(No Model.)

R. G. STANBROUGH.

ANGLE ATTACHMENT FOR DENTAL HANDPIECES.

No. 517,248. Patented Mar. 27, 1894.

Fig. 1.

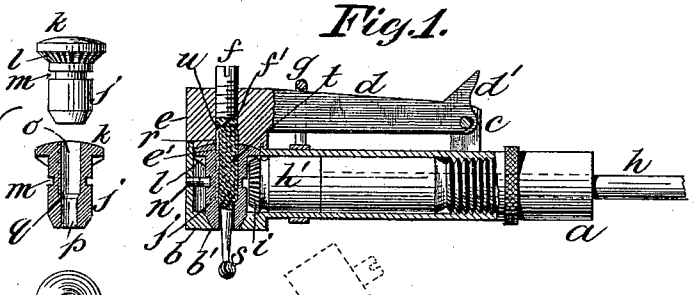


Fig. 5.

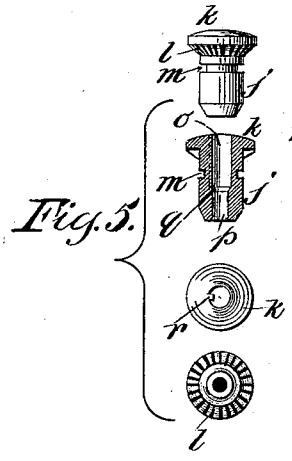


Fig. 6

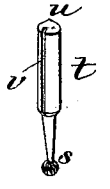


Fig. 2.

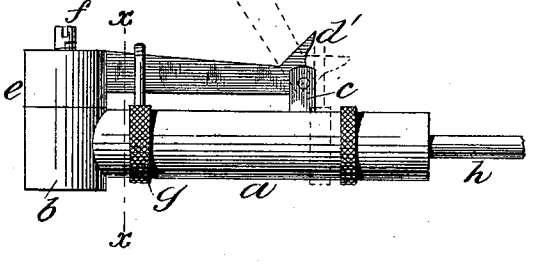


Fig. 3.

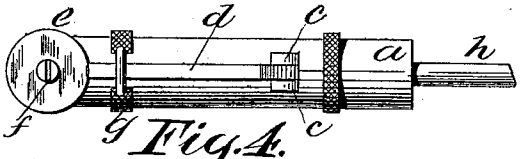
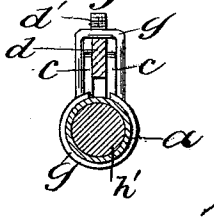


Fig. 4.



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RUFUS G. STANBROUGH, OF NEW YORK, N. Y.

ANGLE ATTACHMENT FOR DENTAL HANDPIECES.

SPECIFICATION forming part of Letters Patent No. 517,248, dated March 27, 1894.

Application filed December 2, 1892. Serial No. 453,817. (No model.)

To all whom it may concern:

Be it known that I, RUFUS G. STANBROUGH, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Angle Attachments for Handpieces, of which the following is a specification.

This invention relates to certain new and useful improvements in angle attachments for dental engines, and has for its object the production of a hand piece in which the burr, drill or other tool will be rotated at an angle to the driving shaft and in which the said tool will be firmly held, yet from which it can be expeditiously removed when desired.

A further object of my invention is to prevent, as far as possible, lost motion, and to save complication of parts.

To these ends my said invention consists in the details of construction, and in the arrangement and combination of parts, all as hereinafter more fully described and pointed out in the claims.

Referring to the accompanying drawings illustrating my invention, in the several figures of which like parts are similarly designated, Figure 1, is a sectional side elevation, showing the various parts, and a drill, in position for use. Fig. 2, is a side elevation with the drill removed. Fig. 3, is a similar plan view. Fig. 4, is a section taken on the line *x*—*x*, Fig. 2; and Fig. 5, represents the drill chuck in various views. Fig. 6, is a perspective view of the operating tool detached.

a, is the cylindrical hand-piece, carrying at its free end the right-angled, tubular projection or chamber *b*, the bottom wall of which is conically recessed or hollowed out, at *b'*, as shown in Fig. 1. From the upper surface of the hand-piece *a*, extend the lugs *c*, *c*, between which is pivoted or journaled the arm *d*, terminating rearwardly in the upwardly inclined finger *d'*, and being provided at its free end with the cap or socket *e*, the inner surface of which is concaved, as at *e'*, and which coincides with, and forms an extension of the chamber *b*. Said cap *e*, is also centrally tapped to receive a set screw *f*, the lower end of which is conically recessed as at *f'*. As shown in the drawings, the upper surface of arm *d*, is an inclined plane, and the clamp *g*, is passed around the hand piece *a*, and over the arm *d*. Through the cylindrical hand-piece *a*, runs the usual driving shaft *h*, connected to the gear-shaft *h'*, which terminates in the beveled gear *i*, projecting slightly into the chamber *b*. Within said chamber, and at an angle to the gear-shaft *h'*, is the drill chuck *j*, the lower end of which is cone-shaped to fit in the cone bearing *b'*, and the upper end is provided with the head *k*, having its top convexed, to correspond with the concavity *e'*, in cap *e*, and carrying upon its under side the bevel gear *l*, which engages with the oppositely beveled gear *i*, on shaft *h'*. Said chuck is also provided with the annular groove or recess *m*, within which enters the set screw *n*, passing through the wall of chamber *b*, and serving to keep said chuck in its position in chamber *b*, when cap *e*, is removed. The interior of chuck *j*, is preferably of two diameters, *o*, *p*, the larger being above the smaller, and joined to it by the incline *q*, and the larger diameter is provided throughout its length with the feather or spline *r*.

