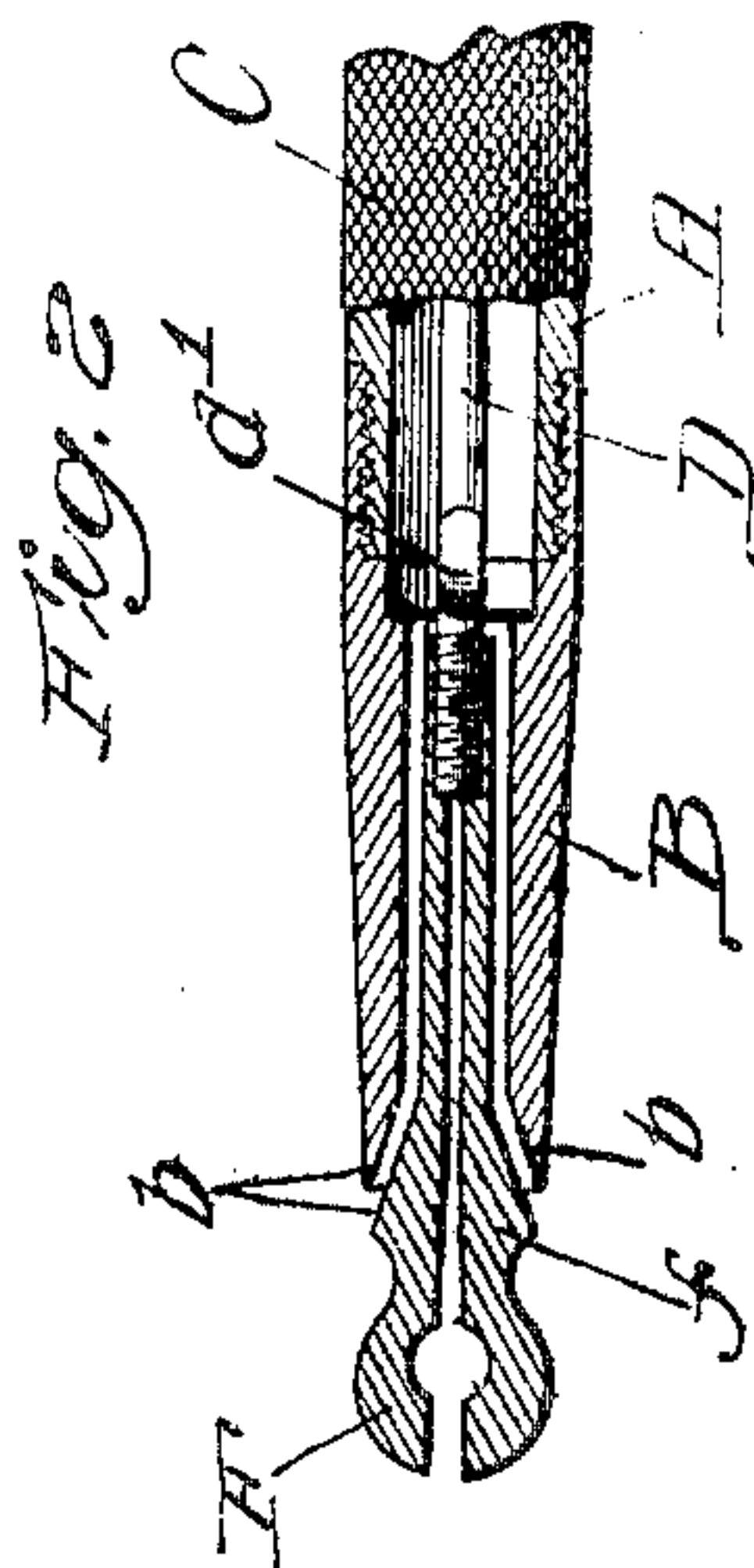
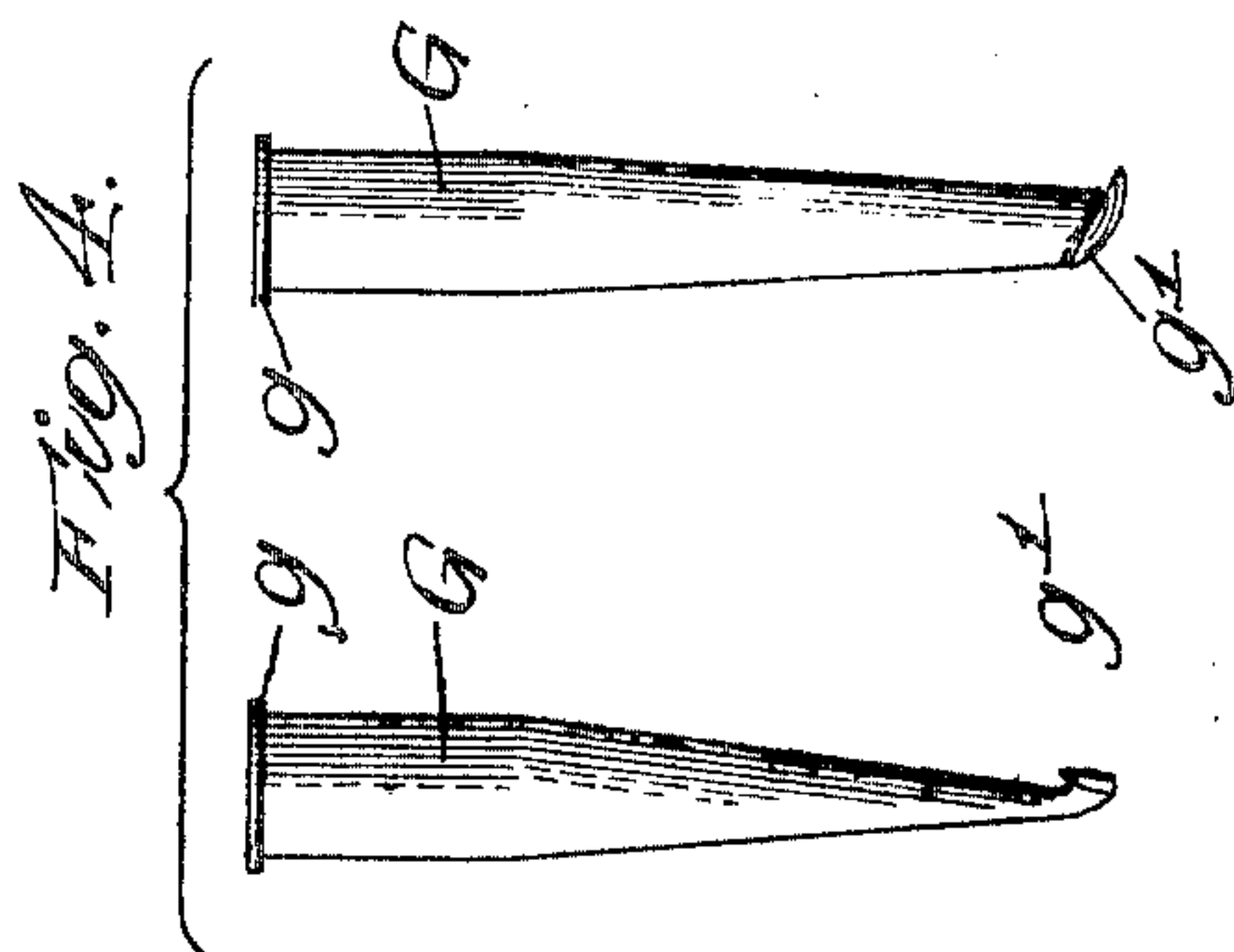
