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2,180,499

CONTRA-ANGLE DENTAL HAND PIECE

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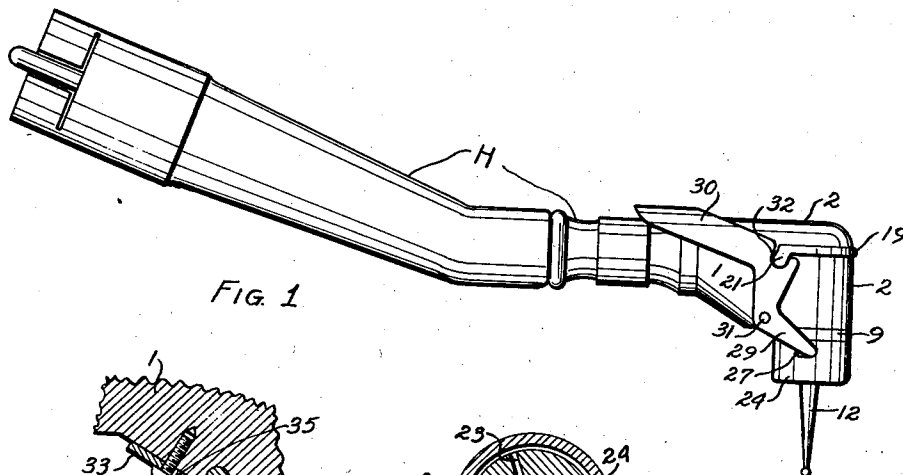


FIG. 1

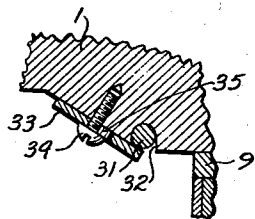


FIG. 7

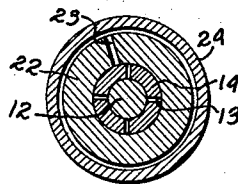


FIG. 6

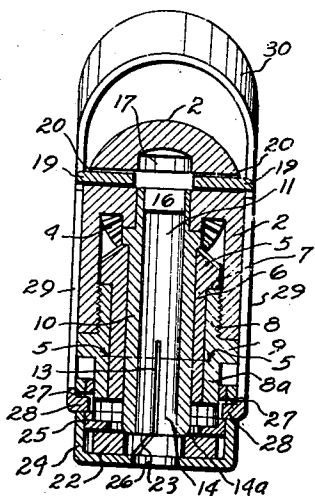


FIG. 3

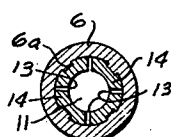


FIG. 5

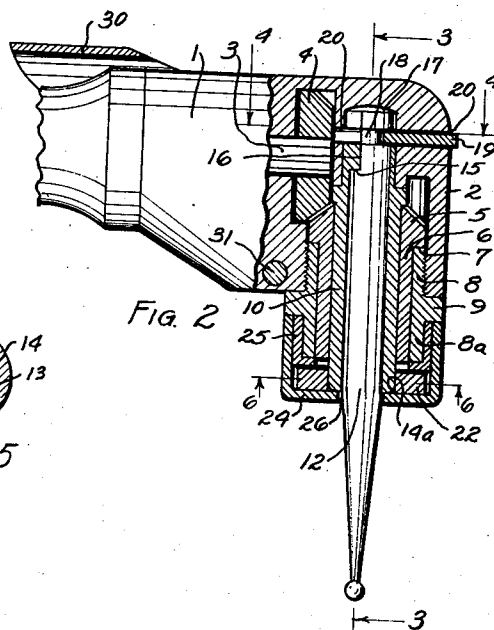


FIG. 2

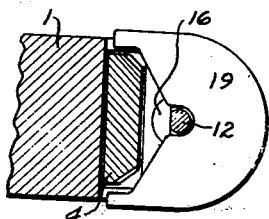


FIG. 4

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CONTRA-ANGLE DENTAL HAND PIECE

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Application October 3, 1938, Serial No. 232,947

6 Claims. (Cl. 32-27)

This invention relates to improvement in dental contra-angle hand pieces and particularly to improvement in burr-receiving, retaining and releasing means in such hand pieces.

