(No Model.)

C. L. CLARKE & J. LEIGH.

APPARATUS FOR LIGHTING GAS BY ELECTRICITY.

No. 261,677. Patented July 25, 1882.

FIG: 1.

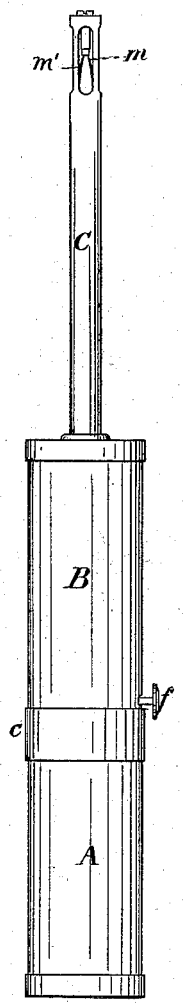


FIG: 2.

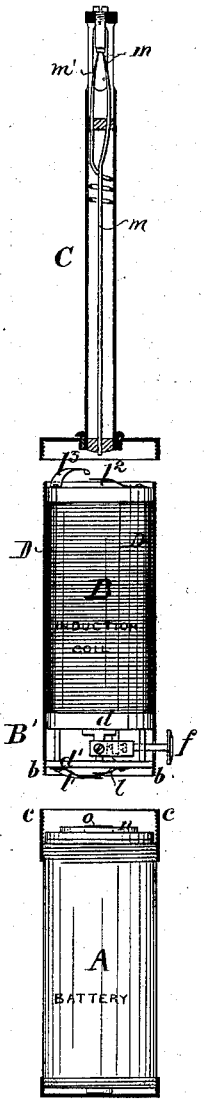


FIG: 3.

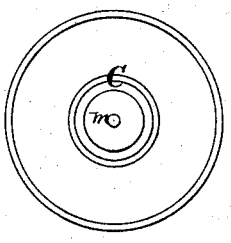


FIG: 4.

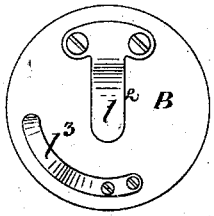


FIG: 5.

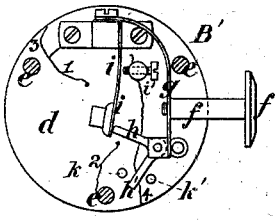


FIG: 6.

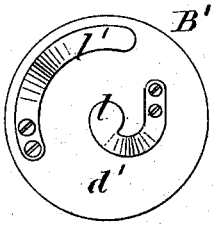
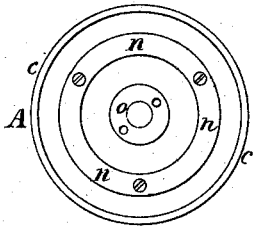


FIG: 7.



Witnesses
Harry Drury
Harry Smith

Inventors
Charles Leigh Clarke
and
John Leigh
by their Attorneys
Howson & Sons

UNITED STATES PATENT OFFICE.

CHARLES L. CLARKE AND JOHN LEIGH, OF MANCHESTER, COUNTY OF LANCASTER, ENGLAND.

APPARATUS FOR LIGHTING GAS BY ELECTRICITY.

SPECIFICATION forming part of Letters Patent No. 261,677, dated July 25, 1882.

Application filed March 20, 1882. (No model.)

To all whom it may concern:

Be it known that we, CHARLES LEIGH CLARKE and JOHN LEIGH, both residing in Manchester, in the county of Lancaster, England, and subjects of the Queen of Great Britain and Ireland, have invented Improvements in the Construction of Apparatus for Lighting Gas by Electricity, of which the following is a specification.

This invention relates to improvements upon the apparatus for which a patent of the United States of America, dated 26th April, 1881, No. 240,661, has been granted to us, our said invention consisting of improvements in the construction and arrangement of the various parts, whereby the same is made much more portable and handy, it can be placed or kept in any position without detriment, the strength of the battery cannot be exhausted by continued pressure on the button or pusher, and the battery, when exhausted, can readily be replaced by another.

The various improvements will be clearly understood on reference to the accompanying drawings, forming part of this specification, and the following description thereof—that is to say—

Figure 1 is an external elevation of our improved electric gas-lighter ready for use, drawn about half-size. Fig. 2 is a sectional view of the same with the three main parts or portions unscrewed from each other, and Figs. 3, 4, 5, 6, and 7 are detached views (drawn full size) of various parts of the same.

In the first place, we make our improved electric gas-lighter in a tubular form, the casing *a a* being in three pieces attached together by screwing, and comprising, first, the battery A; secondly, the induction-coil B and contact-breaker B′, and, thirdly, the lighting-tube C, with its terminal points and guard. These three parts are so constructed and arranged that the mere act of screwing them together establishes the necessary metallic communication between the various parts necessary for the development of the electric current. The screws at *b b* and *c c* are cut true to one gage, so that the parts are interchangeable, and when the battery A becomes exhausted a fresh battery can be substituted by merely unscrewing the old one and screwing on a fresh one in its place. This battery A (which forms the subject of a separate petition for patent bearing the same date as the present) we make in a cylindrical form, and of the peculiar construction described in the specification and shown on the drawings annexed to the said petition.

