E. L. VAN DOLSEN.

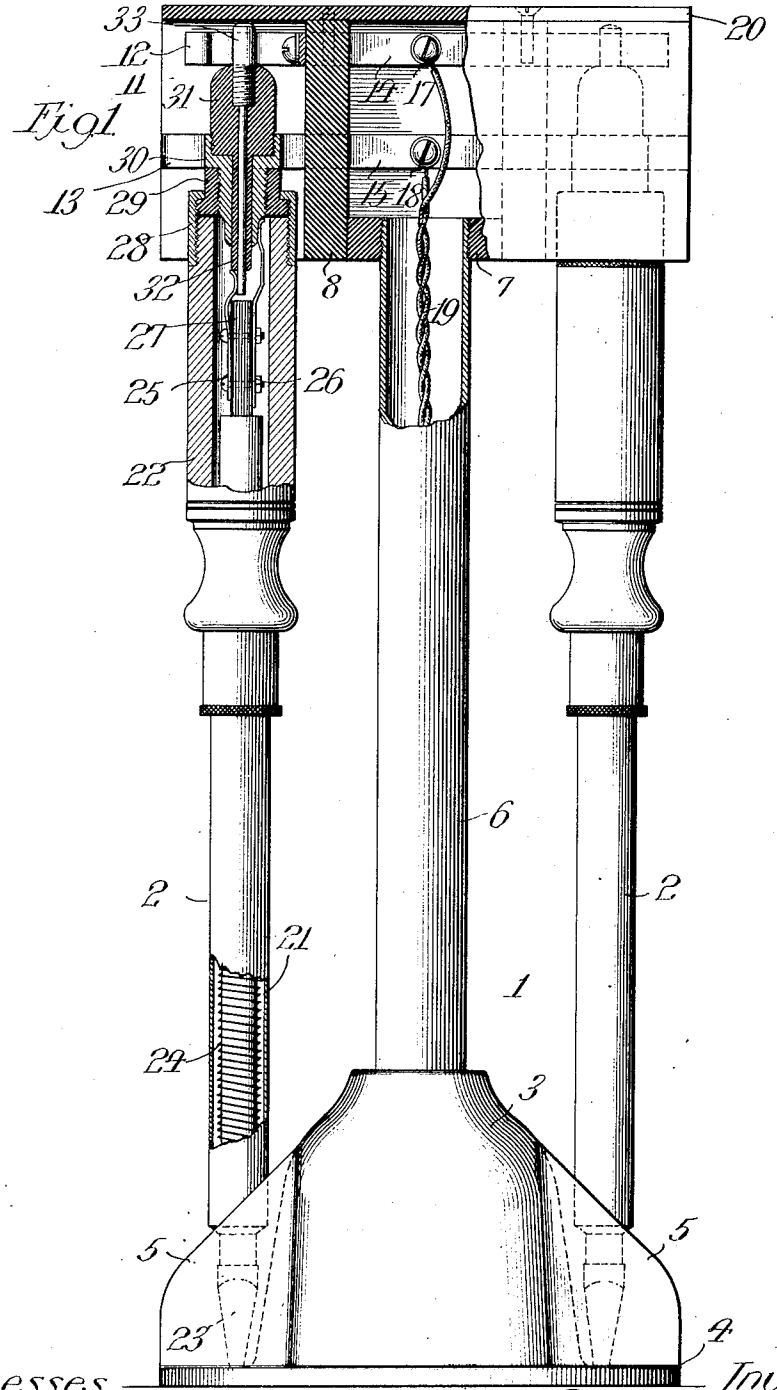
ELECTRICAL HEATING APPARATUS.

APPLICATION FILED FEB. 23, 1906.

908,712. Patented Jan. 5, 1909.

2 SHEETS—SHEET 1.

Fig 1.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 2.

