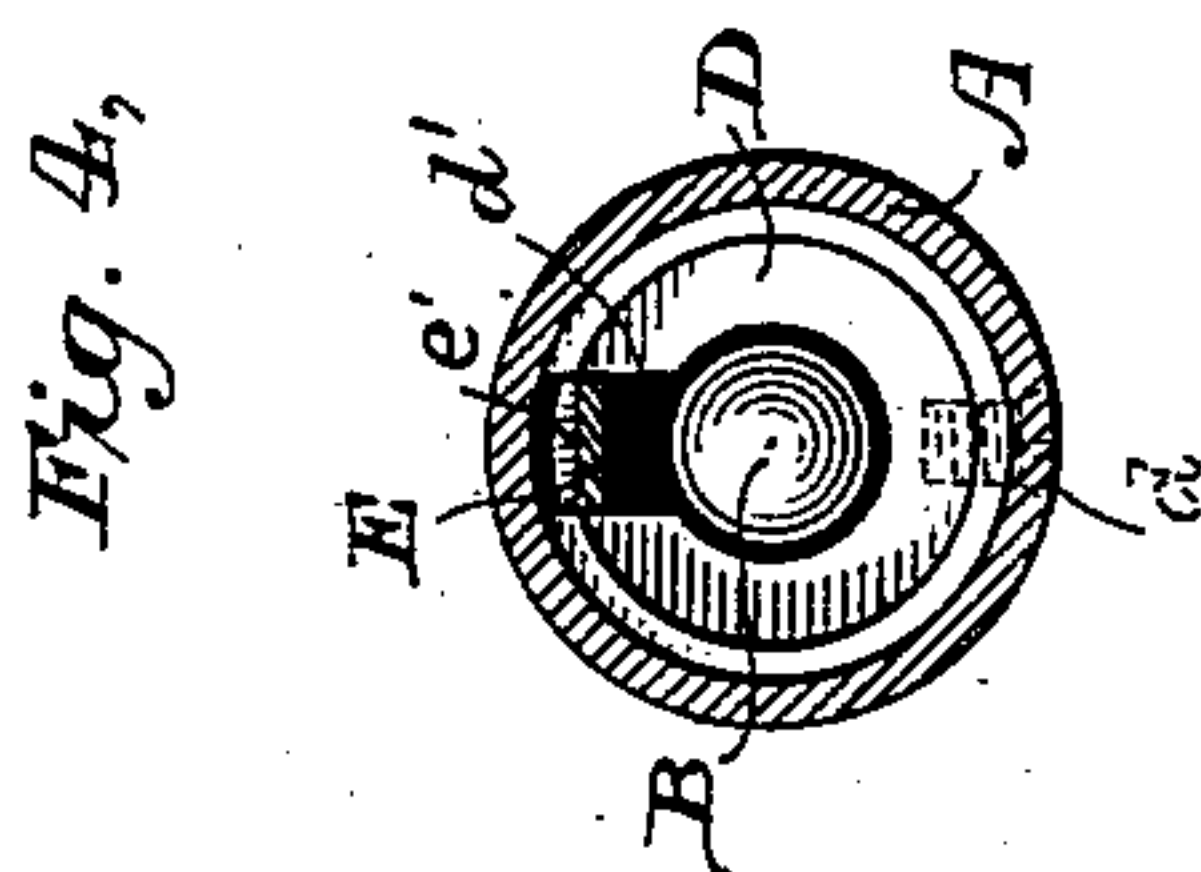
