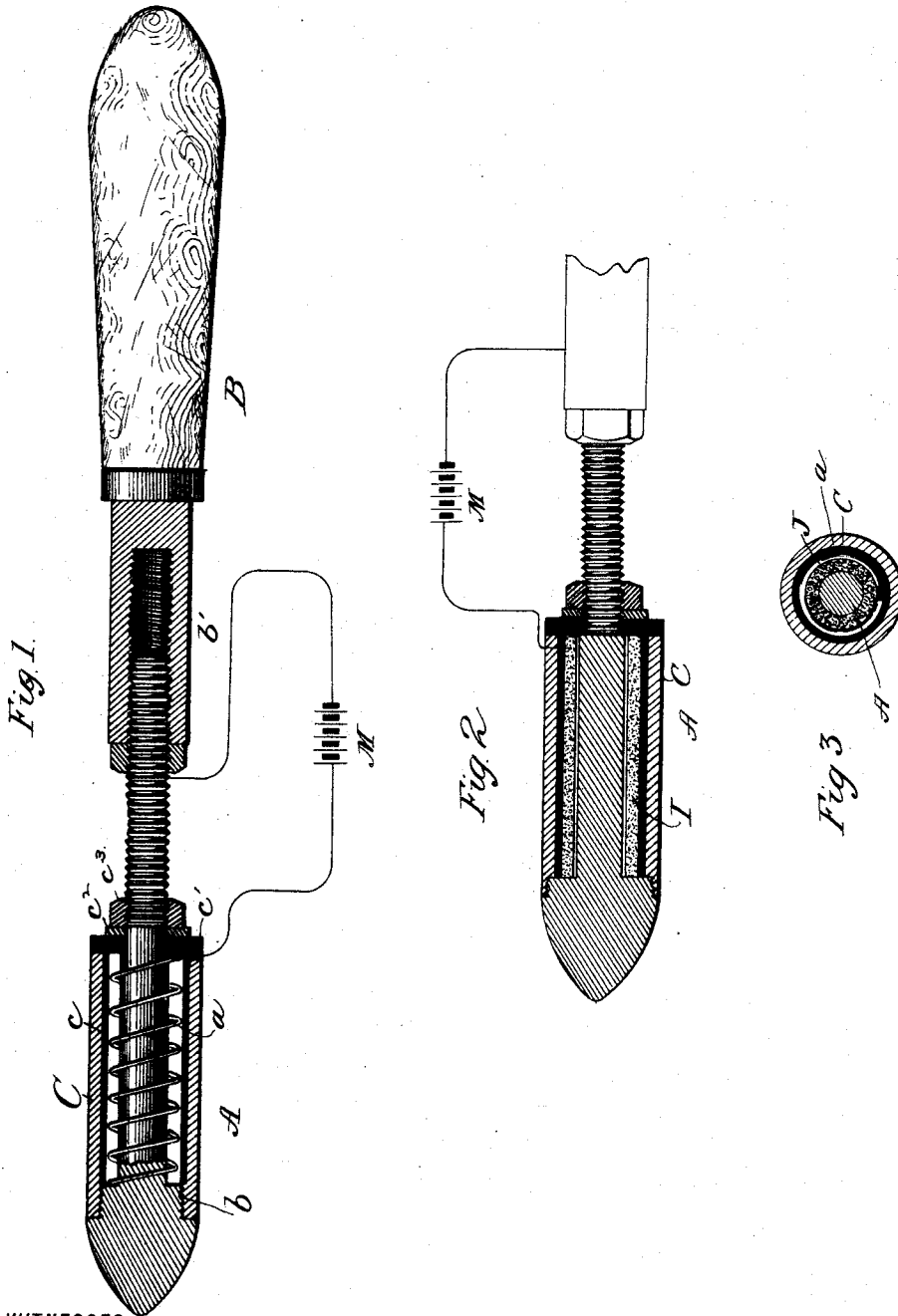


(No Model.)

W. M. MINER.
ELECTRIC SOLDERING IRON.

No. 421,185.

Patented Feb. 11, 1890.



WITNESSES:

Frank S. Ober
Wm A. Rosenbauer

INVENTOR

Willard M. Miner

BY

W. J. Johnston
ATTORNEY.

UNITED STATES PATENT OFFICE.

