

(No Model.)

H. C. REGISTER.

DENTAL Mallet.

No. 363,911.

Patented May 31, 1887.

Fig. 2.

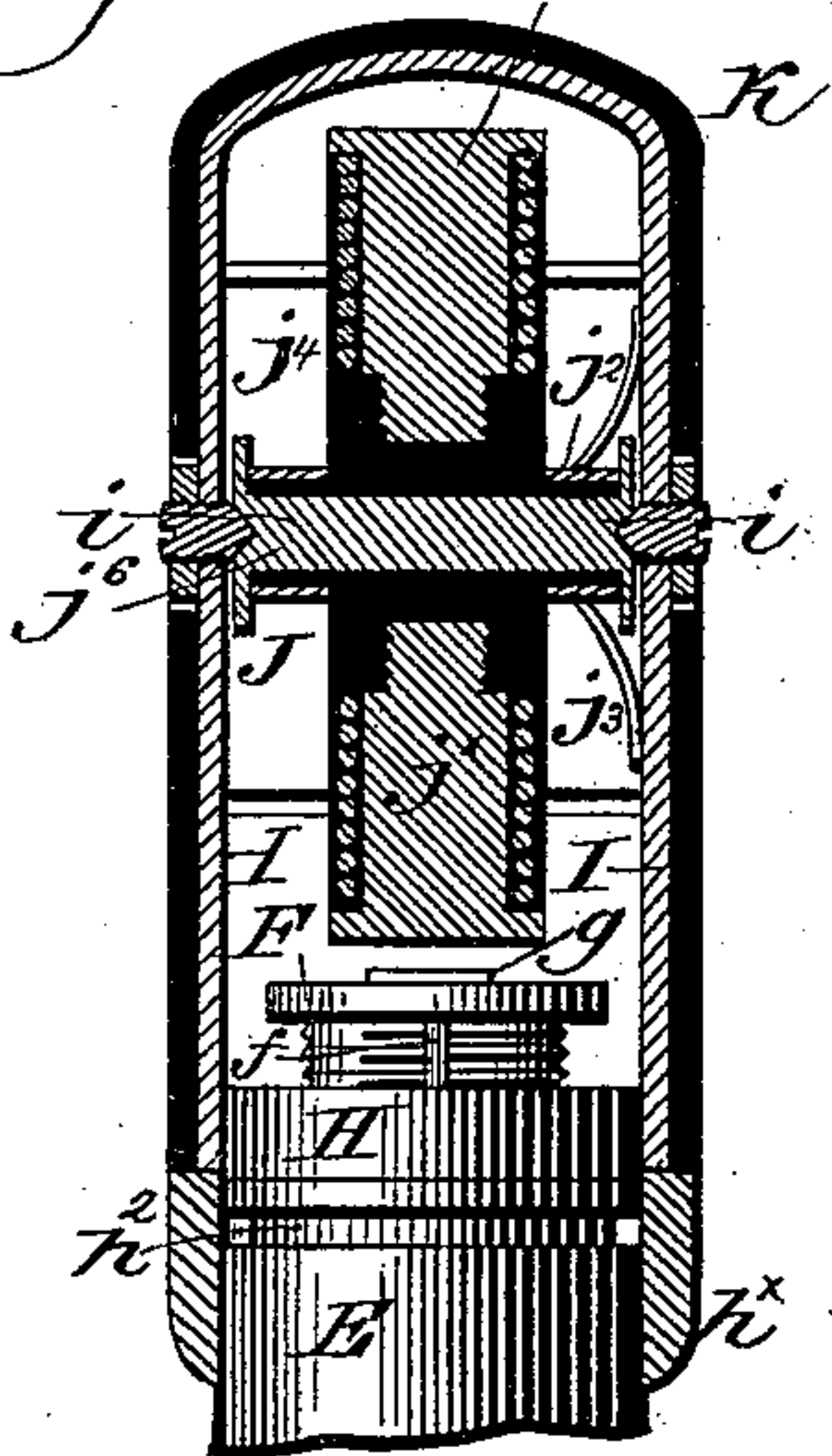


Fig. 1.

