

(No Model.)

J. HOOD & S. H. REYNOLDS.
HANDPIECE FOR DENTAL ENGINES.

No. 548,988.

Patented Oct. 29, 1895.

Fig. 1.

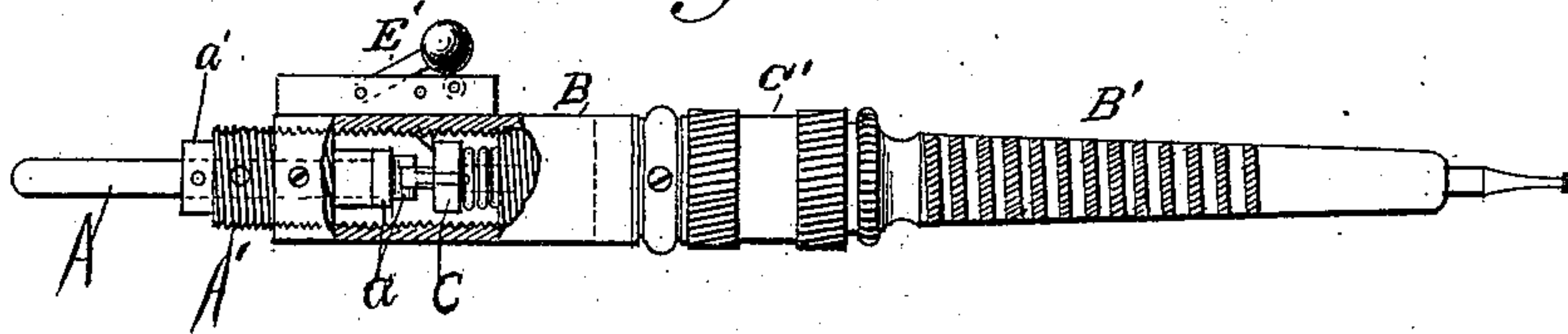


Fig. 2.

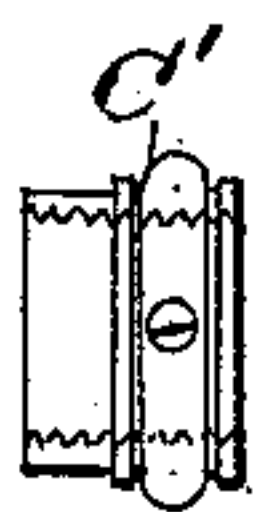
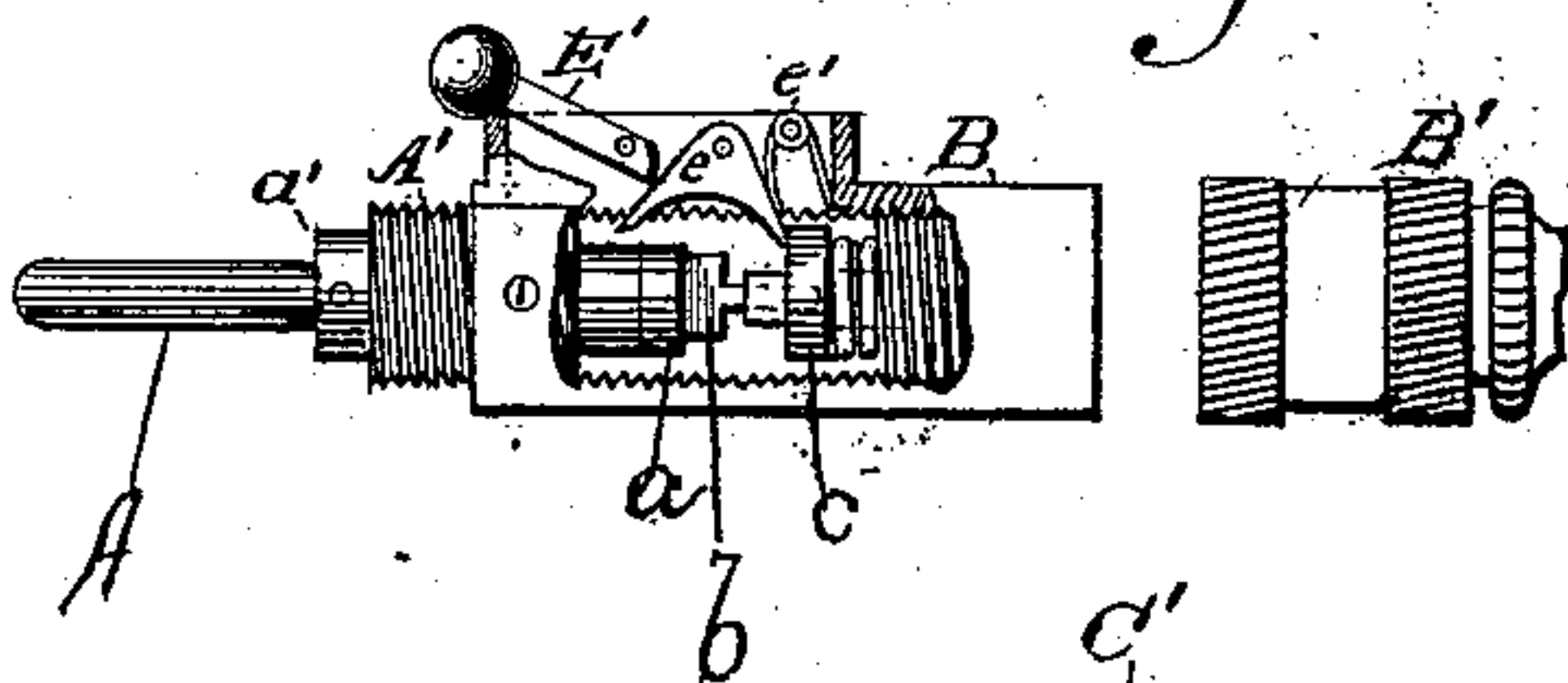


