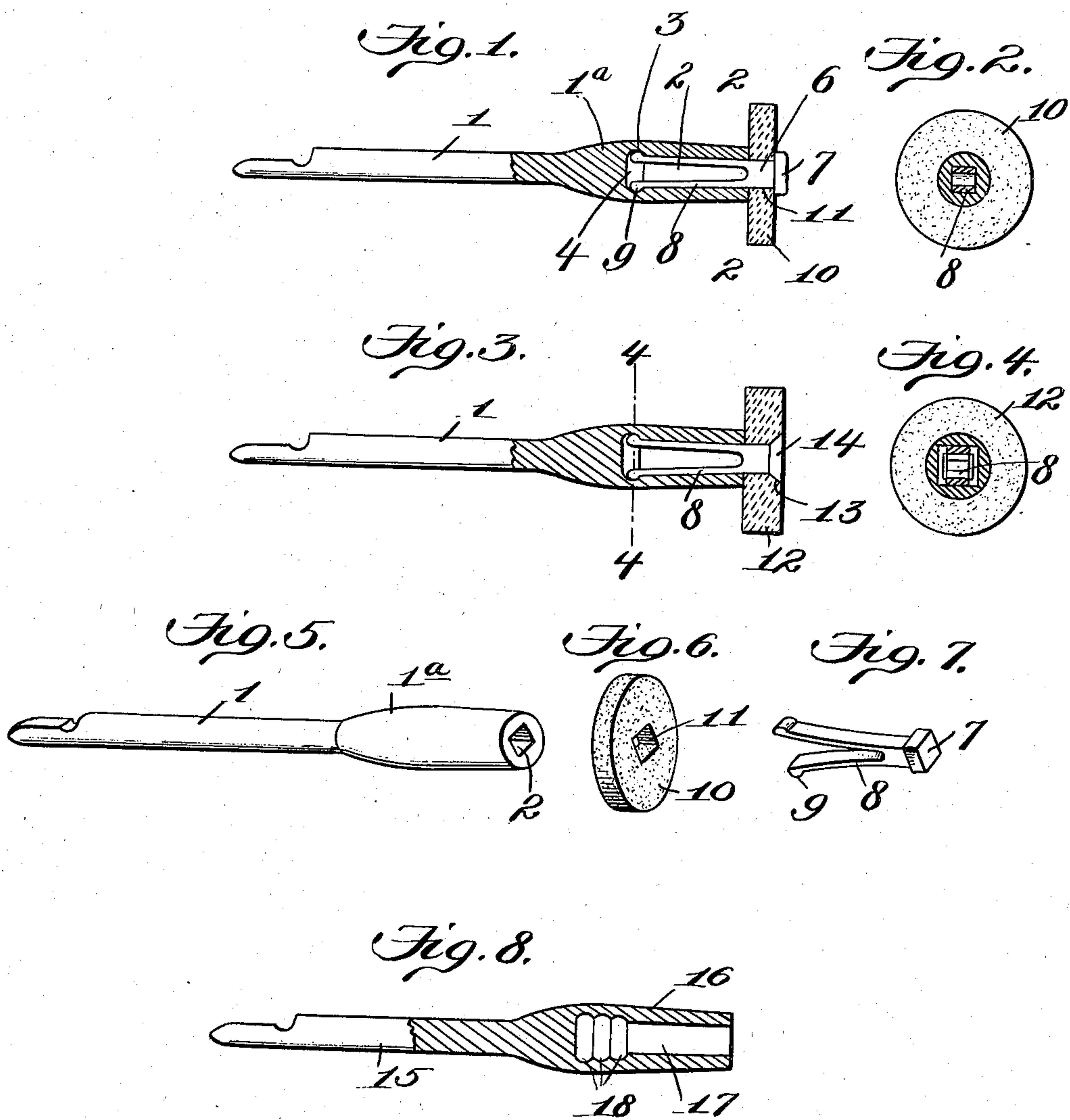


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H. S. HUGHES.
MANDREL FOR DENTAL ENGINES.
APPLICATION FILED MAY 23, 1907.



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UNITED STATES PATENT OFFICE.

HERBERT S. HUGHES, OF UNION CITY, TENNESSEE.

MANDREL FOR DENTAL ENGINES.

No. 881,691.

Specification of Letters Patent.

Patented March 10, 1908.

Application filed May 23, 1907. Serial No. 375,313.

To all whom it may concern:

Be it known that I, HERBERT S. HUGHES, a citizen of the United States, residing at Union City, in the county of Obion and State of Tennessee, have invented new and useful Improvements in Mandrels for Dental Engines, of which the following is a specification.

This invention relates to mandrels for dental engines; and the object thereof is to provide means in a manner as hereinafter set forth which is adapted to permit the easy engagement therewith or disengagement therefrom of the disk of abrading or polishing material, said means furthermore adapted to so connect the disk of abrading or polishing material to the mandrel as to prevent the disk from turning otherwise than in unison with the mandrel.

Further objects of the invention are to provide means for securing the abrading or polishing disk to the mandrel, which shall be simple in its construction, strong, durable, efficient in its use, readily attached and detached from the mandrel, easily manufactured and inexpensive.

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arrangement of parts hereinafter more specifically described and illustrated in the accompanying drawings wherein is shown the preferred embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which come within the scope of the claims hereunto appended.

