(No Model.)

J. H. SHAW.

ELECTRICAL EXERCISING APPARATUS.

No. 311,381. Patented Jan. 27, 1885.

Fig. 1.

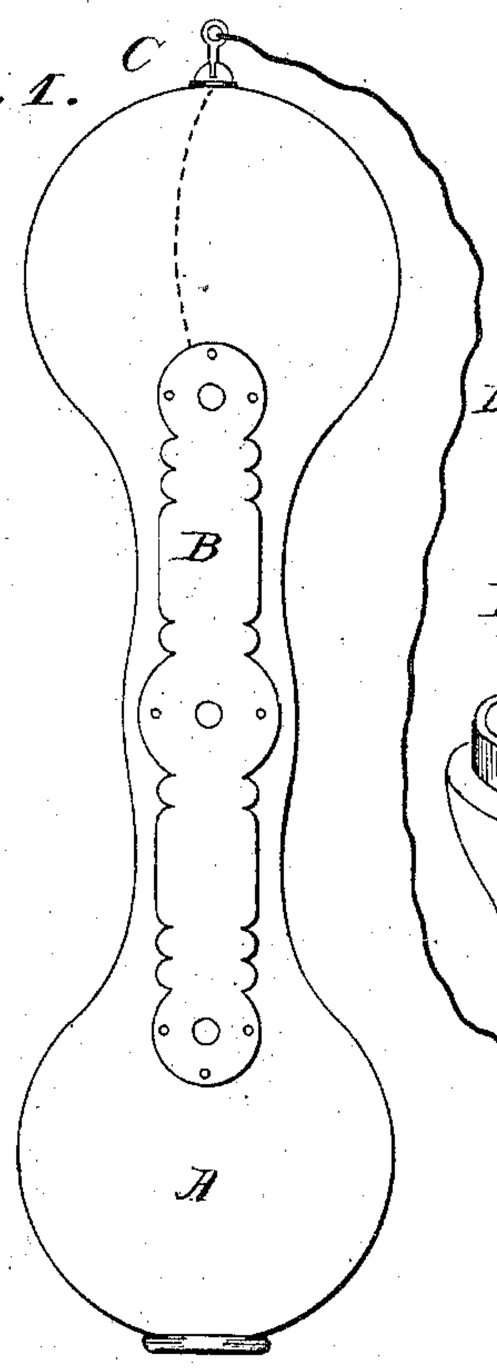


Fig. 2.