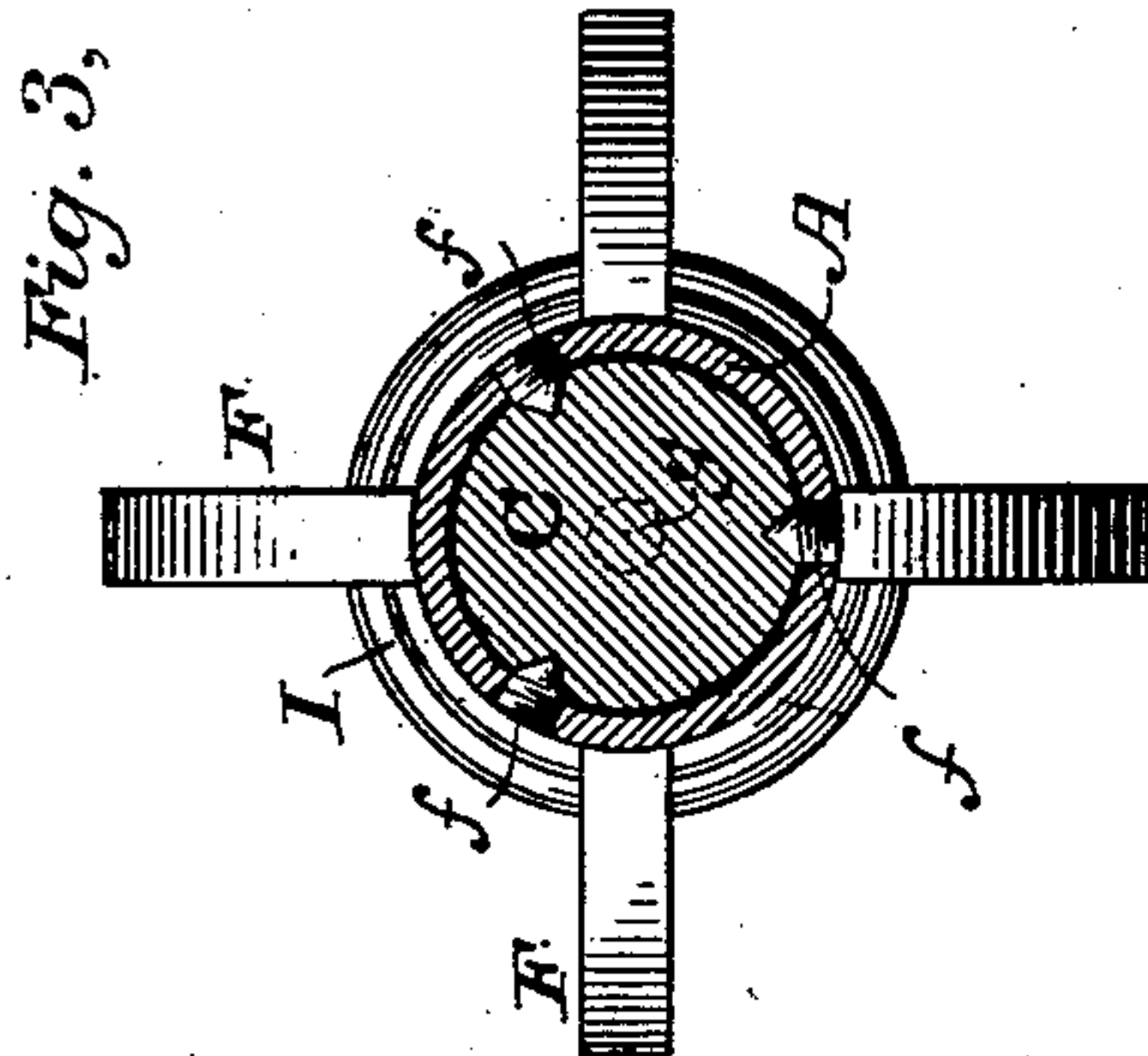
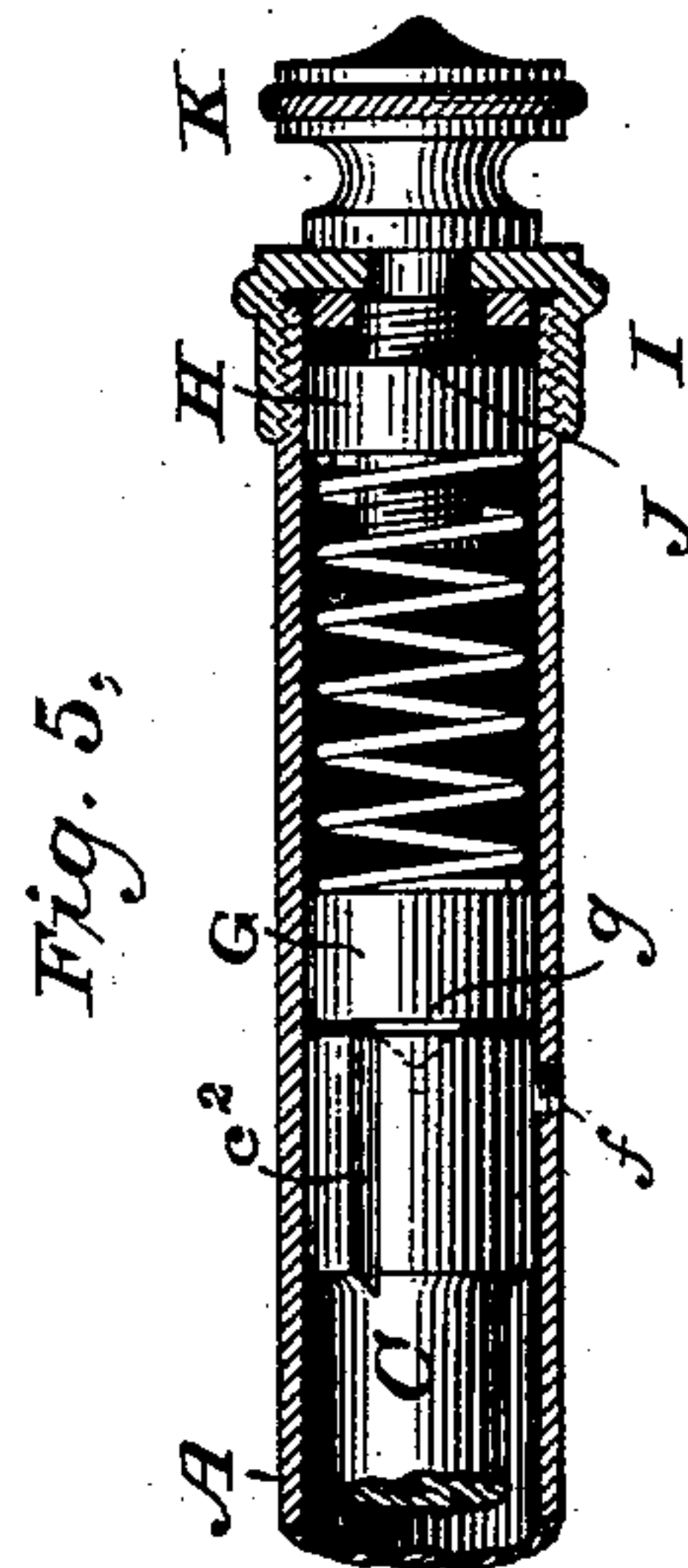
