F. KUHN AND L. H. THOMAS.

ELECTRIC SOLDERING IRON.

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1,425,983

Patented Aug. 15, 1922.

Fig. 2.

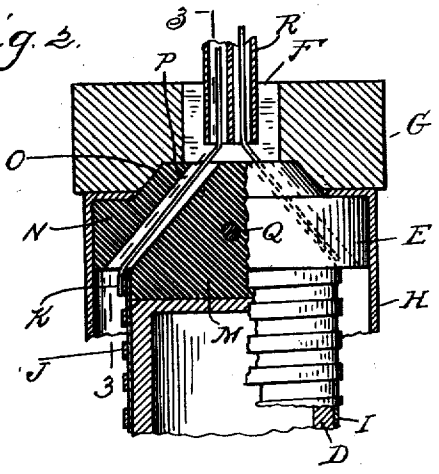


Fig. 3.

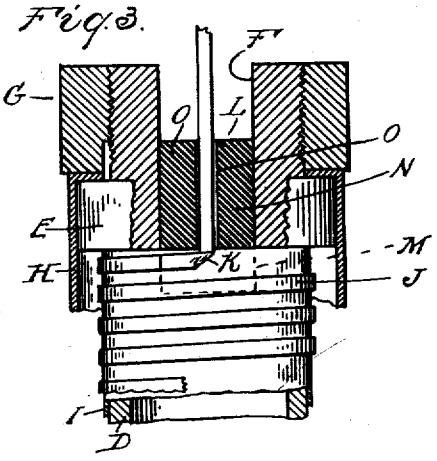


Fig. 1.

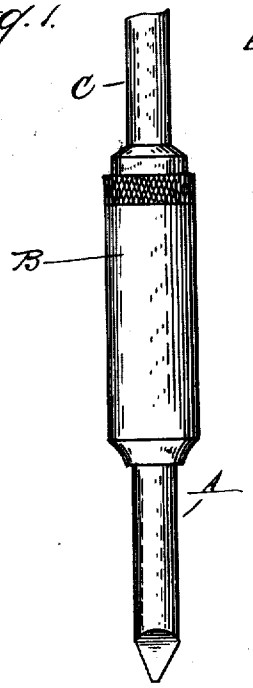


Fig. 4.

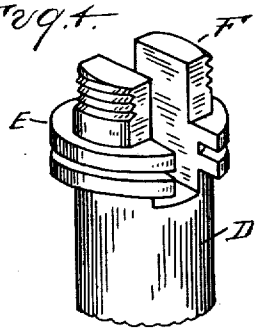
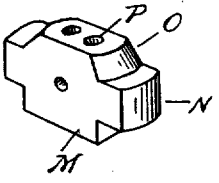


Fig. 5.



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UNITED STATES PATENT OFFICE.

FRANK KUHN AND LAWRENCE H. THOMAS, OF DETROIT, MICHIGAN, ASSIGNORS TO AMERICAN ELECTRICAL HEATER COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

ELECTRIC SOLDERING IRON.

1,425,983. Specification of Letters Patent. Patented Aug. 15, 1922.

Application filed March 20, 1922. Serial No. 545,061.

To all whom it may concern:

Be it known that we, FRANK KUHN and LAWRENCE H. THOMAS, both citizens of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Electric Soldering Irons, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to electric soldering irons of that type shown in Patent 1,214,186 in which a tubular body for receiving the soldering point is surrounded with an insulated resistor. The terminals of this resistor are passed outward from one end of the body through a hollow handle to which the current supplying conductors are attached. It is the object of the present invention to provide an improved terminal construction which avoids certain defects in the constructions heretofore used. Thus it is usual to wrap the tubular body or core with mica insulation on which a resistor ribbon is wound. To pass this ribbon out through the handle it is folded so as to make a substantially right angle turn and this folding, by increasing the thickness, places an additional stress upon the mica adjacent thereto. Consequently there is danger of the insulation breaking down and forming a short circuit between the resistor and the metallic core.

To overcome the difficulties just described, we have placed within the end of the body or core an insulator block insert over which the terminal portion of the resistor ribbon is passed at the point where it is folded to extend outward. Also, this insulator block is formed with apertures therethrough for the passage of the resistor terminal, with the result that danger of breaking down of the insulator is effectually avoided. The invention further consists in certain specific features of the construction as hereinafter set forth.

In the drawings:

Figure 1 is an elevation of the soldering iron;

Figure 2 is a sectional elevation;

Figure 3 is also a sectional elevation with a section on line 3—3 of Figure 2;

Figure 4 is a perspective view of the end portion of the core; and

Figure 5 is a similar view of the insulator insert.

