F. KUHN & J. A. HAND.

HANDLE AND TERMINAL CONNECTION FOR ELECTRICALLY HEATED INSTRUMENTS.

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1,270,303. Patented June 25, 1918.

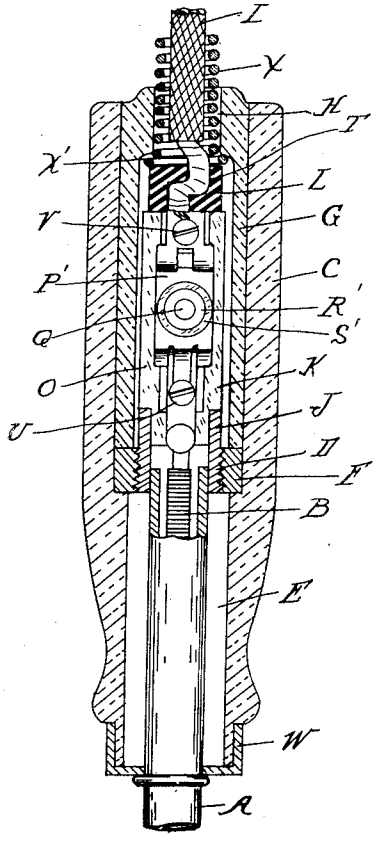


Fig. 1.

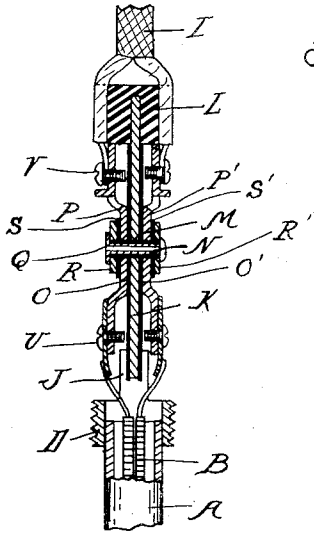


Fig. 2.

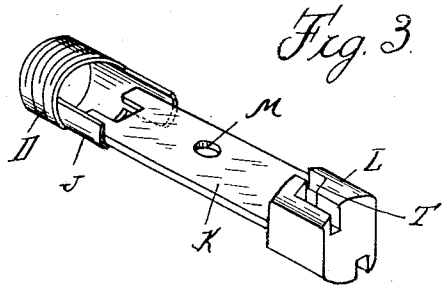


Fig. 3.

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UNITED STATES PATENT OFFICE.

FRANK KUHN AND JAY A. HAND, OF DETROIT, MICHIGAN, ASSIGNORS TO AMERICAN ELECTRICAL HEATER COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

HANDLE AND TERMINAL CONNECTION FOR ELECTRICALLY-HEATED INSTRUMENTS.

1,270,262. Specification of Letters Patent. Patented June 25, 1918.

Application filed January 25, 1917. Serial No. 144,360.

To all whom it may concern:

Be it known that we, FRANK KUHN and JAY A. HAND, 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 Improvement in Handles and Terminal Connections for Electrically-Heated Instruments, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to electrically heated tools or instruments, such for instance as soldering irons, in which the flexible conductor is connected to the handle. It is the object of the present invention to obtain a simple construction of terminal which is housed within the handle and permits of ready attachment and detachment; also one which is free from fragile parts, possesses mechanical strength and is composed of elements that are easily assembled.

In the drawings:

Figure 1 is a longitudinal section through a handle of an electrically heated instrument embodying our invention;

Fig. 2 is a central section in a plane at right angles to Fig. 1;

Fig. 3 is a perspective view of the metallic frame on which the terminal connectors are mounted.

A is the hollow shank of an electrically heated tool, such for instance as a soldering iron, and B are the terminal conductors passing outward through said shank. C is the handle which is mechanically connected to the shank by providing the latter with a threaded head D passing through a cylindrical bore E in the inner end of the handle and engaging an internally threaded bearing F, preferably in the form of a ring or collar mounted in a counter-bore in the outer end of the handle. The bearing is secured in position by a hollow plug G having a contracted opening H at its outer end, through which the flexible external conductor I passes.