Fig. 3.

Fig. 4.

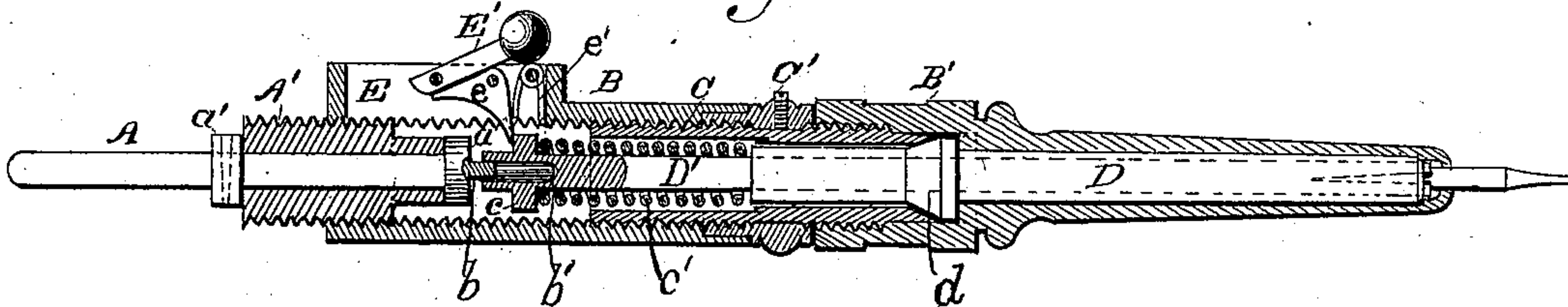


Fig. 5.

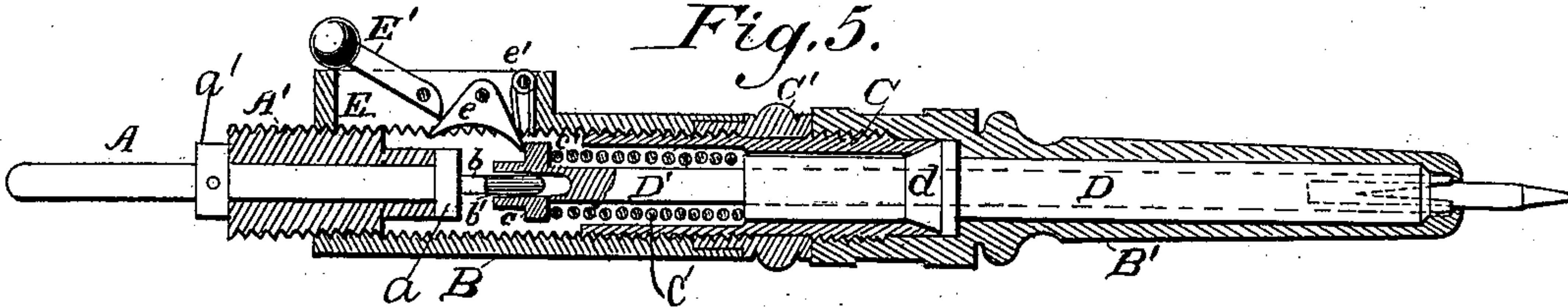
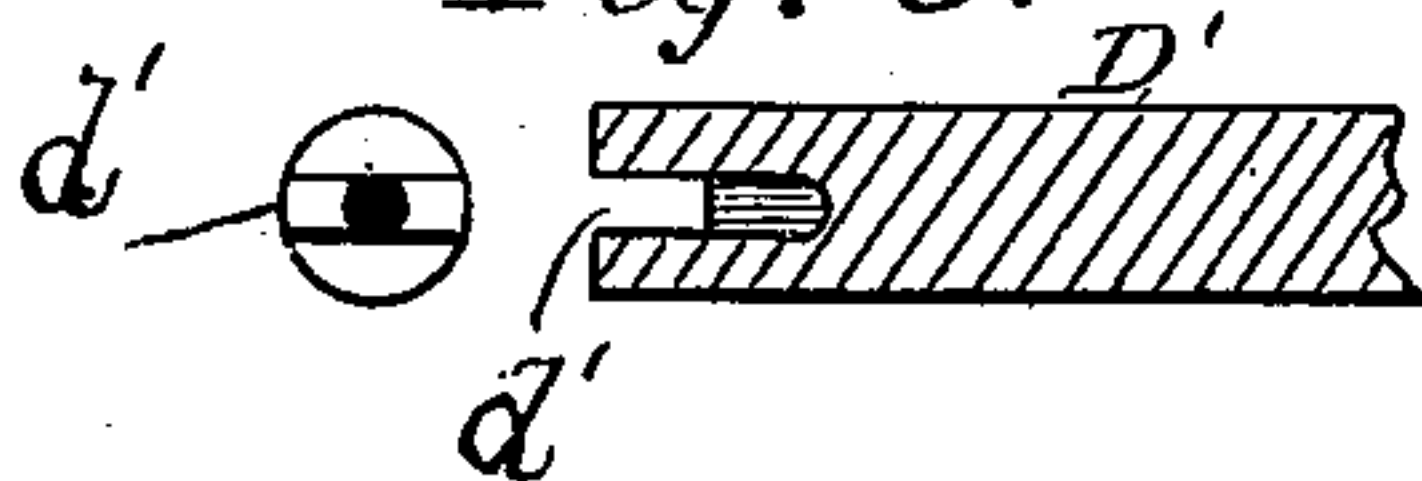