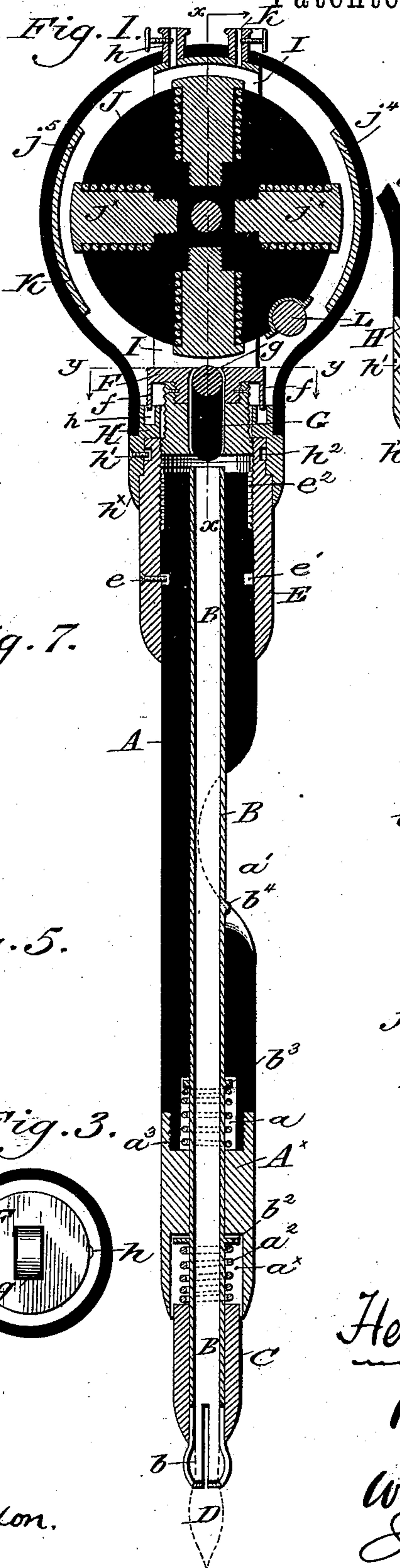


Fig. 6.

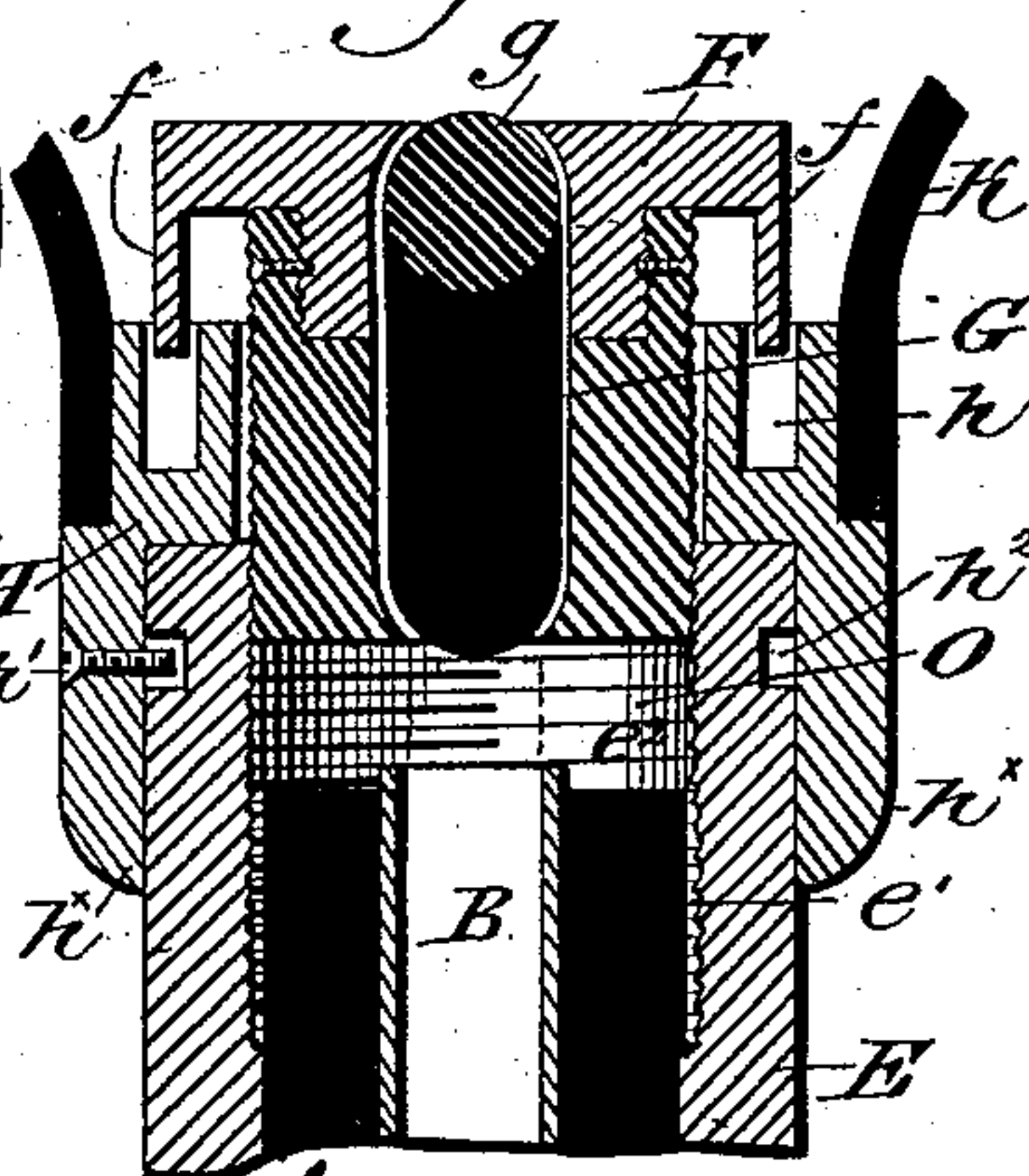


Fig. 4.

