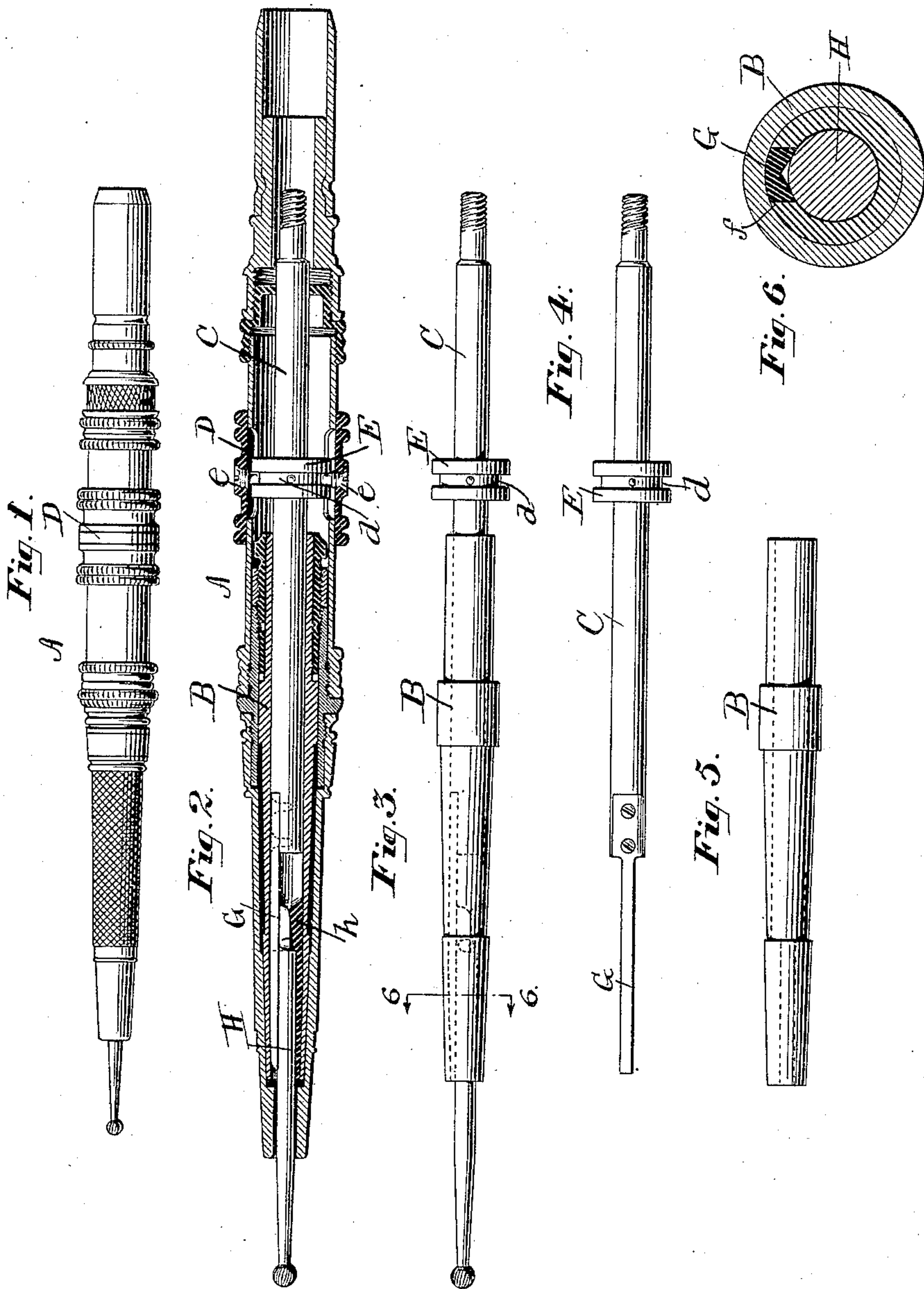


(No Model.)

C. M. RICHMOND.  
DENTAL ENGINE HAND PIECE.

No. 434,952.

