Sept. 8, 1942. C. F. BARNUM 2,295,195

ELECTRIC SOLDERING TOOL

Filed July 5, 1941

Fig. 2.

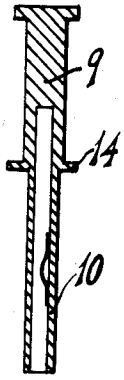


Fig. 1.

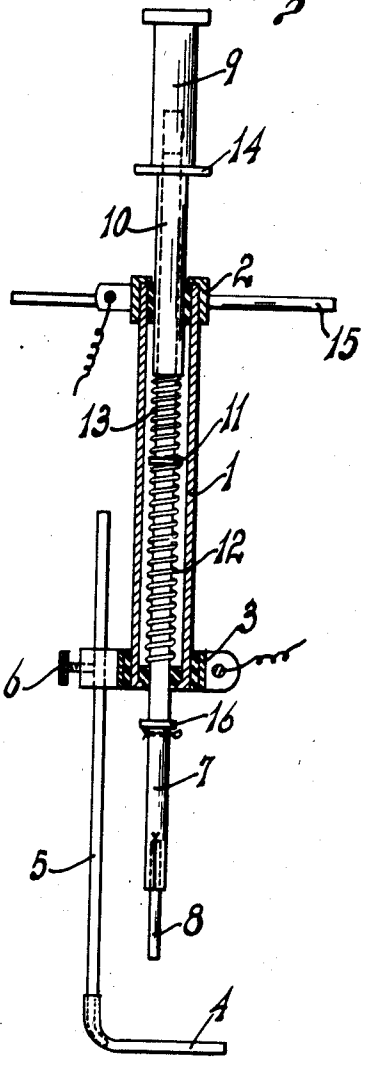


Fig. 3.

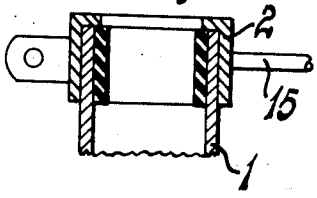
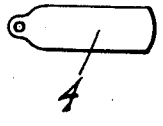


Fig. 4.



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ELECTRIC SOLDERING TOOL

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3 Claims. (Cl. 219—26)

This invention relates to an electric soldering tool and the prime object of my invention is to provide a novel soldering tool which is manipulated with one hand. The operator is able with one hand to clamp the work in the tool and to turn the electric current on and off while holding the work in the tool.

Another object is to provide a novel electric soldering tool in which the foot is adjustable so that work of various sizes can be effectively handled.

A feature of my invention resides in the novel construction and arrangement of the foot which is sturdy, and also is formed of a material which will not bond with the solder in the normal operation of the tool.

Still another object is to provide a novel soldering tool of the make stated, which is simple in construction and effective in operation.

Other objects, advantages and features of invention may appear from the accompanying drawing, the subjoined detailed description and the appended claims.

In the drawing:

Figure 1 is a longitudinal sectional view of the housing portion of the tool, the remaining elements being shown in elevation.

Figure 2 is a longitudinal sectional view of the top sleeve.

Figure 3 is an enlarged fragmentary transverse sectional view of the upper part of the housing and the upper contact collar.

Figure 4 is a top plan view of the foot.

Referring more particularly to the drawing, the numeral 1 indicates a housing preferably tubular in form, and is also made of a suitable insulating material. A contact collar 2 is fixedly attached to the upper end of the housing 1, and one electric wire is attached to this collar. A second collar 3 is attached to the lower part of the housing 1, and the second electric wire extends to this last named collar. A foot 4 is fixedly attached to, or is formed on, a rod 5, and this rod is adjustable in the collar 3 and is held in adjusted position by a set screw 6, or the like. The foot 4 is formed of a suitable material which will not bond with the average solder. Preferably aluminum is used. The foot has substantial width so that the work will rest on this foot, and can be held in position, as will be further described.

