

No. 654,285.

Patented July 24, 1900.

E. SCRIBA.

FUSE FOR EXPLOSIVE PROJECTILES.

(Application filed Apr. 23, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

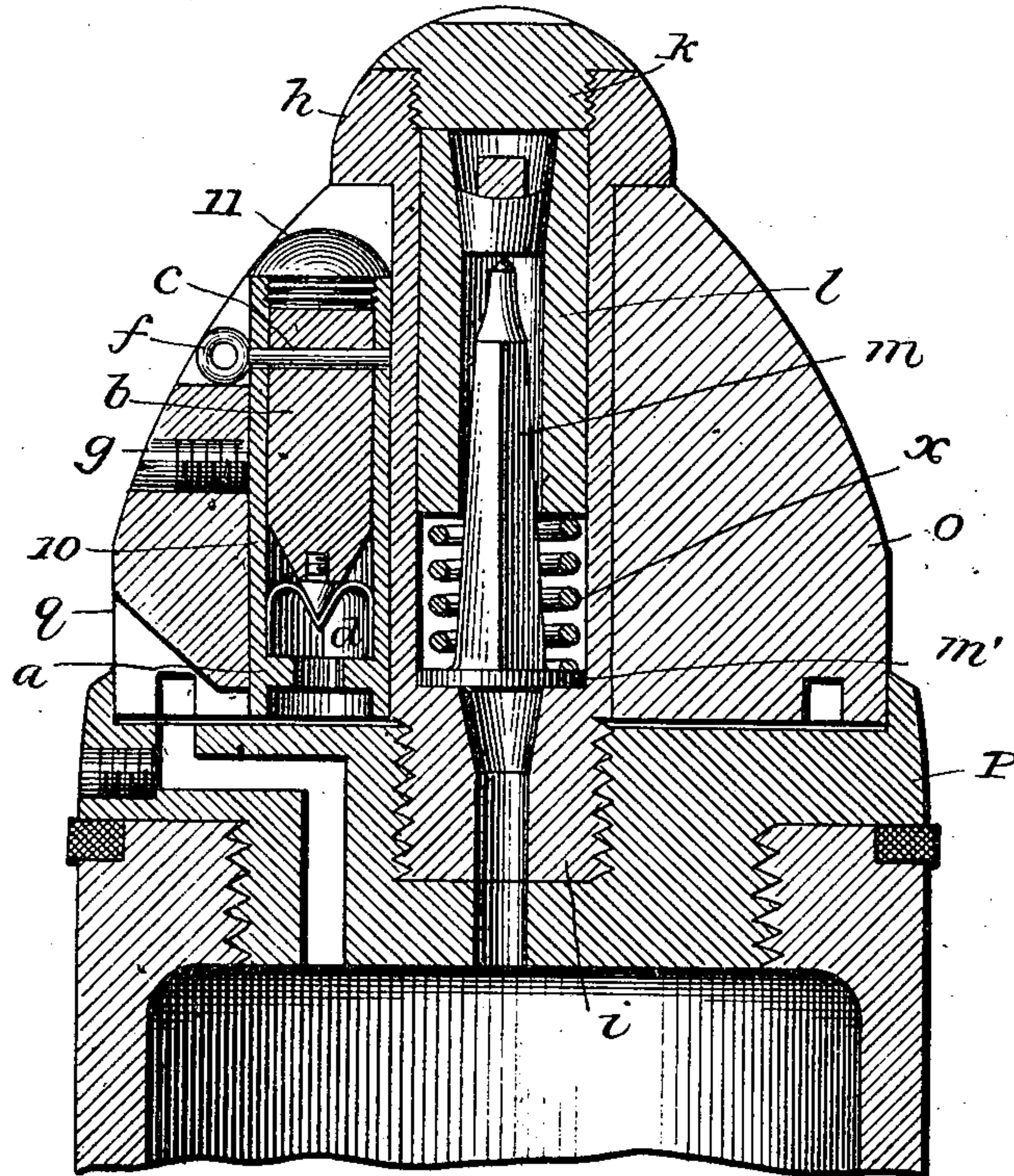
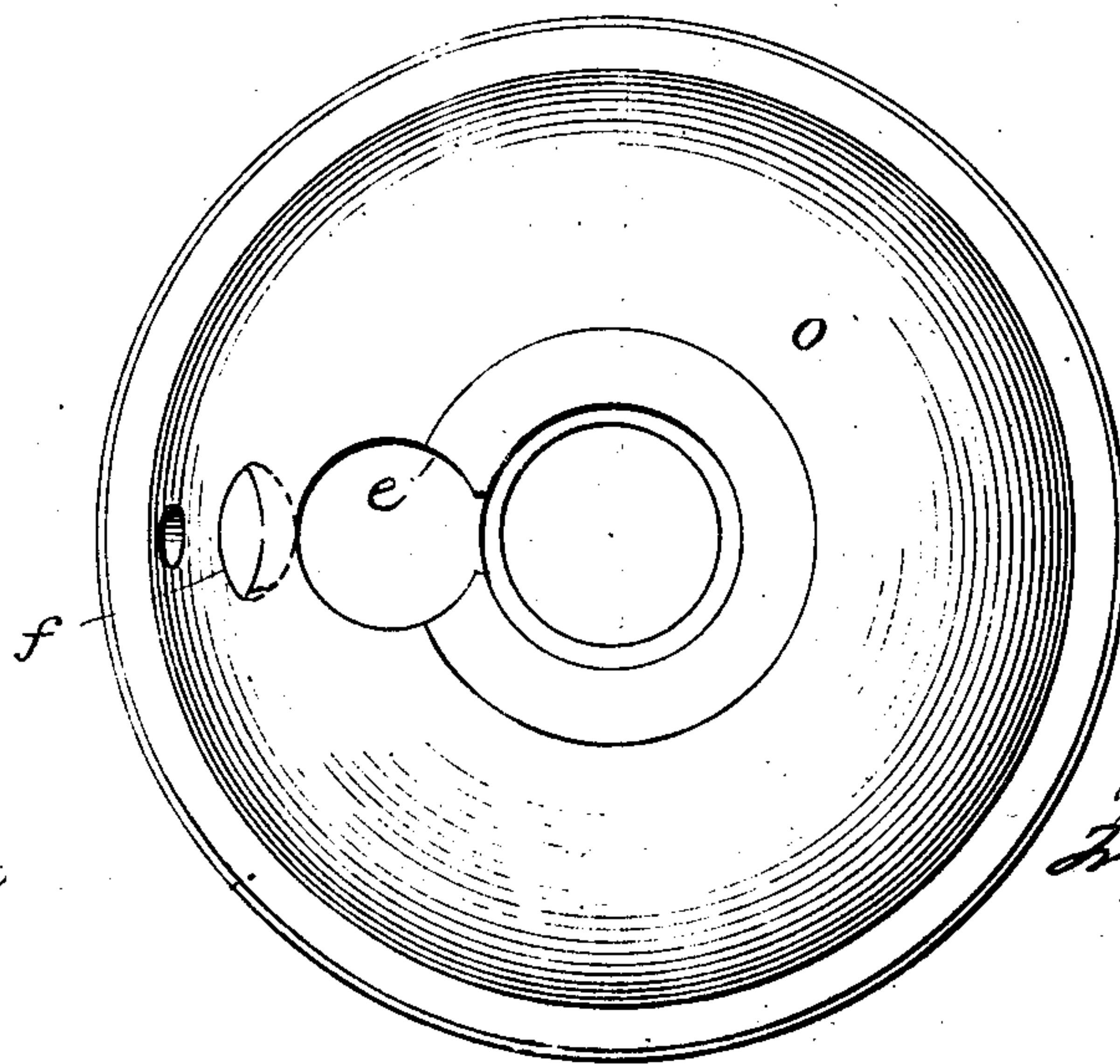


