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SPRAY GUN AND MEANS FOR HEATING AIR AND LIQUID SUPPLIED THERETO

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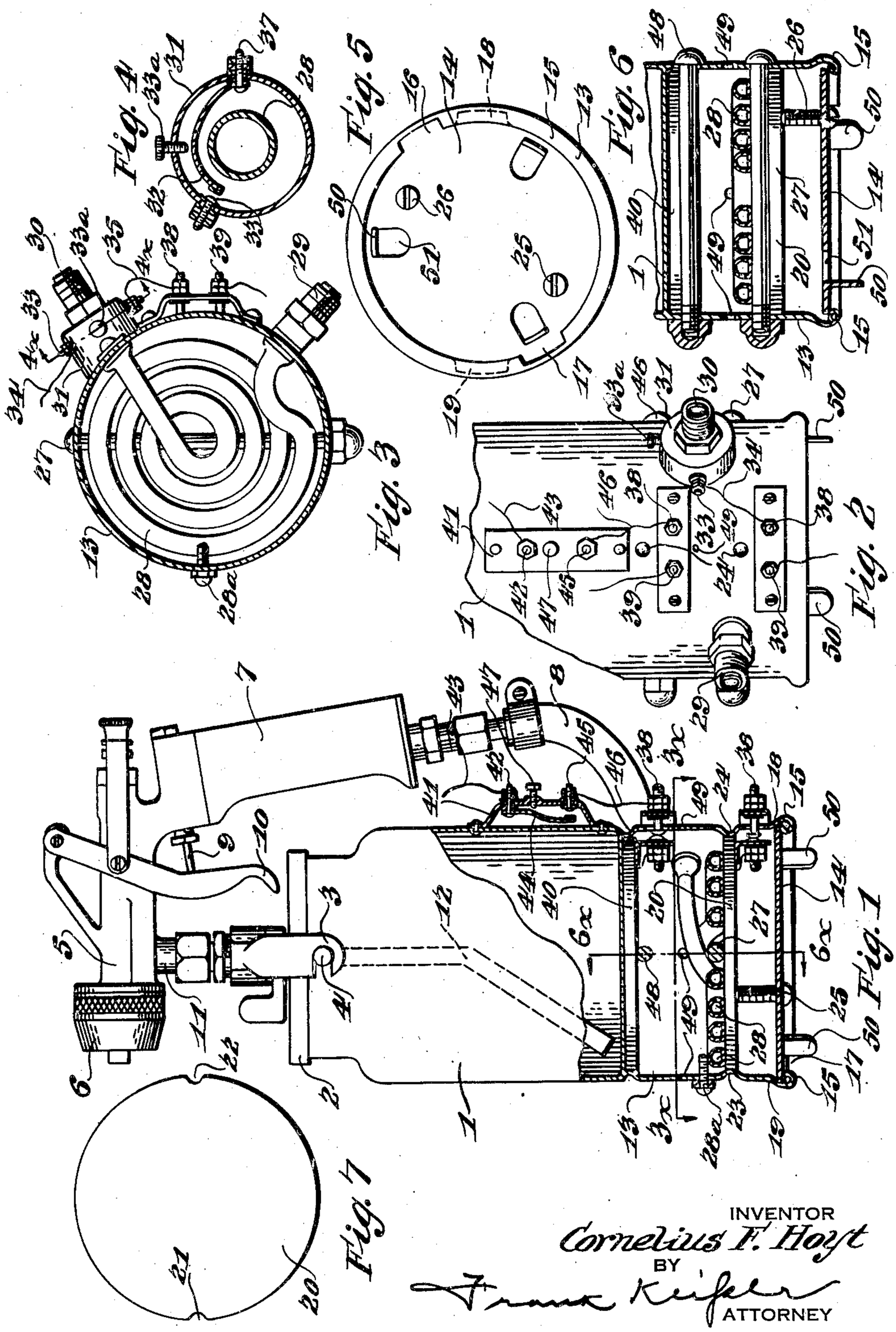

INVENTOR
Cornelius F. Hoyt
BY
Frank Keifer
ATTORNEY

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SPRAY GUN AND MEANS FOR HEATING AIR AND LIQUID SUPPLIED THERETO

Cornelius F. Hoyt, Rochester, N. Y., assignor of one-third to Nathan Olinekow and one-third to Herman Leschner, both of Rochester, N. Y.

