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W. B. & E. P. ALFORD.

SHAFT ATTACHMENT FOR DENTAL MOTORS.

APPLICATION FILED JUNE 17, 1904.

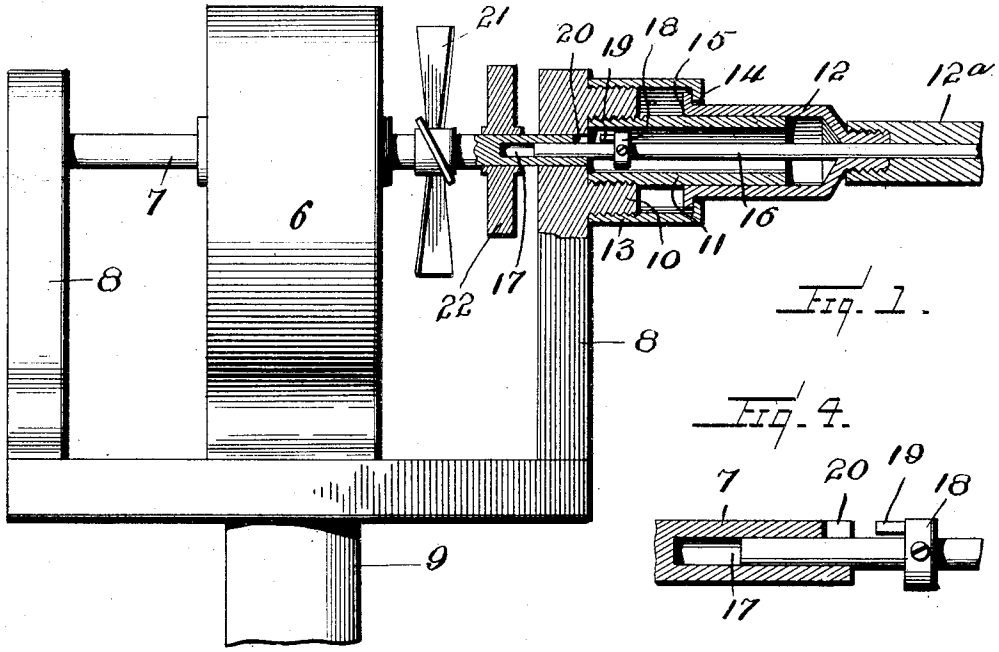


Fig. 1.

Fig. 4.

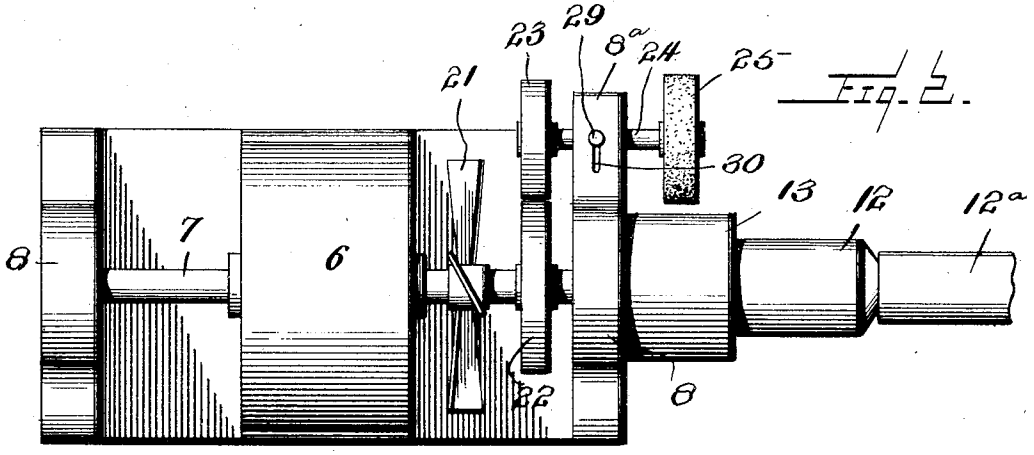


Fig. 2.

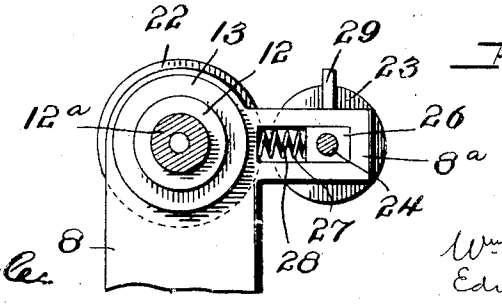


Fig. 3.

WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM BARKIN ALFORD AND EDWIN P. ALFORD, OF SUMTER, SOUTH CAROLINA.

SHAFT ATTACHMENT FOR DENTAL MOTORS.

SPECIFICATION forming part of Letters Patent No. 787,350, dated April 18, 1905.

Application filed June 17, 1904. Serial No. 213,021.

