

M. W. HOUSE.
Electric Instrument.

No. 39,733.

Patented Sept. 1, 1863.

Fig. 1.

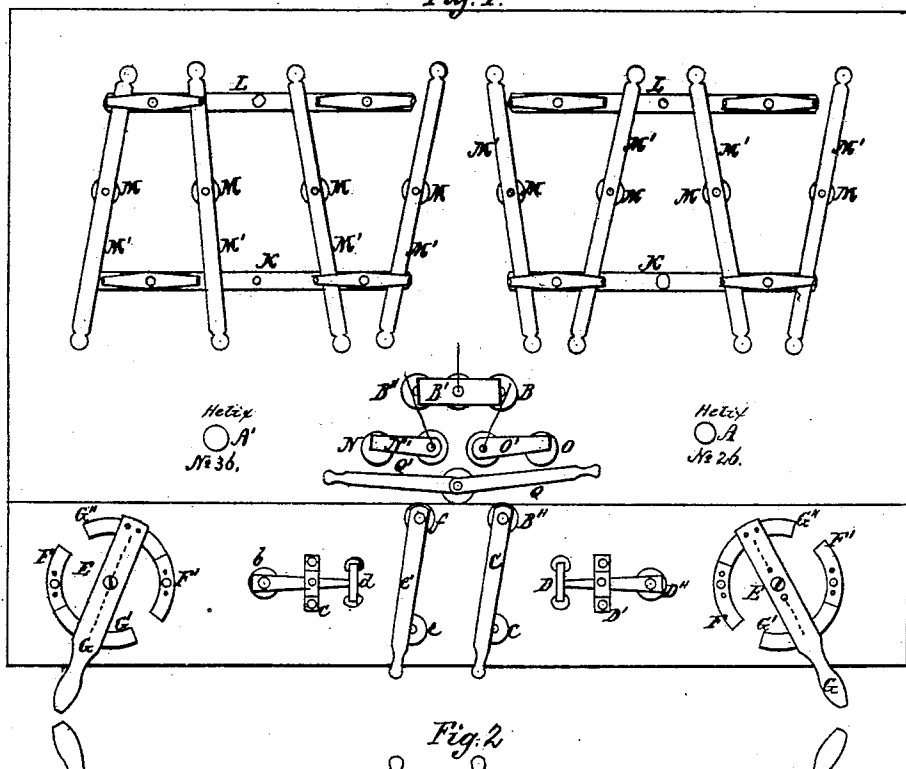
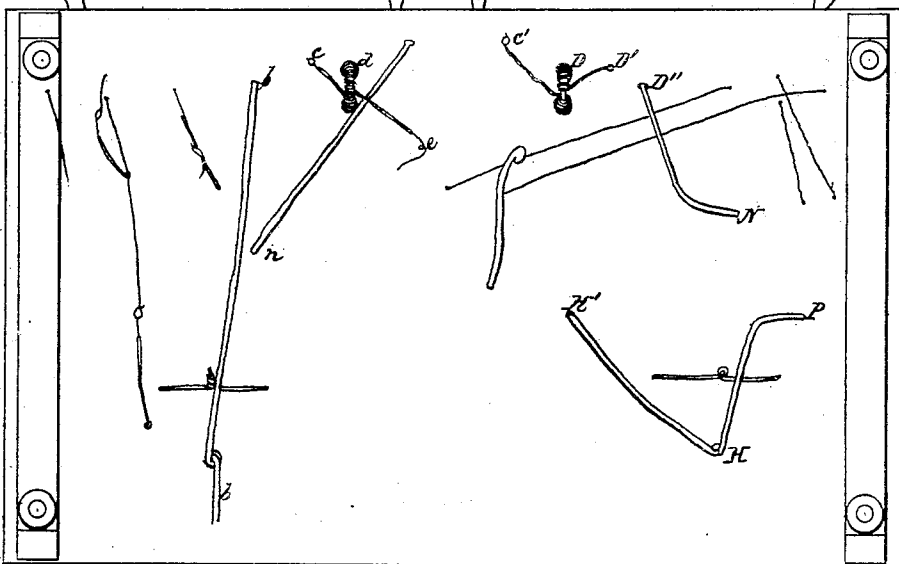


Fig. 2.



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IMPROVEMENT IN REMEDIAL APPLICATIONS OF ELECTRICITY.

Specification forming part of Letters Patent No. 39,733, dated September 1, 1863.

To all whom it may concern:

Be it known that I, MARK W. HOUSE, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in Electrical Instruments; and I do hereby declare that the following is a full and complete description of the construction and operation of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure I is a front view, and Fig. II is a view of the connecting-wires.

The nature of my invention relates to such a construction and arrangement of devices that a primary and induced current may be worked over the same conductors at the same time, or two induced currents of different intensities worked at the same time, either in the same or opposite directions, either with or without a primary current; to combining a primary uninterrupted current with an induced interrupted current, and to devices for changing the poles or direction, whatever may be the number or combination worked, by means of a switch constructed for that purpose and placed within the circuit, all of these objects being for therapeutical or chemical purposes.

