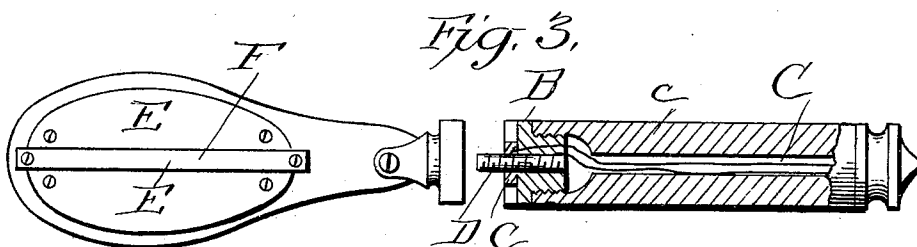
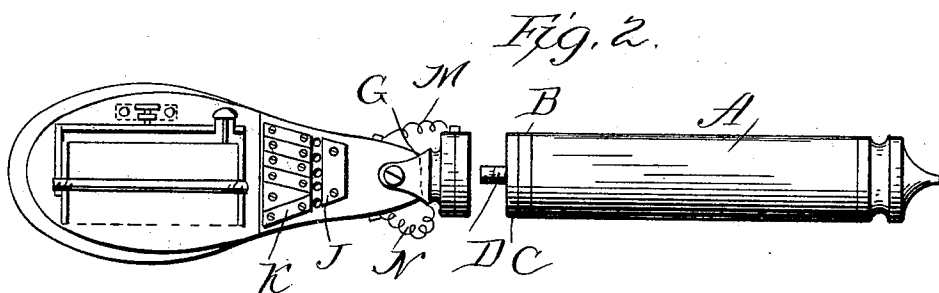
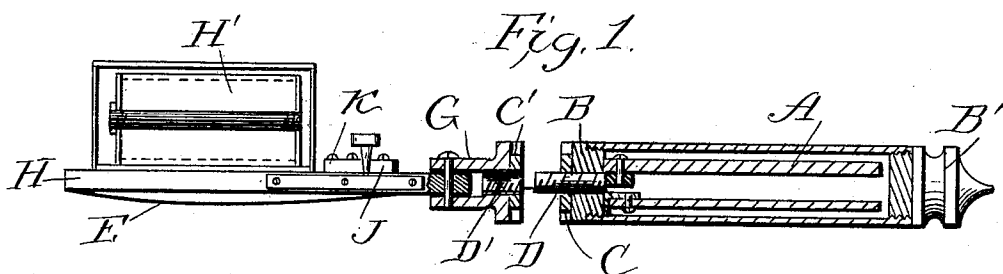


T. C. HODGKINSON.
ELECTRO MEDICAL APPARATUS.

No. 500,539.

Patented June 27, 1893.



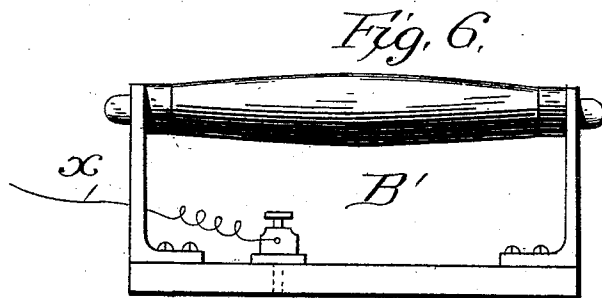
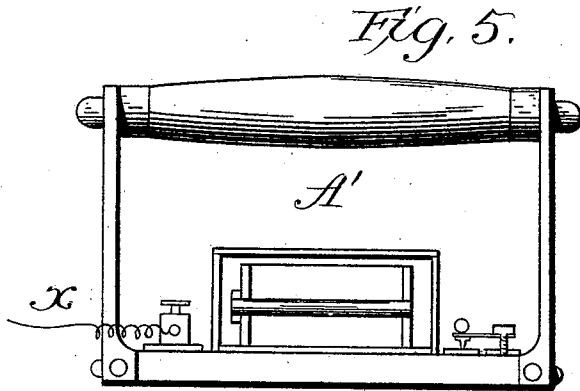
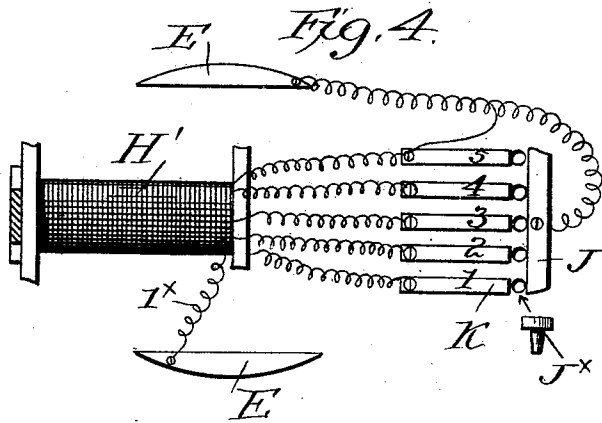
Attest
Walter M. Madsen
F. L. Middleton

Inventor
Thomas Clement Hodgkinson
by Richards & Co
Attys

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UNITED STATES PATENT OFFICE.

THOMAS CLEMENT HODGKINSON, OF MELBOURNE, VICTORIA, ASSIGNOR
TO HENRY THOMAS TOMPSITT, OF SAME PLACE, AND JOHN MILDRED
CREED AND EDWARD HENRY BELISARIO, OF SYDNEY, NEW SOUTH
WALES.

ELECTRO-MEDICAL APPARATUS.

SPECIFICATION forming part of Letters Patent No. 500,539, dated June 27, 1893.

Application filed December 24, 1891. Serial No. 416,098. (No model.) Patented in Victoria April 29, 1890, No. 7,674.

