S. TROOD.

SOLDERING IRON.

APPLICATION FILED JULY 29, 1913.

1,130,218.

Patented Mar. 2, 1915.

Fig. 1.

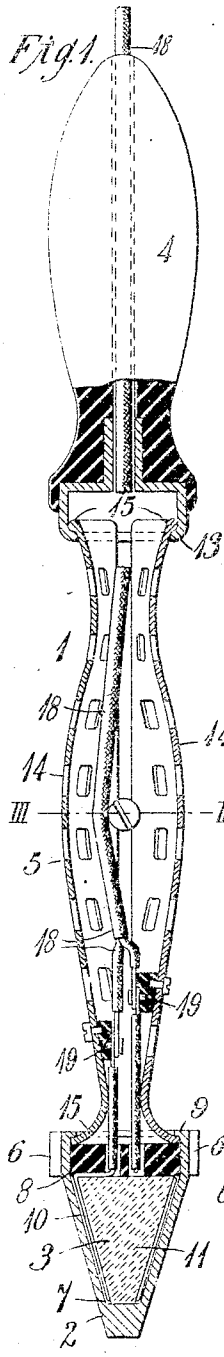


Fig. 2.

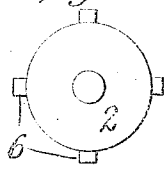


Fig. 3.

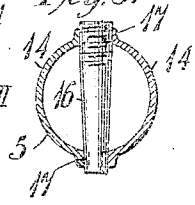


Fig. 4.

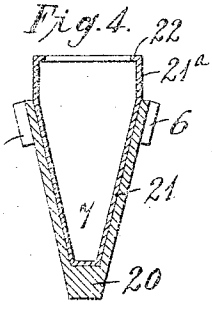


Fig. 5.

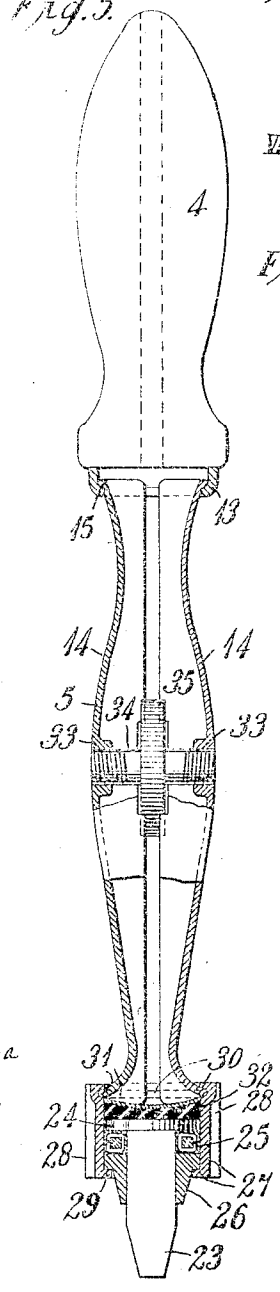


Fig. 6.

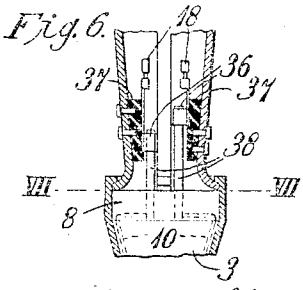


Fig. 7.

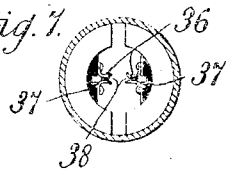
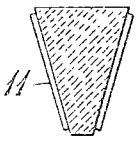


Fig. 8.



Fig. 9.



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SAMUEL TROOD, OF WILKINSBURG, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

SOLDERING-IRON.

1,130,218. Specification of Letters Patent. Patented Mar. 2, 1915.

Application filed July 29, 1913. Serial No. 781,737.

To all whom it may concern:

Be it known that I, SAMUEL TROOD, a citizen of the United States, and a resident of Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Soldering-Irons, of which the following is a specification.

My invention relates to electric heating apparatus and it has special reference to electric soldering-irons and the like.

One object of my invention is to provide an apparatus of the above-indicated character which shall be simple, inexpensive and durable in construction, efficient and reliable in operation and adapted for ready assembly or dismounting.

Another object of my invention is to provide a soldering-iron embodying a readily renewable heater and a removable working member or tip provided with means for preventing any likelihood of damage during the process of repointing, etc.

