May 2, 1933. C. ENGELFRIED 1,907,319

REVERSIBLE DENTAL MANDREL

Filed July 31, 1931

Fig. 1.

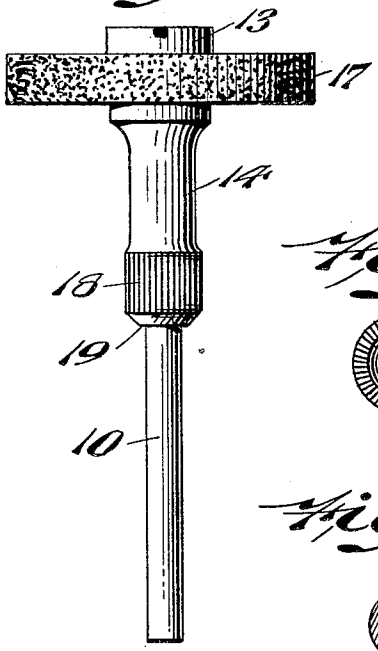


Fig. 2.

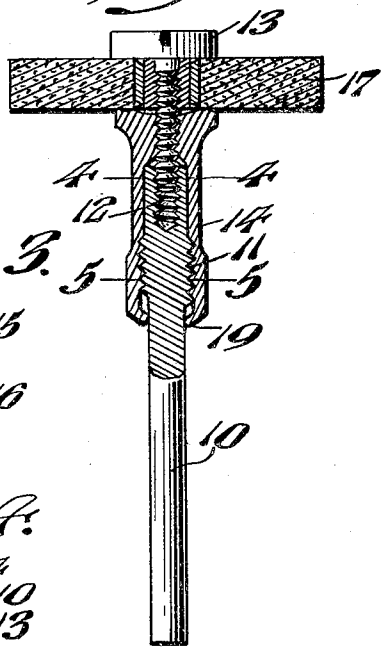


Fig. 3.



Fig. 4.



Fig. 8.

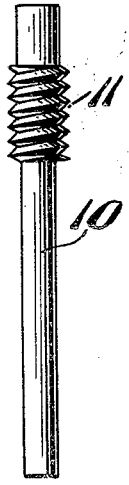


Fig. 6.

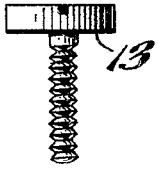


Fig. 5.

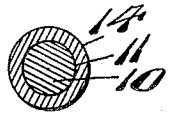


Fig. 7.

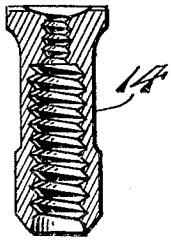
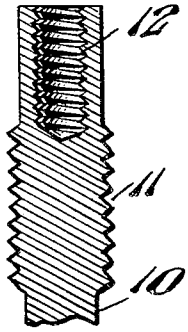


Fig. 9.



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UNITED STATES PATENT OFFICE

CHARLES ENGELFRIED, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE J. BIRD MOYER CO., INC., OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA

REVERSIBLE DENTAL MANDREL

Application filed July 31, 1931. Serial No. 554,208.

This invention relates to that class of dental tools or devices in which discs of various kinds of material used for grinding, cutting, polishing, and the like are detachably secured to shanks or mandrels arranged to be carried by a dental engine as is well understood in the art.

The leading object of the present invention may be said to reside in the provision of a device of this character which will securely hold the discs in such manner as to prevent the same from becoming loose on the mandrel and ineffective upon the reverse movement of the engine hand piece.

A further object of the present invention is to provide a device of the character stated in which the shank of the reversible dental mandrel is provided at its working end with a relatively coarse, exteriorly screw-threaded portion, which screw-threaded portion is received by the sleeve of the device, both the sleeve and the shank being interiorly finely screw-threaded to receive at its working end a clamping member as a screw.

A further object of the present invention is to provide a device of the character stated in which the working end of the sleeve is countersunk and peripherally roughened in order to provide a good gripping surface for a disc as clamped thereto.

A still further object of the present invention is to provide a device of the character stated in which the sleeve and shank are prevented from detachment one with respect to the other by upsetting the inner end of the sleeve.

A further object of the present invention is to provide a device of the character stated in which the sleeve is provided with a knurled portion adjacent the upset end of the sleeve, for the purpose of tightening said sleeve against the dental tool, thus holding the dental tool firmly in position when run in the reverse direction.

With these and other objects in view, the invention consists of the novel construction hereinafter described and finally claimed.

