

No. 629,621.

Patented July 25, 1899.

G. B. SNOW.
DENTAL PLUGGER.

(Application filed May 12, 1899.)

(No Model.)

Fig. 1

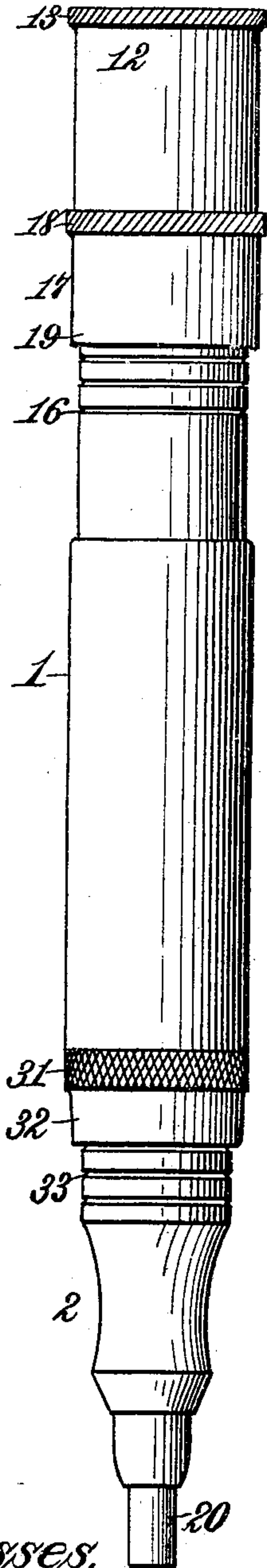


Fig. 2

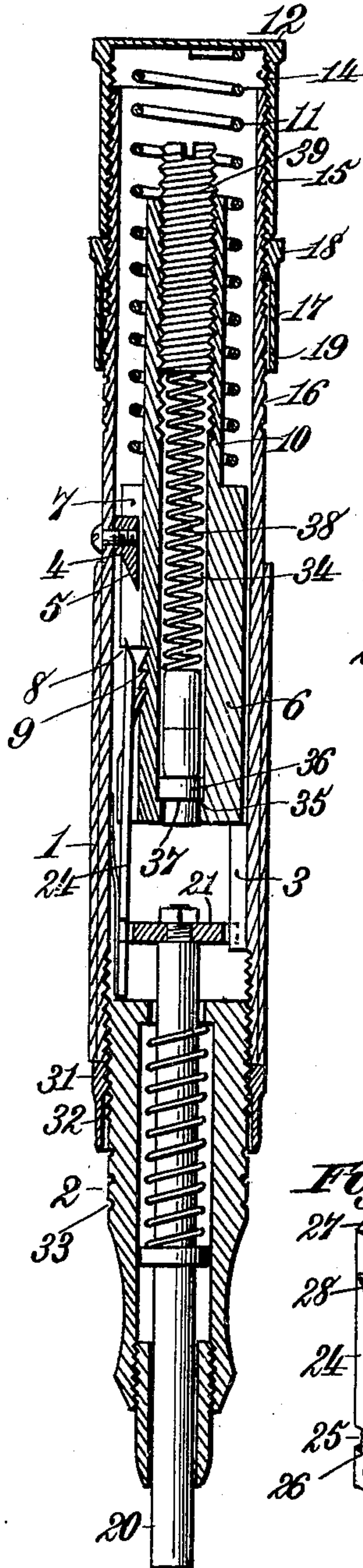


