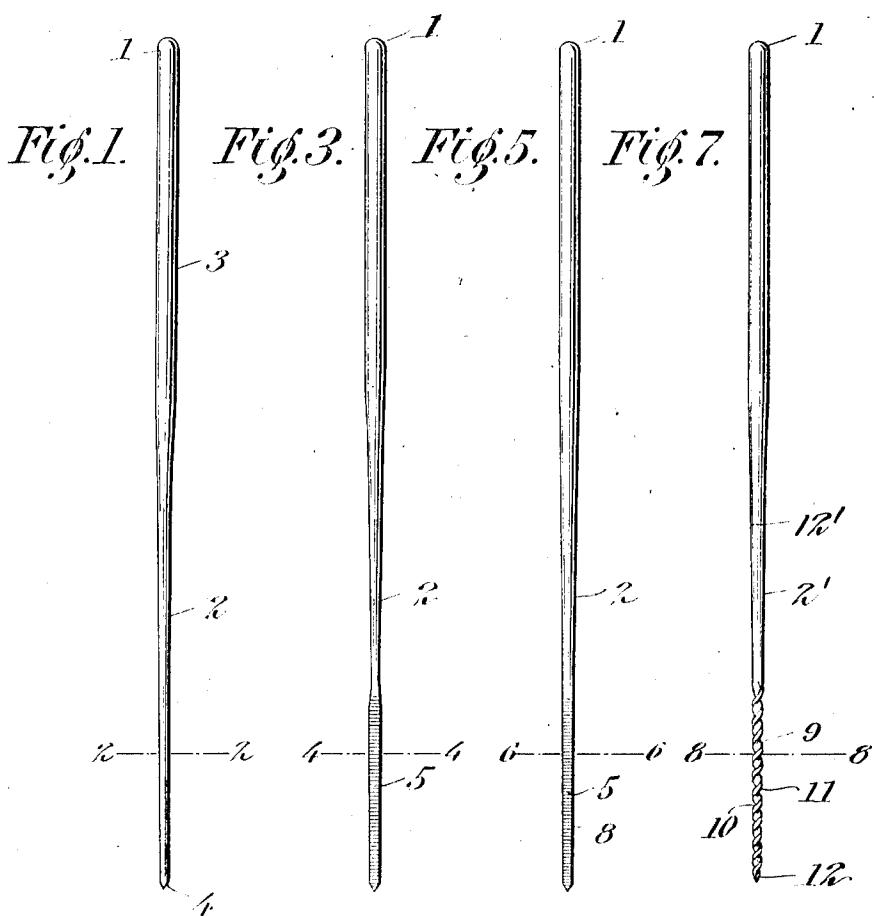


W. W. FOWLER.
DENTAL BROACH,
APPLICATION FILED SEPT. 24, 1912.

1,067,015.

Patented July 8, 1913.



Witnesses:-

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UNITED STATES PATENT OFFICE.

WILLIAM W. FOWLER, OF RIVERDALE, MARYLAND.

DENTAL BROACH.

1,067,015.

Specification of Letters Patent. Patented July 8, 1913.

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To all whom it may concern:

Be it known that I, WILLIAM W. FOWLER, a citizen of the United States, residing at Riverdale, in the county of Prince Georges 5 and State of Maryland, have invented certain new and useful Improvements in Dental Broaches, of which the following is a specification.

This invention relates to dental broaches, 10 and its object is to provide a flexible steel broach of novel and peculiar construction, whereby the broach is adapted to serve both as a nerve extractor and a reamer, and whereby all liability of the broach binding 15 or breaking in a root canal is practically obviated or reduced to the minimum.

The invention consists of a dental broach embodying the novel features of construction hereinafter fully described and claimed, 20 and as shown in the accompanying drawing, in which:-

Figure 1 is a plan view of the blank from 25 which the broach is made, showing the same at the completion of the first step of manufacture. Fig. 2 is a transverse section on line 2—2, of Fig. 1. Fig. 3 is a plan view of the blank as it appears after the completion of the second step. Fig. 4 is a transverse section on the line 4—4 of Fig. 3. Fig. 30 5 is a plan view of the blank as it appears after the completion of the third step. Fig. 6 is a transverse section on the line 6—6 of Fig. 5. Fig. 7 is a view of the completed broach. Fig. 8 is an enlarged detail section 35 on the line 8—8 of Fig. 7.

