

(No Model.)

C. W. JONES.
DENTAL INSTRUMENT.

No. 485,010.

Patented Oct. 25, 1892.

Fig. 1

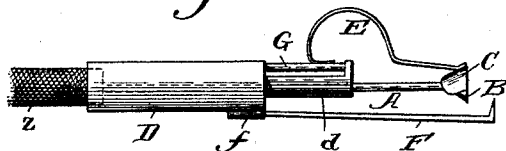


Fig. 2.

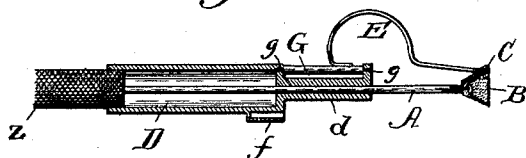


Fig. 3.

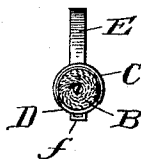


Fig. 4.

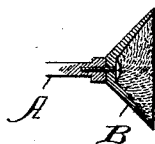


Fig. 5.

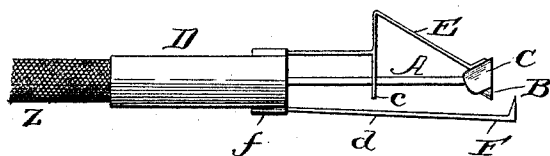


Fig. 6.

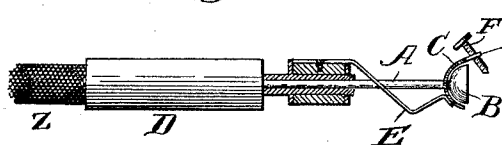
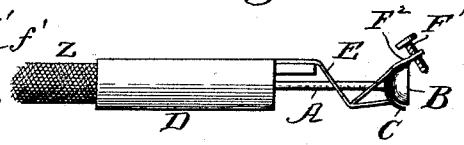


Fig. 7.



Witnesses:

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UNITED STATES PATENT OFFICE.

CHARLES WILLIAM JONES, OF ST. PAUL, MINNESOTA.

DENTAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 485,010, dated October 25, 1892.

Application filed February 4, 1892. Serial No. 420,259. (No model.)

To all whom it may concern:

Be it known that I, CHARLES WILLIAM JONES, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Dental Instruments, of which the following is a specification.

My invention relates to dental instruments used for the cutting or dressing of teeth, with special reference to the preparation of the tooth for the fixing thereon of an artificial crown.

It has for its object to improve dental instruments of this kind in the respects herein-after pointed out; and it consists of improvements in the tooth cutting or dressing tool, in the combination therewith of a novel guard or shield for protecting the gum from the tool when in use, in a novel rest or bearing or supporting piece for the instrument, and in the novel combinations and arrangements of parts, to be hereinafter described.

In order that my invention may be the better understood, I have illustrated it in the accompanying drawings; but it will be evident that the various features thereof may be more or less varied in their embodiment without departing from the invention.

Figure 1 is a side view of the preferred form of my invention. Fig. 2 is a central longitudinal section thereof. Fig. 3 is a front end view. Fig. 4 is a sectional view, enlarged, through the tooth cutting or dressing tool. Fig. 5 is an elevation illustrating a different embodiment of the invention. Figs. 6 and 7 are side views, partly in section, illustrating different forms of my invention.

In the drawings, A represents a mandrel, which is adapted to be inserted into the hand-piece Z of a dental engine, and which at its forward end carries the cutting or dressing tool B. This tool is of metal in the form of a shell, its inner surface being provided with a series of minute cutting-faces, as indicated in Fig. 4, somewhat similar to the cutting-faces of a file, while its outer face is smooth. The shell may be concavo-convex in shape or of the shape of a hollow truncated cone or of a bell shape, and it may be either formed with the mandrel or made separate therefrom and secured to it in any suitable manner.

In using rotary dental tools much suffering

is caused to the patient, as well as inconvenience to the operator, by reason of the rapidly-revolving tool coming in contact with and cutting the gum. To prevent this and yet not interfere with the working of the tool, I make use of a protecting shield or guard, which is carried by the handpiece or by a part carried thereby, and is adapted to embrace the tool and to be interposed between it and the gum where the tool is being used in such a position that it would otherwise cut the gum.

C designates the protecting-shield, which is of a form to more or less embrace or surround the tool B, leaving, of course, its outer or forward cutting-face exposed. The preferred form of the shield is conical or a segment of a cone. It is carried by some non-rotating part of the instrument and fits over the tool closely, but not so as to interfere in any wise with its free rotation. I prefer that the shield or guard should be supported so that it may have a certain amount of motion in order to more or less uncover and expose the tool, and I therefore support it by an elastic or spring arm E. The tension of this arm may be such that it normally tends to draw the shield backward slightly away from the tool, in which event the operator may give to the shield its proper position by pressing with his finger upon the arm, or the tendency of the elastic arm may be to hold the shield forward over the tool, in which event it may be moved backward slightly relative to the tool by pressing it lightly against the gum or the tooth.

