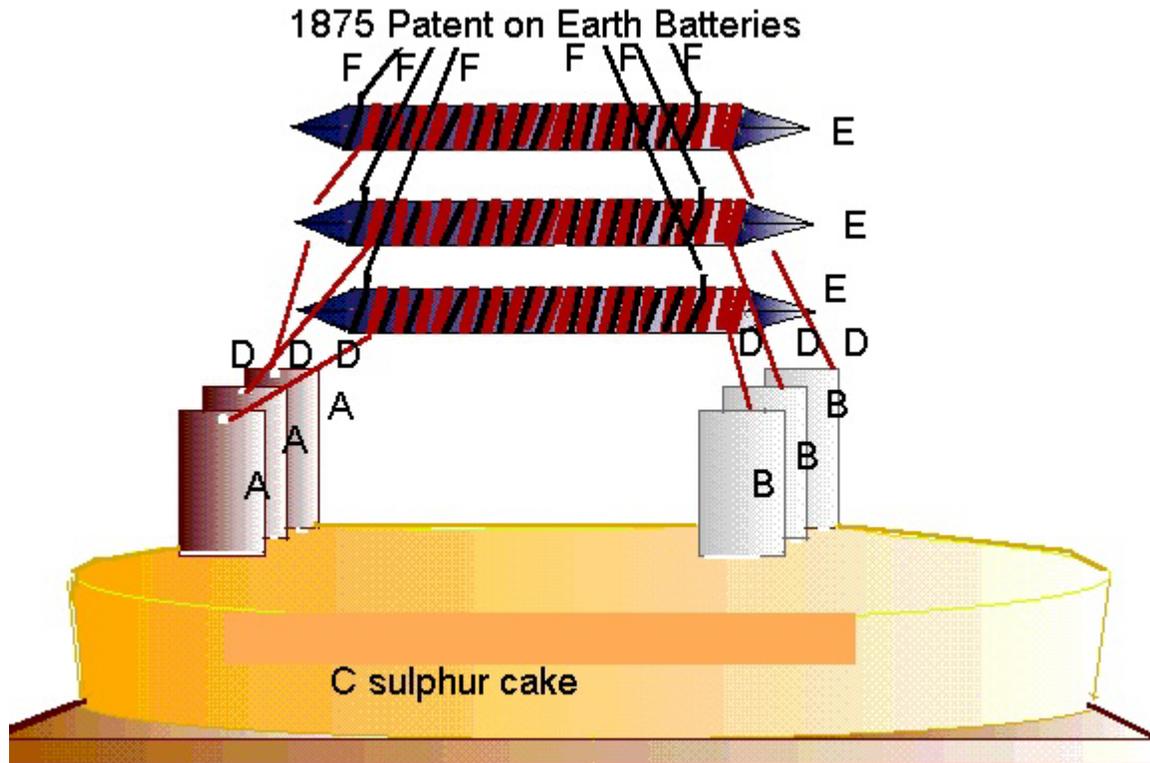


1875 Patent on Earth Batteries



There has recently been a question on Earth batteries on the Free energy newsgroup as so many were unaware of the existence of such a device and must admit that I was ignorant of the device myself until I came across this patent and so I reproduce an except from the patent application below.

"The object of my invention is to produce a current of electricity from an earth battery or batteries capable of generating a constant current of considerable intensity to be used for lightning rod and other purposes where voltaic batteries using solutions are now applied.

It is known that if different elements-for instance sheets of zinc and copper-be buried or placed in the earth ,a current of electricity is generated; but I have discovered that if such elements be partly embedded in sulphur so that the dampness of the earth may act in conjunction with the sulphur on the metals, a more intense will be created.

I utilise this in the following way: The current is collected by insulated wires coiled around nickel plated steel magnets ,which are planted north and south in the earth to receive the magnetic current of the earth; a secondary coil or coils of insulated wire surrounds the coil or coils around the magnets and receives by induction, electricity from both the voltaic and magneto-electro batteries.

In the drawing, the voltaic battery is composed of several pieces or plates of chemically pure zinc **B**, and the same number of copper, **A** they are embedded in a cake of sulphur **C** and are connected by a large insulated wire **D**, which being the primary coil between dissimilar elements is extended, without insulation to the base of the sulphur cake **C**, and also in a spiral coil or coils around steel magnets **E**, which are pointed magnetised and nickel plated.

These batteries are planted in the earth north and south, to receive the earths current of electricity according to the magnetic poles.

