

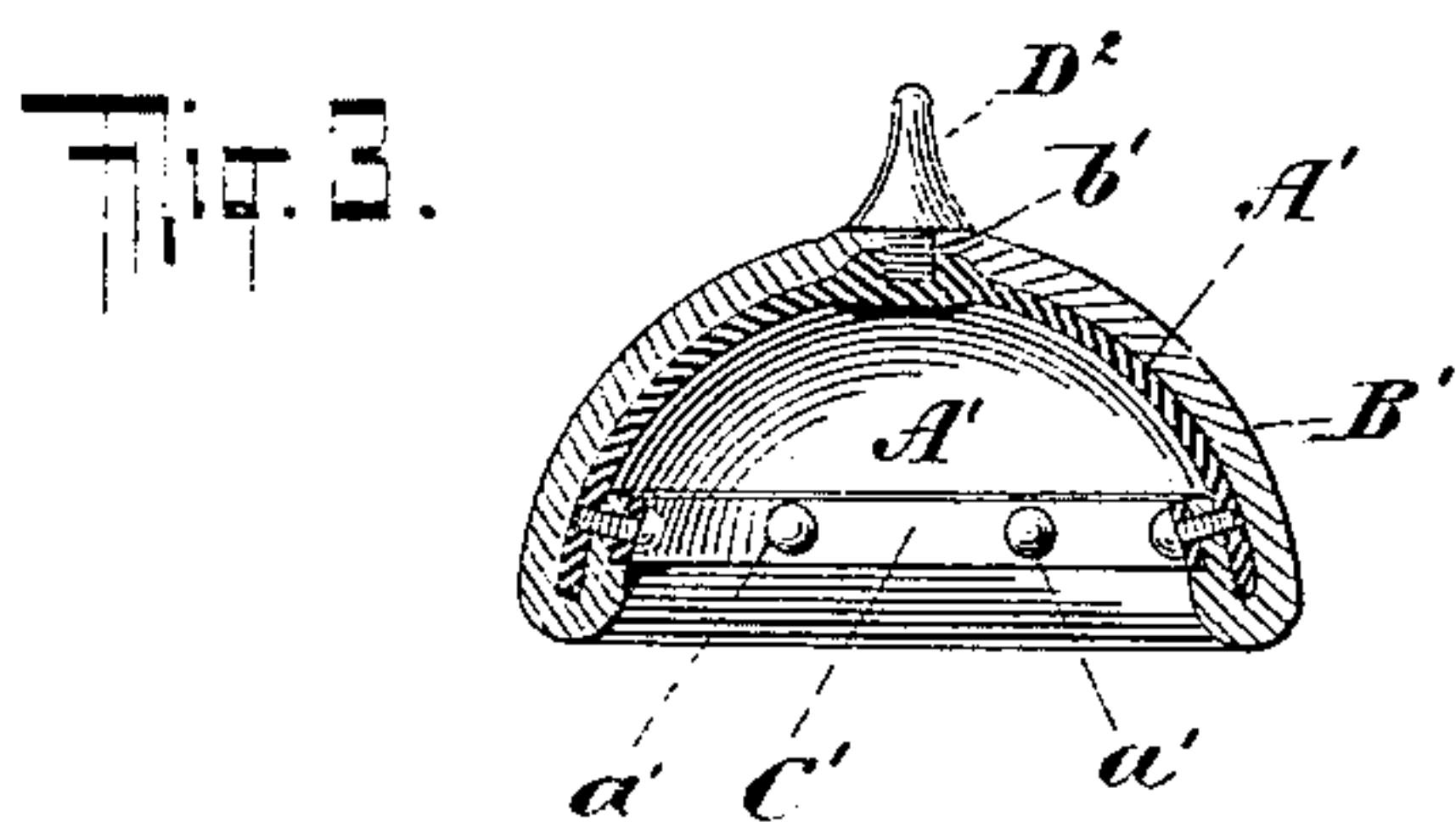
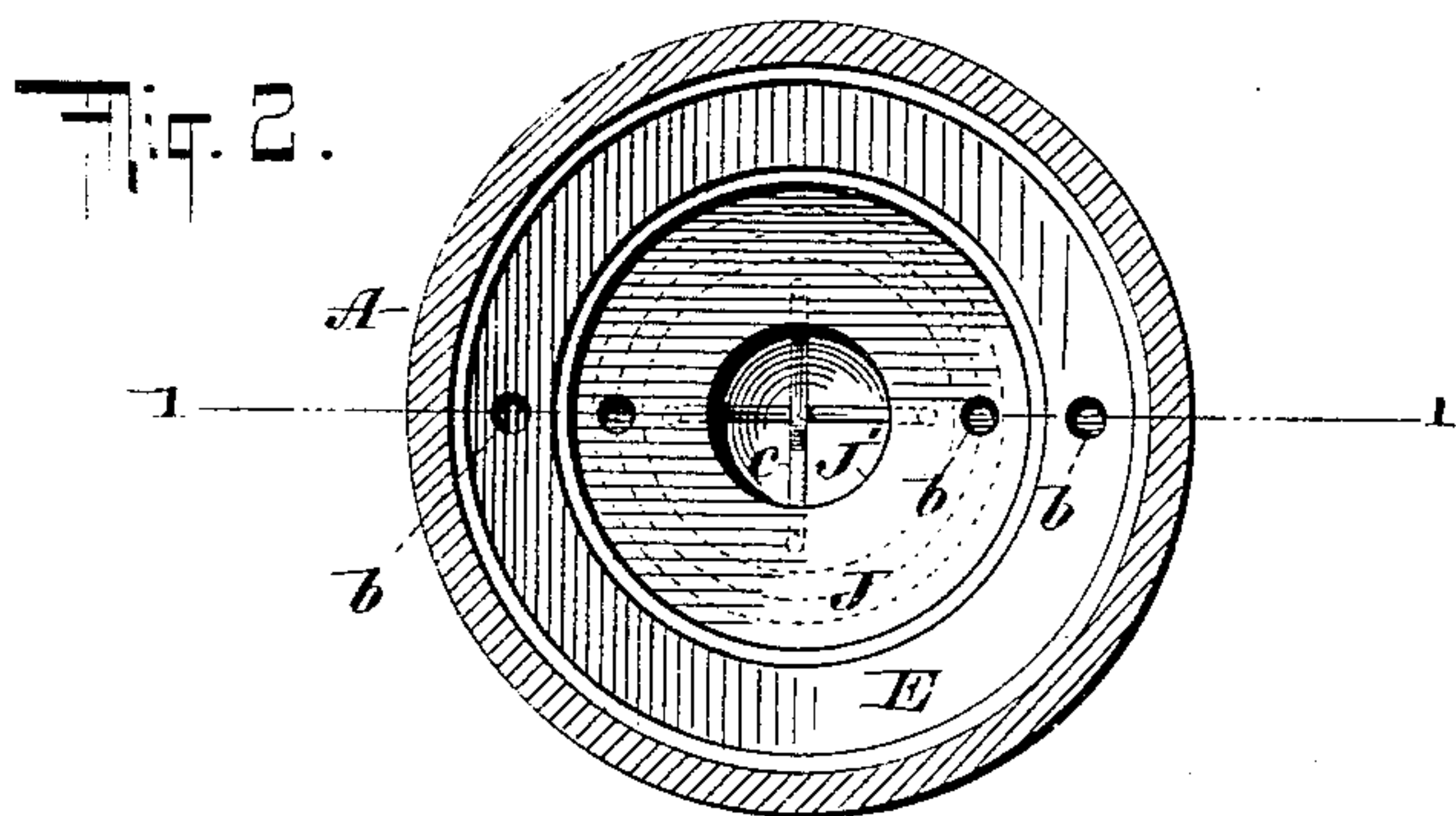