Fig. 5

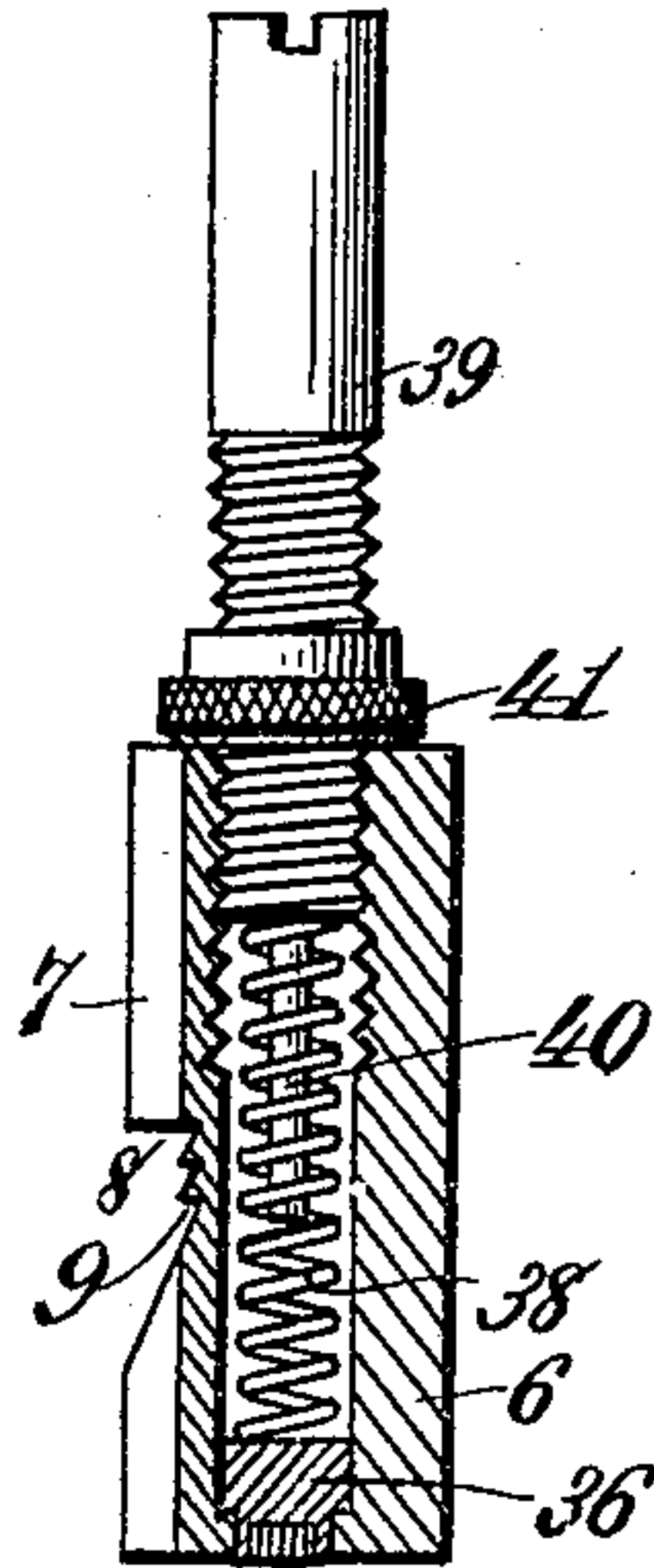


Fig. 3

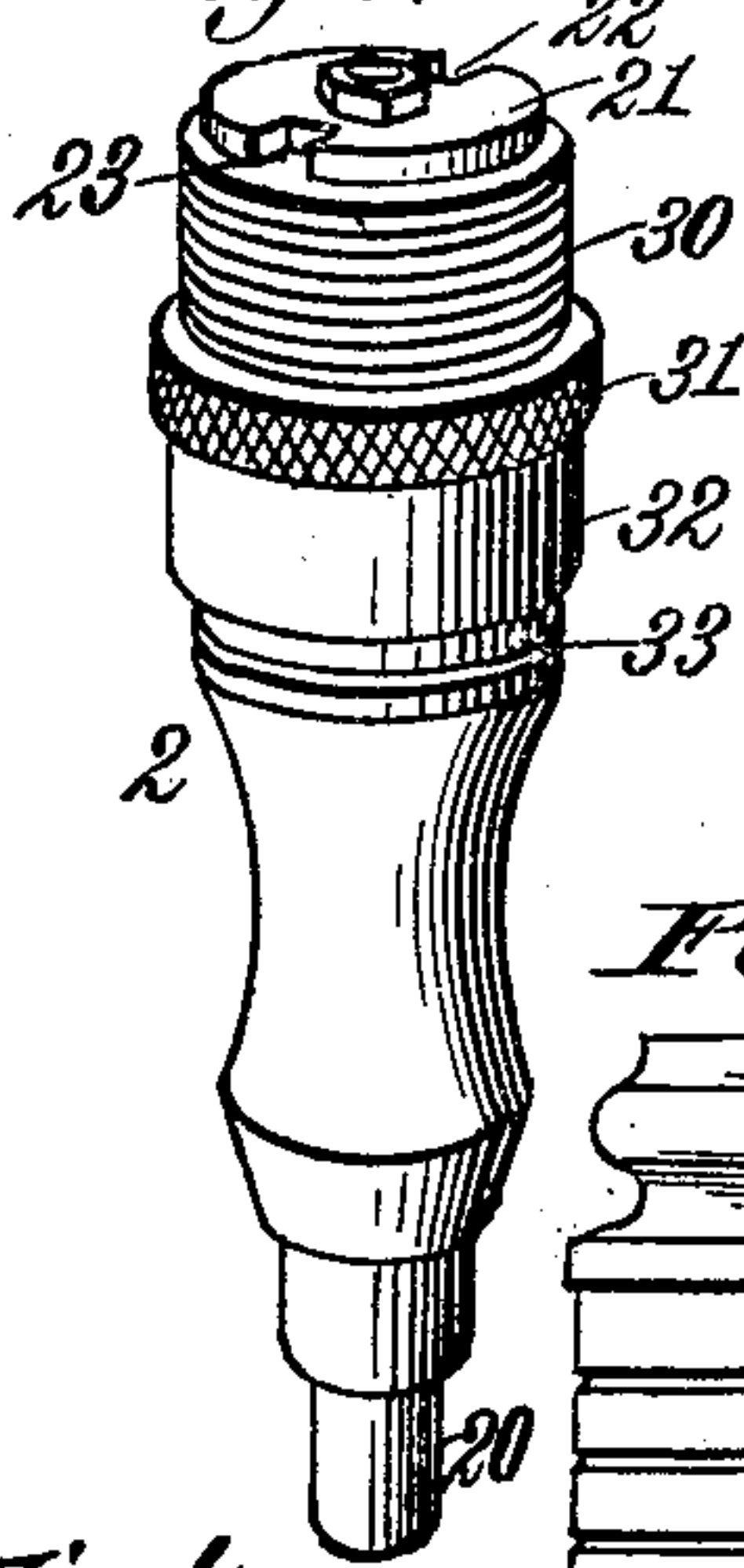