Fig. 2.



Witnesses

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2 Sheets—Sheet 2.

Fig. 3.

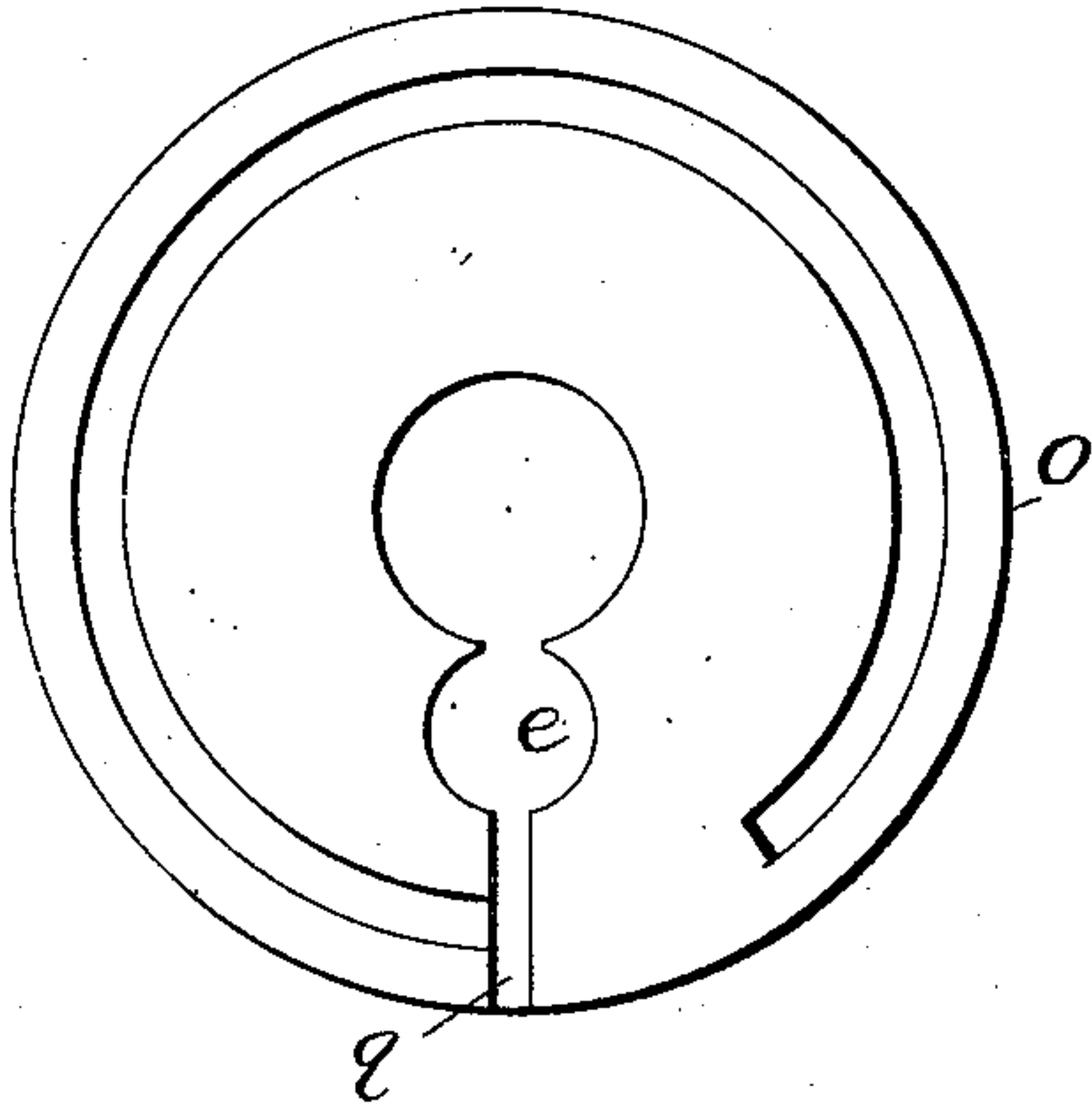


Fig. 4.

