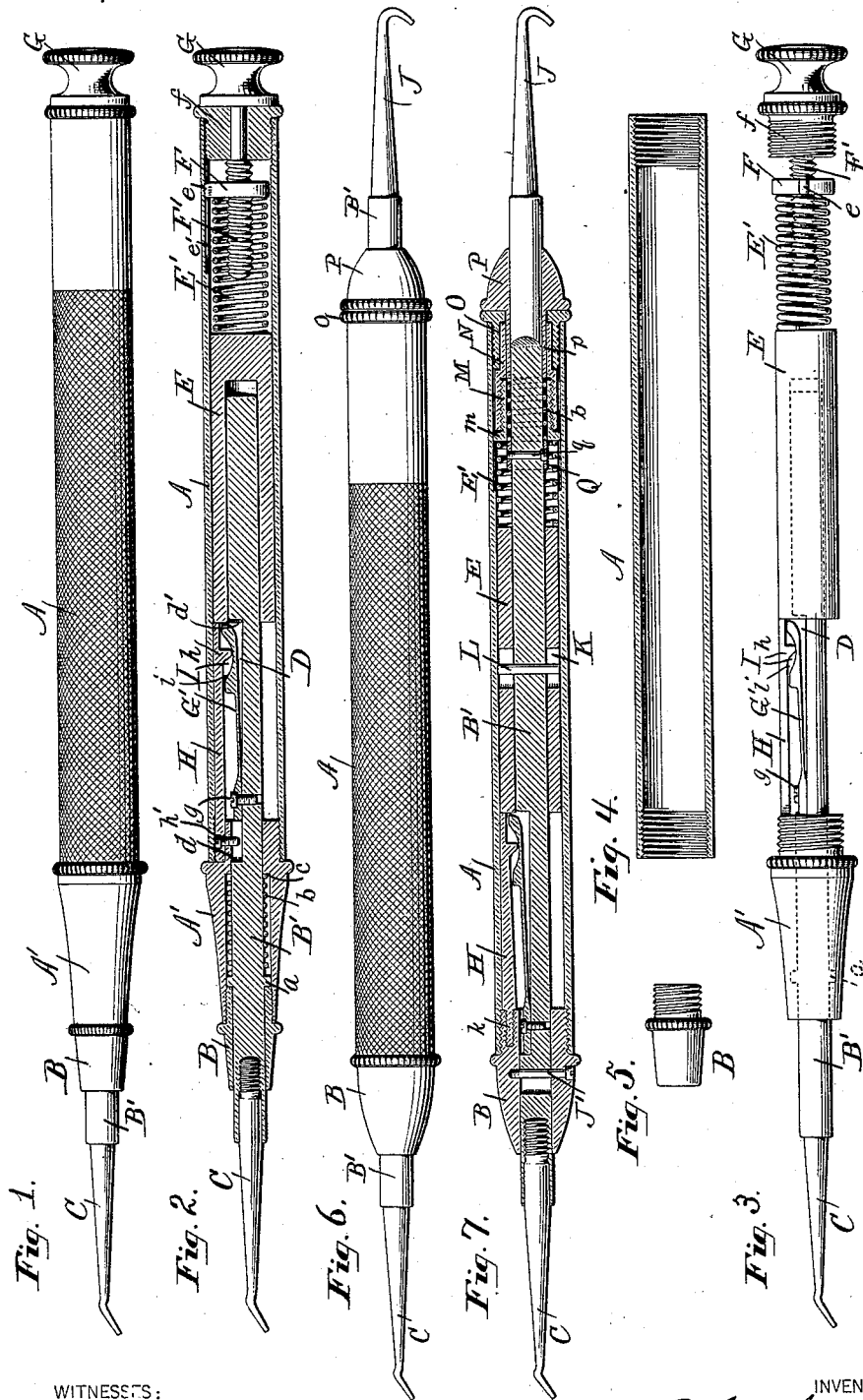


(No Model.)

E. M. STROUD.
DENTAL PLUGGER.

No. 420,745.

Patented Feb. 4, 1890.



WITNESSES:

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EDWARD M. STROUD, OF PITTSBURGH, ASSIGNOR TO THE S. S. WHITE DENTAL MANUFACTURING COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

DENTAL PLUGGER.

SPECIFICATION forming part of Letters Patent No. 420,745, dated February 4, 1890.

Application filed November 12, 1889. Serial No. 329,995. (No model.)

