(Model.)

# H. C. REGISTER.

## DENTAL BIT HOLDER.

No. 251,461. Patented Dec. 27, 1881.

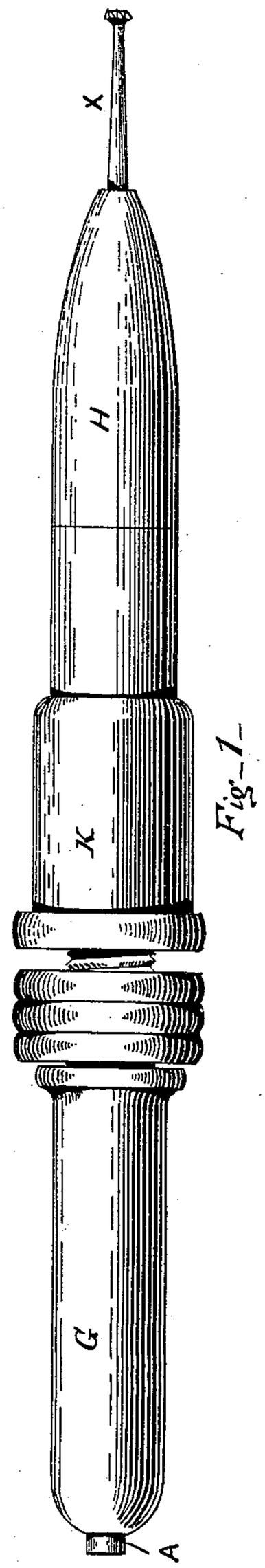


Fig. 1.

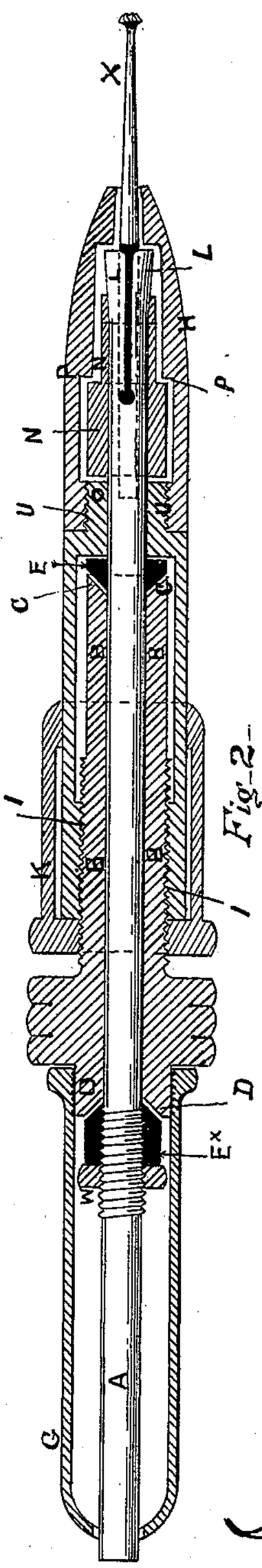


Fig. 2.

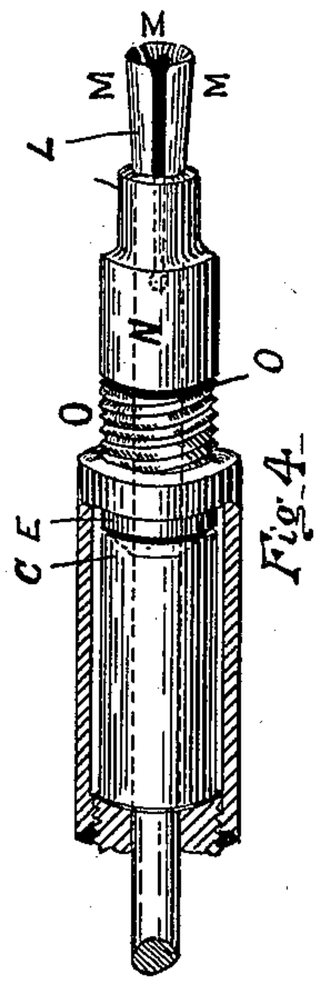


Fig. 4.

Fig. 3.

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# UNITED STATES PATENT OFFICE.

HENRY C. REGISTER, OF PHILADELPHIA, PENNSYLVANIA.

## DENTAL-BIT HOLDER.

SPECIFICATION forming part of Letters Patent No. 251,461, dated December 27, 1881.

Application filed July 18, 1881. (Model.)

*To all whom it may concern:*

Be it known that I, HENRY C. REGISTER, of Philadelphia, Pennsylvania, have invented an Improvement in Dental-Bit Holders or Hand-Pieces for Burrs and other Instruments, of which the following is a specification.

My invention relates in general to the class of holders or hand-pieces which are employed in connection with dental engines of various kinds, and are designed to receive the burr or bit and to enable its attachment to the driven spindle of the flexible shaft; and it relates more specifically to a hand-piece invented by me, application for patent for which was filed March 28, 1881.

In my former invention referred to the principle of the attachment of the bit is by means of a collar sliding endwise upon the driven spindle near its outer end, said outer end being split or formed into spring clamp-jaws, and being closed upon the tool or opened so as to release it by the endwise movement of the collar upon it. This movement of the collar is effected by the rotation in one or the other direction of a rotatable outer casing, a shoulder formed upon the interior of which abuts upon one end of the sliding collar, and when the outer casing is turned in one direction forces the collar in, while in the other direction the movement of the collar is insured by the operation of a coiled spring surrounding the spindle and abutting between the opposite end of the sliding collar and a stop within the hand-piece—such as a ring or bearing affixed to the spindle—which spring acts by expansion to move the collar out when the outer casing is turned in the opposite direction.

