

(No Model.)

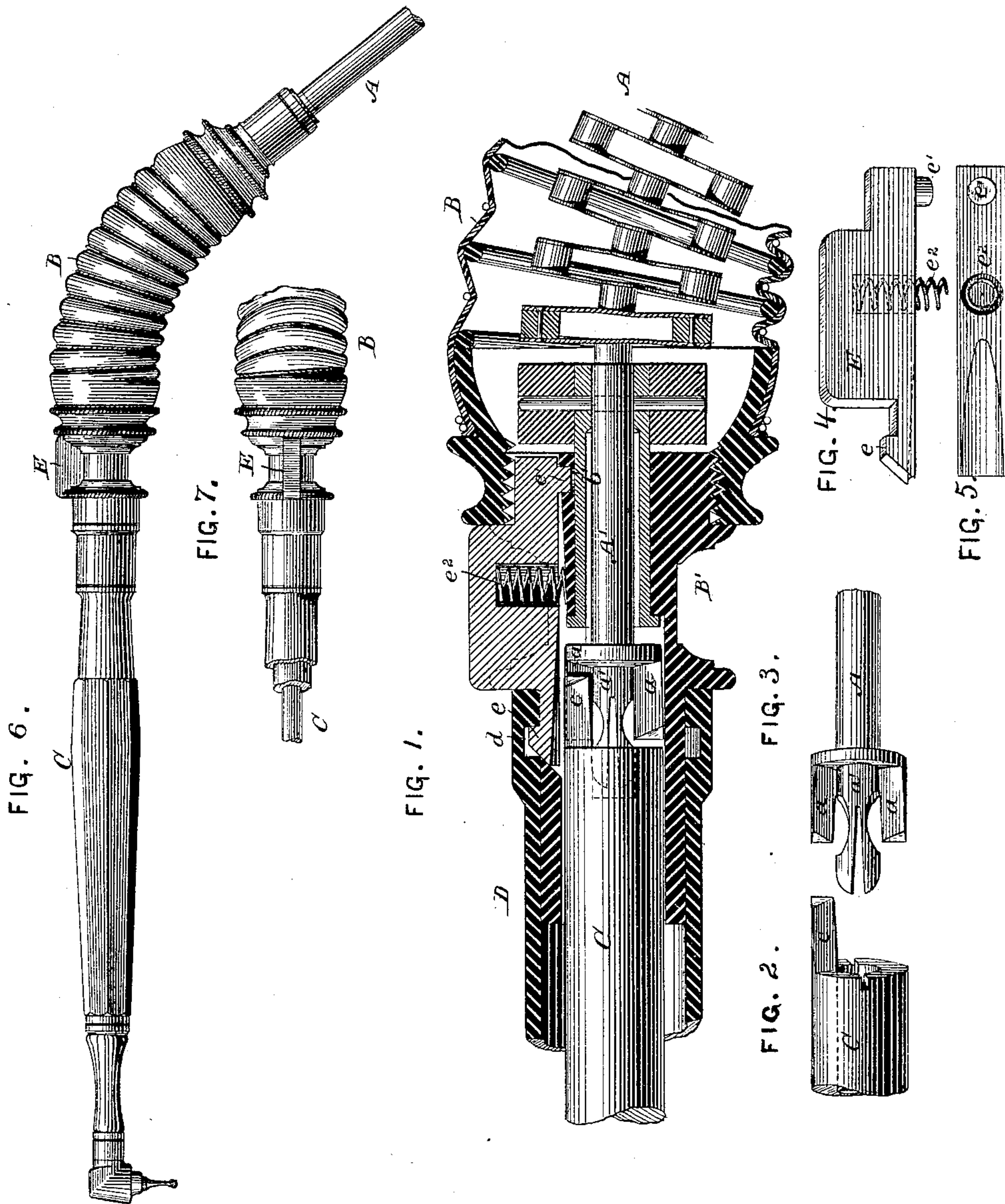
2 Sheets—Sheet 1.

A. W. BROWNE.

DENTAL ENGINE HAND PIECE COUPLING.

No. 326,942.

Patented Sept. 29, 1885.



