(No Model.)

N. MORGAN.

DENTAL DISK HOLDER.

No. 493,893. Patented Mar. 21, 1893.

Fig. 1.

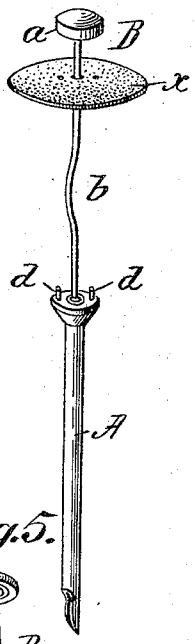


Fig. 2.

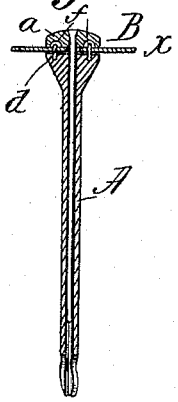


Fig. 3.

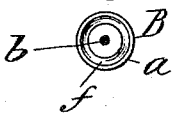


Fig. 4.

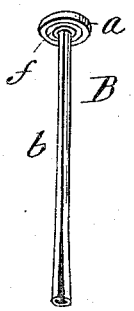


Fig. 5.

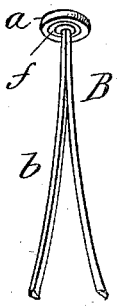
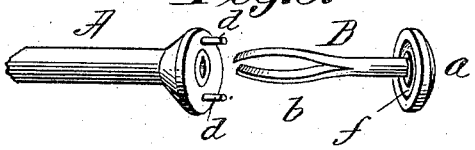
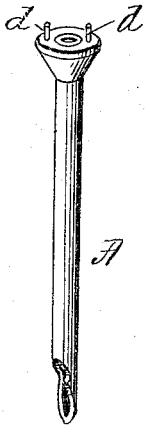


Fig. 6.





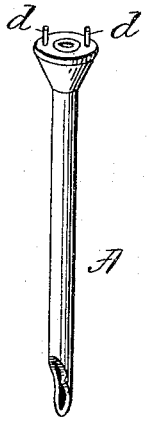
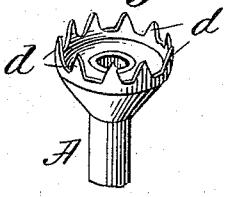


Fig. 7.



Witnesses:

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K. A. Clemons

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UNITED STATES PATENT OFFICE.

NEWTON MORGAN, OF SPRINGFIELD, MASSACHUSETTS.

DENTAL-DISK HOLDER.

SPECIFICATION forming part of Letters Patent No. 493,893, dated March 21, 1893.

Application filed December 19, 1892. Serial No. 455,594. (No model.)

To all whom it may concern:

Be it known that I, NEWTON MORGAN, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Polishing-Disk Mandrels for Dental Engines, of which the following is a specification.

This invention relates to the mandrel of a dental engine, which carries the disk of sandpaper or other abrading or polishing material.

The purpose of the invention is to provide a mandrel of this class which is adapted to permit the easy engagement therewith, or disengagement therefrom, of the disk,—which will permit, freely, and insure good work in the event of running the engine either forward or backward, and which will be adaptable to a comparatively short mandrel as suitable for the attachment for rotating the mandrel at a right or other angle to the flexible driving shaft.

The improved device is, moreover, very simple and inexpensive of construction with all required durability.

Reference is to be had to the accompanying drawings in which the invention is illustrated,—parts thereof being indicated as differing somewhat in detail, though not in essential characteristics.

Figure 1 is a perspective view of the preferred form of the mandrel and the disk retaining device, the parts being shown as in somewhat separated relations, while Fig. 2 is a central, longitudinal section of the same with the parts in their properly connected relations, and Fig. 3 is a view as seen at the underside of the head of the disk-retaining device. Figs. 4, 5, and 6 are perspective views of the mandrels and modified forms of the disk-retaining device, and Fig. 7 is an enlarged perspective illustration of a modified form of the outer extremity of the mandrel.

The invention will be seen as comprising the combination with a tubular mandrel, A, of a retaining device, B, consisting of a head, *a*, for confining the disk, *x*, of sandpaper, or other suitable material, against the end of the mandrel, and a stem or shank, *b*, adapted to enter the tubular mandrel, which is of spring material and which in its length normally has a slight sidewise deflection from the line coincident with the axis of the head, whereby when the stem is forced into the mandrel tube a reaction for frictional engagement is established between it and the surrounding tubular wall. The mandrel is of any usual or suitable length, and may be tubular for the whole or only a portion of its length, and is to be set in the usual manner in any of the forms of receiving and rotating parts of the dental-engine, which are well known and hence need no description herein, especially as such or the portion of the mandrel to be engaged thereby form no part of this invention. The outer end of the mandrel is to be enlarged or formed of such diameter as to present sufficient area of bearing support for the disk, and the mandrel at this end preferably has one or more projections, *d*, which are located to one side of the center, and which are extended substantially parallel with the axis of the mandrel.

The head, *a*, of the disk retaining device is formed of metal, or otherwise, and is also preferably,—to correspond with said projection, *d*,—apertured on its under side, an annular groove, *f*, as shown being regarded the most practical. Thus, of course, when the disk is in place firmly against the end of the mandrel it is penetrated by the one or more of said perforations and prevented from having any rotation independently of that which it receives in unison with the mandrel.

In several of the views the enlarged end of the mandrel is shown as provided with pieces set thereinto and extended therebeyond in parallelism with each other and with the axis of the mandrel, while in Fig. 7 the mandrel is shown as formed with a series of corrugations to constitute the said penetrating projections, *d*, in substantially (though not specifically) the same manner and for the same purpose as those constituted by the aforementioned pins.

The stem or shank of the confining device is preferably, as seen in Fig. 1, composed of a single length of metallic rod or wire which is slightly crooked or sidewise deflected throughout a portion of its length; this stem,

on being forced into the mandrel, the axial bore of which is but slightly greater than the diameter of the stem on being straightened, establishes the conditions for all requisite frictional engagement between the contiguous parts. In Fig. 4 the stem, *b*, is constituted by a small tube the wall of which is longitudinally split along one side with portions at either side of the split laterally spread; in Fig. 5 the stem is formed of double spring tongues which are adapted to be forced together against the tendency for outward reaction, while in Fig. 6 the stem, *b*, is specifically much the same, as seen in Fig. 5, the maximum separation of the duplicated tongues here being at the middle thereof instead of at the ends farthest from the head, *a*, as is the case in the retaining device of Fig. 5.

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

The combination with a tubular mandrel, of a retaining device for a disk consisting of a head for confining the disk against the end of the mandrel, and a stem or shank, to enter the tubular mandrel, of spring material which in its length normally has a sidewise deflection from the line coincident with the axis of the head, whereby when the stem is forced into the mandrel tube a reaction for frictional engagement is established between the stem and the surrounding wall, substantially as described.

NEWTON MORGAN.

Witnesses:
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