

No. 777,985.

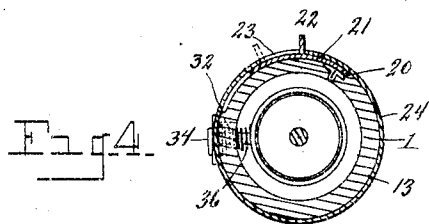
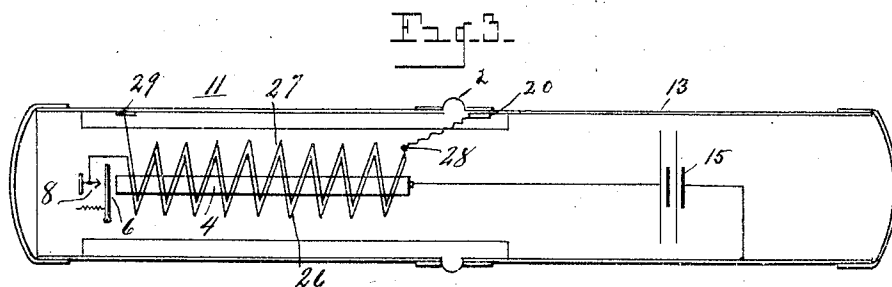
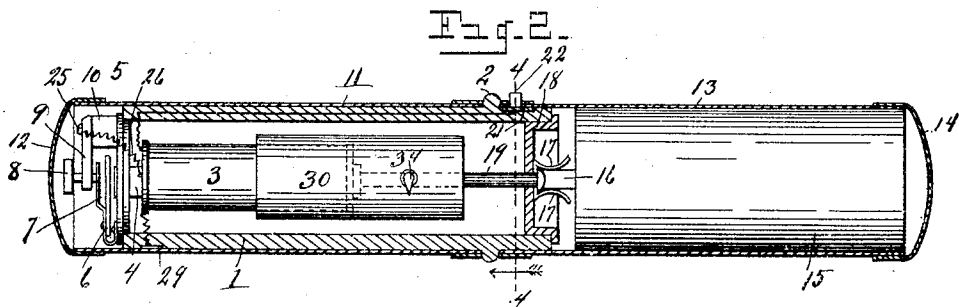
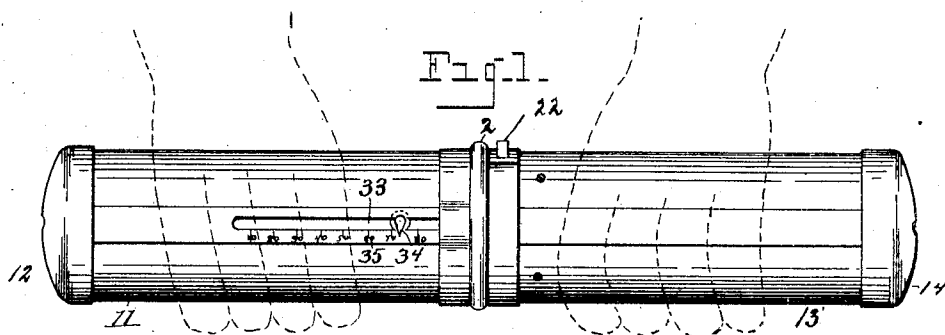
PATENTED DEC. 20, 1904.

N. M. WATSON.

BATTERY.

APPLICATION FILED JUNE 13, 1904.

NO MODEL.



Witnesses:

*H. J. Howlett*

*E. G. Wright*

By the Attorneys

*E. S. Wheeler & Co.*

Inventor

*Nelson M. Watson*

# UNITED STATES PATENT OFFICE.

NELSON M. WATSON, OF DETROIT, MICHIGAN.

## BATTERY.

SPECIFICATION forming part of Letters Patent No. 777,985, dated December 20, 1904.

Application filed June 13, 1904. Serial No. 212,315.

*To all whom it may concern:*

Be it known that I, NELSON M. WATSON, a citizen of the United States, residing at Detroit, in the county of Wayne, State of Michigan, have invented certain new and useful Improvements in Batteries; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to an electric battery designed more expressly for electrotherapeutic purposes; and it consists in the construction and arrangement of parts hereinafter fully set forth, and pointed out particularly in the claims.

The object of the invention is to provide a battery of the character described of simple and compact structure, in which the arrangement is such as to present the electrodes at the opposite ends of the cylindrical casing containing the battery and coil, obviating any external appearance of wires and necessitating only that the ends of the casing be grasped with the hands to close the induction-circuit and to produce upon the system the effect of the electromagnetic current.

The above object is attained by the structure illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of a battery in solving my invention. Fig. 2 is a central longitudinal section through the outer casing and some of the inner parts, other parts appearing in elevation. Fig. 3 is a diagrammatical view to show more clearly the primary and induction circuits and their connections with the electrodes of the battery. Fig. 4 is a transverse section as on line 4 4 of Fig. 2.

