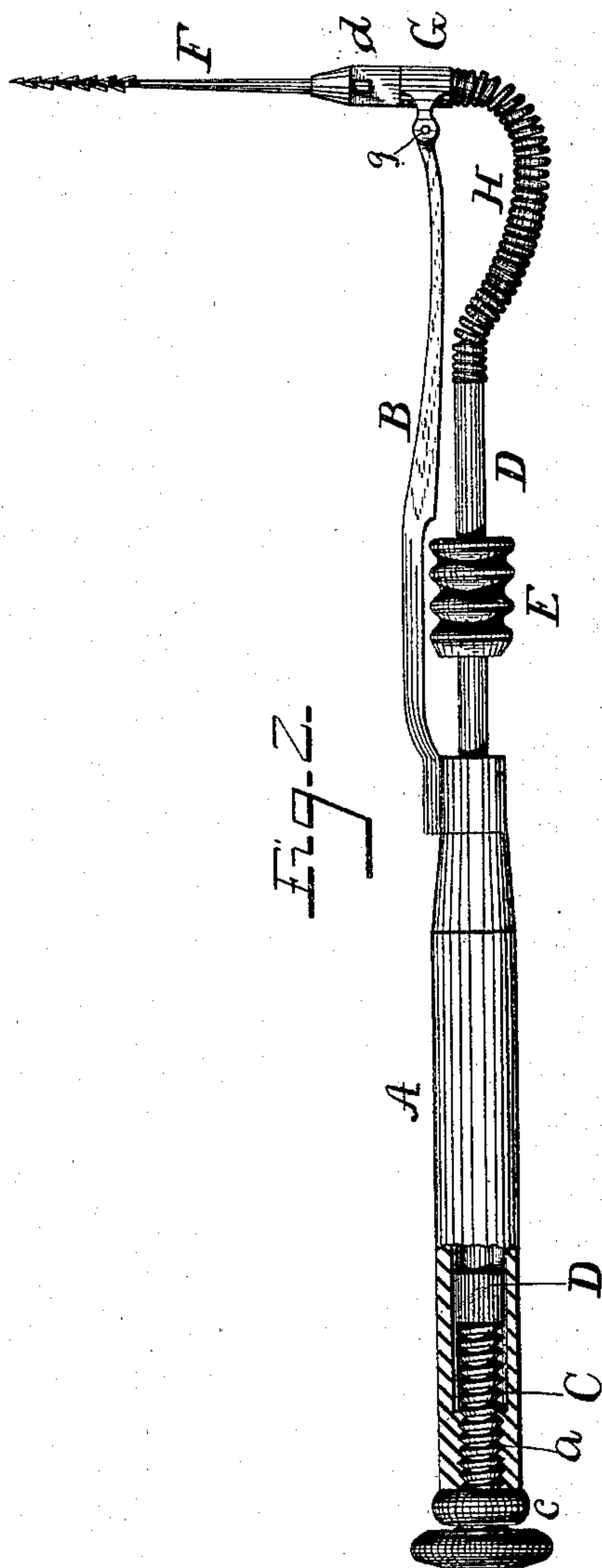
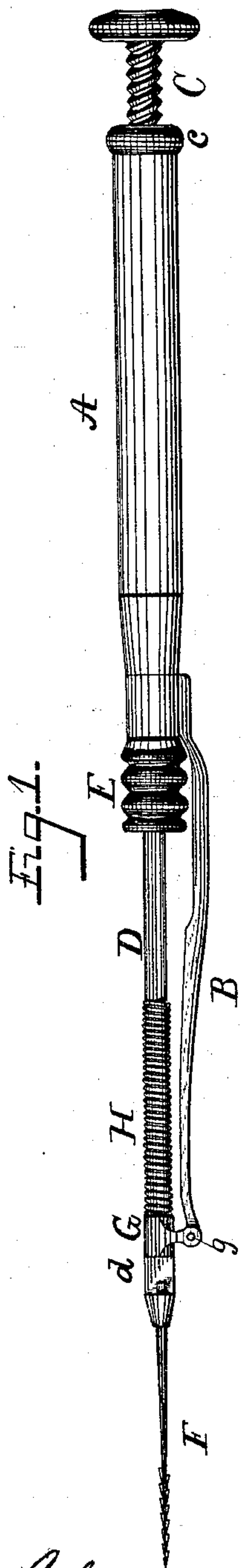


(No Model.)

R. B. DONALDSON.
DENTAL INSTRUMENT.

No. 410,158.

Patented Sept. 3, 1889.



Witnesses.

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UNITED STATES PATENT OFFICE.

ROBERT BRUCE DONALDSON, OF WASHINGTON, DISTRICT OF COLUMBIA.

DENTAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 410,158, dated September 3, 1889.

Application filed May 24, 1889. Serial No. 311,925. (No model.)

To all whom it may concern:

Be it known that I, ROBERT BRUCE DONALDSON, a citizen of the United States, residing at Washington city, in the District of Columbia, have invented certain new and useful Improvements in Dental Instruments; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to that class of instruments employed in dentistry for removing the pulp, or, as it is generally called, the "nerve," and scraping and cleaning the pulp-canal in the root of a tooth.

In a patent granted to me July 14, 1885, No. 322,265, is described and claimed a dental instrument for removing the pulp and scraping the canal in the root of a tooth, which instrument, as well as all others of which I am aware employed for this purpose, consisted of a straight, barbed, and tapered wire with a rigid handle. When in use, these instruments are rotated or turned so as to cause the barbs at the point thereof to engage the pulp or nerve and hold the same, whereby the removal intact of said pulp may be accomplished. To introduce and rotate such instruments—that is, those having rigid handles—has at times been difficult of accomplishment, as when the cavity was at the back of the tooth. By bending the end of the instrument it could then be introduced into the cavity, but the instrument could not be rotated when so bent, which movement of the instrument is necessary to secure the best results.