A shaft 7 extends longitudinally through the housing 1 and projects from the top and bottom of this housing. A carbon tip 8 is mounted on the lower end of the shaft 7, and engages the work during soldering operations, as will be further described. A sleeve 9 is movably mounted on the upper end of the shaft 7. That is, the shaft will have a limited longitudinal movement in the sleeve. The lower part 10 of the sleeve 9 extends into the housing 1 substantially as shown. A collar 11 is formed on the shaft 7, and is normally positioned in the housing 1. A coil spring 12 bears against the collar 11 and against the lower part of the housing 1. A second coil spring 13 bears against the collar 11 and against the lower portion 10 of the sleeve 9. The coil spring 12 is materially weaker in tension than the spring 13.

A flange 14 is provided on the sleeve 9, and this flange is adapted to form contact with the upper collar 2 when the operator depresses the sleeve and carries the shaft 7 downwardly against the work. In operation, the part to be soldered is placed on the foot 4 immediately under the carbon tip 8. The operator then grasps the tool in one hand and presses against the top of the sleeve 9. This causes the spring 12 to be compressed and moves the shaft 7 downwardly until the tip 8 bears against the work. On further pressure, by the operator, the sleeve 9 is caused to move downwardly over the shaft 7, compressing the stronger spring 13. This last movement continues until the flange 14 bears against the top of the collar 2. The current is then fed from the collar 2 downwardly through the shaft 7, tip 8, through the work, thence to the foot 4, rod 5, and back to the bottom collar 3. Resistance in the carbon tip will cause this tip to heat, allowing the solder to melt and bond the parts of the work together. When the solder has been flowed in place, the electric circuit can be broken by relieving pressure on the sleeve 9, permitting the spring 13 to expand and move the flange 14 away from the contact collar 2. The tip 8 still engages the work, and will hold the parts in proper position. Since the electric current is broken, no heat is being generated, consequently the solder will cool while the parts are still being held in proper position, and the operator can even remelt the solder if desired, by again contacting the flange 14 with the collar 2.

This entire operation is performed with one hand, and the other hand of the operator is free to hold the work, or for other purposes.

To facilitate grasping the tool, a pin 15 may be provided on the upper collar 2. A stop collar 16 is removably mounted on the shaft 7, and this stop collar limits the upward movement of the shaft in the housing 1.

The time required to complete a job of soldering is materially reduced with my tool, due to the fact that a fast heat is accomplished, and only enough heat is supplied to melt the solder, due to the fact that the current can be turned on and off at the will of the operator. Since only sufficient heat is applied to melt the solder, less time is required to cool after the joint is soldered, thus the complete soldering time is reduced. The tension of the spring **13** is such that the proper pressure is applied on the tip **8** against the work, thus accomplishing the proper flow of current in order to properly and quickly melt the solder and complete the joint.

Having described my invention, I claim:

1. An electric soldering tool comprising a housing, a contact collar mounted at the upper end of the housing, a second contact collar mounted adjacent the lower end of the housing, a foot mounted on the second collar and spaced below the housing, a shaft extending longitudinally through the housing, the lower end of said shaft being adapted to engage the foot, and spring means engaging the shaft and urging said shaft in a direction away from the foot, a sleeve mounted on the upper end of said shaft, spring means engaging said sleeve and urging the sleeve away from the housing, said sleeve being adapted and arranged to engage the first named collar to close the electric circuit.

2. An electric soldering tool comprising a housing, a contact collar mounted at the upper end of the housing, a second contact collar mounted at the lower end of the housing, a foot adjustably mounted in the second named collar, a shaft extending longitudinally through the housing, the lower end of said shaft being engageable with the foot, spring means engaging the shaft and urging the shaft in spaced relation to the foot, a sleeve slideably mounted on the upper end of the shaft, spring means engaging the sleeve and urging the sleeve in spaced relation to the shaft, a flange on the sleeve, said flange being adapted to engage the first named collar to close the electric circuit on manipulation by the operator.

3. An electrical soldering tool comprising a housing, a contact means mounted on the housing, a contact collar mounted on the housing, a foot mounted on said collar and spaced below the housing, a shaft extending longitudinally through the housing, the lower end of said shaft being adapted to engage the foot, spring means engaging the shaft and urging said shaft in a direction away from the foot, contact means on the shaft, said contact means being engageable with the contact means on the housing on depression of said shaft, whereby the contact is closed between the shaft and the first-named contact means.

CHARLES F. BARNUM.