C. C. BALL.

DENTAL TOOL.

APPLICATION FILED APR. 1, 1915.

1,147,594. Patented July 20, 1915.

Fig. 1

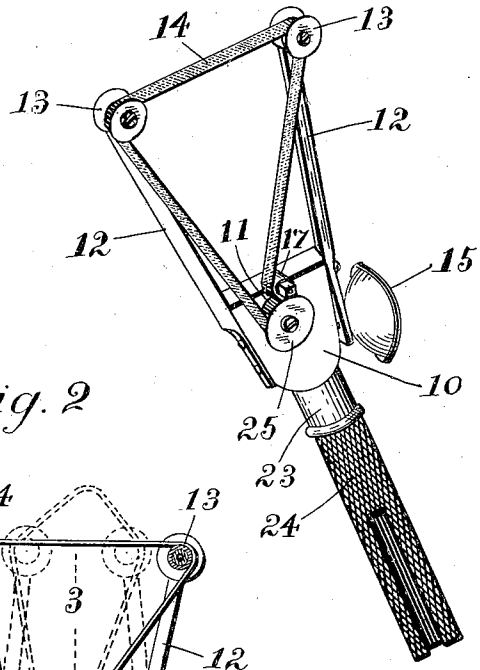


Fig. 2

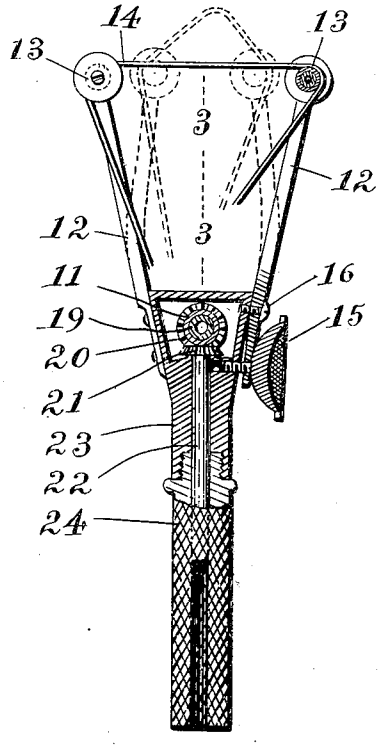
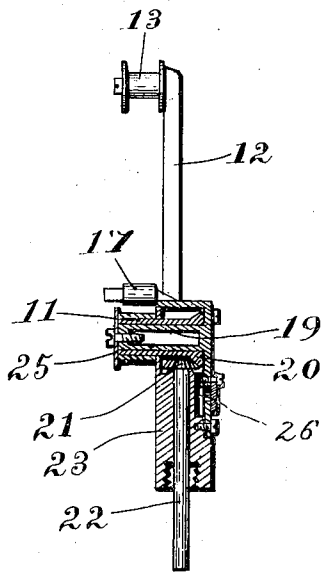


Fig. 3



Witnesses

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DENTAL TOOL.

1,147,594. Specification of Letters Patent. Patented July 20, 1915.

Application filed April 1, 1915. Serial No. 18,562.

To all whom it may concern:

Be it known that I, CALVIN C. BALL, a citizen of the United States, and resident of Huntington, in the county of Cabell and in the State of West Virginia, have invented a certain new and useful Improvement in Dental Tools, and do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to dental instruments, or tools, and my invention has more particularly to do with the surface finishing of the fillings of teeth. By the practice now in vogue this finishing operation is performed by the use of a strip of thin material which is drawn between the teeth over the filling to be finished, the strip being held in place against the filling by the thumb and finger, a method which being objectionable for obvious reasons, is also objectionable in that the operator cannot see the filling being operated on since it is necessarily covered by the thumb, or finger, and it is impossible at all times to accurately control the direction of movement of the strip for slightly more pressure on one edge of the strip than on the other will cause it to deviate from the desired direction and result either in injurious contact of the strip with the gum (when no separator is used) or to have such contact with the filling as to cut it away.

The object of my invention is to provide an instrument which will obviate the objections noted and which will have other advantages, such as the utilization of power, as from the dental engine to impart the movement to the finishing strip with consequent greater speed in the performance of the operation, and convenience and comfort to the operator.

In the accompanying drawings—Figure 1 is a perspective view of a dental instrument constructed in accordance with my invention; Fig. 2 is a view partly in side elevation and partly in vertical section; Fig. 3 is a section on the line 3—3 of Fig. 2.

Briefly described, my invention in the form which I now regard as its best embodiment, comprehends the use of a continuous, or endless band of such material, as metal, cloth, celluloid, or paper, of which finishing strips are ordinarily made, which is carried over and supported by suitably arranged guides in the form of wheels, or pulleys to one of which motion is imparted by suitable driving connections with the dental engine, and thereby the desired movement imparted to the finishing strip.

Referring in detail to the structure shown in the accompanying drawings, it will be found that a casing head 10 is employed on the outside of which at one side is located the driving pulley 11 and from which project two arms 12 that preferably diverge from each other, each of which at its outer end supports a guide pulley 13. Over the three pulleys is placed a continuous, or endless band 14 that constitutes the finishing strip, which band, as I have indicated, may be of any desired material suitable for the purpose and having such width and thinness as may be required. It will thus be seen that the finishing strip is supported by an open frame and the two pulley-carrying arms are mounted for movement toward and from each other as by being made of spring material, their normal position being the one where their pulleys are most widely separated. The portion of the finishing strip extending between the two pulleys 13 is the portion that is applied to the filling and by reason of the capability of the pulley-carrying arms to move toward each other it will be seen that by pulling against the filling such portion of the strip will be changed from its straight direction and caused to conform to a rounded surface and thereby give a convexly rounded conformation to the filling. The flexibility which the spring arms afford is also important in facilitating the application of the finishing strip to the tooth filling to be operated upon and also in facilitating the changing of the strips when that is required. The tension placed upon the strip by the spring tendency of the arms at all times maintains the strip in the taut position necessary to cause its movement by the driving action of the pulley 11.

