Sept. 17, 1935. J. D. FORNEY 2,014,728

ELECTRIC SOLDERING TOOL

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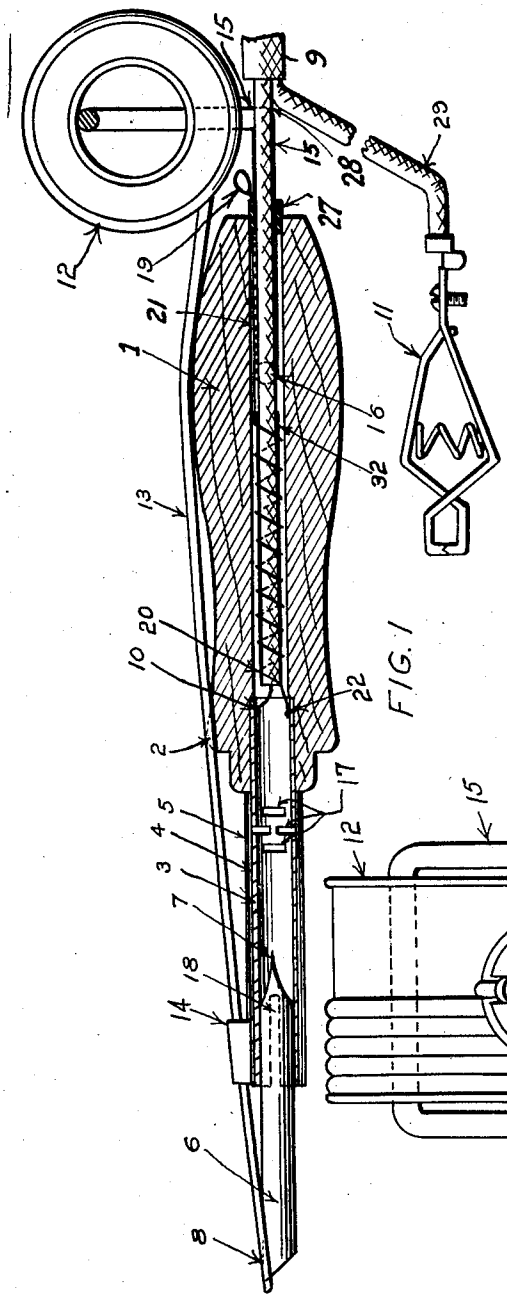


FIG. 1

FIG. 2

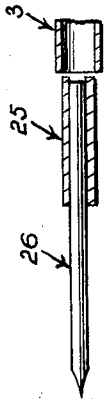


FIG. 3

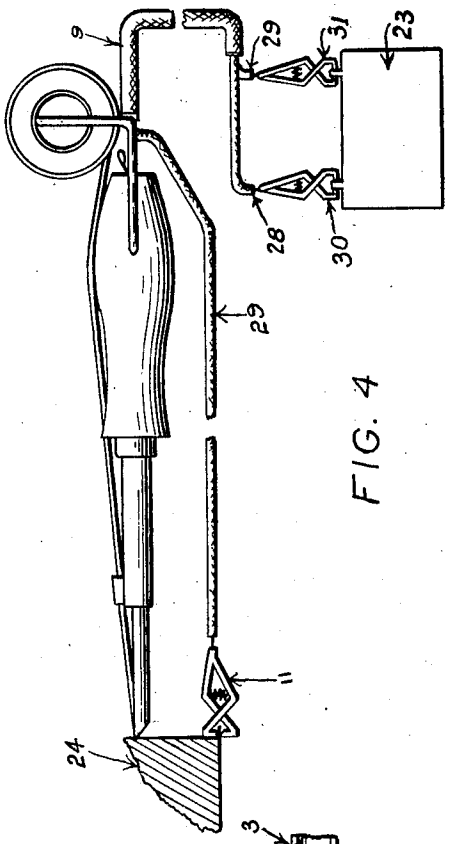


FIG. 4

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ELECTRIC SOLDERING TOOL

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4 Claims. (Cl. 219—27)

The invention relates to improvements in soldering tools using a carbon point. The objects of the improvements are: first to provide a simple, convenient method of feeding flux-filled or acid core solder in wire or strip form to the point of the tool; second, to provide a resistance coil built into an insulating handle to enable one to work on light delicate work in which an excess amount of heat is disastrous; third to have a carbon point adjustably mounted to vary the extent of projection from the holder; fourth, to mount the carbon point so that it is reversible so as to permit either end thereof to be used; each end of said point being different, extending the usefulness of the tool to a broader variety of work. This mounting also makes possible quicker exchanges and replacements; fifth, to insulate the tool entirely so no part can make electrical contact except the carbon point, eliminating the danger of shorting which would injure the battery upon which the tool is used, or burn the wires of the tool. The insulation on the shank also prevents wastage of heat; sixth, to provide a means of holding a complete roll of solder to the handle of the tool; seventh, to provide a smaller bushing to be used in conjunction with the shank, fitting inside of said shank to hold a smaller carbon point, of such diameter as to permit one to work on articles that are otherwise inaccessible with the main point; and eighth, the provision of a method of preventing the heat generated at the point and transferred to the shank from entering the handle, which being wood as a rule, will scorch with excess heat. This also keeps the heat nearer the point which makes for a more efficient tool and makes possible the use of a highly conductive metal, such as copper, in the shank.

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

Figure 1 is a longitudinal sectional view through the center of the improved tool.

