(No Model.)

L. T. STANLEY.

PORTABLE FARADIC BATTERY.

No. 419,731. Patented Jan. 21, 1890.

Fig. 1

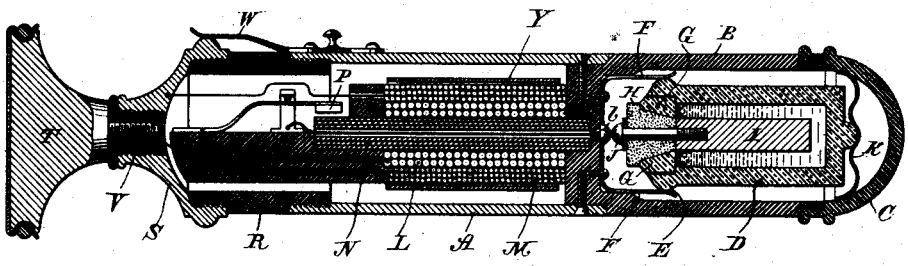


Fig. 2

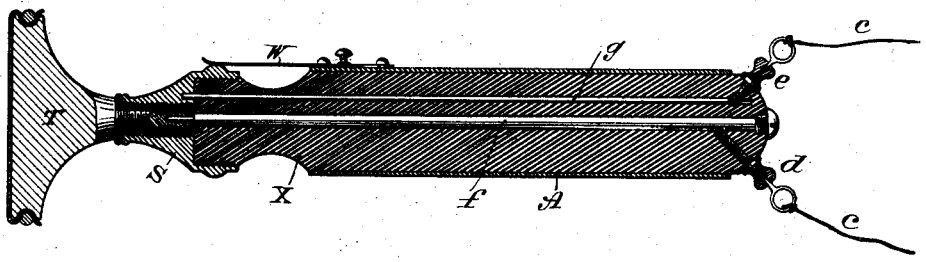
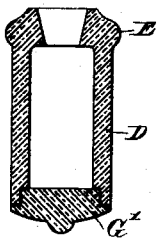


Fig. 3



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PORTABLE FARADIC BATTERY.

SPECIFICATION forming part of Letters Patent No. 419,731, dated January 21, 1890.

Application filed January 12, 1889. Renewed November 16, 1889. Serial No. 330,532. (No model.)

To all whom it may concern:

Be it known that I, LUCIUS T. STANLEY, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Portable Faradic Batteries, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

The object of this my present invention is to combine in small compass and portable form an induction-coil, a galvanic battery, and suitable electrodes for applying the current to different parts of the human body. With this object, and with a view mainly to the difficulties of protecting the coil and its accessories from the battery solution, which is liable to escape from its cell, and of securing good and lasting contacts, I have produced an apparatus which I designate a "portable faradic battery," and which is distinguished by the following features of construction: I form a cylindrical case, the material of which is composed of hard rubber or other non-conductor at the ends and of metal in the middle, at least on its outer surface. The bottom or lower end of the cylinder is composed of a hard-rubber or insulating receptacle closed by a screw-cap. Within this I place the battery-cell. In the central or metallic portion of the cylinder I mount the induction-coil, above which is the automatic circuit-breaker. The upper end of the cylinder is provided with a metal screw-cap, to which one electrode is secured, and the current from the other terminal of the coil is conveyed by a switch to the metal surface of the cylinder, which is held in the hand. The battery-cell is composed of carbon, preferably enameled or varnished on its exterior. It is provided with a perforated carbon top cemented to the main cup, and in the perforation a rubber stopper carrying a zinc electrode is fitted. The cell is held in position by a spring-seat, and when in position the terminals of the primary coil engage with the carbon cell and a metal pin that holds the zinc, respectively.

Certain features of this device may be advantageously used in the construction of a portable electrode, and I have shown a form of this device in illustration of the features referred to.

The details of construction of this invention will be now explained by reference to the accompanying drawings.

Figure 1 is a central vertical section of the faradic battery complete. Fig. 2 is a similar view of the electrode. Fig. 3 is a sectional view of a modified form of cell.

A is the central and main portion of a cylinder of small diameter, composed of or covered with a conducting material.

Into what for convenience may be considered as the lower end fits the closed end of a hard-rubber or insulating cup B, preferably of the same external diameter as the metal cylinder. The open end of this cup is provided with a screw cap or cover C. This cap contains the battery-cell, which consists of a molded carbon cup D, preferably enameled or varnished on its exterior surface, except around a bead or boss E, which presents a conducting-surface for one or more contact-springs F, secured in the cup B, and which bear upon the boss E or some equivalent contact-surface when the battery is in its normal position.