WITNESSES:

*Wm. S. Dayton.*  
*Allan M. L. Abert.*

INVENTOR:

*Arthur W. Browne,*  
*by his attys*  
*Palduin, Hopkins & Dayton.*

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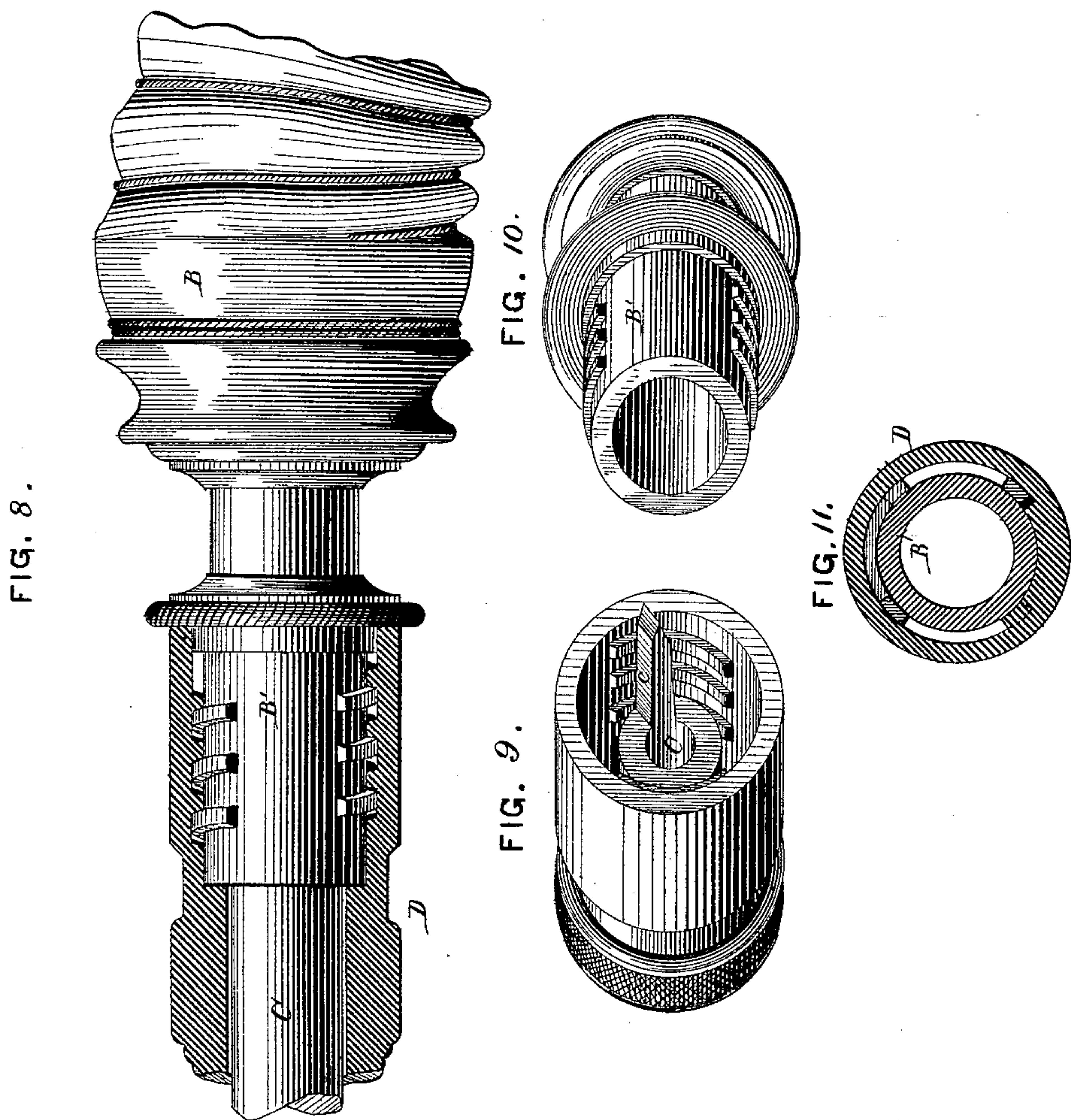
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Wm J. Peyton.  
Allen M. C. Albert.

INVENTOR:

Arthur W. Browne,  
by his Attys.  
Baldwin, Hopwood & Peyton.



# UNITED STATES PATENT OFFICE.

ARTHUR W. BROWNE, OF WESTFIELD, NEW YORK, ASSIGNOR TO THE S. S. WHITE DENTAL MANUFACTURING COMPANY, OF PHILADELPHIA, PA.

## DENTAL-ENGINE HAND-PIECE COUPLING.

SPECIFICATION forming part of Letters Patent No. 326,942, dated September 29, 1885.

