Dec. 13, 1927. 1,652,409

L. H. MOULTHROP

MEANS FOR FUSING MATERIAL AND DELIVERING THE SAME

Filed April 17, 1926 2 Sheets-Sheet 1

Fig. 1.

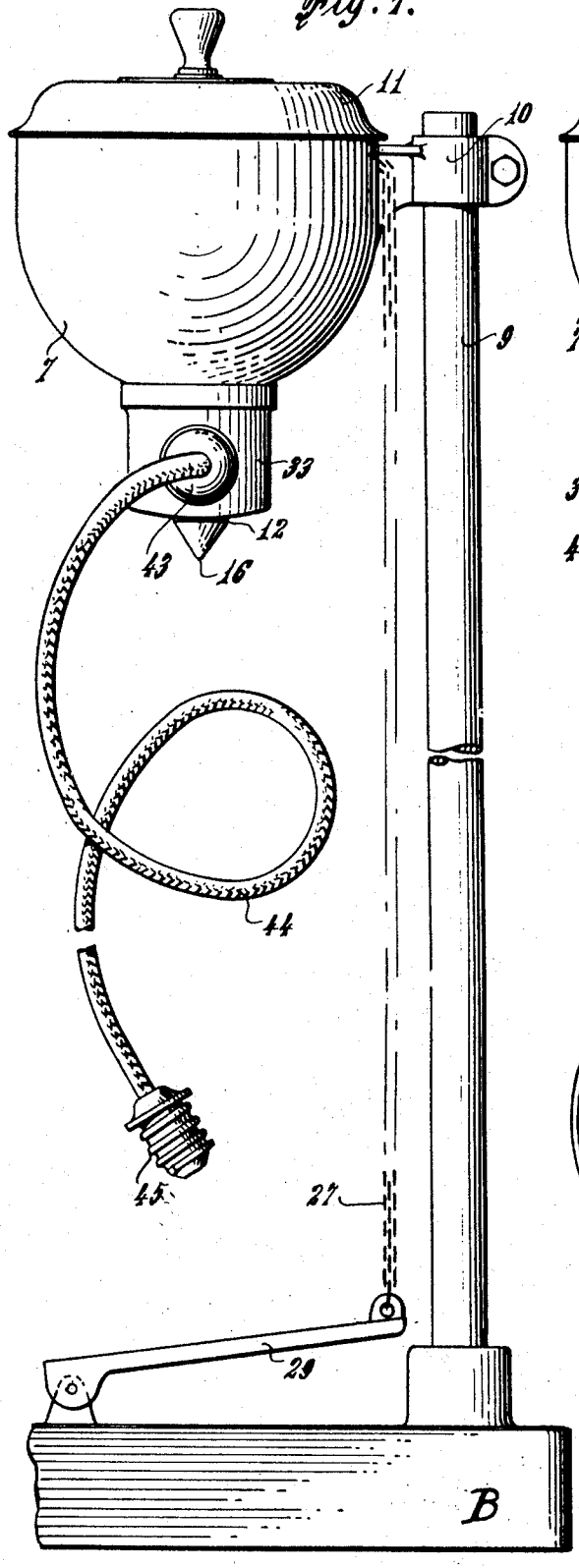


Fig. 2.

