

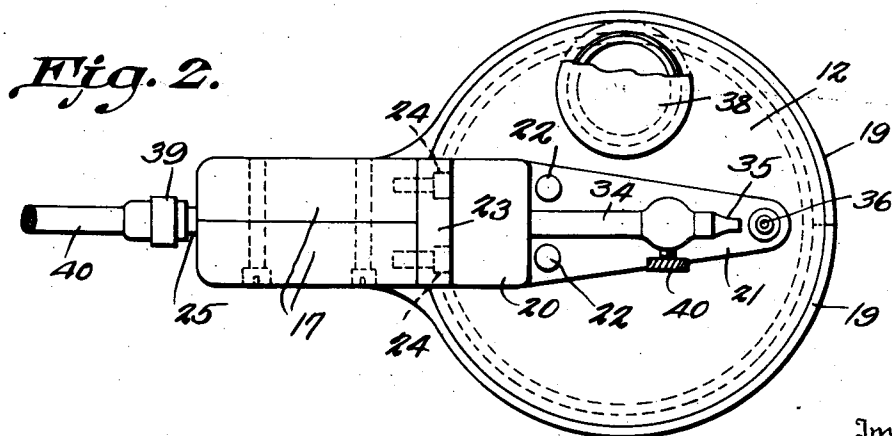
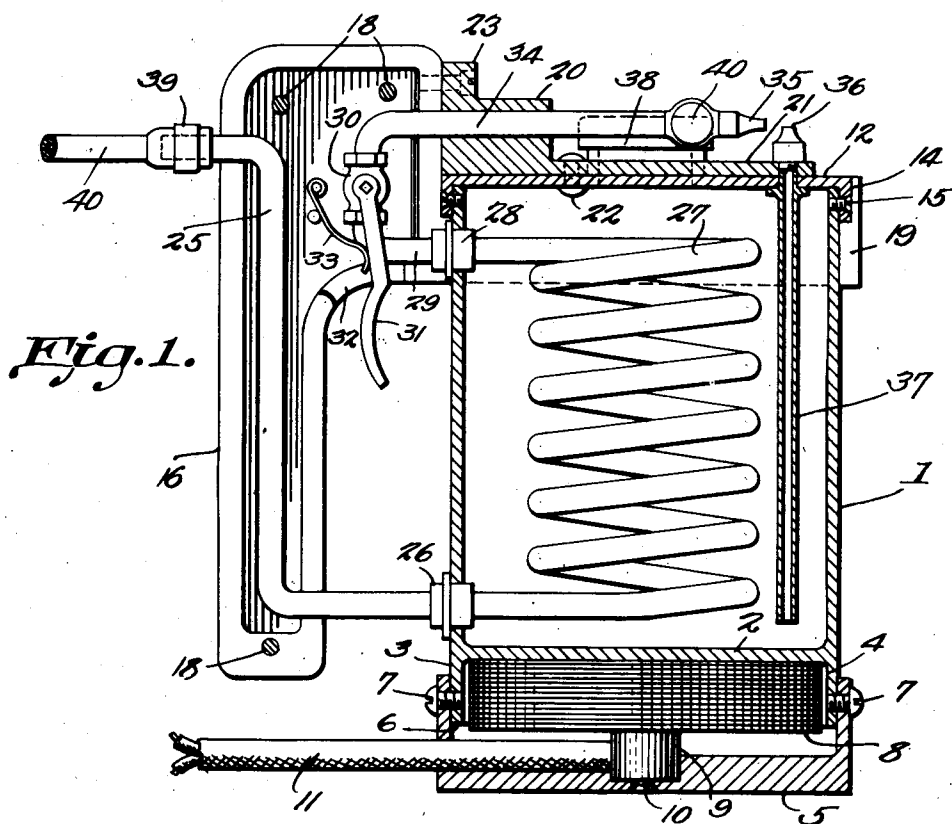
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SPRAYING DEVICE

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SPRAYING DEVICE

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The present invention aims to provide novel means for spraying fluid material, such as molten metal, or anything else. The invention aims, further, to provide a novel means whereby the air by which the material is sprayed may always be kept as hot as the metal, thereby preventing the material from freezing, at the point of discharge. The invention aims, further, to provide a device of the class described which is characterized by the provision of a single means for heating the air and heating the molten metal. Another object of the invention is to supply novel means whereby the flow of heated air is controlled.