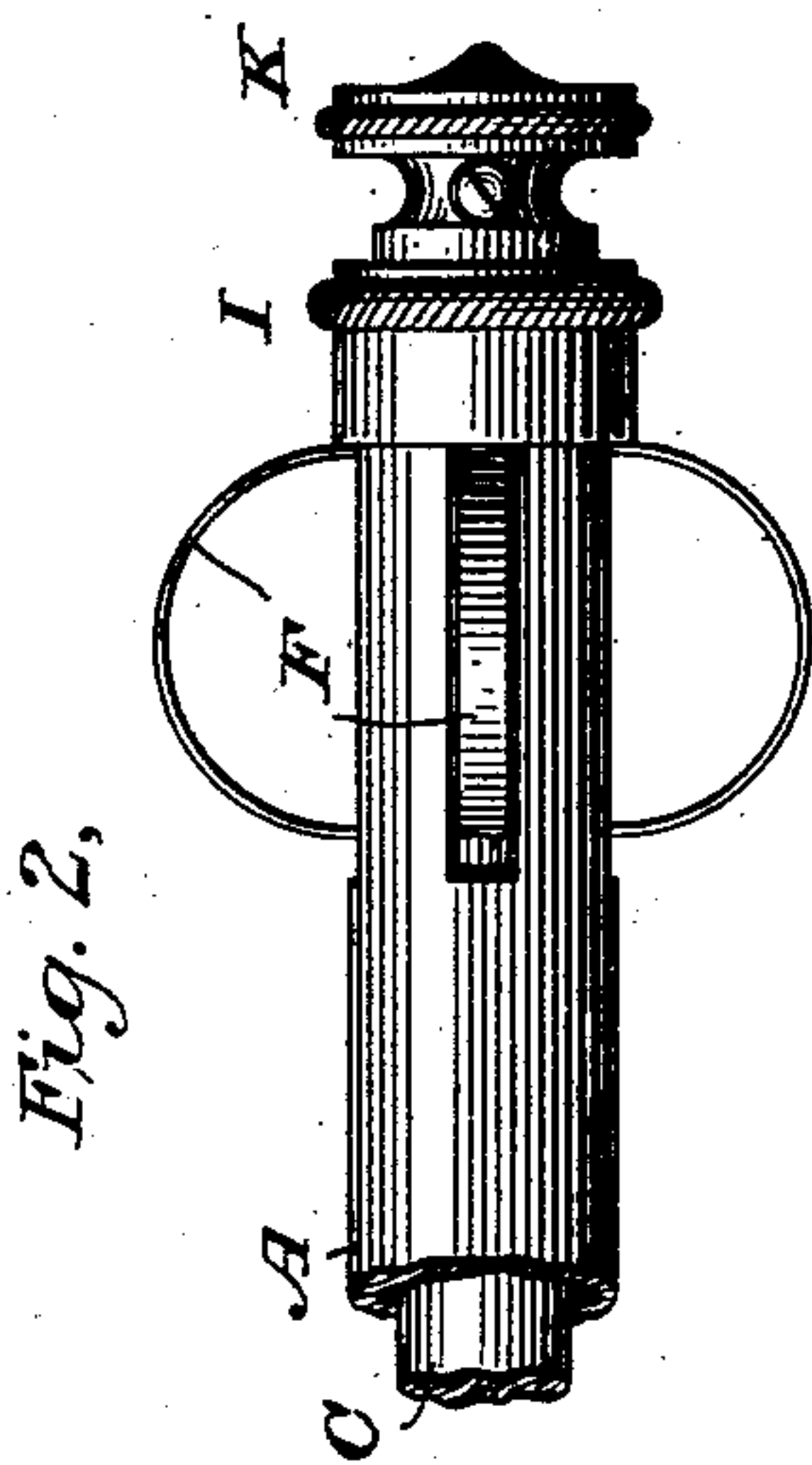