Referring to the characters of reference, 1 designates a cylindrical core, of wood or other non-conducting material, having on one end an annular bead 2. Centrally supported within said core is an induction-coil 3 of suitable winding, the end of the core 4 of which extends through a plate 5 in proximity to a vibrating armature 6, which is mounted on said

plate and carries the upwardly-extending spring-tongue 7, adapted to be engaged by the adjusting-screw 8, which passes through the supporting-arm 9, mounted upon an insulating-block 10, a construction common in vibrating armatures.

A cylindrical casing is formed of two sections, comprising the section 11, which embraces the wooden core 1 and is provided with an end cap 12, and the section 13, which is mounted upon the opposite end of the core 1 in any suitable manner and is provided with the end cap 14. These sections of the casing are formed of metal, preferably aluminium, and are electrically insulated from each other by reason of the interposed bead 2 on said core. Within the section 13 of the casing is a battery-cell 15 of the ordinary dry type, the negative electrode 16 of which extends from the inner end thereof and engages between the contact-springs 17, mounted in a cup-plate 18 in the end of the core 1 and secured in place by means of a screw 19 passing through said plate and into the core 4 of the coil 3. The positive electrode of the battery is its outer shell, which is in electrical contact with the inner wall of the section 13 of the cylindrical casing. Seated in the insulated core 1, at the inner end thereof, upon the side of the dividing-bead 2, on which the battery is located, is a contact-plate 20, (more clearly shown in Fig. 4,) which is normally out of electrical contact with the section 13 of the shell or casing. Mounted to slide within a recess in the core 1, below the surface of the shell 13, but in electrical contact therewith, is a switch 21, formed in the arc of a circle and having a projecting stud 22, which extends through a slot 23 in an annular band 24, which embraces the end of the section 13 of the casing. To the binding-screw 25 in the arm 9 is attached one terminal of the primary winding 26 of the induction-coil, the other terminal of said winding being attached to the contact-plate 20. One terminal of the secondary winding 27 of the coil is attached at 28 (see Fig. 3) to the terminal of the primary which leads to the contact-plate 20, and the other terminal of said secondary winding is attached to a plate 29, lying in electrical contact with the inner

wall of the shell 11 of the casing. By this arrangement when the switch is moved to the position shown in Fig. 4 the battery-circuit is closed through the core of the magnet, the vibrator, the primary of the coil, and the plate 20 and switch, thereby connecting the electrodes of the battery through the vibrator and primary of the induction-coil and the shell 13 of the casing. This closing of the primary circuit causes an induced current in the secondary whose terminals are connected to the electrodes 11 and 13 of the casing, whereby upon grasping said electrodes in the hands the secondary circuit is closed through the body, with the result well understood in the art. By moving the switch 21 out of contact with the plate 20 the primary circuit will be opened and the flow of the current stopped.

For the purpose of graduating the intensity of action in the secondary circuit there is used a sleeve 30, which is adapted to slip over the coil 3 and is provided with a pin 31, which projects through a slot 32 in the core 1 and through a slot 33 in the outer casing, the end of said pin carrying a pointer 34, adapted to traverse the graduated scale 35 on the margin of the slot 33. Surrounding said pin is a spring 36, which forces a washer 37 against the inner wall of the casing and creates sufficient friction to prevent the sleeve 30 from moving except when moved through the medium of the pin 31. A movement of the sleeve 30, so as to withdraw it from the coil, will cause an increase in the energy of action and a corresponding increase in the tension of the secondary current, which is felt in the electrodes to which the terminals of the secondary circuit lead. A movement of said sleeve over the core enables the current to be regulated as desired, and the pointer indicates the comparative quantity thereof which is passing to the electrodes.

This improved medical battery, as will be seen, is entirely free from external wires, and all of the operative parts are confined within the casing, whose end portions form the electrodes of the battery and the active circuit. Local treatment may be given by grasping

one end of the casing in the hand and applying the other end to the parts affected. 50

Having thus fully set forth my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a metallic casing whose end portions are insulated from each other, a battery-cell, one of whose electrodes forms the shell thereof inserted in one end of said casing to have direct peripheral contact therewith, an induction-coil within the opposite end of the casing, the primary winding of said coil being connected with the other electrode of the battery and with the shell of the casing in contact with said first-mentioned electrode, a switch to open and close said circuit, the secondary winding of the coil having one terminal connected through said switch to the shell of the casing in contact with the peripheral electrode of the battery, the other terminal of said secondary winding connected with the opposite insulated end of the casing. 70

2. The combination of a metallic cylindrical casing, a core of insulating material upon which the inner ends of said casing are mounted and which electrically separates them, a cylindrical battery within one end of the casing having a peripheral electrode in direct contact with the wall thereof, an induction-coil in the opposite end of the casing, the primary winding of said induction-coil having one end connected with the opposite electrode of the battery, the other end of said primary winding being connected through a vibrator with the wall of the casing in contact with the shell of the battery, a switch for opening and closing the primary circuit, the secondary winding of the induction-coil having its terminals connected with the opposed insulated ends of the casing, and means for graduating the induced current. 85

In testimony whereof I sign this specification in the presence of two witnesses. 90

NELSON M. WATSON.

Witnesses:

E. S. WHEELER,

I. G. HOWLETT.