The nature, characteristic features and scope of the invention will be more fully understood from the following description taken in connection with the accompanying drawing forming part hereof, and in which:

Fig. 1 is a view in elevation of a dental mandrel embodying the invention;

Fig. 2 is a vertical sectional view of Fig. 1;

Fig. 3 is a top or plan view of the mandrel sleeve;

Fig. 4 is a view in cross-section taken upon the line 4—4 of Fig. 2;

Fig. 5 is a view in cross-section taken upon the line 5—5 of Fig. 2;

Fig. 6 is a view in elevation of the clamping screw shown in Figs. 1 and 2;

Fig. 7 is a central sectional view of the sleeve;

Fig. 8 is a view in elevation of the shank detached; and

Fig. 9 is a fragmentary view of the upper portion of the shank.

For the purpose of illustrating my invention I have shown in the accompanying drawing one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of the instrumentalities as herein shown and described.

Referring to the drawing in detail, the reference numeral 10 designates a shank which is usually clamped in a dental engine hand piece or a chucking device. The outer or working end of the shank 10 is exteriorly provided with a relatively coarse screw-threaded portion 11. Interiorly the inner end of the shank 10 is provided with a relatively fine screw-threaded bore 12 the purpose of which is to accommodate the clamping screw 13. Co-operatively fitted to the screw-threaded end of the shank 10 is a sleeve 14. The outer or working end of the sleeve 14 is countersunk as at 15 and is provided with a roughened peripheral edge 16 in order to provide a good gripping surface for a disc 17. The opposite end of the sleeve 14 is provided with a knurled

portion 18 and adjacent the knurled portion the sleeve is upset as at 19 so that shank 10 and sleeve 14 are fitted together and provided with a space between the lower part of coarse outer thread 11 on shank 10 and knurled section 18. This space allows sleeve 14 to tighten against disc 17. The sleeve 14 is upset at 19 to prevent sleeve 14 from coming off of shank 10. With a disc 17 seated with respect to the sleeve, as shown in Fig. 2, the clamping screw 13 when caused to co-operate with the threaded bore 12 of shank 10 causes the disc to be securely clamped with respect to the sleeve. Thus, in operation, as the shank 10 rotates in the right hand direction, it tightens disc 17 to sleeve 14; and when shank 10 is rotated in the reverse direction, sleeve 14 tightens against disc 17 simultaneously locking clamping screw 13, by action of the coarse outer thread 11, on shank 10 moving faster than the fine inner thread 12. Therefore, the locking screw 13 can be tightened to hold a dental tool securely and rotate in either direction.

What is claimed is:

1. A reversible dental mandrel comprising a shank with external and internal screw threads of unequal pitch, a sleeve coacting with said external screw thread and overhanging the shank, a reduced bore in the overhanging portion of the sleeve threaded to form an extension of the internal screw thread in the shank when properly aligned therewith, and a screw coacting with the internal thread in the shank and its extension in the sleeve to clamp a dental tool against the end of the sleeve, the whole co-operating to lock the screw threads when the sleeve is rotated because the thread in the reduced bore of the sleeve is thereby displaced from alignment with the internal thread of the shank.

2. A reversible dental mandrel comprising a shank with external and internal screw threads of unequal pitch, a sleeve coacting with said external screw thread and overhanging the shank, a reduced bore in the overhanging portion of the sleeve threaded to form an extension of the internal screw thread in the shank when properly aligned therewith, and a screw coacting with the internal thread in the shank and its extension in the sleeve to clamp a dental tool against the end of the sleeve, the whole co-operating to lock the screw threads when the sleeve is rotated because the thread in the reduced bore of the sleeve is thereby displaced from alignment with the internal thread of the shank, the inner end of the sleeve being deformed after assembly on the shank to retain it against removal.

3. A reversible dental mandrel comprising an arbor externally screw threaded with a certain pitch, a sleeve threaded to coact therewith and a screw of different pitch threaded through an extension of the sleeve and into the end of the arbor and adapted to clamp a dental tool against the sleeve, said sleeve acting when rotated in either direction on the arbor to urge the screw axially from its position of engagement in the arbor whereby the sleeve and the screw lock.

4. A reversible dental mandrel comprising an arbor, a sleeve surrounding the arbor and screw threaded thereon, a second internal thread of smaller diameter and pitch in the sleeve, an internal thread in the arbor constituting an extension of the last named thread when the sleeve is screwed home upon the arbor and a screw adapted to retain a dental tool coacting with the smaller thread in the sleeve and with its extension in the arbor, the parts enumerated co-operating to resist any unscrewing of the sleeve alone or the sleeve and the screw because the greater pitch of the former upon the arbor will cause it to compress the dental tool against the screw head and simultaneously urge the portion of the smaller screw thread in the sleeve away from its extension in the arbor.

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