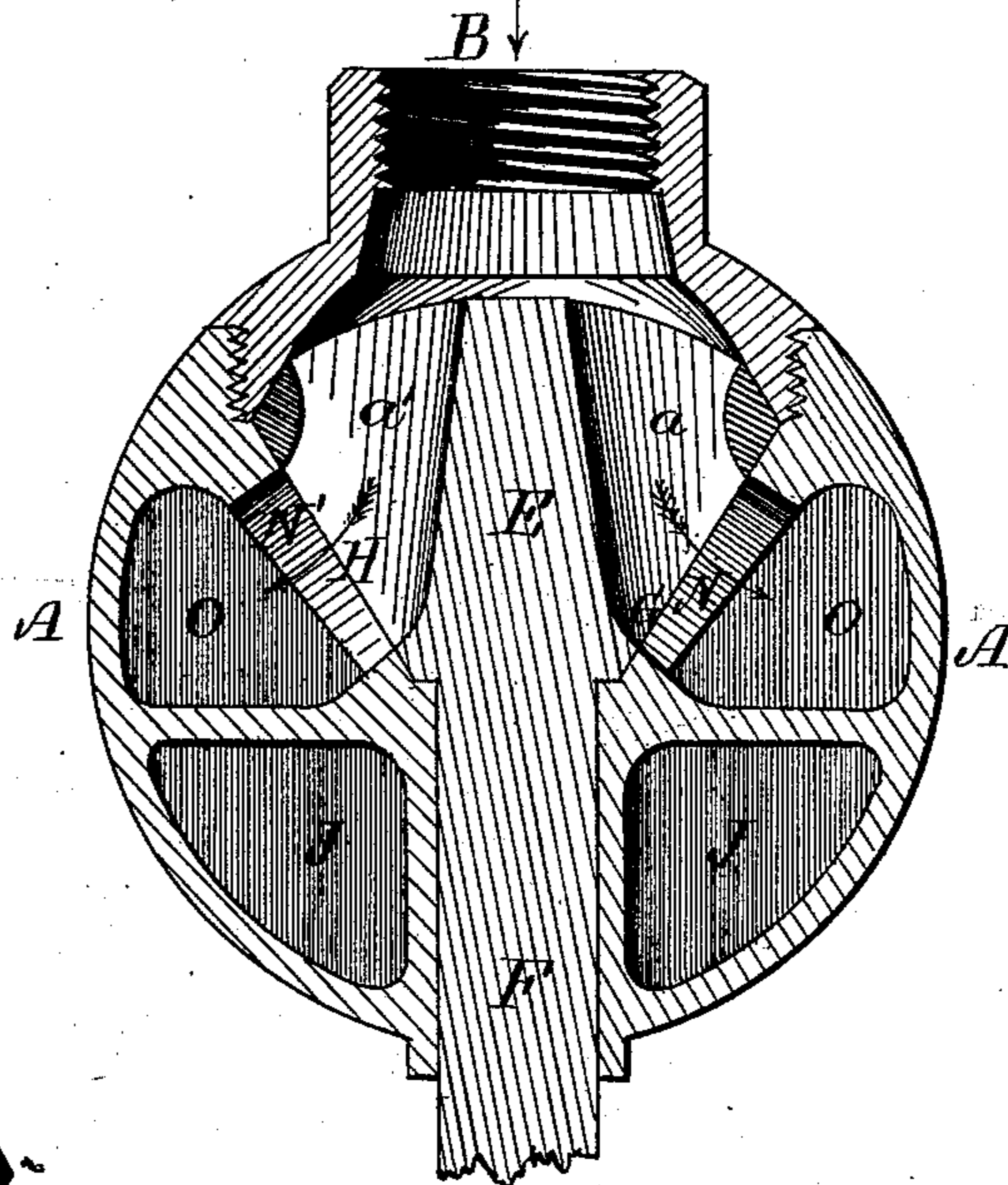
