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3,245,737

AIR TREATING DEVICE

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FIG. 1

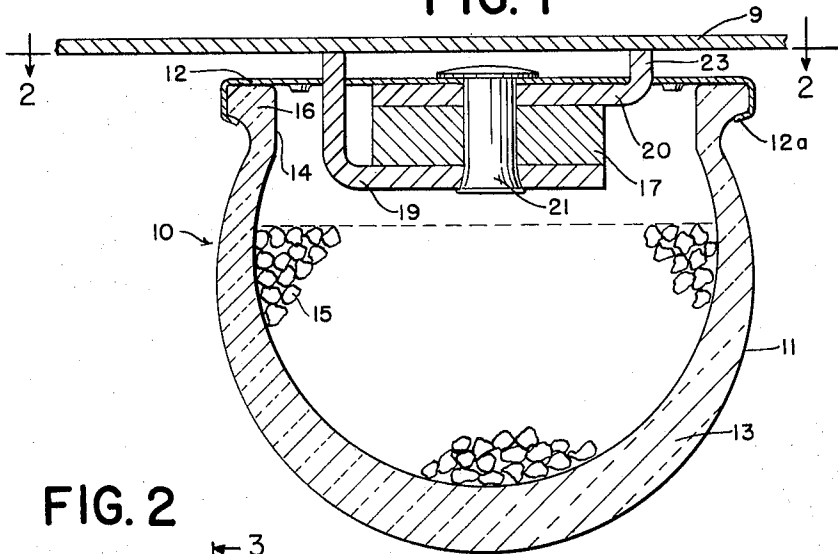


FIG. 2

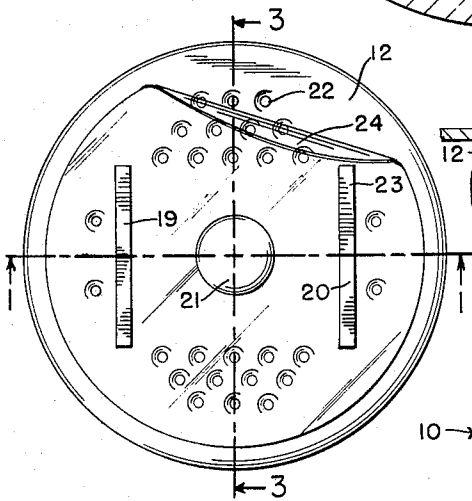


FIG. 3

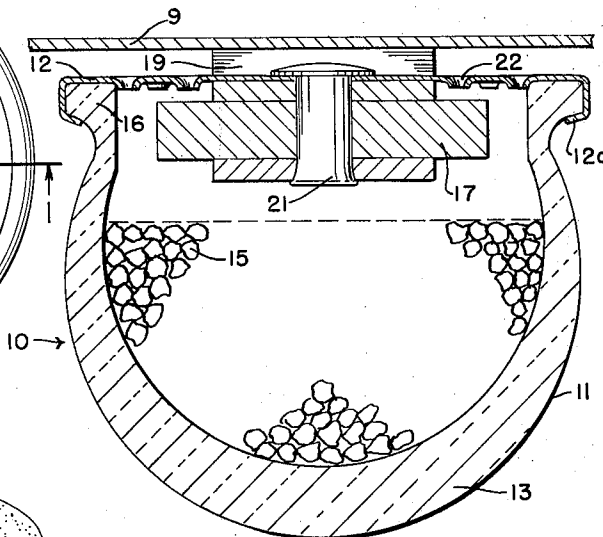
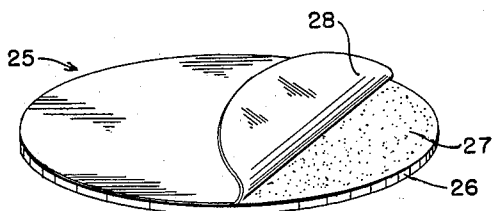


FIG. 4

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AIR TREATING DEVICE

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3 Claims. (Cl. 312—31)

This invention relates to air treating devices, such as those often combined with containers used for storage of materials, and is directed more particularly to a new and improved internal device, adapted for household use, especially in (ferrous metallic) canisters, chests, and the like to treat the air therein.

The air treatment device of the present invention is essentially comprised of a transparent housing, for enclosing and supporting a chemical medium which is adapted to treat the trapped air circulating within the housing, and a quick-mounting assembly for magnetically maintaining the housing securely to, and in a predetermined spaced relation with a wall of a ferrous metallic container.

In accordance with present invention, an appropriate choice of a chemical air treating medium may be made to achieve any one of a variety of beneficial air treatments. While the principal application of the device is for use as a dehumidifier in canisters and the like to preserve the dryness and crispness of hygroscopic food-stuffs stored therein, other immediately contemplated applications, in addition to dehumidification, include the odorizing, insecticidal and like household treatments of the air, usually within a closed container. It is to be understood that further, similarly useful applications will become apparent to those skilled in the art and are therefore to be considered within the scope of the present invention.

