E. OSMOND.

DENTAL-DRILL.

No. 193,456. Patented July 24, 1877.

Fig. 1

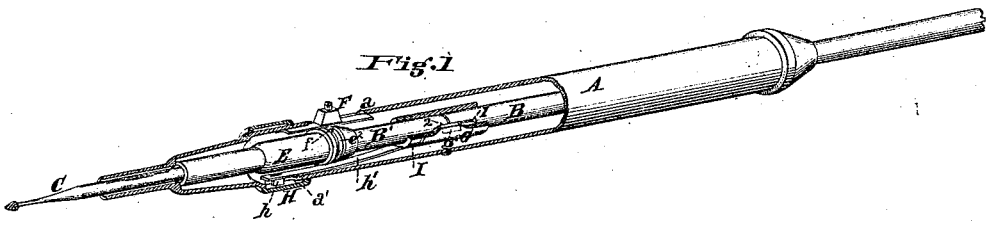


Fig. 2

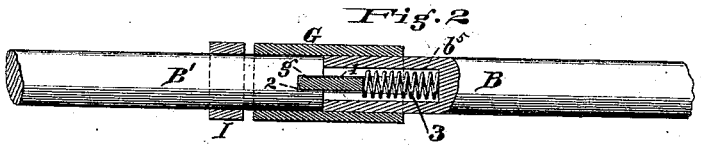
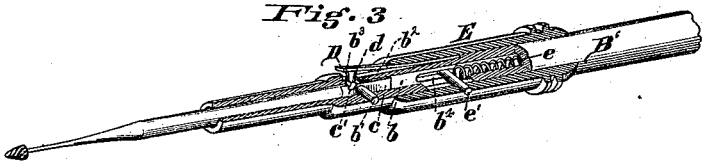


Fig. 3



Witnesses

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EDMUND OSMOND, OF CINCINNATI, OHIO.

IMPROVEMENT IN DENTAL DRILLS.

Specification forming part of Letters Patent No. **193,456**, dated July 24, 1877; application filed April 14, 1877.

To all whom it may concern:

Be it known that I, EDMUND OSMOND, of Cincinnati, Hamilton county, State of Ohio, have invented an Improvement in Drills for Dental and other Purposes, of which the following is a specification:

My invention relates to dental drills which have a divided spindle that may be coupled or uncoupled in the manipulation of the drill-point by the finger of the operator; and my invention consists, in the first part, in means for conveniently stopping the drill-point instantaneously without stopping the motive-power of the drill, and accomplishing this stoppage by the fingers of that hand of the operator which holds the drill, while the hand is retained in the position necessary for the manipulation of the drill in the tooth or other object to be operated upon, the coupling of the two-part spindle being, to this end, connected by a bar to an exterior thimble located in advance of the coupling, and in convenient position for the operator's finger; my invention consists, in the second part, of certain peculiar devices for coupling the two-part driving-spindle of the drill; my invention consists, in the third part, in combination with peculiar coupling device for spindle, of a specific means for operating same from the exterior of the drill-casing; and my invention consists, in the fourth part, of peculiar means for securing the drill-point in position.

Figure 1 is a perspective view of the drill, showing the exterior casing in section, the driving mechanism not appearing. Fig. 2 is a sectional elevation, showing a general adaptation of the coupling of the two-part spindle. Fig. 3 is a sectional perspective view of the drill end of the spindle, showing the drill in position.

In describing the means of securing the drill-point to the spindle, I would say as follows: A represents the ordinary dental-drill case, provided with a two-part spindle, B. The forward part of the spindle B′ is formed with an elongated cavity, *b*, to receive the drill-point C, which is formed with a flattened end, *c*, and a depression, *c′*. The flattened end *c* serves, by coming in contact with the projection b^1 of the spindle to prevent the drill from turning when the spindle is in motion, and the depression *c′* serves to receive the retaining-lug *d*, which is secured to the spring D, and thereby is the drill held in the cavity *b*. This spring D is secured in a depression, b^2, on the outside of the spindle, and the lug *d*, secured thereto, operates through an opening, b^3, in the spindle.

