

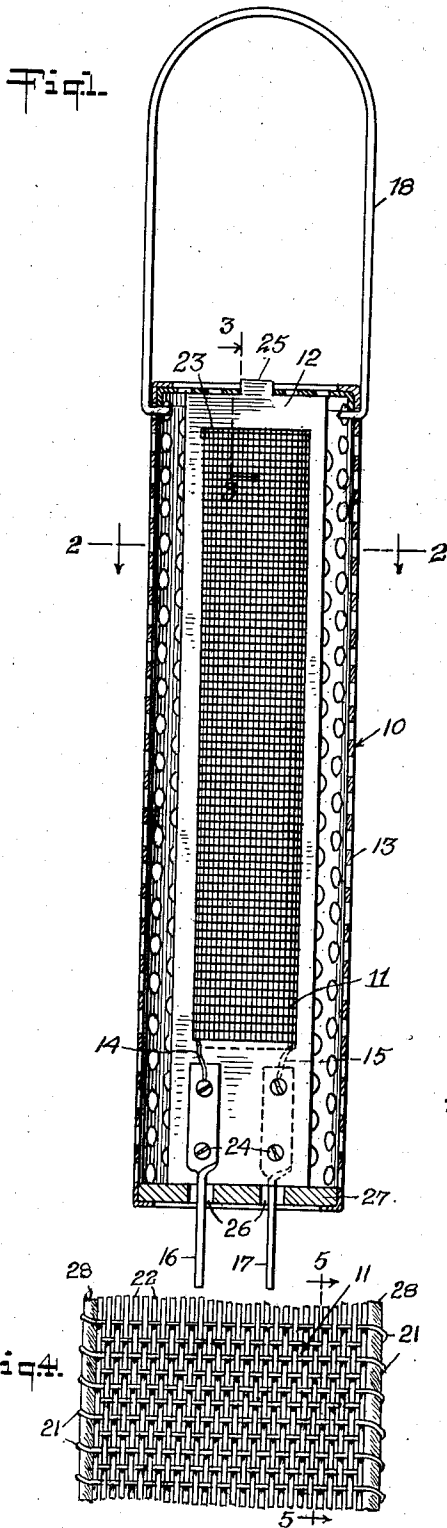
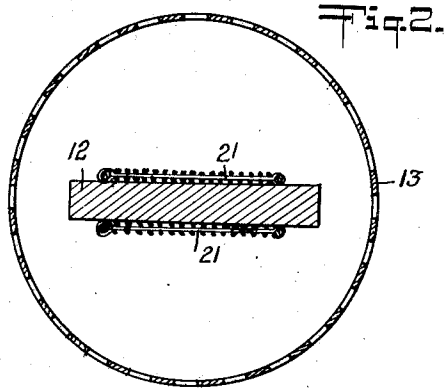
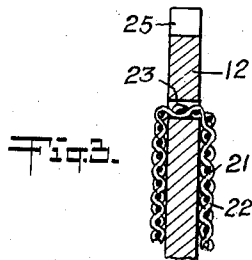
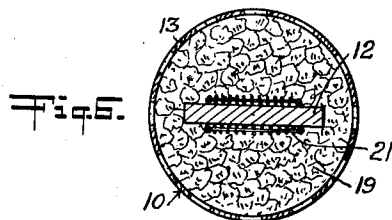
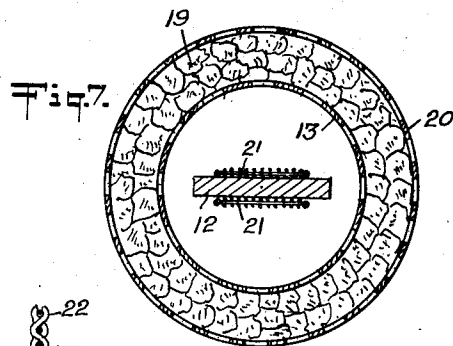
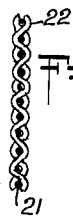
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2,482,050

ELECTRIC AIR-HEATER

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UNITED STATES PATENT OFFICE

2,482,050

ELECTRIC AIR HEATER

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2 Claims. (Cl. 219-19)

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This invention relates to electrical devices and, more particularly, to a unit that can serve as a dehydrator by raising the dry-bulb temperature of the surrounding air.

An object of my invention was to construct a device that could be utilized in damp climates to protect clothing and leather articles from moulding action as a result of excessive moisture contained in the air. By merely plugging my device into the conventional house electrical circuit, it will supply enough heat to dehydrate objects stored in a small area, such as a closet.

Another advantage of my device is that it is very durable and strongly constructed with the result that with ordinary care it should last indefinitely. It is equipped with a strong, perforated tubular shield of metal, coated with a layer of silicon paint and equipped with a handle to facilitate its handling.

A further advantage of my device is that its operating cost is very economical, being approximately the same as that of a fifty watt house lamp.

Another unique feature of my device is the electrical heating element which is composed of a woven fabric in which the woof is composed of insulated electrical conductors and the warp of non-conducting thread, such as glass fibre yarn. The heating element is very flexible and is positioned to the core of non-conducting material such as transite which is mounted within the tubular shield.

A further variation of my invention enables it to be utilized as a "recharging" device for a desiccant. In this form my device is packed with a desiccant such as calcium chloride, activated charcoal or a similar substance and merely hung in a damp compartment or closet. The desiccant will absorb the moisture and through the action of a chemical that will be impregnated into the desiccant, the desiccant will change color when saturated with moisture. The device is then removed when this saturation point is reached and plugged into a conventional electrical circuit. The heat from the element will drive the moisture from the desiccant, "recharging" it so that it can be used again. A unique use for this device would be to place it in the freezing compartment of a refrigerator where it would absorb all the moisture in the air and prevent frost from forming on the freezing unit, obviating the necessity for periodically defrosting the refrigerator.

