W. WOOD, JR.

DENTAL HANDPIECE.

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1,160,805.

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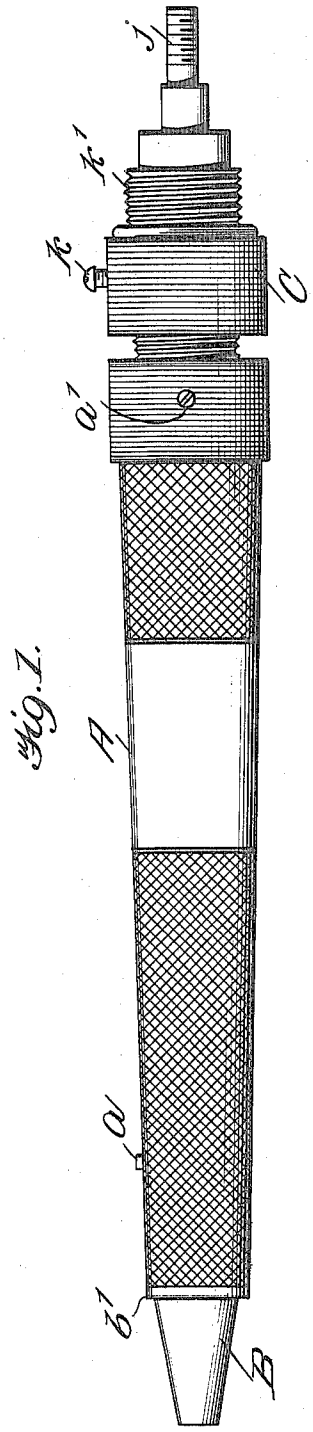


Fig. 1.

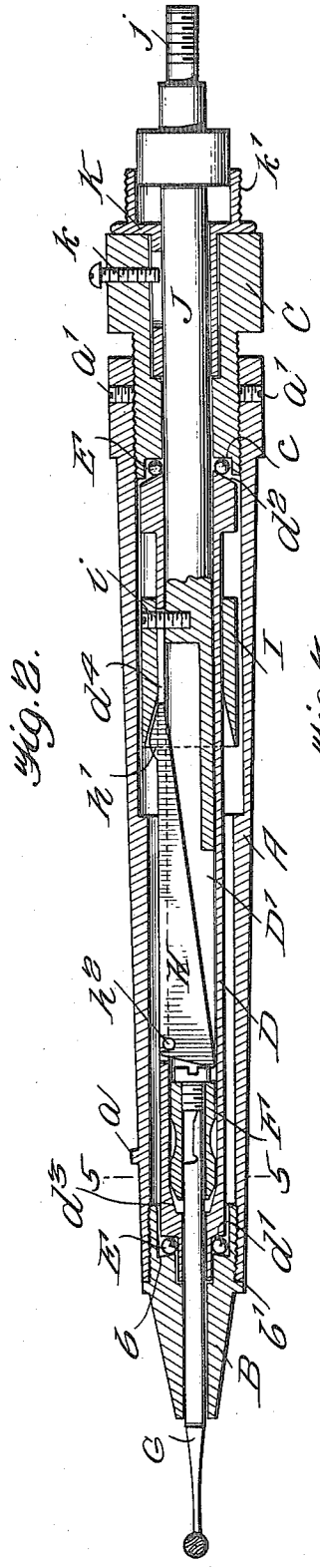


Fig. 2.

