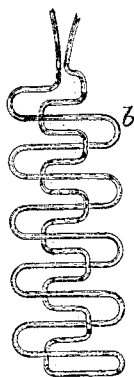
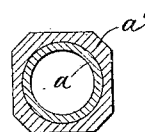
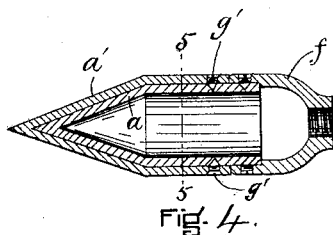
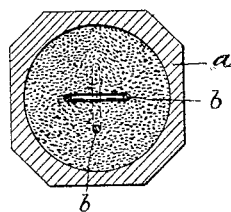
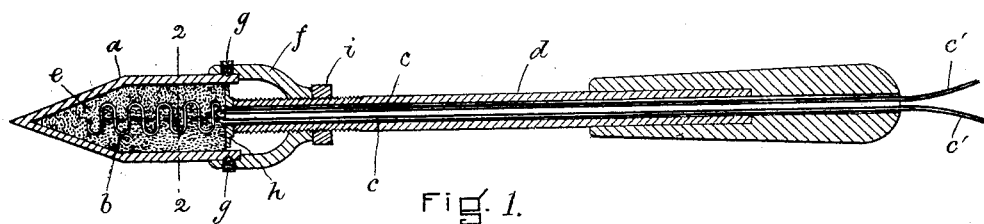


(No Model.)

A. E. APPLEYARD.
ELECTRIC SOLDERING IRON.

No. 455,010.

Patented June 30, 1891.



WITNESSES.

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ELECTRIC SOLDERING-IRON.

SPECIFICATION forming part of Letters Patent No. 455,010, dated June 30, 1891.

Application filed October 1, 1890. Serial No. 366,711. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR E. APPELYARD, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Electric Soldering-Irons, of which the following is a specification.

This invention relates to soldering-irons which are heated by electricity; and it has for its object to provide an iron of this class which shall be heated by means of a conducting-loop of platinum wire or other like material placed within the iron and connected with a suitable source of electrical supply.

The invention consists in the several improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a longitudinal section of my improved soldering-iron. Fig. 2 represents a section on line 2 2, Fig. 1. Fig. 3 represents a view of the conducting-loop removed from the hollow shell that contains it. Fig. 4 represents a longitudinal section showing the hollow shell provided with a detachable cap or cover that constitutes the acting surface of the iron; and Fig. 5 represents a section on line 5 5, Fig. 4.

The same letters of reference indicate the same parts in all the figures.

In the drawings, referring to Figs. 1 and 2, *a* represents a hollow shell, of copper or other suitable material, the external portion of which constitutes the acting surface of the tool and is appropriately formed to enable the tool to perform the work for which it was designed. The shell is here shown as being of pyramidal form at one end, like the ordinary soldering-iron in use by plumbers. It is obvious, however, that the shell may have any other desired external form to adapt it for the work for which it is designed. Within the shell *a* is placed a loop *b*, of platinum wire or other suitable conducting material, which, when included in an electric circuit, will be heated to a suitable degree by the resistance it affords to the passage of the electric current. The ends of the loop are suitably connected to conducting-wires *c c*, which extend through the hollow handle *d*, hereinafter described, and are connected at the

outer end of the handle to flexible extensions *c' c'*, which may be connected to a dynamo or other suitable source of electrical supply.

e represents a filling of any suitable refractory material not a conductor of electricity. Said filling is placed in the shell *a* and serves the double purpose of insulating the loop *b* from the shell by preventing contact between the loop and shell and of conducting to the shell the heat generated in the loop by the passage of the electric current therethrough. Said filling may be made of powdered fire-clay or any other suitable material which is a non-conductor of electricity and is adapted to resist the heat generated in the loop *b*.

I prefer to arrange the parts of the loop in folds or corrugations, as shown in Figs. 1, 2, and 3, to increase its length, and therefore the amount of heat generated within it. Said folds or corrugations are preferably arranged so that those of one part of the loop extend substantially at right angles with those of the other part, so that the heating of all parts of the shell will be as nearly uniform as possible.

f represents an internally-screw-threaded yoke attached by screws *g g* or other suitable means to one end of the shell *a*. The screw-threaded portion or socket of the yoke *f* receives an externally-threaded portion of the handle *d*. The inner end of said handle bears on a head or follower *h*, which enters the open end of the shell *a* and bears on the mass of filling material *e* within the shell. Said follower being adjustable by means of the screw-threaded handle, a rotation of the handle in one direction forces the follower into the shell, while a rotation in the opposite direction withdraws the follower from the shell. A check-nut *i* on the handle, when turned up against the yoke *f*, secures the handle at any position to which it may be adjusted.

The handle *d* is tubular, as already stated, and the follower *h* has a central opening coinciding with the opening in the handle, the conducting-wires *c c* passing through the follower and handle, as shown in Fig. 1.

It will be seen that when a current of electricity is passed through the wires *c c* and

loop *b* the loop is highly heated, and the heat thus generated is conducted by the filling *e* to the shell, which is thus kept at a suitable temperature for soldering purposes. The construction is simple and durable and is of such nature that the different parts can be readily separated for repairs and replacement.

In Figs. 4 and 5 I have shown the shell *a* as provided with an external cap or cover *a'*, the outer surface of which constitutes the acting surface of the tool. Said cap or cover is detachably secured to the shell *a* by means of screws *g' g'* or other suitable fastenings. When the cap *a'* is made unsuitable for use by wear, the remnant of it can be removed and a new cap applied to the shell *a* without disturbance of the other parts.

I claim—

1. In an electric soldering-iron, the combination of a hollow metal shell, a conducting loop or wire of platinum within the shell, a filling of refractory non-conducting material surrounding said loop, an internally-screw-threaded yoke attached to the shell, an externally-screw-threaded handle engaged with said yoke, a head or follower supported by

said handle and arranged to retain the filling in the shell, and conducting-wires connected to the ends of the loop, as set forth.

2. In an electric soldering-iron, the combination of a hollow metal shell, a conducting-loop arranged in curves or corrugations within the shell, the curves of one part of the loop extending in a different direction from the curves of the other part, and a filling of refractory non-conducting material supporting said loop, as set forth.

3. In an electric soldering-iron, the combination of a hollow metal shell, means for electrically heating said shell, and a cap or cover detachably secured to said shell and forming the acting surface of the soldering-iron, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 27th day of September, A. D. 1890.

ARTHUR E. APPELYARD.

Witnesses:

C. F. BROWN,
A. D. HARRISON.