

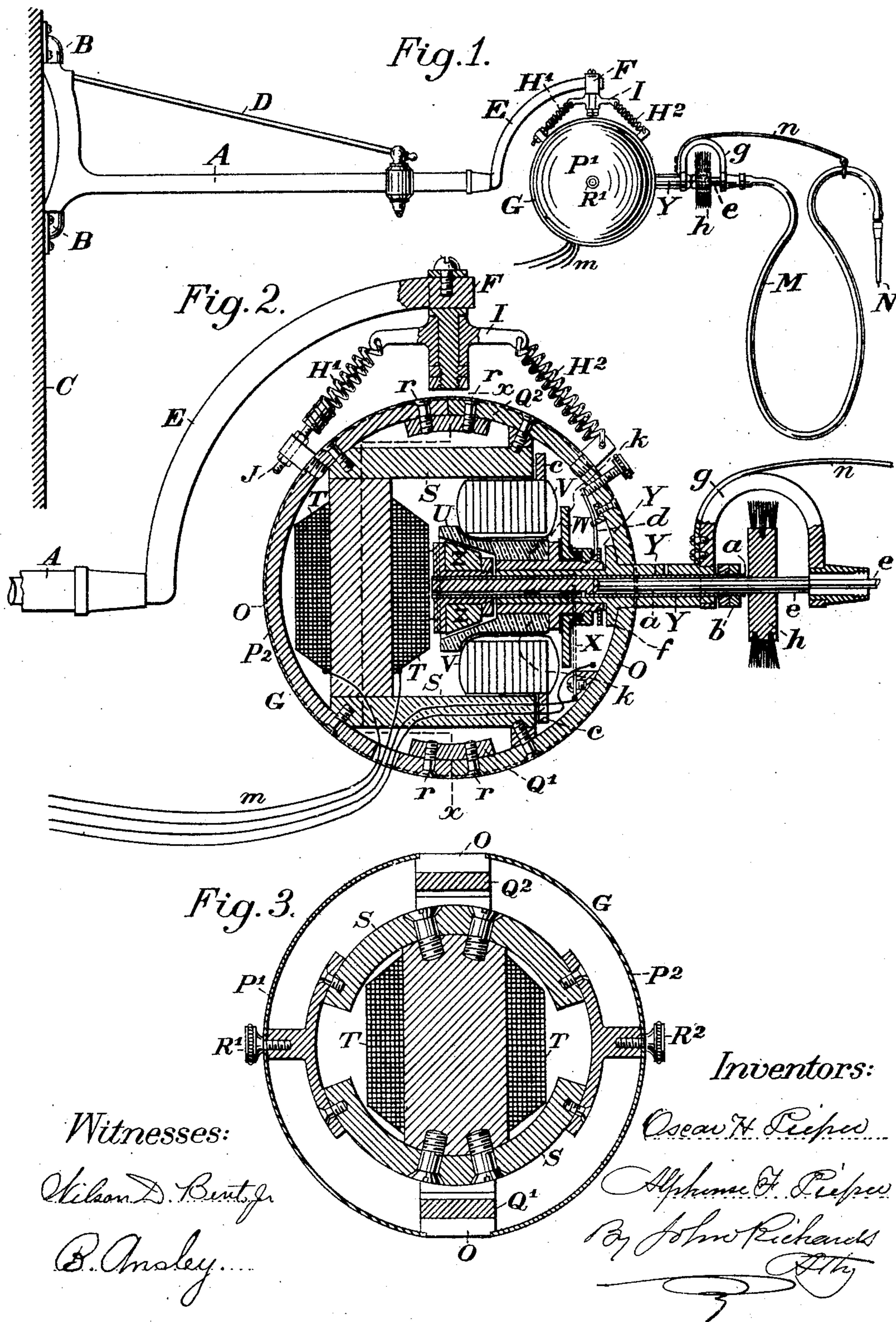
(No Model.)

O. H. & A. F. PIEPER.

# ELECTRICAL APPARATUS FOR OPERATING DENTAL IMPLEMENTS.

No. 534,374.

Patented Feb. 19, 1895.





# UNITED STATES PATENT OFFICE

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ELECTRICAL APPARATUS FOR OPERATING DENTAL IMPLEMENTS.

SPECIFICATION forming part of Letters Patent No. 534,374, dated February 19, 1895.

Application filed April 30, 1894. Serial No. 509,585. (No model.)

*To all whom it may concern:*

Be it known that we, OSCAR H. PIEPER and ALPHONSE F. PIEPER, citizens of the United States, residing in San José, county of Santa Clara, and State of California, have invented certain new and useful Improvements in Electrical Apparatus for Operating Dental Implements, as set forth in the following specification and the drawings therewith, which we declare to be a full, true, and exact description of our invention.

This invention relates to certain improvements upon electrical apparatus, set forth in Letters Patent of the United States, No. 510,048, granted to Oscar H. Pieper, one of the applicants in the present case, for improvements in electrical apparatus for operating dental implements, dated December 5, 1893, and consists in certain improvements that will be set forth and explained in the present specification, and the claims at the end thereof.

Referring to the drawings herewith, and forming a part of our specification: Figure 1 is a side elevation of our improved apparatus for operating dental implements as it appears when ready for use. Fig. 2 is an enlarged vertical section through the main operating parts thereof. Fig. 3 is another section on the line  $x-x$  of Fig. 2 with some of the details omitted.

Similar letters of reference are employed to designate like parts in the different figures of the drawings.

A is a pivoted bracket swinging on the axes B B, adapted to be fastened to a wall C, a post or other thick vertical support, and D a brace rod to give stiffness or vertical stability to the bracket A.