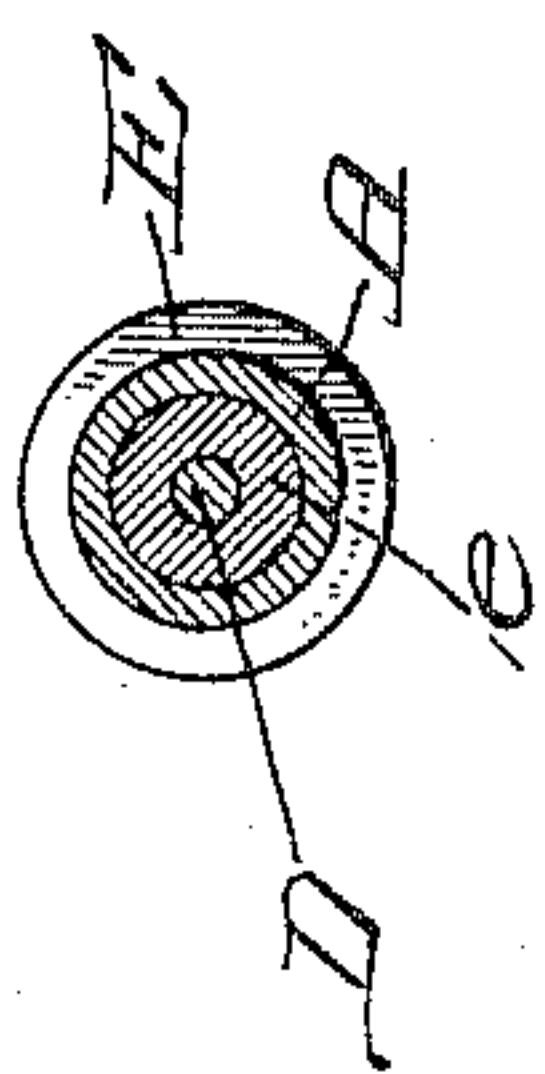
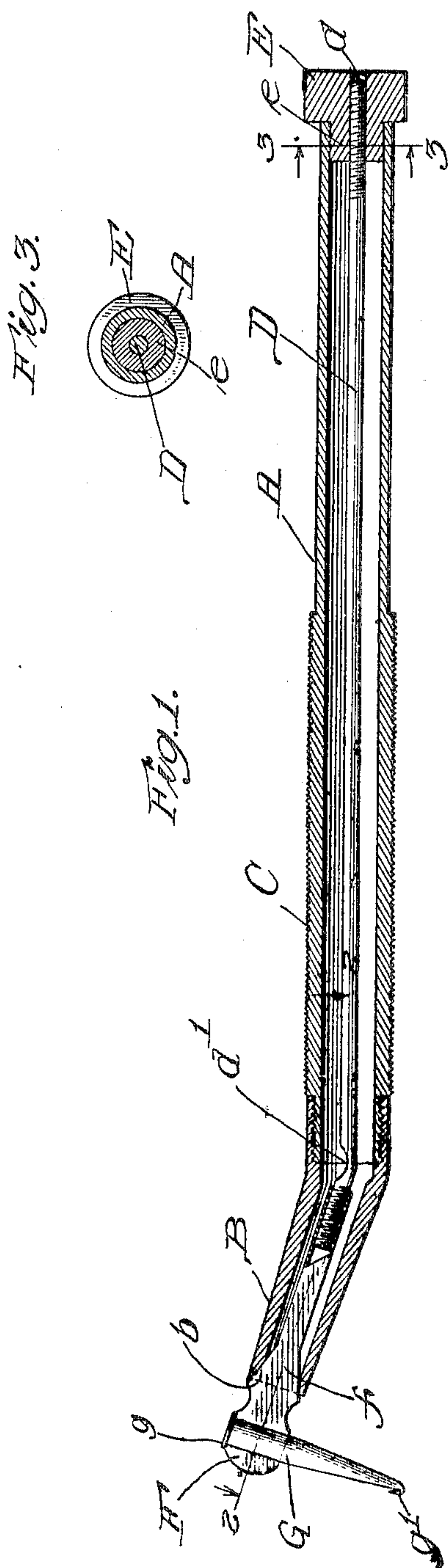