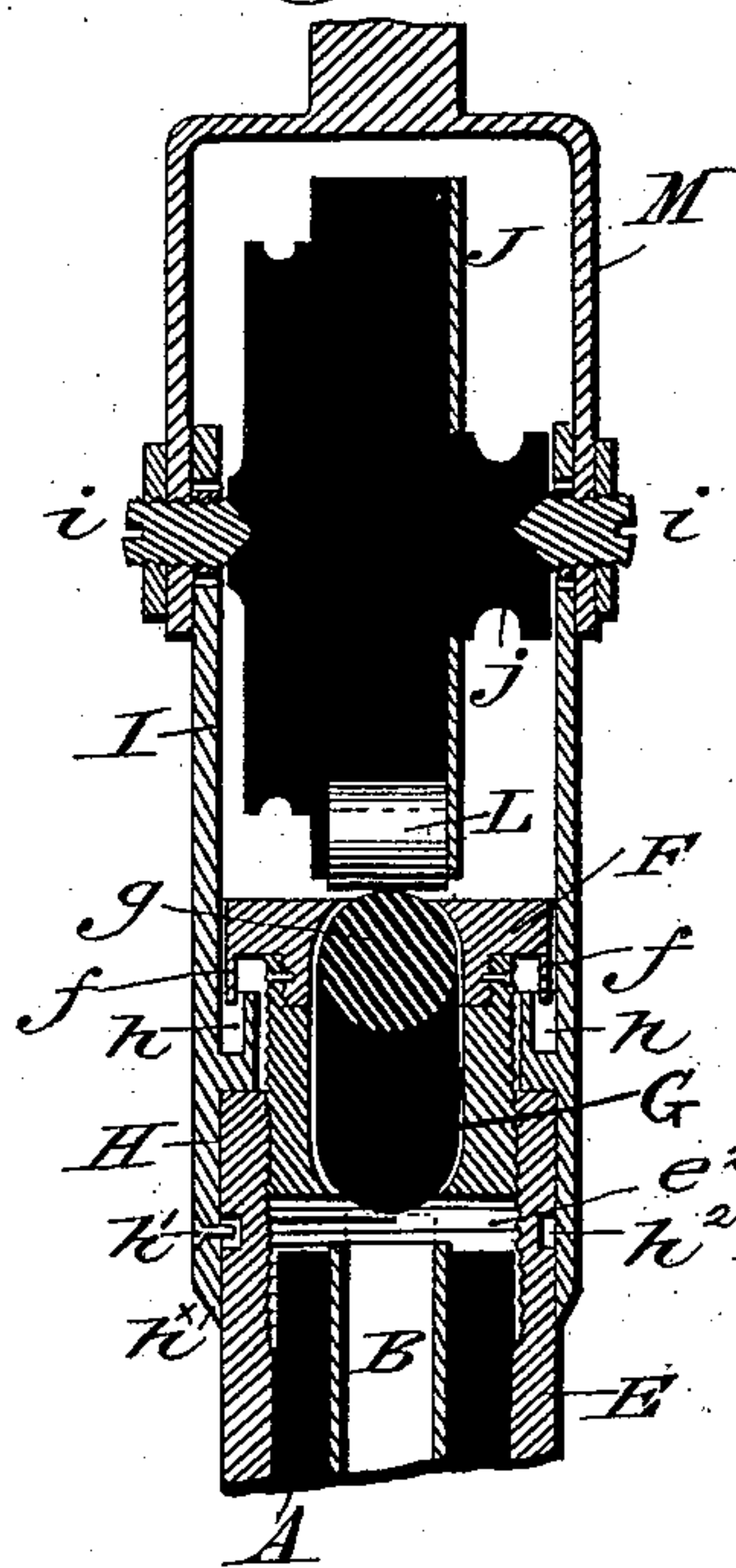


Fig. 7.