Figure 2 is an end view from the electrode end.

Figure 3 is a sectional view of the small size carbon point with bushing for use in conjunction with the main shank.

Figure 4 is a side elevation illustrating the method of use on average materials.

The soldering tool comprises a handle 1 of some insulating material such as wood; a metal tube 3 preferably of copper, one end of which is driven into said handle, the other end being split lengthwise at 18 (cuts being on opposite side of tube) about one inch to admit the carbon point 6 which is of practically the same bore as the inside of said tubing. The tubing 3 is partially cut at 17, about four cuts as shown being sufficient to prevent excess heat from entering the handle 1; these louvers or cuts also keep the heat nearer the point, as copper which is usually used is highly conductive. Each of the four cuts extends approximately one third the distance thru the tube.

A conductor 28 extends into the chamber 21 of the handle 1, and fastens to the tubing 3 at 10. The resistance coil 20 slides over the conductor 28, being insulated from said conductor by asbestos 32, or other suitable material. One end of resistance coil 20 fastens to the tubing 3 at 22; the other end of said coil projecting from handle 1, making a loop 19, such that a spring clip can be fastened to it. The tube 3 is covered with asbestos 4, or other suitable material, then held in place by a metal covering 5.

The solder guiding tube 14 is mounted on this sheet metal covering 5. A slight groove 2 is cut in the handle, to help hold the solder 13. The solder spool holder 15 is mounted at the back of the handle 1, and held in place by slots on opposite sides of handle 1, running parallel with said handle, and holes 16, 16, of shallow depth, in which the ends of said solder holder fit.

The conductor 28 has a rubber insulator 27 where it leaves the handle and has on its outer end a spring clip 30 which fastens to the negative terminal of the battery 23. The other conductor 29 has both ends provided with spring clips 11 and 31, respectively. Clip 31 fastens to the positive terminal of the battery 23. For average work the spring clip 11 fastens to the object, such as 24, to be soldered. The contact is then made by touching the carbon point 6 to the object to be soldered, as illustrated in Figure 4.

For soldering delicate work such as jewelry, special radio work, etc., where an excessive amount of heat must be avoided, spring clip 11 fastens to the resistance coil 20 at 19, and spring clip 30 is disconnected. The object to be soldered is then brought in contact with the negative terminal, either by touching directly to the terminal or using another wire for contact, or since the tool is intended to be used primarily on automobiles, can be brought in contact with any bare metal on the framework on the car.

In Figure 1, numeral 7 refers to the chisel point on carbon 6, said carbon being reversible, making a still wider variety of uses for the tool. Thus

special work can be done that cannot be accomplished otherwise.

In Figure 1, numeral 8 indicates the sheathing covering the two conductors and holding them together where convenient to do so. The spool of solder is indicated by numeral 12.

Referring to Figure 3, numeral 25 indicates a bushing which fits into the tubular shank 3 and holds a carbon point 26, which is approximately one-half the diameter of the carbon point 6.

This small carbon enables one to do work that is inaccessible with the larger one.

The solder is fed to the point of the tool by a firm forward pressure of the thumb applied at groove 2 on the handle 1. Solder can also be quickly returned from the point by a backward motion of the thumb.

The solder touches the carbon point 6 at the groove 8, and being surrounded on three sides by the point it is quickly fused to the proper temperature for the soldering and runs readily into place on the automatically heated article to be soldered. Since the solder touches the carbon point at only a small space, about one-eighth inch, and is open on one side, there is no trouble caused by the solder sticking or clogging; or on the other hand melting and allowing the acid or flux to escape or fuse before touching the article to be soldered. Thus there is no waste of solder even when the tool becomes excessively hot as the solder guiding tube 14 is so tilted that it draws the solder abruptly from the groove and away from the work. This angle being governed by bending the tube 14 to conform with the projection of the carbon from the tubular shank 3.

I am aware that prior to my invention, electric soldering irons using a carbon point were in existence, therefore I do not claim such broadly; but

I claim:

1. A soldering tool of the nature described comprising an insulating handle having a chamber extending parallel thru its center, a partially split metal tubular shank projecting from and fastened to one end of said handle, a conductor connected to one end of said tube or shank, a carbon point or pencil fitted in the other or split end, an insulating material covering the exposed tube, a metal sheeting or tubing covering said insulation, a solder guiding tube mounted on said sheeting.

2. A soldering tube of the nature described comprising an insulating handle having a chamber extending parallel thru its center, a resistance coil mounted in said chamber and fastened at one end to the tubular shank, an insulating sheath covering the inside of said coil, and an extension of said coil to the outside of said handle such that by proper use of the conductors, a resistance can be introduced in the circuit to the carbon point; an extra conductor, on each end of which is mounted a spring clip.

3. A soldering tool of the nature described comprising an insulating handle, a metal tubular shank projecting from one end of said handle with louvers or grooves cut in said tube along its sides, a split arrangement at one end of said tube which admits a carbon pencil or stick of proper bore, a groove cut in one end of said carbon, a chisel point on the opposite end, a mounting of said carbon pencil in said split tubular shank such that the pencil is reversible and the projection from said tubular shank is easily adjustable to the work at hand.

4. A soldering tool of the nature described comprising an insulating handle, a solder guiding groove in said handle, together with a solder spool holding device mounted on said handle, a partially split tubular shank extending from, and gripped by said handle, a bushing to slip into said tubular shank, and a carbon pencil of smaller diameter to fit into said bushing.

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