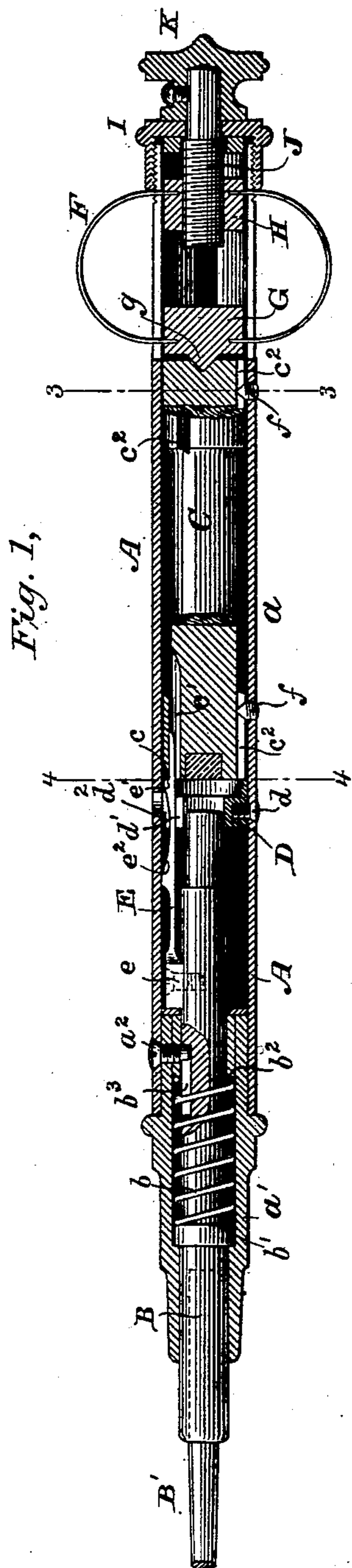