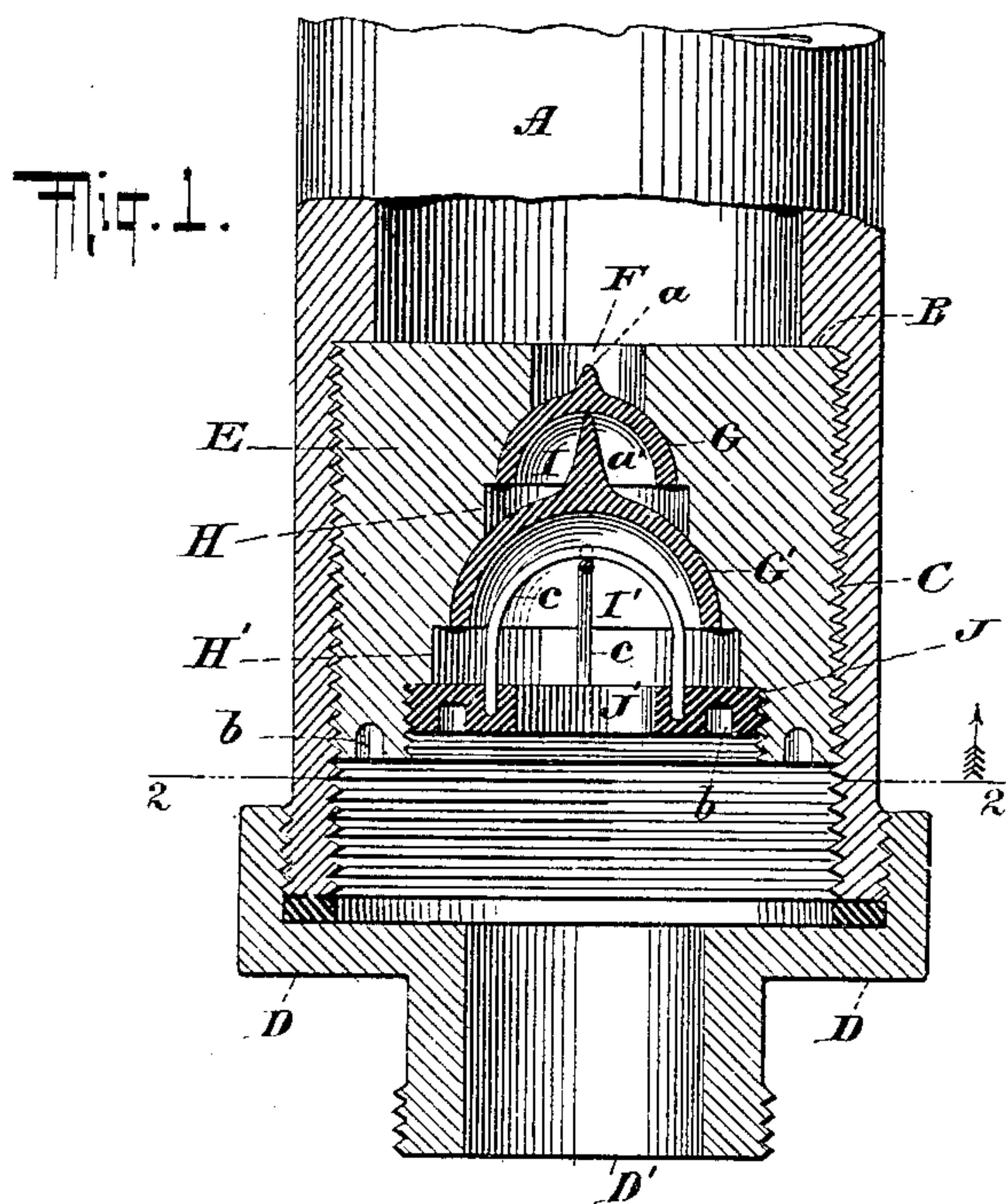
No. 633,418.

