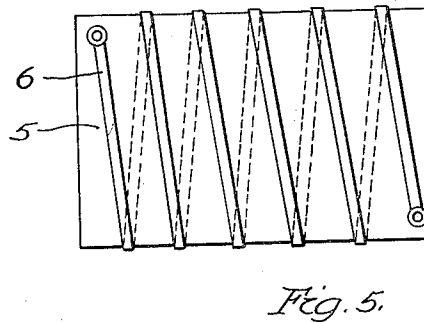
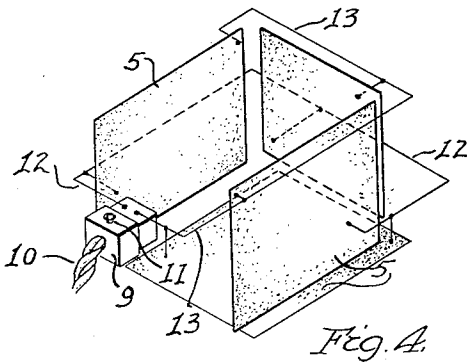
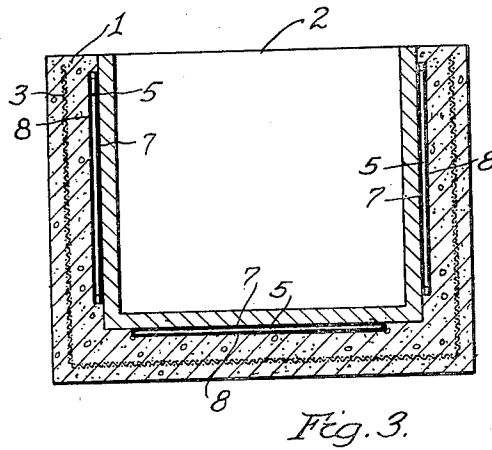
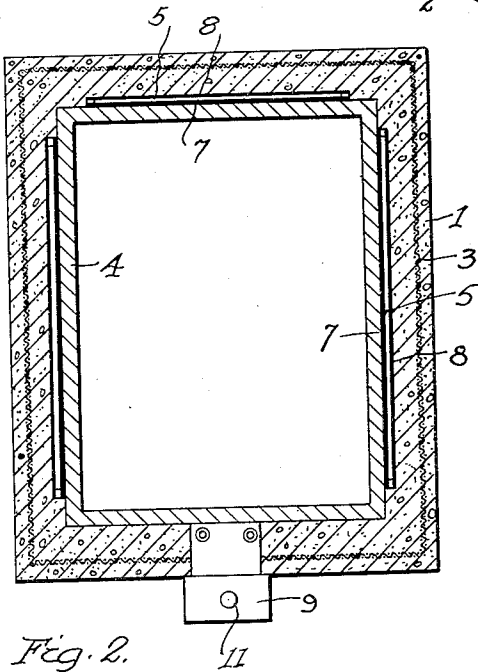
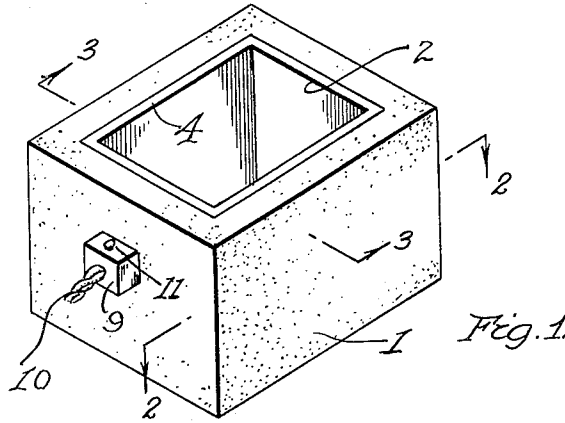


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ELECTRIC SOLDER BOX
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ELECTRIC SOLDER BOX

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7 Claims. (Cl. 219-44)

The present invention pertains to an electric solder box, and the principal object is to overcome many of the difficulties experienced with gas heated boxes.

Among these difficulties is the fact that considerable heat is wasted in a gas heated box, due to the fact that the flame is not particularly confined. As a result, considerable heat does escape into the air, together with fumes which are detrimental to the worker. Also, the outside of the box becomes very hot, and the danger of flesh burns is substantially increased. Because of the loss of heat as stated above, the solder is slow to melt. Since the usual gas heated box is not insulated, the solder is also quick to chill.

The present invention overcomes these objections by providing an electrically heated box with enclosed heating elements. The box is made of concrete or some other heat-insulated material with a metal liner for containing the solder. The heating elements are embedded in the insulation and are close to the bottom and two or three of the side walls of the liner. Preferably, one side of the box is without a heating element, and in this side is mounted a thermostatic control switch which is affected by the average temperature of the box rather than by the temperature of the heating elements.

This device melts the solder in a very much shorter time than a gas furnace and holds the heat considerably longer, so that the solder does not chill quickly. There are no fumes around the box and no excessive heat, which is an indication that little heat is lost. The thermostat may be set to shut off the current when the device has attained the proper temperature for keeping the solder in a molten condition.

The apparatus is entirely self-contained and, for this reason, can be made portable in small sizes by mounting on a floor truck or an overhead carriage. An extension cord extends from the thermostat, and it is only necessary to plug the cord into the nearest electrical outlet.