(No Model.)

F. ABBOTT.
DENTAL PLUGGER.

No. 257,264.

Patented May 2, 1882.



WITNESSES
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DENTAL PLUGGER.

SPECIFICATION forming part of Letters Patent No. 257,264, dated May 2, 1882.

Application filed March 21, 1882. (No model.)

To all whom it may concern:

Be it known that I, FRANK ABBOTT, of the city, county, and State of New York, have invented certain new and useful Improvements in Dentists' Pluggers, of which the following is a specification.

My invention relates to the class of instruments used by dentists, more especially for compacting or condensing gold and other fillings into the cavities of natural teeth while in the mouth, commonly known as "dentists' pluggers;" and my said invention appertains more particularly to the type of such pluggers known as "hand-pluggers," in which a blow is given upon the tool-holder which carries the operating tool or "point" by means of a hammer raised by pressing the tool or point against the filling or spot to receive the blow.

The object of my invention is to improve the construction and organization of dentists' pluggers in order to simplify them, to enable the hammer to give a freer blow than has heretofore been practicable, and to avoid rattling and noise in working the instrument, which, as incidental to the use of hand-pluggers of the class to which mine belongs, has heretofore been annoying alike to patient and operator.

The subject-matter claimed is particularly pointed out at the close of the specification.

In the accompanying drawings, which show my improvements as organized in the best way now known to me, Figure 1 is a longitudinal section through my improved plugger. Fig. 2 is an external view of the upper end of said plugger. Fig. 3 is a transverse section through said plugger on the line 3 3 of Fig. 1, and Fig. 4 is a similar section on the line 4 4 of said Fig. 1. Fig. 5 is a longitudinal sectional view of the upper end of the improved plugger, showing a form of impelling-spring for the hammer of the instrument differing from that shown in Figs. 1, 2, and 3.

The casing A is preferably tubular in form to contain the working parts, as usual, and is composed, in this instance, of two sections—to wit, a handle-section, *a*, and a nose or tool-holder section, *a'*. The tool-holder B is fitted in the nose-section *a'* of the casing, so as to move endwise therein, and extends through said section. The inner inclosed end of said

tool-holder B is fitted to receive the blows of a reciprocating hammer, C, while its outer end is provided with a socket, preferably a screw-threaded socket, as usual, for the reception of the shanks of the operating tools or points B', used with the instrument, of which there are several different forms for doing work of different kind or impacting fillings of different character or in different locations in the teeth, said tools or operating-points B' being readily interchangeable in the holder B by being threaded to fit the tool-holder socket.

A spiral spring, *b*, surrounds the tool-holder B, and is confined between an annular shoulder, *b'*, on said holder, and a similar shoulder, *b²*, formed in this example by inserting a ring in the upper end of the nose-section *a'* of the casing and securing it firmly in place by a set-screw, *a²*, which screw also serves the purpose, in this example, of uniting the two casing-sections *a* and *a'* firmly together. Said screw *a²* is also extended, so that its end enters a longitudinal groove or channel, *b³*, formed in the tool-holder, to constitute a guide for the tool-holder and prevent it from turning in the casing. Said channel or groove and said screw may also constitute the means for limiting the endwise movement of the tool-holder in the casing. The tendency of the force or power of the spring *b* is to keep the tool-holder thrust outward to its farthest extent. The function of said spring will be further alluded to in the description of the operation of the instrument. The inner end of the tool-holder B, as before stated, receives the blows of the hammer C, the said end of said holder being fitted to move in the bore of a guide-ring or annulus, D, fastened in the casing by a screw or screws, *d*, for example, as shown in Figs. 1 and 4.

The bore of the guide-ring or annulus D at one side communicates with a lateral recess, *d'*, in said ring or annulus, and in this recess a lifting spring bar or catch, E, plays laterally and moves endwise. (See Figs. 1 and 4.) Said spring-catch E consists preferably of a piece of spring-steel, the lower end of which is rigidly united to the tool-holder B by a screw, *e*, for example, as shown in Fig. 1, while said catch, near its upper end, is provided with a shoulder, *e'*, which engages the edge *c* of the

hammer C. The end of said catch E above the shoulder e' fits a longitudinal recess, e' , in the lower end of the hammer C, said recess being of sufficient length to permit said hammer C to move down endwise upon the catch to give a blow upon the tool-holder, as will be presently explained. The hammer C reciprocates in the casing, being guided therein by the points of bearing-screws, guides, or ribs f , which project inwardly into the bore of the casing and fit longitudinal grooves c^2 in both the upper and lower ends of the hammer. The diameter of the hammer C is somewhat less than that of the interior of the casing A, so that the hammer in its reciprocations is guided wholly by and moves upon the points of the screws or guides f , whereby the friction of the hammer in its case is reduced to its minimum, and the advantages derived from the greater freedom of the blow delivered are substantial. The lower end of the hammer normally rests upon the upper end of the ring or annulus D, while the upper end of the tool-holder is below said hammer, being carried away from the hammer by the spring b . Said hammer is held down upon the ring or annulus D by the force or power of preferably elliptic or bow springs F, as clearly shown in Figs. 1, 2, and 3. The inner ends of said springs are preferably fastened to blocks, heads, or hubs G H, the lower hub, G, having a central conical point or projection, g , to fit a corresponding recess in the upper end of the hammer C, as clearly shown in Figs. 1, 3, and 5, whereby the springs may exert their force upon the hammer without producing friction to an appreciable extent. The sides of the casing are slotted for the passage of the springs F, and to permit said springs to be freely contracted and expanded while the plugger is being worked.