Patented Sept. 19, 1899.

F. M. BELL.
VALVE.

(Application filed Apr. 4, 1898.)

(No Model.)



WITNESSES:

Gustav Dietrich
John F. Klenbeck

INVENTOR

Frank M. Bell

BY

Gustav Dietrich
his ATTORNEY.

UNITED STATES PATENT OFFICE.

FRANK M. BELL, OF NEW YORK, N. Y., ASSIGNOR TO WILLMA POLLACK,
OF SAME PLACE.

VALVE.

SPECIFICATION forming part of Letters Patent No. 633,418, dated September 19, 1899.

Application filed April 4, 1898. Serial No. 676,293. (No model.)

To all whom it may concern:

Be it known that I, FRANK M. BELL, a citizen of the United States, residing at the city of New York, in the county and State of New York, have invented certain new and useful Improvements in Valves, of which the following is a full, clear, and exact specification.

My invention relates to apparatus for controlling the ingress and egress of fluid to and from containers of divers forms; and said invention has for its object more particularly to provide a simple, efficient, and durable valve for pumps and other apparatus used for hydraulic purposes, which valve may be readily inserted in the pump or other apparatus and when worn out by long-continued use be as readily removed and another inserted without necessitating the taking apart of the entire pump or apparatus in which it is used.

To this end the invention consists in the novel details of construction and in the combination, connection, and arrangement of parts, as hereinafter more fully set forth and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, wherein like letters of reference indicate like parts, Figure 1 is a section taken on the line 1 1 of Fig. 2, showing a portion of a pump-casing and a valve arranged therein constructed according to and embodying my invention. Fig. 2 is a transverse section, the same being taken on the line 2 2 of Fig. 1, looking in the direction of the arrow; and Fig. 3 is an enlarged detail central section showing a modified form of valve-face.

