

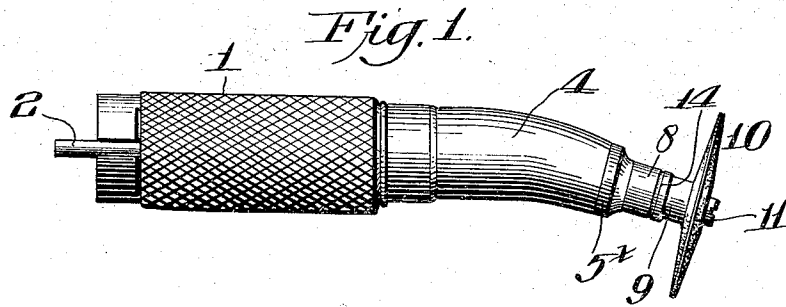
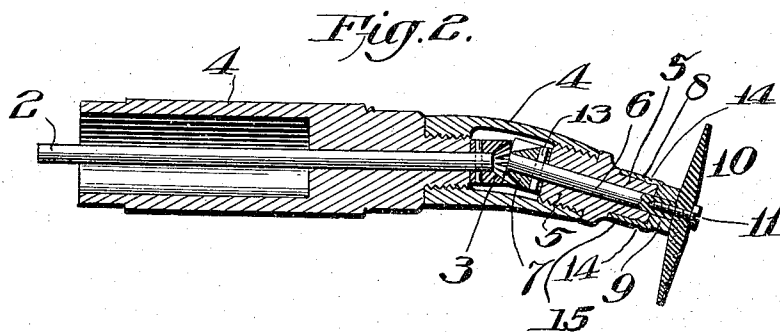
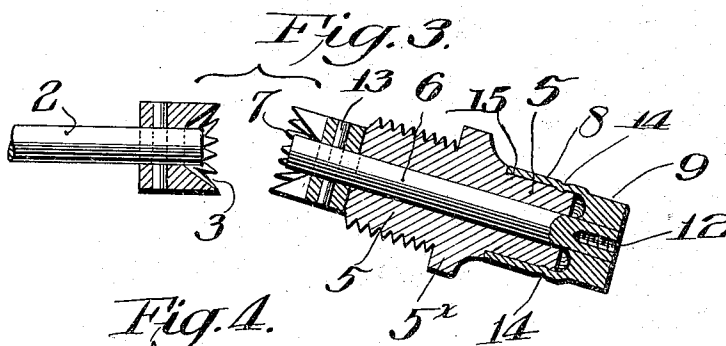
Aug. 21, 1923.

1,465,690

E. E. SMITH

DENTAL INSTRUMENT

Filed Jan. 30, 1922



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UNITED STATES PATENT OFFICE.

EDWARD EVERETT SMITH, OF PHILADELPHIA, PENNSYLVANIA.

DENTAL INSTRUMENT.

Application filed January 30, 1922. Serial No. 532,644.

To all whom it may concern:

Be it known that I, EDWARD EVERETT SMITH, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented new and useful Dental Instruments, of which the following is a specification.

My invention consists of a dental instrument embodying a hand piece, a mandrel with which the tool of the instrument is connected, a bearing member in which said mandrel is mounted, a driving shaft adapted to be geared with said mandrel, and a cap adapted to be operated by said mandrel and form a lap-joint with said bearing whereby saliva is prevented from inflowing to said mandrel and its bearing member.

The invention is satisfactorily illustrated in the accompanying drawing, but the important instrumentalities thereof may be varied, and so it is to be understood that the invention is not limited to the specific details shown and described, as long as they are within the spirit or scope of the claims.

Figure 1 represents a side elevation of a dental instrument embodying my invention. Figure 2 represents a longitudinal section thereof.

Figure 3 represents a longitudinal section of certain members thereof in separated condition, and on an enlarged scale.

Figure 4 represents a face view of one of the gear members of the power or driving shaft of the instrument.

Similar numerals of reference indicate corresponding parts in the figures. Referring to the drawings.