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4 Claims. (Cl. 299—88)

The object of this invention is to provide a spray gun with a tank attached thereto in which liquid enamel and the air with which it is sprayed are both heated preliminary to the spraying, so that the combination of the hot air and hot enamel is sprayed on the object to be painted at a temperature considerably above the atmospheric temperature, which results in quicker setting and drying of the enamel, lacquer, etc.

These and other objects of the invention will be illustrated in the drawing, described in the specification and pointed out in the claims at the end thereof.

In the drawing:

Figure 1 is a side elevation of the spray gun and electrically heated bowl in combination therewith, the lower part of the bowl and housing for the heating elements being partly broken away.

Figure 2 is a side elevation of the bowl and housing shown in Figure 1, looking at it from the right, the bowl being broken away at the top.

Figure 3 is a horizontal section on the line 3*x*—3*x* of Figure 1, looking in the direction of the arrows.

Figure 4 is a sectional view of the outlet and thermostat shown on a large scale, the section being taken on the line 4*x*—4*x* of Figure 3.

Figure 5 is a bottom plan view of the base plate and the flange of the housing supporting it.

Figure 6 is a vertical section of the chamber for holding the heating elements below the bowl, the section being taken on the line 6*x*—6*x* of Figure 1, the bolts being shown in full lines.

Figure 7 is a top plan view of one of the heating elements.

In the drawing like reference numerals indicate like parts.

In the drawing reference numeral 1 indicates a bowl in which is held liquid enamel, paints, or lacquers to be dispensed by spraying. On top of this bowl is a cap 2 locked thereon by a latch 3 engaging a pin 4. On the cap 2 is mounted a spray gun 5 having a nozzle 6 and handle 7. The handle 7 is hollow and through it flows compressed air fed by the tube 8. In the handle 7 is a valve regulating the flow of compressed air. This valve is moved by a valve pin 9, which in turn is operated by a lever 10, which is usually engaged by one finger of the hand that holds the handle 7.

It will be understood that a number of these spray guns are on the market as standard equipment, any one of which can be used for my purpose, and the details thereof constitute no part of my invention.

The flow of air through the spray gun lifts the liquid enamel, etc., through a tube 11 having an extension 12 thereon extending down into the bowl to near the bottom thereof, and carries the liquid so raised in a spray out of the nozzle.

Below the bowl I provide a housing 13. The bottom of this housing is closed by a base plate 14, as follows: The lower rim of the housing 13 is spun outwardly and is then spun inwardly to form the flange 15 extending around the base of the housing. This is cut away or mutilated at 16 and 17, as shown in Figure 5. The base plate 14 has lugs or extensions 18 and 19 thereon that are adapted to pass through the openings formed at 16 and 17 in the flange, and are then locked in engagement with the flange by a slight angular movement. The diameter of the base plate across the lugs 18 and 19 is slightly larger than the inside diameter of the housing and these lugs engage in the choked part of the housing above the flange 15, which choked part holds it in place against upward movement. In this way the chamber below the bowl is enclosed by the housing and the base plate.

In the chamber so formed two sets of heating elements are provided. These heating elements are of a standard type, consisting of a plate with resistance wires coiled therein, such as is shown in Figure 7. The heating element is notched or recessed at 21 and 22, which notches engage indentations 23 and 24 formed in the housing, by which the heating element 23*a* is kept from turning. The heating element 23 is supported by screws 25 and 26 upon which the heating element rests. These screws are threaded into the bottom plate and press the heating element up against a cross bolt 27 shown in Figures 1, 3 and 6. On top of this heating element rests a spiral coil of pipe 28, through which the air current flows. This pipe is held in place on one side by the screw 28*a*. The air is drawn in at the intake 29, and as it passes through the spiral coil of pipe it absorbs heat from the heating element, and the air is heated thereby. The outlet of this coil of pipe is indicated at 30, and from thence the air flows up through the tube 8 and handle 7 to the nozzle. The pipe 28 is flattened on the bottom where it contacts with the heating element.

