

(No Model.)

W. B. FARRAR.
THERAPEUTIC ELECTRODE.

No. 520,673.

Patented May 29, 1894.

Fig. 1.

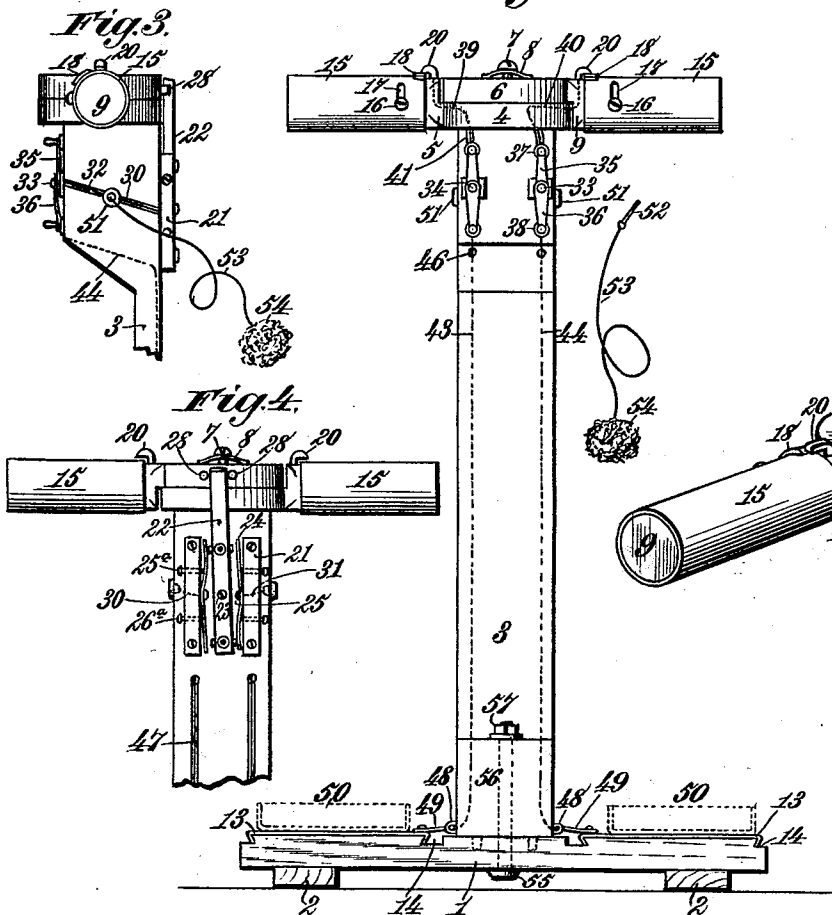


Fig. 5.

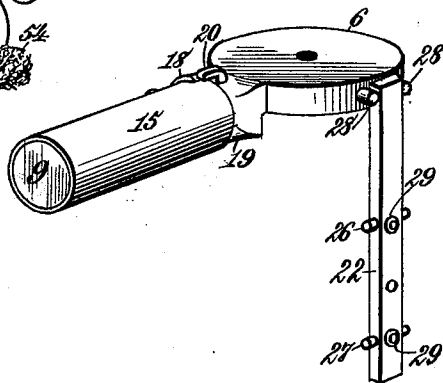
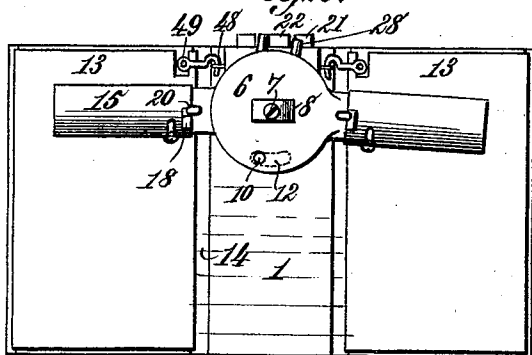


Fig. 2.



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UNITED STATES PATENT OFFICE.

WILLIAM BINGHAM FARRAR, OF GREENSBOROUGH, NORTH CAROLINA,
ASSIGNOR OF ONE-HALF TO OBED W. CARR, OF SAME PLACE.

THERAPEUTIC ELECTRODE.

SPECIFICATION forming part of Letters Patent No. 520,673, dated May 29, 1894.

