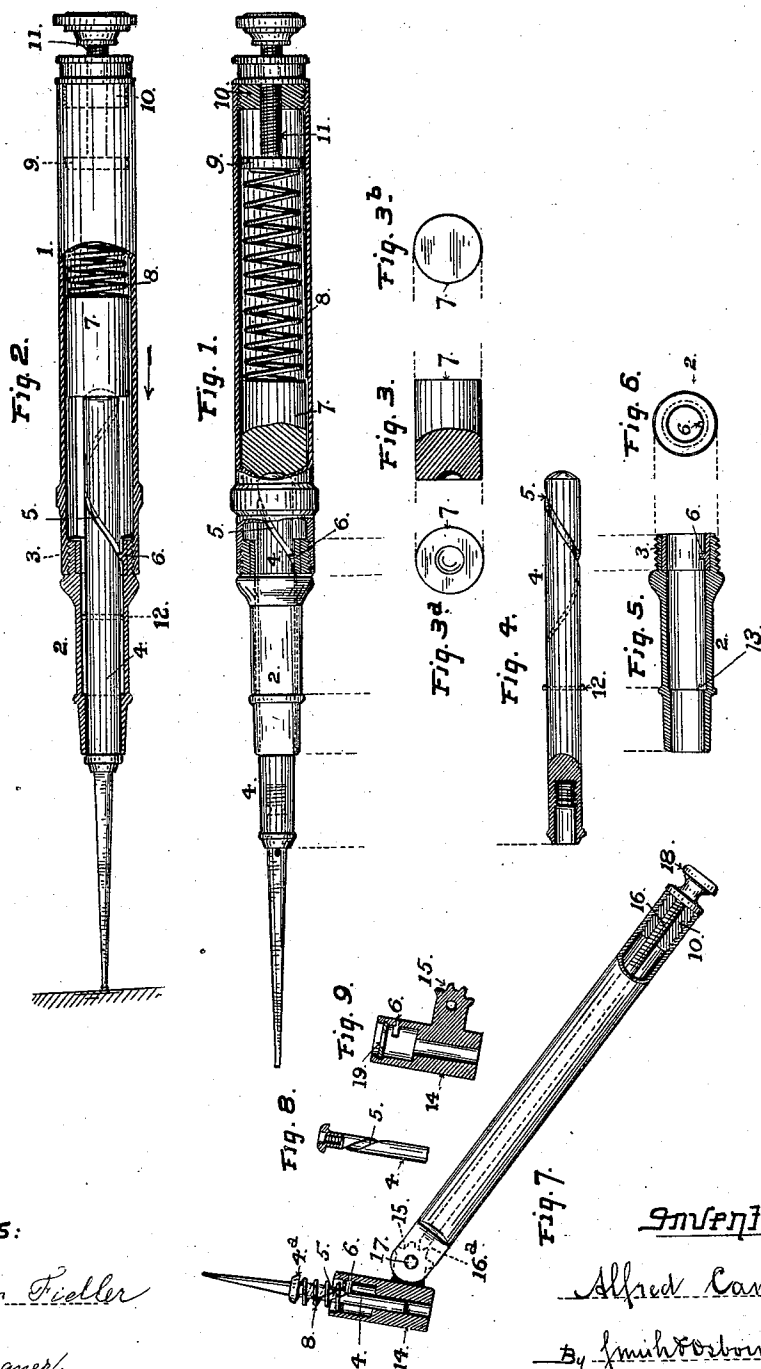


(No Model.)

A. CANE.
DENTAL PLUGGER.

No. 577,507.

Patented Feb. 23, 1897.



Witnesses:

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ALFRED CANE, OF GOLDEN GATE, CALIFORNIA.

DENTAL PLUGGER.

SPECIFICATION forming part of Letters Patent No. 577,507, dated February 23, 1897.

Application filed June 11, 1895. Serial No. 552,446. (No model.)

To all whom it may concern:

Be it known that I, ALFRED CANE, a subject of the Queen of Great Britain, residing in Golden Gate, county of Alameda, and State of California, have invented certain new and useful Improvements in Dental Pluggers, of which the following is a specification.

My invention relates to improvements made in that class of dental instruments known as "pluggers," which are employed for fixing gold-foil and similar fillings in teeth; and my invention has for its object to produce an instrument for operating the filling point or tool by pressure and with a rotative movement at the time of contact of the point with the filling material, such rotative movement of the operating-point being sufficient in degree or amount to condense and burnish the layers of foil or filling material in an effective manner without cutting up or disintegrating the filling.

To such end and object my invention consists in the described construction and combination of parts producing a simple and effective instrument, as hereinafter fully explained and set forth, reference being had to the accompanying drawings, that form part of this specification.

In the said drawings, Figure 1 represents a dental plugger constructed according to my invention and adapted for filling cavities in the upper jaw, a portion of the outer case being broken away and some of the interior parts being shown in section. Fig. 2 is a view of the same instrument, showing the position of the operating parts at the time the point or tool is giving the greatest pressure on the filling in the tooth-cavity. Fig. 3 is a view of the pressure-block or follower that bears against the head of the rotating tool-holder. Figs. 3^a and 3^b are end views of the piece Fig. 3. Fig. 4 is a detail view of the rotating tool-holder, the socket in the tool-bearing end being shown in section. Fig. 5 is a longitudinal section of the lower end portion of the casing. Fig. 6 is an end view of that piece. Fig. 7 represents a construction of handle specially devised for working in cavities in teeth that cannot be reached and operated on to advantage with the other form of instrument. Figs. 8 and 9 are views in detail of the adjust-

able socket and the tool-holder in that construction of handle.