Objects of this invention are to provide, in such a device, (a) an improved chuck, (b) improved means for retaining the burr shank in exact axial alignment and eliminating vibration during rotation, (c) improved means for opening the chuck for removal of the burr shank or for admission of the burr shank therinto and for clamping the burr shank in operative position, and (d) providing a rotating clamping means having a smooth, non-rotatable exterior.

In my pending application, Serial No. 139,132 filed April 27, 1937, I have disclosed lever reciprocation of rotatable means for clamping the chuck upon the burr shank. Objects of the present invention are modifications, variations and improvements of the structure there disclosed.

With these and other objects in view, as will hereinafter more fully appear, my invention comprises certain novel constructions, combinations and arrangements of parts as described in the following specification and defined in the appended claims and illustrated in the accompanying drawing in which

Fig. 1 is a side elevation of a complete contra-angle hand piece constructed according to my invention.

Fig. 2 is an enlarged fragment of Fig. 1 partly in elevation but mostly in central section, illustrating the device with the burr clamped in position for operation.

Fig. 3 is a sectional view on line 3-3 of Fig. 2 looking in the direction of the arrows but not including the burr and showing the clamping mechanism in released or open position.

Fig. 4 is a fragmentary view on line 4-4 of Fig. 2 looking in the direction of the arrows.

Fig. 5 is a section on line 5-5 of Fig. 3.

Fig. 6 is a section on line 6-6 of Fig. 2.

Fig. 7 is a fragmentary sectional view of a modification of the mounting of the pin fulcrum of the lever.

As in the disclosure in my pending application, above referred to, I use a handle and operating means enclosed therein of the type now in common use, the same being indicated generally at H, which handle carries a member 1 which, in turn, carries head housing 2, conveniently formed integrally as illustrated.

Within member 1 is the usual operating shaft carrying suitable gear 4 which meshes with a gear 5 carried by hub 6, having shoulder 7 seated

on a suitable bearing within housing 2 such as the upper or inner end of sleeve 8 which is threaded into housing 2 and is provided with an annular ring 9 which limits the movement of sleeve 8 into housing 2. Sleeve 8 has a downwardly extending portion 8a which extends the bearing for hub 6 and also serves other purposes as hereinafter described.

Hub 6 carries an axially positioned chuck 10 suitably affixed therein as by dovetailing 6a and having an axial bore 11 for accommodation of a burr shank 12, the lower or outer end of chuck 10 being slit as at 13 to form fingers 14.

The shank clamping means, hereinafter described, when accurately constructed, will so tightly hold the shank as to cause the shank to rotate with the chuck but to insure such coincident rotation and prevent slipping, even in case of inaccurate construction, positive means may be provided such as cut out 15 in the shank and co-mating projecting 16 on the inner wall of the chuck.

The upper or inner end of the shank 12 projects into a recess 17 in the top of housing 2 and near this end the shank is annularly grooved as at 18 for the reception of the inner edges of slide 19 adapted by projection into said groove 18 to prevent accidental longitudinal displacement of the shank 12 while fitting sufficiently loosely in said groove 18 to permit free rotation of the shank without substantial frictional contact with slide 19. The housing 2 is slotted as at 20 to accommodate slide 19 with a suitable sliding fit. Slide 19 is provided with suitable means as lugs 21 for engagement by the lever for operation of the slide as hereinafter described.

It will be understood that the shank 12 has a nice sliding fit within bore 11 so that a very slight contraction of fingers 14 will tightly grip shank 12. The fingers 14 project a substantial distance from hub 6 as clearly shown at Figs. 2 and 3. Ring 22, split as at 23, has a normal interior circumference slightly less than the outer circumference of fingers 14 when clamped against shank 12. Suitable provision is made for permitting ring 22 to be forced over the ends of fingers 14 as by bevelling or rounding the outer edges of the ends of fingers 14 as at 14a.

Ring 22 is positioned within the bottom of a cup 24 and is retained thereby by the foot of L sleeve 25 tightly fitting within the walls of cup 24 and forming a sleeve bearing for said cup on the sleeve 8a whereby the cup and sleeve may be slid, longitudinally on said sleeve 8a, upwardly until the rim of the cup and sleeve seat against

