

No. 650,088.

Patented May 22, 1900.

A. D. HOAG.  
DENTAL INSTRUMENT.  
(Application filed Nov. 6, 1899.)

(No Model.)

Fig. 1.

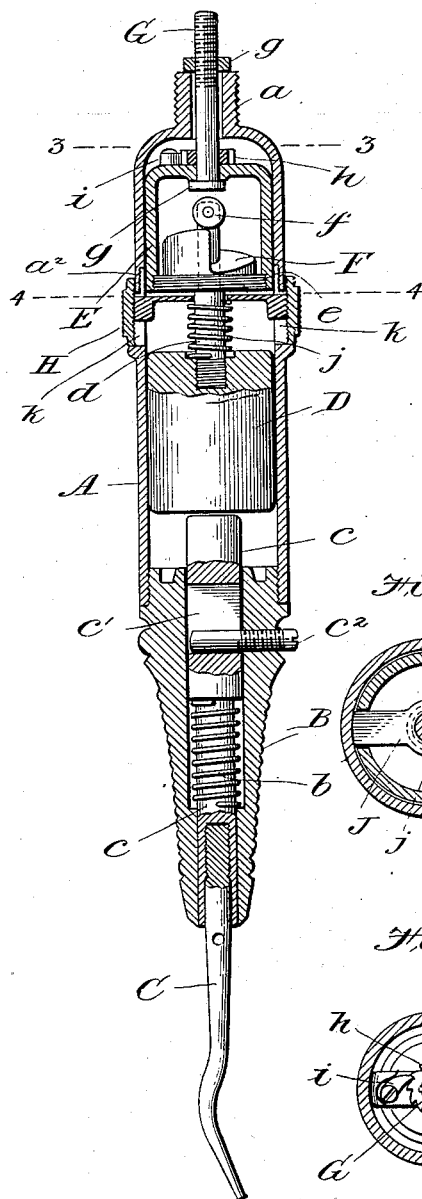


Fig. 2.

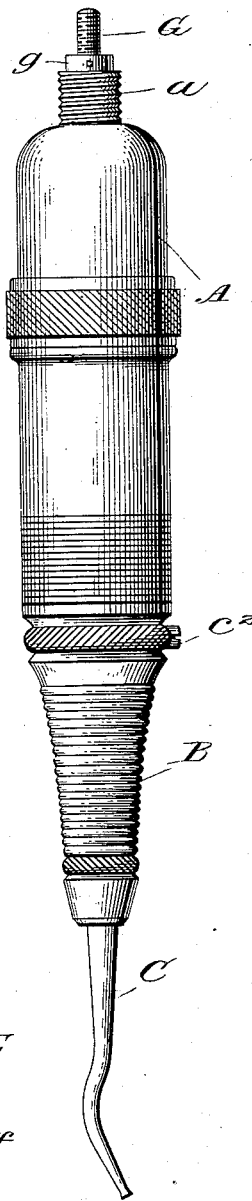


Fig. 4.

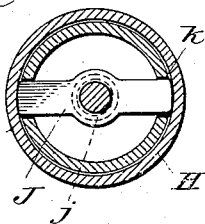
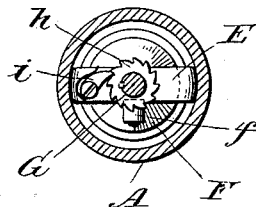


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## DENTAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 650,088, dated May 22, 1900.

Application filed November 6, 1899. Serial No. 735,928. (No model.)

*To all whom it may concern:*

Be it known that I, ALFRED DUKES HOAG, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Dental Instruments, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to certain improvements in dental instruments, and particularly to an improved dental plugger, which will be hereinafter fully described.

The principal object of my invention is to provide an improved construction of instrument, together with an improved mechanism for operating or reciprocating the hammer, and to generally improve and simplify the construction of devices of this character.

Referring to the accompanying drawings, in which similar letters of reference are used to indicate similar parts, Figure 1 is a central longitudinal sectional view of an instrument embodying my improvements. Fig. 2 is a side elevation of the same. Fig. 3 is a cross-sectional view taken about on the line 3 3 of Fig. 1, and Fig. 4 is a similar view on line 4 4 of Fig. 1.

In carrying out my invention I provide a cylindrical casing A, provided with a screw-threaded nipple *a* on its upper end. The lower end of the casing is provided with interior screw-threads, into which is fitted the upper end of the tool-stock B.

The tool C, which is of the ordinary construction, is threaded into a socket provided in the rod *c*, which fits in a central opening provided in the stock B. The upper end of the rod *c* extends a short distance above the top of the stock B into the hollow casing A. Near the upper end of the rod *c* is a transverse slot *c'*, into which the inner portion of the screw *c<sup>2</sup>*, which is threaded in an opening provided in the stock B, passes, the purpose of which is to limit the vertical movement of the rod *c*. The lower portion of the screw *c* is reduced, as shown in Fig. 1 of the drawings, and interposed between the shoulder formed at the beginning of such reduced portion and a shoulder formed in the vertical passage of the stock is a coiled spring *b*, the

purpose of which is to keep the rod *c* in an elevated position and to return it to such position after it has been acted upon by the plunger D.