Instead of connecting the supporting-arm E directly with the handpiece Z, I prefer to have it carried by a sleeve D, which may be slipped upon the end of the handpiece, it being hollow, so that the mandrel may pass through it freely. At its forward end there is a bearing *d* for the mandrel. These means for supporting and carrying the shield C enable it to be easily applied to or removed from an ordinary dental handpiece.

In order further to promote the convenience of the operator and increase the usefulness of the instrument, I so mount the shield that it may be moved or rotated around the tool B to any extent which may be desirable. In Figs. 1 and 2 the arm E is shown as being

supported upon a small shaft G, which is supported so as to turn in bearings carried by the sleeve D. The bearing *d* is preferably elongated and has at its end a projection in which is formed one of the bearings *g*, while the other bearing *g* is in the end wall of the sleeve.

In order to permit the operator to see his work or to better to operate, it is desirable that the arm E should at one time occupy one position and at another time another position, and the construction which I have shown permits this movement of the arm. In place of hinging the arm I might connect it with a sleeve encircling some non-rotating part of the instrument and effect much the same result. Thus in Fig. 6 the arm E is shown as being secured to a sleeve or cylinder I, which is mounted upon the elongated bearing *d*, where it is held between a flange or abutment *i'* and a lock-nut *i*.

In the form of my invention shown in Figs. 5 and 7 the shield C is not movable axially around or relative to the tool and handpiece, except as the sleeve D is moved. In Fig. 5 *c* represents a piece carried by the arm E and forming a bearing for the mandrel A.

F represents a rest or supporting-piece. It consists of an arm detachably connected with some non-rotating part of the implement and having at its forward end a bearing or resting face, which may be made to bear against some convenient support, such as an adjacent tooth, thus affording a rest or support for the implement.

In Figs. 6 and 7 a different form of the detachable rest is shown, it consisting of a small thumb-screw F', which in Fig. 6 is shown having its bearing in a projection *f'* carried by the shield C, and in Fig. 7 as having its bearing in an arm F² extending from the supporting spring-arm E. It will thus be seen that the construction and arrangement of the detachable rest-piece is very much a matter of preference and individual choice.

In Figs. 1, 2, and 5 I have shown the sleeve D provided with a pocket or recess *f*, into which the end of the rest F may be inserted and where it is firmly held, but from which it may be easily removed when it is not desired to use the rest.

In Figs. 6 and 7 I have shown the casing provided with a pocket or recess *j*, in which the end of the spring-arm E may be detachably held.

It will be evident that the shield C and the rest F may be used with any usual or preferred form of dental tools—such as corundum-disks, polishing-wheels, drills, and the like—and also that the peculiar and novel tool B which I have shown may be used without either or both of these said parts.

I have found that a tool such as I have de-

scribed—that is, of some hard and rigid material and of concave, shell, or bell shape, and provided on its inner surface with cutting or abrading teeth and having its outer surface smooth—possesses a number of important and advantageous features. In the first place, such a tool is less liable to lacerate the gum than the ordinary dental cutting or abrading tool on account of its smooth exterior surface, so that it is under some circumstances possible to dispense with the use of the shield hereinbefore described without disadvantage. A further advantage comes from the shape of the tool, in combination with the cutting teeth or surfaces formed on its inner surface, because when a tool of this character is applied to a tooth it does not attack the prisms or “rods” of the enamel of the tooth, which, as is well known, are arranged substantially perpendicular to the surface of the tooth upon their ends and in a line perpendicular to their length, and therefore reduce them only by a grinding action; but it attacks them obliquely, so that the enamel rods are broken apart along the lines of their separation or cleavage, thus reducing the enamel more readily and with less wear upon the tool and pain to the patient than when an ordinary tool is used, attacking, as it does, the enamel prisms or rods at their ends.

What I claim is—

1. A dental tool of shell-like form, the inner face of which is formed for abrading or cutting teeth, in combination with a shield which covers the exterior face of the said tool, thereby preventing it from coming in contact with the gum, said shield, however, not extending beyond the end of the tool, whereby the entire inner face thereof is exposed for cutting or abrading, substantially as set forth.

2. A gum-protecting shield supported upon an elastic or spring arm, substantially as set forth.

3. A gum-protecting shield supported by a hinged elastic arm, substantially as set forth.

4. The combination, with a dental hand-piece and the tool operated thereby, of the shell D, adapted to be slipped upon the end of the handpiece, having the elongated bearing *d* for the mandrel of the tool, the gum-protecting shield, the elastic arm carrying the shield, and the rod G, mounted in bearings *g*, to which the elastic arm is secured, substantially as set forth.

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

CHARLES WILLIAM JONES.

Witnesses:

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A. J. LOUGHRAN.