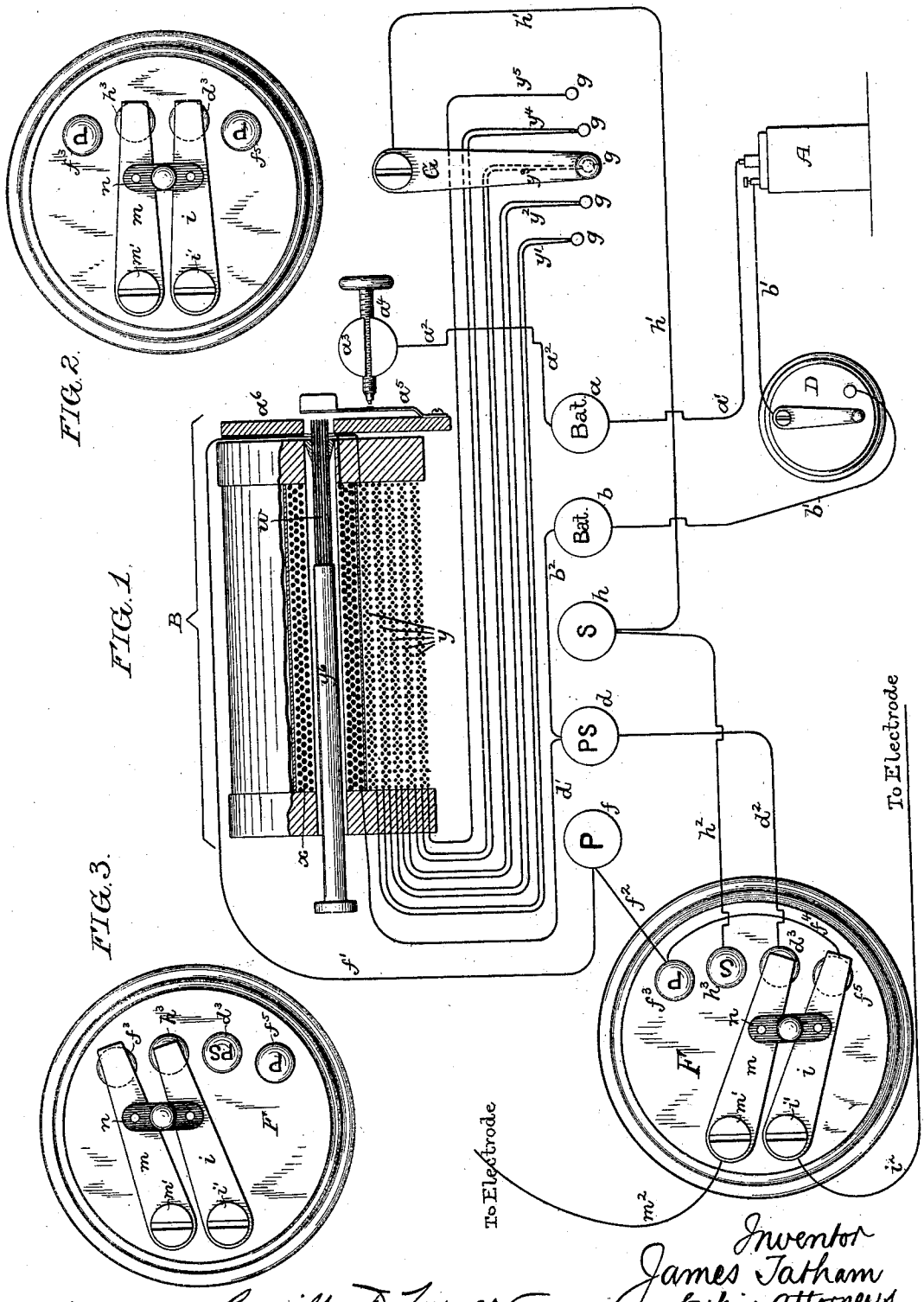
(No Model.)

J. TATHAM.

MEDICAL INDUCTION COIL.

No. 544,266. Patented Aug. 6, 1895.



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JAMES TATHAM, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO ROBERT H. ENGLE, OF SAME PLACE.

MEDICAL INDUCTION-COIL.

SPECIFICATION forming part of Letters Patent No. 544,266, dated August 6, 1895.

Application filed October 15, 1891. Serial No. 408,797. (No model.)

To all whom it may concern:

Be it known that I, JAMES TATHAM, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Medical Batteries, of which the following is a specification.

The object of my invention is to so construct an induction-coil—such as is used in a medical battery—and to so combine a switch therewith that treatment may be effected either with a primary current, with a secondary current, or with a combined current. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a representation of an induction-coil, battery, terminals, and switches in accordance with my invention; and Figs. 2 and 3 are views of one of the switches, showing different adjustments of the same.

