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AIR TREATING DEVICE

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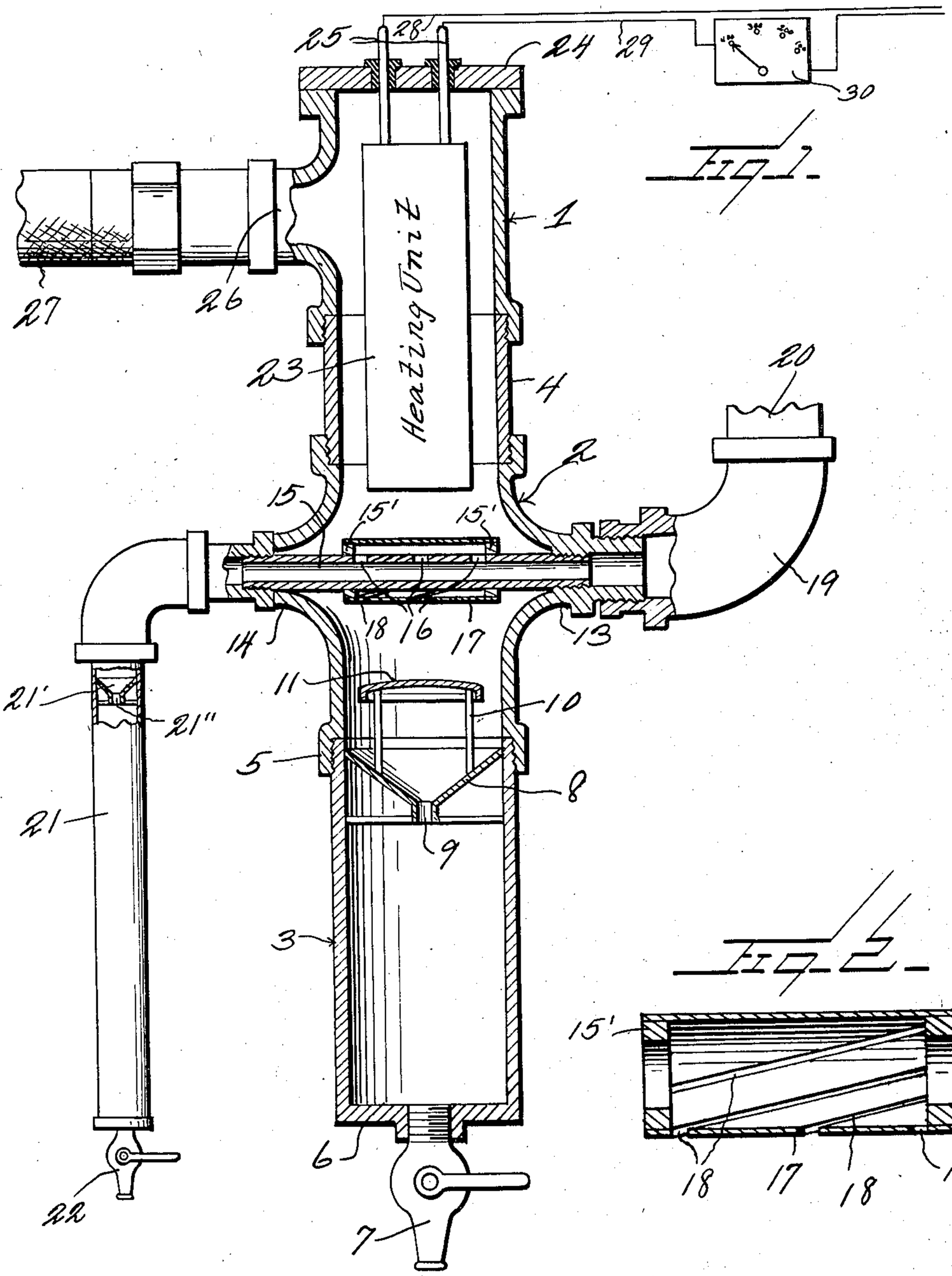