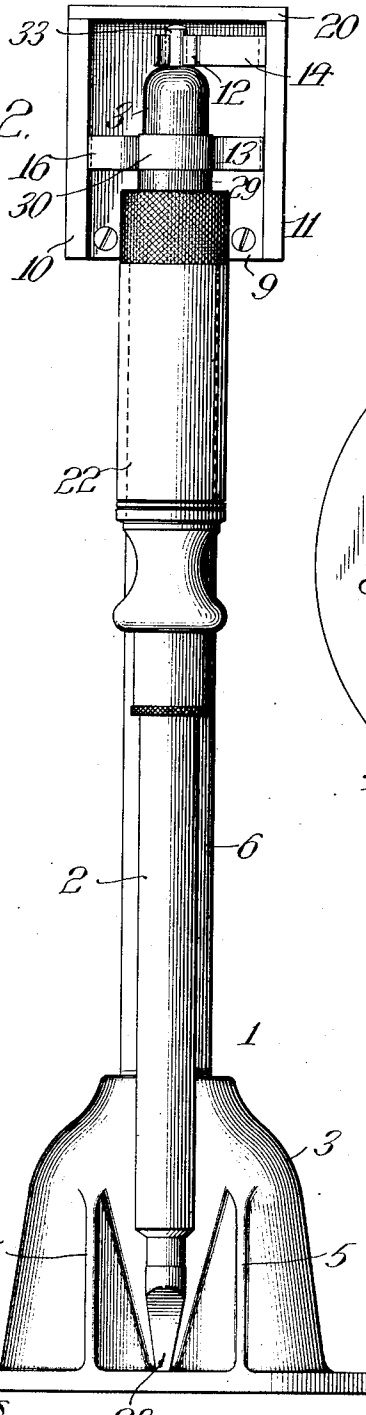
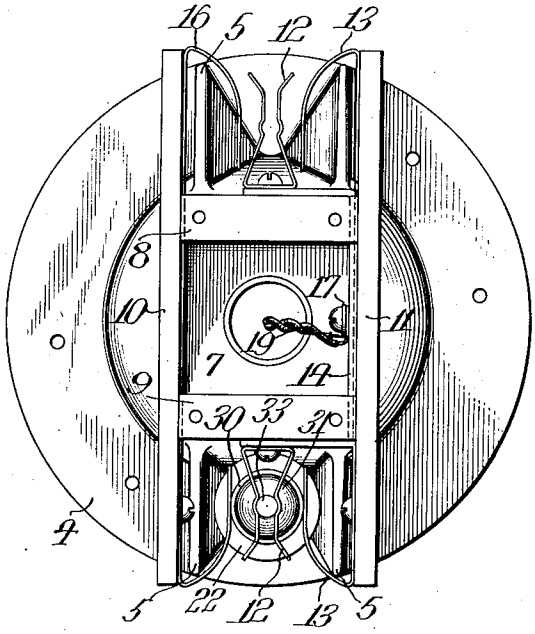


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

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ELECTRICAL HEATING APPARATUS.

No. 908,712. Specification of Letters Patent. Patented Jan. 5, 1909.

Application filed February 23, 1906. Serial No. 302,494.

To all whom it may concern:

Be it known that I, EMMET L. VAN DOLSEN, a citizen of the United States, residing at Berwyn, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electrical Heating Apparatus, of which the following is a specification.

My invention relates to electrical heating apparatus, and more particularly to an improved electrical soldering iron, and a standard or support therefor.

Heretofore in the use of electric soldering irons, it has been customary to provide a permanent connection between the iron and the source of current supply, the connection ordinarily being made through the medium of a long conducting cord attached at one end to a stationary terminal communicating with the mains that supply the current, and at the other end passing into the handle of the iron and connecting with the heating coil. This way of providing for the heating of the iron has been found objectionable in many respects, chief among which is the liability of the constant flexing of the cord at the point where it enters the handle, and its abrasion by contact with surrounding objects, to wear away the insulation and to expose the conductors to short circuit, and accidental connection with the person of the operator, both of which occurrences may lead to serious consequences. Moreover this method of supplying the heating current is not only wasteful of current, inasmuch as the current flows to the iron practically all of the time, whether the iron is in use or not, but is also detrimental to the life of the iron in heating the soldering tip to the point where it becomes "burned" and must be retinned, and also in disintegrating and shortening the life of the heating coil. With the object of overcoming these and other objectionable features, I have so constructed and arranged the apparatus of my invention, that the iron is used in almost identically the manner of an ordinary soldering iron, being quite disconnected from the source of heat while not in use, and consequently having no electrical connection which serves to limit the area within which the iron may be used, and the presence of which, for the reasons above given, may result in electrical shocks and burns to the operator, and in short circuits whereby the material being operated upon may be ignited. Moreover I have so constructed and arranged the heating support or stand in which the soldering iron is adapted to rest when not in use, that any excess heat developed is absorbed by the body of the support without any detriment to the iron, while the superfluous solder that collects from the tip of the iron is held and serves to keep the tip well tinned. The circuit connections also are such that the conductors leading to the support, and the contact terminals mounted upon the support, are protected from accidental injury to themselves, as well as from causing injury to those who have occasion to use the irons; while the contact terminals associated with the iron are specially adapted for coöperation with the stationary terminals, and are constructed to have their parts readily accessible, and to guard against the danger of accidental short circuits.