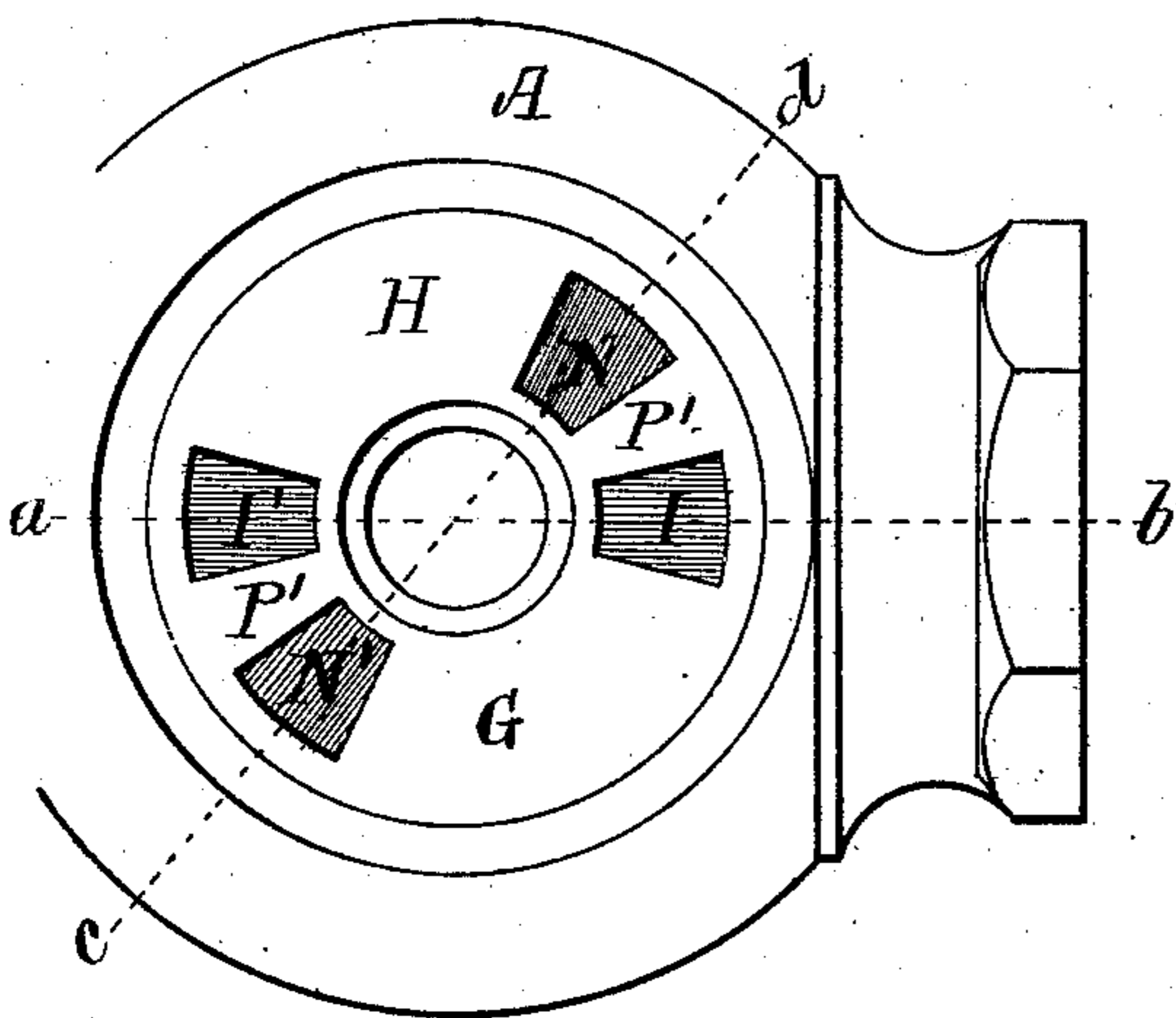


