(No Model.)

A. L. GILMER.

MACHINE FOR POLISHING MARGINS OF CAVITIES IN TEETH.

No. 544,433. Patented Aug. 13, 1895.

Fig. 1.

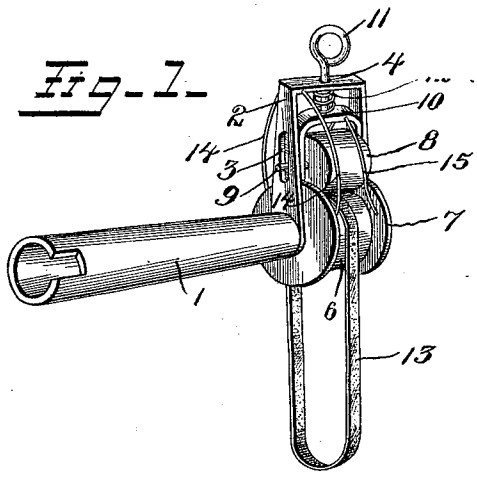


Fig. 2.

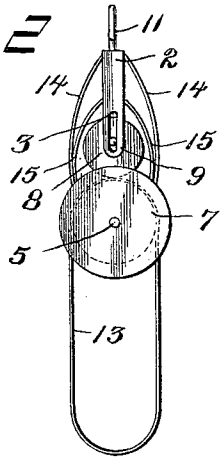


Fig. 4.

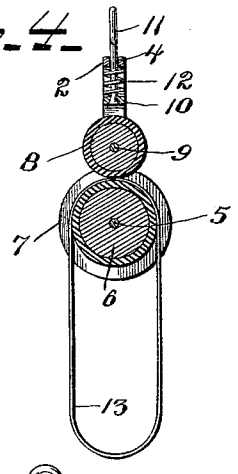
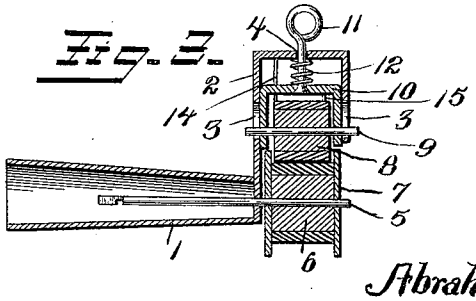


Fig. 3.



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UNITED STATES PATENT OFFICE.

ABRAHAM L. GILMER, OF QUINCY, ILLINOIS.

MACHINE FOR POLISHING MARGINS OF CAVITIES IN TEETH.

SPECIFICATION forming part of Letters Patent No. 544,433, dated August 13, 1895.

Application filed May 28, 1895. Serial No. 551,018. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM L. GILMER, a citizen of the United States, residing at Quincy, in the county of Adams and State of Illinois, have invented a new and useful Machine for Polishing Margins of Cavities in Teeth or Fillings Therein, of which the following is a specification.

This invention relates to an improvement in dental appliances, being designed especially for polishing the margins of cavities in teeth or fillings therein.

The object of the present invention is to provide a simple and efficient attachment or device applicable to the handpiece of a dental engine, whereby an endless polishing-band may be driven with any desired rapidity and passed between adjacent teeth and in contact with fillings therein for the purpose of smoothing the same and removing surplus material, and at the same time smoothing the cervical margins or other portions of the tooth contiguous to the edges of the cavity or filling.

A further object of the invention is to construct such device in a manner that will adapt it to readily receive and release the endless polishing-bands.

Other objects and advantages of the invention will appear in the course of the subjoined description.

In order to accomplish the objects named the invention consists in an improved polishing device adapted to be readily applied to and detached from the handpiece of a dental engine, said device comprising means for imparting motion to an endless polishing-band, and also embodying novel features and details of construction and arrangement of parts, whereby certain advantages in point of simplicity and efficiency are attained, as hereinafter fully set forth, illustrated in the accompanying drawings, and finally embodied in the claims.