In order to compensate for differences in the length of strips, one of the pulley-carrying arms is adjustable toward and from the other as by means of a thumb screw 15 which passes through an opening in the arm and enters a threaded opening in the side of the casing head 10, the arm being pivoted, or fulcrumed between such thumb screw and the pulley, as by means of a fastening screw 16, so that according to the

direction of rotation of the thumb screw 15, such pulley-carrying arm will move farther from, or nearer to its companion arm. The thumb screw is also made to serve the important function of a rest for the end of the thumb of the operator when holding the instrument, the outer face of said thumb screw being dished, or concave and serrated or roughened so as to afford a comfortable and firm bearing for the operator's thumb when holding the instrument by means of the shank, or handle with which it is provided and to the outer end of which the casing head 10 is attached, all as more particularly hereinafter described.

In order to increase the angle of peripheral contact of the finishing strip with the driving pulley, an idler pulley, or guide roller 17 is mounted on the top of the casing head well to one side of the middistance between the pulley-carrying arms where they extend outward from said head, so that the portion of the finishing strip passing from the driving pulley to one of the guiding pulleys 13 instead of extending tangentially from the driving pulley to said guiding pulley 13, it is carried over the driving pulley fairly close to the portion of the strip running tangentially from the driving pulley to the other driving pulley 11.

The driving pulley 11 is in the form of a sleeve which is journaled on a stud 19 that projects from the inside of one of the side walls of the casing head and within the casing on said sleeve is a bevel gear 20 with which meshes a bevel pinion 21 upon the upper end of a shaft 22 which extends through the shank 23, and a detachable connecting piece 24 for coupling the instrument to the engine hand piece and for connecting said shaft with the engine shaft. The connection between the connecting piece and the shank is a threaded detachable one so that by changing the connecting piece according to the engine hand piece my instrument is rendered universal, or adaptable to dental engines generally.

In order to increase the friction of the driving pulley upon the finishing strip, the strip-engaging surface of the pulley may be formed of rubber, or other suitable material. The pulley has a flange formed by a disk 25 which is secured by a screw to the outer end of the pulley journaling stud. The stud is made tubular, or hollow throughout its length to form in rear of the screw an oil chamber from which oil may pass outward and find its way between the pulley sleeve and the exterior of the stud for lubricating purposes. Each of the strip guide pulleys 13 is similarly in the form of a tube or sleeve upon a hollow, or tubular stud that projects from the carrying arm, so that similar provision for lubricating is provided.

For convenient access to the interior of the casing head, one side thereof, to which may be integrally attached the top, is removably secured by screws, and for oiling the rotating parts within the casing head, an oil hole having a suitable cover may be provided.

While the construction illustrated in the drawings is a very desirable embodiment of my invention, it is to be understood that my invention is not restricted in its broad scope to any one construction and arrangement of the parts.

Having thus described my invention what I claim is—

1. As an improvement in dental instruments, the combination of a head, a driving pulley mounted on said head, a pair of arms projecting from the head, a working strip in the form of a continuous band passing over said pulley and over oppositely situated supports on said arms, and means for revolving said driving pulley to impart movement to said strip.

2. As an improvement in dental instruments, the combination of a movably supported finishing strip in the form of a continuous traveling band, the supporting means comprising a frame having members movable toward and from each other, and means to impart movement to said strip to cause it to travel with reference to said frame.

3. As an improvement in dental instruments, the combination of a movably supported finishing strip in the form of a continuous traveling band, the support comprising a pair of spring arms, and means to impart movement to said strip to cause it to travel with reference to said frame.

4. As an improvement in dental instruments, the combination of a head, a movably supported finishing strip, said supporting means comprising an arm mounted to rock on said head, an adjusting device for said arm that forms a thumb rest, and means to impart movement to said strip.

5. As an improvement in dental instruments, the combination of a casing head, a pair of spring arms extending therefrom, each carrying a pulley, a driving pulley mounted on the casing head, a finishing strip extending over said pulleys, and gearing for revolving said driving pulley mounted in the casing head.

6. As an improvement in dental instruments, the combination of a casing head, a pair of spring arms extending therefrom, each carrying a pulley, a driving pulley mounted on the casing head, a finishing strip extending over said pulleys, gearing for revolving said driving pulley mounted in the casing head, and a shank for said casing head including a detachable engine-connecting piece.

7. As an improvement in dental instru-

ments, the combination of a casing head, a pair of spring arms extending therefrom, each carrying a pulley, a driving pulley mounted on the casing head, a finishing strip extending over said pulleys, gearing for revolving said driving pulley mounted in the casing head, and a guide for the finishing strip to change the direction of the strip from the driving pulley to one of the arm-supported pulleys.

In testimony that I claim the foregoing I have hereunto set my hand.

CALVIN C. BALL.

Witnesses:

CHAS. E. BOOTH,

F. M. LEVEZEY.