W. E. HARPER.
DENTAL INSTRUMENT.
APPLICATION FILED JULY 5, 1904.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2

Fig. 5.

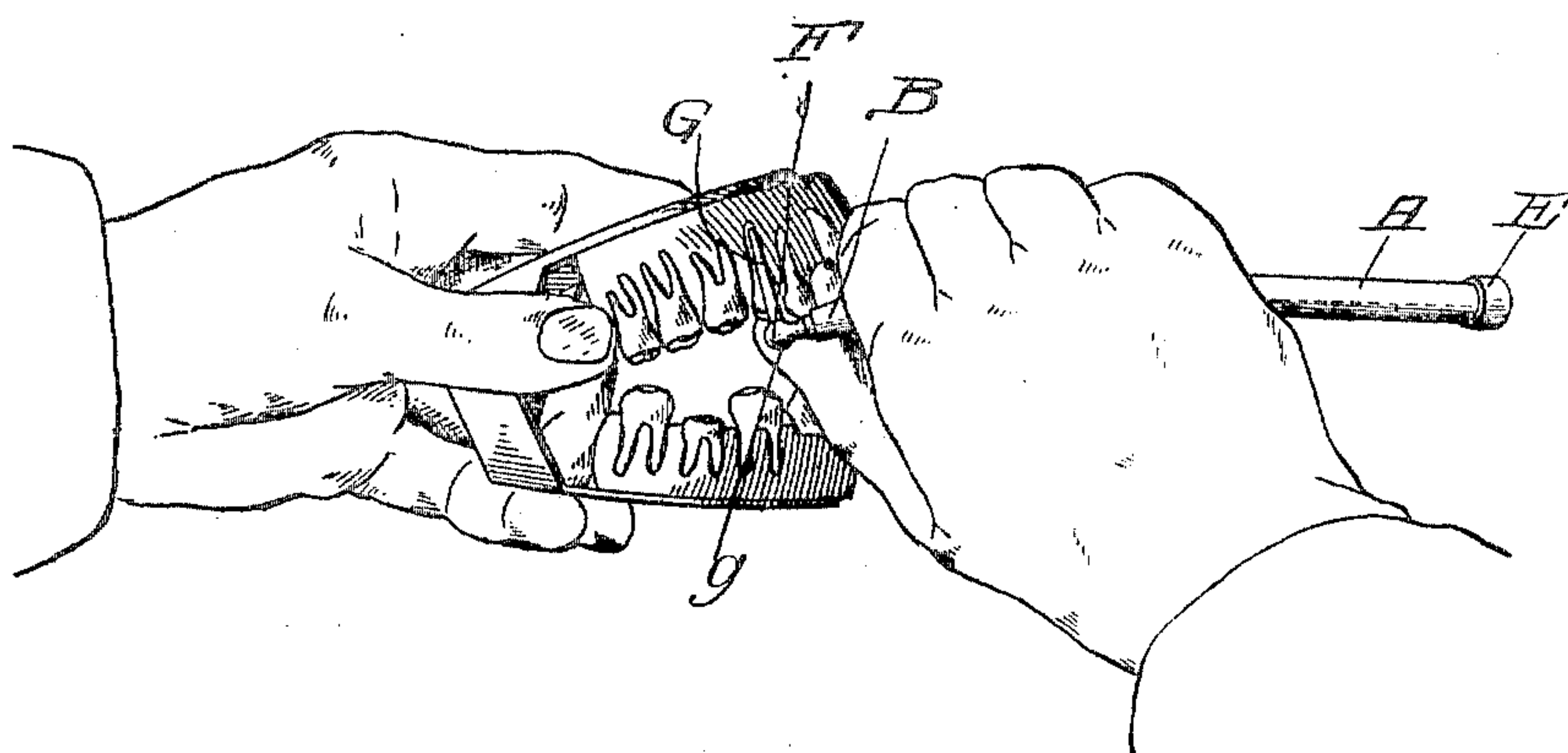
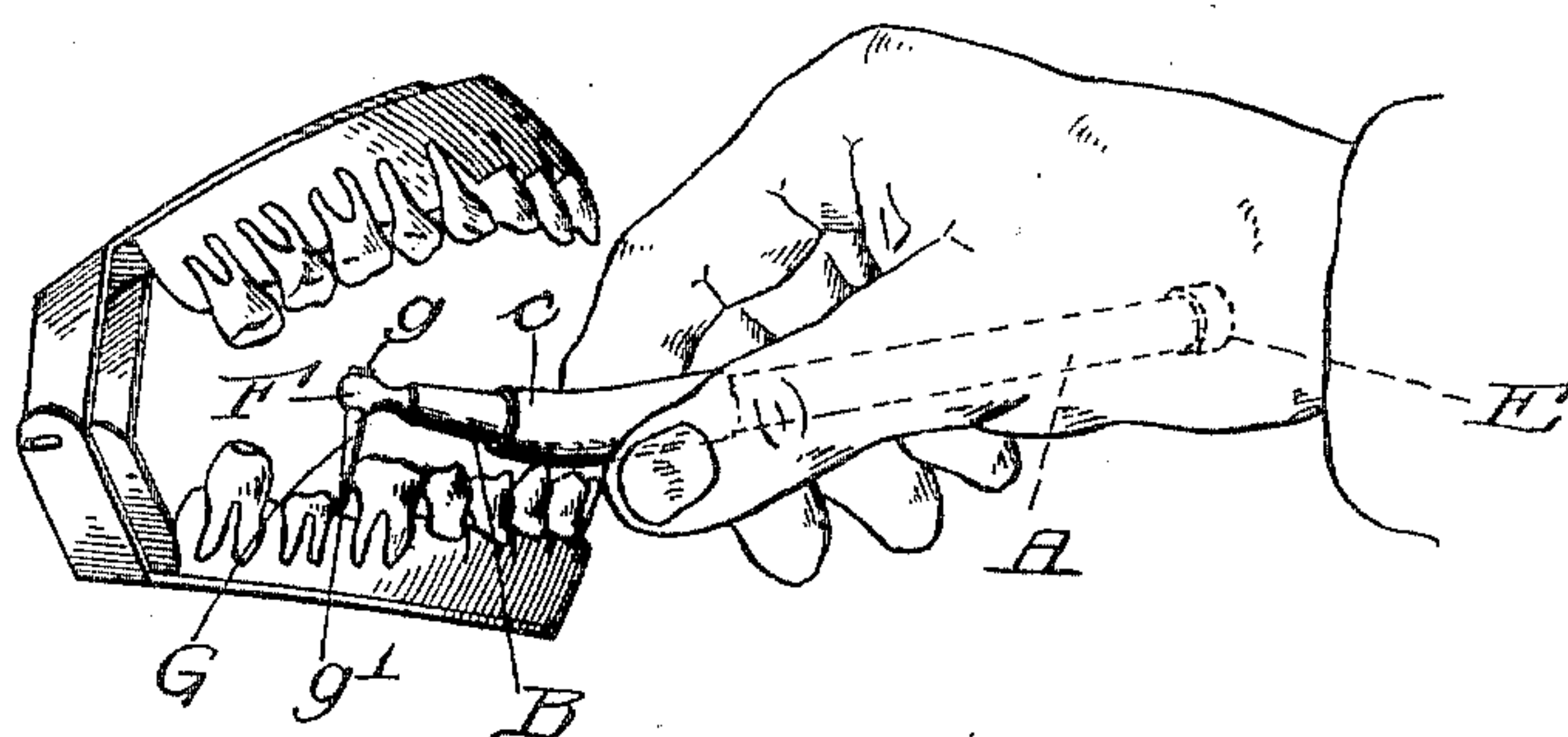