The spring D is so adjusted as that it will, when not controlled, as seen in Fig. 3, take an elevated position, in which the lug *d* will not come in contact with the depression *c′* of the drill, and consequently will not retain the drill in position unless depressed by some governing device. This governing device I provide in the shape of a thimble or sleeve, E, surrounding the spindle, and moving thereupon and over the spring D. This governing-sleeve acts automatically to depress the spring D, by reason of the spiral spring *e*, located preferably in the extreme end of cavity *b*, and acting against the pin e^1, which is secured to the sleeve, and moves in slots b^4 in the spindle.

Thus the drill-point is automatically held in position, and can only be removed by pressing the thimble E against its spring-backing, and thereby releasing the catch.

It will readily be seen that the spring *e* can be located, if desirable, between the sleeve E and spindle E′, in space provided by the cutting away of part of the sleeve or spindle.

To facilitate operating the sleeve E from the exterior of the drill-case, I provide a sliding pressure-knob, F, having a projection, *f*, to connect with an annular groove, e^2, formed in the sleeve, and located to travel in a slot, *a*, in the case A.

And now, in describing the coupling device of the two-part spindle, and the means for operating the same, I would further say: G is a sleeve of such diameter as to encircle the adjacent ends of the two parts B B′ of the operating-spindle, and it is provided with a diametrically-located key, *g*, of such width as that it can engage simultaneously with slots 1 and 2, formed in the ends of the parts B B′, respectively. The slot 2 in the part B′ is merely deep enough to receive, preferably, about one-half the entire width of the key *g*, while the slot 1 is deep enough to receive the entire width of the key, which may thereby be retired from contact with slot 2 without a

separation of the two parts of the spindle. In this manner the two parts of the spindle, while always having their end surfaces in contact, may be connected rigidly together or detached by simply operating the sleeve. In order that the key *g* shall have an automatic tendency to engage with both slots, 1 and 2, I provide the spring 3, located back of the key and in a cylindrical cavity, b^5, in the spindle B. The spring, consequently, acts to force the key *g* out of the slot 1 and into the slot 2, and as the latter is not deep enough to receive the entire width of key, the key remains partly in both slots and serves the purpose of rigidly securing the two parts of the spindle together, and attaining the object desired.

To operate the coupling device from the exterior of the casing A, so as to cause it to connect the two parts of the spindle rigidly against independent motion, or not, as desired, I provide on the outside of the casing a sliding thimble, H, and suitably slot the casing A at *a'*, to admit of the free movement therein of the connecting-lug *h*, which supports an elongated plate, *h'*, to engage with the coupling, as seen in Fig. 1. The object of the introduction of the plate *h'* is to allow of the location of the thimble H at a point on the casing considerably in advance of the coupling, and at a point to be conveniently governed by the fingers of that hand of the operator which holds the drill during its manipulation, and without necessitating an adjustment in the gripe of the hand upon the drill-casing.

In order to reduce the friction between the coupling-sleeve G and the plate *h'*, I provide the annular collar I, located as seen in Fig. 1, and free to remain stationary upon spindle B' when pressed against sleeve G in the act of uncoupling the two parts of the spindle.

I claim—

1. In a surgical or dental drill, the combination, substantially as specified, of the two-part drill-spindle, the adjustable coupling thereof, a bar or link connected to and extending forward from said coupling, and an exterior thimble which engages the forward end of said bar, and is so located that the finger of the operator may move it to uncouple the two parts of the spindle without changing the position of his hand on the drill.

2. A coupling device for shafts or spindles, having, in combination, notched spindles B 1 B' 2, socket b^5 formed in the former, encircling sleeve G, having feather *g* diametrically secured thereto, and spring 3, to operate substantially as and for the purpose specified.

3. In a dental drill the combination of notched spindles B 1 B' 2, socket b^4, sleeve G *g*, spring 3, anti-friction collar I, and thimble H, having extended bar *h'*, substantially as and for the purpose specified.

4. In a dental drill the combination of governing-sleeve E e^2, actuating-spring *e*, spring-catch D *d*, and the notched drill C *c'*, connected to operate substantially as and for the purpose specified.

In testimony of which invention, I hereunto set my hand.

EDMUND OSMOND.

Witnesses:

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