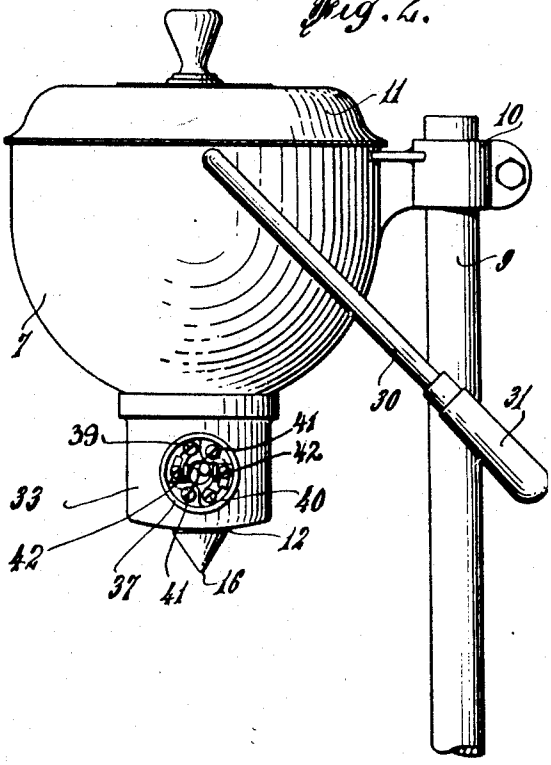
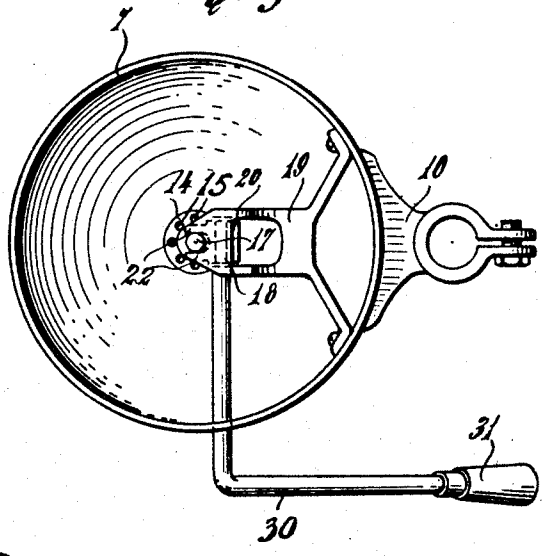


Fig. 3.



INVENTOR
Lembert H. Moulthrop
BY
ATTORNEY

Dec. 13, 1927. 1,652,409

L. H. MOULTHROP

MEANS FOR FUSING MATERIAL AND DELIVERING THE SAME

Filed April 17, 1926 2 Sheets-Sheet 2

Fig. 4.

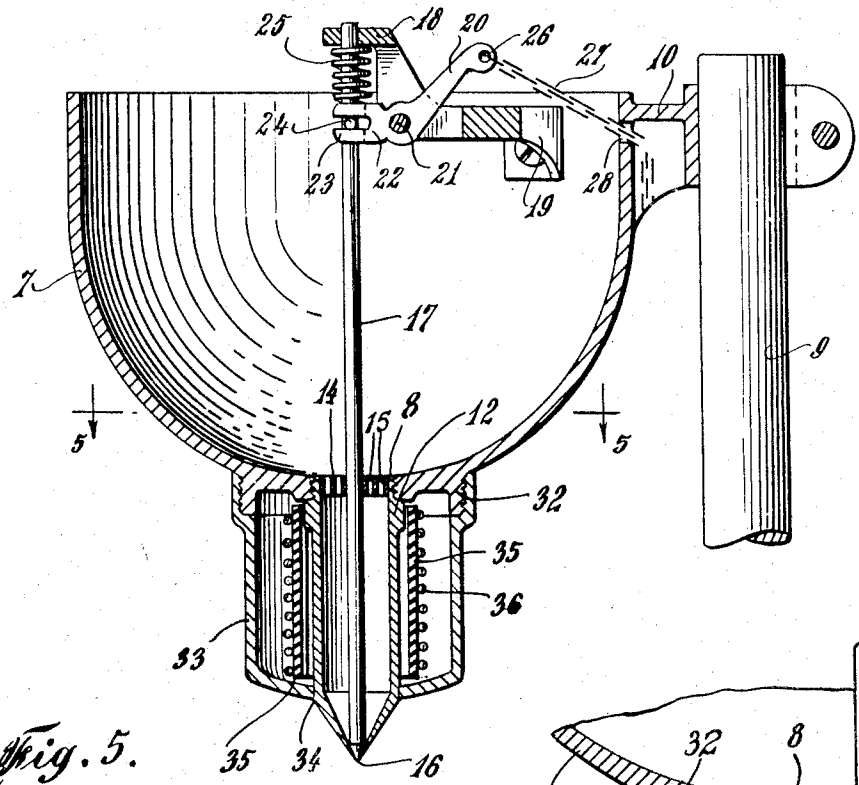
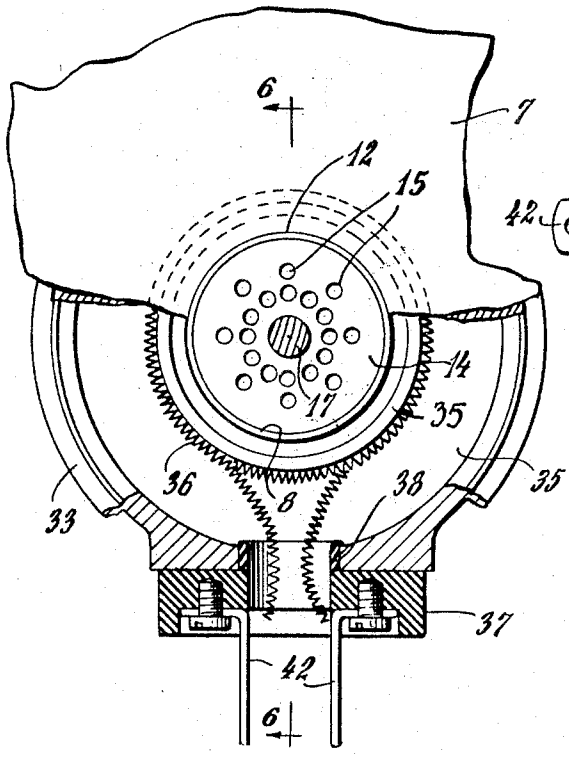