I will describe my invention more particularly by reference to the accompanying drawings in which—

Figure 1 is a front elevation, partially in section, of a stand supporting two soldering irons, both stand and irons being constructed in accordance with my invention; Fig. 2 is an elevation of the stand showing a soldering iron in position; and Fig. 3 a plan view of the stand with an iron in position on one side, and the upper panel of the insulating head removed.

The embodiment of my invention illustrated comprises a stand or support 1 arranged to receive two irons 2 adapted to have the terminals of their heating coils brought into connection with the terminals of the supply circuit by being placed in the stand or support; but it is obvious that the stand may be arranged to accommodate more or less than two irons, as desired. The stand in the present instance comprises a dome-shaped base 3 of any suitable metal, as cast iron, preferably provided with a flat annular flange 4 at its bottom, the flange being drilled to receive screws for fastening the base to any suitable support. Pockets for receiving the tips of the irons are formed in the base, in the present instance by providing a pair

of vertically disposed wings or flanges 5 formed integrally with and extending out from the body of the base, and together forming an open topped horizontally extending recess or groove into which the tip of the iron may be readily thrust laterally. The opposed surfaces of these flanges may converge towards the base, as illustrated, in order to guide the iron into the proper position when it is placed in the stand.

The base is preferably hollow, and rising from it, and connected with it in any suitable manner, as by a screw-threaded joint, is a hollow standard or pipe 6 which at its top carries the insulating head. As shown in the present instance, the insulating head consists of a box-like structure of suitable material such as insulating fiber, comprising a base panel 7, to which are secured two end pieces 8 and 9, with two side panels 10 and 11 extending across and projecting beyond the ends of said end pieces, and, across the top of the side and end panels, a top panel 20 is placed. The parts which go to make up the insulating head are suitably fastened together by screws or the like.

Upon the head are carried the terminals of the electric circuit, the conductors of which are preferably led up into the inside of the head through the hollow base 3 and standard 6. In the present instance, two sets of terminals are provided, each comprising a spring contact member or clip 12 adapted to engage one terminal of the soldering iron, and another spring contact 13 adapted to engage the other terminal of the soldering iron. The clips 12 are supported upon a U-shaped metallic strap 14, the base of which extends through the interior of the insulating head, while the clips are secured to its arms which lie flat upon the outside of the end pieces of the head. The clips or contact members 13, in the present instance, are merely the re-curved portions of a metallic strap 15 which extends through the inside of the insulating head, and lies along the inner surface of the side panel 11 immediately beneath the strap 14. On the other side of the insulating head, and lying against and secured to the inner surface of the other side panel 10 is a like metallic strap 16, the re-curved ends of which also contact with the same terminal of the soldering iron which is contacted by the re-curved ends of the strip 15, and serve to balance the thrust of said ends. Terminal screws 17 and 18 with interposed washers, are mounted upon the straps 14 and 15, respectively, in the interior of the insulating head, and are adapted to secure the ends of the supply conductor 19 to the strips. The position of the contact terminals 12 and 13 within the hoods formed by the projecting top and sides of the insulating panels of the head, is such that there is little liability of accidental contact with them; and the manner in which the clips are formed to flare outwardly insures the guiding of the top of the iron into the proper position in the hood with its contacts in engagement with the clips.

The contact terminals of the soldering irons 2 are adapted to coöperate with the circuit terminals 12 and 13. In the present instance, for the purpose of illustration, I have shown an iron of the type described in Patent 786,542, issued April 4, 1905, to Brown and Holmes, but it will of course be understood that any iron may have its terminals adapted for use in accordance with my invention.