A is the soldering point; B is a tubular heater in which the shank portion of the point is inserted, and C is the hollow handle shank through which the terminal connections for the heater pass outward to the handle (not shown). The core member D is provided at its inner end with a flange E and beyond this flange with a threaded bifurcated shank F for engagement with a nut G for clamping the outer casing H of the heater. Surrounding the core D is a wrapping I of insulating material such as mica and surrounding this insulation is wound the resistor ribbon J, which is folded at K to extend at right angles outward through the hollow handle. Instead, however, of extending the core member D uninterruptedly to the flange E, it is centrally cut away for the reception of an insulator block L. This block has a portion M forming a complementary segment of the cylindrical core D, also a portion N forming a complementary segment of the flange E, and a portion O extending outward beyond said flange between the furcations F. The block is also provided with obliquely extending channels P which pass through the flange M from diametrically opposite sides thereof and terminate at points adjacent to the center of the block at the outer end thereof. The block is locked in engagement with the core by suitable means such as the cross pin Q which retains it from displacement in any direction.

In forming the heater the insulator wrapping I extends not only around the metallic core, but also the portion M of the block L and the first convolution of the resistor extends over this portion of the block and then is folded at K to extend at right angles through the channel P. The opposite ends of the resistor thus pass from opposite sides of the block through the channels P and outward therefrom adjacent to each other, preferably passing into a double channel insulator tube R, which extends outward through the hollow handle. The construction is therefore one in which all danger of breaking down of the insulation at the point of closing of the resistor is avoided, for there is, in addition to the mica insulation, the insulation of the block L. Also, the passage of the terminals through the channels in the block L guards them from accidental contact with any metallic part.

What we claim as our invention is:

1. In an electrically heated instrument, the combination with a cylindrical metallic core member, of an insulator wrapping surrounding said core, a resistor wound upon said insulator wrapping and having a terminal portion extending outward longitudinally of the core, and an insulator block insert in said core adjacent to and channeled to receive said terminal portion of the resistor.

2. In an electrically heated instrument, the combination with a cylindrical metallic core member having a flange at the end thereof, of an insulator wrapping surrounding said core and extending adjacent to said flange, a resistor wound about said wrapping and having a terminal portion extending outward longitudinally of said core, and an insulator block insert in said core forming a complementary portion of the cylindrical portion and flange and channeled for the passage of said terminal portion of the resistor therethrough.

3. In an electrically heated instrument, the combination with a cylindrical metallic core having a flange at one end thereof and having a central recess extending from the end of the core through said flange and into said cylindrical portion, an insulator block insert within said recess forming complementary portions of said cylindrical portion of the core and flange and provided with a channel extending through the flange portion thereof, a wrapping of insulating material surrounding said core and complementary portion of the insulator block, and a resistor wound upon said wrapping and extending outward through the channel in said insulator block.

4. In an electrically heated insulator, the combination with a cylindrical metallic core having a flange at the end thereof and provided with a central recess extending to said flange and into the cylindrical portion, of an insulator block in said recess fashioned to be complementary to the cylindrical portion of said core and also of said flange, said block having a channel extending through the flange portion thereof outward and inclined towards the center or axis of the block, means for holding said block in said recess, and an insulated resistor wound on said core and extending outward through the channel in said block.

5. In an electrically heated insulator, the combination with a cylindrical core member having a flange at one end thereof and provided with a central recess extending through said flange and into the cylindrical portion of the core, of an insulator block insert in said recess fashioned to be complementary to said cylindrical portion and flange and provided with a channel extending through the flange portion thereof, a wrapping of insulating material surrounding the core and complementary portion of the block, a resistor wound upon said wrapping and folded to extend at substantially right angles axially outward, said fold being located over said insulator block and the outwardly extending portion passing through the channel in said block.

6. In an electrically heated instrument, the combination with a cylindrical core member having a flange at one end thereof and provided with a central recess extending through said flange and into the cylindrical portion, of an insulator block in said recess formed to be complementary to said cylindrical portion and flange and channels extending through the flange portion of said block on diametrically opposite sides thereof and inclined towards the longitudinal axis thereof, means for securing said block in said core, a wrapping of insulating material surrounding said core and complementary portion of the block, a resistor wound upon said insulating wrapping and having the opposite terminal portions thereof folded to pass outward through the channels in said block, said folds being adjacent to the portion of the block complementary to the cylinder.

7. In an electrically heated instrument, the combination with a cylindrical metallic core member, of an insulator surrounding said core, a resistor upon said insulator and having a terminal portion extending outward longitudinally of the core, and an apertured insulator block insert forming a complementary portion of said core.

In testimony whereof we affix our signatures.

FRANK KUHN.
LAWRENCE H. THOMAS.