To all whom it may concern:

Be it known that I, EDWARD M. STROUD, of Pittston, in the county of Luzerne and State of Pennsylvania, have invented a certain new and useful Improvement in Dental Pluggers, of which the following is a specification.

My invention relates to that class of hand dental pluggers which are provided with spring-actuated hammers for imparting blows, the force of which may be regulated to pluggers carrying the plugging-points and supported within sliding sectional casings.

My improvement, as hereinafter claimed, consists in a novel organization of devices by means of which I produce a simply-constructed and efficiently-operating plugger.

In the accompanying drawings, which show suitable organizations of mechanism embodying my improvement in both single and double acting pluggers, Figure 1 is a longitudinal view of a single-acting plugger; Fig. 2, a view showing most of the parts in longitudinal central section; Fig. 3, a longitudinal view showing the internal mechanism and other parts of the instrument, the hand-piece casing-section and nose-piece casing-section being detached. Fig. 4 represents the hand-piece casing-section in longitudinal central section, and Fig. 5 shows the nose-piece casing-section detached. Fig. 6 is a longitudinal view of a double-acting plugger having my improvement applied thereto in slightly-modified form; and Fig. 7, a longitudinal view of the double-acting plugger, showing most of the parts in central section.

Referring now to Figs. 1 to 5, inclusive, A is the hand-piece section of the casing, which is connected at its outer end with the short casing-section A', screwed therein and carrying the screw-attached nose-piece section B of the casing. The plunger B', to the end of which is applied the plugging tool or point C in any suitable way, is carried by the reciprocating sectional casing. The plunger is provided with a shoulder or collar *a*, normally resting against the inner end of the nose-piece of the sectional casing, to which it is pressed by the spring *b*, which is confined within the casing and around the plunger be-

tween said shoulder and an internal shoulder *c* of the plunger-bearing formed by the reduced end of the casing-section A'. The plunger is recessed or cut away at D and provided with the shoulders *d d'* at opposite ends of its cut-away portion. At the inner end of the plunger is fitted a spring-actuated hammer E, adapted to slide and strike upon the plunger. The hammer-actuating spring E' bears at one end on the inner end of the hammer, and at its opposite end is borne upon and rendered adjustable to vary the force of the blows imparted to the plunger by a centrally-perforated and screw-threaded disk or nut F, through and in which works an adjusting-screw F'. By turning this screw one way or the other the disk or nut may be moved in either direction within and lengthwise of the hand-piece section of the casing to vary the tension of the spring and regulate the force with which it acts. The nut is prevented from turning and is guided by means of a lug or projection *e* at its edge engaging and sliding in a groove *e'*, in the hand-piece-casing section. The shank or unthreaded portion of the adjusting-screw passes through and turns in a screw-plug or cap-piece *f*, secured in the end of the hand-piece section of the casing, and is provided with the milled head G for turning it.

To adapt the plunger and its striking-hammer for co-operation, so that pressure upon the plugging-point will cause the hammer to act, devices such as next to be described are provided.

At its cut-away or recessed portion D the plunger is provided with a spring-latch G', secured at one end by a screw *g* to the plunger and at its opposite or inner end normally projecting outwardly or away from the plunger to the limit of movement allowed it, in which position it is against or close to the outer end of the hammer. This latch is made to serve as the medium for retracting the hammer and compressing its actuating-spring by pressure on the plugging-point and for releasing the hammer to allow blows to be struck upon the plunger. A latch-tripper occupying a fixed relation to the sliding casing and serv-

ing to force the inner or free end of the latch inward or toward the plunger for releasing the hammer is shown as formed by an inclined lug *h*, projecting toward the plunger and secured within the sectional casing by an arm *H*, with which it is formed. The carrying-arm of the latch-tripping lug is fixed close to or in contact with the hand-piece casing-section by a screw *h'*, attaching it to the inner end or bearing portion of the casing-section *A'*, and this securing-screw is made to serve as a stop, against which the plunger-shoulder *d* abuts to limit movement of the sliding sectional casing toward the plugging-point. At its inner end the tripping-lug arm *H* acts as a stop to limit the outward movement of the hammer, which normally abuts against it. A recess *I*, so formed as to constitute an incline *i* on the outer surface of the free end of the spring-latch, is entered by the tripping-lug, which normally rests in the recess in advance of or out of contact with the incline, as shown by the drawings.