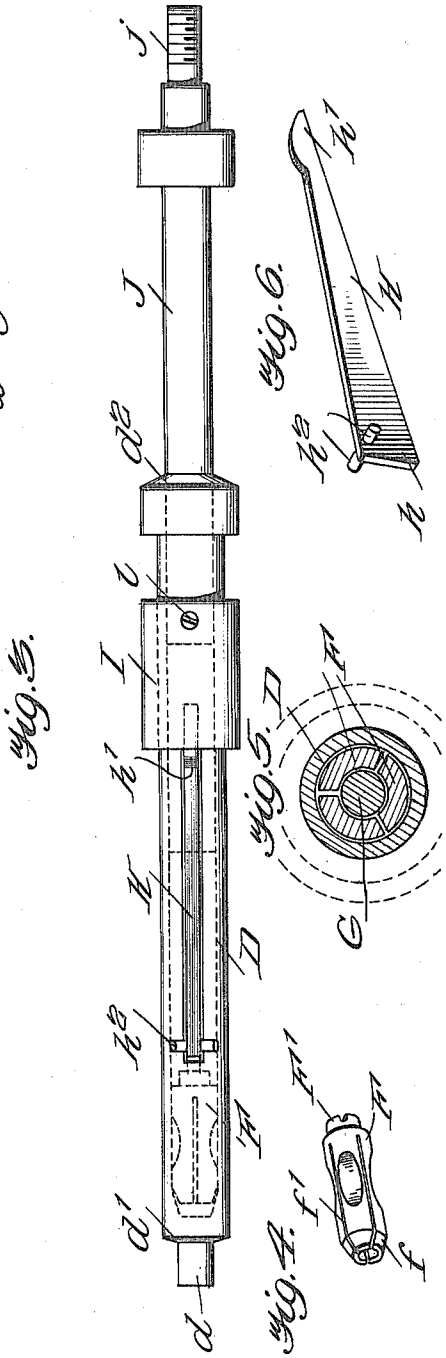


Fig. 3.

Fig. 6.

Fig. 5.

Fig. 4.

WITNESSES

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DENTAL HANDPIECE.

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To all whom it may concern:

Be it known that I, WALLACE WOOD, JR., a citizen of the United States, and a resident of New Orleans, in the parish of Orleans and State of Louisiana, have made certain new and useful Improvements in Dental Handpieces, of which the following is a specification.

My present invention relates to hand-pieces for dental operating engines, my object being to provide a hand-piece improved with respect to simplicity, and embodying in its make-up a materially reduced number of parts as compared with those usually employed, and the specific nature of which parts permits of their economical manufacture.

Figure 1 is an elevation of my improved hand-piece, Fig. 2 is a central longitudinal section taken therethrough, Fig. 3 is an elevation of the rotating stem and the clutch controlling parts associated therewith, removed, Fig. 4 is a detailed perspective view of the clutch sleeve, Fig. 5 is a detailed transverse section taken substantially on line 5—5 of Fig. 2, and Fig. 6 is a detailed perspective view of the clutch operating lever.

Referring now to the figures, I provide a cylindrical casing A, the outer surface of which may be milled as shown in Fig. 1 either in whole or in part, as desired, for the purpose of enabling the same to be effectively gripped, and may be provided with any suitable means, including a stud *a*, whereby angle attachments and other supplemental tools, implements and accessories, commonly used in connection with hand-pieces of this character may be readily attached thereto.

The opposite ends of the casing A are internally threaded to receive front and rear end pieces B and C respectively, these end pieces having threaded portions for engagement with the internally threaded casing ends and having longitudinal bores and internal annular shoulders *b* and *c* respectively, and surrounding the inner ends of their said bores.

From Fig. 2 it will be particularly noted that the front end piece B also has an external annular shoulder *b'* abutting the forward end of the casing A to form the limit of its movement within the casing A while the rear end piece C has its threaded portion substantially elongated so as to screw more or less within the casing A as may be desired, set screws *a'* being threaded radially through the rear end of the casing A and movable to bind upon the threaded portion of the end piece C to hold the latter in adjusted position for a purpose to be hereinafter described.

Mounted axially through the casing A is a one-piece rotatable stem D having a forward reduced end *d* revolubly extended into a recess surrounding the inner end of the bore of the front end piece B, and having annular shoulders *d'* and d^2 adjacent its forward and rear ends respectively, and opposing the respective annular shoulders *b* and *c* of the front and rear end pieces and spaced therefrom to receive annular series of anti-friction balls E in the spaces between them. Thus the adjustment of the rear end piece C provides for the proper tension upon the anti-friction bearings so formed, and provides for compensation for wear of the parts and the elimination of undue play at all times. Likewise it will be seen that the bearings so formed take up all end thrust of the rotating stem D in operation.

The stem D has a longitudinal bore D' terminating at its forward end in a substantially conical cavity d^3, and is also provided with a longitudinal slot d^4 communicating with its bore.

