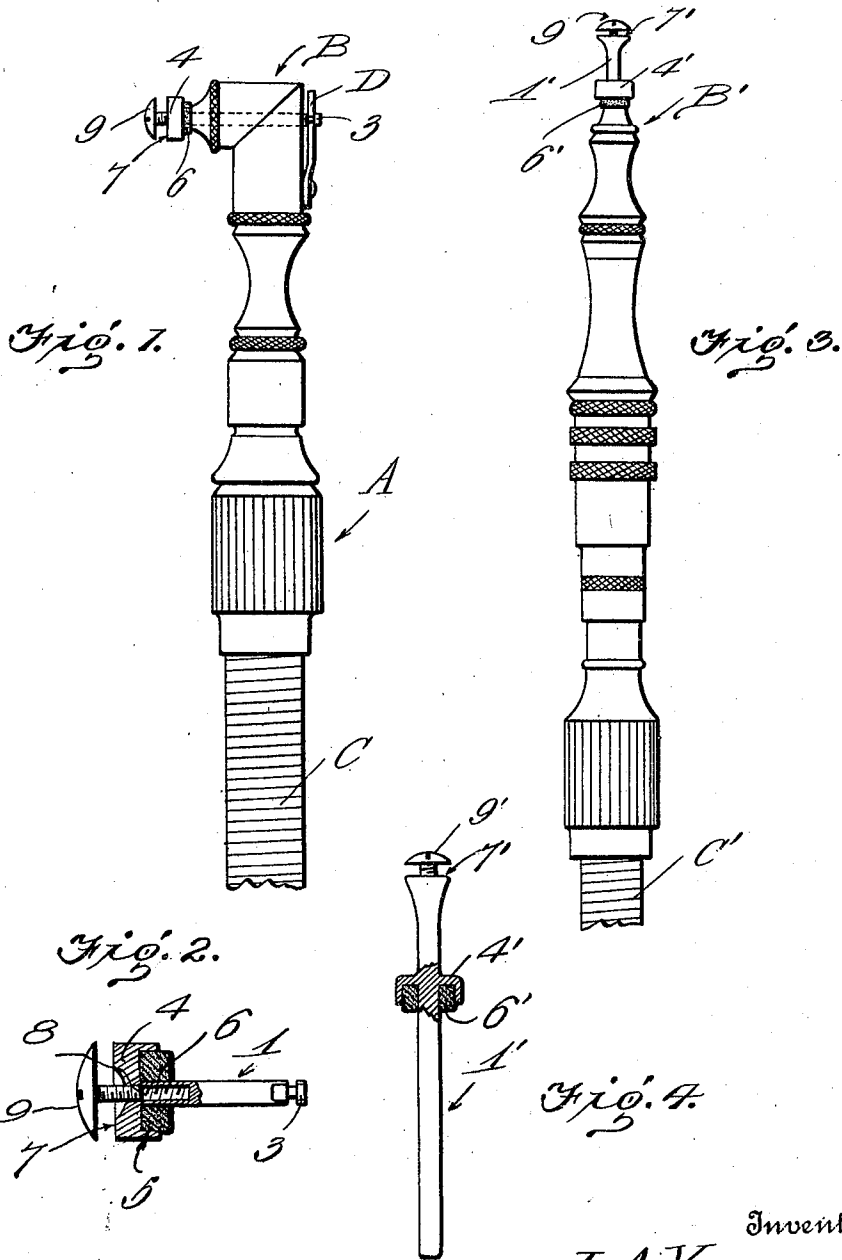


1,405,249.

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# UNITED STATES PATENT OFFICE.

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## DENTAL TOOL.

1,405,249.

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*To all whom it may concern:*

Be it known that I, LUTHER A. YOUNG, a citizen of the United States, residing at University, in the county of St. Louis and State of Missouri, have invented certain new and useful Improvements in Dental Tools; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates broadly to improvements in dental tools, having special reference to devices of this class known as mandrels.

The principal object of the invention is to provide a device of the above mentioned class including novel means for excluding saliva, dirt, and other extraneous matter from the interior of the tool-holder or hand-piece with which it is associated, so as to protect the bearings and other internal parts of the hand-piece.

Another object of the invention is to provide a tool of this class wherein the cup-like element of the dust and liquid excluding means above referred to is, in some instances, such that it provides a clamping surface against which the grinding element, drill, or other tool is held by means of a clamping screw or the like.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same:

Figure 1 is an elevational view of a conventional type of hand-piece such as is intended to be used with angularly disposed mandrels.

Figure 2 is a detail view, with parts in section, showing the type of mandrel adapted for use in connection with the holder shown in Fig. 1, this mandrel being equipped with novel dust and dirt excluding means.

Figure 3 is a view similar to Fig. 1 disclosing a straight type of hand-piece.

Figure 4 is an elevational view with parts in section of the type of mandrel designed for use in connection with the hand-piece disclosed in Fig. 3.