Application filed January 8, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR W. BROWNE, of Westfield, in the county of Richmond and State of New York, have invented certain  
5 new and useful Improvements in Dental-Engine Hand-Piece Couplings, of which the following is a specification.

My invention relates more particularly to dental engines, and to the method of connecting the hand-pieces and tool-holders or chucks thereof with the driving and supporting connections.

The objects of my improvements are to permit of the ready separation of the hand-piece  
15 casing and tool-holder or chuck thereof from the supporting-sleeve and driving-shaft of the engine, whereby one style of hand-piece may be readily removed or detached and another substituted in place thereof, and whereby also  
20 the hand-piece may be removed and other operating devices substituted, such as a right-angle attachment or hand-piece, by which the operating-tool is driven at an angle relatively to the longitudinal line of the attachment.

25 The subject-matter claimed by me is first particularly described as embodied in the best ways now known to me, and is then particularly recited in the summary at the close of the specification.

30 In the accompanying drawings, Figure 1 is a longitudinal central section through so much of a dental-engine hand-piece and the driving and supporting connections at the rear end thereof as is necessary to illustrate the subject-matter herein claimed. Fig. 2 is a view  
35 of the rear end of the chuck or tool-holder, which is mounted to turn in bearings in said hand-piece. Fig. 3 is a view of the front end of the driving shaft or connection fitted to engage with the rear end of the chuck or tool-holder to rotate it when the driving-shaft is  
40 driven in the operation of the engine. Fig. 4 is a side elevation of the spring-latch which connects the rear end of the hand-piece casing with the engine-sleeve which surrounds the driving-shaft, or a portion thereof, and Fig. 5  
45 is a bottom plan view of said locking-latch. Fig. 6 is a view in elevation showing the usual hand-piece removed and an angle at-

50 tachment or hand-piece substituted therefor, and Fig. 7 is a plan view of a portion of the devices illustrated in Fig. 6. Figs. 8, 9, 10, and 11 are views of a modified form of connection between the rear end of the hand-piece casing and the shaft-enveloping sleeve  
55 or cover.

In the accompanying drawings I have shown as much of the driving-shaft and the sleeve or cover thereof as is necessary to illustrate that part of the engine. The driving-shaft may be  
60 driven in any of the usual well-known ways, and constitutes no part of the present invention.

The driving-shaft A and sleeve or cover B thereof are improved organizations devised  
65 by me, and for which I have applied for Letters Patent under date of December, 1884, and consequently the particular construction of such parts shown in the drawings is not claimed herein.

70 The front end, A', of the driving-shaft A is fitted to turn in a bearing in a front section, B', of the sleeve or cover B. The extreme front end of the front or stiff section, A', of the driving-shaft A is fitted with a driving-  
75 connection to engage a driving-connection, c, of the rear end of the chuck or tool-holder C of the hand-piece. This chuck or tool-holder C is fitted, as usual, to rotate in a bearing or bearings in the hand-piece casing D.

80 The driving-connection between the shaft-section A' and the rear end of the chuck or tool-holder C consists, preferably, of a tapered or beveled end rib or projection, c, which fits a groove or seat between two forwardly-projecting and preferably tapered or beveled-end  
85 ribs or fingers, a a, on the front end of the shaft-section A'. A central projection or pin, a', also extends forward at the front end of the shaft-section A'. This projection or pin  
90 a' is split, and consequently has spring-jaws, and when the driving-connection is engaged between the front end of the shaft A' and the rear end of the chuck or tool-holder C it enters a central opening or socket in the rear  
95 end of said chuck C, so as to form a steady connection between the chuck or tool-holder and the driving-shaft, while the engagement



of the rib *c* with either one of the ribs *a* of the shaft *A'* forms a rigid driving-connection during the rotation of the driving-shaft.

It will thus be seen that the driving-connection between the front end of the driving-shaft *A'* and the rear end of the chuck or tool-holder *C* is a slip-connection, and is made by moving the end of the chuck or tool-holder backwardly so as to engage its rigid rib *c* with one of the rigid driving ribs or projections *a* of the driving-shaft, and this engagement or passage of the rib *c* past the rib *a* being facilitated by the tapered shape or beveled ends of said ribs, there being by such construction no danger of the ends of the opposing ribs coming in contact, and thus preventing the formation of the driving-connection (see Figs. 1, 2, and 3) for the rigid tapered or beveled-end driving ribs or fingers.

The connection between the rear end of the hand-piece casing *D* and the front end of the front section, *B'*, of the sleeve *B* consists of a slip or telescoping joint by reason of the reduced front end of said sleeve-section *B'* entering the rear end of the hand-piece-casing section, as clearly shown in the drawings.