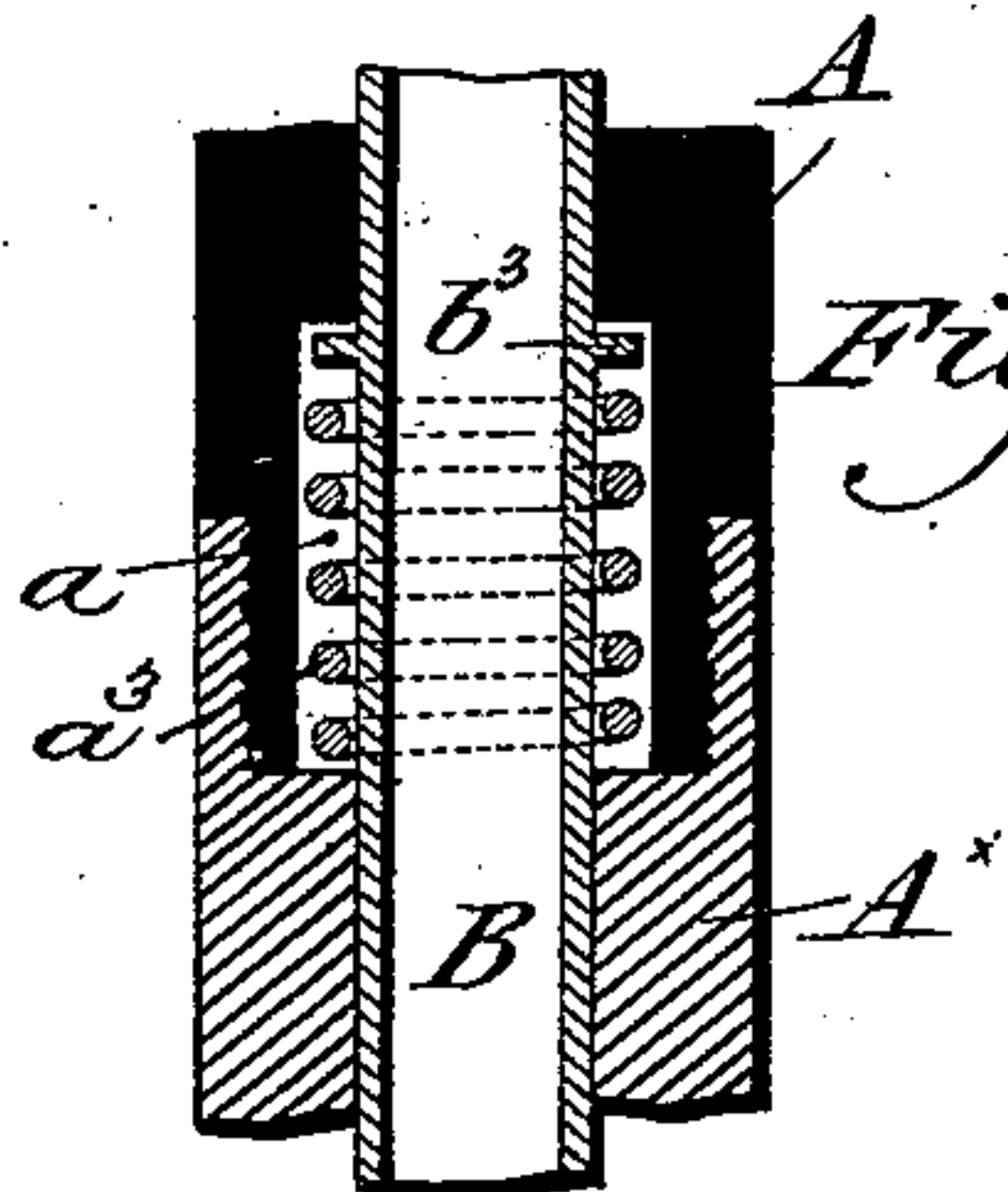


Fig. 5.