Fig. 5.



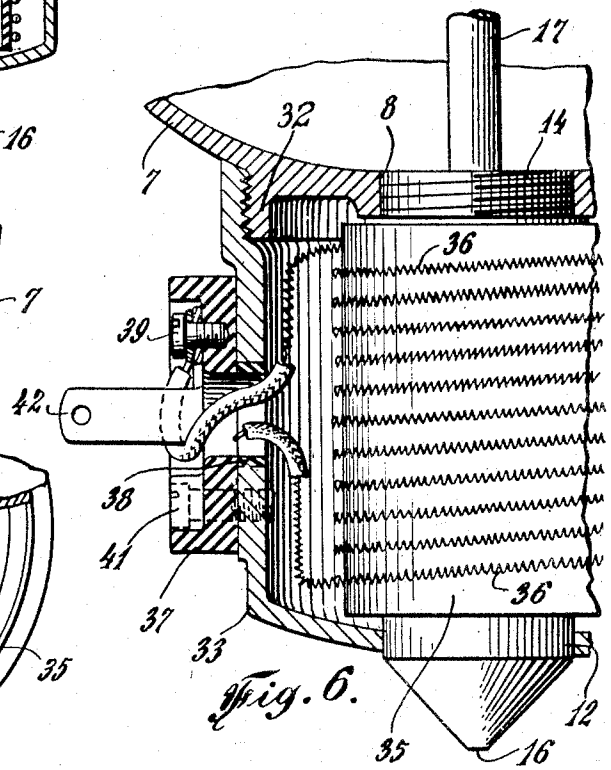


Fig. 6.

INVENTOR
Lembert H. Moulthrop
BY John A. Siefert
ATTORNEY

Patented Dec. 13, 1927. 1,652,409

UNITED STATES PATENT OFFICE.

LEMBERT H. MOULTHROP, OF SOUTH NORWALK, CONNECTICUT.

MEANS FOR FUSING MATERIAL AND DELIVERING THE SAME.

Application filed April 17, 1926. Serial No. 102,779.

This invention relates to means to fuse material and deliver the fused material in predetermined quantities, particularly adapted for use as a "spot waxing" device to apply a quantity of wax to seal a connection in electrical devices, such as connection plugs and the like, or a "spot soldering" device to apply a spot of solder to an electrical connection in electrical devices, and it is the object of the invention to provide apparatus for this purpose which is simple in structure, novel and highly efficient in use.

