W. J. BRIZIUS.

WAX EXTRACTOR.

APPLICATION FILED JAN. 9, 1915.

1,140,660. Patented May 25, 1915.

Fig. 1

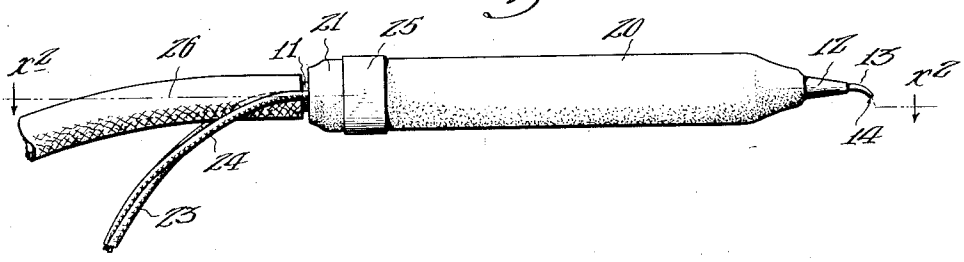


Fig. 2

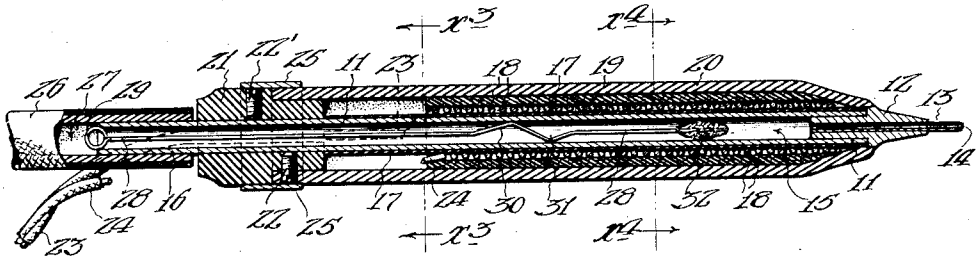


Fig. 3

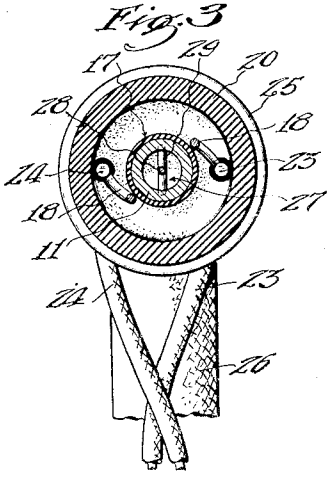
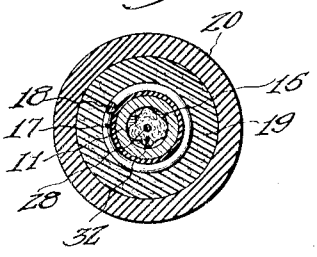


Fig. 4



Witnesses:
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Inventor,
by William J. Brizius,
Townsend, Graham & Davis.
his attys.

UNITED STATES PATENT OFFICE.

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WAX-EXTRACTOR.

1,140,660. Specification of Letters Patent. Patented May 25, 1915.

Application filed January 9, 1915. Serial No. 1,474.

To all whom it may concern:

Be it known that I, WILLIAM J. BRIZIUS, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Wax-Extractor, of which the following is a specification.

My invention relates to dental instruments, and especially to instruments used for removing excess wax from wax impressions used in gold inlay work. In such work the cavity to be inlaid is first shaped so that it will provide a proper support for the inlay, and this cavity is then filled with wax, the projecting portion of the wax being rounded out to conform to the original shape of the tooth. The wax impression is then removed and is used as a pattern to form a mold in which the gold inlay is cast, the gold inlay when finished being the same size and shape as the wax impression or pattern. The inlay is then cemented into the cavity.

The principal object of the invention is to provide an instrument by which small portions of wax may be removed from the interior of the impression, so as to provide locking spaces for the cement, and further to provide insulating layers of cement near the body of the tooth. As gold is a good heat conductor, and cement is not, it is very desirable in many locations to substitute cement for gold, so that hot and cold substances taken into the mouth will not affect the tooth itself. It is further desirable to cut down the actual amount of gold in the inlay to the lowest amount consistent with proper locking and wearing qualities on account of the actual cost of the gold itself. With my invention any desired amount of wax may be removed from the impression so that only a shell of gold is produced, this shell being filled with and embedded in cement when in place.

As it takes some time to prepare wax impressions, and they are therefore valuable, it is very necessary that any instrument intended for the above purpose be so constructed that the operator will not be likely to injure the impression in removing superfluous wax and so that the amount of wax removed can be regulated exactly.

A further object of my invention is to provide a wax extractor by which small particles of wax may be removed from an impression without danger of injuring the impression, the operator having complete control of the amount of wax removed at all times.

Further objects and advantages will be evident hereinafter.

In the annexed drawing, which is for illustrative purposes only:—Figure 1 is a side view of the wax extractor with its connecting wires and tubing shown broken off. Fig. 2 is an enlarged section on the plane x^2—x^2 of Fig. 1. Fig. 3 is a further enlarged section on the plane x^3—x^3 of Fig. 2. Fig. 4 is a similarly enlarged section on the plane x^4—x^4 of Fig. 2.

