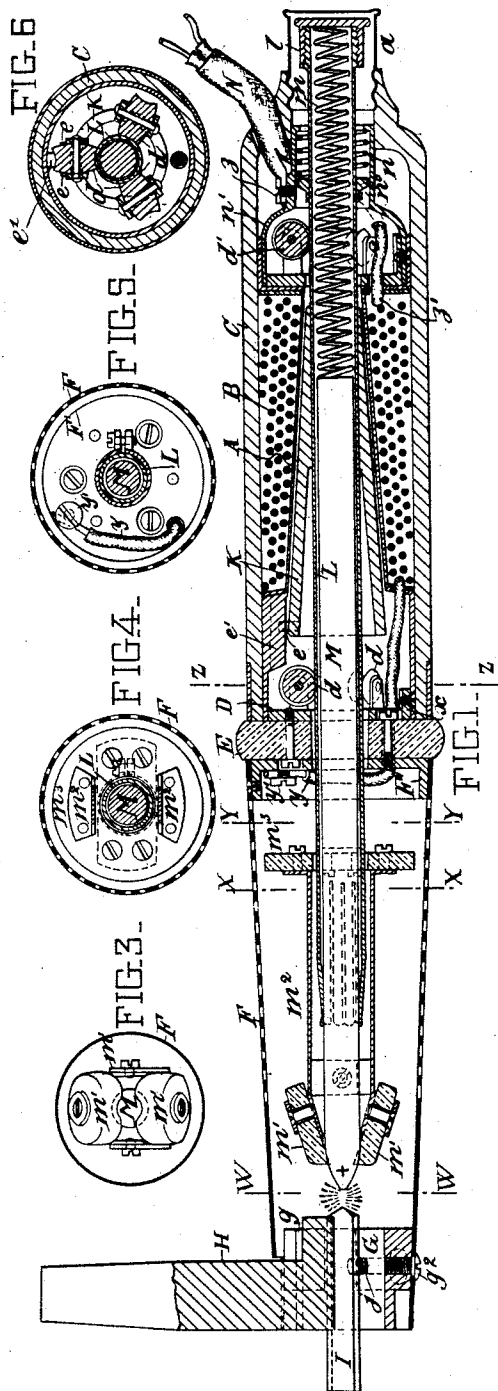


(No Model.)

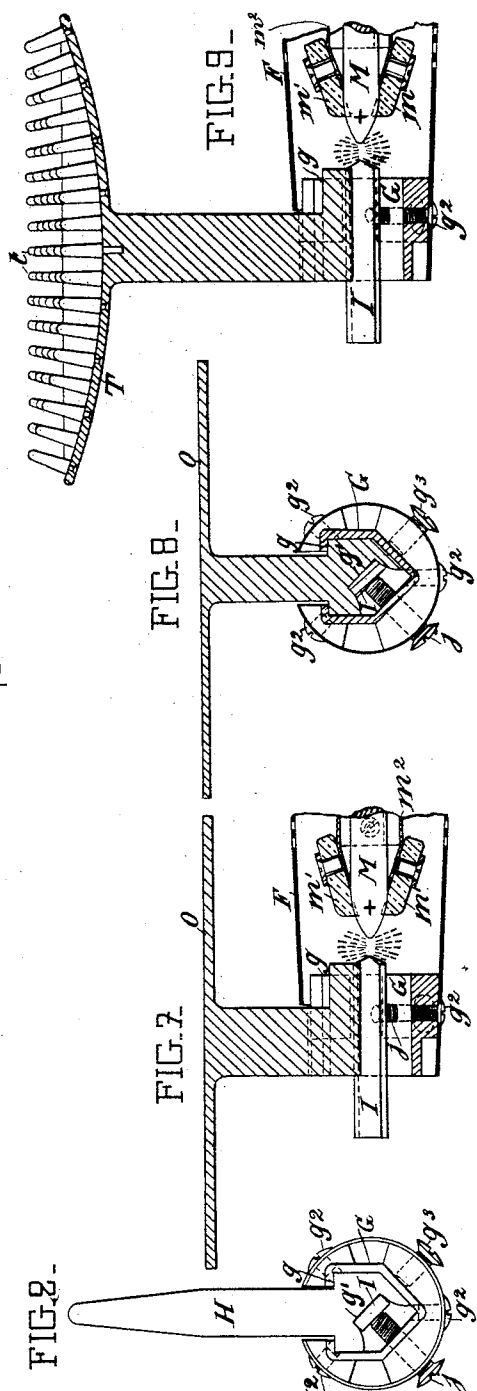
J. J. RITTER.
ELECTRIC SOLDERING TOOL.