Fig. 1

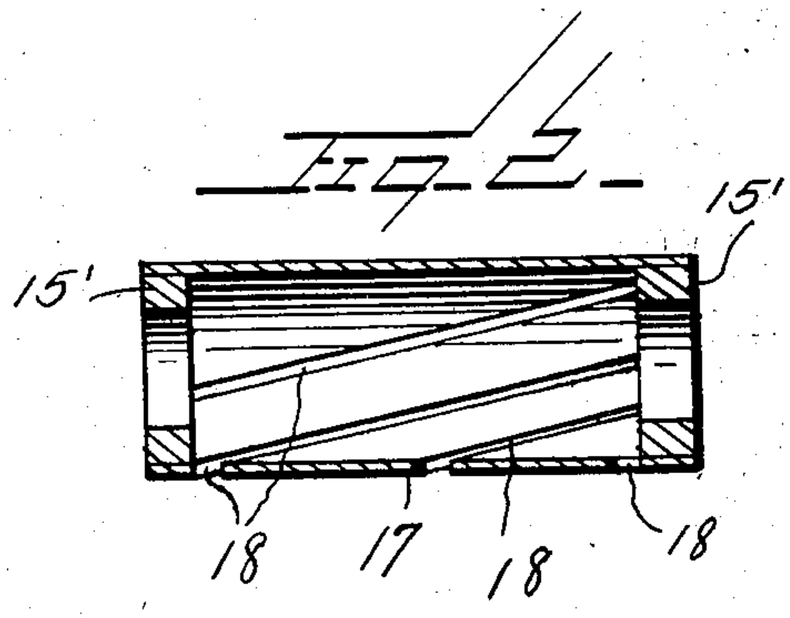


Fig. 2

Inventors
A. J. Desautels
& L. L. Levesque
By Watson E. Coleman
Attorney

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## AIR TREATING DEVICE

Armand J. Desautels and Louis L. Levesque,
Nashua, N. H.

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3 Claims. (Cl. 183—75)

This invention relates to air treating devices and particularly to a means of treating air which is employed in connection with paint spraying or similar devices.

The present invention has for its primary object to provide a device or mechanism designed primarily for use in association with paint sprayers, by means of which all or a substantial proportion of the moisture carried by the air may be removed therefrom before the air is mixed with the paint or other substance in association with which it is used.

Another object of the invention is to provide an air drying or dehydrating device which is designed to be connected in the air line or conduit by which air under pressure is carried from a source of supply to a discharge point such as a spray gun or the like.

Still another object of the invention is to provide an air drying or dehydrating device which is of uncomplicated construction, small and compact, whereby it may be introduced into an air line without adding materially to the weight or bulkiness of the line and other mechanism associated therewith, thus making it possible to shift the drying device with a spray gun or similar apparatus with a minimum of effort.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing forming part of this specification, with the understanding, however, that the invention is not to be confined to any strict conformity with the showing of the drawing but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawing:

Fig. 1 is a view partly in longitudinal section and partly in elevation of the device embodying the present invention.

Fig. 2 is a longitudinal sectional view through the channeled sleeve.

Referring now more particularly to the drawing, the device embodying the present invention comprises the three hollow or chamber portions 1, 2 and 3, the portion 1 being connected at one end by a coupling 4 with one of the two open sides of the intermediate portion 2 in the manner shown and the other open side of the intermediate portion is coupled by the coupling collar 5 with the end of the elongated third portion which is indicated by the numeral 3. The latter portion or chamber of the device has a lower end wall 6 with which is connected a drain cock 7 and at the upper end of this lower portion which constitutes a fluid receptacle, there is a downwardly converging partition wall 8 which is in the form of a funnel and which is open at its central or apex portion, as indicated at 9. Supported upon the wall 8 by the upright members 10 is a hood 11 which covers the opening 9, as shown.

The intermediate portion of the device has formed integrally therewith the oppositely directed arms 13 and 14, which are both interiorly and exteriorly screw-threaded and extending transversely of the intermediate portion is a tube 15, the ends of which are secured into the arms 13 and 14, so that this tube forms a channel or passageway across the chamber of the intermediate body 2. The tube 15 is provided with a series of apertures 16, here shown as being three in number, and these apertures are directed upwardly or away from the receptacle 3.

Surrounding the tube 15 are two spaced or separated collars 15′ between which the apertures 16 are located and connecting these collars is a cylinder 17 which is supported by the collars in spaced relation with the tube 15 so as to form an elongated chamber around the tube. This cylinder is provided with a series of spirally extending slots 18 but these slots are so arranged that no one of them extends across the top or upper part of the cylinder so that the apertures 16 are directed toward an unperforated portion of the cylinder. Thus it will be seen that air discharging upwardly through the apertures 16 will strike against a solid portion of the cylinder and must then flow laterally and partially around the tube 15 before reaching the slots 18 through which it passes into the body 2 and upwardly into the overlying chamber in which the hereinafter described heating unit is located.