The iron as illustrated comprises a body portion 21 attached to a handle 22 of wood or other suitable material, and having projecting from its end a soldering tip or heating body 23, surrounded by a heating coil 24. The terminals of the heating conductor are connected with a pair of contact springs 25 and 26 mounted upon a terminal block 27 and properly insulated from each other, the free ends of the contact springs projecting into position to make contact with the conducting surfaces adapted to coöperate with them. In the present instance, I prefer to complete connection between the circuit terminals 12 and 13 and the heating coil terminals 25 and 26 by means of a double-ended plug secured to the end of the handle of the iron in any suitable manner, as by the metallic screw-threaded ferrule 28. The double-ended plug in the present instance comprises an insulating ring 29 having an outer screw-threaded flange arranged to engage the threads on the inside of the ferrule 28. The inner surface of the insulating ring 29 is screw-threaded to receive a tubular conducting sleeve 30, one part of which is of reduced diameter and externally threaded, and terminates in a smooth surface adapted to engage the contact spring 26, and the other part of which is of a diameter substantially equal to that of the insulating ring 29, and is adapted to make contact with the terminal clip 13 of the support. An insulating tip 31 is screwed into the tubular conducting sleeve 30 and is provided with a neck 32 extending centrally through and beyond the reduced portion of the conducting sleeve. The insulating tip and its associated neck are centrally perforated, and through the central perforation extends a metallic rod 33 having an enlarged head adapted to contact with the clip 12 of the support, the other end of the rod projecting beyond the insulating neck 32 and being adapted to engage the contact spring 25. The double-ended connecting plug thus constitutes a unitary structure, which may be removed bodily from the end of the handle of the

iron so that access may be had to the contact terminals of the heating coil in the interior thereof.

In the use of my invention, the supply circuit being connected with the terminals on the standard or support, the iron which it is desired to heat is placed in position in the support, the tip preferably being set in the pocket first, and the handle of the iron bearing the contact terminals being then thrust into place between the terminal clips mounted on the head of the stand. The circuit is now completed to the heating coil, and the current flowing therethrough quickly brings the heating body or tip of the iron to the temperature where it is enabled to melt the solder. When the proper temperature is reached the iron may be removed from the stand, whereupon the circuit through it is instantly and automatically interrupted, and the iron may be used in exactly the same manner that it would be if it were an ordinary soldering iron heated by fire, and without any liability of accidentally electrically shocking or burning the operator, or igniting the material upon which he is working. When the iron cools to the point where it requires to be re-heated, it may be replaced in the stand, any superfluous solder which has accumulated upon the soldering tip being, by the act of replacing it, jarred off into the pocket, where it may serve subsequently to keep the tip of the iron well tinned. If it is desirable to leave the iron in the stand or support beyond the time when it has reached a temperature sufficiently high for use, this may be done without danger of burning the iron, as the contact of the soldering tip with the large body of metal in the pocket and in the massive base of the stand acts to conduct away and dissipate any excess heat.

Although I have described more or less precise forms and details of construction, I do not intend to limit myself thereto, as I contemplate changes in form, proportion of parts and the substitution of equivalents as circumstances may suggest or render expedient without departing from the spirit or scope of my invention and claims. As for instance, although I have illustrated the stand or support as being of a peculiar construction, and with the pockets in which the soldering tips of the irons are adapted to rest, formed integrally with the base, and although I have shown a specific form of switch for controlling the flow of current to the iron, it will be understood that the invention may be equally well embodied in a standard or support having a quite different construction, that the pockets need not necessarily be formed as an integral part of the support, and that the form of the switch for automatically interrupting the flow of current to the iron when it is taken for use may be varied within wide limits without departing from the spirit of my invention.

I claim:

1. The combination with an electric soldering iron, of a support therefor provided with a pocket wherein the tip of the iron is adapted to rest, said pocket serving to receive the excess solder, whereby the iron is kept tinned.

2. The combination with an electric soldering iron, of a support therefor provided with a massive metallic base having a pocket adapted to receive the tip of the iron, whereby any excess heat is dissipated.

3. The combination with a plurality of portable electric heating devices, of a support therefor in the form of a standard having a metallic base provided with a plurality of pockets wherein the heating bodies of said devices are adapted to rest.

4. A support for electric soldering irons, comprising a metallic base having a pocket therein, a standard rising from said base, an insulating block carried on the top of said standard and contact terminals arranged upon said insulating block.