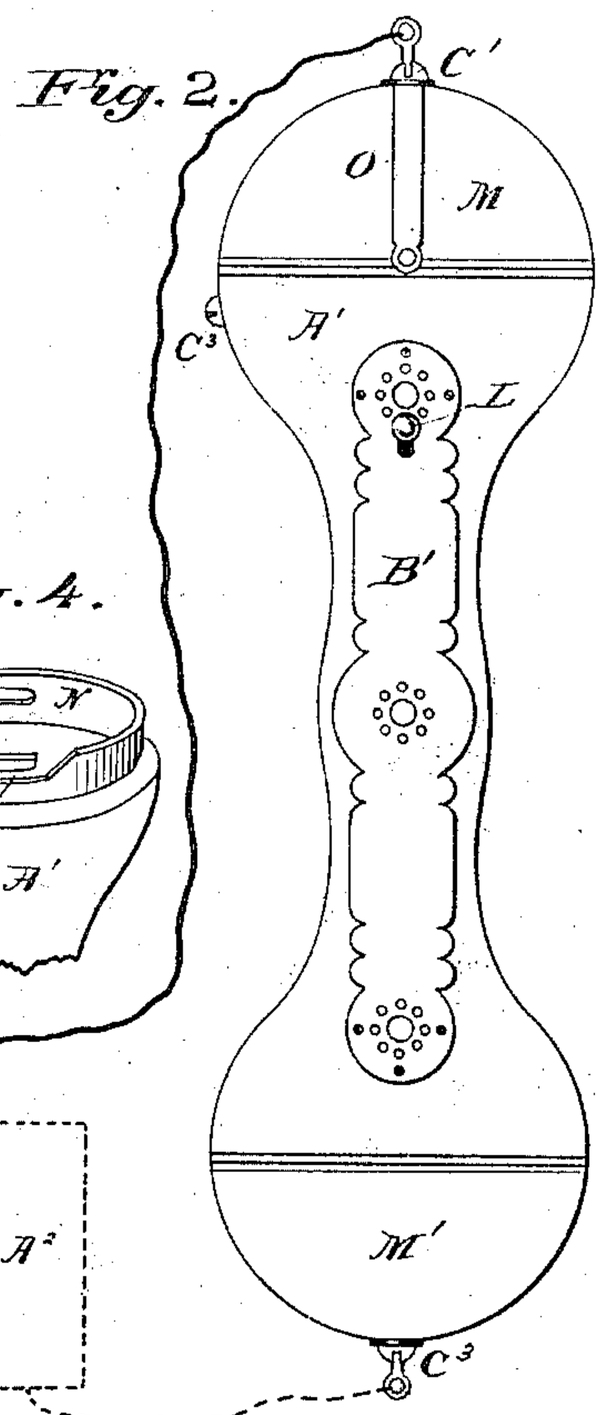


Fig. 4.

Fig. 5.

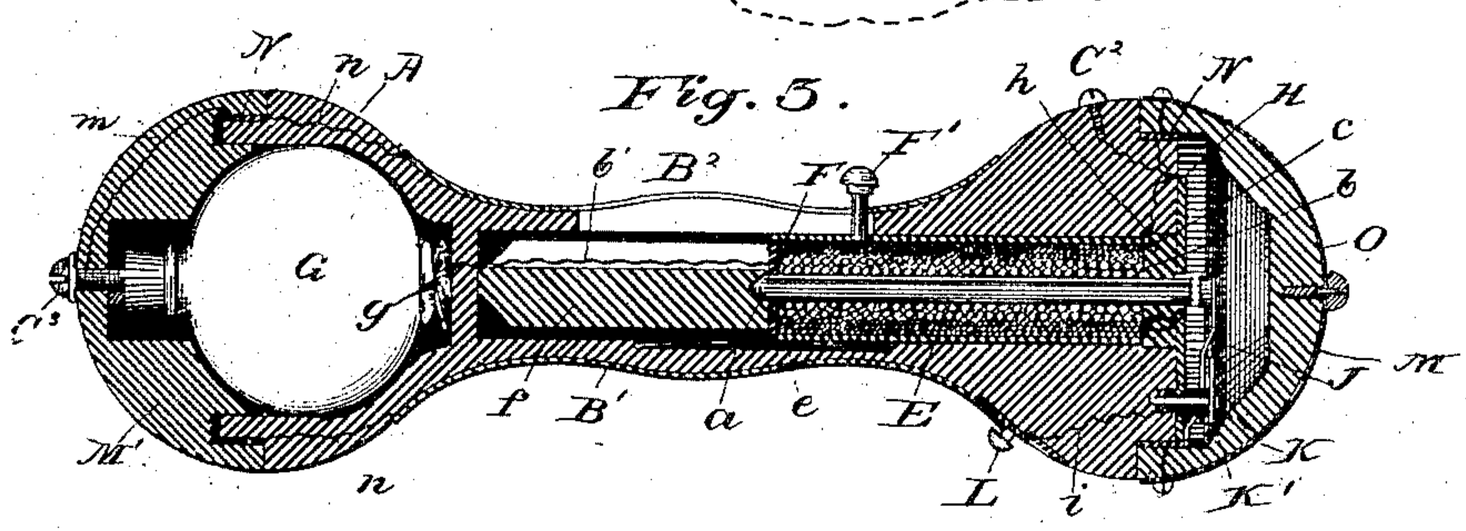
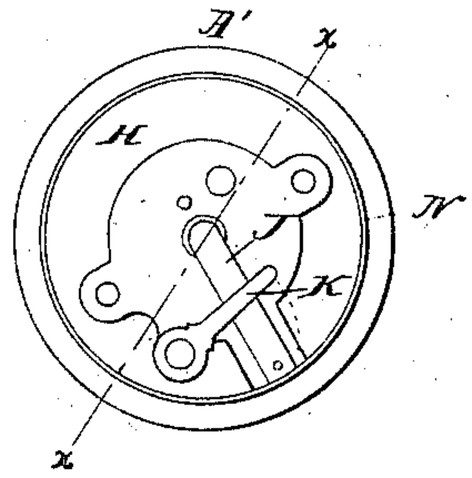


Fig. 5.



Witnesses.

A. W. Steiger:

J. F. Acker, Jr.

Inventor:

James H. Shaw

By David A. Burr

Attorney.

UNITED STATES PATENT OFFICE.

JAMES H. SHAW, OF NEW YORK, N. Y.

ELECTRICAL EXERCISING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 311,381, dated January 27, 1885.