In carrying out the invention there is provided a receptacle for carrying a quantity of fusible material and to be fused or melted therein, said receptacle being arranged with outlet means at the lowermost part and a supply opening at the top provided with a cover, a valve mechanism being provided to control said outlet means which is normally urged to closing position and is adapted to be actuated exteriorly of the receptacle to move it to outlet opening position. An electric heating unit is mounted upon the receptacle, preferably in the region of the outlet means of the receptacle, in isolated relation to the material in the receptacle and the material as it is delivered therefrom, for fusing the material in the receptacle, a casing being provided to enclose the heating unit and confining the heat to the receptacle and prevent the dissipating of the heat and also to prevent injury to the operator as by burning.

In the drawings accompanying and forming a part of this specification, Figure 1 is a side elevation of apparatus embodying the invention showing the same mounted on a support and actuating means for the valve mechanism for controlling the delivery of material therefrom as including a chain and treadle.

Figure 2 is a side elevation of the apparatus showing an alternative form of valve actuating means.

Figure 3 is a plan view of the apparatus with the cover removed and arranged with the alternative valve actuating means shown in Figure 2.

Figure 4 is a longitudinal sectional view on an enlarged scale of the fusible material containing receptacle and to show the construction and arrangement of the outlet means and of the heating means relative to the receptacle.

Figure 5 is an enlarged fragmentary view in plan and in section of the receptacle taken on the line 5—5 of Figure 4 looking in the direction of the arrows and showing the mounting of a member of a separable electrical connection plug on the enclosing casing for the heating means and the connection of the latter thereto.

Figure 6 is an enlarged elevational view in section taken on the line 6—6 of Figure 5 looking in the direction of the arrows.

Similar characters of reference designate like parts throughout the different views of the drawings.

The embodiment of the invention illustrated in the drawings comprises a bowl shaped receptacle 7 having the top open and an opening 8 in the lowermost portion of the bottom. The receptacle is adjustably supported on a standard 9 fixed in a supporting base B by an arm 10 integral with and extending laterally from the receptacle adjacent the top, said arm being arranged with a tubular portion for engagement of the standard, and the tubular portion being split longitudinally with ears having perforations, extending laterally and in parallel relation from the split portions, one of which perforations is threaded for receiving a screw passed through the perforation of the other ear for securing the receptacle in adjusted position on the standard. The receptacle may be adjusted to any desired height by loosening the screw, adjusting the receptacle and then again tightening the screw. The open top or material receiving end of the receptacle is arranged with a removable cover 11 having a central knob to facilitate the removal of the cover from and applying the same to the receptacle.

An auxiliary receptacle 12 of tubular form is mounted upon the receptacle 7 in line with the opening 8 to extend axially below the receptacle, shown as screw threaded into the receptacle opening 8. A closure plate 14 is mounted in the end of the receptacle to be flush with the inner sur-

face of the receptacle 7, said plate being arranged with an opening axially of the receptacles and having perforations 15 arranged equijacent to said central opening whereby said plate serves as a filter plate to prevent foreign substances from passing from the receptacle 7 into the receptacle 12. The opposite end of the receptacle 12 is of conical shape and has a perforation 16 through the apex thereof to constitute a discharge orifice.