The heating effect of the element 20 is controlled by a thermostat, which is shown on an enlarged scale in Figure 4, in which 28 indicates the tube and 31 indicates the casing which

surrounds the tube 28 with an air space between them. In the air space is placed a thermostat needle 32, the end of which makes contact with the contact 33. As the air passing through the tube 28 is heated up, the air inside of the casing 31 is also heated and causes the thermostat needle to bend, breaking the contact until the correct temperature is restored, after which the needle straightens or bends in the opposite direction and makes electrical contact. The movement of the needle is adjusted or modified by the thumb screw 33*a*. The wires 34 and 35 are connected to the contacts 33 and 37. The wire 35 connects to the post 38, which connects to one end of the heating element as is shown at the bottom of Figure 1, and the post 39 is connected to the other end of the heating element in the same manner.

Similar contacts 38*a* and 39*a* are also connected to the upper heating element 40. On the side of the bowl is provided a casing 41 having a contact 42 thereon, to which is connected the wire 43. This wire connects with the thermostat needle 44, which makes contact with the contact 45, from which leads a wire 46 to the contact 38 of the upper heating element. As the contents of the bowl 1 heat up the air inside of the casing 41 is also heated up, causing the thermostat needle 44 to open, breaking the circuit and preventing undue heating of the enamel, etc. An adjustment screw 47 is provided, by which the action of the thermostat needle may be varied.

The heating element 40 is in all respects similar to the heating element 20 shown in Figure 7, and rests on the bolt 48 and is held thereby directly in contact with the bottom of the bowl. Ventilating holes or air vents 49 are provided in the housing, so as to prevent undue heating of the air contained therein. The base plate 14 has feet 50 struck up therefrom leaving openings 51 therein, through which air can pass for the purpose of ventilation.

In operation, the bowl is filled with liquid enamel, etc. and the electric current is turned into the two heating elements, and after the enamel has been raised to a sufficient temperature the hot air blast is turned on and the spraying of the enamel begins. By operating in this way, the enamel is sprayed onto the object to be coated at a temperature considerably higher than normal, with the result that it sets and drys, or hardens, in a fraction of the time that would ordinarily be necessary.

By varying the setting of the thermostat needles, the temperature at which the air and enamel is fed can be separately regulated.

I claim:

1. The combination of a spray gun, a handle therefor, a bowl below the handle adapted to hold the liquid to be sprayed below the handle, a housing connected to the bottom of said bowl, a tube for conveying compressed air, part of said tube being located in said housing, a heating element in said housing adapted to heat the supply of compressed air, a thermostat located outside of the air line and in proximity therewith to regulate the temperature of the supply of compressed air.

2. The combination of a spray gun, a handle therefor, a bowl adapted to hold liquid to be sprayed below the handle, a housing connected to the bottom of said bowl, a heating element in said housing for heating the contents of the bowl, a suction tube extending from the spray gun down into the bowl, the intake end of said suction tube being placed near the heating element, said spray gun having a handle, a tube through which compressed air is adapted to flow to the spray gun, a heating element in said housing adapted to heat the supply of compressed air.

3. The combination of a spray gun, a handle therefor, a bowl supported from the handle adapted to hold the liquid to be sprayed below the handle, a housing connected to the bottom of said bowl, a heating element in said housing for heating the contents of the bowl, a suction tube extending from the spray gun down into the bowl, the intake end of said suction tube being placed near the heating element, a thermostat on the side of the bowl for regulating the heating of the heating element in the housing.

4. The combination of a spray gun, a handle therefor, a bowl adapted to hold the liquid to be sprayed below the handle, a housing connected to the bottom of said bowl, a heating element in said housing adapted to heat the supply of compressed air, a thermostat adapted to regulate the heating effect of the heating element on the supply of compressed air.

CORNELIUS F. HOYT.