At the outer end of the bracket A is a curved extension E, to which is attached a pivotal or swivel support F, on which is supported the closed case G containing the motive apparatus to be hereinafter described.

The case G with its connected parts is suspended to a crosshead I by the coil springs  $H' H^2$ , the former being provided with an adjusting screw J so as to regulate in a vertical plane the axis or sleeve Y, through which passes the rotary shaft  $a$  for operating the flexible shaft M and dental implements N thereto attached.

The combined swinging movement of the bracket A, the swivel support at F, the springs  $H' H^2$ , with the flexible shaft M, permits a free range for operating implements in any position, and over an area sufficient to meet all the exigencies of practice.

The main operating parts of the motive apparatus are attached to a ring O, which with the hemispherical covers  $P' P^2$  form the inclosing case G.

The ring O is separable on the line  $x-x$  in Fig. 2, and is held together by the reinforcing segments  $Q' Q^2$ , and the screws  $r$ , as seen in Fig. 2, so as to enable the various contained parts to be fitted to their positions before the two parts are joined together, and afterward permit access thereto for inspection, adjustment or repairs. The sides or covering plates  $P' P^2$ , held by the screws R R, can also be quickly removed.

Inside the ring O is attached an electro magnet S, having coil T arranged in the usual manner. Within the electro magnet S is an armature having spools V V, a commutator W and brushes X constructed and arranged in the usual manner in so far as the functions of the various parts are concerned.

The core of the armature U, the commutator W, with other revolving parts are mounted loosely on a sleeve Y, inserted in the ring O, as shown in the section, Fig. 2.

The supporting shell  $\frac{1}{2}$  of the core or nave of the armature U has formed on its inner end a tapering socket as shown in Fig. 2, forming the external member of a friction clutch, the inner member Z of which is attached to the revolving shaft  $a$ , that extends out through the axis or sleeve Y, and is retained in place and adjusted by the screw-nuts  $b$ .

To engage the friction clutch formed by the supporting frame of the armature U and the member Z, we employ the attractive force of the electro magnet S on the armature, such force being augmented by a ring  $c$  placed around the armature core U and shown in section, Fig. 2, so that when the electric circuit is closed the armature is at once drawn inward, engaging the friction clutch before explained, setting the shaft  $a$  and spindle  $e$  in revolution.

When the electric circuit is broken, the armature U is moved outward by means of the



spring *d*, and the friction clutch being thus released, the shaft *a* stops. Within this shaft *a* is inserted a spindle *e* held by a feather or pin *f*, so as to revolve with the shaft *a*.

5 To the outer end of the sleeve *Y* we attach a curved bracket *g* provided with an outer bearing for the spindle *e*, and within this bracket *g* we mount a rotary brush *h* for cleaning implements while in use. On the  
10 bracket *g* is fastened a light support *n* to sustain the flexible shaft *M*.

The electric circuits are so arranged by means of the conducting wires *m* that the electric motor can be started, stopped, or re-  
15 versed so as to revolve in either direction with varying velocity and force, by means of a rheostat and resistance coils, forming the subject matter of an application for letters patent filed by us at the same time with this,  
20 and not requiring further explanation in connection with our present invention.

The course of the electric circuit and connections being in the present case common to those of reversing electro motors, and well  
25 understood by those familiar with the art, it is not necessary here to trace out such circuits and connections.

Having thus explained the nature and objects of our invention, what we claim as new,  
30 and desire to secure by Letters Patent, is—

1. In electro-motive apparatus, as herein described, an electro motor mounted in a closed case suspended on a swivel bearing attached to a swinging wall bracket in the man-  
35 ner shown, the containing case flexibly supported by springs so as to move and be adjusted in a vertical plane, in the manner substantially and for the purposes specified.

2. In electro-motive apparatus, as herein  
40 described, an electro magnet and armature mounted in and supported by a ring adjustably suspended at the top by means of a swivel bearing and springs, so as to turn in a horizontal plane, and move within the limits of  
45 the springs in a vertical plane, so as to admit of adjustment in all planes, in the manner substantially and for the purposes specified.

3. In electro-motive apparatus, as herein described, an electro motor mounted in and

supported by an adjustable ring, and in com- 50  
bination therewith a friction clutch so arranged that by attraction of the main electro magnet the clutch will be engaged when the electric circuit is closed, and will be released  
55 when the circuit is open, and the armature sliding upon the shaft or spindle upon which it is mounted in the manner substantially as described.

4. In electro-motive apparatus, as herein described, an electro motor mounted in and  
60 supported by an adjustable ring or frame, the armature capable of longitudinal movement on its axis, and provided with a supplemental ring around the spools to increase magnetic attraction in a longitudinal direction, and  
65 thus engage a friction clutch on the operating spindle, in the manner substantially and for the purposes specified.

5. In electro-motive apparatus, as herein described, an electro magnet and armature,  
70 the latter mounted on a sleeve or hollow bearing and in connection with an automatically-acting friction clutch; a revolving spindle driven by the clutch, arranged to operate  
75 dental or other implements; a rotary brush mounted on the spindle within the distance spanned by an outer supporting bracket, in the manner substantially and for the purposes specified.

6. In an electro-motive apparatus, as herein  
80 described, an adjustable supporting ring or main frame, to which the various elements of the motive apparatus are attached, the ring or frame made in two parts, separable at the  
85 center without disconnecting any of the contained parts therein, so as to permit convenient adjustment or repairs of the contained mechanism, in the manner and for the purposes substantially as described,

In testimony whereof we have hereunto af- 90  
fixed our signatures in presence of two witnesses.

OSCAR H. PIEPER.  
ALPHONSE F. PIEPER.

Witnesses:

GEO. D. SMITH,  
CHAS. H. PIEPER.