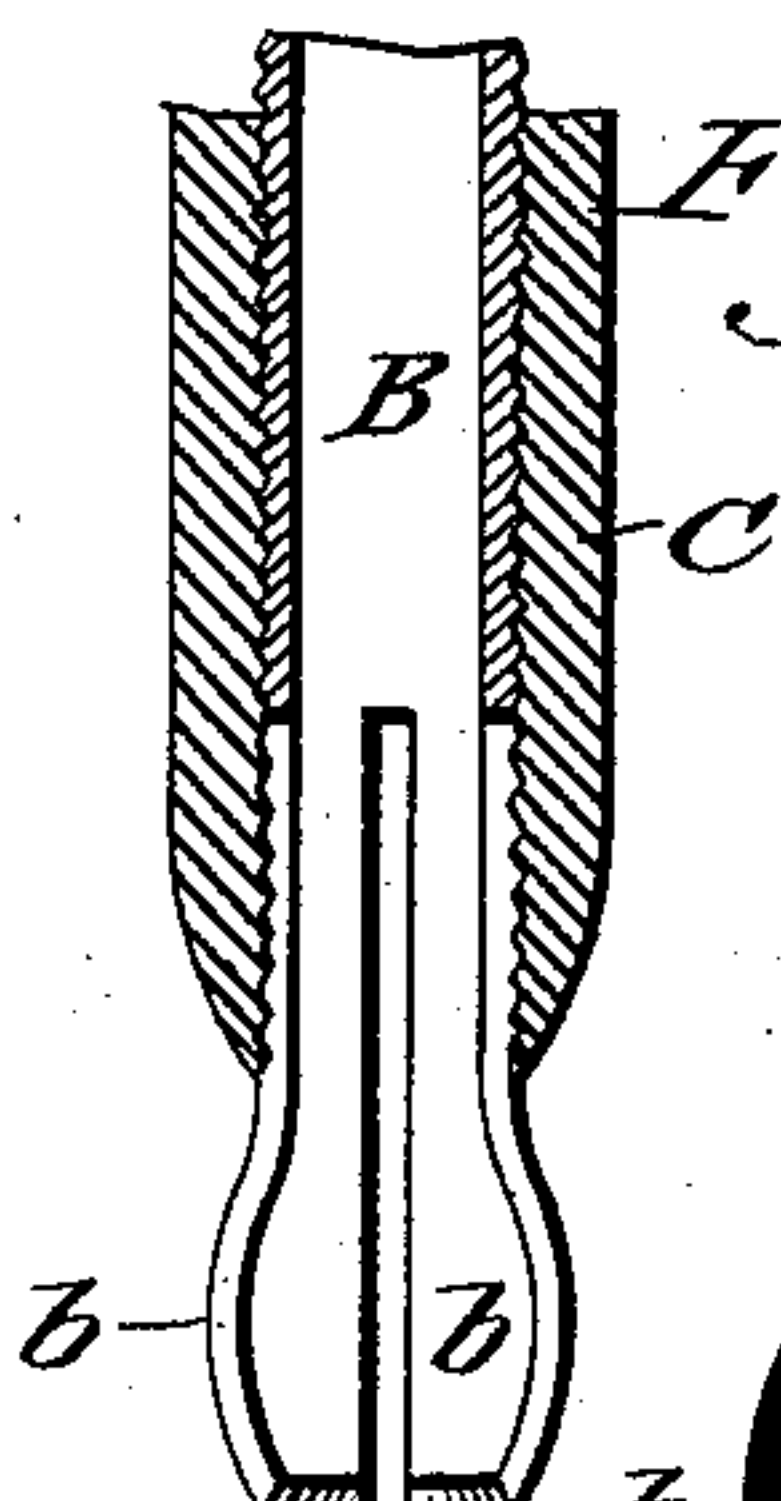
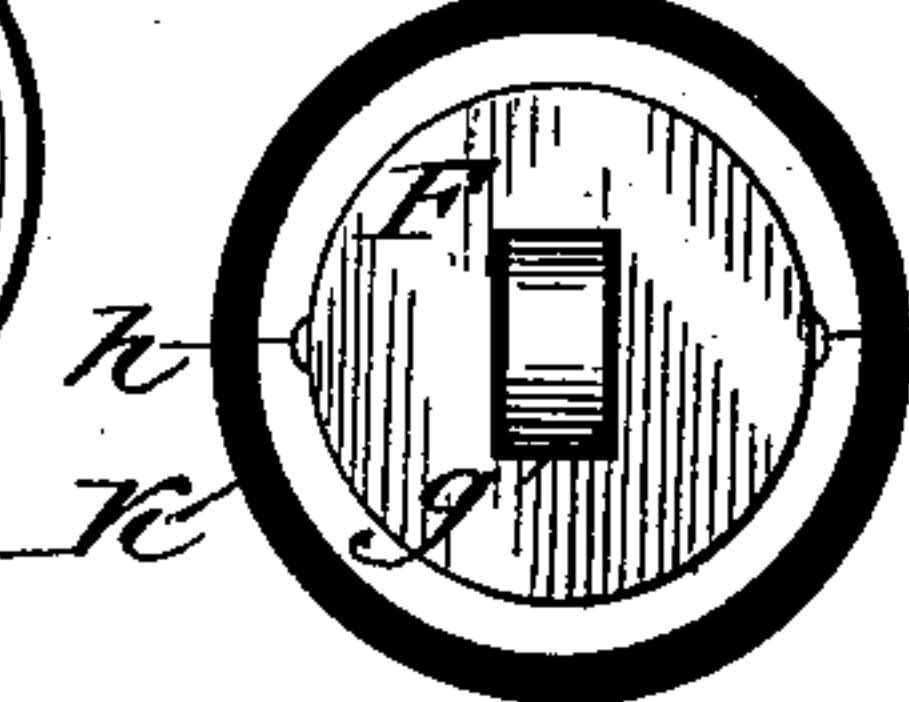


Fig. 3.