To regulate the discharge orifice a valve mechanism is provided comprising a plunger or valve rod 17 arranged axially of the receptacle 7 and passing through the central opening in plate 14 and the receptacle 12 with the lower end arranged as a needle point to engage the wall of the discharge orifice, the inner wall of which orifice is tapered toward the outer wall to provide a seat for the end of the valve rod. The valve rod at its upper end is slidably mounted in a connecting portion 18 of a bifurcation of a bracket 19 fixed upon the receptacle, as by screws. A lever 20 pivotally supported upon a pin 21 fixed in and extending transversely of the bifurcation of the bracket 19 has one end bifurcated, as at 22, for engagement at opposite sides of the valve rod, and each leg of the bifurcation is arranged with a bifurcation, as at 23, for engagement of a pin 24 fixed in and extending transversely through and laterally from opposite sides of the valve rod. The valve rod is normally urged in a direction with the needle point in engagement with the wall of the discharge orifice to close the same by a spring 25 coiled about the valve rod and confined between the connecting portion 18 and the bifurcated end 22 of the lever 20. Suitable means are provided to move the valve rod to orifice opening position. As shown in Figure 4 one arm of the lever 20 is extended and arranged with a perforation 26 for the connection of a chain 27 or the like passing through a perforation 28 in the wall of the receptacle and the opposite end connected with a treadle 29 pivotally mounted on the base B. An alternative form of valve actuating means is shown in Figures 2 and 3, comprising a lever or crank 30 formed of a rod bent to right angle form with one angle portion extending from the exterior to the interior of the receptacle through a perforation in the wall thereof, with a hand grip 31 arranged at the end of the angle portion exterior of the receptacle. The extremity of the lever 30 within the receptacle is reduced and rotatably engaged in perforations in the opposite legs of the bifurcated portion of the bracket 19 and on which the lever 20 is fixed. By this arrangement as the lever 30 is moved downward as viewed in Figure 2 the valve rod will be moved against the tension of the spring 25 and away from the discharge orifice.

The receptacle at the bottom and centrally of the outlet 8 is arranged with a circular rib or boss 32 externally threaded for the connection of a cup shaped casing 33, said casing being of a length less than the length of the auxiliary receptacle 12 and with the side walls spaced from said receptacle, a central perforation being arranged in the casing for the passage of the outer conical end of the receptacle 12 with the discharge orifice to extend beyond the bottom of the casing.

Heating means is provided to supply heat to fuse the material in the receptacle and render the same in a fluid and flowable condition. This heating means is preferably arranged in the region of the outlet means or about the auxiliary receptacle 12, and comprises an electrical heating unit including a tubular member 35 of electrical insulating and heat conducting material mounted upon the auxiliary receptacle in contiguous relation thereto and in spaced relation to the wall of the casing 33. A coil 36 of wire of electric conducting and resistance material is wound upon the tubular member or cylinder 35 with the terminals thereof extended through a tubular portion of a member of a separable electric connection plug 37 of insulating material engaged in an opening in the casing, as shown at 38, and connected to contact terminals in the form of binding screws 39, 40 threaded into said plug member, said plug member being mounted by screws 41 upon the exterior of the casing 33 as clearly shown in Figures 5 and 6. The binding screws are in electrical connection with contact making posts or blades 42 extending laterally of the plug member for electrical connection with a companion plug member 43 (Figure 1) having an electric current conductor 44 connected thereto arranged for connection to a cut out in an electric feed line, shown as a screw threaded electric connection plug 45. By this construction the receptacle 12 is subjected directly to the heat radiated by the coil 36 heating the same and fusing the material in the auxiliary receptacle rendering it in a fluid condition and also fusing the material in the receptacle 7 which flows into the auxiliary receptacle 12 as material is drawn or discharged therefrom.

In order to deliver fused material from the receptacle the operator moves the valve rod 17 to discharge orifice opening position by pressing down upon the treadle 29 with the foot, or by manipulating the lever 30, the quantity of material delivered being determined by the length of time the discharge orifice is maintained open.

While I have illustrated one embodiment of my material fusing apparatus, particularly adapted for use in spot waxing or spot soldering it may be used for other purposes, such as the applying of melted or fused wax

or paraffine upon preserves in jars and the like to seal the same, and while there has been described a particular embodiment of the invention it will be obvious that various modifications may be made in construction and arrangement of parts, and that portions of the invention may be used without others, without departing from the scope of the invention.