Referring first to Figs. 1 and 2, the letter A designates a conventional type of tool-holder or hand-piece which is provided at

its outer end with means B for holding a mandrel 1 in an angular position with respect to the body portion of the holder. This holder among other things includes internal mechanism for actuating the mandrel, and a slide-latch D for retaining the latter in operative position in the manner disclosed. The internal mechanism of the holder may be of any suitable construction and arrangement and is not shown here as it forms no part of this invention. For the sake of convenience and clearness of description, I have shown a flexible drive shaft C associated with the hand-piece. However, it is to be understood that any other driving means may be used.

The tool 1, or mandrel as it is best known in the trade, is provided at its inner end with a head 3 with which the latch D co-acts. On the outer end of the shaft is an integral enlargement 4 which has a recess 5 formed in its inner face for reception of a yieldable packing-ring 6. Before further proceeding with the description, I wish to state at this point that by thus recessing the enlargement 4, it is formed into a cup and when the tool is in use, the open end of this cup is directed toward the adjacent end of the holder and is spaced therefrom. The packing 6 when placed in position extends beyond the cup and occupies this space, yieldably engages the end of the holder and thus excludes saliva, dust, and other extraneous matter from the interior of the holder and in this way protects the internal mechanism of the latter. The enlargement 4 in addition to providing the aforesaid cup, has a cavity formed in its outer face and it is thus given an additional function, that is, its outer face 7, constitutes an effective clamping surface against which the abrasive element, or other tool is held. In order to accomplish this result, the enlargement and shaft of the mandrel is formed with a screw-threaded socket 8 into which a binding screw 9 extends, this screw serving to retain the grinding disk or other element in place as is obvious.

Referring now to Figs. 3 and 4, A' designates a slightly different type of holder or hand-piece of the "straight" type, which like the one already described includes means B' for retaining the mandrel or tool in place, and internal mechanism (not shown) for imparting rotation to the mandrel. In this figure, I have also disclosed the usual flexible drive shaft C' of the dental

motor. The mandrel 1' used with this type of holder is provided intermediate its ends with a cup 4' for reception of the packing 6'. This shaft is increased in diameter at its outer end and formed with a concavity to provide a relatively large clamping surface 7' against which the abrasive disk or other detachable element is brought, the same being held in position by means of a screw 9' as already described. At this point, I wish to state that in both types of mandrels shown, the cups could be detachable if desired, instead of being integral as shown.

In use, the shafts of the tools are engaged with the chucks of the holders in the usual way so that the outer ends thereof project beyond the holder in the manner shown. The cups and packings are so positioned on these shafts that when the tool is in place, the packing is brought into yieldable engagement with the conical nose or end of the hand-piece in such a manner as to absolutely exclude saliva, dirt, and other extraneous matter from the interior of the latter. As before stated, the grinding element, or other working implement is clamped on the shaft and held by means of the binding screws referred to. It is hardly necessary to again state that in the "angular" holder, a latch is provided for coaction with the head 3 on the shaft 2 for retaining this tool in place.

While I have shown and described two particular types of mandrels or shafts, I desire it to be understood that these devices will vary in shape and size according to the type of holder with which they are to be used, and, of course, the dust excluding means which is associated therewith will occupy various positions on the shaft to insure effective engagement thereof with the holder. With the construction and arrangement of excluding means shown, it is obvious that the packing can be easily and readily removed or replaced whenever necessary or desired. Furthermore, if desired, the cup itself may be made removable so that the same cup may be used on the various types of mandrels. These and other features and advantages of the invention

have, no doubt, become apparent from the foregoing description. Therefore, a more lengthy and detailed description is deemed unnecessary.

Advantageous and effective results are practically insured with the construction and arrangement herein shown and described. However, I wish it to be understood that various minor changes within the scope of the invention as claimed, may be resorted to.

I claim:

1. A dental tool of the type described comprising a shaft equipped with a cup opening toward the inner end of the shaft and a packing arranged in the cup and projecting beyond the open end thereof, being adapted for yieldable engagement with the end of said hand-piece to effectively exclude water, dirt, and other extraneous matter from the interior of the latter.

2. The combination with a hand-piece; of a dental mandrel projecting from one end thereof and carrying an integral cup opening toward the hand-piece and spaced from the adjacent end thereof, and a yieldable packing seated in the cup and projecting beyond the open end thereof and engaging the end of the hand-piece for excluding water, dirt, and the like from the interior of the latter.

3. A dental tool of the class described comprising a shaft having a head at one end with which the usual retaining latch on the holder co-acts, being equipped at its opposite end with an integral enlargement having its inner face recessed to form a cup, the outer end providing a clamping surface, said enlargement having a screw-threaded socket in its outer end, a clamping screw threaded into the socket, and yieldable packing arranged in said cup, being intended to engage the tool-holder to exclude liquid and dirt from the interior of the latter.

In testimony whereof I have hereunto set my hand.

LUTHER A YOUNG.