My device is economical to manufacture, economical to operate and would not only be of

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benefit to the user in protection of clothing but would also save time and labor in doing away with the necessity of defrosting the refrigerator once or twice a week.

Further advantages and objectives of my invention will be apparent as I proceed with the description.

Referring to the drawings—

Figure 1 shows a plan view of my device in section.

Figure 2 shows an enlarged cross section on line 2-2 of Figure 1.

Figure 3 shows a view on line 3-3 of Figure 1 indicating the method of positioning the heating element through the slot in the transite core.

Figure 4 shows an enlarged cross section view of a portion of the heating element.

Figure 5 shows a view on line 5-5 of Figure 4.

Figure 6 shows a cross section view on line 2-2 of Figure 1, with the desiccant packed around the heating element.

Figure 7 shows a modified form of Figure 6 with an additional outer shield with the desiccant packed between the inner and outer shield.

In Figure 1 I have shown a plan view of my air-heater 10 in section. The woven heating element 11 is positioned to the transite core 12 by passing it through a slot 23 near the top of the core and extending it down the sides of the core toward the base.

The element is held to the sides of the core by adhesion with silicon resin. However, other means of securing the element to the core may be utilized such as tying it with glass thread or through the use of insulated clips.

In its preferred form, I have specified a transite core, however, any other similar insulating material would serve the purpose. As indicated, the transite core 12 has a projection 25 at the top which is anchored in the perforated tubular shield 13. Positioned at the bottom of the transite core 12 is another circular piece 27 of the same material that supports the center core 12 and is equipped with holes 26 for the electrical connectors 16 and 17.

Figure 4 illustrates an enlarged cross section view of the woven heating element 11, showing the electrical conductors 21 which, in their preferred form, consist of single strand resistance wire. The conductors form the woof of the woven element and the warp is composed of non-conducting thread 22. The end threads 28 of the warp are also composed of non-conducting threads and are considerably larger than the remainder of the warp which construction adds to

the rigidity of the woven element. The heating element consists of a continuous electrical conductor which terminates at one side of the transite core 12 in a lead 14 and on the opposite side in lead 15.

Figure 5 illustrates a cross section view through the heating element 11 showing the electrical conductors 21 and the non-conducting threads 22.

Figure 2 illustrates how this woven, flexible heating unit 11 is positioned to the sides of the center core of transite 12 and Figure 3 illustrates the method of passing the element 11 through the slot 23 in the transite 12.

The heating element 11 with the transite core 12 is then mounted in the perforated tubular shield 13. This shield 13 in its preferred form is made of metal. However, plastic or other similar material that will perform satisfactorily may be utilized. The shield 13 is equipped with a handle 18 which will facilitate handling of the device when the unit is hot and also serve as a means for hanging the unit where desired.

The shield 13 may be coated inside and out with a layer of silicon paint or plated with a rust resistant material which will resist any form of dampness and prevent the unit from rusting due to excessive moisture.

Mounted at the lower end of the transite core 12 are the electrical connectors 16 and 17 which are adapted to fit the conventional household outlet plug, the connectors 16 and 17 are secured to the core 12 through rivets 24. The electrical circuit can be traced from connector 17 through lead 15 to the heating element, through the heating element and lead 14 back to connector 16. The device is designed to operate on a normal house circuit of 110 to 120 volts and draws approximately the same wattage as a fifty watt bulb.

Figures 6 and 7 show another form of the device where it is used in conjunction with a desiccant such as calcium chloride, activated charcoal, etc. It is contemplated to pack the desiccant 19 either around the heating element 11 as shown in Figure 6, or between the shield 13 and an additional outside shield 20 as shown in Figure 7. When used in this form, it is contemplated to hang the device in a moist atmosphere where the desiccant can absorb the moisture from the air. By adding a chemical to the desiccant, it is planned to control the color of the desiccant so that it will change from its original color when completely saturated with moisture. This color change would indicate that the desiccant is no longer operating and, at this point, the device could be removed and plugged into the conventional house electrical circuit. Through the heating action of the woven element, the moisture would be forced from the desiccant and when this has been accomplished, the device would be ready for use once again. The device is so designed that this "recharging" of the desiccant

can be repeated indefinitely. The woven heating element is adequately insulated so that moisture absorbed by the desiccant will not cause a short circuit between the turns of wire in the heating element.

An example of where this device would be of great use and benefit would be in conjunction with an electric refrigerator. The device could be placed in the freezing compartment where it would absorb the moisture, preventing the freezing element of the refrigerator from frosting and, consequently, eliminating the necessity to periodically defrost the refrigerator.

While the invention has been described in detail with respect to a present preferred form which it may assume, it is not to be limited to such details and forms since many changes and modifications may be made in the invention without departing from the spirit and scope of the invention in its broadest aspects. Hence, it is desired to cover any and all forms and modifications of the invention which may come within the language or scope of any one or more of the appended claims.

I claim:

1. An electrical device comprising a heating element having a core of non-conducting material and a woven fabric secured to said core, the woof of said fabric comprised of electrical conductors and the warp composed of threads of non-conducting material, a perforated tubular shield surrounding said element secured to said core through means, said element equipped with electrical terminals attached to the core and electrically connected to the conductors of said fabric.

2. An electrical device comprising a heating element having a core of non-conducting material and a woven fabric with electrical conductors, said core being slotted adjacent one end, said fabric positioned through said slot having its ends extending down and secured to opposite side of said core, a perforated tubular shield surrounding said element secured to said core through means, said element equipped with electrical terminals attached to the core and electrically connected to the conductors of said fabric.

LECH YEJESKI.

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