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HENRY C. REGISTER, OF PHILADELPHIA, PENNSYLVANIA.

DENTAL MALLET.

SPECIFICATION forming part of Letters Patent No. 363,911, dated May 31, 1887.

Application filed February 3, 1887. Serial No. 226,375. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. REGISTER, a citizen of the United States, residing in the city and county of Philadelphia, in the State of Pennsylvania, have invented an Improvement in Dental Mallets, of which the following is a specification.

The object of my invention is the construction of a simple, accurate, and easily operated mallet which shall be reliable in its action and not liable to get out of order.

My invention is an improvement upon a dental plugger patented to me August 24th, 1886, in and by United States Letters Patent No. 347,828.

My patented plugger comprehends, in a dental mallet, the combination of a bit-actuating plunger, an impact wheel, and a roller or sphere which is housed within said wheel and a portion of the periphery or surface of which projects beyond the periphery of said impact wheel. The said bit-actuating plunger is contained within a cylindric form thimble screwed into the upper portion of the casing and adapted to be raised or lowered to adjust the set of its contained plunger by rotating it by its head or upper portion which projects above the upper extremity of the casing.

My present invention relates especially to means for adjusting the aforesaid thimble, and it also comprehends the application to the plunger of an antifriction roller or sphere, as well as certain other features of construction hereinafter described and claimed.

A mallet conveniently embodying my improvements is represented in the accompanying drawings and described in this specification, the particular subject matter claimed as novel being hereinafter definitely specified.

In the drawings, Figure 1 is a central, vertical, longitudinal, sectional, side elevation through a mallet embodying my invention, and provided with an electrically-actuated impact wheel, and a bit-actuating plunger provided with a cylindric form roller. Fig. 2 is a vertical transverse sectional elevation through the impact wheel and its head and enclosing envelope shown in Fig. 1, in the plane of the dotted line $x-x$ of said figure,—the thimble and its adjusting collar and a portion of the socket piece being, however, represented in side elevation. Fig. 3 is a top plan view of

the thimble shown in Figs. 1 and 2, section being supposed in the plane of the dotted line $y-y$ of Fig. 1, and sight being taken in the direction of the arrows upon said line. Fig. 4 is a transverse sectional view similar in general character to that of Fig. 2 of a mechanically operated impact wheel contained in a double forked head; the bit-actuating plunger shown being provided with a sphere or ball instead of a roller. Fig. 5 is a central, vertical, sectional, fragmentary elevation, in a modified form of application, of the collar for operating the bit clamping jaws. Fig. 6 is a fragmentary sectional elevation of the thimble and neighboring parts; and Fig. 7 a similar view of the body chamber, bushing spring, and neighboring parts.

Similar letters of reference indicate corresponding parts.

In the drawings, A represents the casing, conveniently composed of a body of vulcanite, which is designated by the said letter A, and of a ferrule A^x screwed or otherwise suitably applied to the lower extremity of said body. The casing proper, which includes both body and ferrule, is axially apertured to contain a cylindric form bushing B, preferably made of metal, and terminating at its lower extremity in any suitable bit-clamping chuck, conveniently a series of spring jaws b of any preferred construction. The lower extremity of the ferrule is recessed to form an annular ferrule-chamber a^x , which contains what I term a collar spring a^2 , encircling the bushing, and adapted to act between the under surface of an externally projecting circumferential flange which I term the lower flange b^2 , fixedly applied to the bushing, and the upper extremity of a sliding collar C encircling the bushing, entered as to its upper extremity within the ferrule chamber, and adapted to compress the spring jaws b upon the bit D (represented in dotted lines in the drawing,) when forced down upon said jaws by the thrust of the collar spring a^2 acting, as stated, against the lower flange b^2 as an abutment.

At the region of the joint between the body and ferrule of the casing, an annular chamber, which I term the body chamber a , Figs. 1 and 7, is formed within the inner walls of the casing,—within which is inclosed a spiral spring, which I term the bushing spring a^3 , which

abuts between the base of the body chamber and an upper flange b^3 , similar to the lower flange b^2 , applied to the exterior of the bushing. Normally, the bushing spring serves to

5 maintain the bushing and its contained bit in an elevated position, by maintaining the upper flange b^3 against the top of the body chamber, as shown in Fig. 1.

A portion of the body of the casing is cut away or opened to form a thumb space a' exposing for a portion of its length the bushing, which is, as to such exposed portion, provided with a thumb knob b^4 , or equivalent projection, depression, or finger surface, by means of which the bushing can be manually forced

15 downward, compressing the bushing spring, and, for the time being, removing the bit from range of contact with the plunger, notwithstanding the continued reciprocation of the latter under a continuing rotation of the impact wheel.