Fig. 6

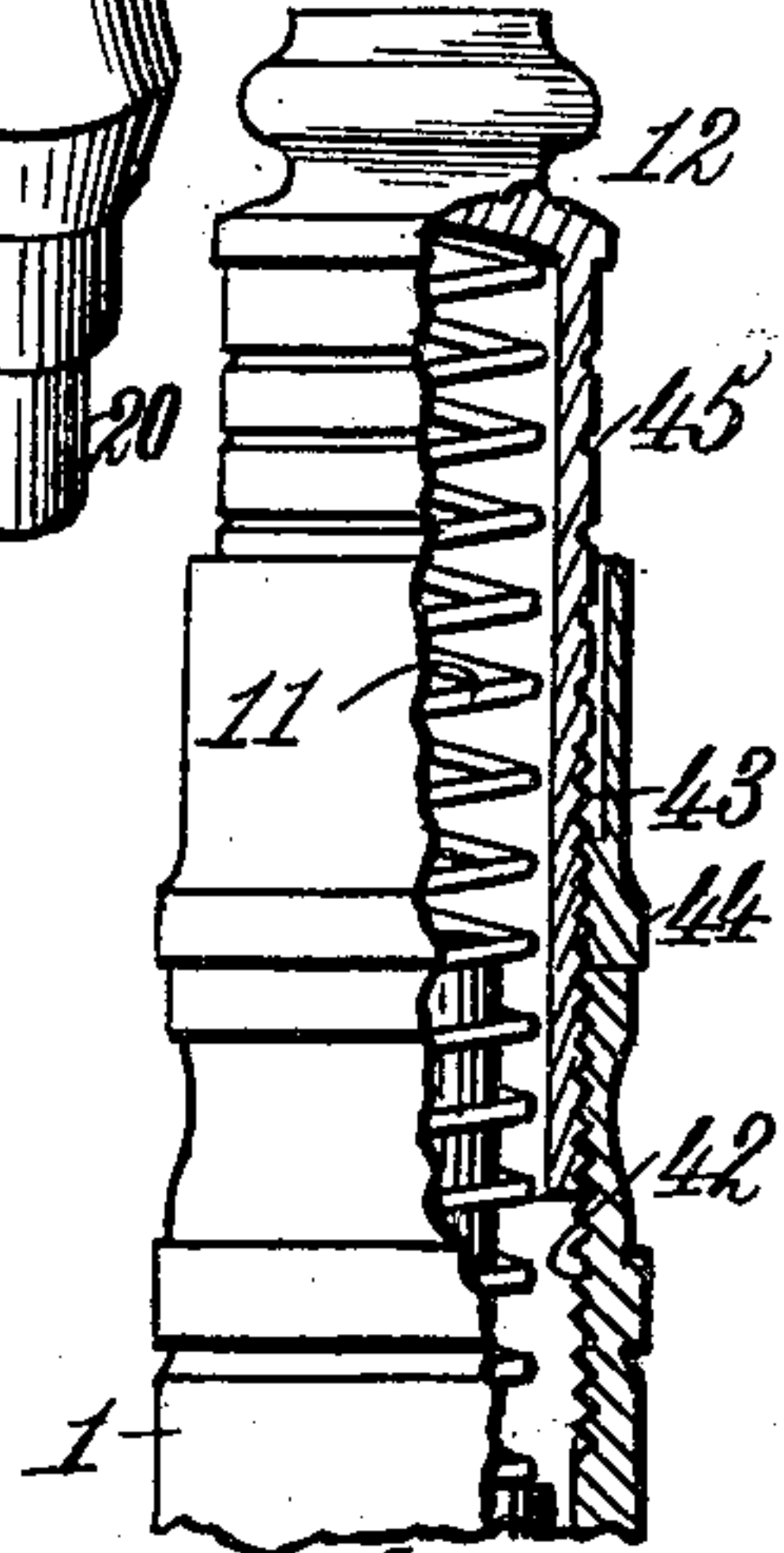
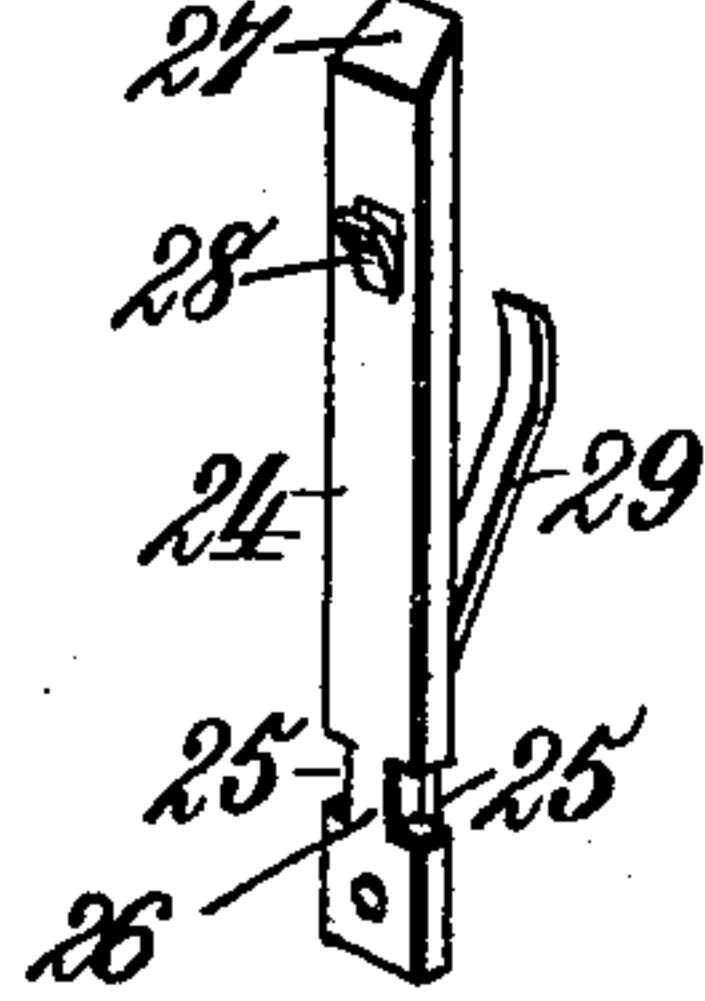