The object of my present invention is to dispense with the spring which is necessary in my former invention, and to enable the actuation of the sliding collar equally in either direction by the positive movement of the rotating outer casing; to which end my invention consists in the devices hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a longitudinal elevation of a hand-piece embodying my improvements; Fig. 2, a longitudinal vertical central section throughout said hand-piece; Fig. 3, an end view of the spring clamp-jaws and surrounding collar as shown in Fig. 4; and Fig. 4, a detailed view, partially in section and partially in perspective, exhibiting the construction of a section or portion of the rotatable outer casing, the spring clamp-jaws, and the sliding collar.

Similar letters of reference indicate corresponding parts.

In the accompanying drawings, A represents the driven spindle of the device by the rotation of which the bit X is revolved. The spindle is journaled within an inner tubular spindle-casing, B, which is formed with two conically-faced journal-bearings, C and D, C being the outer and D the inner bearing, the said bearings being formed at the ends of said inner casing. The journaling is effected by means of two angularly-faced rings, E being the outer, and being rigidly affixed to the spindle in the proper position, and $E^{\times}$ being the inner, and being threaded upon the spindle and secured, when screwed to the proper position, by means of a jam-nut, W, likewise screwing upon the spindle in the rear of said ring. This adjustment adapts the inner pivot-ring to be moved endwise upon the spindle and enables the adjustment of the parts to compensate for wear.

G is a tubular cover, threaded upon the inner casing, near the rear thereof, and adapted to be removed to enable the setting of the inner pivot-ring. This tubular cover forms, when in place, an integral portion of the hand-piece.

H is a rotatable tubular casing exterior to the fixed tubular spindle-casing. It is conveniently made in two sections, threaded together at U, is tapered at its outer extremity, accurately fitted around the inner casing, so as to be capable of being rotated and moved endwise thereon, by means of a screw-thread, I, formed both upon it and the inner casing.

K is a cap surrounding the outer casing at the rear thereof and screwing upon the thread I of the inner casing, as clearly shown in Fig. 2. The office of this cap, as it is screwed in or out upon the inner casing, is to limit the extent to which the outer casing can be screwed in, it being a regulating device whereby the extent of inner endwise movement of said outer casing is controlled.

The front extremity of the spindle is connected with or formed into spring clamp-jaws

L, which are adapted to receive within them the bit X. The spring clamp-jaws are of suitable number, and ordinarily stand apart from each other, but are adapted to be forced together and upon the bit by means of a sliding collar, N, fitted around them.

The rear portion or section of the outer casing is formed with an inner annular extension or shoulder, O, Figs. 2 and 4, against which the inner end of the sliding collar, when the same is in the position represented in Fig. 4, abuts.

Near the orifice of the outer casing is an internal annular shoulder, P, which registers against the outer end of the sliding collar. When, therefore, the rotatable outer casing is screwed in upon the inner casing the action of its shoulder P is to force the sliding collar inwardly along the spring-jaws, and thereby permit the expansion or opening of said jaws and the introduction or removal of the tool. When, on the contrary, the outer casing is unscrewed with respect to the inner casing, the annular extension or shoulder O acts to cause the sliding collar to slide outwardly upon the spring clamp-jaws, and thereby to compress the jaws and cause them to engage the tool which has been previously entered within them. In this latter position the collar forms, so to speak, a part of the spindle and revolves with it within the chamber formed within the hollow outer casing, said casing having been first slightly reversed to relieve compression.

It will be understood by reference to my former invention that the gist of this improvement lies in the provision of means whereby the rotatable outer casing operates the sliding collar positively in both directions, and any mechanic will understand that other means than opposing shou'ders abutting against opposite ends of the collar will accomplish this result. Thus, for instance, a circular spline on the interior of the outer casing feathered into a spline-groove in the exterior of the collar would effectuate the movement of the collar endwise in the movement of the outer casing. I do not therefore restrict myself to the precise form of shoulder and inner annular extension shown as a mechanical means of actuating the collar in an endwise direction, as I contemplate resorting to allied mechanical contrivances which will insure such endwise movement. The gist of the invention, however, lies in the positive movement of the collar endwise in either direction by the rotation in one or the other direction of the rotatable outer casing.

The collar and spring clamp-jaws may, of course, be formed either of circular, square, polygonal, or other fit outline.

The advantages of the hand-piece are that it is equally well adapted for use with any form of bit or tool, no special construction of bit-shank being required; that the outer casing, being entire and free from orifices or apertures of any character, prevents the escape of oil from the lubricated surfaces to soil the hands of the operator, and that the simplicity of parts lessens the danger of the tools getting out of order, breaking, or failing to act.

Having thus described my invention, I claim—

In a dental hand-piece, the combination, substantially as before set forth, of a driven spindle revolving within a casing, the front extremity of which spindle is connected with or formed into a tool-holder composed of spring clamp-jaws, a sliding collar surrounding and free to move endwise upon said clamp-jaws, and an outer rotatable casing which has an endwise movement with respect to the casing within which the spindle revolves, and which registers against or engages by means of circular shoulders or their equivalents with the sliding collar, whereby, upon the endwise movement of the outer casing in one or the other direction, the collar is moved in one or the other direction and the spring clamp-jaws clamped upon or released from the tool.

In testimony whereof I have hereunto signed my name this 29th day of June, A. D. 1881.

HENRY C. REGISTER.

In presence of—

J. BONSALL TAYLOR,

W. C. STRAWBRIDGE.