The plunger D fits loosely into the cylindrical bore of the casing A and has secured to its upper end a stem *d*, having a shoulder about midway of its length, on which rests the disk *e*, carried by the stirrup E. The upper portion of the stem *d* passes through an aperture formed in the disk *e* and also through the cam F, which is formed integral with the disk *e*.

The stirrup E, which carries the disk *e*, is screw-threaded at its lower inner edge, so that the said disk *e* may be screwed thereto. The upper end of the stirrup E is provided with a central aperture through which passes the spindle G, which extends up through the central aperture of the nipple *a* and is screw-threaded for attachment to the flexible shaft of the motor. A collar *g* is secured to the outer projecting portion of the spindle G, which rests upon the nipple *a* and supports the said spindle. The lower end of the spindle is provided with a flange or head *g'*, which supports the stirrup E. A ratchet *h* is secured to the spindle G above the stirrup, which is engaged by a pawl *i*, carried by a stirrup, so that as the spindle revolves in one direction the stirrup will revolve with it, but when reversed the pawl *i* will run loosely over the ratchets and the stirrup remain stationary.

On the side of the stem *d*, near the top thereof, is pivoted a roller *f*, which rests on the cam F.

The upper portion of the cylindrical casing A is divided, as illustrated in Fig. 1 of the drawings, and coupled together by means of the screw-threads *a<sup>2</sup>*. The upper end of the lower section A is provided with the slots *k*, diametrically opposite each other, for the reception of the screw-threaded ends of the plate J. This plate J has an aperture in its center, through which the stem *d* passes, and interposed around the stem *d*, between the plate J and the plunger D, is coiled a spring *j*. The object of this spring is to assist and insure the return of the plunger D after it has been raised by the cam F.

On the outside of the casing A, around the

slots *k*, is a screw-threaded nut H, which engages the threads of the plate J, which extend through the slots *k* for that purpose. The lower edge of the nut H abuts against a flange *l*, formed on the outer casing, and as this nut H is turned the plate J is adjusted by means of its engaging thread to increase the tension of the spring *j*. Thus as the spindle G is revolved the stirrup E, by reason of its ratchet- and-pawl connection with the spindle, will also revolve and operate the cam F, on which the roller *f* rests, and thus impart a vertical reciprocating movement to the stem *d* and plunger D. The plunger D on its downward stroke strikes the upper end of the rod *c*, and thus imparts a similar reciprocating motion to the said rod and its tool C, the spring *b* serving to return said rod *c* to its elevated position, as heretofore described, while the spring *j* also serves to assist the plunger D in making its downward stroke. This spring *j* is necessary, as the instrument is held in different positions by the operator, so that the plunger D does not always drop by gravity.

25 Having fully described my invention, what I claim is—

1. The combination with the casing having a tool-holder mounted therein, of a driving-spindle G having a stirrup E loosely suspended on its lower end, a cam F secured to the lower ends of the stirrup, mechanism for revolving the stirrup as the driving-spindle revolves in one direction and for preventing its revolution when the motion of said driving-spindle is reversed, a hammer D having a stem *d* adapted to an opening in cam F, and

a pivoted roller *f* carried by the upper end of the stem adapted to bear on the cam F and impart a reciprocating movement to the hammer, substantially as described.

2. The combination with the casing having a tool-holder mounted therein, of a hammer D, having an upward-projecting stem *d*, a roller *f* pivoted on one side of said stem, a driving-spindle G having a stirrup E loosely suspended on its lower end, a ratchet *h* secured to said spindle above the stirrup, a pawl *i* carried by the stirrup adapted to engage the ratchet *h*, and a cam F secured to the lower ends of the stirrup, said cam adapted to engage the lower surface of the roller *f* and impart a reciprocating movement to the stem *d* and its hammer, substantially as described.

3. The combination of the driving-spindle G a stirrup E suspended from the lower end of said spindle, adapted to revolve therewith, screw-threads formed on the lower inner sides of the stirrup ends, a cam F having a screw-threaded base, adapted to engage and be rigidly supported by the ends of said stirrup, a hammer D having a stem *d* secured thereto, said stem being adapted to an aperture formed in the cam F, and a pivoted roller *f*, carried by the said stem, adapted to be engaged by the cam, for the purpose specified.

In witness whereof I have hereunto set my hand this 4th day of November, A. D. 1899.

ALFRED DUKES HOAG.

Witnesses:

W. LEWIS CAVE,  
SAMUEL J. TAYLOR.