In the accompanying drawings, Figure 1 is a perspective view of a device for polishing teeth constructed in accordance with the present invention. Fig. 2 is an end elevation of the same. Fig. 3 is a longitudinal section through the device in line with the shafts of the actuating and friction rollers. Fig. 4 is a transverse section through the actuating and friction rollers and the main and spring-pressed frames.

Similar numerals of reference designate corresponding parts in the several figures of the drawings.

Prior to this invention it has been customary to polish or finish fillings, particularly gold fillings, with a strip of polishing fabric about eight or ten inches in length, by forcing the same between adjacent teeth and reciprocating said strip by means of the fingers. This is a very disagreeable operation and frequently causes considerable pain. Another way of polishing fillings is to employ a thin disk having a mandrel capable of being affixed to the handpiece of a dental engine, but with this it is very difficult and sometimes impossible to reach all parts of the filling. The object of this invention is to overcome the difficulties and objections just noted, and this I accomplish by means of the device which will now be described.

Referring to the accompanying drawings, 1 designates a barrel or sleeve, which is preferably made in the tapering form shown, adapting it to be passed over and engaged with the handpiece on the outer free end of the flexible shaft of a dental engine. The barrel or sleeve is formed from any desired metal and finished in any preferred way, and has formed integrally therewith a stationary three-sided or U-shaped frame 2, the latter being provided with an oppositely-disposed pair of elongated slots 3 for the reception of a friction-roller shaft and also formed with a perforation 4 for the handle or stem of said friction-roller, which will hereinafter be described. The outer end of the barrel or sleeve is provided with a reduced opening, as shown, which forms a bearing for the stem or spindle of the actuating-roller. This stem or spindle, indicated at 5, is provided at its inner end with means for engaging the end of the rotary shaft of the dental engine, from which said spindle receives its motion, and upon the outer end of said spindle is rigidly mounted the actuating-roller 6. The actuating-roller is provided with a rubber tread or periphery, and also with end disks or flanges 7 projecting beyond the periphery thereof, the distance between said end disks or flanges being suf-

ficient to receive and accommodate the width of a friction-roller 8. The friction-roller is also provided with a rubber tread, which rests in contact with the actuating-roller, and said friction-roller is mounted upon a shaft 9, which projects laterally from each side thereof and passes through aligning perforations in the ends of the oppositely-disposed arms of the three-sided or U-shaped spring-pressed frame 10, arranged within and adapted to slide upon the main frame of the device. The shaft of the friction-roller after passing through the frame or yoke of said roller also passes at each end through and lies within the elongated slots in the main frame, this arrangement permitting the friction-roller to be removed from contact with the actuating-roller.

11 designates a handle having a stem passing through the perforation in the main frame, and having its inner end threaded to engage a threaded perforation in the frame or yoke of the friction-roller, as shown, although it will be apparent that such connection may be established in any usual and well-known manner.

12 designates a spring preferably of spiral form and disposed around the stem of the handle between and bearing at its ends against the main frame and the frame or yoke of the friction-roller.

13 designates an endless polishing-band, which, of course, may be made of any desired length, width, and thickness, and coated or prepared in any way with emery-dust or other polishing substance. This polishing-band may be introduced between the actuating and friction rollers by withdrawing the friction-roller beyond the plane of the end disks of the actuating-roller and passing said band therebetween. By releasing the friction-roller the spring-pressed yoke thereof forces it into close frictional engagement with the polishing-band, and as the actuating-roller is revolved by the dental engine said polishing-band is caused to run rapidly between the rollers in a manner that will be readily understood.

In order to prevent any liability of the polishing-band becoming disengaged or passing from between the rollers, I provide the main frame of the device with a pair of spring-wire arms disposed upon opposite sides of the frame and having their lower ends arranged within and bearing slightly against the inside of the inner disk or flange of the actuating-roller, said spring-arms being indicated at 14. Similar spring-wire arms 15 are attached to the frame or yoke of the friction-roller and have their free ends arranged within and in close proximity to or bearing against the inside of the outer disk or flange of the actuating-roller. These spring-arms also serve to keep the actuating and friction rollers in alignment and to prevent the escape of the actuating-roller and its spindle from the barrel or sleeve and the main frame of the device.