Fig. 6.
E

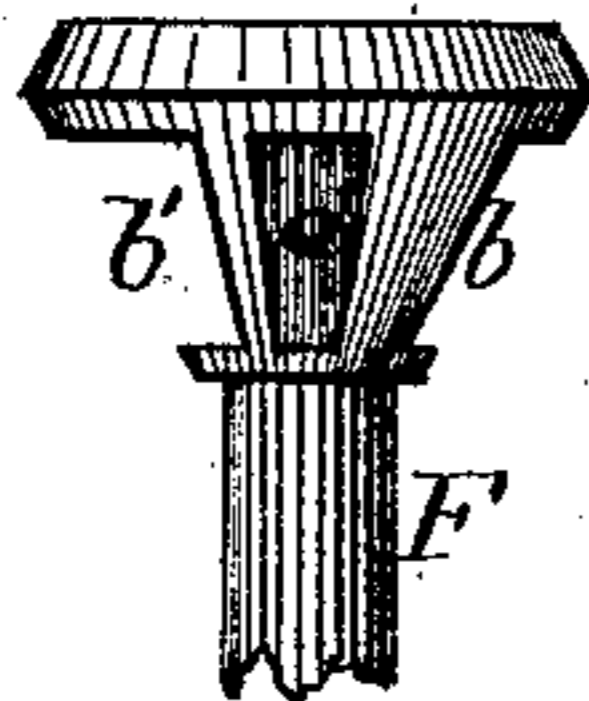
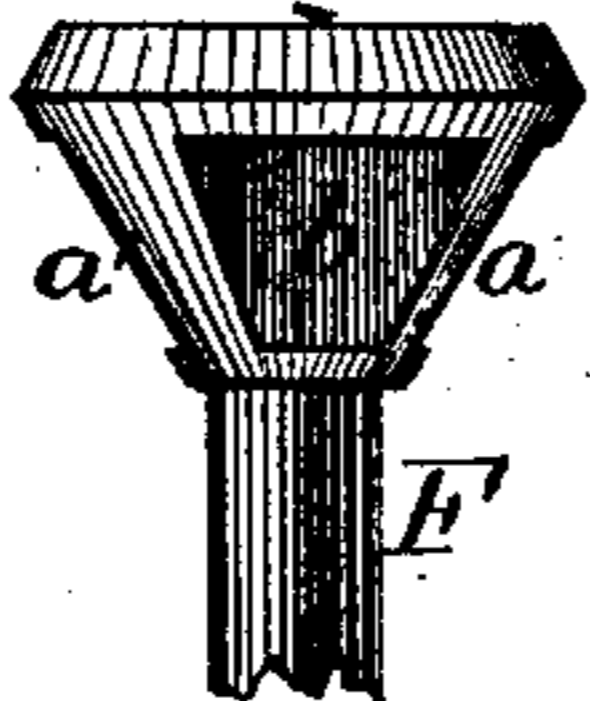


Fig. 7.
E



Witnesses.
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W. E. Lodge.

Inventor.
Benajah Fitts.
J. Curtis, Atty.

(No Model.)

2 Sheets—Sheet 2.

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No. 272,421.

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Fig. 3.
on line e.f. of Fig. 1.