In the older types of electric soldering-irons many defects and disadvantages may be found. The first cost is high and no provision is made for the renewal of the heater; the weight is excessive and not properly balanced by reason of the iron cylinder employed with the heating element; the copper tip, although renewable, is of a form easily damaged and facilities for cleaning the iron are not provided; and many irons embody threaded joints, which are unsuitable for employment in apparatus of this class, by reason of the possibility of destruction through the combined action of heat and acid fumes.

According to my present invention, I provide an electric soldering-iron or the like embodying means which singly or collectively obviate the above-mentioned disadvantageous features.

The novel and advantageous features residing in my invention will be more clearly brought out in the description thereof and in the accompanying drawing, in which—

Figure 1 is a view in longitudinal section of a soldering-iron constructed in accordance with my invention, Fig. 2 is a view thereof in end elevation, Fig. 3 is a sectional view on the line III—III of Fig. 1, Figs. 4 and 6 are sectional views of modifications of portions of the device shown in Fig. 1, Fig. 5 is a similar view to Fig. 1 of a modification of my invention, Fig. 7 is a partial view on the line VII—VII of Fig 6, and Figs. 8 and 9 are plan and longitudinal sectional views, respectively, of a portion of the apparatus shown in Fig. 1.

Referring to the drawing, an electric heating apparatus, here shown as a soldering-iron 1, comprises a removable working member or tip 2, an electric heater 3 removably disposed therein, a suitable handle 4, and an intermediate expansible member 5. The tip 2 may have any desired exterior form. A plurality of outwardly projecting lugs 6, circumferentially spaced at the rear end thereof, are adapted for being held in the jaws of a vise for repointing, cleaning, etc., thereby preventing damage to the tip 2 or to the inclosed heater 3. The tip 2 has a longitudinally disposed, forwardly-converging, and substantially conical recess 7 in the front of which the conical heater 3 and in the rear of which a pad 8 of suitable heat-insulating material are disposed, and also is provided with an inwardly-extending annular flange 9, disposed within the rear end of the recess 7 for a purpose hereinafter specified.

The conical heater 3 may be of any suitable type. Preferably a conducting element 10 is wound in the grooves of a fluted conical spool 11 and then is smoothly covered with a suitable electrically-insulating and heat-conducting cement. The handle 4 of any suitable form is provided with an inwardly-extending annular flange 13 for cooperation with the member 5, as hereinafter described. The intermediate expansible member 5 comprises two oppositely-disposed and approximately semi-cylindrical perforated shells 14 provided with outwardly-extending end flanges 15 that are respectively adapted to expansibly engage the flange 9 of the tip 2 and the flange 13 of the handle 4. The split expansible member 5 is forced into operative engagement with the flanges 9 and 13 by an adjustable screw 16 that engages oppositely disposed similar segmental openings 17 in each of the perforated shells 14. A plurality of supply conductors 18 extend through the handle 4 and the member 5 to a plurality of suitably disposed terminal members 19, to which the ends of the conducting element 10 are suitably secured.

It will be seen that, in the structure above described, very little radiated heat from the

tip 2 will reach the vicinity of the handle 4 and that any heat from the supply conductors 18 will readily be dissipated through the perforations in the member 5. It will also be noted that my soldering iron may very easily be assembled or taken apart.

In the modification of my invention shown in Fig. 4, I employ a tip 20 provided with the lugs 6 and having the conical recess 7. Removably disposed in the recess, is a tubular shell 21 for receiving the heater 3 and having a rearwardly-disposed cylindrical extension 21^a that is provided with an inwardly extending annular flange 22 located within the rear end thereof for engaging the end-flange 9 of the intermediate expansible member 5.

In Fig. 5, a tip 23 has a rear end flange 24; a heater element 25 of any suitable type is disposed around the tip adjacent to the flange and a substantially conical ring 26 is disposed around the tip adjacent to the heater. A cylindrical incasing member 27 having a plurality of outwardly-projecting lugs 28 is provided at one end with an inwardly-extending annular flange 29 for engaging the conical ring 26 and, at the other end, with an interiorly disposed circumferential groove 30 for receiving the curved clamping end-flange 31 of the expansible member 5. A suitable pad of heat-insulating material 32 is disposed intermediate the rear face of the flange 24 and the expansible member. A plurality of threaded alined side openings 33 are provided in the central portion of the shells 14 that comprise the member 5 and a double-ended screw 34 provided with a centrally-located knurled disk 35 that extends on both sides beyond the member 5, runs in the openings 33 for forcing the end flanges 15 and 31 of the shells 14 into expansible engagement with the flange 13 and groove 30 of the handle 4 and the incasing member 27, respectively.