It is within the province of the disclosure to improve generally and to enhance the utility of devices of that type to which the invention appertains.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, may be made within the scope of what is claimed, without departing from the spirit of the invention.

In the accompanying drawing:

Fig. 1 shows in longitudinal vertical section, a device constructed in accordance with the invention; and

Fig. 2 is a top plan wherein parts are broken away.

In carrying out the invention, there is provided a receptacle 1, preferably of cylindrical construction, and including a bottom 2, spaced vertically a short distance above the lower end of the receptacle 1. The bottom 2 forms a depending annular flange 3 at the lower edge of the receptacle 1, and within the flange 3 there exists a compartment 4.

The numeral 5 designates a lower cup-shaped base, having an annular flange 6, engaged closely but removably about the flange 3 of the receptacle 1, and held thereto by securing elements 7. The base 5 carries a heater 8, preferably an electrical heater, disposed within the compartment 4, close to or in contact with the bottom 2 of the receptacle 1. The heater 8 is supplied with a depending central boss 9, secured at 10 to the lower part of the base 5. The conductors 11 for the heater 8 extend from the boss 9, outwardly through the flange 6 of the base 5, in spaced relation to the flange 3 of the receptacle 1.

The receptacle 1 is surmounted by an upper cup-shaped cap 12 having a depending annular

flange 14 surrounding the upper end of the receptacle 1, and held thereon, removably, by securing elements 15.

The numeral 16 designates a depending hollow handle, located in parallel relation to the receptacle 1, and in spaced relation thereto, as Fig. 1 will show. The handle 16 embodies laterally separable parts 17, held together by securing members 18, mounted in the parts of the handle. The parts 17 of the handle 16 have semicircular jaws 19, extended around the flange 14 of the cap 12. These jaws 19 steady the handle 16 on the receptacle 1, and they also prevent the securing elements 15 from working outwardly.

The numeral 20 designates a bracket, having an elongated foot 21 attached by securing members 22 to the cap 12. The bracket 20 has an upstanding lip 23, carrying securing elements 24, engaging the upstanding separable parts of the handle 16, and aiding in holding the handle in place on the receptacle 1. The securing devices 24 also prevent the parts of the handle from separating laterally.

The numeral 25 designates a conduit or pipe, the outer end of which is joined by a union 39 to a pipe 40, adapted to supply air under pressure. The conduit 25 enters the hollow handle 16 and extends downwardly within the same, the conduit extending outwardly through the handle 16, near to the lower end thereof, as Fig. 1 will show. A union 26, mounted in the wall of the receptacle 1, near to the bottom 2, connects the lower end of the conduit 25 with the lower end of a coil 27, extending upwardly in the receptacle 1, above the bottom 2. The coil 27 is a heat interchange device, preferably made of metal which will melt only under a very high degree of temperature. The upper end of the coil 27 is extended horizontally. A union 28 mounted in the wall of the receptacle 1, connects the upper end of the coil 27 with one end of a U-shaped pipe 29, extended into the hollow handle 16, near to the upper end of the hollow handle. A valve 30 is interposed in the pipe 29, and is located within the handle 16. An arm 31 controls the valve 30, and extends downwardly through an opening 32, formed in the lower wall of the upper part of the handle 16. A spring 33 is secured within the handle 16, and bears against the arm or operating member 31, to hold the valve 30 normally in closed position. The upper arm 34 of the U-shaped pipe 29 extends outwardly through the handle 16 and through the bracket 20, horizontally, in parallel relation to the cap 12. The upper arm 34 of the pipe 29 terminates in an

air discharge nozzle 35. A valve 40 under the control of an operator, is located in the arm 34 of the pipe 29, behind the nozzle 35. The nozzle 35 is located closely adjacent to the discharge head 36 of an outlet tube 37, mounted in the foot 21 of the bracket 20, and in the cap 12. The outlet tube 37 for the material to be sprayed extends downwardly to a point adjacent to the bottom 2 of the receptacle 1.

10 The cap 12 carries a removable closure 38, affording a means whereby the metal, either molten or otherwise, may be introduced into the receptacle 1.

