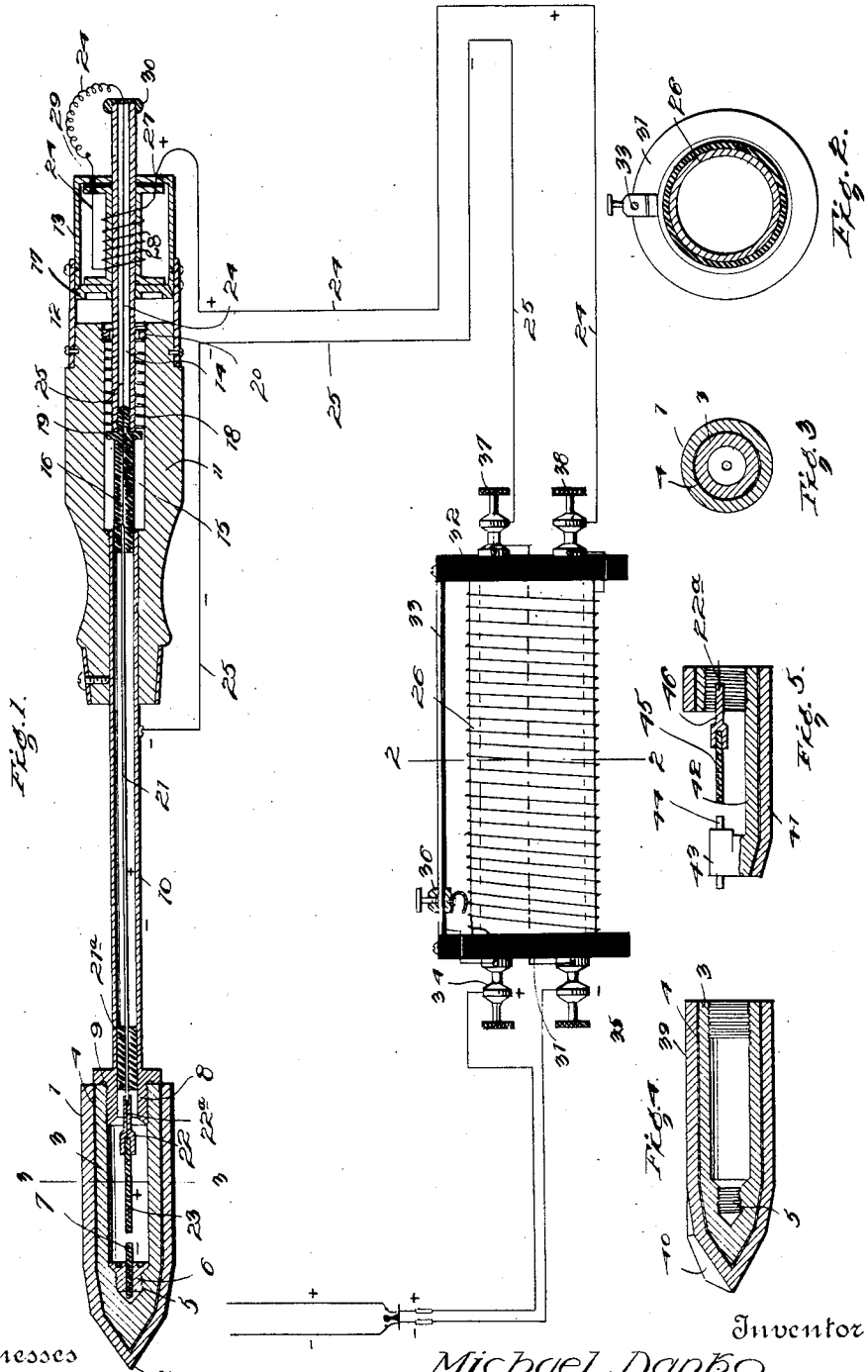


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ARC SOLDERING IRON.
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997,044.

Patented July 4, 1911.



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UNITED STATES PATENT OFFICE.

MICHAEL DANKO, OF SOUTH BETHLEHEM, PENNSYLVANIA.

ARC SOLDERING-IRON.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, MICHAEL DANKO, a subject of the Emperor of Austria-Hungary, residing at South Bethlehem, in the county of Northampton and State of Pennsylvania, have invented certain new and useful Improvements in Arc Soldering-Irons, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to soldering and welding tools, and the principal object of the same is to provide a tool of the character stated which is heated from the interior by an electrical current to produce an arc by means of which the tool is quickly heated to a high degree.

This invention also contemplates novel means by which the current can be controlled so that the degree of heat within the tool can be regulated.

In carrying out the objects of the invention generally stated above it will be understood, of course, that the essential features thereof are necessarily susceptible of changes in details and structural arrangements, certain preferred and practical embodiments of which are shown in the accompanying drawings, wherein:

Figure 1 is a longitudinal sectional view of the improved tool, also showing diagrammatically the electrical circuit including a rheostat. Fig. 2 is a transverse sectional view taken on the line 2—2, Fig. 1. Fig. 3 is a similar view taken on the line 3—3 Fig. 1. Fig. 4 is a longitudinal sectional view of a modified soldering head. Fig. 5 is a similar view of a tool adapted for welding.