As illustrated in the drawing, the extractor consists of a central metal tube 11 which has a head 12 brazed into the forward end thereof, the head 12 having an extraction tube 13, which is preferably of silver, brazed therein. The extracting tube 13 is provided with a central opening 14 which communicates with a cylindrical opening 15 which extends completely through the center of the metal tube 11 from the head 12 to the rear end 16. Mica insulation 17 is wound on the metal tube 11, and an electric heating element 18 is wound on the mica, being insulated from the metal tube 11 by the mica. A layer of asbestos 19 is placed over the heating element 18, and a shell 20 is secured over the asbestos 19 as shown in Fig. 2, and secured to a plug 21 by a set screw 22. The shell 20 is preferably formed of insulating material. The plug 21 is slipped over the metal tube 11 and is secured in place on the tube by means of a set screw 22′, the plug 21 having a projection extending inside the shell 20 for supporting the shell 20 at the rear end. Wires 23 and 24 pass through the plug 21 and communicate with the heating element 18, the wires 23 and 24 being externally connected to any suitable source of electric power through any suitable switch.

A metallic band 25 slides over the junction of the shell 20 and the plug 21. A flexible tube 26 is secured over the end 16 of the metal tube 11 and the internal opening 27 in that tube is in open communication with the opening 15 of the tube 11. A wire member 28 has a handle 29 formed at one end, and has curved portions 30 and 31 so shaped that they grip the internal walls of the tube 11 when the wire 28 is pushed therein. A small body of absorbent cotton 32 is twisted about the end of the wire 28 and rests in

the opening 15 close to the extracting tube 13.

The method of operation of the invention is as follows:—The tube 26 is connected to any suction means so that a slight vacuum is produced in the opening 27 and in the opening 15 inside the metal tube 11, this vacuum being constantly relieved by an inflow of air through the opening 14 in the extracting tube 13. Electric current being supplied through the wires 23 and 24, flows through the wires forming the heating element 18, and heat is generated therein. This heat is conducted through the mica 17 to the tube 11, and this heat is conducted by the metal tube 11 to the head 12 and to the extracting tube 13. The extracting tube 13 is preferably of very small diameter and is slightly curved, as shown in Fig. 1. The operator having removed the wax impression from the mouth of the patient, holds the impression in his left hand and manipulates the wax extractor with his right hand, applying the extracting tube 13 to the point from which he wishes to remove the wax. The extracting tube 13 being heated considerably above the melting point of the wax, the wax is melted by contact with the extracting tube and becomes liquid. The constant flow of air inwardly through the opening 14 draws the melted wax through the opening 14 into the opening 15 inside the metal tube 11. This wax flows along the opening 15 and is finally absorbed by the cotton 32. At intervals the tube 26 is removed from the metal tube 11, and the wire 28 and the absorbent cotton 32 are removed from the opening 15, fresh cotton being secured to the wire 28 as needed.

I have found that it is possible by using my extractor to carve away very small portions of wax and to maintain an absolute control of the amount of wax removed at any time. By the use of my wax extractor, I can cut the walls of the wax impression down to an almost paper thinness without in any way affecting the external shape of the impression. I can produce locking grooves or cavities inside the impression into which the cement is forced when the tooth is put in place. After the impression is suitably modified by the use of my wax extractor, the gold inlay may be produced therefrom by any one of the several well known methods.

My invention should not be confused with the various devices in common use in dentists' offices for heating air before it is forced from an orifice. Such devices cannot be used as my invention is used due to the fact that the heated wax is forced out against cold portions of the impression adhering thereto and materially changing the shape thereof. It is quite essential that the melted wax be removed from the impression as soon as it is melted and collected. Some sort of a suction means is quite essential to the successful operation of my invention.

I claim as my invention:—

1. A wax extractor comprising a handle, a small heated metal point carried in said handle and having an opening therein, and means for drawing the heated wax through said opening away from said point.

2. A wax extractor comprising a handle, a small heated metal point carried in said handle and having an opening therein, means for drawing the heated wax through said opening away from said point, and absorbent means adjacent to said point for collecting and retaining the heated wax.

3. A wax extractor comprising a metal tube, means for heating said tube, an extracting tube having a small opening therein secured in said metal tube, the opening in the extracting tube communicating with the interior of the metal tube, and means for causing a partial vacuum in the interior of the metal tube.

4. A wax extractor comprising a metal tube, means for heating said tube, an extracting tube having a small opening therein secured in said metal tube, the opening in the extracting tube communicating with the interior of the metal tube, means for causing a partial vacuum in the interior of the metal tube, and absorbent means in said metal tube for collecting and retaining the melted wax drawn into said metal tube through said extracting tube.

5. A wax extractor comprising a metal tube having an extracting tube secured in one end thereof, said extracting tube having an opening communicating with the interior of said metal tube, insulating material wound on said metal tube, an electric heating element wound on said insulating material, means for supplying electricity to said heating element, and means for causing a partial vacuum in the interior of said metal tube.

6. A wax extractor comprising a metal tube having an extracting tube secured in one end thereof, said extracting tube having an opening communicating with the interior of said metal tube, insulating material wound on said metal tube, an electric heating element wound on said insulating material, means for supplying electricity to said heating element, means for causing a partial vacuum in the interior of said metal tube, and absorbent means inside said metal tube for collecting and retaining the heated wax drawn into said metal tube through said extracting tube.

7. A wax extractor comprising a metal tube having a small end and having an opening extending longitudinally through said tube and said end, an electric heating element wound on said tube and insulated

therefrom, means for supplying electricity to said heating element, a shell for protecting said heating element, and means for causing a partial vacuum inside said tube.

8. A wax extractor comprising a metal tube having a small end and having an opening extending longitudinally through said tube and said end, an electric heating element wound on said tube and insulated therefrom, means for supplying electricity to said heating element, a shell for protecting said heating element, means for causing a partial vacuum inside said tube, and removable absorbent means in said tube for collecting and retaining the melted wax drawn into said metal tube by said vacuum.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 4th day of January, 1915.

WILLIAM J. BRIZIUS.

In presence of—
FORD W. HARRIS,
FRED A. MANSFIELD.