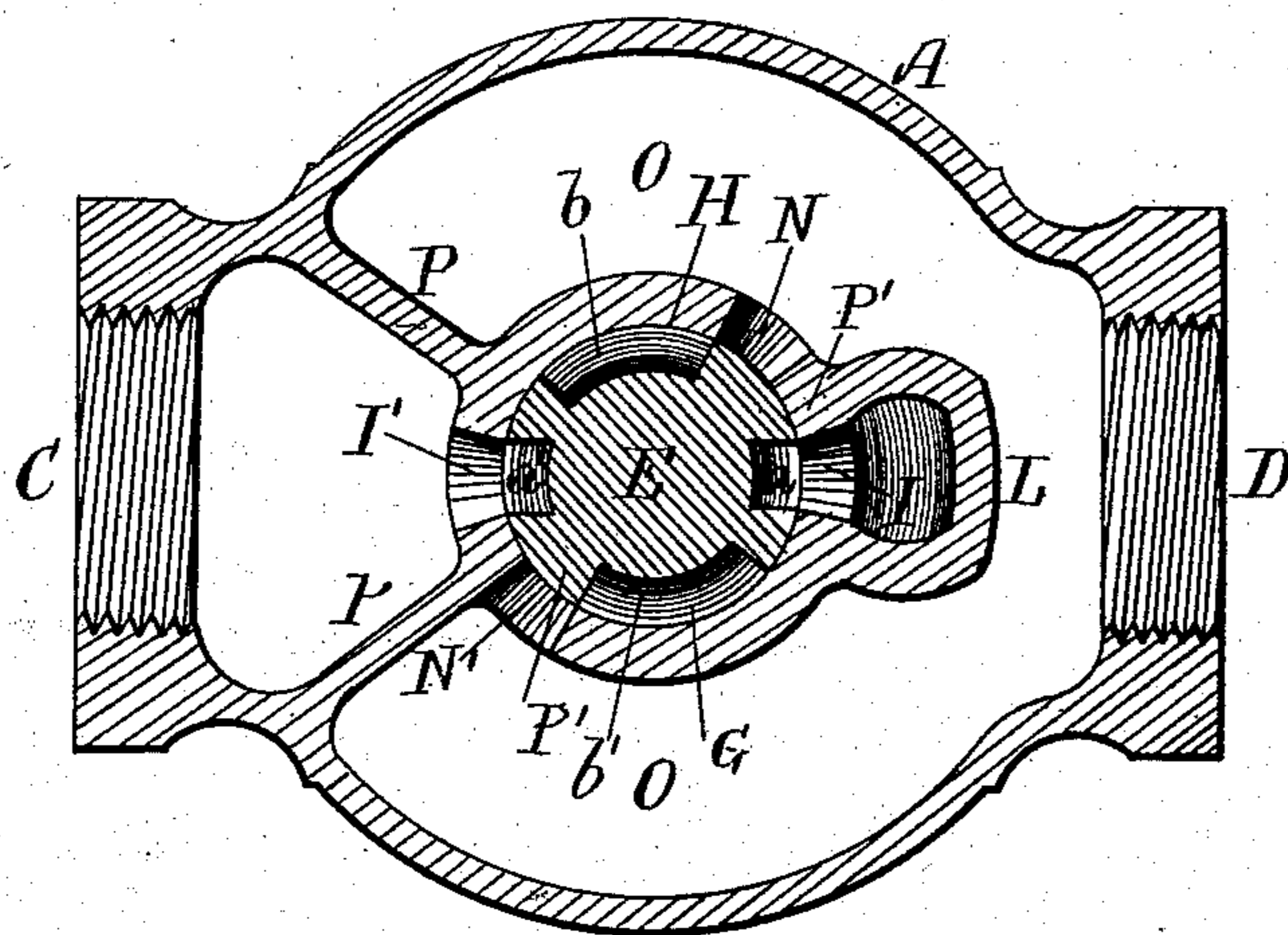


Fig. 4.
on line g.h. of Fig. 1.