Application filed April 5, 1894. Serial No. 506,452. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BINGHAM FARRAR, a citizen of the United States, residing at Greensborough, in the county of Guilford and State of North Carolina, have invented new and useful Improvements in Apparatus for the Transmission of Electric Currents Through Any or All Parts of the Human Body, of which the following is a specification.

It is the purpose of my invention to provide a simple and convenient apparatus for the transmission of electric currents through any, or all, parts of the human body, and in opposite directions, provision being made whereby the current may be reversed by the patient without removing the hands from the electrodes. It is my purpose, also, to provide an apparatus of the type mentioned which may, with slight instruction, or explanation, of a simple and easily comprehensible character, be used by any person for the remedial application of electricity to the body, either by transmission through the upper, or lower extremities, or through both or by topical application either by sponging, or other suitable means.

It is a further purpose of my invention to provide an apparatus of this kind with simple means whereby the circuit which is completed by the upper extremities may be broken or closed by the patient without removing the hands from the electrodes.

My invention also comprises means for the application of the electric bath to the feet together with certain novel features of construction and arrangement of the parts composing the stand whereby the apparatus is improved and simplified.

The invention is fully described in the following specification and then particularly pointed out and defined in the claims appended thereto.

In the drawings accompanying this application:—Figure 1 is a front elevation of an apparatus embodying my invention. Fig. 2 is a plan view of the same. Fig. 3 is a detail side elevation of the upper portion of the stand, showing the switches. Fig. 4 is a detail rear elevation showing the current-reversing mechanism. Fig. 5 is a detail view

showing the means for operating the reversing mechanism, and for throwing the hand-electrodes into and out of circuit.

The reference-numeral 1, in said drawings, indicates a base-plate of rectangular, or other suitable form, and composed of wood, or any suitable non-conducting material. I prefer to support this base upon strips, or bars 2, by which it is slightly raised from the floor. Should circumstances require it, rubber, or other insulating nipples of the ordinary form may be provided to prevent any possibility of grounding the current. From the center of the base-plate, at or near the rear edge thereof, rises an upright, or stand 3, its height being such as to bring its top within convenient reach of the hands of a person sitting in front of the apparatus. Upon the enlarged upper end is rigidly mounted a disk 4, which forms part of a laterally extending arm, or bar 5, which is usually of cylindrical form. Mounted upon the disk 4 is a similar disk 6, through which passes a central pivot 7, of any suitable form, such, for example, as a screw which enters the lower, rigid disk 4. Said screw passes through an aperture in a spring-plate 8 which is arched upward, its ends being pressed against the disk 6 by the head of the screw 7, thereby providing any required degree of frictional resistance to the rotary movement of the upper disk. From the latter, at a point diametrically opposite to the arm 5, extends an arm or bar 9, similar in form and size and lying in substantially the same horizontal line. Each of these arms, or bars, is either integral with, or rigidly mounted upon, one of the disks and said parts are constructed of wood, or other suitable material which has poor conductivity. The rotary movement of the upper disk 6 is extremely limited, its range being determined by a pin 10, rigidly fixed in the movable disk and having its downwardly projecting end lying in a short slot, or opening 12, in the lower disk 4.

Upon the base-plate 1, on each side of the stand 3, is a plate-electrode 13, formed of any metal having suitable conductivity. The edges of the plate are bent at an acute angle with its body-portion and are slipped into channels 14, which are cut in the base-plate

across the grain of the wood, so that the swelling and shrinking of the latter, due to the absorption and evaporation of moisture, will not loosen the connection of the plate to the base.

Upon each of the arms 5 and 9 is mounted an electrode 15, composed of a metallic cylinder loosely fitting the arm and capable of a restricted, rotary adjustment thereon, which is limited by a screw, or pin 16, lying in a slot 17 in the electrode and rigidly secured to the arm. Each electrode is provided with a contact 18 which rises somewhat above its cylindrical surface and is arranged at the end of the electrode lying adjacent to the disks. This end of the electrode abuts against a shoulder, or enlargement 19, on which is mounted a contact 20, which may consist of a brass screw having a head which projects over the circular edge of the electrode and with which the contact 18 may be engaged by simply turning the electrode in the proper direction, their dis-engagement and the interruption of the circuit being effected by an opposite movement.