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM EDWARD HARPER, OF CHICAGO, ILLINOIS.

DENTAL INSTRUMENT.

No. 797,684.

Specification of Letters Patent.

Patented Aug. 22, 1905.

Application filed July 5, 1904. Serial No. 215,299.

To all whom it may concern:

Be it known that I, WILLIAM EDWARD HARPER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Dental Instruments, of which the following is a specification.

My invention relates to improvements in hand implements for dental work.

The object of my invention is to provide a hand implement of this character which shall be so adaptable to a wide range of dental operations that all parts of a tooth in any part of the mouth shall not only be accessible to the instrument for dental operations, but shall be accessible in such a manner that, while a powerful leverage is afforded, the instrument shall be under perfect control of the operator and shall be sensitive in a high degree.

Another object of my invention is to provide such an instrument having the handpiece and a plurality of operating-points so adapted to each other that the operating-point may automatically adjust itself to the tooth-surface upon which it is acting, and a comparatively small number of operating-points will meet all requirements and will take the place of the very extensive number of points which is required for any hand instrument now known to me. It should be understood, however, that a principal object of my invention is to provide a hand instrument for cleaving the enamel from the tooth which shall provide the combination of great power, perfect control, great sensitiveness, and adaptability to a fixed rest upon the jaw containing the tooth being operated upon. These and such other advantages as may hereinafter appear are attained by my invention, a preferred embodiment of which is found in the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view of my improved instrument. Fig. 2 is a sectional view on the line 2 2 of Fig. 1 looking in the direction indicated by the arrows. Fig. 3 is a transverse sectional view on the line 3 3 of Fig. 1 looking in the direction indicated by the arrows. Fig. 4 shows two views of an enamel-cleaver. Fig. 5 shows my improved implement applied to the root of a tooth in the upper jaw, while Fig. 6

shows my improved instrument applied to a tooth in the lower jaw.

Like letters of reference indicate the same parts in the several figures of the drawings.

As shown in the accompanying drawings, the implement consists primarily of a tubular handpiece A, having the lower portion thereof B bent at an obtuse angle to the body of the handpiece. I have found that the most satisfactory way to bend the handpiece is to cut a V-shaped slot part way through the handpiece. Thereupon the desired bend is made and the walls of the V-shaped slot are brazed together. At C the handpiece is preferably thickened and roughened to afford a firm grip for the operator. The open end of the bent portion B flares outwardly to afford a conical seat *b*.