The invention is fully disclosed by way of example in the following description and in the accompanying drawing in which:

Figure 1 is a perspective view of the device,
Figure 2 is a section on the line 2-2 of Figure 1,

Figure 3 is a section on the line 3-3 of Figure 1, and

Figure 4 is a wiring diagram, illustrating also the relative position of the electrical elements.

Figure 5 is a view of one of the heating elements.

Reference to these views will now be made by use of like characters which are employed to designate corresponding parts throughout.

In Figures 1, 2 and 3, the device is illustrated as comprising a box 1 having an open top 2. The body of the box consists of a suitable heat-insulating material, and for this purpose concrete is preferred. The concrete is reinforced by an embedded screen 3 in all its sides. Within the box is a liner 4 of a material, such as steel, unaffected by molten solder and having no detrimental effect thereon.

In the bottom and at least two of the side walls of the box is embedded an electric heating element of the character illustrated in Figure 5. Each such element consists of a sheet 5 of mica or other insulation with a resistance ribbon 6 wound thereon in the form of a spiral. Each element is placed between two insulating sheets 7 and 8, such as mica, as shown in Figures 2 and 3. These units are assembled in juxtaposition to the outer surfaces of the liner 4 before the concrete is poured.

In the side of the box that is not fitted with a heating element, a thermostatic control switch 9 is inserted as may be seen in Figures 1 and 2. An electric cord 10 extends from the switch and is adapted to be plugged into an electric outlet in the well known manner. The switch has a regulating knob 11 for setting the operating temperature. The switch is of well known construction, and the details thereof are therefore not shown.

One of the terminals of the switch is connected by a branched conductor 12 to one end of each winding 6. Similarly, the other terminal of the switch is connected by a branched conductor 13 to the remaining ends of the windings. Each winding is thus connected across the line and receives the full line voltage.

In the operation of the device, the solid solder is placed in the box and the current turned on, either by plugging in or by a switch in the conductor 10. The knob 11 is set so that it opens the circuit when the solder is thoroughly molten. It has been found by experiment that the solder melts in a fraction of the time required by a gas furnace and remains molten for a considerably longer period than in a gas heated device, after the heat has been cut off. There is no excessive heat around the outside of the box, and in fact the outer surfaces of the box are not dangerously hot. This is not only a safety factor in protecting the operator from burns but also indi-

cates that the device is operating efficiently, because of the enclosure of the heating elements in the insulated box 1. The liner 4 adjacent to the heating element is, on the other hand, a good conductor of heat and conveys heat from the elements to the solder within the liner.

As previously stated, due to this means and method of heating, there are no unpleasant fumes over the box to annoy the operator and perhaps affect his health. The device may be made in any desired size, and it will be evident that the smaller sizes can easily and practically be made portable. In this respect the device need only be placed on a suitable carriage, since the operating current is obtained merely by plugging the cord 10 into a convenient electrical outlet.

In the smaller sizes, at least, the element 5, 6 opposite the thermostatic switch may be eliminated. The use thereof in larger sizes is optional, according to requirements.

Although a specific embodiment of the invention has been illustrated and described, it will be understood that various alterations in the details of construction may be made without departing from the scope of the invention, as indicated by the appended claims.

What we claim is:

1. An electric solder box comprising a box having walls of concrete, a metal liner therein, electric heating elements molded in the walls of said box and substantially in contact with the walls of said liner, and an insulating sheet enclosing each element to insulate it from said liner and to protect it from the concrete.
2. An electric solder box comprising a box having walls of concrete, a metal liner therein, electric heating elements molded in the walls of said box and substantially in contact with the walls of said liner, and an insulating sheet enclosing each element to insulate it from said liner and to protect it from the concrete, each element being substantially of the same length and breadth of the liner wall adjacent to which it is disposed.
3. An electric solder box comprising a box having walls of concrete, a metal liner therein, electric heating elements molded in the walls of said box and substantially in contact with the walls of said liner, and an insulating sheet enclosing each element to insulate it from said liner and to

protect it from the concrete, each element consisting of a sheet of insulation with flat resistance ribbon wound spirally thereon.

4. An electric solder box comprising a box having walls of concrete, a metal liner therein, electric heating elements molded in the walls of said box and substantially in contact with the walls of said liner, and an insulating sheet enclosing each element to insulate it from said liner and to protect it from the concrete, and a screen molded in said box near the outer surfaces thereon and substantially co-extensive with said surfaces.

5. An electric solder box comprising a box having walls of concrete, a metal liner therein, electric heating elements molded in the walls of said box and substantially in contact with the walls of said liner, and an insulating sheet enclosing each element to insulate it from said liner and to protect it from the concrete, and a thermostatic switch molded in said box and connected in parallel with said elements, said elements being connected in parallel to each other.

6. An electric solder box comprising a box having walls of concrete, a metal liner therein, electric heating elements molded in the walls of said box and substantially in contact with the walls of said liner, and an insulating sheet enclosing each element to insulate it from said liner and to protect it from the concrete, each element consisting of a sheet of insulation with flat resistance ribbon wound spirally thereon, said elements being connected in parallel to each other, and a thermostatic switch molded in said box and connected to said elements.

7. An electric solder box comprising a box having walls of concrete, a metal liner therein, electric heating elements molded in the walls of said box and substantially in contact with the walls of said liner, and an insulating sheet enclosing each element to insulate it from said liner and to protect it from the concrete, each element being substantially of the same length and breadth of the liner wall adjacent to which it is disposed, one of the liner walls having no element adjacent thereto, and a thermostatic switch molded in said box adjacent to said liner wall.

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