Upon the rear face of the stand 3, near the top, are attached two similar blocks 21, separated from each sufficiently to permit the insertion of a central lever 22, mounted on a pivot 23, the space between the blocks 21 being sufficient to permit the lever 22 to have a limited movement upon its pivot before it is brought in contact with the adjacent blocks 21. Upon the faces of the latter which are adjacent to the lever are mounted elastic switch-plates 24, fastened by screws 25 which are substantially in line with the pivot 23 of the lever 22. From its point of attachment each switch-plate diverges at a small angle from the face of the block on which it is mounted, so that its upper and lower ends are normally withdrawn a little distance from the block, against which they may readily be pressed. In the lever 22, above and below its pivot 23, and in lines which intersect the ends of both switch-plates, are arranged transverse contacts 26 and 27, the ends of which project somewhat on both sides of the lever. By turning the latter one end of the contact 26 and the opposite end of the contact 27 will be pressed against the upper end of one switch-plate and against the lower end of the other, respectively, and said ends of these plates will be caused to approach the corresponding ends of the blocks 21. In each of the latter are inserted two screws 25^a and 26^a, the first above and the latter below the point of attachment of the switch-plate. By the adjustment of these screws the ends of the switch-plates may be held in such relation to the contacts 26 and 27 as to insure a proper engagement. The lever 22 extends above the blocks 21 and lies between pins 28 which project from the periphery of the movable disk 6 and by the limited rotary adjustment of the latter the lever is vibrated.

The battery wires are attached, by means of suitable terminals, to the lever 22, the terminals being inserted in metallic contacts 29, which form part of or have electrical contact with the transverse contacts 26 and 27. From the attaching screws 25 two wires 30 and 31, lying in channels 32, are carried to posts 33 and 34 secured on the front of the stand 3. Upon each of these posts are mounted switch-plates 35 and 36, which turn on said posts to engage and disengage an upper and lower contact 37 and 38, respectively. From the upper contacts 37, wires 39 and 40 are carried through channels 41, apertures in the lower disk 4, and in suitable channels in the upper face of said disk, to the contacts 20, on the arms 5 and 9. From the two lower contacts 38, wires 43 and 44 are carried through openings 46 in the enlarged top of the stand 3, from the rear of which they issue just beneath the blocks 21. They are thence led downward, in channels 47 to the foot of the stand, where they are connected to eye-bolts 48, which project from the sides of the stand 3. Upon the base-plate 1, near the base of the stand 3, are pivoted hooks 49 which engage the eyes in the ends of the eye-bolts 48, in which position said hooks have contact with the plate-electrodes 13. Pans 50 are provided, of such shape and size that they may stand upon the plate-electrodes and receive water for the feet. An induction coil may be employed, if the ordinary voltaic cell is used as the generator, instead of the magneto-machine. Both are so well known that no illustration is required of either.

By my invention the current may be supplied to all parts of the body, or to either pair of extremities, separately, and the current passing to the hand-electrodes may be cut out at any moment by the rotary movement of the metallic cylinders constituting said electrodes. The direction of the current may be reversed, also, by the rotary movement of the disk 6, which is effected by means of the arm 9. The entire apparatus is capable of control in so simple and comprehensible a manner that any person may readily operate the same without assistance, by referring to a few plain directions.

In the lateral faces of the enlarged upper portion of the stand 3 are inserted tubular contacts 51, electrically connected to the wires 30 and 31. These contacts are adapted to receive terminals 52, of ordinary form, to which wires 53 are connected leading to sponge-holding electrodes 54. The latter are of any preferred construction and will contain sponges, which are wet, when used, in the usual manner. The patient may use a single sponge-electrode, if desired, the circuit being completed by placing one hand upon one of the electrodes 15, while the other hand applies the sponge at the proper point. Or, the same result may be produced by placing one or both, feet on the plate-electrodes. I

may, of course, substitute any special form of electrode for the sponge, when special topical treatment is necessary.

In order to prevent all danger of a short circuit between the plate-electrodes 13 in case water should be spilled from the pans 50 upon the base 1, I make the channels 14, on each side of the stand 3, of such width and depth as to enable them to carry off all such accumulations of liquid and keep the surface of the base-plate drained.