1 designates the hand piece of a dental instrument, in the present case, that of a grinding device. Mounted in the same is the driving shaft 2 which receives power from a suitable engine or motor and carries at its forward end the bevel gear wheel 3. To the forward end of said hand piece is screwed or otherwise attached, the sleeve 4 which is screwed or otherwise attached to the tubular plug 5 whose bore forms the bearing for the countershaft or mandrel 6, whose rear or inner end carries the bevel gear wheel 7 which meshes with the bevel gear wheel 3, said wheels 3 and 7 occupying the sleeve 4.

Secured to the forward or outer end of the plug 5 is the cap 8 of metal or other rigid material to whose forward end is attached the tubular plug or neck 9 also of

metal or other rigid material against which neck abuts the tool 10, which in the present case, is that of a stone or grinding disc, it being noticed that the mandrel 6 extends also through the bore of said neck 9, and said tool is secured to said mandrel 6 by the screw 11 which is passed through the tool into the threaded opening 12 in said shaft 6, thus firmly retaining the tool in operative position.

Attention is directed to the fact that the sleeve 4 is deflected from a right line, say in curved form from the hand piece, and the mandrel 6 in its longitudinal direction is angular to the driving shaft 2, while the plug 5, the cap 8 and the neck 9 also conform to the angle of said mandrel 6, consequently, the tool 10 is inclined to the longitudinal direction of the hand piece, while the gear wheel 7 meshes with the gear wheel 3 at a corresponding angle thereto, without interfering with the free rotation of said wheels when the shaft 2 has power transmitted to it.

When the sleeve 4 is deflected as above—it may be conveniently passed over various parts of the teeth, and so present the tool most accessively and conveniently to either of said parts of the teeth as may be desired for the operation of the tool thereon.

The gear wheel 7 is secured to the inner end of the mandrel 6 by the pin or screw 13 which is passed through the hub of said gear wheel and the adjacent portion of the mandrel. Then as the cap is connected with the outer end of said mandrel by the screw 11 which passes through the tool 10 and neck 9 of the cap into said mandrel as has been stated, the cap is retained on the adjacent portion of the plug 5 while being adapted to rotate thereon. To assist in retaining the cap on the plug and steady the same in its rotation, the metal of the side of the cap is upset slightly inwardly as at 14 so that the inner wall of the upset portion engages frictionally with the contiguous part of the plug 5 as a swivel, without, however, preventing the free rotation of the cap with the tool and mandrel. Then as the forward end and side of the plug are covered by the neck and side of the cap and the rear end of the cap is seated against a shoulder on the exterior of the plug 5, and the inner edge of said cap abuts freely and flush with the adjacent shoulder on the exterior of said plug, the joint of the cap

and plug is closed whereby saliva from the mouth is prevented from entering the same and reaching the mandrel, while on the contrary, the saliva is caused to flow over the exterior of the cap, the exposed portion 5* of the plug, and the hand piece from which it may be readily removed.

Having thus described my invention what I claim as new and desire to secure by Letters Patent, is:—

1. In a dental instrument of the character stated, an attachment consisting of a sleeve connectible with the hand piece of the instrument, a plug in said sleeve secured thereto, a rotatable cap held on said plug, a neck extending forwardly from said cap and secured thereto and a tool-carrying mandrel having its bearing in said plug and secured to said neck, said mandrel having on its inner end a gear which is adapted to intermesh with a gear on the driving shaft of the

instrument, said neck being adapted to have the tool abut thereagainst and secured to said mandrel.

2. In a dental instrument, a hand-piece, 25 a driving shaft therein, a sleeve adapted to be secured to said hand-piece a tubular plug in said sleeve adapted to be connected with the forward end thereof, a rotatable cap on the exterior of said plug, a neck on said cap on the front end of said plug, a shoulder on said plug with which said cap freely abuts forming a closed joint therewith, a tool-carrying mandrel having its bearing in said plug and neck, and means for gearing 30 said mandrel with said driving shaft, the tool of the instrument being adapted to abut said neck. 35

EDWARD EVERETT SMITH.

Witnesses:

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