Application filed March 13, 1884. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. SHAW, of the city, county, and State of New York, have invented a new and useful Improvement in Electrical Exercising Apparatus; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

My invention relates to electrical dumb-bells or other forms of exercising apparatus inclosing a battery and inductorium, and has for its object a more simple and effective construction of the electrical apparatus, and its more perfect adaptation to the development of either the primary, the secondary, or the primary and secondary currents combined, to the adjustment of the power or intensity of said currents, and to their application to the body through its electrodes.

It consists in the combination, with the rheophore dumb-bell containing the battery and inductorium of the apparatus, and provided with suitable manual contact-plates, of an electrode dumb-bell also provided with manual contact-plates, and a conducting-wire adapted to connect the two and close an electrical circuit through the same to include the body of the person holding the two dumb-bells.

It consists, furthermore, in improved devices for adjusting and varying the quality and intensity of the electric current in the apparatus, and for facilitating the use thereof, as is hereinafter fully described.

In the accompanying drawings, Figure 1 is an elevation of my electrode dumb-bell; Fig. 2, an elevation of my rheophore dumb-bell adapted to be connected therewith by an insulated conducting-cord, as shown. Fig. 3 is a longitudinal section of the rheophore in line *x x* of Fig. 5; Fig. 4, a detached view, in perspective, of the open end of the rheophore dumb-bell with its cap removed, illustrating the bayonet-joint by which the cap is made fast, and electrical connections effected through the same; and Fig. 5, a top view of the rheotome at one end of the rheophore dumb-bell, the cap being removed.

A is an electrode constructed in the form of a dumb-bell, preferably of wood or rubber, and which is fitted exteriorly with metallic contact-plates B B for the hand. These plates, secured on opposite sides of the central portion of the electrode dumb-bell, are connected by concealed metallic wires or strips (see dotted lines) with a binding-screw, C, in the end or side of the device, adapted to engage and secure the end of a suitable conducting-cord, D, whose opposite end is to be secured to a similar binding-screw, C′, in the end or side of a rheophore dumb-bell, A′.

Within a central longitudinal cylindrical chamber formed in the dumb-bell A′ is fitted an induction-coil, E, constructed, in the customary manner, of a primary coil of insulated wire, *b*, wound about a central core and overlapped by an outer secondary coil of finer insulated wire, *c*. An insulating coating or envelope is laid upon the outer coil, and upon this is fitted a cylindrical metallic case or damper, F, of about the same length as the coil, and which is adapted to be slid off and on the same within the cylindrical chamber by means of a pin or button, F′, projecting from the slide outward through an extended slot in the casing, its too free movement being prevented by a lateral spring, *e*, interposed between it and the inner side of the containing-chamber. The slide or damper is supported as it moves off from the coil by means of a cylindrical block, *f*, whose diameter coincides with that of the coil, so as to serve, when fitted end to end thereto, as an extension thereof, as illustrated in Fig. 3. The outer end of this block *f* rests against a partition, which separates the central chamber in which the induction-coil E and its slide or damper are thus fitted from a semi-spherical recess in the end of the dumb-bell adapted to contain the battery-cell G. A flat helical spring, *g*, is fitted in the bottom of the recess, and the bottom of the cell G, carrying the metallic contact-plate of one of its poles, is made to rest upon the spring, which is connected with the inner end of the primary coil *b* of the inductorium by means of a conducting-wire, *b′*, led through a slot cut in the interposed block *f*. The opposite end of the chamber containing the inductorium is closed by a metallic plate, H, fixed over the