To all whom it may concern:

Be it known that I, THOMAS CLEMENT HODGKINSON, mechanical and electrical engineer, of Ramsden's Buildings, Elizabeth Street, in the city of Melbourne, in the Colony of Victoria, have invented certain new and useful Improvements in Electro-Medical Apparatus, (for which I have obtained a patent in Victoria, No. 7,674, dated April 29, 1890), of which the following is a specification.

The object of the invention is to effect improvements in the design and construction of electrical instruments used in surgical, medical and other applications of electricity to the human body or the bodies of the lower animals and that such instruments shall be complete and capable of adjustment and within a portable compass.

The invention consists of an electrical apparatus which for better description and for the purpose of this application is illustrated by accompanying drawings showing the complete instrument.

Figure 1, is a part side elevation and section of the apparatus with the handle shown as detached. Fig. 2, is a plan view of the same. Fig. 3, is a bottom of a modification partly in section. Fig. 4, is a diagrammatic view of the electrical connections, and Figs. 5 and 6 are views of further modifications.

This instrument is capable of many modifications and developments founded on the principle of this invention. First, the battery may be either primary or secondary. The primary form which is found to be most suitable is shown upon drawings and consists of either one or more elements of ordinary construction, or of an element composed of carbon and zinc and excited by the use of a paste composed of pure farina (previously boiled) and to which after cooling sulphate of mercury is added in the proportions necessary to produce greater or lesser currents of primary electricity as may be required for special uses. This paste when incorporated is poured into the spaces between the outer covering of the battery and the elements.

For one of the purposes of this invention the battery is made to form the handle of the

instrument and may be made either round (as shown in the drawings) or square, oval, &c., according to the number of elements contained within it. The case of this handle must be made from some non-conducting material and fitted with a screwed plug B' at one end for facility of cleansing and also a special cap B screwed to fit the other end. Upon this the elements are secured and the electricity derived from these is carried to the brass facing piece (marked C) and the screwed plug (marked D). These form the battery terminals and for use in this invention are made to correspond with a similar facing piece and hole screwed in conducting material forming terminals of primary leads in the instrument itself as shown in drawings and lettered C' and D'. Thus when one or either of these batteries (which are to be interchangeable) is screwed up the circuit is completed and the instrument ready for use.

The instrument itself consists of a novel combination of the plates forming the face of the instrument, an "intensity" coil suitably wound and adjusted and a resistance or commutator plate for regulating the intensity of current desired to be used.

This instrument is constructed as follows:—A flat piece of non-conducting material (H) is fashioned to a desired shape and fitted to the metal fork G. Upon this flat piece of material two concave plates (E E) are mounted separated from contact with each other by the use of a strip of insulating material (marked F). Upon the top side of the plate H a neat box of suitable shape is secured, so arranged that the intensity coil H' placed within can be exposed to view for purpose of adjustment of "the contact breaker." The coil is so wound as to allow the primary or secondary wires representing various "strengths" to be attached to the terminal screws upon the resistance or commutator plates (marked J and K). The circuits are made as follows:—M and N are primary leads the former connecting with primary of coil and the latter to contact breaker; this may be shunted direct to the plates upon the face of the instrument when a continuous current is to be used in

preference to the "faradic" or intermittent form. The first layer 1^x of secondary wire is led from the coil to the terminal of one of the contact plates upon the face of instrument, and the other ends of secondary wires or strengths are led to terminals 1. 2. 3. 4 and 5. The other contact plate is connected with plate J. The spaces between these strips or plates are closed as required by the use of a small metal plug J^x accurately fitted to any of the holes arranged between the strips J and K so that a varied degree of intensity may be obtained by altering the position of the plug. These contact plates may be used as a foundation or electrical base upon which to attach any fittings required for the special application of this instrument to any portion of a living body which it may be impossible to reach with the instrument as shown complete upon the drawings.

These instruments may be made in various other shapes, for example, those shown on the drawings and marked A' and B' and may be operated also by the use of an ordinary primary battery contact being made by the use of flexible cords X or a hollow handle C having flexible cords C'' passing through the same as shown in drawings. Metal bristles may also be inserted in the contact plates and the instrument may thus be used as an electric brush.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, I would have it understood that I do not confine myself to the exact details as here given, as the same may be altered or varied without departing from the principle of the invention, but

I declare that what I do claim is—

1. In combination, the contact plates E, the insulated holder for said plates, the intensity coil secured to the said contact plate holder, and the adjustable commutator comprising the plates K, the plate J, and the removable

plug J^x carried by the said plate holder, substantially as described.

2. In combination, the plate holder H, of non-conducting material, the contact plates E, E, arranged on one side of the said plate, the non-conducting piece F, between them, the casing secured to the back of the case, the induction coil therein and the adjustable commutator comprising the plates K, J, and the removable screw plug J^x, the first layer of the induction coil being connected with one of the said contact plates, substantially as described.

3. In combination, the plate holder H, the handle detachable therefrom, the contact plates E, carried by the plate holder, the handle detachably connected with the plate holder and the contact pieces between the said handle and the plate holder and detachable with the handle and the electrical connections from the battery with the same, substantially as described.

4. In combination, the plate holder with contact plates, the detachable handle, the screw plug forming said detachable connection and the contact pieces between the handle and the plate holder forming one set of terminal connections, the said screw plug and socket forming the other terminals, substantially as described.

5. In combination, the plate holder with contact plates, the detachable handle connected to said plate holder with a screw and socket, the contact pieces between the handle and plate holder, the said handle being hollow to receive the electrical connections, substantially as described.

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

THOMAS CLEMENT HODGKINSON.

Witnesses:

ALFRED FORD,

Notary Public, Melbourne.

NEIL WALKER,

Law Clerk, Melbourne.