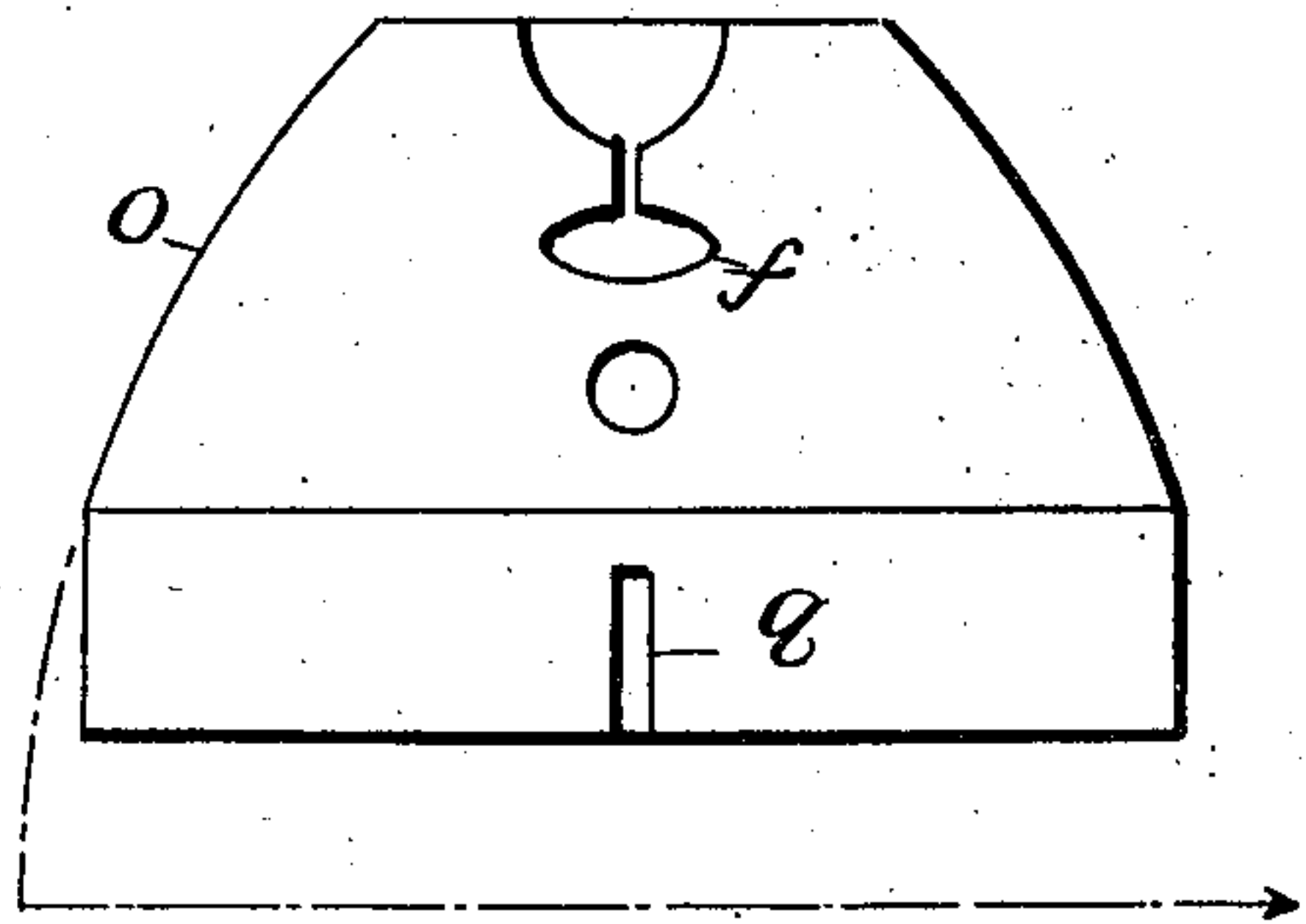


Fig. 5.