In operation the endless polishing-band is introduced between adjacent teeth or passed around a single tooth which has been filled, and the dental engine is then operated for imparting motion to the actuating-roller of this device. By this means the polishing-band may be driven at any desired speed and will act to rapidly smooth and polish the filling and remove any surplus gold therefrom, at the same time smoothing and finishing the cervical margin or other portion of the tooth lying contiguous to the cavity or the filling therein. The operation is much easier and considerably more rapid than where it is done by hand, and will not be near as unpleasant and painful to the patient.

It will be apparent that various changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. A device for polishing margins of cavities in teeth or fillings therein, the same comprising a sleeve or barrel adapted to be applied to the hand piece of a dental engine, an actuating roller carried thereby and mounted upon a spindle adapted to be coupled to and driven by the dental engine shaft, an endless polishing band embracing said actuating roller, and means for holding said polishing band in engagement with and adapting it to be driven by the actuating roller, substantially as specified.

2. A device for polishing margins of cavities in teeth or fillings therein, the same comprising a suitable frame, means for connecting said frame with the hand piece of a dental engine, a rotary spindle adapted to be coupled to and driven by the dental engine shaft, a roller secured to said spindle, a supplemental roller in frictional engagement with the same, and an endless polishing band passing between said rollers and adapted to be driven thereby, substantially as specified.

3. A device for polishing margins of cavities in teeth or fillings therein, the same comprising a suitable frame adapted to be applied to the hand piece of a dental engine, a spindle capable of being coupled to and driven by the dental engine shaft, a roller mounted thereon, a second roller revolving in frictional contact therewith, a spring pressed frame or yoke for controlling said friction roller and an endless polishing band passing between said rollers, substantially as and for the purpose specified.

4. A device for polishing margins of cavities in teeth or fillings therein, the same comprising a suitable frame capable of being attached to the hand piece of a dental engine, an actuating roller mounted in said frame and adapted to be driven by said engine, a friction roller operating in contact therewith, end disks or flanges carried by one of said

rollers and partially embracing the other roller means for holding one of said rollers in frictional contact with the other roller and allowing the same to be separated when desired and an endless polishing band passing between said rollers, for the purpose specified.

5. A device for polishing margins of cavities in teeth or fillings therein, the same comprising a suitable frame, a pair of rollers revolubly mounted therein and operating in frictional contact, means for driving one of said rollers from the dental engine shaft, a spring pressed yoke in which one of said rollers is journaled, a handle or stem for operating said yoke against its normal tendency, and an endless polishing band passing between said rollers substantially as and for the purpose described.

6. A device for polishing margins of cavities in teeth or fillings therein, the same comprising a suitable frame, means for attaching the same to the hand piece of a dental engine, a pair of rollers operating in frictional contact and having motion imparted thereto by the dental engine shaft, an endless polishing band passing between said rollers and a pair of spring arms carried by the device and disposed in such relation to the rollers as to prevent the endless polishing band from accidentally running or escaping from between said rollers, said spring arms also serving to assist in holding said rollers in alignment and in place within the frame of the device, substantially as and for the purpose specified.

7. A device for polishing margins of cavities in teeth or fillings therein, the same comprising a sleeve or barrel adapted to embrace the hand piece of a dental engine, a frame formed integrally therewith and provided with oppositely disposed slots, a pair of friction rollers carried by said sleeve or barrel and its frame and adapted to be driven by the dental engine shaft, a spring actuated frame or yoke carrying one of said friction rollers, the shaft of said roller projecting at its ends and adapted to operate within the slots in the main frame and an endless polishing band passing between said rollers, all arranged for joint operation, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ABRAHAM L. GILMER.

Witnesses:

BENJAMIN F. GILMER,

WM. G. MCDAVITT.