When the hand-piece-casing section *D* is slipped upon the front end of the sleeve-section *B'* it is held thereon by the engagement of the front shouldered or hooked end *e* of a spring-latch, *E*, said hooked end of the spring-latch *E* engaging an annular groove, *d*, formed upon the interior surface of the rear section of the hand-piece casing. Said latch *E* is fitted by a projection, *e'*, in a socket, *b*, in the sleeve-section *B'*, and is acted upon by a spring, *e''*, the tendency of which, as clearly shown in Fig. 1, is to hold the front or hooked end of the latch *E* in engagement with the annular groove *d* of the rear section of the hand-piece casing. The hand-piece casing, by means of the latch *E*, is therefore not only locked to the shaft-sleeve, but the hand-piece casing is free to swivel or turn by reason of the annular groove to conform to the turning movements of the hand of the operator in manipulating the engine.

From the above description it will be obvious that all that it is necessary to do to detach the hand-piece casing and the tool-holder or chuck thereof from the driving-shaft and its enveloping sleeve is to depress the spring-latch to release it from its hold in the annular groove *d*, whereupon the hand-piece and chuck may be drawn off endwise and detached, while they may be again readily inserted in place and a firm driving-connection insured by fitting the parts together.

The chuck or tool-holder *C* of the hand-piece casing is usually provided with a socket at its front end for the reception of the shanks of the driving-tools, so that the tool projects out in a longitudinal line corresponding to that of the hand-piece. If it is desired to insert in place of this hand-piece a hand-piece in which a tool is driven at an angle to the

longitudinal line of the hand-piece, the first hand-piece may be readily detached and an angle hand-piece having corresponding connections at its rear end be substituted in its place, and this may be readily accomplished, as will be obvious, and as shown in Figs. 6 and 7.

Instead of the spring-latch connection between the hand-piece casing and the shaft-enveloping sleeve or cover *B*, the connection may be by sectional screw-ribs, for instance, as shown in Figs. 8, 9, 10, and 11. In those figures there are sectional ribs on the interior of the hand-piece casing, which may be slipped past the external ribs on the front section, *B'*, of the sleeve or cover, and then turned to engage the ribs, so as to prevent the accidental withdrawal of the hand-piece from the front end of the sleeve *B*.

It will be obvious that in fitting the rear end of the hand-piece casing upon the front end of the sleeve-section *B'* the rear end of the tool-holder or chuck will be engaged with the front end of the driving-shaft *A*, so as to form a driving-connection, and upon then turning the hand-piece casing to engage its ribs with those of the sleeve-section *B'* the parts will be locked in position for operation.

Other forms of driving-connection permitting of the ready separation and connection of the parts may be employed between the front end of the driving-shaft and the rear end of the chuck or tool-holder.

I believe myself to be the first ever to have provided a hand-piece with a sliding or detachable connection between the hand-piece casing and its chuck or tool-holder and the shaft-enveloping sleeve and driving-shaft, respectively, and I do not therefore limit myself to the particular details of construction shown in the accompanying drawings, and described herein, as the best ways known to me of embodying my improvements.

I claim as my invention—

1. The combination of the driving-shaft with the chuck or tool-holder by means of a slip-joint or telescoping driving-connection consisting of rigid tapered or beveled-end driving ribs or fingers, substantially as described.

2. The combination of the driving-shaft with the chuck or tool-holder by means of a slip-joint or telescoping driving-connection consisting of rigid driving ribs or fingers projecting from the chuck or tool-holder and the driving-shaft, respectively, and the central socket-and-pin guiding and steadying connection, substantially as described.

3. The combination of a hand-piece casing with a supporting-sleeve by means of a telescoping or slip-joint connection and a sectional screw-rib locking-connection, substantially as described.

4. The combination, with the driving-shaft and its enveloping-sleeve, of a hand-piece

casing and its chuck or tool-holder carried thereby by means of detachable telescoping or slip-joint connections, substantially as described.

- 5 5. The combination, with the driving-shaft and its enveloping-sleeve, of a hand-piece casing and its chuck or tool-holder carried thereby by means of telescoping or slip-joint connections, and a fastening or securing de-

vice between said casing and said shaft-enveloping sleeve, substantially as described.

In testimony whereof I have hereunto subscribed my name.

ARTHUR W. BROWNE.

Witnesses:

J. H. HITCHCOCK,

G. GULOWSEN.