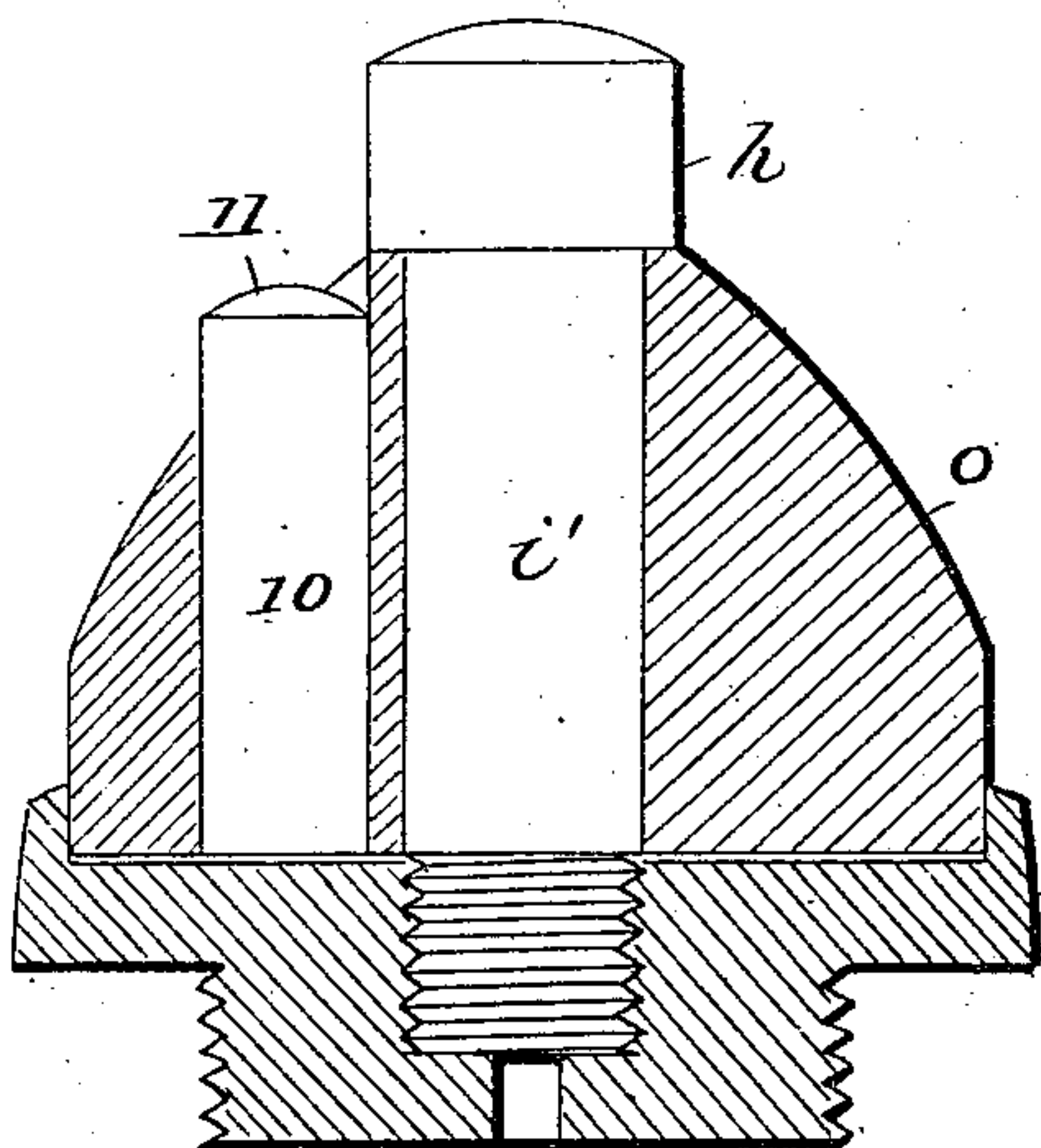


Fig. 6.

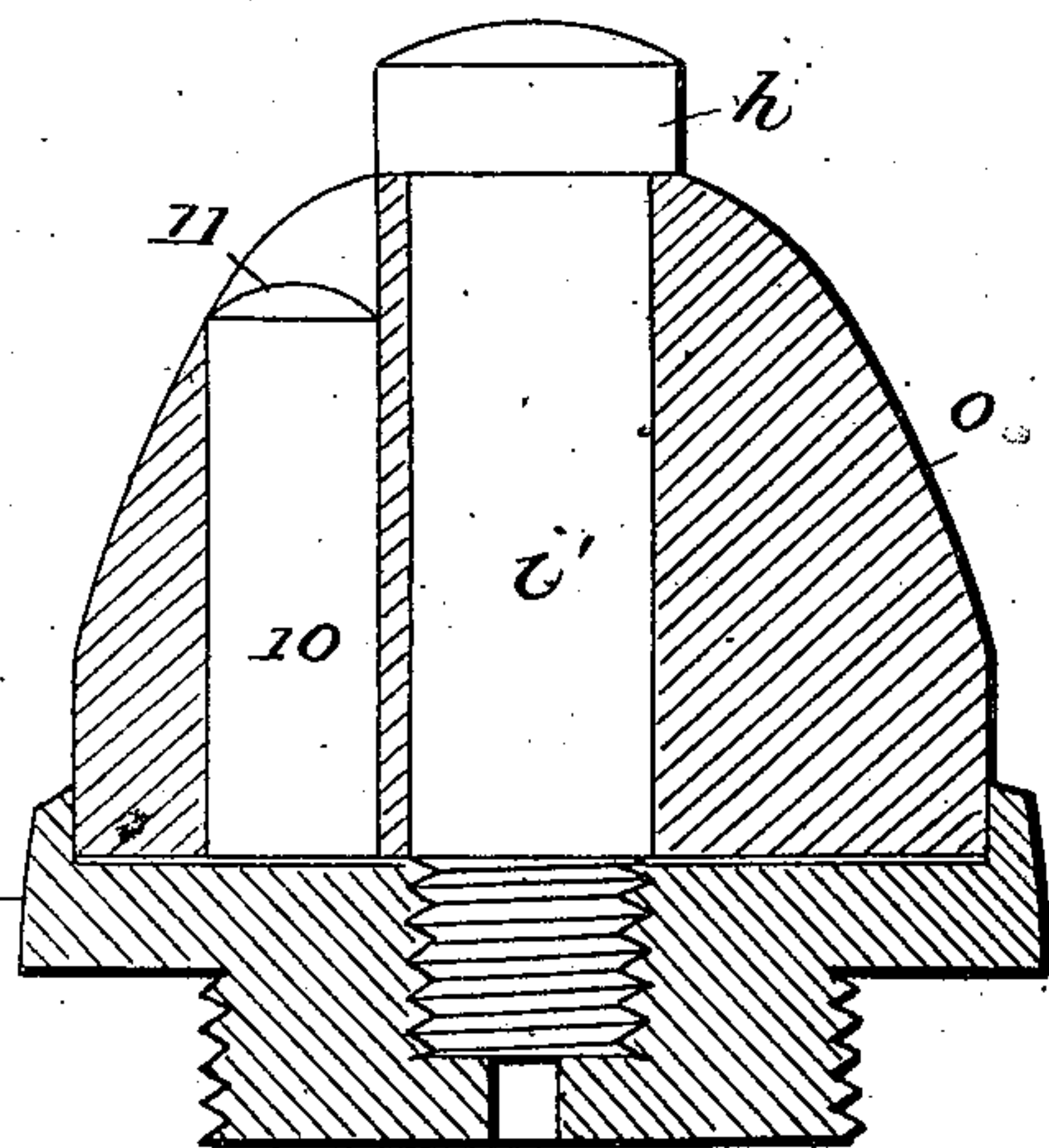


Fig. 8.