WILLARD M. MINER, OF PLAINFIELD, NEW JERSEY.

ELECTRIC SOLDERING-IRON.

SPECIFICATION forming part of Letters Patent No. 421,185, dated February 11, 1890.

Application filed November 5, 1889. Serial No. 329;359. (No model.)

To all whom it may concern:

Be it known that I, WILLARD M. MINER, a citizen of the United States, residing in Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Electric Soldering-Irons, of which the following is a specification.

The invention has reference to electric soldering-irons. Its object is the provision of means whereby a soldering-iron may be heated by electricity, and when so heated to retain its heat for a considerable time. Simplicity of construction is another feature of my invention.

In general, the invention consists of the usual solid head of copper, in combination with a heating resistance placed on the outside and surrounding the same. A shell of non-conducting material is placed over the resistance to concentrate the heat upon the copper and to prevent its dissipation.

The invention will be described with reference to the accompanying drawings, in which—

Figure 1 represents a longitudinal section of my improved soldering-iron, and Figs. 2 and 3 similar views of modifications of the same.

A represents the copper head, and B the handle, common to all soldering-irons. Beginning a little back of the point the head is cut away for some distance, and around this contracted portion is coiled a German silver wire *a*. The diameter of the coil is somewhat larger than that of the head, so that the two will not touch when they are concentric. In forming the reduced portion of the head A shoulder *b* is left, upon which a thread may be cut to receive shell C. This shell may be made of brass, compressed asbestos, or any other material. If of metal, it should be provided with a lining *c*, of non-conducting material. This shell is closed at its inner end by a disk *c'*, of insulating material, and this is held in place by a washer *c²* and nut *c³*, the latter working upon the threaded shank of the head, which extends back into a metallic socket *b'*, forming part of the handle B. One end of the coil of wire *a* is in contact with the copper head at the shoulder *b*, and the other end may be connected in any suitable

manner with one side of a source of electricity M, the circuit being complete from the other side to some portion of the copper head, as shown. Although the circuit-wires are represented by finer lines than the coil, it is to be understood that the resistance of the coil is higher than that of the line.

I am aware that soldering-irons have been heated by means of an electric current flowing through a resistance located inside of the iron, but in such cases the copper head has been made hollow, and the resistance has been in the form of finely-divided carbon, which is pressed against the point of the iron by one of the electrodes. In all such devices the whole outer surface of the copper head is exposed to the temperature of the surrounding atmosphere, and it therefore requires more current to maintain the required amount of heat in the iron. By putting the resistance on the outside I am able to make a more massive head, which will also aid in the retention of the heat.

In Figs. 2 and 3 I show modifications of my invention. In Fig. 2 the coil is substituted by a carbon cylinder I, and it is to be understood that I may use any kind or form of resistance without departing from the spirit of my invention, so long as I place such resistance on the outside of the copper head. I may use a series of carbon rods, a net-work of wire, or any similar material or construction. In Fig. 3 I have shown the head or the contracted portion of it surrounded by a jacket J, of lime or other heat-retaining and refractory material. This will be found also to reduce the current necessary to operate the iron.

Having thus described my invention, I claim—

1. The combination, with a soldering-iron, of a heating resistance included in an electric circuit, said resistance being located on the outside of the head of the iron for the purpose set forth.

2. The combination, with a soldering-iron, of a heating resistance included in an electric circuit, said resistance being located on the outside of the head of the iron and surrounding the same, for the purpose set forth.

3. The combination, with a soldering-iron,

of a heating resistance included in an electric circuit, said resistance surrounding the head of the iron, and a shell for confining the heat inclosing the resistance and the head of
5 the iron.

4. A soldering-iron having a head provided with a reduced portion or shank which is surrounded by a heating resistance included in an electric circuit, and a shell placed around
10 the reduced portion to retain the heat and impart to the head a symmetrical appearance.

5. The combination, with the head of a soldering-iron having a coating of heat-retaining

material, of a heating resistance included in the electric circuit surrounding the same. 15

6. The combination, with the soldering-iron, of a coil of wire forming a heating resistance and surrounding the head thereof.

In witness whereof I have hereunto signed my name in the presence of two subscribing
witnesses. 20

WILLARD M. MINER.

Witnesses:

WM. A. ROSENBAUM,
THOMAS K. TRENCHARD.