No. 834,899. PATENTED NOV. 6, 1906.

W. W. FREEMAN.

DENTAL HANDPIECE.

APPLICATION FILED AUG. 22, 1905.

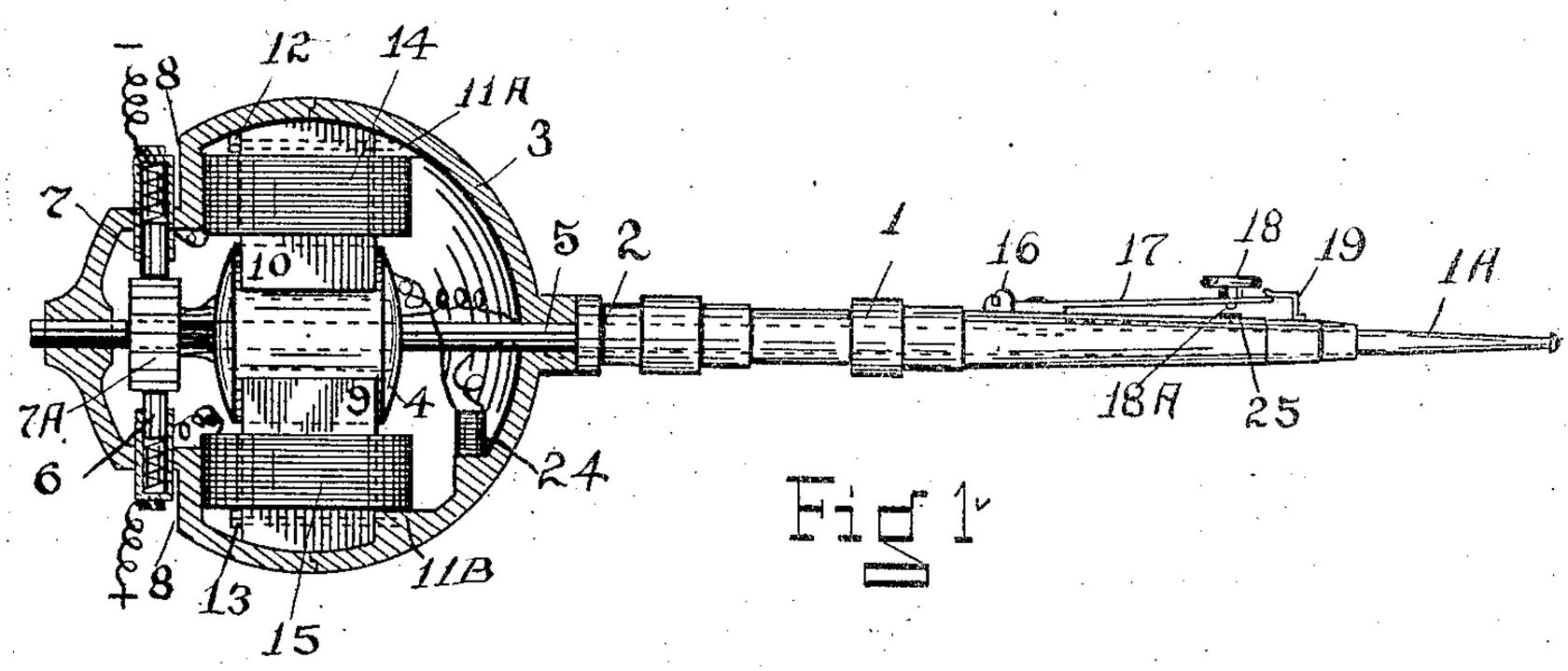

Fig 1.