The induction-coil B may be of the ordinary construction; but we prefer to make it as described in the specification of Letters Patent granted to us in Great Britain, dated June 1, 188 ', No. 2,229, and for which we have also filed a petition for a patent in the United States of America, such petition bearing date the 8th day of April, 1881, the condenser D being placed round it.

The contact-breaker B′, (see Fig. 5,) which we employ to make and break contact, is fixed on the lower end of the induction-coil, and is constructed as follows: The framing of the contact-breaker is formed of two plates, *d d*, of vulcanite or other suitable material, united by metal pillars *e e*.

The button or pusher *f f* is connected to a spring, *g g*, which carries a small two-armed catch, *h h′*, one arm, *h*, of which pushes against the vibrater *i i*. As the button *f f* is pushed home the second arm, *h′*, of the catch comes against a fixed pin, *k*, which causes the catch to oscillate and cause the first arm, *h*, to slip from the vibrator *i i*, thus setting it vibrating, so as to make and break contact. As soon as the button *f f* is released the spring *g g* returns to its original position without touching the vibrator, and the second arm, *h′*, of the catch, coming against a second fixed pin, *k′*, replaces the first arm, *h*, in a position to act on the vibrator *i i* as soon as a fresh pressure is given to the button or pusher *f f*. By the use of this arrangement it will be evident that it will not be possible to exhaust the battery A by keeping pressure on the button or pusher *f f*, as each separate pressure only causes two or three vibrations, sufficient to produce a spark at the end of the terminal wires of a duration long enough to light a jet of gas, and no further effect is produced by keeping the pressure of the thumb or finger longer on the button or pusher *f f* before releasing it.

The lighting-tube C is screwed onto the up-

per end of the case above the induction-coil, the requisite metallic connection being made by means of springs l^2 l^3, to which the ends of the wires are connected. The terminal points m m are near to the top of this tube, slots or openings being cut or formed in the latter to allow of the access of the gas to the induced spark formed at the end of the terminal wires, when electrical contact is established at the same time that it forms a perfect guard against accidental shocks.

The way in which the metallic connections are established by simply screwing the parts A, B, and C together is shown at Figs. 3, 4, 6, and 7, Fig. 3 showing the underneath of the cap at the bottom of the lighting-tube, Fig. 4 the top of the coil, Fig. 6 the under side of the contact-breaker, and Fig. 7 the top of the battery. One of the elements of the battery is electrically connected with the insulated metallic ring n, while the other is connected to the metallic plug o, Fig. 7. When the battery A and the induction-coil B are screwed together the contact-spring l' bears on the ring n, while the spring contact-finger l bears on the plug o, this finger l being connected to the point i' of the circuit-breaking device. The spring l' is electrically connected to one of the posts e, Fig. 5, to which is secured one of the terminal wires, 2, of the inner coils, the other terminal, 1, of the inner coils being connected to the post carrying the vibrator i. This wire 1 and the contact-point i' are connected by wires 3 and 4, Fig. 5, respectively, to the condenser D, Fig. 2, which we have shown as wrapped around the induction-coil B. The terminals of the outer coils are connected to spring contact-fingers l^2 l^3, the former of which comes into contact with the end of the wire of one of the sparking-points m when the tube C is screwed on the case containing the battery A, while the spring-finger l^3 bears on the metallic screw-cap carrying the tube C, and the sparking-point m' is in contact with this tube.

We claim as our invention—

1. An electric gas-lighting apparatus made in three detachable sections with screw-connections, whereby they are adapted to screw together, the adjoining ends of the detachable sections having corresponding contact-fingers, substantially as described, whereby the requisite metallic connections between the sections are established by simply screwing the parts together.

2. An electric gas-lighting apparatus consisting of three detachable sections adapted to be screwed together to form one portable instrument, one section composed of a tube carrying the terminal sparking-points, the middle section carrying the induction-coil, condenser, and circuit-breaker, and the third section comprising the battery, all substantially as described.

3. A portable gas-lighting apparatus consisting of an induction-coil, condenser, sparking-points, and circuit-breaker, with a battery, A, detachably secured to the induction-coil casing by a screw-ring, c, the said casing and battery having corresponding contact-points to form electrical connections when the battery is screwed to the casing.

4. An electric gas-lighting device having a circuit-breaker consisting of a contact-point and vibrator, with a push-spring, two-armed catch carried by the spring, and two stop-pins, substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CHAS. L. CLARKE.
JOHN LEIGH.

Witnesses:
JOHN HUGHES,
W. BOLSOVER.