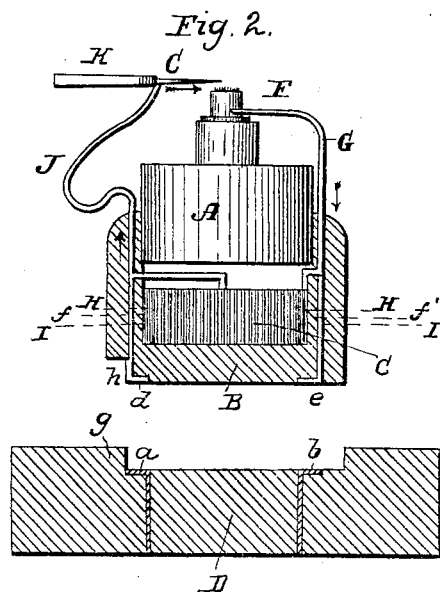
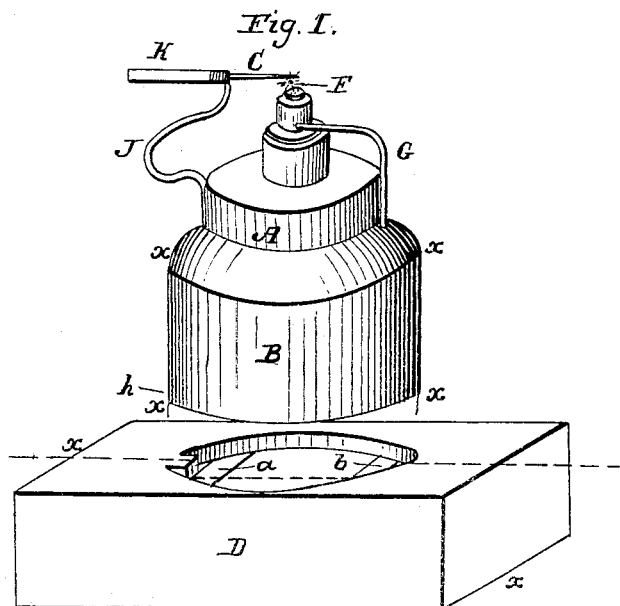


G. G. PERCIVAL.
Electric Lamp Lighter.

No. 53,669.

Patented April 3, 1866.



Witnesses:
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W. B. Maloney

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN ELECTRICAL LAMPS.

Specification forming part of Letters Patent No. 53,669, dated April 3, 1866; antedated March 9, 1866.

To all whom it may concern:

Be it known that I, GEORGE G. PERCIVAL, M. D., of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Electrical Lamp; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view of my invention. Fig. 2 is a vertical section through the line *x x*, Fig. 1.

The same letters, wherever used, indicate the same parts.

This invention relates to an attachment to a lamp of a device for the purpose of lighting the lamp by means of electricity; and it consists in attaching to a lamp, or the base or fixtures thereof, a secondary pile or condenser for voltaic electricity, which pile, by being properly connected with the poles of any suitable motor of galvanism, may become charged, and will store up and retain the electricity until given off from time to time, as may be required, the lamp having the poles of the secondary pile connected with it and arranged in such a manner that the circuit or current may be completed and broken at the will of the operator or user and the lamp lighted with the greatest facility.

It also consists in attaching to a lamp, or to the base or fixtures thereof, a helix of insulated conducting wire, or its equivalent, forming part of the circuit of the secondary pile, the purpose of this helix being to increase the intensity of the spark produced by breaking the circuit when this spark is designed to light the lamp.

By giving the plates of the secondary pile the form of ribbons or wires and winding them in the form of a flat spiral or helix the pile may be made to answer the double purpose of a secondary pile and a helix.

A represents a lamp, which may burn alcohol, or, with a suitable modification, burning-fluid or coal-oil.

B is the base of the lamp, and contains the secondary pile C. D represents any motor of galvanism—*e. g.*, a voltaic pile, a magneto-electric machine, or a thermo-electric machine.

Its two poles are represented by the two metallic slips *a* and *b*.

The lamp A has attached to its wick-holder E a small projecting point, F. This wick-holder E is in communication, by means of the wire G, with one of the plates, H, of the secondary pile C, the other plate, I, of the pile being connected, by means of the insulated wire J, with needle-holder K, containing a needle, *c*.

B, the base of the lamp, contains the secondary pile C, and has on its under surface two metallic slips, *d* and *e*, connected respectively with the two plates of the pile. These slips establish communication between the poles *a* and *b* of the battery D and the two plates of the pile whenever the base B of the lamp is properly placed on the galvanometer D.

The secondary pile C consists of but one pair of plates, H and I, of sheet-lead. Other suitable metal or material may be substituted, if desired. These plates are placed side by side throughout their whole length, contact between them being prevented by interposed layers of cloth *f f'*, or in some other suitable manner. They should be of an area of at least one-half square foot. The greater that area the greater quantity of galvanism they will store, and consequently the less frequently will they require to be charged.

To enable these plates to answer the double purpose of a secondary pile and a helix of conducting-wire, the form of ribbons is given to them and they are coiled into a flat spiral. When rolled in this form each coil of either plate is embraced between two coils of the other plate, both sides of the plates being thus rendered available. The form of covered wires would be better still, but more expensive.

The wire G, connected with the outer end of the plate H, forms one pole of the secondary pile. The wire J, connected with the inner end of the other plate, I, forms the other pole. Connected with these two plates are also the metallic slips *d* and *e*, the use of which has been explained. The layers of cloth *f f'* are saturated, once for all, with dilute sulphuric acid or some other suitable solution. Provided evaporation is checked, this solution will not require renewing. For convenience in distinguishing in the drawings, the plate H is shaded darker than the plate I.

To use, place the base B of the lamp on the

galvanometer D in such a manner that the slip *d* may be in contact with the pole *a* and the slip *e* in contact with the pole *b*. The tongue *g* on the galvanometer, fitting into the groove *h* on the base, insures the proper position. The electric current, now passing from *a* along the slip *d* to the plate I and through the layers of cloth *f f'* to the plate H, and thence back through slip *e* to pole *b*, renders the plate I positively polarized and the plate H negatively polarized, and the secondary pile is then charged, and will act the part of a battery when the proper connections are made. The longer the base remains on the galvanometer within certain limits the more powerfully the plates are polarized and the more lasting the charge of the pile.

If there is no unnecessary leakage, the pile will retain its charge for weeks and even months.

Whenever the needle *c* is placed in contact with the point F a voltaic current originates at plate I, passes along wire J, needle-holder K, needle *c*, point F, wick-holder E, and wire G to plate H, and thence through cloth to plate I, thus completing circuit.

When the needle *c* is removed from the point

F the current is broken at this point and a spark produced, which lights the lamp. The greater the length of the plates forming the pile, provided they are of sufficient size to be good conductors, the greater the spark produced at the breaking of the circuit.

The galvanometer D may, of course, be used to charge any number of secondary piles.

I claim and desire to secure by Letters Patent—

1. The attachment to a lamp, or to the base or fixtures thereof, of a secondary pile, which will store up and retain galvanism until given off from time to time, as may be required, for the purpose of lighting the lamp, substantially as hereinbefore described.

2. The attachment to a lamp, or to the base or fixtures thereof, of a helix of insulated wire, or its equivalent, forming part of the primary circuit of the secondary pile, when this helix is used to increase the spark produced by breaking this circuit and the spark is used to light the lamp.

GEO. G. PERCIVAL, M. D.

Witnesses:

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