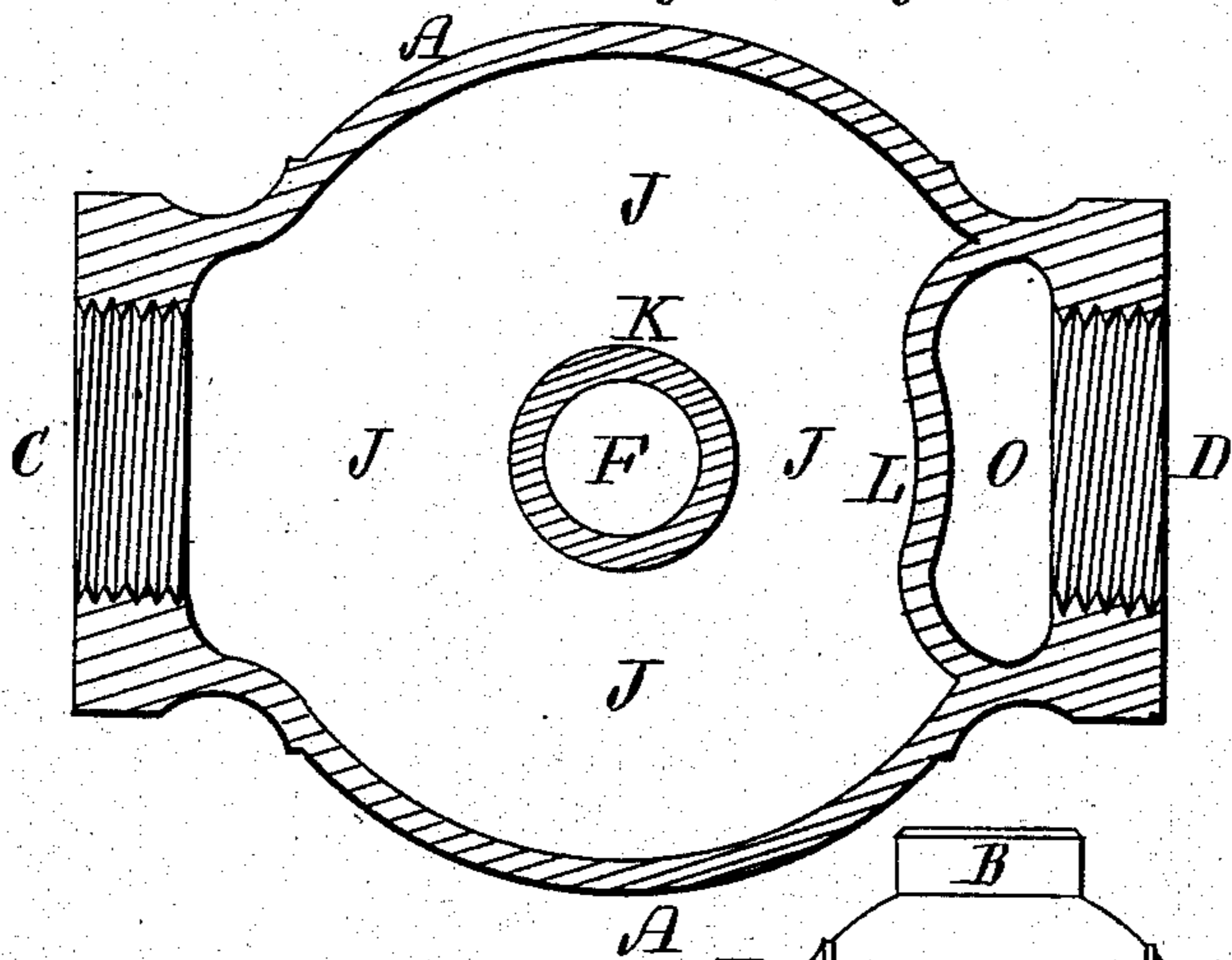


Fig. 8.
E'