To all whom it may concern:

Be it known that we, WILLIAM BARKIN ALFORD and EDWIN P. ALFORD, citizens of the United States, residing at Sumter, in the county of Sumter and State of South Carolina, have invented new and useful Improvements in Shaft Attachments for Dental Motors, of which the following is a specification.

This invention is an improved shaft connection particularly suitable for the attachment of the flexible shaft of a dental handpiece to the driving-shaft of a motor, the object being to afford means whereby the tool may be started or stopped at will without stopping the motor. The connection includes a slip-joint, in one position of which the shafts are coupled and in the other position of which they are uncoupled.

Improved details will also appear with respect to the means for supporting the motor and the handpiece-shafts and for driving a rotary brush.

In the accompanying drawings, Figure 1 is a front elevation of the apparatus. Fig. 2 is a side elevation. Fig. 3 is a top plan view. Fig. 4 is a detail of the shaft connection.

Referring specifically to the drawings, 6 indicates the motor-casing, and 7 the shaft of the motor. The latter is carried in bearings in arms 8, projecting from a standard 9, the motor being located between the arms. On the outside of one of the arms, extending around the shaft-bearing, is a nipple 10, which is threaded on the inside and outside. The inside threads receive the threaded end of a tube 11 and the outside threads receive the threaded end of a coupling-sleeve 13.

12 indicates a sleeve or tubular piece which is carried on the end of the flexible-shaft covering, which is indicated at 12^a. This sleeve 12 is enlarged to proper size to have an easy fit over the tube 11, on which it is slidable lengthwise to connect or disconnect the shaft. The outward movement is limited and the parts retained in place by flanges 14 and 15, projecting inwardly and outwardly, respectively, from the coupling-sleeve 13 and the piece 12.

The rigid end piece of the flexible shaft is indicated at 16 and the end thereof fits within an axial bore 17 in the end of the motor-shaft 7. The end piece 16 carries thereon an adjustable collar 18, which has a pin 19, adapted to enter a notch 20 in the end of the shaft 7 to couple the shafts together.

As stated before, the piece 12 and the shaft-covering and flexible shaft connected thereto are slidable in and out. To connect the flexible shaft with the motor-shaft, the former is shoved in until the pin 19 engages in the notch 20, and to disconnect the shaft it is pulled out a sufficient distance to withdraw the pin from the notch. These actions can be performed while the motor is running, and the tube 11 acts as the support for and guide for the movement of the flexible shaft, so that the weight of said shaft is not borne by the motor-shaft. The handpiece and its shaft can be readily taken off by disconnecting the coupling-sleeve 13. The movement of the part 12 on the tube 11 is preferably made tight enough to prevent unintentional engagement or disengagement of the parts.

The extension of the motor-shaft beyond its casing and its support in the arms 8 permits the attachment of a fan, as indicated at 21, on the shaft between the motor-casing and the arm. Furthermore, means to drive a rotary brush are provided, including a friction-wheel 22 on the motor-shaft and a friction-wheel 23 on the brush-shaft, engageable therewith. The brush-shaft is indicated at 24 and the brush at 25. This shaft is carried in a bearing-box 26, which is slidable in a recess 27 in the arm 8^a, projecting from the head of the branch 8. A spring 28 behind the bearing-box normally holds the wheels 22 and 23 out of contact. They may be thrown in contact to rotate the brush by sliding the shaft 24 laterally, which may be conveniently done by pressure on the pin 29, which projects from the bearing-box 26 through a slot 30 in the top of the arm 8^a referred to. It will be seen that the brush is conveniently located and may be used even when the handpiece is idle.

What we claim as new, and desire to secure by Letters Patent, is—

1. The combination with a driving-shaft and a support therefor, of a tube projecting from the support, a flexible shaft having a covering, and a sleeve at the end of the covering, slidable on said tube, to connect or disconnect the shafts.

2. The combination with a driving-shaft and a support therefor, of a driven flexible shaft engageable with said shaft and having a covering, a tube secured to the support and into which the end of the flexible shaft extends, and a sleeve connecting the covering and the tube and slidable on the latter to connect or disconnect the shafts.

3. The combination with a driving-shaft, and a support having a bearing therefor, of an inner tube and outer sleeve projecting from the support around said bearing, and a flexible shaft engageable with the driving-shaft and having a tubular covering, and a sleeve at the end of said covering slidable between the tube and said outer sleeve, to engage or disengage the shafts.

4. The combination with a driving-shaft and a support therefor, of a flexible driven shaft engageable with the driving-shaft and having a tubular covering, and telescoping sleeves between the support and said covering, slidable in and out to engage or disengage the shafts, one of said sleeves having a stop to limit the outward movement.

5. The combination with a support, and a driving-shaft mounted in bearings therein and having a socket in the end, of a flexible shaft having a covering slidably connected to the support, and an end piece slidable in the socket, and constructed to engage or disengage the shafts.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

WM. BARKIN ALFORD.
EDWIN P. ALFORD.

Witnesses to William B. Alford:
JOHN L. BURNS,
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Witnesses to Edwin P. Alford:
G. A. LEMMON,
J. K. ROSSWELL.