Fig. 6.



Witnesses

H. H. Schott
W. Burroughs

Inventors

John Hood
Stephen H. Reynolds
By their Attorney
W. H. Chandler

UNITED STATES PATENT OFFICE.

JOHN HOOD AND STEPHEN H. REYNOLDS, OF BOSTON, MASSACHUSETTS.

HANDPIECE FOR DENTAL ENGINES.

SPECIFICATION forming part of Letters Patent No. 548,988, dated October 29, 1895.

Application filed April 6, 1888. Serial No. 269,830. (No model.)

To all whom it may concern:

Be it known that we, JOHN HOOD and STEPHEN H. REYNOLDS, citizens of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Handpieces for Dental Engines; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to certain improvements in the handpieces of dental engines by which the engine is made capable of continuing its revolution without a burr or other implement being inserted therein, and is also capable of allowing the removal and insertion of the burr without stopping the engine, and is an improvement upon the handpiece for which United States Letters Patent No. 213,167 were granted to Benoni S. Brown on the 11th day of March, 1879. In the handpiece of Brown it was necessary to press the follower firmly against the collar upon the hollow shaft, which received the burr when it was desired to force said shaft forward and release a burr. The friction caused by this operation between the follower and collar was sufficient to prevent the revolution of the shaft, causing a strain upon the flexible portions of the same, which was liable to break or disarrange the wire-coil of which said flexible portions was composed.

In our improved handpiece, forcing the follower against the collar uncouples the implement-holding part of the shaft from the rest, thus allowing the rotation of the flexible and main portion of the shaft to continue while the implement-holding part is at rest, thus allowing a burr or other implement to be removed and another inserted without stopping the movement of other parts of the machine.

In the accompanying drawings, Figure 1 is a side elevation of the handpiece, a part of the outer shell or covering being broken away to show the position and arrangement of the several parts of the coupling when in gear. Fig. 2 is a similar view of a part of the hand-

piece with the coupling disconnected. Fig. 3 shows the connecting-nut removed from the handpiece. Fig. 4 is a longitudinal section through the handpiece, illustrating the arrangement and position of all the parts when in operation. Fig. 5 is a similar section with the coupling disengaged, so that the burr or other implement may be removed or a new one inserted. Fig. 6 shows an enlarged end view and section of the shaft which carries the burr or other implement.

In describing the construction of this handpiece, as shown by the drawings, A represents that portion of the shaft which is connected with the ordinary dental-engine shaft by means of a flexible coupling. This shaft A turns freely in a bearing A', screwed into or otherwise held in the sleeve B. Near the inner end of the shaft A is a fixed collar *a*, which bears against the inner end of the bearing A', while an adjustable collar *a'* is placed upon the shaft against the outer end of said bearing, thus preventing endwise movement of the shaft with relation to the bearing, as well as providing a means of adjustment for taking up wear or lost motion. Upon the inner end of this shaft A, adjacent to the fixed collar, is formed a flat rectangular part *b*, and extending beyond this is a small round guide-pin *b'*.