This instrument is constructed to hold and operate a straight point or tool by pressure without percussion and with a limited rotative movement of the point at the time of its contact with the filling material and during the contact and pressure of the operating point or tool therewith.

The body of the instrument is composed mainly of a barrel 1, formed of a piece of metal tubing, a tubular socket-piece 2, fixed into one end of this tube by a screw-point 3, and a nut or threaded block 10, fixed in the opposite end.

The socket-piece 2 carries a spindle 4, in the outer end of which is fixed the point or tool to be operated, and the barrel contains a spiral spring 8, that is interposed between an adjustable head 9 and a block or plunger 7, fitted to slide in the barrel and bearing on the head of the spindle in the piece 2, before mentioned. This spring gives resistance to the backward movement of the spindle at each thrust or pressure of the tool against the filling, and the degree of this resistance is varied by regulating the degree of compression of the spring, for which purpose the head 9 is fixed on the end of a screw-rod 11, having a threaded bearing in the fixed block 10, and the outer end of this rod is provided with a milled head, so that the tension of the spring is varied by turning the screw in or out.

The spindle 4 is fitted to slide easily in the socket 2 and also to rotate in that part. Its length is greater than the socket-piece, so that its end projects a short distance beyond the end of that part of the instrument when the tool on the end is pressed back to the limit of its movement. In such longitudinal movement of the spindle a limited or partial rotative movement is given to it by means of a spiral groove 5, cut in the body of the spindle, and a pin 6, fixed in the socket-piece 2 and setting in such groove, so that as the spindle is pressed backward into the socket-piece it turns in that piece. The groove 5 is made of such pitch that the spindle in each stroke or longitudinal movement will make less than one complete turn or revolution. Usually I make the spiral groove of such length that it

produces about three-fourths of a complete turn, as I have found that amount or extent of rotation to produce good results. The effect of this limited rotative movement of the point while it is pressed against the foil is to impart a rubbing or burnishing action to the point without tearing or disintegrating the layers in building up a filling, and thus produce solidity and uniform density in the finished work quite equal in all respects to work produced with plugging instruments that operate by blows or impact of the tool upon the filling.

The points or tools, one form or style of which is illustrated in Figs. 1 and 2, are fixed in the outer end of the spindle, usually by means of a screw-threaded socket 4^a, provided in that end, but any of the well-known means of securing such points in the instrument or holder may be employed where the same are of a form not to be loosened by the rotative movement.

Usually the head of the spindle is rounded to set into a cavity in the bottom face of the block 7, as shown in Figs. 3, 3^a, and 4, so that the resistance of the spring is maintained as nearly as possible at all times on the axial line or center of the spindle, and thus is always in line with the extreme end of the point, for the instrument is designed to use and operate only those forms and styles of points or tools in which the extreme acting-point lies in a straight line with the shank.

The backward movement in the spindle 4 is limited by the pin 6 striking the end of the spiral groove or by the collar around the lower end of the spindle carrying the tool-socket, as seen in Figs. 1, 2, 4, and 8, while the outward throw or movement is limited by a cross-pin 12, fixed in the spindle and engaging a shoulder 13, formed in the socket-piece 2, one portion of the bore being of greater diameter than the other portion for that purpose.

For special work in filling cavities that would be difficult to reach and operate on properly with the point and the handle or holder situated on a straight line, as in the foregoing construction, I provide the socket-piece and tool-holding spindle with a handle that allows the spindle and its holder to be set into different angular positions with respect to the handle portion. In this modification (clearly shown in Figs. 7, 8, and 9 of the drawings) the socket-piece 14 has a toothed

segment 15 projecting from one side and fitting between two ears on the end of the tubular handle like the knuckles of a hinge, to which it is united by a screw-pivot 17. A long screw-threaded rod 16 extends through the handle portion from the head 10, at which point the rod works in a threaded bearing, and by rotating its milled head 18 on the outer end the opposite end or point 16^a of the rod is set forward into the teeth of the segment 15 or is drawn back to clear them. This device forms a simple and readily-operated means of adjusting and locking in position the tool-holder.

The pin 6 in the socket-piece engages the groove 5 of the spindle, and the spring 8 is placed directly around the spindle behind a flanged rim or collar 4^a or the end of the spindle and between that part and a seat or bearing 19 in the socket-piece just above the fixed pin 6. In this construction the spring offers the same yielding resistance to the backward movement of the spindle, while the spiral groove and the pin produce the before-described partial rotative movement of the spindle as it moves back.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The herein-described dental plugging instrument consisting of the hollow handle having the tubular socket-piece on the lower end, the spindle fitted to move in said socket-piece and having a helical groove extending partly around the circumference thereof a fixed pin in the socket-piece engaging said groove, a coil-spring within the handle bearing upon the head of the spindle, the adjusting-screw in the upper end of the handle resting upon and forming an adjustable bearing for the spring and a socket in the lower end of the spindle to receive a filling point or tool; the said parts being so constructed and arranged that a limited rotative movement of the filling-point simultaneously with pressure is produced by the contact of such point with the filling in the cavity, as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

ALFRED CANE. [L. S.]

Witnesses:

EDWARD E. OSBORN,
R. D. MCELROY.