The construction as above described has heretofore been used, electrical connection being made between the conductors I and B through the medium of connectors on a terminal insulator block housed within the hollow plug G. It has been found, however, that this terminal block is easily broken, as it is subjected to more or less heat conducted into the handle through the shank A, and is also subject to mechanical stress of the attachment cord I, as well as the shocks incident to the use of the instrument. With our improved construction we obtain a greater degree of mechanical strength and also a structure which may be manufactured at less cost and more easily assembled than structures heretofore used.

In detail, the threaded head or collar D upon the shank A is provided with inwardly-extending ears J upon opposite sides thereof, and between these ears and attached thereto is a flat metallic bar K carrying an insulator block L at its outer end. This insulator block L may be molded to the end of the bar K before the latter is attached to the ears J, and subsequently this attachment may be made, preferably by spot-welding. The member K has a central aperture M passing therethrough, in which is an insulator bushing N. There are also insulator facings for the opposite sides of the bore, preferably formed of strips of mica O and O', and metallic connectors P and P' are placed against these mica strips and secured by a rivet Q passing through the bushing N. The rivet directly engages metallic washers R and R', which are insulated from the connectors P and P' by insulator washers S and S'. The block L has formed in the opposite sides thereof an angular slot T, into which the end portion of the conductor I may be pressed to form a mechanical lock.

With the construction as just described, in assembling the parts the flexible conductor cord I is passed through the hollow lug G and recess E of the handle, and is then connected to the insulator block L by forcing the separate strands into the slots T upon opposite sides of said block. The conductors B, after passing through the shank A extend over the connectors P and P' and may be secured thereto by binding-screws U. The bared ends of the conductor I, after passing through the slots T, are also attached to the connectors P and P' by means of set-screws V. The proportion of the parts mounted on the bar K is such as to lie within the circle of the threaded collar D, so that it is possible when the cord I is drawn outward to insert these parts through the threaded bearing F and into the hollow

plug G. The collar D may then be secured into the ring and in doing this a ferrule W upon the shank A is clamped over the inner end of the handle. We also preferably provide a resilient metallic spiral X, which surrounds the cord I and has a flaring inner end portion X′ fitting against the contracted end H of the plug G. This spiral may be placed on the cord before connection is made with the shank A and may then be drawn through the handle into position where it is clamped between the insulator plug L and the bearing H.

What we claim as our invention is:

1. The combination with a hollow handle, of an internally-threaded bearing anchored within said handle, a hollow shank having a threaded collar for engaging said internally-threaded bearing and inwardly-extending ears upon opposite sides thereof, a metallic shank secured to and projecting from said ears and insertible through said internally-threaded bearing, a flexible conductor secured to the end of said metallic shank and connectors mounted upon opposite sides of and insulated from said metallic shank for connecting the ends of said flexible conductor with conductors passing through said hollow shank.

2. The combination with a hollow handle, of an internally-threaded bearing anchored within said handle, a hollow shank having a threaded collar for engaging said internally-threaded bearing, a flat metallic plate secured to said collar and projecting therefrom, being insertible through said internally-threaded bearing, a flexible conductor, an insulator block secured to the end of said flat plate and forming an anchor connection for the end of said flexible conductor, and connectors mounted upon opposite sides of said flat plate and insulated therefrom, forming connections between said flexible conductor and conductors passing through said hollow shank, said parts being also insertible through said internally-threaded bearing.

3. The combination with a hollow handle, of an internally-threaded bearing anchored within said handle, a hollow shank having a threaded collar engageable with said internally-threaded bearing, a flat metallic shank having one end secured to said collar, an insulator block secured to the opposite end and grooved for engagement with the ends of a flexible conductor entering the outer end of said hollow handle, insulator strips on opposite sides of said flat shank, and connectors rigidly mounted on said shank and insulator strips forming connection between said flexible conductor and conductors passing through said hollow shank, being adapted to be inserted through said internally threaded bearing.

In testimony whereof we affix our signatures in presence of two witnesses.

FRANK KUHN.
JAY A. HAND.

Witnesses:
HARRY W. LUYCKX,
ARCHIE OAKES.