No. 820,474. PATENTED MAY 15, 1906.

W. C. K. BUCHANAN.

MANDREL FOR DENTAL ENGINES.

APPLICATION FILED DEC. 5, 1905.

Fig. 1

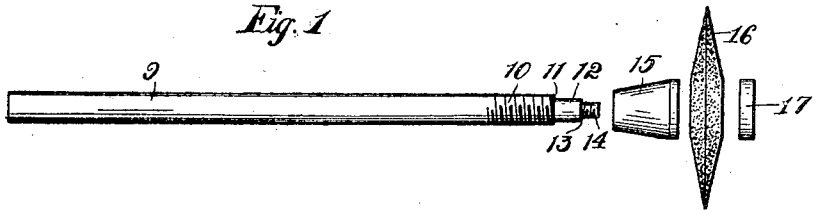
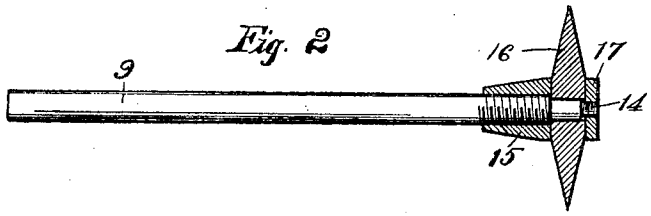



Fig. 2



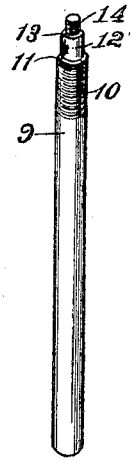




Fig. 4

Fig. 3

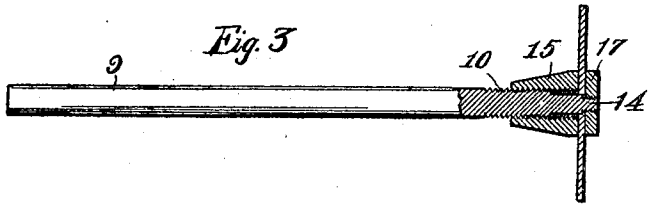



Fig. 8




Fig. 7

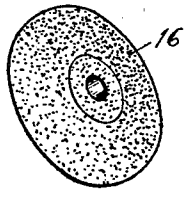
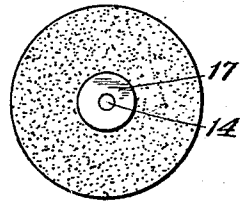



Fig. 6




Fig. 5




Witnesses:

R. E. Hamilton

A. M. Wappell.

Inventor,

William C. K. Buchanan

By Arthur C. Brown

Attorney.

# UNITED STATES PATENT OFFICE.

WILLIAM C. K. BUCHANAN, OF KANSAS CITY, MISSOURI.

## MANDREL FOR DENTAL ENGINES.

No. 820,474. Specification of Letters Patent. Patented May 15, 1906.

Application filed December 5, 1905. Serial No. 290,362.

*To all whom it may concern:*

Be it known that I, WILLIAM C. K. BUCHANAN, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Mandrels for Dental Engines; 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My present invention relates to a mandrel for dental engines, and has for its object to provide a device of the class described which is simple and economical in construction and comprises the improved details of structure which will presently be fully described, and pointed out in the claims, reference being had to the accompanying drawings, forming part of this specification, in which like reference-numerals refer to like parts throughout the several views, and in which—

Figure 1 is a side elevation of the mandrel, clamping collar, stone, and cap in their relative positions before assembly. Fig. 2 is a similar view of the same parts in central section shown in their assembled position. Fig. 3 is a similar view showing the position of the clamping-collar when a flat disk is in use. Fig. 4 is a detail view of the mandrel-shank. Fig. 5 is an end view of Fig. 3. Figs. 6, 7, and 8 are details of the clamping cap, stone, and collar, respectively.

In the ordinary mandrel the shank is usually provided with an end socket, within which a screw-shank carried by a clamping-cap is inserted. This construction has been found to be simple and fairly satisfactory while the parts are new, but the shank being weakened by the socket is often broken and the interior threads are liable to rust or become clogged with grit, so that it is either impossible to insert the screw-shank or the threads on the shank are worn, making the joint so loose that the disk cannot properly be held.

It is the object of the present invention to provide means on the exterior of the mandrel for carrying the clamping parts, which can be easily cleaned or repaired and which will not in any way weaken the parts. In accomplishing this object I provide the improved details of structure, which I will now describe by reference to the accompanying drawings.

9 represents the mandrel-shank, a portion of one end of which is threaded, as indicated at 10. At the outer end of threaded portion 10 is an offset 11, and extending from said offset is a smooth bearing 12, which extends almost to the end of the shank and is in turn provided with an offset 13. Projecting from offset 13 is a second threaded portion 14, the threads on portion 14 being oppositely disposed to those on portion 10.

15 is a clamping-collar having interior screw-threads adapted to mesh with the threads on the portion 10 of the shank 9.

16 is a disk or stone having a central perforation adapted to fit snugly over the bearing 12 and rest against the offset 11.

17 is a clamping-cap adapted to screw on the threaded portion 14 at the end of shank 9, cap 17 being adapted to bear against the offset 13 and being of such width that the end of the threaded portion 14 will not project beyond the outer surface thereof.

When the parts are assembled as shown in Fig. 2, it will be noticed that the disk 16 is held by the offset 11 so that it does not come in contact with the threads on portion 10, its central perforation being large enough to slip over without touching the threaded portion 14 in order that the threads on such portions will not be worn away by coming in contact with the rough surface of the stone and also that the end portion 14 is flush with the outer surface of cap 17, thereby leaving no projecting end which might injure the patient while the instrument is being operated.

In Fig. 3 is shown an ordinary sandpaper disk which is much thinner than the stone shown in Figs. 1 and 2. It will be seen that the cap 17 is in the same position against the offset 13 as shown in Figs. 1 and 2; but the collar 15 has moved forward over the smooth bearing 12, a portion only of said collar being in engagement with the threaded portion 10 of the mandrel-shank, the parts being so constructed that the thickest stone which is ordinarily used or the thinnest disk may be held with equal firmness. By having a portion 10 provided with left-hand threads and the portion 14 with right-hand threads the tendency of the parts to work loose is obviated, as when the shank is revolved and the clamping parts held rigid the latter will move

toward each other until they come in contact with the disk or stone, when the latter is bound firmly therebetween.

While I have described my invention as relating to a dental-engine mandrel, its use with mandrels generally is readily apparent.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. In a device of the class described, a shank provided with threaded portions, separated by a smooth bearing-surface and clamping members carried by said threaded portions.

2. In a device of the class described, a shank provided with exterior threaded portions, separated by a smooth bearing-surface and clamping members and carried by said threaded portions.

3. In a device of the class described, the combination of a shank having a pair of exterior clamp-bearing portions separated by a disk-bearing portion, and suitable disk and clamp members.

4. In a device of the class described, the combination of a clamp-bearing portion, an adjacent disk-bearing portion of less diameter than said clamp-bearing portion, and a second clamp-bearing portion of less diameter than, and extending from said disk-bearing portion, and suitable clamp and disk members carried by said shank.

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

WILLIAM C. K. BUCHANAN.

Witnesses:

JAS. B. BUCHANAN,

E. E. CARPENTER.