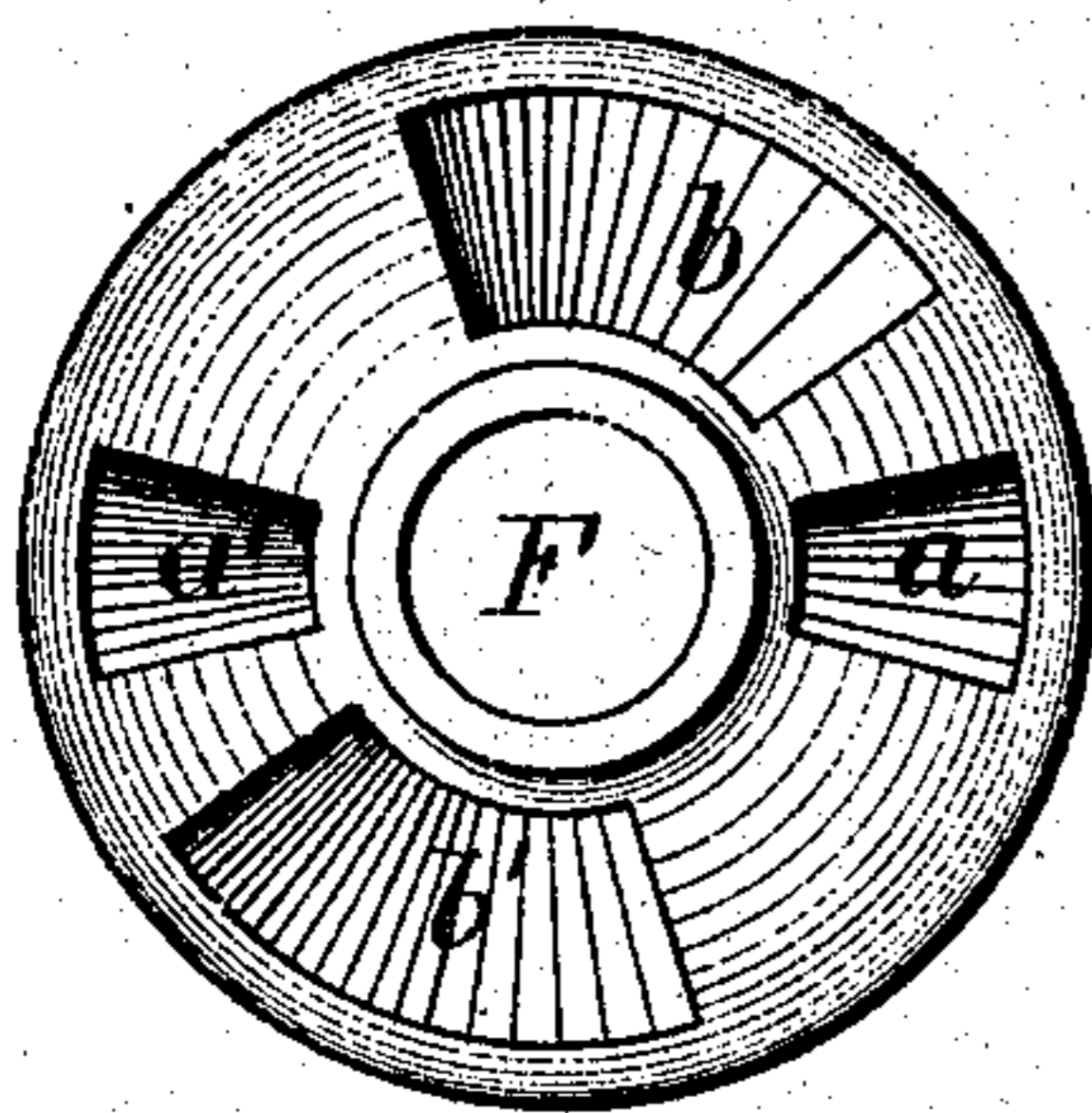


Fig. 10.