A represents the primary battery; B, the induction-coil; D, the switch for putting the primary battery in or cutting it out of circuit; F, the switch for governing the character of the current used in treatment, and G the switch for varying the strength of the secondary or induced current and of the combined current.

One pole of the primary battery is connected by a wire a' to a binding-post a, which is also connected by a wire a^2 to a post a^3, carrying the screw a^4, which makes and breaks connection with the armature-spring a^5, carried by the bar a^6 at the head of the induction-coil. The other wire b' of the battery passes through the switch D, when the latter is closed, to the binding-post b, which is connected by a wire b^2 to a binding-post d, the latter being connected by a wire d' to one end of the primary winding x of the induction-coil. The other end of the primary winding has electrical connection with the bar a^6 at the end of the coil, and the latter is connected by a wire f' to a binding-post f, one end of the secondary winding y being also connected to the wire f'.

The secondary winding of the induction-coil is a multiple-wind—that is to say, it consists of a series of independent coils, and between the successive coils are loops represented in the drawings at y' y^2 y^3 y^4, each of these loops, and also the terminal wire y^5, communicating with one of the terminals g of the switch G, the pivot-stud of which is connected by a wire h' with a binding-post h. This post h is connected by a wire h^2 to a terminal h^3 of the switch F, and the binding-post d is connected by a wire d^2 to another terminal d^3 of said switch, the post f being connected by a wire f^2 to a terminal f^3 of the switch, and said terminal f^3 being connected by a wire f^4 to a fourth terminal f^5 of the switch. The latter has two switch-arms i and m connected by a non-conducting strip n, the pivot-post i' of the arm i communicating through a wire i^2 with one of the treating-electrodes, and the pivot-post m' of the arm m communicating through a wire m^2 with the other of said treating-electrodes.

The action is as follows, supposing the switch D to be closed: When the switch F is in the position shown in Fig. 1—that is to say, so as to make connection with the terminals d^3 f^5—the treating current is a primary one, the circuit being from the battery A through a' a a^2 a^3 a^4 a^5 a^6 f' f f^2 f^3 f^4 f^5 i i' i^2 to one electrode, and the return from the other electrode being through m^2 m' m d^3 d^2 d b^2 b b' to the battery. The current is divided at a^6, a portion passing through the primary winding x of the induction-coil, thence through d', b, b^2, b and b' to the battery.

When the switch F is set, as shown in Fig. 2, so as to make connection with the terminals d^3 h^3, the treating current is a secondary current, and the strength of this current is dependent upon the adjustment of the switch G, the movement of which in one direction (to the right in Fig. 1) serves to bring coil after coil of the secondary winding into circuit, while the movement of the switch in the opposite direction throws coil after coil of said secondary winding out of current.

Supposing that the switch is in the position shown in Fig. 2, the secondary circuit will be as follows. From the first or innermost coil y through the primary winding x, thence through d', d, d^2, d^3, i, i', and i^2 to one electrode, and on the return from the other electrode through m^2 m' m h^3 h^2 h h', switch G and one wire of loop y^3 to the third coil of the secondary winding, thence through loop y^2 to

the second coil, and thence through loop y' to the first or innermost coil.

When the switch F is set, as shown in Fig. 3, so that its arms connect with the terminals f^3 h^3, the treating current is a combined primary and secondary current, the primary current being as follows: from the battery through a' a a^2 a^3 a^4 a^5 a^6 f' f f^2 f^3 m m' m^2 to one electrode and return from the other electrode through i^2 i' i h^3 h^2 h h' G y^3, third coil y, loop y^2, second coil y, loop y', first coil y, primary winding x, d', d, b^2, b, and b' to battery. The secondary current in this case is from the inner end of the first coil of the secondary winding to f', thence through f f^2 f^3 m m' m^2 to one electrode, the return from the other electrode to the first coil of the secondary winding being the same as the primary current. It will thus be seen that of the five binding-posts f is a primary, d a primary secondary, h a secondary, and b and a battery-posts, and of the four terminals of the switch F, f^3, and f^5 are primaries, h^3 a secondary, and d^3 a primary secondary.

The core w of the coil may, as in ordinary induction-coils, be more or less exposed by sliding out and in the sleeve y^6, which surrounds said core.

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

The combination of a battery and an induction coil, with a switch having four points disposed as described, and two arms adjustable so as to bear upon any two adjoining points of said switch, and connections, substantially as described, whereby the current controlled by the switch may be either a primary current, a secondary current, or a combined primary and secondary current, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES TATHAM.

Witnesses:

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HARRY SMITH.