Having thus described my invention I claim:

1. In means for the purpose specified, a receptacle to contain fusible material having an opening in the bottom thereof, an auxiliary receptacle mounted upon the receptacle in communication at one end with the opening in the bottom of the first receptacle and having a perforate closure with a central opening in said end and the opposite end being of conical shape arranged with an outlet in the apex thereof, a tubular member of electric insulating and heat conducting material engaged upon the auxiliary receptacle, and an electric heating coil wound about said member for heating the auxiliary receptacle and fusing material therein.

2. In means for the purpose specified, a receptacle to contain fusible material having an opening in the lowermost part thereof, an auxiliary receptacle mounted at and in connection with the outlet of the first receptacle having a closure in said connection with a central opening and equijacent perforations relative to the central opening and a restricted perforation in line with the central opening of the closure in the opposite end, a casing mounted concentrically and spaced from the auxiliary receptacle with the portion of said receptacle having the restricted perforation projecting from said casing, an electric heating unit mounted upon the auxiliary receptacle in heat conducting and electrically insulated relation thereto, and means arranged upon the exterior of the casing and in electrical connection with the heating unit and arranged for the connection of means for connecting the heating unit with a source of electricity.

3. In means for the purpose specified, a receptacle to contain fusible material having an opening centrally in the bottom, an auxiliary receptacle mounted at one end in said opening and having a restricted outlet in the opposite end, a plunger adjustably mounted in the receptacle and arranged for engagement in and closing the outlet in the auxiliary receptacle, a casing mounted on the receptacle concentric of the auxiliary receptacle, a member of electric insulating and heat conducting material carried within the casing in contiguous relation to the auxiliary receptacle, and an electric heating element carried on said member for heating the auxiliary receptacle and thereby fusing the material therein.

4. In means for the purpose specified, a receptacle to contain fusible material having an opening in the bottom, a tubular member mounted at one end on the receptacle in line with the opening and having the opposite end arranged of conical shape with a discharge orifice arranged in the apex thereof, a spring actuated plunger normally positioned to engage in and close said discharge orifice, a lever pivotally supported by the first receptacle having a bifurcation at one end for engagement of a pin extending laterally from the plunger, and means for actuating the lever to move the plunger against the action of its operating spring away from and opening the discharge orifice.

5. In means for the purpose specified, a receptacle to contain fusible material having an opening in the bottom, an auxiliary receptacle mounted upon the receptacle in communication with the receptacle opening for the delivery of material thereto by gravity from the first receptacle and having a discharge orifice arranged for the flow of material by gravity therethrough, means for opening and closing the discharge orifice in the auxiliary receptacle, and an electric heating element for fusing the material in the receptacle.

6. In means for the purpose specified, a receptacle to contain fusible material having an outlet at the lowermost part thereof, an auxiliary receptacle mounted on the first receptacle in line with the opening therein having a closure in the end at which it is connected to the first receptacle arranged with a central opening and having perforations equijacent to the central opening and the opposite end of said receptacle being of conical form with a discharge orifice through the apex thereof, adjustable closing means for said discharge orifice comprising a plunger slidably mounted in the central opening in the closure in the auxiliary receptacle and slidably supported at the upper end by a bracket at the top of the first receptacle, said plunger having a needle point at the opposite end for engagement in and to close the discharge orifice in the auxiliary receptacle, a spring to normally urge the plunger to closing position, and an actuator to move the plunger to discharge orifice opening position against the action of its actuating spring.

7. In means for the purpose specified, an open end receptacle to contain fusible material and having a removable closure for the open end and an opening in the bottom, an auxiliary receptacle mounted at one end in line with the opening in the receptacle bottom and having a discharge orifice opposite to the connection thereof with the first receptacle, adjustable closing means for said discharge orifice normally urged to closing position, a casing mounted on the receptacle

concentric with and in spaced relation to the auxiliary receptacle, an electric heating element mounted on and electrically insulated from the auxiliary receptacle and enclosed within the casing, and electric contacts mounted on and insulated from the casing for connection of the heating element and adapted for connection of the heating element to a source of electricity.

Signed at the city of New York, in the county of New York and State of New York this 5th day of April, 1926.

LEMBERT H. MOULTHROP.