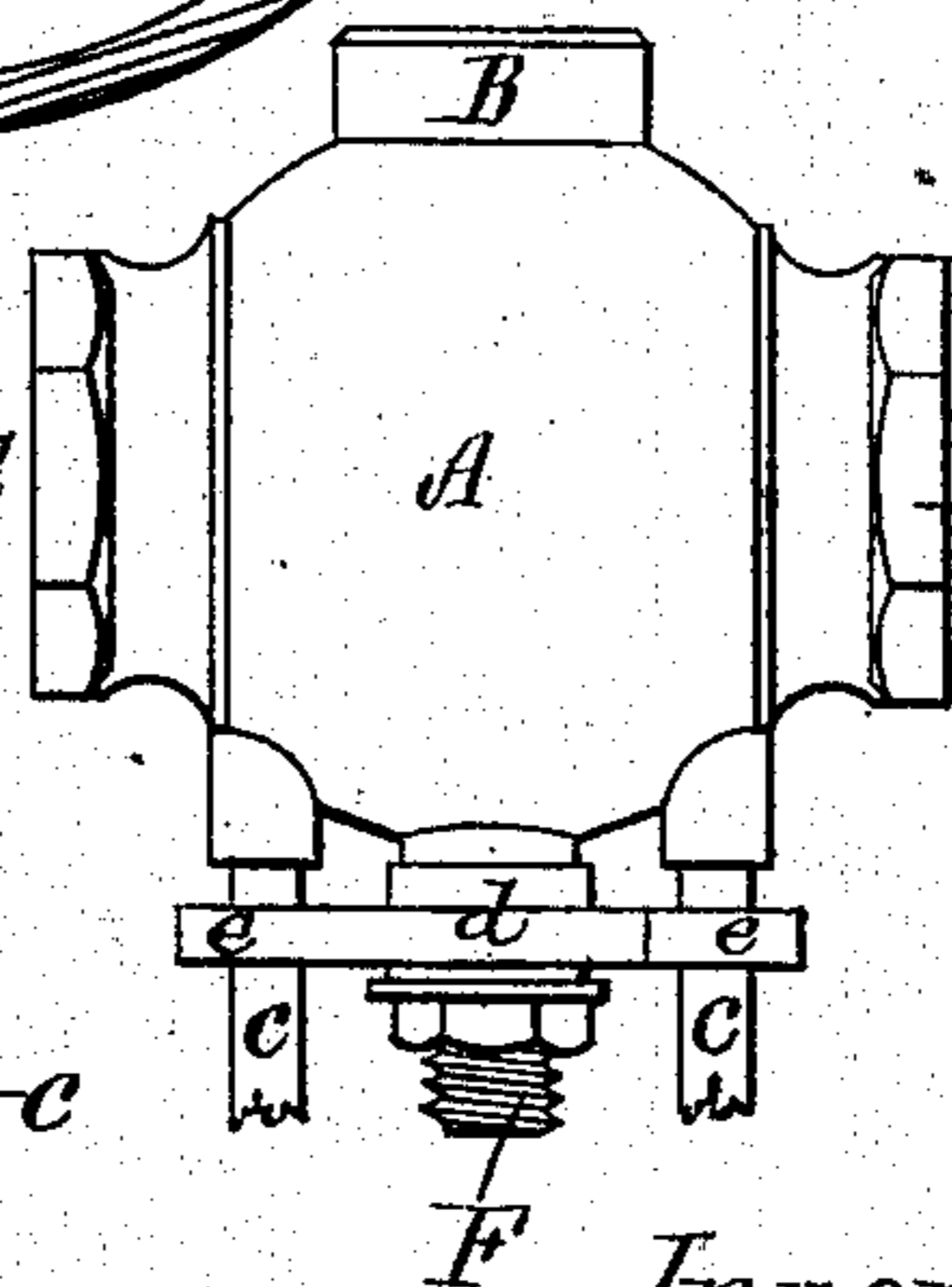
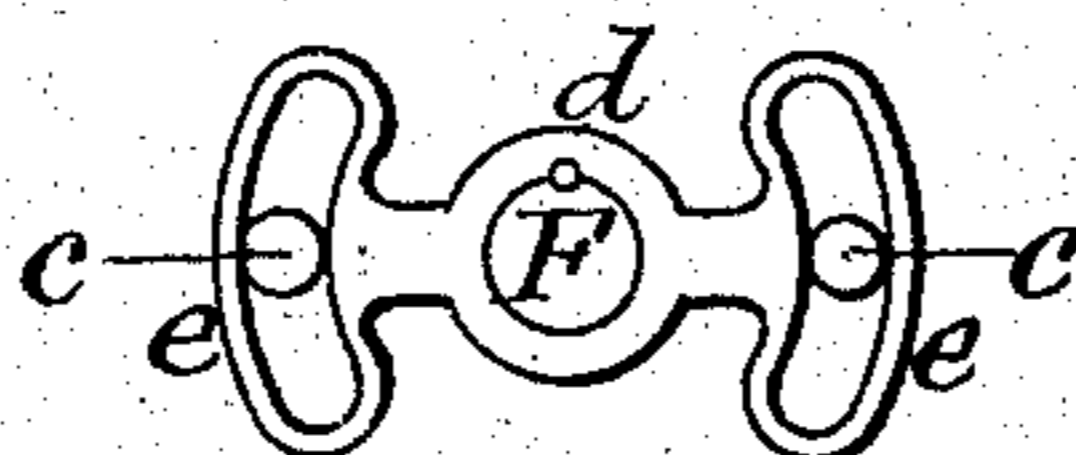


Fig. 9.

Witnesses.

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UNITED STATES PATENT OFFICE.

BENALAH FITTS, OF WORCESTER, MASSACHUSETTS.

THREE-WAY VALVE.

SPECIFICATION forming part of Letters Patent No. 272,421, dated February 20, 1883.

Application filed September 18, 1882. (No model.)

To all whom it may concern:

Be it known that I, BENALAH FITTS, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Three-Way Valves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to valves for use in hydraulic hoists and for other purposes; and it consists in the peculiar construction and arrangement of the valve and ports, as hereinafter explained.

The drawings accompanying this specification represent in Figures 1 and 2 vertical sections of a cock or valve containing my improvements. Figs. 3 and 4 are longitudinal sections of the same. Fig. 5 is a plan of the valve-seat. Figs. 6 and 7 are side views of the valve, and Fig. 8 an end view of the latter. Fig. 9 is a side view of the valve, showing the rocking yoke for shifting the valve. Fig. 10 is a view of such yoke, these two latter figures being in a reduced scale from the others.