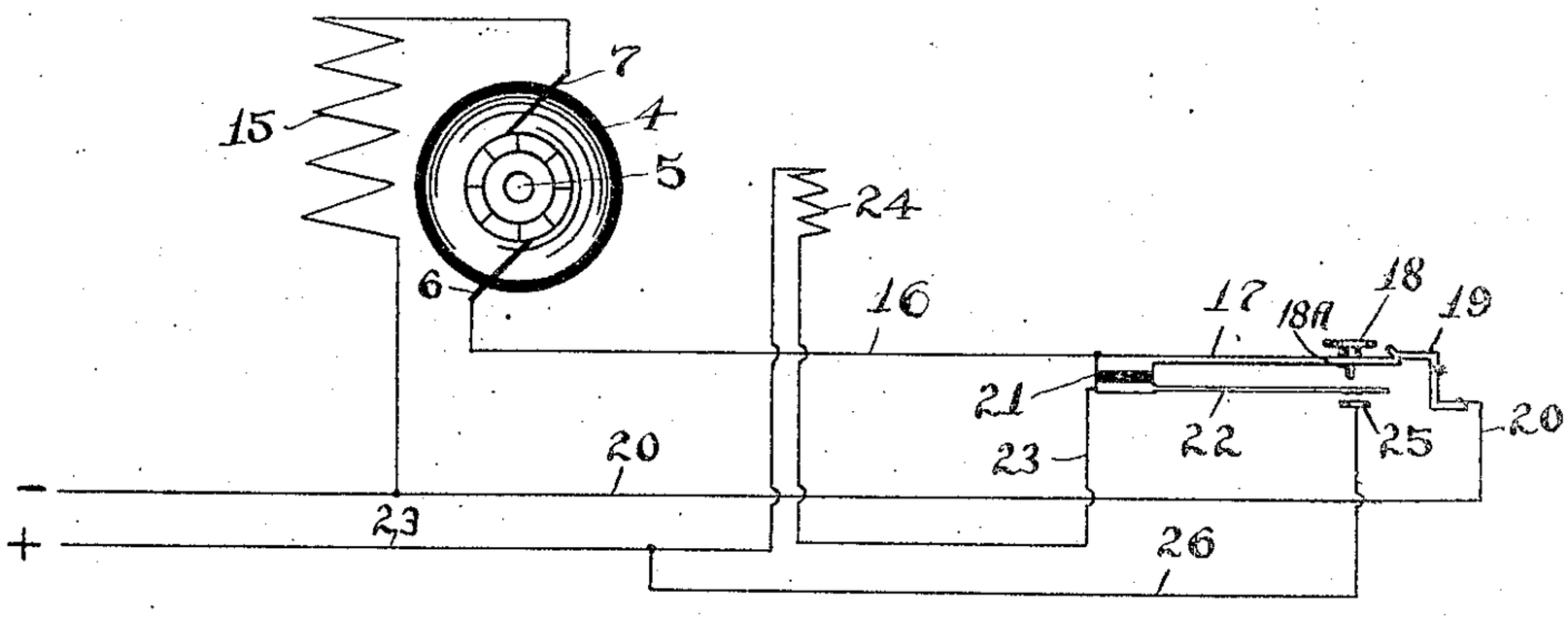

Fig 2.

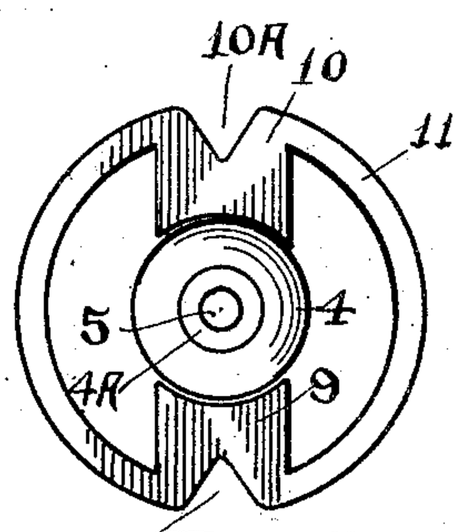

Fig 3.

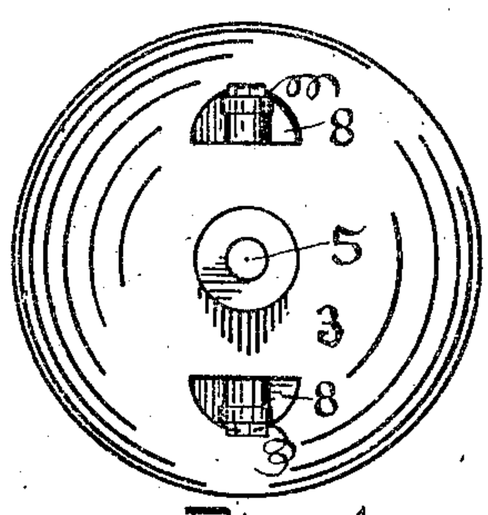

Fig 4.

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UNITED STATES PATENT OFFICE.

WALLACE W. FREEMAN, OF NORFOLK, VIRGINIA.

DENTAL HANDPIECE.

No. 834,899. Specification of Letters Patent. Patented Nov. 6, 1906.

Application filed August 22, 1905. Serial No. 275,235.

To all whom it may concern:

Be it known that I, WALLACE W. FREEMAN, a citizen of the United States, residing at Norfolk, in the county of Norfolk and State of Virginia, have invented certain new and useful Improvements in Dental Handpieces, of which the following is a specification.