In said drawings, A designates the pump-casing, provided upon its inner surface with a shoulder B and screw-threads C, extending from the shoulder B to the end of the casing A.

D denotes a screw-cap for closing the end of the pump-casing A, said cap having a short pipe-section D' projecting from its outer side, adapted for securement to a pipe by a suitable joint or union.

E denotes a valve-casing made of metal or other suitable non-yielding substance and provided upon its outer surface with screw-threads whereby said valve-casing E may be secured within the casing A, and F denotes

a centrally-arranged opening which extends entirely through the casing E, said opening being of larger diameter at the bottom of the casing E than at its top. Within said casing E are arranged the valve-seats G G', which correspond in outline with the valve-faces, and below said valve-seats G G' are vertical wall-sections H H', respectively, each of said wall-sections being of larger diameter than the valve-face disposed therein.

I I' denote valve-faces made of soft rubber or other yielding substance and provided upon their outer surfaces with centrally-located teats a a', respectively.

The end of the opening F at the bottom of the casing E is provided with screw-threads, and in this threaded opening is secured a head J, having a central opening J' therein, and above said opening are arranged wire loops c c, having their ends secured in the head J, adjacent to the opening J' therein. Upon the upper or rounded portion of said loops c c the valve-face I' is adapted to rest and supports the valve-face I when said valve-faces are not in contact with their respective seats, and by turning the head J the amount of play of the valve-faces I I' may be regulated. To facilitate this, the base of the casing E and the head J are provided with recesses b b to receive the ends of a spanner.

When the valve is designed for heavy work, I prefer to make the same in the manner indicated at Fig. 3. In this construction the valve-face is composed of a thin shell of soft copper A', upon the outer surface of which is disposed a facing B', of leather, rubber, or analogous substance, having its lower edge bent inward and then upward and secured to the inner side of the shell A' by means of an annular band C' and screws a', extending through the band C', the covering B', and into the shell A', and D² denotes a teat provided at its lower end with a screw-section b', whereby the said teat may be secured to the valve-face, the shell A' being made thicker at its top for the purpose of giving additional strength to the structure at that point and form a bearing for the screw-section b' of the teat D².

It will be apparent that many forms of valve-faces may be devised and that the same

may be made of different materials, the same depending to a large extent upon the material employed in making the valve-casing, the main feature being that the valve-face
 5 must be formed of a substance which will be soft or yielding in relation to the substance forming the valve-seat and be able to conform itself by pressure to its seat.

While I have shown the valve constructed
 10 with two valve-faces, one of which is smaller than the other, I do not, however, confine myself thereto, as any number of valve-faces may be employed and the same may be all of the same diameter, and where required
 15 springs may be interposed between the valve-faces and the head J to maintain the valve-faces normally seated.

Without limiting myself to the details of construction, which may be varied within the
 20 scope of the invention, what I claim, and desire to secure by Letters Patent, is—

1. A valve for the purposes specified comprising a casing having a hard, non-yielding valve-seat therein, and a relatively soft, yielding,
 25 concavo-convex valve-face adapted to expand under pressure into, and fill said seat, substantially as specified.

2. A valve for the purposes specified comprising a hard, non-yielding casing having a
 30 valve-seat therein, a relatively soft, yielding, concavo-convex valve-face adapted to expand under pressure into, and fill said seat, and means for regulating the movement of said valve-face within the casing, substantially as
 35 specified.

3. A valve for the purposes specified, comprising a casing having a tapering opening therein, valve-seats arranged in said opening, valve-faces adapted to conform to said seats under pressure, a head adapted to be
 40 secured in the base of the casing, having an opening therein, and loops c, c extending upward from its upper surface, whereby to limit the movement of the valve-faces when the head is turned in the base of the casing, sub-
 45 stantially as specified.

4. In a valve for the purposes specified, a valve-face comprising a shell of soft, yielding metal, a facing of softer, more yielding material disposed thereon, and means for securing
 50 said facing to the metal shell, substantially as specified.

5. In a valve for the purposes specified, a valve-face comprising a shell of soft, yielding metal, reinforced at its center, a resilient fac-
 55 ing disposed upon said shell, a teat centrally located in the outer side of said valve-face, and secured in the reinforced portion of the shell, said facing having its edge turned inward and upward, and an annular band dis-
 60 posed upon said turned-over edge and secured to the inner or under side of the valve-face, substantially as specified.

Signed at the city of New York, in the county and State of New York, this 2d day
 65 of April, 1898.

FRANK M. BELL.

Witnesses:

WILLIAM L. POLLACK,
 GUSTAVE DIETERICH.