E. T. STARR.

ANGLE ATTACHMENTS FOR DENTAL ENGINES.

No. 186,504. Patented Jan. 23, 1877.

Fig 1

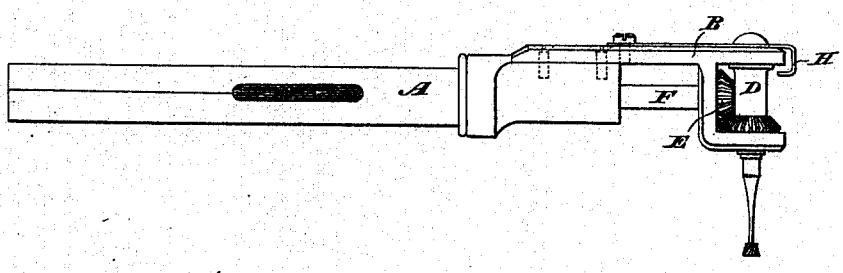


Fig 2

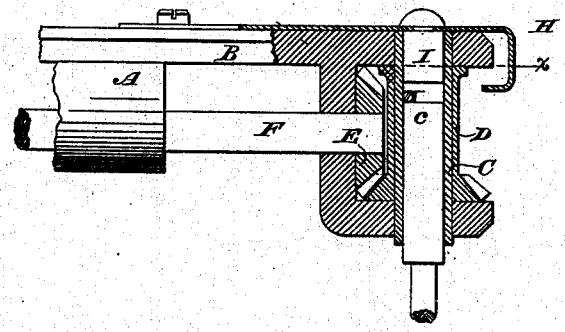


Fig 4

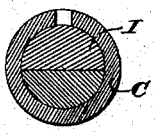


Fig 3.

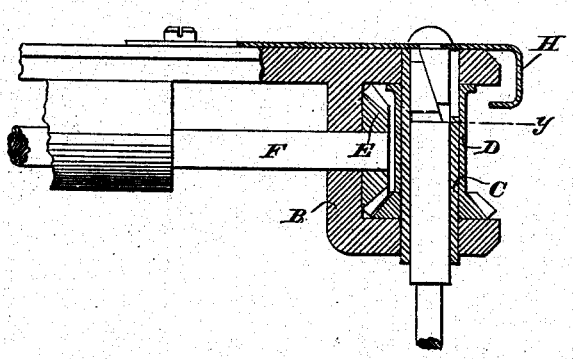


Fig 5.

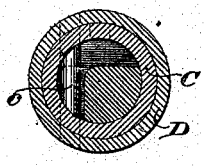
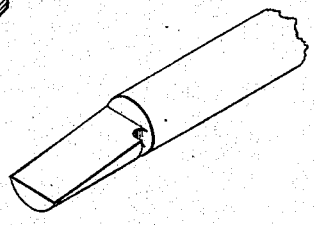


Fig 6.



WITNESSES.

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INVENTOR.

Eli T. Starr

By his Attorneys.

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UNITED STATES PATENT OFFICE.

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

IMPROVEMENT IN ANGLE ATTACHMENTS FOR DENTAL ENGINES.

Specification forming part of Letters Patent No. **186,504**, dated January 23, 1877; application filed December 5, 1876.

To all whom it may concern:

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

My invention relates to a tool-carrier attachment for the hand-pieces of dental engines of that class known as "right-angle attachments," adapted to carry burrs, disks, drills, and other revolving tools.

The objects of my invention, the manner in which these objects are attained, and the subject-matter claimed will hereinafter specifically be designated.

In the accompanying drawings, Figure 1 represents a view in elevation, the improvements being shown as adapted for application to the hand-piece of the well-known S. S. White dental engine; Fig. 2, an enlarged view, partly in section, showing the shank of a tool inserted and locked in its socket; Fig. 3, a similar view to Fig. 2, the parts being in a different position. Figs. 4 and 5 are sectional views on the lines *x* and *y*, respectively, of Figs. 2 and 3; and Fig. 6, a view, in perspective, of a tool-shank adapted to the device.

My improved attachment is composed of a slotted tubular portion, A, to which is firmly attached in any suitable manner, or in some instances may form a part thereof, a forked arm or support, B, which carries the tool-retaining mechanism. This tool-retaining mechanism consists of a socket, C, lying at right angles to, and the ends of which fit and turn in, the forks of the arm B, it being enveloped by, and driven with, a geared sleeve, D, which works between the forks of said arm B, and to which motion is communicated through a bevel-pinion, E, keyed on the end of a shaft or spindle, F, having its bearings in the attachment, said spindle being adapted to engage with the chuck of the hand-piece of a dental engine, and be driven thereby, when the attachment is applied to use in usual well-known ways. In the socket C is a transverse pin, *c*, tangential to the bore thereof, which engages with the wedge-shaped eccentrically-grooved shank of the tool inserted therein, substantially as shown and described in Letters Patent granted to William R. Nutz, June 2, 1874, No. 151,614, and is consequently not broadly claimed herein.

A spring-arm or leaf-spring, H, is secured, in this instance, to the rear side of the arm B, and carries a turning wedge, I, which wedge is adapted to enter the socket C, to engage with and lock the tool in the socket. This spring-arm, it will be observed, is hook-shaped, so as to bend over the top of the arm B, and form a stop to prevent the wedge from being drawn entirely out of its socket.

By mounting the driving-sleeve D in bearings at both ends in a line forming a prolongation of the tubular portion of the attachment, as shown, I am enabled materially to shorten the distance between the point of the tool and the back of its holder, which is a great advantage, as the tool has to be used in a very confined space.

I have described the transverse locking-pin *c* as tangential to the bore of the socket, which construction I prefer; but, obviously, a radial pin or stud projecting partially into the bore might be used with a corresponding alteration in the tool-shank and its locking-wedge.

To secure a tool in its socket it is only necessary to insert its wedge-shaped shank therein, and turn it to the right or left until the eccentric groove engages with the transverse pin *c*, at which time the locking-wedge is forced forward by its spring, and engages with the inclined end of the tool, and forming, as it were, a continuation thereof, thus securely locking the tool in the socket. To release the tool the locking-wedge should be raised, its upward movement being limited by the hooked end of the carrying-spring abutting against the forked arm, and the tool turned to the right or left to disengage it from the transverse pin, which leaves it free to be removed.

I claim as my invention—

1. The combination, substantially as hereinbefore set forth, in a right-angled attachment for dental engines, of the tubular portion, its forked arm, and tool-retaining mechanism turning in bearings in said arm.

2. The combination, substantially as hereinbefore set forth, of the tubular portion, its

forked arm, tool-retaining mechanism, having its bearings in said arm, and the driving-gear on the said tool-retaining mechanism, whereby space is enconomized, and a steady movement and firm bearing of the tool secured.

3. The tool-retaining mechanism, substantially as set forth, consisting of the combination of the turning socket, its transverse pin *c*, and the wedge, whereby a tool inserted into said mechanism is securely locked against accidental displacement and pulling strain.

4. The combination, substantially as hereinbefore set forth, of the tool-socket, the spring-arm mounted on the socket-support, and the locking-wedge revolving in said spring with the operating-tool.

In testimony whereof I have hereunto subscribed my name.

ELI T. STARR.

Witnesses:

JOS. B. HOUGH,

J. A. B. WILLIAMS.