One arm of the intermediate chambered body 2 is joined by the reduction couplings and elbow 19 with an air pipe line 20 leading from the source of air while the other arm of the body 2, indicated by the numeral 14, is connected with a fluid drain which is in the form of a tube 21, the free end of which is normally closed by the cock 22. Within the upper end of this tube is a funnel-like partition 21′ which has a constricted central opening 21″.

The upper chambered body constitutes a shell or housing for an electrical heating unit which is indicated generally by the numeral 23, this unit being of elongated character and suspended within the body from the top plate 24 through

which the insulated current conductors 25 pass.

Any suitable means may be employed for regulating the heat generated by the unit 23. In the illustration of the invention, the terminals of the heating unit are shown connected with current conductors 28 and 29, and there is shown connected with one of these conductors an element 30 by means of which the flow of current to the heater can be controlled or regulated so that the extent to which the unit may be heated can also be regulated. No detailed showing has been made of the unit 30 as this in itself does not constitute part of the invention and it may be any one of a number of different types of controls which are obtainable on the market.

The upper portion of the device which constitutes a housing or casing for the electric heater 23, is provided with a lateral air outlet arm 26 with which may be connected an air lead-off hose 27 by which the heated and dried air can be conveyed to the point of discharge which may be an air spray gun or other type of apparatus in association with which the air is to be used. This lateral outlet 26 may be in the form of a reduction coupling if the hose 27 is of small diameter or so that it may be joined to any size of hose with which the air gun or other unit is equipped.

In the operation of the present device, the air from a pressure tank or a constantly operating pressure machine is conducted to the device through the line 20 into the tube 15. The cocks 7 and 22 are kept closed, therefore, the air cannot pass out through the tube 21 but discharges through the opening 16 against the wall of the cylinder 17 and any entrained moisture will be condensed on the cylinder and will flow therefrom through the slots 18 and pass down over the hood 11 and through the funnel-like partition 8 into the lower part of the water receiver 3. The air escaping through the slots 18 will pass upwardly around the heating unit and out through the outlet 26. Drainage of the water from the receptacle 3 is effected by opening the cock 7 and also drainage of the tube 21 is effected by opening the cock 22. The partitions 8 and 21' operate to hold back the air pressure to a certain extent during this draining operation as the apertures or passages 9 and 21'' are relatively small. The air flowing upwardly through the casing 1 will be heated by the unit 23 and will thus pass out through the tube 27 in heated and partly or completely dehydrated condition.

What is claimed is:

1. A device of the character described, comprising an elongated hollow body designed when in use to be vertically arranged in an air pipe line, means intermediate the ends of the body for introducing air thereinto, a tube disposed transversely within the body and connected at one end with the air inlet means, the other end of the tube being closed from connection with the interior of the body, said tube being provided with upwardly directed air outlet apertures, a cylinder encircling the tube and connected at its ends therewith, said cylinder having spirally extending slots therethrough, said slots being arranged whereby said tube apertures are directed toward a solid wall surface of the cylinder, and air outlet means at the upper end of the body.

2. A device of the character described, comprising an elongated hollow body designed when in use to be vertically arranged in an air pipe line, means intermediate the ends of the body for introducing air thereinto, a tube disposed transversely within the body and connected at one end with the air inlet means, the other end of the tube being closed from connection with the interior of the body, said tube being provided with upwardly directed air outlet apertures, a cylinder encircling the tube and connected at its ends therewith, said cylinder having spirally extending slots therethrough, said slots being arranged whereby said tube apertures are directed toward a solid wall of the cylinder, air outlet means at the upper end of the body, said body having a portion of its lower end beneath the air inlet removable, and drainage means connected with said removable portion for drawing off condensed moisture therefrom.

3. An air treating device of the character described, comprising an elongated vertically arranged hollow body formed to provide a central portion and upper and lower portions connected with and communicating with the central portion, the body being designed for connection in an air pipe line, an air inlet in one side of said central portion, a tube extending transversely through the central portion and having one end secured in the inlet whereby when said inlet is connected with a source of air it will be discharged into the tube, a normally closed fluid drain pipe connected with the other end of the tube, said tube having a series of upwardly directed air outlet apertures, a cylinder encircling the tube and connected at its ends therewith, said cylinder having spirally extending slots therethrough, said slots being arranged whereby said tube apertures are directed toward a solid wall surface of the cylinder, a valved fluid draw-off means for the lower end of the lower portion of the body, and an air outlet for the upper portion of the body.

ARMAND J. DESAUTELS.
LOUIS L. LEVESQUE.