Into the open top of the carbon cup is placed an annular carbon cover G, which rests on an offset in the walls of the cell, and which is secured by a cement of sulphur or other suitable material. The part G has a tapering opening to receive a rubber plug or stopper H, to which the zinc electrode I is secured by a screw J.

The construction of the cell may be modified in certain particulars, as shown in Fig. 3. The top of the cell in this figure is formed integral with the sides and is provided with the tapering perforation and the boss. The bottom G′, however, is formed independently, and is secured to the sides by cement in the same manner that the cover G is secured in Fig. 1.

While any desired means may be used for holding the cell in place, I prefer to place in the cap C a spring K, which forms a seat for the cell and keeps it firmly up in its position.

The closed end of the part B forms a base

for the induction-coil, of which the primary coil is designated by L and the secondary by M. The core of this coil is a bar or bundle of wires N, which supports the coil by being set in the insulating-base formed by cylinder B. The opposite end of the core is prolonged, and serves to operate a spring circuit-breaking armature P, contained within the insulating-cylinder R.

Y is the metallic cylinder surrounding the coil and used as a damper. It is adjusted by any ordinary devices such as are commonly used for this purpose.

S is a metal cap, which is screwed or otherwise secured to the cylinder R. A metallic electrode T is set in a threaded socket V, of insulating material, screwed into the cap S. A metallic bridge or contact-piece W, movable in guides on the metal plate A, connects parts A and S when pushed forward.

The electrical connections and operation of this device will be readily understood. One end of the primary coil is connected to the spring-contacts F, and through them to the positive pole of the battery. The other end is connected to the spring-armature P, the conducting back-stop of which is connected by a wire, which may be conveniently carried through the core N to a screw *b*, passing through the insulated end of cylinder B in position to engage the screw J when the battery is in position. The ends of the secondary coil are led to the electrode T and the cap S, so that any one holding the instrument and applying the electrode to any desired part of the body will receive a current by pushing up the contact-making slide W until the part A in contact with the hand is brought into connection with the secondary coil. I sometimes employ this switch and handle without the battery, as shown in Fig. 2. The handle in this case is a cylindrical piece of insulating material X, with a metal tube or casing A, carrying the slide W. The metal cap S is secured to the end of the handle X, and in it are set the insulating-socket R and the electrode T. The current for this device is conveyed from an external source by wires *c c* to suitable terminals *d e*, in connection, respectively, with rods or wires *f g*, in electrical contact—the one with the electrode T, the other with the cap S.

The battery which I have herein shown I do not claim of itself, but have made it the subject of another application for Letters Patent, the said application having been filed November 16, 1889, Serial No. 330,531.

In a patent granted to me May 17, 1887, No. 363,304, I have shown and described a form of portable battery and electrodes, upon which the construction herein described is an improvement in the particulars described in the claims.

What I claim is—

1. A case for portable faradic batteries, consisting of a central metallic portion forming one of the electrodes, insulating ends, one containing the battery, the other provided with a metallic terminal, and a switch for connecting the metallic terminal with the central part constituting the electrode, as set forth.

2. The combination, with the holder having its middle portion composed of metal and its ends of insulating material, of a battery-cell in one of the insulating ends, an insulated electrode carried by a metallic terminal secured to the other insulating end, and a switch for connecting and disconnecting the metallic part of the holder with the metallic terminal for making and breaking the secondary circuit, and an induction-coil located within the holder, as set forth.

3. The combination, with a metallic casing or holder, of an insulating-receptacle containing a battery-cell and inserted in one end of the same, the closed end of said receptacle forming an insulating supporting-base for an induction-coil contained within the metallic casing, an insulating-cylinder secured to the opposite end of the metallic casing, an insulated electrode, and a metallic cap secured to said cylinder and forming the secondary terminals of the induction-coil, and a switch for connecting the metallic cap and metal holder, as herein set forth.

4. The combination, in a holder for a faradic battery, of a central metallic portion forming one electrode and containing the induction-coil, an insulating-receptacle fitted into one end of the same and provided with a removable cap and adapted to contain a battery-cell, an insulating-casing secured to the opposite end of the metallic portion, and an electrode secured thereto, as shown.

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