Fig. 4



Witnesses,
Robert Everett,
J. B. Keefe

Inventor,
George B. Snow,
By James L. Norris,
Atty.

UNITED STATES PATENT OFFICE.

GEORGE B. SNOW, OF BUFFALO, NEW YORK.

DENTAL PLUGGER.

SPECIFICATION forming part of Letters Patent No. 629,621, dated July 25, 1899.

Application filed May 12, 1899. Serial No. 716,573. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. SNOW, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Dental Pluggers, of which the following is a specification.

My invention relates to dental pluggers, the same being particularly designed as an improvement upon the plugger shown and described in reissued Letters Patent No. 9,248, granted to me June 8, 1880.

The object of the invention is to provide means for adjusting the tension of the hammer-impelling spring and for indicating the degree of adjustment of the same, for regulating the length of stroke of the tool-holder and for indicating the degree of regulation thereof, and for controlling the character of blow imparted by the hammer upon the tool-holder so as to produce a soft or cushion blow or a hard or unyielding blow or one which is at first soft or yielding and afterward hard or unyielding.

The construction of parts by which the above objects are attained will be fully set forth hereinafter, and the novel features of the invention will be defined in the claims.

In the drawings forming part of this specification, Figure 1 is a side elevation of my improved plugger. Fig. 2 is a longitudinal section of the same. Fig. 3 is a perspective view of the lower section of the casing. Fig. 4 is a similar view of the detent, and Fig. 5 is a sectional view of a modified form of hammer. Fig. 6 is a detail sectional view showing a modified construction of the upper end of casing, cap, and jam-nut cooperating therewith.

Like reference-numerals indicate like parts in the different views.

The casing of my instrument is made up of an upper tubular section 1 and a lower section 2, adapted to be screwed in the lower end thereof. On the inside of the section 1, adjacent to its lower end, is a spline or feather 3, and on the inside of said section, adjacent to the upper end thereof, but opposite the feather 3, is a releasing-dog 4, having a downwardly-extending projection 5 thereon, which is beveled along its outer surface. Fitting within the section 1 of the casing and resting nor-

mally upon the end of the spline 3 is the hammer 6, which is provided with a longitudinal groove 7 and with a transverse recess 8, intersecting the groove 7, and provided with a series of notches or teeth 9. The upper end of said hammer is formed with a stem or cylindrical extension 10, which is surrounded by the lower end of a coiled spring 11, whose upper end abuts against the inner side of a cap 12, as clearly shown in Fig. 2 of the drawings. The said cap 12 is provided with a milled or knurled finger-engaging portion 13 and is internally threaded, as shown at 14. The threads 14 are adapted to mesh with corresponding external threads 15 on the upper end of the section 1. Below the threads 15 the section 1 is provided with circumferential scores 16 16, which are arranged in parallel relation and at equal distances from each other. Fitting upon the section 1 and engaging the threads 15 thereof is a jam-nut 17, provided with a milled finger-engaging portion 18 and with a forwardly-extending sleeve or tubular portion 19, which is adapted to cover up and conceal the threads 15 below the lower end of the cap 12. The force of the blow of the hammer 6, which is imparted by the spring 11, may be controlled by screwing inwardly or outwardly the cap 12, and said cap may be locked in its adjusted position by means of the jam-nut 17. The degree of adjustment of the cap 12 with respect to the section 1 may also be determined by the scores 16 on the section 1—that is to say, if the outer or upper score of the series is opposite the lower edge of the sleeve or tubular portion of the jam-nut 17 it will be apparent that the spring 11 is not tightly compressed, whereas if the inner or lower score 16 of the series is opposite the lower edge of the sleeve or tubular portion of the jam-nut it will be apparent that the spring is very much compressed, and consequently the force of the blow imparted to the hammer 6 by said spring will be great. Intermediate tensions will be indicated by the adjustment of one of the intermediate scores opposite the lower edge of the jam-nut.