To overcome these objections as now found to exist in the practical operation of dental broaches employed to remove the pulp from the pulp-canal of a tooth and scrape said canal, especially in the posterior teeth, is the object of my present invention, and to accomplish which I proceed as follows, reference being had to the accompanying drawings, forming a part hereof, for a better understanding of the details of construction of the same, and in which drawings—

Figure 1 is a view in elevation of a dental instrument for removing the pulp from the canal of a tooth and cleaning said canal, constructed according to my invention, the broach

being shown as in its normal or straight position; and Fig. 2 is a similar view of the instrument, in partial section, illustrating the broach as at an extreme angle for entering a cavity at the back of a posterior tooth.

The letter A designates a hollow handle, at the outer end of which is supported a bracket or arm B, and the inner end is screw-threaded or carries a nut, as at *a*. Through this screw-thread *a* of the rear end of the handle A projects a thumb-screw C, that carries a set-nut *c*, and projecting from the outer end of said handle is a shaft D, which shaft is of such length as to extend somewhat beyond and almost entirely through the handle and impinge against the end of the thumb-screw C, as shown in Fig. 2. Upon this shaft is keyed a burr E, by which the same is rotated, and at the outer end thereof is a head or socket-piece *d*, that receives the broach F.

G is a box or journal-bearing for the socket-piece *d*, which bearing is pivoted or hinged to the outer end of the bracket B, as at *g*, and has a swinging movement upon said bracket. A portion, as at H, of the shaft is made flexible, being preferably of spring-wire in spiral form, so that the shaft may be bent upon itself, as in Fig. 2, without affecting the rotation thereof.

The operation of the device is as follows: To change the position of the broach from a straight line, as in Fig. 1, to an angle, as in Fig. 2, so that the instrument may be in proper position to readily enter and be rotated in a cavity at the back of a tooth, the clamp-nut *c* is first run down the screw C, then by adjusting said screw C it is driven against the end of shaft D and said shaft forced outward. As the shaft moves outward the flexible portion H thereof bends upward and causes the socket *d* and broach held therein to assume an angle, as in Fig. 2. Any desired degree of angularity may be given to the broach by manipulating the screw C, and when the required angle has been reached the screw C is retained in position by the clamp-nut *c*. It will thus be seen that the instrument may be readily introduced into cavities in the tooth, whatever the position of said cavities may be, and when so introduced into a cavity a simple movement of the burr E by the forefinger and thumb of the operator will cause a rotation of the broach.

Instead of adjusting the shaft D by a screw

at its end, which screw enters the handle of the instrument and presses against the rear end of the shaft, as here shown, such shaft may be adjusted in any other suitable manner, but the screw at the outer end of the handle, with set-nut, is the preferred construction. The portion H of the shaft may also be a light flexible wire cable, instead of a spiral wire, if such cable will be found to accomplish the desired results.

The socket-piece or holder *d* may be of various forms and arranged to receive broaches of different sizes.

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

1. A dental instrument for removing the pulp and cleaning the canal in the root of a tooth, consisting of a hollow handle, and a shaft held in said handle and adapted to be rotated therein and projected therefrom and carrying at its outer end the cleaning-tool.

2. A dental instrument of the nature described, composed of a handle, and a shaft held in said handle and adapted to be rotated therein and projected therefrom, and having at its outer end the socket for holding the broach or cleaning-tool, which shaft has a flexible section interposed in its length whereby the line of direction of said shaft may be changed from straight to angular.

3. In a dental instrument of the nature described, in combination with the handle, the bracket support or arm secured to said handle and carrying at its outer end the swinging bearing, and shaft held in said handle and swinging bearing, which shaft is adapted to be rotated in said handle and bearing and to be projected from the handle, as and for the purposes described.

4. In a dental instrument of the nature described, in combination, the hollow handle A, bracket support or arm B, with swinging bearing G, and shaft D, having flexible connection H, which shaft is held in said handle and adapted to be rotated therein and pro-

jected therefrom, and socket or tool-holder *d*, substantially as described, for the purposes specified.

5. In a dental instrument of the nature described, in combination, the handle, shaft having the socket for the cleaning-tool at its outer end projecting through said handle, and a thumb-screw arranged to project the shaft from the handle.

6. In a dental instrument of the nature described, in combination, the hollow handle with screw-threaded rear end, and shaft extending through said handle, and a screw passing through said screw-threaded end of handle and impinging against the end of shaft, substantially as described, for the purposes specified.

7. In a dental instrument of the nature described, the shaft having the socket for the cleaning-tool at its end, and burrs or thumb-nut for operating the same, and an interposed flexible portion whereby said shaft may be rotated and bent at an angle.

8. In a dental instrument of the nature described, in combination, the hollow handle, the shaft with interposed flexible portion, the bracket with swinging bearing for the shaft, the set-screw for projecting the shaft, and socket or tool-holder at the outer end of the shaft.

9. In a dental instrument of the nature described, in combination, the handle, the flexible shaft carrying the cleaning-tool, the swinging bearing for the shaft, the burrs keyed thereon to operate the same, the screw at the outer end of handle to project the shaft, and the set-nut on said screw, all constructed and arranged to operate substantially as described, for the purposes specified.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT BRUCE DONALDSON.

Witnesses:

WM. H. BRERETON,
H. J. LAUCK.