From the above description it will be seen that when in operating the plugger the plugging-point is pressed upon with sufficient force the sectional casing, and with it the tripping-lug, is moved inward, and the spring-latch is caused to act on the hammer to retract it, and thereby compress its actuating-spring. As the retracting movement of the hammer is completed, the tripping-lug having by its action on the incline of the latch pressed this latch at its free end toward the plunger far enough to come in line with the plunger-opening in the hammer, the hammer is released and left free to be acted on by its spring, and thus made to strike a blow upon the plunger. After each blow is struck the parts are left in the positions in which they are represented in the drawings for repetition of the above-described operation.

In Figs. 6 and 7, showing a double-acting plugger, the plunger *B'* is made of a length sufficient to allow it to project at each end of the casing and is adapted to receive a back-acting plugging-point *J* at one end in addition to the direct-acting plugging-point *C* at the opposite end. In this form of tool the casing-section *A'* and its contained spring are omitted, thus reducing the length of the instrument. The nose-piece *B* is increased in diameter and screwed directly to the hand piece casing-section. A screw *J'* in the nose-piece and passing through a slot in the plunger serves to limit the sliding movement of the casing. The tripping-lug arm *H* is secured in position by screwing it into the nose-piece at *k*. The hammer *E* has the opening for the plunger extending entirely through it, instead of only part way through, as before, and is provided midway its length with a slot *K*, through which passes a cross-pin *L*, secured in and passing through the plunger. The blow of the hammer is imparted to the plunger by means of this pin *L*. The hammer-actuat-

ing spring *E'* is confined between the hammer and the flanged or shouldered end *m* of an externally-threaded sleeve *M*, adjustable within and endwise of the hand-piece section of the casing. Lugs on the flanged end of this sleeve are received in the grooves in the hand-piece casing to prevent turning of the sleeve. An adjusting-sleeve *N*, shouldered midway its length to constitute two portions of different diameters, has its larger portion internally threaded for engagement with the screw-thread upon the adjustable sleeve. A threaded sleeve *O*, having a milled head, screws into the end of the hand-piece casing-section around the reduced portion of the adjusting-sleeve *N*. A sleeve *p*, provided with an elongated head *P*, constituting a nose-piece bearing for the plunger, is fitted within the reduced portion of the adjusting-sleeve, with the head *P* resting upon the head of the sleeve *O*. The inner end of this nose-piece sleeve abuts against one end of the spring *b*, which acts with a tendency to maintain the sliding sectional casing and the plunger in their normal relative positions. At its opposite end this spring bears against a collar *Q*, secured by a screw *q* to the plunger. The nose-piece sleeve *p* is adapted, in any suitable way, to turn the adjusting-sleeve *N*, through or by means of which the adjustable sleeve *M* is actuated to increase or lessen the tension of the hammer-actuating spring. The nose-piece sleeve may be engaged with the adjusting-sleeve by forcing it tightly in place within the smaller portion of the adjusting-sleeve, so that the frictional contact between these parts will cause any turning movement of the nose-piece sleeve to be imparted to the adjusting-sleeve, and thus move the adjustable sleeve lengthwise of the hand-piece section of the casing.

Obviously, instead of depending merely upon frictional contact between the parts, the nose-piece sleeve and the adjusting-sleeve may be detachably connected with each other by means of a short screw or readily-removable pin.

It will be apparent that the double-acting plugger operates substantially as already explained with reference to Figs. 1 to 5, the hammer being thrown into action either by a thrusting pressure upon the direct-acting plugging-point or by a pulling strain on the back-acting plugging-point.

It will be obvious that by providing the plunger with the recessed or cut-away portion *I* am enabled to locate the spring-latch and the tripping-lug opposite each other, and maintain them in contact while attaining a compact and simple construction of parts.

I claim as my invention—

The combination of the sectional casing, the spring-actuated hammer, the cut-away plunger, the spring-latch secured at one end to the cut-away portion of the plunger and at its opposite end projecting outwardly there-

from, provided with the incline and acting
on the hammer to retract it, and the trip-
ping-lug having connection with the casing
and in contact with which the spring-latch is
5 maintained, and by which lug said latch is
caused to release the hammer, substantially
as and for the purpose set forth.

In testimony whereof I have hereunto sub-
scribed my name.

EDWARD M. STROUD.

Witnesses:

W. B. PAGGART,
T. R. STALEY.