same, and made fast to the end block, *h*, of the induction-coil, through which the outer end of the primary coil *b*, together with the inner end of the secondary coil *c*, are led into contact with said plate H. The end of the central core, *a*, of the induction-coil is extended out through the plate H to attract a vibrating armature opposed thereto, and consisting of a spring-plate, J, made fast at one end to the plate H, so that its opposite free end, carrying a suitable platina contact-point, may vibrate in and out of contact with the end of said core *a*. The vibrations of the spring-armature J are limited and regulated at pleasure by means of an arm or lever, K, pivoted to an insulated block, K′, on the plate H, so as to swing transversely over the armature to bear thereon more or less closely to its outer end. Manual contact-plates B′ B² are fitted and secured upon opposite sides of the body of the dumb-bell, and are both connected by conducting-wires with its battery-cell, one of them, B′, being also connected with the lever K over the vibrating armature J by means of a pin or screw led through the insulating-block K′, and to the end of which the conducting-wire *i* is connected. A simple sliding circuit-closing device, L, is interposed between the end of the wire *i* and the manual contact-plate B′. The outer end of the secondary coil *c* is connected by a fine wire with an outer binding-screw, C². The ends of the dumb-bell are closed by semi-spherical hollow caps M M′, each fitted thereto by a bayonet-joint, which is constructed of a metallic ring, N, fitted as a band upon the end of the body of the dumb-bell, and which is formed with suitable slots, *k k*, at opposite points, to receive and interlock with pins on the inner face or rim of each cap M. The cap is made to fit snugly over and upon said band, and to make a neat close joint with the body of the dumb-bell, as illustrated in Fig. 2. The battery-cell G is preferably of a spherical bottle shape, to fit snugly within the spherical end of the dumb-bell. One element of the cell is made to connect through the bottom thereof with the spring-plate *g* and the primary coil. The other element is made to connect outwardly through the stopper of the cells with a binding-screw, C³, in the cap M′, governing and closing that end of the dumb-bell. The screw C³ is connected by a concealed conducting-wire, *m*, with the pin engaging the metallic rim N, and said rim is in turn connected by concealed conducting-wires *n n* with the manual contact-plates B′ and B². The cap M, covering the opposite end of the dumb-bell, is also provided with a central outer binding-screw, C′, which is connected by an outer metallic strip, O, with the pins which engage the metallic rim N to lock the bayonet-joint. The primary circuit is closed in the rheophore dumb-bell by moving the slide L so as to produce a contact of the wire *i* with the plate B′, whereupon the current will pass from the positive pole of the battery through the primary coil *b*, the rheotome-wire *i*, the plate B′, the rim N of the cap M′, and the wire *m* to the negative pole.

In the use of this electrical apparatus the electrode dumb-bell A is connected with the rheophore dumb-bell A′ by means of the conducting-cord D, secured to the one binding-screw in the first, and to either one of the binding-screws in the latter, according to the nature of the current desired, and one of the dumb-bells is held in each hand. If, now, the connection of the cord D be made with the end screw, C′, both the primary and secondary currents from the induction-coil will be received by the person holding the apparatus. If the conducting-cord D be connected to the binding-screw C², the primary current alone will be obtained. The strength or intensity of both currents may be modified at pleasure by a movement of the damper F off or on the induction-coil, and the quality of the current is varied by a movement of the lever K, which determines the length and rapidity of the vibrations of the armature J in the rheotome. By using a second electrode, A², (see dotted lines, Fig. 2,) to be held in the hand, instead of the rheophore dumb-bell A′, the latter may be used simply as a convenient electro-magnetic machine. In such case, by connecting this electrode A² with the binding-screw C³, and a second electrode with the binding-screw C′, the combined primary and secondary currents are obtained. By connecting one electrode with the binding-screw C′ and the other with the binding-screw C² the secondary current is obtained, while by connecting one electrode with the binding-screw C² and the other with the binding-screw C³ the primary or extra induced current is obtained.

I claim as my invention—

1. The combination, in an electrical exercising apparatus, with a rheophore dumb-bell inclosing a battery, an induction-coil, and rheotome, and fitted with suitable manual contact-plates, of a separate electrode dumb-bell fitted with manual contact-plates, and a detachable insulated conducting-cord adapted to close a circuit from the battery or inductorium through said contact-plates and the body of the person grasping the two devices, all substantially in the manner and for the purpose herein set forth.

2. The combination, in a rheophore dumb-bell or exercising device, and with its induction-coil, of a metallic cylinder encircling the coil and insulated therefrom, and which is adapted to be moved back and forth longitudinally thereon within the body of the dumb-bell by means of an outwardly-projecting pin, substantially in the manner and for the purpose herein set forth.

3. The combination, with the end of a rheophore dumb-bell or exercising device, and with a cap fitting thereon, and a battery-cell and inductorium inclosed therein, of a fixed metallic band encircling the seat of the cap, and notched to form a bayonet-joint with one or

more pins on the cap, and adapted, by means of suitable conducting wires or plates connected thereto and to said pins, to produce an electrical connection between a binding-screw or contact-point on the cap and the cell and induction-coil of the rheophore, substantially in the manner and for the purpose herein set forth.

4. The combination, with an external manual contact-plate upon a rheophore dumb-bell or exercising device, and with the wires and conducting-strips arranged to close the primary circuit from the battery to the inductorium and through said contact-plate, of an external slide included in said circuit, and adapted by its movement to open and close the same, substantially in the manner and for the purpose herein set forth.

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

JAMES H. SHAW.

Witnesses:
A. W. STEIGER,
G. M. WOODCOCK.