The device forming the subject matter of this application may be used to spray liquid of any kind, but, in the following discussion, it will be supposed that a light metal, in molten form, such as aluminum, is to be sprayed. The aluminum, cold and solid, might be placed in the receptacle 1, by way of the closure 38. With a view to saving time, however, the aluminum generally is melted by any means (not shown) external to the device shown in this application. The molten metal is poured into the receptacle 1, by way of the closure 38. The metal is kept hot and fluid, due to the action of the heater 8.

The operator lays hold of the handle 16, operates the arm 31, and opens the valve 30, whereupon air under pressure flows through the conduit formed by the parts 40, 25, 27, 29 and 34, the air passing out of the nozzle 35, across the head 36 of the tube 37, the molten metal being drawn out of the receptacle 1 and being discharged in the form of a spray.

35 It is to be observed that as the air passes through the coil 27, the air is heated, and, the air will not freeze the metal as the air from the nozzle 35 proceeds across the head 36 of the tube 37. Because the coil 27 is surrounded by molten metal, the air is at the same temperature as the molten metal. It is to be noted, further, that the heater 8 exercises two functions, in that it melts the metal, or heats the metal, in the receptacle 1, and, likewise, raises the temperature of the air in the coil 27. In view of the fact that aluminum or some other metal melting at a low temperature is used, and because the coil 27 is made of metal which melts only at a high temperature, there is no danger of melting out the coil 27 whilst the aluminum is being heated.

Sometimes it is desired to apply the liquid at a lowered temperature, rather than in a heated form. Under such circumstances, the heater 8 is put out of operation and a cooled blast, rather than a hot blast, is resorted to.

The device forming the subject matter of this application is compact, simple in operation, and provides a convenient and economical means for heating both the metal and the blast air from a single instrumentality, to wit, the electrical heater 8 or its equivalent.

If desired, the heater 8 may be put out of operation, and blocks of dry ice or the like may be placed in the receptacle 1, by way of the closure 38. The temperature within the receptacle then

will be lowered, and a blast of cooled air will proceed through the coil 27 and attendant parts.

Having thus described the invention, what is claimed is:

1. In a device for spraying material, a receptacle, a cap closing the upper end of the receptacle, means for securing the cap removably to the receptacle, an air conduit including a coil disposed about the axis of the receptacle, a bracket secured to the cap, a handle secured to the bracket, an outlet pipe extended downwardly into the receptacle and having its upper portion secured to the bracket, a portion of the air conduit being mounted on the bracket, the air conduit discharging in operative relation to the upper end of the outlet pipe, and means for heating the receptacle.

2. In a device for spraying material, a receptacle, a cap closing the upper end of the receptacle, means for securing the cap removably to the receptacle, an air conduit including a coil disposed about the axis of the receptacle, a bracket secured to the cap, a handle secured to the bracket and having an opening, an outlet pipe extended downwardly into the receptacle and having its upper portion secured to the bracket, a portion of the air conduit being mounted on the bracket, the air conduit discharging in operative relation to the upper end of the pipe, means for heating the receptacle, a valve interposed in the air conduit and located in the handle, the valve comprising operating means extended outwardly through the opening in the handle, the handle comprising laterally separable parts giving access to the valve and the operating means, and means for holding together detachably, the laterally separable parts of the handle.

3. In a device for spraying material, a receptacle, a cap closing the upper end of the receptacle, a bracket secured to the cap, means whereby material may be introduced into the receptacle, means for heating the receptacle, an outlet for the receptacle, having its upper end secured to the bracket, a handle comprising a depending portion and including laterally separable parts, means for securing each of the laterally separable parts of the handle detachably and individually to the bracket, an air conduit entering the upper portion of the handle and extended downwardly within the depending portion of the handle and extended out of the depending portion of the handle and into the receptacle, the conduit being formed into a coil located within the receptacle, the coil being connected to a part of the air conduit extended out of the receptacle and into the upper portion of the handle and out of the handle and through the bracket, into operative relation to the upper end of the outlet, a valve interposed in the conduit and located in the upper portion of the handle, and operating means for the valve, the operating means being extended downwardly between the laterally separable parts of the handle.