No. 469,949.

Patented Mar. 1, 1892.



Witnesses:
Herbert Blopp.
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UNITED STATES PATENT OFFICE.

JOHANN JAKOB RITTER, OF BASLE, SWITZERLAND.

ELECTRIC SOLDERING-TOOL.

SPECIFICATION forming part of Letters Patent No. 469,949, dated March 1, 1892.

Application filed August 27, 1891. Serial No. 403,910. (No model.) Patented in Switzerland August 19, 1890, No. 2,565, and in England April 9, 1891, No. 6,125.

To all whom it may concern:

Be it known that I, JOHANN JAKOB RITTER, a citizen of the Republic of Switzerland, and a resident of Basle, Switzerland, have invented certain Improvements in Electrical Apparatuses for Soldering, Boiling, and Heating, (for which patents have been granted to me in Switzerland, No. 2,565, dated August 19, 1890, and in Great Britain, No. 6,125, dated April 9, 1891,) of which the following is a specification.

My invention relates to a portable apparatus adapted for heating purposes, the heating agent being an electric arc. The invention will be fully described hereinafter, and its novel features carefully defined in the claims.

In the accompanying drawings, which serve to illustrate my invention, Figure 1 is a longitudinal mid-section of an electrical heating apparatus embodying my improvements, and Fig. 2 is an elevation of the operative end of the same, showing a soldering-bit in position therein. Figs. 3, 4, 5, and 6 are transverse sections taken in the respective planes indicated by the lines W W, X X, Y Y, and Z Z. Figs. 7 and 8 are views illustrating the application of my apparatus to boiling liquids contained in vessels; and Fig. 9 is a similar view to Fig. 7, illustrating the application of my invention to heating articles in general.

Generally speaking, my apparatus comprises a solenoid with a movable iron core of tubular conical form attached to a metal tube, on the end of which are clamping-fingers which embrace a carbon-rod. The tube also carries limiting jaws or stops of porcelain or other refractory material, up to which the tip of the carbon is kept pressed by a spring as it burns away. The spring is arranged behind the carbon in the tube. The coil of the solenoid is embraced by and mounted in a wooden casing, and this casing has a metallic prolongation, which is perforated and extends out over and beyond the tip of the carbon, where it has a socket or holder to receive the soldering-iron or other body to be heated, the latter having in it a recess or slot to receive a metal bar, between which and the carbon the arc is formed. One extremity of the wire coil of the solenoid is connected with one pole of an electric generator, while the other end is connected

electrically with the aforesaid metallic bar. The carbon-rod is connected with the other pole of the generator. The tubular holder of the carbon-rod is kept pressed forward habitually by a spring, which keeps the tip of the carbon in contact with the metal bar, and when a current from the generator is sent through the circuit, closed normally at the point where said metallic bar is in contact with the carbon, the core of the solenoid is drawn back within the coil, thus drawing back the carbon-rod, and a continuous spark or arc passes between the carbon and the metallic bar thus separated.

I will now describe the construction more particularly with reference to the accompanying drawings.

A is the bobbin of the solenoid and B the coil of the same, which is embraced by a tubular casing C of wood or the like. This casing serves as a handle to be grasped by the hand of the user. On the front end of the bobbin A is secured a metal disk D, by means of lugs *a*, and to the disk D is secured an insulating-piece E of slate, porcelain, or the like. To the piece E is secured a metal collar F', to which is secured a perforated casing F. In the outer end of the casing F is secured, by means of screws *g*², a socket piece or holder G, which is V-shaped, and is provided with external projections, and between the upturned edges *g* of the socket is placed or inserted the copper soldering-bit H, which has a projecting part adapted to enter the socket in the socket-piece. In the part which is inserted into the socket G this soldering-bit H is provided with a slot *g*' for the reception of the metallic bar I, before mentioned, which is clamped fast in said slot by a screw *j*. The soldering bit and bar I are both held in place in the socket by this screw *j*.

The electrical connection between the rod I and the wire of the coil is effected by means of the binding-screw *y*', the metal disk F', the metal casting F, the screws *j* and *g*², and the socket-piece G.