I construct my battery for quantity and depend upon the fineness and length of coil for the induced current for intensity. I prefer to use two helices, one of which is composed of No. 26 wire and the other of No. 36 wire. By this means I get currents of varying intensity. These helices are represented at A A' in Fig. I, A being of No. 26 and A' of No. 36. Other numbers may be used, but I prefer those named.

I will first describe the direction of the primary current in the coil or helix shown at the right hand of the drawings.

Suppose P to represent the conducting-wire from the positive pole of the battery, it passes at H into the coil or helix, (shown at A,) thence to the post B, along the button B' to the posts B'', along the connector C to the post C'; thence to the magnet D over the arch D' to the post D'', and thence to the negative pole of the battery. The course of the primary current of the left-hand instrument is marked by small letters, and may be traced as follows: from the position *p* to the helix A, thence to the post *b* through the arch *c*, magnet *d*, post

e, current-breaker *e'*, to the post *f*, and thence through *n* to the negative pole of the battery, thus completing the circuit. The current-breakers C and *e'* may be placed at any convenient part of the circuit for the purpose of opening and closing the circuit.

An uninterrupted primary current can be secured by screwing down the platinum point in the arch D' upon the platinum disk upon the spring of the vibrating armature, so as to close the circuit.

For the purpose of changing the polarity of the primary or induced currents at pleasure, I place within the circuit a pole-changer, E, one for each helix. It consists of semicircular plates of metal F F', secured to the base-board, and being connected with the secondary coil, as hereinafter set forth, and an insulating switch-lever, G, to which is attached two semicircular plates, G' G'', also connected as hereinafter specified.

Current-directors are shown at K L M, consisting of the plates K and L and the posts M and buttons M'. A connecting-wire unites G' with L and G'' with K. One end of the secondary coil connects with the post N, thence through the button N' to the segment F. The other end of the secondary coil connects with the segment F' through the post O and button O'. Now, if F constitutes the positive pole, and the insulated segment G'' is brought into contact therewith, the conductor K will also represent the positive pole. When G'' is brought in contact with F, G' must necessarily be in contact with F', thus constituting the conductor L the negative pole. Now, by simply changing the switch so that G' connects with F and G'' with F', K becomes the negative and L the positive pole.

M represents a series of posts, each of which supports a button, M'. A conductor leads from each of the posts M (of which there may be two or more, I prefer four or six) to a corresponding number of electrodes placed within the bath. Now, suppose L to be the positive pole, one of the posts M may be connected with the head-electrode of the bath and the button M' connected with the plate L, all the remaining buttons may be connected with the plate K, which will now represent the negative pole. Both side plates or electrodes of the bath by

being connected with K become negative and the circuit is completed through the medium placed between the respective electrodes. These electrodes are so arranged, as will be seen by reference to a patent granted to me under date of May 5, 1863, that they can be moved along the sides of the bath for the purpose of localizing the action of the currents. In the case supposed, the head-electrode forms the positive and the side electrodes the negative. Experience has shown that when an interrupted induced current is allowed to flow in one direction (and the same is true of a primary uninterrupted current) the effect upon the patient becomes less marked, and it hence becomes desirable to change the direction of the current suddenly. I accomplish this by moving the lever G; thus bringing G' in contact with F and G'' in contact with F', by which the direction of the current is instantly changed.

One side electrode may be made positive and one negative, and the polarity changed at pleasure, as above described.

A great number of changes and combinations can be made by the devices herein described, which it is not necessary here to specify—for example, the uniting of a primary and induced current. By turning the button B' so that it shall not form contact with either of the posts B or B'', and turning the button N' upon B'' and the button O' upon B, and screwing down the platinum point in the arch D' upon the platinum disk in the spring of the vibrating armature, an uninterrupted primary current will be conducted through K and L, as before described in relation to the induced current, and the direction of the current can be changed in the same manner. Now, by placing the button Q in contact with the post O and the button Q' in contact with the post N the induced current or circuit becomes closed, thereby increasing the intensity of the primary current. An interrupted induced current can be worked through the same electrodes from the helix and instrument shown

upon the left-hand side of the drawings, and in either direction, at pleasure.

The current-directors and pole-changers are the same in structure and operation as those already described.

It will thus be seen that by means of the devices herein described I am enabled to work an uninterrupted current in any direction through the body of the patient when in the bath, to localize and change its action at pleasure, to strengthen or intensify the primary current by closing upon it the induced current, to work an interrupted induced current through the same electrodes conjointly with a primary current, either in the same or in opposite directions, or to work two induced interrupted currents at the same time in the same or in opposite directions.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The arrangement of two helices of the same or different intensities upon the same stand, and so connecting them that a primary interrupted or uninterrupted current and an induced current may be given at the same time, as specified.

2. Closing the circuit of the induced current, in the manner substantially as specified and shown at Q and Q', while the primary current is being used for the purpose of increasing the intensity of the primary or giving the reflex action of the induced to that of the primary current.

3. The pole-changers, when placed in the circuit at any point between the helix and the electrodes and operating as and for the purpose specified.

4. The current-directors for the purpose of conveniently localizing the currents, substantially as and for the purpose herein set forth.

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Witnesses:

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