It will be understood, of course, that the spline or feather 3 limits the downward movement of the hammer 6 and that the longitudinal groove 7 in said hammer embraces the

releasing-dog 4, so that rotary movement of said hammer is prevented by said dog.

The lower section 2 of the casing carries the outwardly spring-pressed tool-holder 20, and said tool-holder has secured to its upper end the disk 21, provided with two notches 22, 23, located at diametrically opposite points, the notch 22 serving to permit of the upward movement of the disk 21 on the spline or feather 3 and to prevent the rotation of the tool-holder, and the notch 23 serving as a means of connection for the spring-actuated detent 24. Said detent is made up of a flat strip of metal having oppositely-disposed notches 25, 25 adjacent to its lower end, which form a web 26, that is received in the notch 23 of the disk 21, heretofore referred to. The upper end of said strip is beveled, as shown at 27, and on its inner surface, adjacent to its beveled upper end, said strip is formed with a tooth 28, which is adapted to fit within or engage one or the other of the series of notches or teeth 9 in the hammer 6. The said strip is normally held inwardly so as to engage said notches by means of the spring 29, which is secured at its lower end to said strip and is adapted to engage the inner surface of the section 1 of the casing.

The upper end of the section 2 is formed with external screw-threads 30, which mesh with corresponding internal screw-threads in the lower end of the section 1. By this means the two sections may be secured one to the other and the degree of penetration of the section 2 into the section 1 may be regulated. This regulation is for the purpose of varying the length of stroke of the tool-holder 20, the said regulation causing the tooth 28 on the detent 24 to engage one or the other of the series of notches 9 in the hammer 6. In the drawings I have shown three of said notches 9, which will serve to illustrate the invention; but of course I do not care to be limited to this exact number. The section 2 is adapted to be locked in its adjusted position on the section 1 by means of a jam-nut 31, which is internally screw-threaded, is formed with a milled finger-engaging portion, is adapted to engage or abut against the lower end of the section 1, and is formed with a downwardly or outwardly extending sleeve or tubular portion 32. Coöperating with said jam-nut or the tubular portion 32 thereof is a series of scores 33, 33 upon the outer surface of the section 2, spaced the same distance apart as the notches 9, by means of which it may be determined from the outside which one of the notches 9 the tooth 28 on the detent 24 is in engagement with.

In the foregoing description I have set forth the means for adjusting the tension of the hammer-impelling spring and the means for regulating the length of stroke of the tool-holder, as well as the general construction of the device and its method of operation. It is sometimes desirable, however, that a soft or cushion blow be imparted by the hammer.

In order to provide means whereby this may be effected, I form in the hammer 6 a central longitudinal bore or opening 34, which extends through the stem 10 and is formed with an internal annular shoulder 35 at its lower end. Fitting within the bore or opening 34 is a striking-piece 36, which has an annular shoulder 37 thereon engaging the internal shoulder 35 in the bore 34 and normally lying flush with the lower end of the body portion 6 of said hammer. Behind the striking-piece 36 and fitting within the bore 34 is a coiled spring 38, which is acted upon at its rear or upper end by a screw-plug 39, which fits within and engages internal screw-threads in the bore 34. It will of course be apparent that by screwing the plug 39 inwardly toward the striking-piece 36 the spring 38 may be compressed to any desired degree and the tension of said spring upon the striking-piece 36 controlled. As the hammer is actuated by the means heretofore described the striking-piece 36 will be brought in contact with the upper end of the tool-holder 20 and a soft or cushion blow imparted thereto, and the degree of cushioning effect of said blow may be readily controlled.