My invention relates to handpieces for dental drills, burs, and the like.

The object of my invention is to provide a very light and self-contained combined electric motor and handpiece for use in dental operations.

The further objects and advantages of the invention will be more fully set forth in this specification and then specifically pointed out in the claims annexed hereto.

The invention is shown in simple and convenient embodiments in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a sectional elevation of the motor-shell with the handpiece and drill attached thereto. Fig. 2 is a diagrammatic view of the motor wiring and connections. Fig. 3 is a front view of the field-magnet ring or annulus with the notched cores forming a part thereof. Fig. 4 is an end view of the spherical motor shell or casing, showing the pockets or depressions therein.

In the drawings like reference-numerals indicate similar parts in all the views.

1 is the dental handpiece, of any desired form, and is provided with a drill 1^A or a bur and also has a slip or bayonet joint 2, so as to admit of its being removed from the motor-shaft when desired.

3 is a spherical shell or casing for the electric motor and is usually made of aluminium or other metal of low specific gravity in order to get lightness.

4 is the motor-armature, and 4^A, Fig. 3, is the armature-core, which consists of an aluminium cylinder, as shown in the figure.

5 is a continuous armature-shaft and extends through the length of the handpiece 1, and at one of its ends suitable provision is made to receive a drill, bur, or other instrument.

6 is the positive, and 7 is the negative, brush bearing upon the commutator 7^A, through which the electric current is conveyed to the armature 4 in the usual manner. The brushes 6 and 7 are usually inclosed in cylinders provided with springs, the cylinders being in the pockets or depressions 8 in the spherical casing 3, as shown.

9 is the lower, and 10 is the upper, field-magnet and are provided with gaps 10^A, Fig. 3, the magnets being a part of the ring 11, which is fastened to the shell or casing 3 upon the shoulders 11^A and 11^B, Fig. 1, and are suitably fastened by the bolts or screws 12 and 13. The gap or notches 10^A concentrate the lines of force to the effective area of the magnet-cores, which is near the armature.

14 and 15 are the upper and lower field-coil and are removably fastened to the cores or magnets 9 and 10, so that they may be renewed, if necessary.

16, Fig. 2, is a wire from the lower brush 6 to one end of the spring-switch 17, having a push-button 18 and a contact 18^A.

The switch or tongue 17 is normally in contact with the Z-shaped terminal 19, which is connected to an electric supply by the wire 20.

21 is insulation between the switch 17 and the spring contact-tongue 22, connected to the wire 23 and to the resistance coil or rheostat 24, and from thence is attached to the negative feed-wire 23.

25 is a terminal button or contact having the wire 26 in shunt across the rheostat-coil 24.

In the position shown in Figs. 1 and 2 the switch 17 is in its normal position, the armature of the motor being short-circuited, and the motor is therefore not in operation; but when the switch 17 is depressed the contact or point 18^A comes in contact with the tongue 22, which places the rheostat in the circuit, and the motor will therefore rotate at a slower speed. When the switch 17 is further depressed, the spring-tongue 22 is brought in contact with the button 25 and the motor will operate at full speed, the entire current passing through the wires 16 and 26 without traversing the rheostat.

In practice I arrange part of the connections and devices shown in Fig. 2 within the handpiece 1, the visible parts in that case being the switch 17, button 18, and the Z-shaped contact 19, as shown in Fig. 1.

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

1. In combination with a dental handpiece, an electric motor, a shaft driven by said motor passing through said handpiece having an armature thereon, a shell having

a plurality of exterior pockets therein and covering said motor, a plurality of removable field-coils, a notched V-shaped ring core or pole piece for each coil, said cores forming a part of a ring, a resistance-coil in said shell, and means carried by the said handpiece for controlling said resistance.

2. In combination with a dental handpiece, a motor, a shaft passing through the handpiece in the direction of its length and carrying an armature for said motor, a spherical shell having a plurality of pockets therein, a spring-switch upon the said handpiece, a Z-shaped contact-piece normally bearing thereupon, an insulated spring-tongue beneath the said switch and adapted to make contact therewith, said switch and tongue having electrical connection with the motor and the source of electrical supply, a resistance-coil in circuit with said tongue, and a contact-button or terminal for contact with the tongue in shunt connection around said resistance from a supply-wire for operating the motor at full speed.

In testimony whereof I have hereunto affixed my signature, in the presence of two witnesses, this 28th day of July, 1905.

WALLACE W. FREEMAN.

Witnesses:
WALTER B. BURROW,
V. T. BURROW.