Referring to the accompanying drawings by numerals, and particularly to Figs. 1, 2, and 3 thereof, it will be observed that the improved tool comprises a hollow head 1 provided with the usual pointed end 2. Said head is open at the rear end and has fitted therein a shell 3. The shell is insulated from the head by mica or other suitable insulating material 4. Said shell has an open rear end that is internally threaded. An internally threaded socket 5 is formed in the forward end of shell 3 for the reception of a plug 6 that has a stick of carbon 7 mounted therein. A hollow plug 8 is fitted in the open rear end of shell 3 and is provided with a flange 9 that abuts the outer surface of said open rear end. An elongated sleeve 10 of iron or steel projects from said plug 8 and extends into a handle 11 and is suitably fastened therein. The rear end of handle 11 has a sleeve 12 projecting therefrom and said sleeve has the open end of a cylindrical casing 13 fastened thereto. Said casing 13 projects into the rear end of sleeve 12. An externally threaded hollow core 14 is slidable through casing 13 and sleeve 12 and projects into a chamber 15 formed longitudinally in the handle 11. The inner end of core 14 is internally threaded for the reception of the externally threaded end of a bar of insulating material 16 that extends into the sleeve 10. Core 14 carries an abutment disk 17 which contacts with handle 11 to limit the movement of core 14 in one direction and with the open end of casing 13 to limit the movement of said core in an opposite direction. A spring 18 is coiled about core 14 within chamber 15, one end of said spring bearing against an abutment flange 19 carried by bar 16, the other end thereof bearing against a guide collar 20 fitted within said chamber 15. A conductor rod 21 has one end seated in bar 16 said rod extending through sleeve 10 and through a block of insulating material 21^a in said sleeve which centers said rod. The rod 21 terminates in plug 8 and enters the rear end of a socket 22, and connects with a feed wire 22^a that extends longitudinally of said socket. Socket 22 carries a carbon stick 23 one end of which is connected with wire 22^a. Said stick 23 is in alinement with and adjacent carbon stick 7. As will be understood from the foregoing, the spring 18 normally tends to slide the core 14, rod 21, socket 22, and carbon stick 23 so that said stick 23 will be in contact with carbon stick 7. And to provide the arc between said sticks for heating the soldering head, it is necessary to slide core 14, rod 21, socket 22 and stick 7 against the tension of spring 18 so that the sticks 7 and 23 will be separated. This last mentioned movement is obtained by magnetizing the core 14 within casing 13, as will now be explained.

The current is supplied through the circuit-wires 24 and 25 which are in circuit with a rheostat 26. From said rheostat, wire 24 extends to and through an insulated opening 27 in the rear end of casing 13 and is wound about core 14 within said casing

as indicated at 28. From said winding the wire passes out of casing 13 through an insulated opening 29 and through the insulated end cap 30 on the projected rear end of core 14. Said wire passes through core 10 and into bar 16 and connects with rod 21. The other wire 25 extends from the rheostat 26 to the sleeve 10 at a point adjacent the front end of handle 11. This arrangement obviously magnetizes core 14 so that sticks 7 and 23 will be separated and also completes the circuit so that an arc will be formed by said sticks. The rheostat is interposed between the source of electrical supply and the wires 24 and 25 and is composed of the insulated end disks 31 and 32 which are connected by a bar 33. Disk 31 carries the contacts 34 and 35. Contact 34 is in circuit with the windings of the rheostat and contact 35 is in circuit with the bar 33. An adjustable contact 36 is slidable on bar 33 and is adapted to selectively close the circuit between the windings of the rheostat to vary the resistance thereof. End disk 32 is provided with contacts 37 and 38 to which wires 24 and 25 are connected.

As will be clear from the foregoing this invention provides means whereby an arc is formed in the soldering head which will quickly heat said head to a high degree.

In Fig. 4 a modified type of soldering head 39 is provided in which the free end is provided with a flattened external portion 40 producing a chisel-shaped point which especially adapts the head for use in soldering interior corners of articles.

In Fig. 5 the head 41 is open and the shell 42 carries an outstanding lug 43 in which a carbon stick 44 is carried. The other carbon stick 45 is carried by a socket 46 in the same manner as that set forth in connection with the preferred form of the invention. The tool in this form of the invention is especially adapted for welding, and it will be clear that the open shell and head will readily permit the work to be held in the arc between the two sticks 44 and 45.

What I claim as my invention is:—

1. A tool of the character described comprising a head, a shell therein, means for insulating said shell from said head, and

electrical means for producing an arc in said shell.

2. A tool of the character described comprising a head, a shell therein, means for insulating the shell from said head, a carbon stick stationary in said shell, an adjustable carbon stick in said shell, and means for producing an arc between adjacent ends of said sticks.

3. A tool of the character described comprising a hollow head provided with an open rear end, a shell fitted therein, insulating means interposed between said shell and head, and means for producing an arc in said shell.

4. A tool of the character described comprising a hollow head, a hollow shell therein, insulating means interposed between said shell and head, and heating means in said head.

5. A tool of the character described comprising a head, a shell therein, insulating means interposed between said head and shell, said shell having a socket in one end, a plug in said socket, a carbon stick carried by said plug, a plug sealing the other end of said shell, a carbon stick adjustable in said sealing plug, and electrical means for producing an arc between adjacent ends of said sticks.

6. A soldering iron comprising a hollow head having an open rear end, a shell in said head, insulating means interposed between said head and shell, a carbon stick in the forward end of said shell, a hollow plug fitted in the rear end of said shell, a conductor rod extending through said plug, a socket carried by said rod within the shell, a carbon stick carried by said socket, means for normally holding the carbon sticks in contact, an electrical circuit including said sticks, and a magnet in said circuit for separating said sticks to produce an arc in said shell.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

MICHAEL DANKO.

Witnesses:

CHARLES ZENLER,
FRANK ZIRVIF.