I have also illustrated in the drawings another form of hammer, which is similar to that just described except that the stem 10 is dispensed with and the screw-plug 39 has formed upon its lower or inner end a pin or projection 40, which is adapted to fit down within the spring 38, as shown. I have also provided a jam-nut 41, by means of which the plug 39 may be locked in its adjusted position on the hammer 6. In this form of hammer it will be observed that I can adjust the plug 39 down into the body of the hammer 6 until the pin 40 is brought in contact with the upper end of the striking-piece 36, at which time a hard or unyielding blow will be imparted by the hammer to the tool-holder 20. By unscrewing the plug 39 slightly the pin 40 can be removed from the upper end of the striking-piece 36, and then a blow will be imparted by the hammer, which will be at first soft, but afterward, when the striking-piece 36 comes in contact with the lower end of the pin 40, will be hard and unyielding. By further unscrewing the plug 39 from the body of the hammer 6 the pin 40 can be so far removed from the striking-piece 36 that the blow imparted by the hammer will be soft or yielding throughout, it being understood, of course, that the downward movement of the hammer 6 will be limited by its engagement with the spline or feather 3.

The operation of my device is as follows: With the parts in the position they are shown in in Fig. 1 the tool in the tool-holder 20 is applied to the filling of the tooth and forced against it. This action causes the tool-holder 20 to be forced inwardly into the section 1 of the casing, or, more properly speaking, the section 1 of the casing is forced down upon the tool-holder 20. In any event, how-

ever, relative longitudinal movement between said tool-holder and said casing is brought about. This action, by reason of the engagement of the tooth 28 of the detent 24 with one of the notches 9 in the hammer 6, forces said hammer upwardly against the action of its spring 11. As soon, however, as the beveled end 27 of the detent 24 is brought into contact with the beveled projection 5 of the releasing-dog 4 said detent 24 is retracted against the action of its spring 29, and the tooth 28 is disconnected from the notch 9 of the hammer 6. The said hammer is then impelled by the influence of its spring 11 against the end of the tool-holder 20 and imparts a blow to the tool. As the tool-holder 20 is normally downwardly or outwardly spring-pressed, and as the downward movement of the hammer 6 is limited by the spline or feather 3, as soon as the blow has been struck the parts return to their normal position, and the instrument is ready for further action in a manner similar to that above described. If it be desired to lengthen the stroke of the tool-holder 20, it is merely necessary to unscrew the section 2 from the section 1 to such an extent that the tooth 28 on the detent 24 will be in proper position to engage the lower notch 9 on the hammer 6. The proper degree of movement to effect this adjustment may be determined by the scores 33 on the section 2—that is, for the longest stroke the jam-nut 31 will be so adjusted with respect to the section 2 that the outer edge of the sleeve portion 32 of said nut will register with the inner or upper score of the series. To shorten the stroke, a reverse operation to that just described would be performed, it being understood that the number of scores 33 will correspond with the number of notches 9 and will be so located on the section 2 that the proper adjustment may be readily determined from the outside of the instrument. The adjustment of the tension of the spring 11 may be effected in a similar manner, and the character of the blow imparted by the hammer 6 may be regulated, as hereinbefore set forth.

While the construction described for adjusting and locking the parts 12 and 2 upon the tubular section 1 and the relative arrangement of the jam-nuts and scores are deemed by me to be preferable at this time, it will of course be understood that I do not limit myself to the exact disposition and arrangement of parts shown, but reserve the right to change, vary, or otherwise modify the same within the terms of the claims. For example, in Fig. 6 of the drawings I have shown the casing provided with internal screw-threads 42 and the cap with external screw-threads 43, meshing therewith, which is a mere reversal of the construction shown in Fig. 2. In this form of the invention also the jam-nut 44 engages the screw-threads on the cap instead of on the casing and coöperates with scores 45 on said cap. The operation is similar to that of the former construc-

tion. Furthermore, I do not desire to limit myself to the use of the novel features of my invention upon the exact form of dental plugger herein shown and described, as it is evident that this may be varied at will without departing from the spirit of my invention.

