

the windings, as clearly shown in Fig. 3 of the drawings, so that in each coil or layer of the windings there will be alternate convolutions of the copper and iron wires forming the voltaic couple, and it will of course be understood that there may be any number of separate coils or layers of the wires according to the required size and capacity of the battery. Each coil or layer of the windings is separated from the adjacent coils or layers by an interposed layer of cloth or equivalent insulating material 8, and a similar layer of insulating material 9 also surrounds the longitudinal core-piece 1 to insulate from this core-piece the innermost coil or layer of the windings.

The terminals 10 of the copper and iron wires 5 and 6 are disconnected so as to preserve the character of the wires as the electrodes of the voltaic couple; but the other or remaining terminals of the wires are brought in contact through the interposition of any electrical instrument or device with which they may be connected to cause the electric currents generated in the coil-body 4 to flow through such instrument or device.

In the use of the battery constructed as described the same may be immersed in a cell or jar 11, containing water as the electrolyte; but it is simply necessary to have the coil-body 4 moist to excite the necessary action for the production of a current in the couple, and it is also the contemplation of the invention to place the battery in moist earth, which alone is sufficient to provide the necessary electrolytic influence for producing an electric current.

It has been found that by reason of winding the couple of copper and iron wires into a coil-body the current traversing the windings of this body will produce a magnetic field within and around the body of sufficiently strong inductive effect for practical utilization by means of a solenoid or secondary coil 12, as illustrated in Fig. 4 of the drawings.

The solenoid or secondary coil 12 is of an ordinary construction, comprising a wire closely wound into a coil of any desired size on an ordinary spool 13 and incased within a protective covering 14 of mica, celluloid, or equivalent material. The spool 13 of the solenoid or secondary coil may be conveniently secured directly on the exterior of the coil-body 4 between the heads 3 with a suitable layer or wrapping of insulating material 15, interposed between the spool and the body 4, and the terminals 16 of the solenoid or secondary coil may be connected up with any instrument usually operated by secondary currents—such, for instance, as a microphone-transmitter or telegraphic relay. The magnetic field produced by the current traversing the coil-body 4 induces a secondary current in the solenoid or secondary coil 12, when the ordinary make and break of the

primary current produced within the coil 4 is made between the terminals of said coil 4. It will therefore be seen that the construction of the battery illustrated in Fig. 4 is practically a self-generating induction-coil, and it can be used for every purpose that a coil of this character is used, for as long as the coil-body 4 is wet or damp with moisture electric currents will be produced in the manner described. It will also be obvious that by reason of the magnetic inductive properties of the coil-body 4 the core-piece 1 will necessarily be magnetized while a current is going through the body 4, so that the battery may be used as a self-generating electromagnet, if so desired, it being observed that to secure this result is simply required connecting the extended terminals of the wires 5 and 6 together after wetting or dampening the coil-body.

Many other uses of the herein-described battery will suggest themselves to those skilled in the art, and I will have it understood that any changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. A combined electrical battery and electromagnet, for use with water as an electrolyte, comprising a soft-iron core-piece, and a voltaic couple of copper and iron wires insulated from each other and closely and compactly wound together in separate insulated layers to produce a solid coil-body surrounding the soft-iron core-piece, substantially as set forth.

2. An electrical battery for use with water as an electrolyte comprising a voltaic couple of insulated copper wire and bare iron wire closely wound into a coil-body, substantially as described.

3. An electrical battery for use with water as an electrolyte comprising a voltaic couple of insulated copper and bare iron wire wound side by side in separate insulated layers to produce a coil-body, substantially as described.

4. An electrical battery, for use with water as an electrolyte, comprising a voltaic couple having its separate electrodes insulated from each other and closely wound into a compact coil-body forming a self-generating primary coil when moistened and a solenoid or secondary coil fitted on the coil-body of the couple, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

NATHAN B. STUBBLEFIELD.

Witnesses:

JOHN H. SIGGERS,
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