In describing the invention in detail reference is had to the accompanying drawings wherein like characters denote corresponding parts throughout the several views, and in which—

Figure 1 is a sectional elevation of a dental mandrel and disk-attaching means in accordance with this invention; Fig. 2 is a section on line 2—2 of Fig. 1; Fig. 3 is a view similar to Fig. 1 of a modified form; Fig. 4 is a section on line 4—4 of Fig. 1; Fig. 5 is a perspective view of the mandrel; Fig. 6 is a like view of the abrading or polishing disk; Fig. 7 is a perspective view of one form of attaching means for the disk, and, Fig. 8 is a sectional view of a modified form of mandrel.

Referring to Figs. 1 and 2 of the drawings, 1 denotes a mandrel having an enlarged head 1^a which is recessed to form a socket 2. The wall at the inner end thereof is shouldered as

at 3 so as to form a seat 4. The socket is square in cross section but tapers slightly from its outer end to the seat 4. Extending within the socket 2 is an expansible and contractible attaching member comprising a solid portion 6 which terminates at one end in a head 7 the other end of said solid portion terminating in a pair of spring arms 8 having the free ends provided with offsets, as at 9, said offsets adapted to engage in the seat 4, or rather impinge against the shoulder 3 so that when the attaching member is inserted in the socket 2 the frictional engagement of the arms 8 with the wall of the socket and the engagement of the offsets 9 with the shoulder 3 prevent the accidental dislodgment of the attaching member. The portion 6 is substantially square in cross section as well as the socket, the arms 8 being flat and of a size as to snugly engage the socket, as shown in Fig. 2. By such an arrangement the attaching member will be prevented from turning within the socket 2.

The reference character 10 denotes a stone disk of abrading or polishing material and which is provided centrally with a square opening 11 of such size as to snugly fit the solid portion 6 of the attaching member, the function of such member being to connect the disk 10 to the mandrel. The head 7 of the attaching member abuts against the outer face of the disk 10 when the attaching member is connected thereto (for example as shown in Fig. 1). By providing the square opening 11 in the disk 10 and the positioning of the square portion 6 within the opening 11 the disk 10 is prevented from turning, and, owing to the length of the socket with respect to the arms 8 when the attaching member is in position, the disk 10 is held in snug contact with the end of the mandrel.

The modification shown in Fig. 4 consists in providing the disk of abrading or polishing material which is indicated by the reference character 12 with an opening having a countersunk portion 13 which is adapted to receive the head 14 of the attaching member. Otherwise than that as stated the construction shown in Fig. 3 is the same as that shown in Fig. 1, the same reference characters being applied thereto.

In Fig. 8 a modified form of mandrel is shown and which is indicated by the reference character 15, and the head 16 thereof is recessed so as to form a socket 17, the inner

end of the wall of the socket being formed with a plurality of grooves 18 so as to constitute a plurality of seats for the offset portions 9 of the spring arms 8. By such an arrangement provision is made for different lengths of spring arms 8. In some instances it is necessary, owing to the size of the abrading or polishing disk, to employ various sizes of attaching members, consequently the length of the arms 8 will be increased or decreased, so under such circumstances it is essential that seats should be arranged at different points in the wall of the recess for the offsets of the attaching arms. The construction shown in Fig. 8 provides for such contingency. The head of the mandrel is enlarged so as to increase the strength of the wall of the socket, and furthermore to provide a necessary bearing for the disk when the latter is secured in position.

By setting up an attaching means in a manner as hereinbefore set forth the abrading or polishing disk can be readily attached to the mandrel head, and furthermore the disk is prevented from turning except with the mandrel. This is evident owing to the attaching means being square in cross section and the opening through the disk corresponding in contour to the shape of that portion of the attaching means which is positioned in the disk when the latter is connected to the mandrel. The disk is connected to the mandrel by forcing the attaching means in the socket. During such operation the arms 8 will be contracted until the free ends thereof are arranged opposite the shoulder 3 at the inner end of the socket. The arms will then expand and the offset 9 abut against the shoulder 3, and, owing to the fact that that portion of the socket where the shoulder 3 is of greater diameter than the remaining portion and in connection with the offset portion 9, as well as the frictional engagement of the arms 8 with the wall of the socket, the disk 10 will be secured to the mandrel head. By pulling laterally against the disk 10 the arms 8 will be caused to contract and consequently the disk, together with the attaching member, can be removed from the mandrel. Before the disk, however, is connected to the mandrel head the attaching member is inserted

through the central opening of the disk. This action can be had by contracting the arms 8.

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What I claim is—

1. The combination with a mandrel having a socket at one end, the wall of the socket at its inner end formed with an annular shoulder, of a disk having an attaching means extending through said opening, each of said arms provided with spring arms having an off-set adapted to engage said shoulder thereby connecting the disk to the mandrel head.

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2. The combination with a mandrel having the head thereof formed with a socket slightly tapering from its outer to its inner end and square in cross section, of a disk, and an attaching member square in cross section extending through said disk and provided with a pair of spring arms adapted to engage the wall of the socket for fixedly securing the disk to the mandrel head, said member further provided with a head adapted to abut against the disk for clamping the disk against the head of the mandrel.

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3. The combination with a mandrel having its head formed with a recess substantially square in cross section, of a disk, and an expansible and contractible attaching member substantially square in cross section adapted to extend through and abut against said disk and engage in the mandrel head thereby securing the disk to the mandrel.

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4. The combination with a mandrel having its head formed with a recess with the wall thereof enlarged to form a shoulder, of a disk, and a headed attaching member substantially square in cross section adapted to extend through and abut against said disk, said member comprising a plurality of arms adapted to project in said socket and engage said shoulder thereby fixedly securing the disk to the mandrel.

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In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

HERBERT S. HUGHES.

Witnesses:

WALTER HOWELL,
B. M. SCOGGIN.