Extending longitudinally of the handpiece A is a rod D, provided at one end with a screw-threaded portion *d*, upon which is threaded a nut E, which abuts against the rear end of the handpiece A and is preferably provided with a reduced portion *e*, which fits slidingly within the bore of the handpiece A. The rod D is attached at its forward end to a clutch F, having a conical portion *f*, which is adapted to the conical seat *b*. The clutch F is composed of two halves or jaws adapted to receive and grip an operating-point, such as G. (*Vide* Fig. 1.) The rod D is preferably cut away at *d'* to more readily adapt it to the angle between the operating end B and the body of the handpiece A.

The operating-point is preferably provided with a cylindrical shank and also with a shoulder, such as *g*, Fig. 1 and Fig. 4.

In Fig. 1 I have shown the implement fitted with an enamel-cleaver, such as that shown in Fig. 4, such a point being provided with an upwardly-projecting cutting edge *g'* and being used to remove the tartar from the surfaces of the teeth and to cleave off the enamel, which, as is well known, is the hardest of animal substances. This instrument is therefore operated to scrape the tooth-surface by powerful traction, while being at the same time held by strong lateral pressure against the tooth-surface.

In the use of my implement when constructed as shown an operating-point, such as G, is inserted between the jaws F and is locked in position by tightening the nut E

upon the end of the rod D, thereby drawing the conical portion *f* of the clutch F into operative contact with the conical seat *b*, thereby clamping the jaws about the operating-point.

While it is obviously possible to so tightly clamp the jaws about the operating-point as to hold it rigidly in position, I prefer when using points which are operated either by traction or pressure to only lightly clamp the point between the jaws F, so that while the point will not fall from its position in the jaws it may be rotated about its axis. This permits of the automatic adjustment of the operating portion of the point to the varying surfaces of the teeth which are being operated upon, while, for example, in case of such a point as the cleaver G the shoulder *g* will abut against the upper surface of the jaws of the clutch F, so that the point cannot be displaced by any tractional force which may be exerted in operating the point to cut the tooth-surface; but the operator need not rely upon this automatic adjustment, because this "fast and loose" clutch of the point will enable the operator to manually adjust the point to any desired angle without manipulating the clutch mechanism.

As shown in Fig. 5, the operator is allowed to get a perfect rest by resting his thumb against the tooth which is being operated upon. The instrument adapts itself to the limited opening of the mouth, to the position of the jaw, and to the hand of the operator, so that the skilled operator will feel perfectly every roughness upon which the instrument operates and can detect exactly how the work is progressing by the sense of touch, or, as shown in Fig. 6, the shank of the instrument itself may be rested upon any tooth of the lower jaw, care being taken to provide the instrument with a rubber sleeve *c*, which shall rest against the tooth and prevent injury thereto. When so operating, it will be seen that not only does the fulcrum so afforded give the operator extreme power; but, as shown, he may push the instrument tightly against the mesial surface of the tooth being operated upon and at the same time exert all necessary tractional force without thereby at all losing control of his instrument and en-

dangering any of the soft tissues of the mouth. By thus affording a firm and sure rest, a powerful leverage, and an adjustable point I render the hand operations of dentistry more rapid, more certain and accurate, and I render various tooth-surfaces readily accessible, which have been heretofore difficult of access because the operating-point extends at an angle, preferably a right angle, to the operating end of the handpiece.

It will be understood that for purpose of illustration I have merely shown my invention in what I now consider to be its preferred form, but without thereby confining myself to such embodiment thereof.

I claim—

1. A dental instrument comprising the combination of an operating-point provided with a cleaving-lug, a shank and a shoulder, with a handpiece having a portion thereof bent at an angle to the body of said handpiece, a clutch arranged to hold said operating-point at an angle to the axis of said handpiece, and means for operating said clutch to engage said operating-point.

2. A dental cleaver, comprising the combination of an operating-point provided with a cylindrical shank and a shoulder projecting outwardly above said shank, with a handpiece having a portion thereof bent at an angle to the body of said handpiece, and a clutch arranged to hold said operating-point at an angle to the axis of said handpiece, said clutch comprising a pair of jaws arranged to clamp the cylindrical portion of said operating-point and to engage said shoulder, said clutch being provided with a cam-surface adapted to engage a cam-surface upon the end of said handpiece so as to clamp said jaws together, a rod extending through said handpiece, and a nut mounted upon said rod and engaging the end of said handpiece, whereby said cam-surfaces may be drawn in contact with each other so as to clamp said operating-point between said jaws.

WILLIAM EDWARD HARPER.

Witnesses:

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