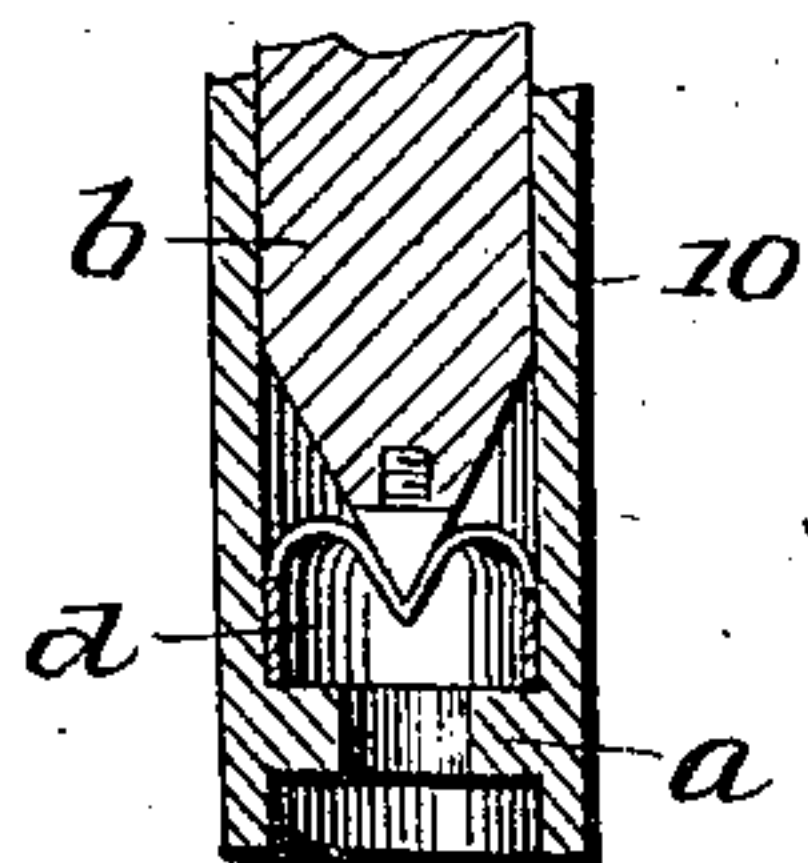


Fig. 7.

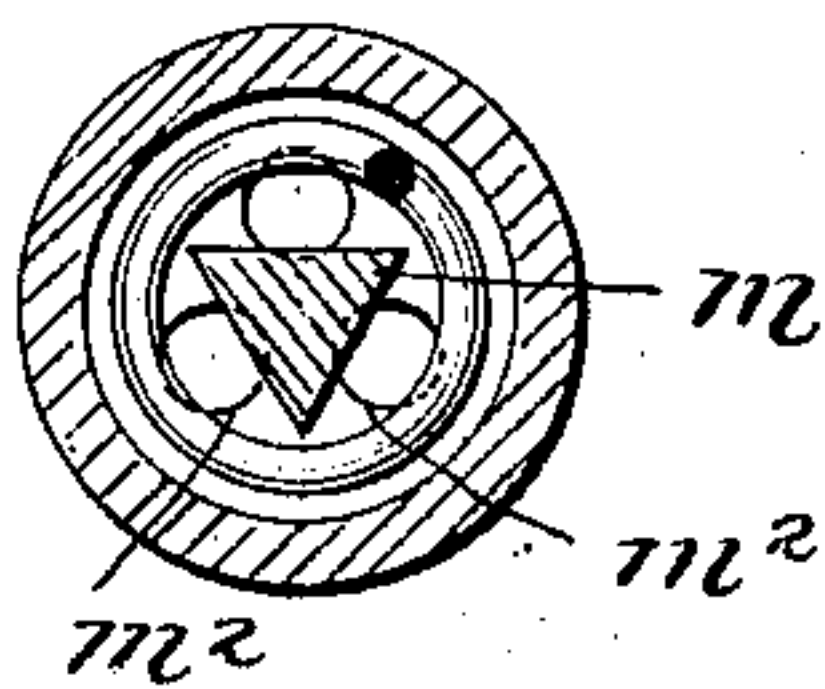
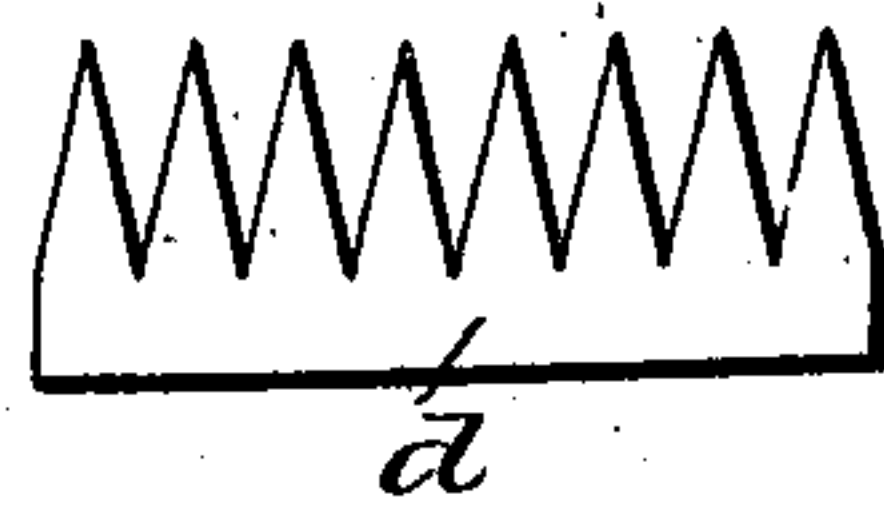