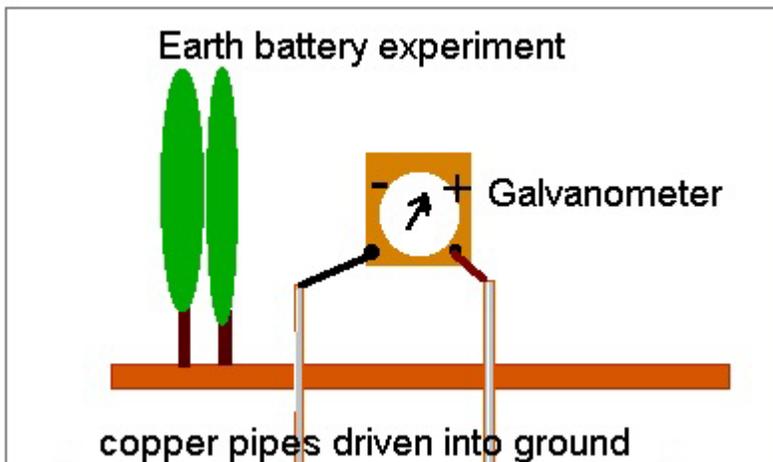
The primary coil or coils **D** are surrounded by secondary insulated wire **F**, in a spiral coil or coil to receive by induction ,electricity from the batteries current through **D**

end of patent extract

For those that are interested I recommend you getting a copy of the Borderlands Journal issue volume L111 number one first quarter 1997.

Where there is an interesting article giving more details are other related research into this interesting field..

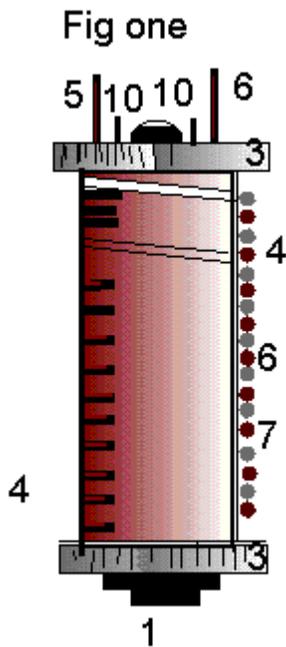
In the article it is suggested that if you want to try the idea of earth batteries for yourself



If you want to try it then get two copper rods or pipe and drive them into the ground and then connect a galvanometer (place them near a tree for better results.) apparently the needle always points positive although it may take time for the current and voltage to build up.

It seems that early engineers and telegraph operators knew of the effects of these ground currents when their Edison batteries they had used went flat and long time depleted and their telegraph kept giving out sparks sometimes of greater intensity than when they had been using batteries.

The Stubblefield Earth Battery



The following is a reproduction of Nathan B. Subblefield Patent the drawing may be inaccurate due to some difficulty in reading of the patent drawings (Geoff)

ASSIGNOR OF ONE HALF TO WILLIAM G.LOVE OF SAME PLACE

Specification forming part of letters patent no 600,457 dated march 9 1898

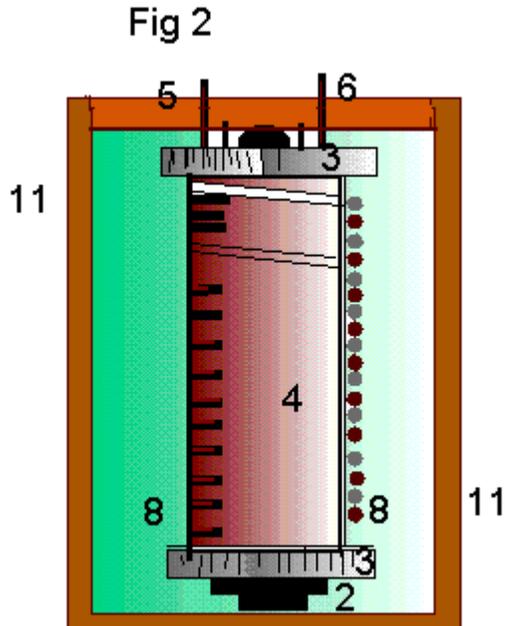
Application filed October 24,1896 serial number 609969 no model

To all whom it may concern.

Be it known that I Nathan B Stubblefield a citizen of the United states of America, residing at Murray in the county of Calloway and

State of Kentucky have invented a new and useful Electrical Battery of which the following is a specification.