The drill, burr, or other operating tool *s*, which I prefer to use with this device is shown, described and claimed in a divisional concurrent application, filed by me October 24, 1893, Serial No. 488,977. This tool is provided with the enlarged stock *t*, as shown, the lower end of which tapers and finds a seat upon the incline *q*, while the upper end is pointed as at *u*, and has a bearing in the recess *f'*, of set screw *f*. It is also provided with the longitudinal groove or recess *v*, to engage with the feather or spline *r*. It will be gathered from the foregoing that the tool is inserted in the chuck from above, and that it is held against escape in the direction of its active end by means of its shouldered contact with the chuck, and is held from escape in the opposite direction by the positively locked cap *e*. It will be obvious that when the clamp *g*, is forced toward the end of the device, it slides along the inclined plane on arm *d*, thus securely locking the parts in their closed or coincident position by a wedge action; and when said clamp is moved in the other direction a sufficient distance, it strikes against the projecting finger *d'*, rais-

ing the arm *d*, and the cap *e*, away from the rest of the device, and to the position shown by dotted lines in Fig. 2, thus facilitating the removal of one tool and the insertion of another.

The tension on the operating tool can at all times be regulated through the set screw *f*, and by using cone-bearings wherever practicable, excessive friction is avoided. I prefer to arrange the gear *l*, above the gear *i*, as shown, but it may, in some instances be desirable to reverse the relative positions of said gears, and this, with other structural changes and modifications can obviously be accomplished without departing from the principle of my invention, and involve merely the skill of a mechanic versed in the art.

It will be seen from the foregoing that my device is simple in construction, and that its few parts are arranged in a manner yielding the maximum of efficiency, while reducing to the minimum the liability of the parts to breakage or derangement.

What I claim as new, and desire to secure by Letters Patent, is—

1. A cylindrical hand-piece having an angular tubular projection, within which is located a rotary tubular chuck; an arm pivoted to said hand-piece and carrying a cap, adapted, in the closed position of the arm, to coincide with the tubular projection, and form a movable upper bearing for the chuck therein, in combination with a clamp for holding said arm in its closed position, and a drive shaft passing through the hand-piece for imparting motion to the chuck, substantially as described.

2. A cylindrical hand-piece having an angular, tubular projection, within which is located a rotary tubular chuck; an arm of inclined or tapering form, and provided with a reversely inclined rearwardly projecting finger, pivoted to said hand-piece and carrying a cap, adapted in the closed position of the arm to coincide with the tubular projection and form a movable upper bearing for the chuck therein, in combination with a sliding clamp, working over the inclines on the arm, whereby said arm is held in its closed or moved to its open, position, and a drive shaft passing through the hand-piece substantially as described for the purposes set forth.

3. Means for holding and rotating an operating tool at an angle to the drive shaft, comprising a rotary tubular chuck provided internally with a feather or spline, and cone-shaped at one end, and having a head carrying a beveled gear at its other end; upper and lower bearings for said chuck, one of which is movable, and a shaft terminating in a beveled gear engaging with the gear on the chuck, substantially as described.

4. A tubular chuck for angle attachments cone-shaped at its lower end and having at its upper end a convexed head carrying a beveled gear, the internal diameter of said chuck comprising a contracted and an extended portion, the latter being provided with a feather or spline, an annular groove exteriorly surrounding said chuck, and means for holding and rotating said chuck in operating position, substantially as described.

5. The combination of a cylindrical hand-piece having a tubular projection arranged at an angle thereto, an arm pivoted to the hand-piece and carrying a cap for said projection, a shaft arranged in said hand-piece and provided with a beveled gear, a rotary tubular chuck having cone bearings in the cap and projection and provided with an internal feather or spline and an external gear, an operating tool grooved to engage the said feather or spline and having cone bearings in said chuck and a set screw tapped through said cap and constituting an end bearing for said tool, substantially as described.

6. A rotary chuck of two internal diameters, one of which is provided with a feather or spline; an operating tool adapted to enter and fit said chuck; a movable upper bearing for said tool and means for imparting rotary motion thereto, substantially as described.

Signed at New York, in the county of New York and State of New York, this 30th day of November, A. D. 1892.

RUFUS G. STANBROUGH.

Witnesses:
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