In carrying my invention into practice, I take a piece of round spring-tempered wire of the desired length and gage and shape the butt end 1 in any suitable manner, 40 after which the prong portion 2 is rendered of greater flexibility than the handle or shank portion 3 by tapering said prong portion longitudinally and uniformly toward its pointed extremity 4, as shown. This may 45 be accomplished by grinding or filing the prong portion until it accurately fits within a grooved templet or other gaging device, whereby accuracy in shaping the prong is insured. The blank produced, as above described, and shown in Fig. 1, is then polished and the entering end 4 finally pointed to the desired degree, after which the acting portion of the prong 2 is flattened, as shown 50 at 5 in Figs. 3 and 4. This acting portion 55 may be made of any longitudinal extent desired, as a result of which the flexibility and

transverse dimension of said portion is increased in one direction and curved surfaces 6 left at the longitudinal edges of the flattened section. These edges 6 are next 60 ground down to substantially plane surfaces 7, forming at their angles of intersection with the remaining sides of the flattened section 5 longitudinal cutting or reaming edges 8, as shown in Figs. 5 and 6. The blank thus far prepared is then placed in a suitable chuck or holder and by any suitable means turned or rotated to twist the portion 5, as illustrated in Figs. 7 and 8, showing the completed broach, forming a continuous double coil or spiral 9 having continuous longitudinal reaming or cutting edges 10 and 11 and a terminal entering point 12. These cutting or reaming edges 65 are preferably plane surfaced, in order to prevent the waste of material encountered 70 in forming barbs or spurs thereon, whereby the cost of manufacture is increased on account of the number of defective broaches 75 which must be discarded as unfit for service, but under some conditions the reaming edges may be barbed or spurred to meet trade requirements.

The broach constructed as above described 80 is provided with a spirally-coiled portion 85 which is longitudinally tapered and pointed and thus adapted to be readily inserted into a root canal, and which is also provided with cutting edges adapted to ream the wall 90 of the canal and thus remove all tissue impeding the rotation of the broach, whereby the nerve will be positively engaged for extraction and the canal at the same time thoroughly cleaned. The portion of the prong 95 between the coiled part 9 and the handle or shank is freely flexible, by reason of its circular and tapered formation, while the flattened twist of the coiled portion gives it a wide amplitude of universal flexibility, thus allowing the acting portion of the broach 100 to be disposed at any required working angle without liability of fracture.

The described construction of the twist or coil 9 produces an extracting and reaming surface which has a screw-like action when the broach is rotated in a clockwise direction, thus adapting the broach for use in penetrating and cleaning out very small canals without the objectionable pressure required in the use of broaches of ordinary construction. This allows the broach to be fed forward until the end of a canal is 110

reached without liability of its becoming broken off within the canal or of being forced through the canal and entering and infecting the tooth socket. By the use of a flat-twist the coiled portion, if it should become bound in a canal, may be twisted upon itself by manipulation of the shank, so that it will cut itself loose, thus avoiding all liability of breakage. Moreover, unlike ordinary barbed broaches, my improved broach instead of engaging only portions of the wall of the canal will cleanly scrape or ream the canal throughout its length, insuring the removal of all substances liable to cause infection or decay.

In practice I preferably provide means of a suitable character for indicating the extent to which the broach may be inserted to reach the end of the root canal of an average tooth, thus enabling a dentist to determine to an approximately accurate degree just how far the broach has been inserted, so that he may work with proper confidence and caution to prevent undue projection of the broach when the indicating means registers with the outer end of the canal or some other suitable portion of the tooth in connection with which the indicating means is

employed as a gage. To this end, the upper surface of the broach may be blued or otherwise rendered of contrasting color or appearance to the lower surface thereof, such as from the butt end 1 to a point 12' on the prong, the distance of which from the entering point 12 will indicate the distance to which the prong may be safely introduced within a root canal of an average length.

Having thus described my invention, I claim:

A spring tempered dental broach comprising handle and prong portions, said prong portion being of circular cross section at its inner end and flattened to a rectangular cross section at its outer end and being tapered longitudinally throughout to a point, said flattened end of the prong portion being continuously twisted upon itself to produce a pair of opposed spiral coils having continuous reaming or cutting edges.

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

WILLIAM W. FOWLER.

Witnesses:

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