Patented Aug. 26, 1890.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

CASSIUS M. RICHMOND, OF NEW YORK, N. Y., ASSIGNOR TO THE S. S. WHITE DENTAL MANUFACTURING COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

## DENTAL-ENGINE HAND-PIECE.

SPECIFICATION forming part of Letters Patent No. 434,952, dated August 26, 1890.

Application filed June 2, 1890. Serial No. 353,932. (No model.)

*To all whom it may concern:*

Be it known that I, CASSIUS M. RICHMOND, of the city, county, and State of New York, have invented certain new and useful Improvements in Dental-Engine Hand-Pieces, of which the following is a specification.

My invention relates to certain improvements, as hereinafter claimed, in that class of dental-engine hand-pieces for drills and burring-tools in which the shanks of the tools are connected with the hand-pieces by way of tool-clamping and actuating spindles made each in two parts with the one part having endwise movement in the other, for engaging and locking the tool-shanks in place.

My object is to provide simple, strong, inexpensive, and readily-operated means for firmly securing the tools to their spindle.

In the accompanying drawings, Figure 1 is a longitudinal view of a hand-piece with my improvements applied thereto; Fig. 2, a view of the same, on an enlarged scale, showing most of the parts in central longitudinal section. Fig. 3 is a longitudinal view of the sectional or two-part tool-actuating spindle detached. Figs. 4 and 5 are similar views of the spindle-sections separated from each other. Fig. 6 is a section on a considerably-enlarged scale on the line 6 of Fig. 3.

Within a hand-piece A, composed of casing-sections connected in a suitable well-known way, is mounted to rotate in proper bearings, the outer section or tubular portion B of the tool clamping and actuating spindle. The section C of this spindle extends within the tubular section, projects rearwardly therefrom, and is adapted for connection with a flexible shaft or driven pulley of a dental engine in the usual way. This inner spindle-section C is movable endwise, and to adapt it to be reciprocated to the extent desired it is connected with a slide D, movable to and fro along the hand-piece. The connection between the slide and spindle-section is made, as shown, in the following way: A collar E, secured to the spindle-section, is provided with an annular groove *d*, into which project the ends of two pins *e*, screw-attached to the slide. A groove *f* is provided within the

tubular spindle-section B, extending from the outer end of this section inward for a portion of the length thereof. This groove is formed by securing in the tubular spindle-section a bushing of suitable dimensions cut away or having an opening along one side to constitute the groove *f* when the bushing is in place.

The inner spindle-section C has a locking pin or key G at its outer end adapted for engagement with the internal groove *f* of the tubular casing-section. This key is partially wedge-shaped, being slightly tapered on its outer surface from its free end inward for a portion of its length. The locking-key is by preference provided on its inner surface with a V-shaped groove extending from its outer end inward for a portion of its length, or it may be its whole length.

The shank H of the tool shown is of well-known form, being round and provided with the reduced inner end, forming a flattened portion to rest upon a shoulder *h* of the tubular spindle-section. It is not, however, necessary to provide the shoulder *h* and reduced flattened end of the tool-shank.

In the operation of securing a tool in place, the inner section C of the spindle having been retracted, the tool-shank is inserted into the tubular spindle-section, and the inner spindle-section then moved outward with sufficient force to firmly clamp the tool-shank between the locking-key and the inner surface of the tubular spindle-section opposite the key. A very firm frictional grip is exerted upon the tool-shank which can quickly be disconnected from the hand-piece by moving the sliding spindle-section inwardly.

I claim as my invention—

1. The tool-clamping spindle consisting of the outer tubular section provided with the internal groove extending longitudinally thereof, and the endwise-movable inner section provided with the tapered locking-key engaging with the groove of the tubular section, substantially as and for the purpose set forth.

2. The combination of the hand-piece, the two-part tool clamping and actuating spindle consisting of the outer tubular section pro-

vided with the internal groove extending longitudinally thereof, and the endwise-movable inner section provided with the tapered locking-key engaging with the groove of the tubular section to clamp the tool-shank in place, and the slide for actuating the inner spindle-section, substantially as set forth.

In testimony whereof I have hereunto subscribed my name.

CASSIUS M. RICHMOND.

Witnesses:

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WM. J. MCCLELLAND.