The stand 3 is detachably connected to the base 1 by means of a bolt 55, which passes up through the base 1 and through an enlarged lower portion 56 of the stand 3, its upper end receiving a nut 57. The rotary displacement of the stand is prevented by any well known means, such, for example, as one or more dowel-pins. By disconnecting the stand and laying it upon the base-plate 1 the space required for storing, or packing, the apparatus is largely diminished, and it may be sent, or transported, from place to place with very little inconvenience. For example, if a physician has patients requiring electrical treatment and who are prevented either by their condition, or by distance, from visiting the office of the physician, or repairing to a place where a suitable apparatus can be found, the apparatus may be sent, or taken, to the residences of such patients by the physician and used under his direction. A physician living in the city or in the country, can carry with him, in his daily rounds, an apparatus of this form without inconvenience, whereas, the cumbersome and heavy chairs heretofore employed in electrical treatment cannot be carried from place to place without employing a special conveyance and incurring much trouble and expense.

What I claim is—

1. An electric apparatus comprising a base-plate having plate electrodes, a stand having upon its upper end a centrally pivoted, movable disk, super-posed on a rigid disk, hand-electrodes projecting from said disks, and a reversing lever pivoted between blocks carrying switch-plates, the upper end of said lever lying between pins projecting from the edge of the movable disk, substantially as described.

2. In an electrical-apparatus the combination with laterally projecting arms of hand-electrodes consisting of hollow cylinders mounted loosely on said arms and having raised contacts at or near one end, and contacts mounted on the arms and having heads which project over the ends of said electrodes, substantially as described.

3. In an electrical-apparatus the combination with laterally projecting arms of hand electrodes consisting of hollow metallic cylinders loosely mounted on said arms and provided with raised contacts, contacts mounted on the arms and having heads which project

over and are adapted to engage with the raised contacts, and means for limiting the rotary movement of the electrodes, substantially as described.

4. In an electrical-apparatus the combination with laterally extending arms one of which is supported by a centrally pivoted disk, of hand-electrodes mounted on said arms, a reversing-lever pivoted between blocks, switch-plates centrally attached to said blocks, battery-wires electrically connected to contacts above and below the pivotal support of the lever and projecting on both sides thereof, and a centrally pivoted disk supporting one of the lateral arms and having pins projecting from its edge on each side of the extended end of the lever, substantially as described.

5. In an electrical-apparatus the combination with a base-plate having channels cut therein across the grain, of plate-electrodes having their edges bent at an acute angle with the body portion and inserted in said channels, substantially as described.

6. In an electrical-apparatus the combination with a base of plate electrodes for the feet, oppositely projecting arms mounted on separate disks one of which is centrally pivoted on the other, hand electrodes consisting of metallic cylinders loosely mounted on said arms and having raised contacts, contacts rigid on the arms and having heads projecting into the line of adjustment of the raised contacts, a reversing-lever pivoted between centrally mounted switch-plates and having its extended end between pins on the edge of the movable disk, switches pivoted on each of two posts and adapted to engage with or discharge from either, or both of two separate contacts above and below the post, and a circuit including the plate-electrodes, hand-electrodes, reversing-lever and switches, substantially as described.

7. In an electrical-apparatus a supporting base having plate electrodes mounted thereon for the lower extremities of the body and adapted to receive pans containing water, said base being provided with channels adapted to receive the bent edges of the plate-electrodes and carry off water spilled upon said base, substantially as described.

8. In an electrical-apparatus, a supporting-base having plate electrodes the edges of which are bent and placed in channels in said base cut transversely to the grain of the wood, the channels receiving the adjacent edges of the electrodes being cut of a depth and width to carry off accumulations of water upon the said base, substantially as described.

9. An electrical-apparatus comprising a supporting base having plate-electrodes and a stand supporting the hand-electrodes, said stand being detachably mounted on the base, substantially as described.

10. An electrical-apparatus comprising a supporting base having plate-electrodes, a

stand rising from between the latter and having supports extending laterally for the hand electrodes, said stand being detachably connected to the base, and wires connecting
5 the hand and plate-electrodes with switches mounted on said stand, electrical connection being made with the plate electrodes by means of hooks pivoted upon the base in electrical
10 contact with the plate-electrodes and adapted to engage with and be disengaged from eye-

bolts on the stand, to enable the latter to be detached, substantially as described.

In testimony whereof I have hereunto set my hand and affixed my seal in presence of two subscribing witnesses.

WILLIAM BINGHAM FARRAR. [L. s.]

Witnesses:

WM. B. BOGART,
C. B. BOGART.