The upper portion of the casing is closely surrounded by a swivelled adjusting collar E, maintained against vertical displacement by a swivel stud e passing through it into a circumferential recess e' formed on the exterior of the casing. The lower internal surfaces of the adjusting collar are cylindric to afford a bearing for rotation of the collar upon the

30 casing, while its upper internal surfaces are provided with a screw thread e'' for engagement with the externally-threaded thimble F, which is, by such engagement of threads, supported above the casing.

35 The thimble contains a bit-actuating plunger G, capped or surmounted by a sphere, roller, or anti-friction wheel, to ease, by its capacity for rotation, the contact of the roller or sphere of the impact wheel, which in my former patented invention encountered the upper extremity of the plunger direct.

In order conveniently to admit of the introduction of the plunger and its sphere within the thimble, the latter is preferably made in

45 two parts socketed and threaded together as clearly represented in Figs. 1 and 6.

The office of the adjusting collar E, being, by its rotation under application of the operator's fingers, to raise and lower the thimble to adjust the set of the plunger with respect to the sphere of the impact wheel, it is obvious that the thimble, while free to move vertically in either direction, must be maintained against rotation,—and this I conveniently accomplish

55 by providing said thimble with depending thimble lugs f adapted to be entered and to move vertically within lug seats h in a socket piece H, from which spring the side or fork bars I of the head for supporting the journals

60 i of the impact wheel J.

The socket piece is conveniently provided with a depending cylindric socket flange h^x which is closely fitted over the upper extremity of the adjusting collar E, and is swivelled with respect thereto by the swivel stud

65 h' entered within a recess h^2 on the exterior of

the adjusting collar. The fit of the socket flange with respect to the adjusting collar, and of the adjusting collar with respect to the casing, should be so exact as to prevent play. 70

The impact wheel proper being simply a device for carrying a sphere, roller, or equivalent anti-friction contrivance L so housed within it that a portion of its periphery or surface projects beyond the periphery of the wheel, it is manifestly inconsequential how the said wheel be formed and operated, and, in Fig. 4, I have represented it simply as a solid disk or wheel, adapted to be actuated by a driving cord passed over a pulley j formed or connected

80 with it, while in Figs. 1 and 2 I have represented it as an electrically-operated disk, substantially in the form of the armature of an electric motor. In this latter form the body of the armature or impact wheel or disk proper, to which the letter J is applied and which is provided with the peripheral sphere, or roller

85 L, is formed of vulcanite and contains four embedded bobbins j^x , being also provided with a commutator j^2 Fig. 2, of which the brushes are designated j^3 . Pole pieces j^4 j^5 of a magnetic field are likewise suitably applied, and preferably supported by an enclosing envelope K of vulcanite which springs from the socket piece and envelopes the entire impact wheel

95 and upper portion of the instrument, as shown in Figs. 1 and 2. The axle of the armature is designated j^6 , and is at its axial extremities conically recessed to fit it to receive cone-pointed journals i applied, as stated, in any preferred manner to the fork bars I, which spring from the socket piece. 100

All circuit connections save only the wires upon the cores of the bobbin, which are shown in section, are for clearness of illustration omitted, but binding posts k applied to the enclosing envelope are represented. It is to be understood that the usual connections are employed. 105

In Fig. 4 I have represented the side or fork bars I, which together and in connection with the socket piece of which they form a part, form the forked head of the implement, as extending only far enough to carry the journals of the impact wheel, while a supplemental fork M, completing the enclosure of the wheel, is likewise applied to the journals. 110

In Fig. 5 I have represented the collar C, which, in the construction already described, is actuated to clamp the spring jaws upon the bit by the thrust of a collar spring,—as internally threaded to thread upon an externally threaded bushing terminating in spring jaws, by which construction the collar spring can be dispensed with, and the jaws of the bushing, which form a clamp chuck, be clamped upon the bit by the rotation of said threaded collar. 115

In addition to the foregoing modifications, it is obvious that many changes in form and construction of the various parts may readily be made. Thus, while it is convenient to provide the thimble with lugs to prevent its rota- 120 125 130

tion, it may, while being free to move vertically, be retained against rotation by an external feather or key, or by many other contrivances obvious to a mechanic.

5 The mode of construction of the thimble is not, of course, essential. That represented is a convenient form; but, as is apparent, the plunger alone or the plunger and its sphere may be retained within it by a cap or bushing
10 applied to either extremity of the thimble, the latter in such instances being made solid.

The form of the socket piece and of the head proper of the mallet may likewise be varied. It is obvious that while the bushing is a convenient contrivance for enabling the operator
15 to temporarily throw the bit out of range of engagement with the plunger, yet that the plunger when equipped with a sphere or roller applied to a thimble constructed and operated
20 in the manner herein set forth is operative with mallets unprovided with the bushing and its connected contrivances.