In the above-named drawings, A represents the case of the valve, which is practically spherical in exterior form, the inlet-port of such case being shown at B, and the outlet or discharge ports at C D, respectively, the first being situated (as the valve is shown in the drawings) at the top of the case A and the two latter at opposite ends thereof. The valve E is an inverted conic frustum, formed upon the upper end of an axial stem, F, and filling a corresponding valve-chamber, G, formed centrally in the case A, the annular valve-seat of such chamber being shown at H. The outlet C makes exit from the valve-chamber by two diametrically-opposite ports, I I', leading from the latter, the port I being opposite such outlet, these ports I I' being continued into a chamber or passage, J, occupying the entire lower part of the case A, with the exception of the tubular bearing K thereof, which guides the valve-stem, the said ports I I' and passage J being shut

out from communication with the outlet D by a wall, L, cast in the substance of the valve-case. The outlet D makes exit from the valve-chamber G by two diametrically-opposite ports, N N', which unite in a U-shaped passage, O, occupying a part of the upper portion of the valve-case, above the passage J, before named, the said ports N N' and passage O being shut off from the said passage J and outlet C by walls P P, cast in the substance of the valve-case, as seen in Fig. 3. The center of each port N N' is separated from that of each port I I' a distance of about sixty degrees of a circle, the partition P', dividing the ports, being a comparatively narrow one. The valve E is formed with two diametrically-opposite ports or passages, a a', leading from its periphery upward through it and communicating with the main inlet B, these ports or passages a a' being practically of equal area with the ports I I', before named, and adapted to operate with both the latter simultaneously. Moreover, the valve E is formed with two diametrically-opposite cells, b b', which are practically of equal length with the ports a a', but of a width sufficient to cover both sets of ports, or nearly so, said cells being intermediate between the ports. When the ports or passages a a' of the valve are turned to communicate with the ports I I' of the valve-chamber and with the passage J, which opens into the outlet C, fluid flows from the inlet B through such ports a a' into said passage J, and is discharged at the outlet C, the pockets b b' of the valve being at this time closed by the solid portion of the valve-seat. This constitutes one extreme position of the valve. In the other extreme position of the valve its ports a a' stand at right angles to the axis of the case A. When the valve is turned to the latter position, its ports a a' are closed by the solid portion of the valve-seat, so that no fluid can pass such ports from the inlet B, and at the same time its cells or recesses b b' open communication between the outlet C and the chamber J by the ports I N and I' N', and permit the fluid which escaped by the outlet C to return thereby to the chamber O O by way of said ports N N' and escape at the outlet D. For instance, when the valve is employed with hydraulic hoists, it is placed in the conduit connecting the street-main or other water-supply under press-

ure, by which the elevator is operated, and when the valve E is turned to the first-named position the ports I I' open communication between the inlet B, chamber J, and outlet C, and water from the street-main flows from such outlet to raise the elevator-car. When the elevator-car is to descend the valve is turned to its other extreme, in which case its solid portion, as before stated, closes the ports I I' against the inlet B and shuts off the street-main, while its cells b b' open communication between the outlet C and chamber O O by way of the ports I P and I' P', and the fluid escaping by way of the outlet D permits the car to descend.

This valve is incidentally capable of another operation—that is, of performing the functions of an ordinary two-way cock, into which it may be converted by simply turning the valve E to a point intermediate between the two extremes before noted—in other words, so that its passages or ports a a' shall communicate with the ports N N'. In this case fluid from the inlet B flows through the ports a a' of the valve and the ports N N' in the valve-seat and thence into the chamber O O and escapes by the outlet D.

To support the entire valve in position rods c c may be employed, secured at one end to the valve-case, upon opposite sides of the valve-stem F, as shown in Figs. 9 and 10 of the draw-

ings, and at the other to any suitable part of the structure containing or surrounding the valve.

The valve is rocked in its bearings by suitable mechanism connected with its stem F, and to determine the extent of rocking or semi-rotary movements of such valve a two-armed yoke, d, may be employed, keyed to the valve-stem and with its slotted arms e e straddling the rods c c.

I claim—

A valve constructed as herein described—that is, composed of the case A, with its inlet B, outlets C D, valve-seat H, chambers or passages J O O, ports I I' and N N', and the valve E, with its ports or passages a a' and its cells b b', the ports a a' operating with the ports I I' only to permit of passage of fluid from the inlet B to the outlet C, while the cells b b' operate to open communication between the said outlets C and D and chambers J and O O by way of the ports I N and I' N', all substantially as and for purposes stated.

In testimony whereof I affix my signature in presence of two witnesses.

BENAIAM FITTS.

Witnesses:

H. E. LODGE,
F. CURTIS.