

E. T. STARR.
 HAND-PIECES FOR DENTAL-ENGINES.
 No. 170,125. Patented Nov. 16, 1875.

Fig. 1.

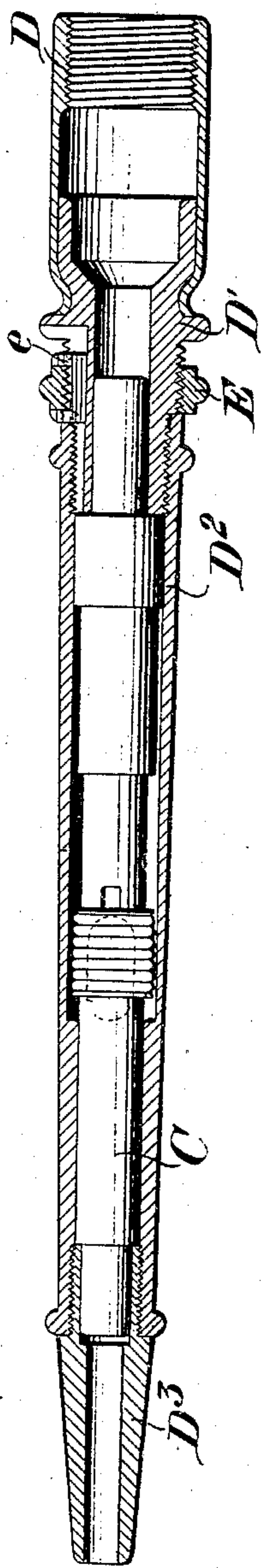


Fig. 2.