Fig. 9.



Witnesses

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FUSE FOR EXPLOSIVE PROJECTILES.

SPECIFICATION forming part of Letters Patent No. 654,285, dated July 24, 1900.

Application filed April 23, 1900. Serial No. 14,032. (No model.)

To all whom it may concern:

Be it known that I, EMIL SCRIBA, a subject of the Emperor of Germany, and a resident of Heilbronn, Germany, have invented certain new and useful Improvements in Fuses for Explosive Projectiles, of which the following is a specification.

This invention relates to explosive projectiles; and it consists of the employment with each projectile of a time-fuse, a percussion-fuse, and a percussion device for igniting the time-fuse so arranged that the percussion-fuse and the percussion device for igniting the time-fuse can be bodily and independently removed when required.

I will describe my invention with reference to the accompanying drawings, in which—

Figure 1 is a longitudinal section of a shrapnel-shell embodying my invention. Fig. 2 is an end view of a priming-piece in the form of a shell-head and unprovided with a fuse. Fig. 3 is an under side view of the priming-piece. Fig. 4 is a side elevation of the priming-piece, showing recesses for the reception of a screw and pin used in connection with time-fuse-igniting devices. Figs. 5 and 6 illustrate two slight modifications of the priming-piece which enable the time-fuse-igniting devices to be removed without removing the percussion-fuse. Fig. 7 is a transverse section of the percussion-fuse. Figs. 8 and 9 are views of a safety device used in connection with the time-fuse-igniting device.

According to this invention the fuse mainly consists of a flanged supporting plate or disk P, screwed to the shell, a priming-piece o, and a central or set screw *i'* for retaining the priming-piece in position. As a shrapnel double fuse involves the provision of two igniting or detonating devices and requires a percussion-fuse which is to come into operation in the event of the time-fuse failing to produce the desired effect, certain important modifications in its construction are necessary.

The devices for igniting the time-fuse, as shown in Figs. 1, 8, and 9, consist of a cylindrical brass case 10, closed by a screw-cap 11 at its upper end. Near its lower end is a plate or disk *a* holding a detonating pellet.

An opening or port is provided outside the disk *a*, which opening serves as a passage for the detonating flash to the time-fuse. The detonating pellet is fired by means of a needle bolt *b*, having a steel point, which bolt is locked in place by a pin or "key" *c*. To prevent premature explosion, there is interposed between the disk *a* and the end of the bolt *b* a bent piece of sheet-brass *d*, which is shown unfolded in Fig. 9.

In the priming-piece or shell-head parallel to the central longitudinal passage provided for the reception of the set-screw *i'* there is formed a second cylindrical perforation *e*, Figs. 2 and 3, into which the casing 10 is inserted loosely with a limited space to move in, so that the foot or base of the casing is flush with the lower surface of the priming-piece, the ear or lug of the key *c* resting within a deep recess *f* in the priming-piece. A small screw *g* firmly retains the casing 10 in position.