Disposed in the bore D' of the stem and in the forward end thereof is an internal clutch sleeve F, which, as best shown in Fig. 4, has a conical forward end *f*, and a plurality of longitudinal slits *f'* forming clutch pieces between the slits, a screw F' being threaded into the rear end of the clutch sleeve and provided with a rearwardly projecting head. This clutch sleeve, as will be best seen in Fig. 2, is movable longitudinally of the forward portion of the bore D' of the stem D, so that its conical forward end coöperates with the conical forward cavity in the said bore, whereby forward and rear longitudinal movements of the clutch sleeve result respectively in moving the same to clutched and unclutched positions, due to the cooperation of the conical surfaces.

A bur or other operating implement such as indicated at G in Fig. 2, is inserted with its shank extending through the bore of the front end piece B and the stem D and into the clutch sleeve F, and the latter is operated upon by means of a lever H, extending inwardly through the slot D^4 of the stem and

consisting of a flat strip of metal as best shown in Fig. 6, having a relatively broad angular forward end h and a gradually tapering body terminating at its rear end in a rounded tail h'. This lever is also provided at one side of its relatively broad forward end with laterally projecting trunnions h^2 which are seated in recesses in the stem D adjacent the forward end of its slot d^4, and which thus form the working fulcrum upon which the lever is moved.

With the parts in unclutched position, as shown in Fig. 2, the rounded tail h' normally projects slightly beyond the contour of the stem D and an operating sleeve I loosely surrounds the said sleeve and has its inner wall provided with a conical forward end to engage and press the tail h' of the lever H inwardly when the said sleeve I is moved forward.

The sleeve I is coupled by means of a radial set screw i extending therefrom and through the rear end of the stem slot d^4 to the forward reduced end of connecting rod J rotatably extended through the bore of the rear casing end piece C and the rear portion of the bore D′ of the stem D, said connecting rod having an exteriorly projecting and reduced rear end j threaded to engage the flexible shaft of the usual dental engine, and extending through a coupling member K coupled to the end piece C by a radial set screw k and having a rearwardly projecting threaded portion k' for detachable connection with the usual socket piece at the end of the flexible shaft just mentioned. Thus in operation, the adjusting screw F′ is manipulated so as to extend more or less from the rear end of the adjusting sleeve and in this manner increase or decrease the longitudinal movement of the sleeve under actuation of the lever H. Communication of rotation to the sleeve D is from the rod J, which rod and the casing A as a whole are moved longitudinally with respect to one another in order to effect the clutching and unclutching of the operating implement G. When so moved, the operating sleeve I presses the rear end of the lever H inwardly, forcing its forward angular end against the clutch member in order to move the latter to clutch position.

From this it will be seen that I am enabled to provide a hand-piece which through its particular construction embodies a materially reduced number of parts as compared with those hand-pieces now generally in use and the parts of which obviate the use of expensive machinery and the delicate operations incident to many approved devices of this general nature.

I claim:—

1. A dental hand-piece comprising a cylindrical casing, a hollow rotatable stem mounted axially in the casing, an implement clutch movable in the forward portion of the hollow of the stem, a connecting rod having its forward end extending into the rear portion of the hollow of the said stem, and clutch operating means mounted upon the stem between the clutch and the said connecting rod and secured to the latter.

2. In a dental hand piece, the combination of a cylindrical casing, a hollow rotatable stem mounted axially within the casing and having a conical cavity at the forward end of its hollow and a longitudinal side slot, a split sleeve forming a clutch member and movable in the forward portion of the hollow of the stem within and out of the conical cavity thereof, a lever extending through the side slot of the stem and having a forward angular end pivoted thereto adjacent the clutch sleeve, a sleeve slidably disposed on the stem to engage the opposite end of the said lever, and a connecting rod extending within the rear end of the stem and secured to the said operating sleeve, all for the purpose described.

3. In a dental hand-piece, the combination of a cylindrical casing, a hollow rotatable stem mounted in the casing and having a conical cavity adjacent its forward end, a clutch member movable longitudinally within the hollow of the stem and into and out of the said conical cavity thereof, said clutch member comprising a longitudinally slotted sleeve, and an adjusting screw threaded into the rear end of the said sleeve, and means for moving the clutch member to clutched and unclutched positions including a lever bearing against the said adjusting screw.

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Witnesses:
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