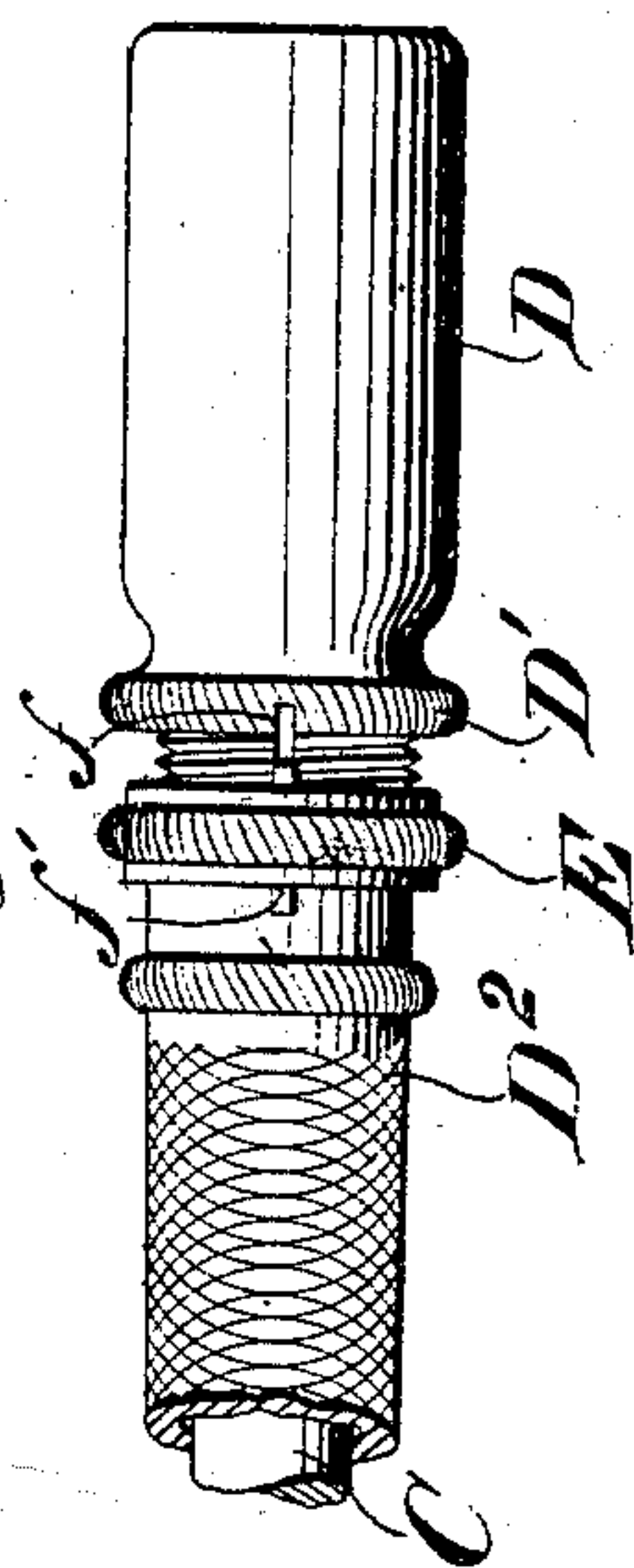


Fig. 3.

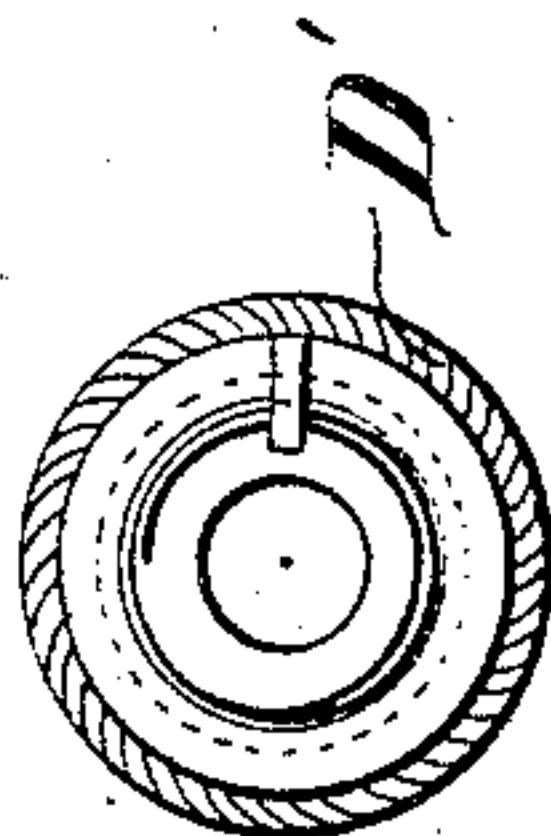
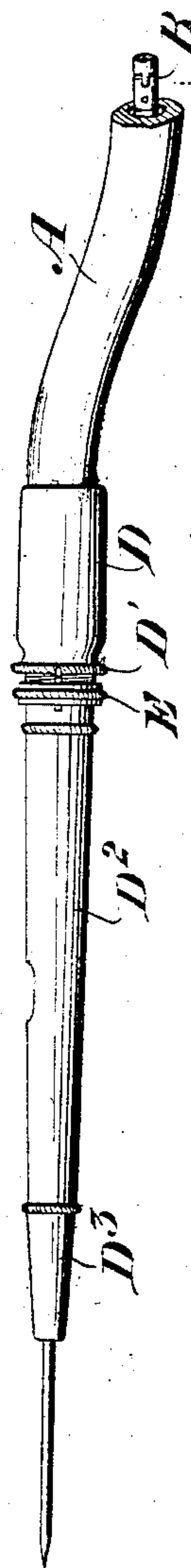


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

ELI T. STARR, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO SAMUEL S. WHITE, OF SAME PLACE.

IMPROVEMENT IN HAND-PIECES FOR DENTAL ENGINES.

Specification forming part of Letters Patent No. 170,125, dated November 16, 1875; application filed November 5, 1875.