Screwed into the forward end of the sleeve B is a smaller sleeve C, and connected with the outer end of this sleeve is a sleeve B', which forms the outer covering of that part of the handpiece which holds or carries the implement. A locking-nut C' is placed upon the sleeve C, between the outer sleeves B and B', to retain them in their proper relative positions upon the sleeve C. When properly adjusted, this nut C' may be prevented from turning by a set-screw passing through the same with its end bearing upon the sleeve C. The sleeve B' receives within it and forms a bearing for the sleeve D, the forward end of which rests against a shoulder formed in the outer sleeve and is prevented from moving in the opposite direction by the conical collar *d*, which enters the flaring end of sleeve C. The sleeve D extends beyond its collar into the sleeve C and forms a bearing for the shaft D'. This shaft has a free rotary as well as longitudinal movement within the sleeve D,

its forward end being enlarged, tubular, and split, so that when it is forced forward it expands and allows the shank of a burr or other implement to be inserted in the tube; but when it is drawn back into the sleeve D the latter compresses the enlarged end of the shaft, causing it to embrace tightly the shank of the implement and hold it firmly therein. Upon this shaft D' near its inner end is a fixed collar c, between which and the end of sleeve D is placed the spirally-coiled spring c'. It will be seen that the tendency of this spring c' is to force the shaft D' back into the sleeve D, so that the normal position of that shaft is that in which it is holding an implement. (See Fig. 4.)

The rear or inner end of the shaft D' is bored out to receive the pin b' of the shaft A, and is also slotted transversely at d' to permit the flat part b of said shaft to enter the slot and thus cause the shafts D' and A to revolve together.

Upon one side of the sleeve B is formed a mortise E, having an elevated flange surrounding it upon all sides. Within this mortise is pivoted the dog or follower e, of triangular form, one of its angles resting against the collar c upon the shaft D' and the other against the cam-shaped end of lever E'. The arrangement is such that when the lever is turned its lower or cam-shaped end bears against one side of the dog e, causing its opposite angle to impinge against the collar c and force the shaft D' forward through the sleeve D, thus allowing the outer end of the shaft to spread and release the implement held therein. This same movement of the lever and dog, by carrying the shaft D' forward, releases it from its connections with the shaft A, allowing the latter to turn freely without imparting rotation to the shaft D'. In order to assist in returning the dog and lever to their normal position when it is desired to couple the shafts, a spring e' is placed in the mortise between the dog and one end of said mortise, which serves as an abutment against which the spring acts. By this construction of the operating parts of the hand-piece it will be seen that we accomplish the object heretofore named of disengaging the implement-holding part of the handpiece from the revolving shaft by the same mechanism used to throw forward the implement-holder and release the implement.

Having thus described our invention, we claim as new, and desire to secure by Letters Patent, the following:

1. In a hand piece for dental engines, the combination of the casing, the sleeve mounted in the forward end thereof, the driving shaft mounted in the rear end of the casing and having its inner end rectangular in form, the guide pin projecting from the inner end of the driving shaft, the longitudinally movable tool holder journaled in the said sleeve, the inner end of the said holder having a socket and transverse slot to register with the guide pin and the rectangular portion of the driving shaft, and means for holding said tool holder in and out of operative relation to the drive shaft, substantially as described.

2. In a hand-piece for dental engines, the combination of the casing, the sleeve mounted in the forward end thereof, the driving shaft mounted in the rear end of the casing and having its inner end rectangularly shaped, the guide pin projecting from the inner end of the driving shaft, the longitudinally movable tool holder journaled in the sleeve, the inner end of the said holder having a socket and transverse slot to register with the guide pin and the rectangular portion of the driving shaft, and the coiled spring surrounding the shaft of the holder to force and to hold the same in engagement with the driving shaft, substantially as described.

3. In a hand piece for dental engines, the combination of the casing, the sleeve mounted in the forward end thereof, the driving shaft mounted in the rear end of the casing and having its inner end rectangularly shaped, the guide pin projecting from the inner end of the driving shaft, the longitudinally movable tool holder having a socket and transverse slot to register with the guide pin and the rectangular portion of the driving shaft, the coiled spring surrounding the shaft of the holder to force and to hold the same in engagement with the driving shaft, and the mechanism, for moving the holder against the action of the spring to disengage the rectangular slot of the same and the rectangular portion of the shaft, consisting of the triangular dog engaging with the holder, and the lever bearing on the dog, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN HOOD.
STEPHEN H. REYNOLDS.

Witnesses:

HORACE T. SEARS,
JOHN MAY.