In Fig. 1 the casing 10 is supposed to be placed close against the retaining-screw *i'*, so that the head of the screw partially covers the passage containing the casing. In Figs. 5 and 6, however, this is not the case, the latter construction admitting of the removal of the casing 10 without the necessity of taking out the retaining or set screw *i'*.

As shown in Figs. 1 and 7, the retaining or set screw *i'* constitutes the percussion-fuse. Externally it consists of a cylinder, preferably of brass, having a somewhat-projecting head *h* and at its inward end with a screw-thread for the reception of the flanged disk P. Its interior is for the greater part hollowed out cylindrically, and the head is closed by a screw *k*, carrying the detonating pellet. Through the screw-threaded end of the said retaining-screw is a partly-conical and partly-cylindrical channel which leads from the hollow space or chamber toward the explosive charge to afford a passage for the detonating flash. Within the hollow chamber are arranged the following parts: a hollow brass weight *l*, one end of which is next to the closing-screw *k*; a steel needle *m*, of triangular section, projecting into the hollow weight; the foot *m'* or supporting-plate, of which needle rests on the bottom of the hollow chamber in the re-

5 taining-screw, and between the foot or supporting-plate and the weight is interposed a powerful spiral spring x . The object of this spiral spring is to prevent the triangular steel needle which increases in width toward the said foot-plate from becoming jammed prematurely in the longitudinal aperture of the weight while the projectile is being transported from place to place. When, however, 10 the projectile is fired from the gun, the weight l will have a tendency to move to the rear and become jammed on the needle, and when the projectile strikes an object the weight and needle will advance together and the needle 15 will come in contact with and ignite the detonating pellet, and the firing flash will pass through the foot-plate of the needle, which plate has three perforations m^2 to the charge within the projectile.

20 The priming-piece o , forming the head or point of a shell, has a cylindrical portion, upon the surface of which the timing-scale can conveniently be effected. Its lower end is engaged by the annular flange of the disk P , whereby it is reliably secured in position. A 25 channel or port q , Figs. 1, 3, and 4, serves as an outlet for the excess of force displayed by the detonating pellet, which ignites the time-fuse.

30 The disk P is screw-threaded to enable the shell to be screwed onto it, and it is also tapped for the reception of the central retaining-screw i' and is provided with a path for the fire of the time-fuse to reach the explosive 35 charge.

The priming-piece or shell-head may be of zinc, or it may be of nickel-plated cast-steel.

40 The shrapnel double fuse admits of two different modes of employment, both of which have been recognized as necessary—first, when the needle-retaining pin or key c is not removed the percussion-fuse alone comes into operation and the projectile acts as a bomb-shell, and, second, when the said key is removed the projectile operates (a) as grape-shot 45 (case-shot, canister-shot) if timed at the near end of the priming-ring or (b) as shrapnel if timed at a portion of the priming-ring somewhat removed from its near end.

50 The advantages of the double-fuse shrapnel above described over certain constructions heretofore published are that it is more simple in its construction, it may be readily examined and controlled, as both fuses may 55 instantaneously and with perfect safety be removed and examined singly without its being necessary to take off the whole fuse-hold-

ing body, and its operation is perfectly reliable.

Having now particularly described and as- 60-
certained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. An explosive projectile comprising the explosive shell, a priming-piece removably 65-
attached to the shell, said priming-piece having two parallel longitudinal bores, one centrally arranged and both having communication with the interior of the shell, a percussion firing-fuse in the central bore of the 70-
priming-piece, a time-fuse in said priming-piece, and a percussive firing device for the time-fuse in the other bore, each of said percussive firing devices being operative independently of the other, substantially as set 75-
forth.

2. An explosive projectile comprising the explosive shell, a priming-piece removably attached to the shell, a percussion firing device for the shell supported in a central longitudinal bore in the priming-piece, a time-fuse arranged concentrically of the percussion firing-fuse and independent thereof, a percussion firing device for the time-fuse supported in a bore in the priming-piece parallel with and to one side of central bore, each of said percussive firing devices being operative independently of the other and separately removable from the priming-piece, and a removable lock device to render the firing 90-
device for the time-fuse inoperative, substantially as set forth.

3. A percussion firing-fuse for an explosive projectile, comprising a casing i' secured to the projectile and communicating with the 95-
explosive charge therein, a cap closing the outer end of said casing and carrying a detonating pellet, a tubular weight within the casing, a triangular firing-needle having a perforated footpiece engaging the lower wall 100-
of said casing, said needle projecting into the tubular weight and being wider toward the foot portion than the interior diameter of said weight, and a spring interposed between the footpiece and the opposing end of the weight, 105-
substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EMIL SCRIBA.

Witnesses:

LUDWIG KAHN,

HEINR. WILH. HARTMANN.