In Figs. 6 and 7 is shown means for detachably connecting the heater 3 to the supply conductors 18. A pair of offset contact clips 36 are suitably secured to insulating blocks 37 that are disposed within the member 5 and are severally connected to the supply conductors 18. The ends 38 of the heating conductor 10 are suitably disposed to resiliently engage the clips 36.

I do not wish to be restricted to the specific structural details herein set forth, since my invention is adapted for a much wider application. I, therefore, desire that only such limitations shall be imposed as are indicated in the appended claims.

I claim as my invention:

1. A heating apparatus comprising a working member, a removable electric heater coöperating therewith, a handle member, and expansible means for associating said working member and said handle member.

2. A soldering-iron comprising a recessed working member, an electric heater removably disposed therein, a handle member, and adjustably expansible means for associating said working member and said handle member.

3. A soldering-iron comprising a conically-recessed working member, a conical electric heater removably disposed therein, a handle, and an adjustably expansible member for engaging said working member and said handle.

4. A soldering-iron comprising a conically-recessed tip provided with a plurality of exteriorly-disposed lugs, a conical electric heater removably disposed in said tip, a handle, a split member disposed intermediate said tip and said handle and adjustable means for causing said split member to expansibly engage them.

5. A soldering-iron comprising a conically-recessed tip having an interior annular groove and provided with a plurality of exteriorly-disposed lugs, a conical electric heater removably disposed in said tip, a hollow handle having an interior annular groove, a split perforated tube disposed intermediate said tip and said handle and having exteriorly-disposed end flanges, an adjustable screw for engaging the several parts of said split tube and forcing the end flanges thereof into expansible engagement with the said internal grooves, and a plurality of supply conductors for said heater severally extending through said handle and said perforated tube.

6. A soldering-iron comprising a recessed tip, a shell disposed in said tip, an electric heater removably disposed in said shell, a handle, a split member disposed intermediate said shell and said handle, and adjustable means for causing said split member to expansibly engage the same.

7. A soldering-iron comprising a conically-recessed tip provided with a plurality of exteriorly disposed lugs, a conical shell removably disposed in said tip and having an inwardly-extending annular flange, a conical electric heater removably disposed in said shell, a hollow handle having an interior annular groove, a split perforated tube disposed intermediate said shell and said handle and having exteriorly-disposed end flanges, an adjustable screw for engaging the several parts of said split tube and forcing the end flanges thereof into expansible engagement with the annular flange on said shell and within the annular groove in said handle, and a plurality of supply conductors for said heater severally extending through said handle and said perforated tube.

8. A soldering-iron comprising a tip, an

electric heater removably disposed around said tip, an incasing member surrounding said heater, a handle, a split member disposed intermediate said incasing member and said handle, and adjustable means for causing said split member to expansibly engage the same.

9. A soldering-iron comprising a tip having a flange disposed at its inner end, an electric heater removably surrounding said tip and abutting against said flange, a conical ring surrounding said tip and abutting against said heater, an incasing member engaging said ring and provided with a plurality of exteriorly disposed lugs and an inwardly-extending annular flange, a hollow handle having an interior annular groove, a split perforated tube disposed intermediate said incasing member and said handle and having exteriorly-disposed end-flanges, an adjustable screw for engaging the several parts of said split tube and forcing the end flanges thereof into expansible engagement with the annular flange on said shell and within the annular groove in said handle, and a plurality of supply conductors for said heater severally extending through said handle and said perforated tube.

10. A soldering iron comprising a recessed working-member, an electric heater removably disposed in said member, a hollow handle, an expansible member disposed intermediate said working member and said handle, adjustable means for causing said expansible member to expansibly engage the working member and the handle, a plurality of supply conductors for said heater severally extending through said handle and said expansible member, and means for detachably connecting said heater to said supply conductors.

11. A soldering iron comprising a conically-recessed tip provided with a plurality of exteriorly-disposed lugs, an electric heater removably disposed in said tip, a hollow handle, a split member disposed intermediate said tip and said handle, an adjustable screw for engaging the parts of said split member and forcing them into engagement with the said tip and the said handle, a plurality of supply conductors for said heater severally extending through said handle and said split member, and a plurality of resilient contact members for detachably connecting said heater to said supply conductors.

In testimony whereof I have hereunto subscribed my name this 22nd day of July, 1913.

SAMUEL TROOD.

Witnesses:
W. P. COLEY,
B. B. HINES.