Having thus described my invention, what I claim is—

1. In a dental plugger, a casing, a tool-actuating hammer and an impelling-spring for the hammer, in combination with a cap provided with screw-threads meshing with corresponding threads on said casing, and a sleeved jam-nut acting upon said cap and casing for locking the cap in adjusted position, and coöperating with scores on one of said parts for indicating the degree of adjustment of said cap.

2. In a dental plugger, a casing, a tool-actuating hammer and an impelling-spring for the hammer in combination with a cap provided with screw-threads meshing with corresponding threads on said casing, the latter being provided with a series of scores, and a jam-nut upon said casing adapted to lock the cap in adjusted position and to coöperate with said scores for indicating the degree of adjustment of said cap.

3. In a dental plugger, a casing having two sections adjustable longitudinally with respect to each other, one provided with a series of scores, a spring-actuated hammer in one of said sections, a tool-holder in the other of said sections adapted to have its length of stroke regulated by the relative adjustment of said sections, and a jam-nut for locking said sections in adjusted position and adapted to coöperate with said scores for indicating the degree of adjustment of said sections.

4. In a dental plugger, a casing having two sections adjustable longitudinally with respect to each other, one of said sections provided with a series of scores, a hammer and an impelling-spring therefor in one of said sections, said hammer being provided with a plurality of engaging portions, a tool-holder in the other of said sections, a detent connected to the tool-holder and adapted to engage one or the other of the engaging portions on said hammer, and a jam-nut for locking the two sections of the casing in adjusted position, said jam-nut adapted to coöperate with said scores for indicating the degree of adjustment of said sections.

5. In a dental plugger, a reciprocating hammer having a yielding reciprocating striking-piece thereon.

6. In a dental plugger, a reciprocating hammer, and reciprocating means whereby a soft or cushion blow may be imparted thereby.

7. In a dental plugger, a reciprocating hammer, means whereby a soft or cushion blow may be imparted thereby, and means for regulating the degree of softness or cushioning effect thereof.

8. In a dental plugger, a hammer, means whereby a soft or cushion blow may be im-

parted thereby, means for regulating the degree of softness or cushioning effect thereof, and means whereby a hard or unyielding blow may be imparted thereby.

9. In a dental plugger, a hammer, and means whereby a blow may be imparted thereby which is at first soft or yielding and afterward hard and unyielding.

10. In a dental plugger, a hammer, an independently-movable striking-piece thereon, and a spring acting upon said striking-piece, as and for the purpose set forth.

11. In a dental plugger, a hammer, an independently-movable striking-piece thereon, a spring acting upon said striking-piece, and means for adjusting the tension of said spring, as and for the purpose set forth.

12. In a dental plugger, a hammer having a longitudinal bore therein, a striking-piece at one end of said bore, a screw-plug at the opposite end of said bore, and a spring interposed between said striking-piece and said plug.

13. In a dental plugger, a hammer having

a longitudinal bore therein provided with a shoulder near one end and screw-threads at its opposite end, a striking-piece in said bore having its movement in one direction limited by said shoulder, a threaded plug engaging the threads in said bore, and a spring interposed between said striking-piece and said plug, as and for the purpose set forth.

14. In a dental plugger, a hammer having a longitudinal bore therein, a striking-piece at one end of said bore, a coil-spring behind said striking-piece, and a screw-plug in the end of said bore opposite said striking-piece, adapted to compress said spring and provided with a pin extending through said spring and adapted to engage the rear end of said striking-piece, as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

GEORGE B. SNOW.

Witnesses:

CHARLES E. CLARK,
EDWARD G. ADOLFF.