Having thus described my invention, I claim:—

25 1. In a dental mallet, the combination of a bit-actuating plunger, a sphere or roller surmounting said plunger, an impact wheel, and a sphere or roller which is housed within said wheel, and a portion of the periphery or sur-
30 face of which projects beyond the periphery of said impact wheel, substantially as set forth.

2. In a dental mallet, in combination with a casing, a thimble applied to the upper portion of the casing and adapted to be adjusted
35 longitudinally with respect to said casing, a plunger contained in said thimble, a sphere or roller surmounting said plunger, an impact wheel, and a sphere or roller which is housed within said wheel and a portion of the periph-
40 ery or surface of which projects beyond the periphery of said impact wheel, substantially as set forth.

3. In a dental mallet, in combination with a casing, a thimble applied to the upper por-
45 tion of the casing and adapted to be adjusted longitudinally with respect to said casing, a plunger contained in said thimble, an adjusting collar applied to the casing and threading with respect to the thimble so as to be adapted
50 when rotated to adjust the vertical set of said thimble, suitable means for maintaining the thimble against rotation, an impact wheel, and a roller or sphere which is housed within said wheel and a portion of the periphery or sur-
55 face of which projects beyond the periphery of said impact wheel, substantially as set forth.

4. In a dental mallet, in combination with a casing, a thimble applied to the upper portion of the casing and adapted to be adjusted
60 longitudinally with respect to said casing, a plunger contained in said thimble, a sphere or roller surmounting said plunger, an adjusting collar applied to the casing and threading with respect to the thimble so as to be adapted
65 when rotated to adjust the vertical set of the thimble, suitable means for maintaining the

thimble against rotation, an impact wheel, and a roller or sphere which is housed within said wheel and a portion of the periphery or sur-
70 face of which projects beyond the periphery of said impact wheel, substantially as set forth.

5. In a dental mallet, in combination with a casing, an externally threaded thimble, a bit-actuating plunger contained within said thimble, lugs applied to said thimble, a socket
75 piece containing lug seats for said lugs, and an adjusting collar internally threaded to engage with the threads upon the thimble and swivelled with respect to both the casing and the socket piece, substantially as set forth. 80

6. In a dental mallet, in combination with a casing apertured throughout and formed with a thumb space or opening exposing its aper-
85 ture,—a bushing adapted to the aperture, capable of end for end movement within the casing, terminating in a bit clamping chuck, and provided with a thumb knob or equivalent finger contrivance presenting through the opening in the casing,—a spring for normally
90 maintaining the bushing in an elevated position,—a bit-actuating plunger,—and means for supporting and reciprocating said plunger, substantially as and for the purposes set forth.

7. In a dental mallet, the combination of a casing apertured throughout and chambered
95 at its lower extremity,—a bushing adapted to the aperture of the casing and terminating in spring jaws,—a collar applied to said bushing above the spring jaws,—and a spring contained within the chamber of the casing and
100 adapted by thrust between said collar and an abutment on the bushing to cause the collar to compress the jaws,—substantially as set forth.

8. In a dental mallet, in combination with
105 a casing apertured throughout, formed with a thumb piece or opening exposing its aperture, and chambered at its lower extremity,—a bushing adapted to the aperture, capable of end for end movement within the casing, ter-
110 minating in a bit-clamping chuck, and provided with a thumb knob or equivalent finger contrivance presenting through the opening in the casing,—a collar applied to said bush-
115 ing above the bit-clamping chuck,—a spring contained within the chamber of the casing and adapted by thrust between the collar and an abutment on the bushing to cause the collar to compress the jaws,—a spring for normally
120 maintaining the bushing in an elevated position,—a bit actuating plunger above the casing,—and means for supporting and reciprocating said plunger, substantially as and for the purposes set forth.

9. In a dental mallet, the following elements
125 in combination,—an apertured casing having a thumb space or opening exposing its aperture,—a bushing adapted to the aperture in the casing and terminating in a bit clamping chuck,—a bushing spring contained within
130 the casing and adapted to maintain the bushing normally at a given elevation,—a swiv-

elled adjusting collar applied to the casing and adapted to adjust the vertical set of a thimble,—a thimble containing a bit-actuating plunger,—means for maintaining the thimble
5 against rotation,—a mallet head supported above the adjusting collar and swivelled with respect thereto for carrying an impact wheel,—an impact wheel,—and a roller or sphere which is housed within said wheel, and a portion of

the periphery or surface of which projects beyond the periphery of said impact wheel, substantially as set forth.

In testimony whereof I have hereunto signed my name this 25th day of January, A. D., 1887

HENRY C REGISTER,

In the presence of

J BONSALE TAYLOR

JOHN JOLLEY Jr