The upper end of the casing is closed by a screw-cap, I, as usual, and through this cap a screw, J, passes, said screw being fitted in a thread in the hub H, and provided outside the cap I with a thumb-piece, K, whereby the tension or power of the springs F, which act upon the hammer C, may be varied to give blows of greater or less force, as desired, it being obvious that inasmuch as the screw J cannot move endwise in the cap I, said screw, when being turned by the finger-piece K, will cause the hub H to advance or retreat, and thus regulate the power of the springs relatively to the hammer.

The operation of the instrument is as follows: The point of the operating-tool having been placed against the filling to be condensed or compacted in the cavity of the tooth, forward pressure is exerted upon the casing A by the operator's fingers which surround it. This pressure causes the casing to move forward over the tool-holder, projecting the inner end of said holder through the guide-ring or annulus D, and raising or holding the hammer C away from said end of the tool-holder, inasmuch as the spring-catch E of the tool-holder engages the edge c of the hammer C with its

shoulder e' and prevents it from moving forward with the casing. The forward movement of the casing continues until the edge or shoulder d^2 , Fig. 1, of the ring or annulus D is brought against the incline e^2 of the spring-catch E, which will cause said catch to be wedged or moved inward and thereby force the shoulder e' thereof from under the edge c of the hammer. As soon as this tripping of the lifting-catch is accomplished the hammer is forced or thrown forward by the accumulated tension or force of the springs F, and a quick, sharp, free blow is delivered upon the end of the tool-holder and through said holder to the filling operated upon. As soon as the blow is delivered the pressure of the fingers upon the casing is relieved, which permits the spring b to act, said spring throwing the case upward or outward relatively to the tool-holder, in order to retract the end of said holder from contact with the hammer, and to permit the catch E to again engage the hammer preparatory to the next movement of the casing, which is to cause a blow to be administered upon the filling.

I prefer to use the bow-springs F—which virtually, with their hubs, constitute two elliptic springs in the precise organization shown—as the impelling-springs of the hammer, as a perfectly free blow can be had by their use; but in some instances a spiral or other form of spring may be employed with good effect, as shown, for example, in Fig. 5.

I claim as my invention—

1. The combination, substantially as hereinbefore set forth, of a hammer to give blows upon a tool-holder, with an elliptical spring formed by uniting the ends of bow or bent springs to central blocks or hubs acting upon said hammer.

2. The combination, substantially as hereinbefore set forth, of a hammer to give blows upon a tool-holder, an impelling-spring acting upon said hammer to impart said blow, and an interposed connecting-block between said hammer and said spring.

3. The combination, substantially as hereinbefore set forth, of a hammer, an elliptical spring composed in part of central hubs or blocks, one of which acts upon said hammer, and a screw for adjusting the power of said spring, working in the other of said hubs, whereby the force of the blows administered by the hammer may be regulated.

4. The combination, substantially as hereinbefore set forth, of a hammer, a spring acting upon said hammer, a movable hub or block to vary the power of said spring, and a turning-screw working in said hub or block to move it relatively to said screw.

5. The combination, substantially as hereinbefore set forth, of the casing, the bearing-guides of said casing, and the reciprocating hammer guided and supported in said casing by the said bearing-guides, whereby the friction of the hammer in the casing is reduced.

6. The combination, substantially as here-

inbefore set forth, of the casing, the tool-holder, the hammer to deliver blows upon said holder, the impelling-spring of said hammer, the bearing-guides upon which the hammer reciprocates
5 so as to have great freedom of reciprocation, and the catch connected with said tool-holder and acting upon said hammer.

7. The combination, substantially as here-
inbefore set forth, of the casing-sections, the
10 tool-holder fitted to move endwise in one of said sections, and provided with a longitudinal channel, and a screw passing through said

casing-sections to unite them and into the channel of the tool-holder to form a guide for said holder and prevent its rotation in the casing.
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In testimony whereof I have hereunto subscribed my name this 13th day of March, A. D. 1882.

FRANK ABBOTT.

Witnesses:

J. ROMAIN BROWN,
V. K. REYNOLDS.