This invention relates to electrical batteries and it has for its objects to provide a novel and practical battery for generating electrical currents of sufficient force for practical use, and also providing means for generating not only a constant primary current but also an induced momentary secondary current. it is well know that if any voltaic couple be immersed in water placed in moist earth the positive element of the couple will undergo a galvanic action of sufficient intensity to produce current when the terminals of the couple are brought in contact , and this form of battery is commonly as the "water Battery ", usually employed for charging electrometers , but are not capable of giving any considerable current owing to their great internal resistance . Now the principle involved in this class of batteries is utilised to some extent in carrying out the present invention , but I contemplate, in connection with water or moisture as the electrolyte ,t he use of a novel voltaic couple constructed in such a manner as to greatly multiply or increase the electrical output of ordinary voltaic cells , while at the same time producing in operation a magnetic field having a sufficiently strong inductive effect to induce a current in a solenoid or secondary coil..To this end the invention contemplates a form of voltaic battery having a magnetic.



induction properties of sufficient intensity , so as to be capable of utilisation for practical purposes , and in the accomplishment of the results sought for the invention further provides a construction of battery capable of producing a current of practically constant electromotive force and being practically free of the rapid polarization common in all galvanic or voltaic batteries . With these and many other objects in view the invention ,combination , arrangement of arts herein after more fully described, illustrated and claimed.

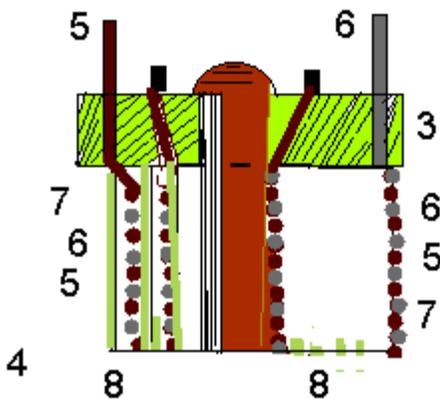
In the drawings Figure 1 is a side elevation of an electrical battery constructed in accordance with this invention . Fig 2 is a central longitudinal sectional view of the battery , showing the same immersed in water as the electrolyte. Fig 3 is an enlarged sectional view of a portion of the battery ,showing more clearly the manner of winding the voltaic couple or in other

words , the wires comprising the couple . Fig 4 is a vertical sectional view of the battery , shown modified for use with an induction-coil.

referring to the accompanying drawings the numeral 1 designates a soft-iron core-piece extending longitudinally of the entire battery and preferably in the form of a bolt having at one end a nut 2 which permits of the parts of the battery being readily assembled together and also quite readily taken apart for the purpose of repair , as will be readily understood. The central longitudinally-arranged core-piece 1 of the battery has removably fitted on the opposite ends thereof the oppositely - located end heads 3,confining there between the magnetic coil-body 4 of the battery , said heads 3 being of wood or equivalent material. The coil -body 4 of the battery is compactly formed by closely-wound coils of a copper and iron wire 5 and 6 ,respectively ,which wires form the electrodes of the voltaic couple , and while necessarily insulated from each other ,so as to have no metallic contact ,are preferably wound in the manner clearly illustrated in fig 3 of the drawings.

In the preferred winding of the wires 5 and 6 copper wire 5 is incased in an insulating covering 7,while the iron wire 6 is a bare or naked wire ,so as to be more exposed to the action of the electrolyte and at the same time to intensify the magnetic field that is created and maintained within and around the coil-body 4 when the battery is in operation and producing an electrical current . While the iron wire is preferably bare or naked for the reasons stated , this wire may also be insulated without destroying the operativeness of the battery , and in order to secure

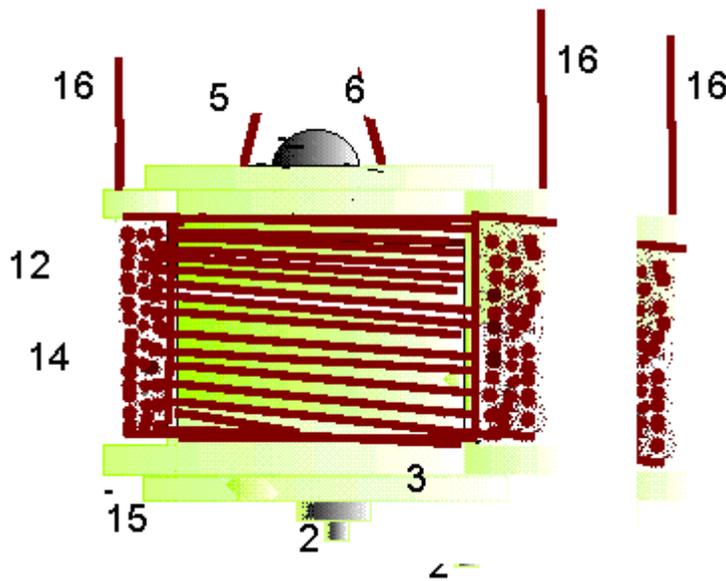
Fig 3



the best results the wires 5 and 6 are wound side by side in each coil or layer of 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 ant 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 in 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 electrode of the voltaic couple; but the other or remaining terminals of the wires are brought into 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 utilisation 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

Fig 4



an ordinary spool 13 and increased 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 insulated 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 a secondary current- 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 magnetised 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 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.