5. A supporting device for electric soldering irons comprising a metallic base having a plurality of pockets therein, a hollow standard rising from said base, an insulating head carried on the top of said standard, and a plurality of sets of contact terminals mounted on said insulating head.

6. A support for electric soldering irons, comprising a hollow base, a hollow standard rising therefrom, an insulating head carried at the top of said standard, two conducting strips passing through said head and projecting at both sides thereof, said conducting strips being adapted for connection with a conducting cord passing up through said hollow standard, metallic contact pieces arranged on both ends of the aforesaid conducting strips, said head being provided with insulating panels which project beyond and protect said pieces against accidental contact being made therewith.

7. A support for electric soldering irons, comprising a base, a standard rising therefrom, an insulating head carried at the top of said standard, contact terminals mounted on said insulating head and adapted to engage coöperating terminals carried on an associated soldering iron, and insulating ledges projecting from said insulating head and serving to guard against accidental contact with said terminals.

8. In an electric soldering apparatus, the combination with the heating body of a soldering iron, and its associated handle, of a heating coil for said body, contact terminals for said heating coil carried within said handle, contact terminals having connection with a source of electrical current,

and a double ended plug carried upon said handle and adapted to complete connection between the aforesaid sets of terminals.

9. A contact device for an electric soldering iron comprising two contact springs 25 and 26 mounted within the handle of said iron and connected with the heating coil thereof, and a double ended contact plug secured upon the end of the handle of the iron, said plug comprising an insulating body 31, a metallic rod 33 extending centrally therethrough and projecting therefrom at both ends, a second contact part 30 arranged concentrically about said central rod and insulated therefrom, and an insulating ring 29 disposed about said last mentioned contact part, said contact parts having surfaces at one end adapted to engage the aforesaid contact springs within the handle of the iron, and contact surfaces at the other end of the plug adapted to engage a spring jack connected with the source of current supply.

10. The combination, with an electric soldering iron having a heating body and tip and a handle provided with contact members, of a support provided with a horizontal recess adapted to receive said iron laterally and support it vertically upon its tip, said support having contact terminals connected with a source of electric current and adapted to make contact with the contact members upon said soldering iron when the latter is in place thereupon to complete the circuit through the iron.

11. The combination, with an electric soldering iron having a heating body and tip and a handle provided with contact members, of a support provided with a horizontal recess adapted to receive said iron laterally in position to rest vertically upon its tip, said support having contact terminals connected with a source of electric current and adapted to make contact with the contact members upon said handle of the iron when in place thereupon to complete the circuit through the iron and also adapted to support the iron laterally.

12. The combination, with an electric soldering iron having a heating body and tip and a handle provided with contact members, of a support provided with a horizontal recess adapted to receive the tip of the iron to support it vertically thereon, said support being also provided with contact terminals connected with a source of electric current and adapted to make contact with the contact members upon said handle of the iron when in place thereupon to complete the circuit through the iron and also adapted to support the iron laterally.

13. The combination, with an electric soldering iron having a heating body and tip and a handle provided with contact members, of a standard for supporting said iron, an insulated circuit terminating in switch contact springs arranged at the upper end of said standard and adapted to make contact with the contact members on said handle of the iron to complete the circuit through the iron, and an insulating hood inclosing said switch contact springs.

14. A support for electric soldering irons comprising a base, a central vertical standard, a plurality of sets of radially disposed contact terminals mounted upon said standard, and an insulated source of current in electrical connection with said contact terminals.

15. The combination, with an electric soldering iron having a heating body and tip and a handle provided with contact members, of a support comprising a base equipped with a plurality of open topped pockets or recesses each adapted to receive the tip of the soldering iron to support it in vertical position, a central vertical standard having arranged at its upper end a like number of sets of radially disposed and laterally accessible spring contacts, each set being arranged to make contact with the contact members on said handle and also to support the iron against lateral displacement, whereby a soldering iron supported vertically in any one of said recesses may have its circuit completed and be supported laterally by the corresponding set of contacts.

16. The combination, with an electric soldering iron having a soldering tip and a handle provided with contact terminals and with a source of electric current, of supporting means comprising a V-shaped groove arranged to support the iron vertically upon its tip, and holding means arranged to receive the handle and support it laterally and also complete the circuit through the iron.

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