The iron core in the bobbin A of the solenoid is tubular and conical, tapering from front to back, as clearly shown. It is traversed longitudinally by and firmly connected to a metal tube L, which receives and forms a holder for

the carbon-rod M. The tube L is provided at its rear end with a screw-cap *l*, which closes it, and at its other or front end it is slitted to form spring clamping-fingers, which embrace the carbon, insure a good contact, and steady it. Back of the carbon in the tube L is a spring *m*, which constantly tends to press the carbon forward against porcelain jaws or limiting-stops *m'*, secured to the tube L through the medium of a metal mounting *m²* and a disk *m³*, of slate or other like material.

To guide the core K in its movement and to prevent it and its attached parts from rotating axially when the cap *l* is manipulated, the core is provided with two studs *e*, which embrace somewhat loosely a rib *e'* on the bobbin A.

A coiled spring *n*, arranged about the tube L, between a collar *n^o* thereon and the end of a tubular projecting metal part *n'* on the bobbin A, which incloses said spring, serves to press the tube, carbon, and core forward, the latter out from the cavity in the bobbin, and at the same time it presses the tip of the carbon-rod up to the end of the metallic bar I. Rollers *d* are attached to the disk D and rest on the tube L, and these facilitate the movements of the core, and serve also as conductors. A similar roller *d'* is also mounted on the bobbin A, for the same purpose. Moreover one wire of the conductor N, which enters through an opening at the rear of the casing C, from the electric generator is by means of the roller *d'* put into connection with the tube L and the carbon-rod at the same time, inasmuch as the end of the above-named wire is connected with the projecting part *n'* of the bobbin by means of the screw *z*, while the other wire of conductor N is connected at *z'* with the other end of the wire, forming the coil B of the bobbin.

The wire connected with the carbon-rod M is united to the positive pole of the electric generator, while the other wire—that is, the wire which connects electrically with the metallic bar I—is united to the negative pole of the generator.

The handle C may be closed at the rear end by a removable cap *a*.

In order to use this apparatus for soldering, the two wires of the conductor N, are connected with the poles of the generator, and as soon as the electric current from the latter is established in the apparatus the core K will be drawn back into the bobbin A, and the carbon-rod M will be separated from the bar I, thus setting up an electric arc between the points of these bodies, by means of which the soldering-bit H in its vicinity is heated and may be used for soldering.

If the apparatus is to be employed for boiling liquids, the soldering-bit may be removed and replaced by a flat disk O, as seen in Figs.

7 and 8. Any sort of cooking-vessel may be set on the disk O as on a stove; or, if an article is to be heated for any purpose, the heating-plate T (seen in Fig. 9) may be substituted for the bit H or disk O. This plate T may have a parabolic form and be provided with projecting points or parts *t* for increasing the heating-surface.

Whatever form the article to be heated may have, it will have a branch or part constructed to fit into the socket G and be adapted to receive the metallic bar I, being held in contact with the later.

Having thus described my invention, I claim—

1. In an electrical apparatus for heating purposes, the combination, with the solenoid and the casing in which it is mounted, of the carbon-carrying tube L, extending through and fixed to the movable core of the solenoid and provided with refractory limiting jaws or stops for the carbon-rod, the said carbon-rod, a spring arranged in said tube behind said carbon-rod to press it up to said stops, a metal casing F, provided with a socket-piece G to receive and hold the article to be heated, the metallic bar I, having its end or point adjacent to the end or point of the carbon-rod, and the spring *n*, arranged to keep the tube L pressed forward normally, so that the carbon-rod will be in contact with the bar I, as set forth.

2. In an electrical heating apparatus, the combination, with the solenoid having a conical movable core K, of the carbon-carrying tube L, extending through said core longitudinally and secured rigidly thereto, limiting-stops for the carbon-rod mounted on said tube, the said carbon-rod mounted movably in said tube, the spring behind the carbon-rod in said tube for pressing the carbon up to said stops, the spring back of said tube for pressing the core, tube, and carbon-rod forward normally, the casing which supports the socket-piece or holder G, and the said socket or holder, substantially as set forth.

3. An electrical heating apparatus having a holder or socket-piece G, provided with a clamp-screw *j*, in combination with an article to be heated by said apparatus, having a part adapted to fit into said socket, said part having a recess or slot to receive the metallic bar I of the apparatus, and means for clamping together the said article and the bar I, substantially as set forth.

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

JOHANN JAKOB RITTER.

Witnesses:

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CHARLES A. RICHTER.