To all whom it may concern:

Be it known that I, ELI T. STARR, of Philadelphia, Pennsylvania, have invented certain new and useful Improvements in Hand-Pieces for Dental Engines, of which the following is a specification:

My invention relates to the well-known class of hand-pieces for dental engines in which a tool holder or chuck revolves in bearings in a cylindrical casing.

It is well known to those by whom they are used that hand-pieces of dental engines, as now constructed, by reason of the excessive and constant friction of the tools and tool-holders in their bearings therein, caused by their great rapidity of motion, wear away such bearings to a degree seriously to incommode the proper operation of the engine, and often necessitate new shells or casings while the remaining parts of the engine remain in good working condition.

The object of the first part of my invention is to remedy this defect, which end I attain by making the nose or bearing that supports the end of the tool-holder and the tool carried thereby detachable, and of hardened steel, whereby its durability is increased, as it can be removed and replaced when worn.

The next part of my invention relates more especially to that class of hand-pieces in which the driving-shaft is inclosed in a non-rotating sheath. Its object is so to connect a hand-piece with the sheath that the former is free to turn to conform to the movements of the hand of the operator, without liability of becoming detached, while permitting its separation for access to the chuck or tool-holder for cleansing, oil, &c.

The subject-matter claimed will hereinafter specifically be set forth.

In the accompanying drawings, which show my improvements as embodied in the best way now known to me for adaptation to the well-known S. S. White dental engine, Figure 1 is an enlarged longitudinal central section through my improved hand-piece. Fig. 2 is a side elevation of a portion of the same, showing the mechanism by which I accomplish the second object of my invention. Fig. 3 is a cross-section therethrough on the line *x x* of

Fig. 2; and Fig. 4 a view of the hand-piece when ready for use.

The flexible sheath A and the flexible driving-shaft B are attached to the hand-piece and tool-holder C in usual well-known ways. The hand piece or casing is shown as constructed of four sections, D D¹ D² D³. The section D is firmly secured to the flexible sheath, and is connected to section D¹ by means of a swivel-joint of well-known construction, which thus permits section D¹ and the remaining portions of the hand-piece to turn freely in the section D, while they are connected firmly therewith as against longitudinal displacement. The sections D¹ D² are united by screw-threads, as usual, so as to allow of their separation when access is to be had to the chuck or tool holder; but, in addition to this connection, I employ a screw-ring, E, working on section D¹ to operate a sliding catch, *e*, which catch works in a longitudinal groove, *f*, in said section, and in a corresponding groove, *f'*, in section D², by which means the instrument can be turned without unscrewing the parts. It is obvious that by screwing back the clutch so as to break this connection section D² can be unscrewed.

I propose, in some cases, to construct the section D¹ of hardened steel, as it is that section which forms the bearing for the inner end of the tool-holder and flexible shaft; but this is not absolutely essential, as the excessive friction of the parts does not come to an injurious degree upon this bearing.

Section D² and the nose or bearing D³ are connected together by screw-threads, or in any other equivalent way. This nose or section D³, which forms the bearing for the front end of the chuck or tool holder, and the tool carried thereby, I construct of hardened steel, more effectually to resist the excessive friction of the parts working therein. The increase of friction at this particular point is due, to a considerable degree, to the necessary pressure exerted upon the tool when in operation. This nose or bearing may be hardened by any of the improved methods known in the art, and constitutes one of the prime features of this invention.

I claim as my invention—

1. The hand-piece, constructed as hereinbefore set forth, with a detachable nose or bearing of hardened steel and a softer metal body, for the purpose set forth.

2. The combination of the fixed section D of the hand-piece, the section D¹ swiveling therein, the casing screwed on the section D¹, and the screw-collar, and its locking-catch, these members being constructed and operating in

combination as set forth, whereby the hand-piece can be turned without disconnecting its sections.

In testimony whereof I have hereunto subscribed my name.

ELI T. STARR.

Witnesses:

FRANK L. HIGG,
JAS. B. WILLIAMS.