More specifically, the new treating device of the invention comprises a housing for containing an air treating medium, which housing is provided with an apertured wall portion for accommodating the flow of air to and from the medium. The device further includes means for magnetically securing the device to the wall of the container or the like in such manner that the apertured wall portion faces the container wall in predetermined spaced relation. The arrangement is such that air access to the treating medium is provided in an advantageous manner, through the predetermined space between the apertured wall and the adjacent cover wall.

An important aspect of the invention is its universality of application. In the event a container is non-ferrous and therefore not capable of sustaining a magnetic mounting, an adhesive-coated auxiliary ferrous plate is provided, which is adapted to be mounted on the inner wall of a non-ferrous container to render such container capable of sustaining of magnetic mounting.

For a more complete understanding of the nature of the present invention, and for further specific advantages to be obtained therefrom, reference should be had to the following detailed description and the accompanying drawing, in which:

FIG. 1 is a cross-sectional view of the air treatment device taken along line 1—1 of FIG. 2 embodying the principles of the invention;

FIG. 2 is a plan view of the device of FIG. 1, taken along line 2—2 of FIG. 1;

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FIG. 3 is a cross-sectional view of the device of FIG. 1, taken along line 3—3 of FIG. 2; and

FIG. 4 is a perspective view of an adapter to be used with the device of FIG. 1.

With reference to FIG. 1, the air treatment device of the present invention is indicated generally by reference numeral 10 and includes a housing 11 and perforated cover 12. The housing is advantageously in the form of a globe 13 and includes an open mouth portion 14, which is wide enough to permit the insertion of the treating medium 15 therein. The mouth 14 advantageously has a thick lip 16 (in the form of a bead) about its circumference, the function of which will be explained in greater detail hereinafter. The housing advantageously is manufactured from a chemically inert, transparent or translucent, heat-resistant material, for example, heat-resistant glass, to permit the state of the air treating medium to be readily observed without the necessity of removing the cover 12.

In a preferred embodiment of the present invention for use as a dehumidifier, the chemical air treating medium 15 is a regenerative desiccant having an added color indicator to show its state of saturation. Aluminum oxide or silica gel are working examples of the type of regenerative desiccants contemplated, which type, upon saturation, may be heated in an ordinary household oven to drive off the absorbed moisture. Advantageously, the color indicator is a first shade, for example, blue, when the desiccant is unsaturated and a contrasting shade, for example, pink, when it has absorbed sufficient moisture to become saturated and require heating to be of further use. The absorption-heating, or saturation-desaturation, cycle may be continually repeated to give the desiccant an indefinite life.

In accordance with the invention, the device 10 is adapted to be mounted within a closed container or the like by a magnetic mounting sub-assembly which includes a permanent magnet 17 and two pole pieces 19, 20. A rivet 21 fixedly mounts the magnet 17 and its associated pole pieces 19, 20 to the perforated cover 12, which as best seen in FIG. 2, has a plurality of openings, typically in the form of circular ports 22 and rectangular pole ports 23. The latter allow the ends of the pole pieces 19, 20 to project through the cover to join a ferrous surface of the container 9, while the former allow the circulating air in the container to enter the globe 13 to be treated by the chemical medium 15. The pole pieces 19, 20 are, in accordance with the invention, of sufficient length to hold the housing in a predetermined spaced relation away from the container wall to expose the orifices to the tapped air in the container and provide for a desired air circulation to and from the treating medium. A removable transparent sealing mask 24 may be provided to prevent the chemical medium 15 from being exposed to the air until the device is ready for air-treatment applications.

The final assembly of the new and improved air treatment device is completed by placing the cover 12, which is initially in the form of a cylinder closed at one end, over the sub-assembly to close the mouth 14, the ends of the poles 19, 20 being of such length as to project through the ports 23 a predetermined distance. The cover is secured to the globe 13 by crimping its ends 12a around the lip 16.

As one of the important advantages of the invention the completed device is adapted to be quickly and easily mounted with the perforated cover 12 in predetermined spaced relation to a surface of any ferrous metallic container or the like to treat the air circulating along the surface therein. The quick-mounting sub-assembly is uniquely constructed to hold the body of the device away from the container wall a predetermined, limited distance, to accommodate the free flow of air to and through the perforated cover which faces the container wall.

When it is desirable to treat the air in a non-ferrous container, the adapter 25 shown in FIG. 4 may be used. The adapter 25 comprises a ferrous pad 26 coated with a universal adhesive 27 which is protected until use by a removable sheet 28. By securing the ferrous pad to the inside of the non-ferrous container, the container is readily adapted to receive the air treating device of the present invention.

The structure described herein and illustrated in the accompanying drawing advantageously may be used to suspend a treating medium in a beneficial and desirable manner that effectively isolates the chemical from possible contact with the contents. For example, in a deodorizing application, activated charcoal may be incorporated in the treatment device of the invention and magnetically attached to the top wall of a container, with the perforated cover facing upward, isolating the charcoal from contact with the contents of the container and avoiding sifting out of small particles through the openings 22.

Thus, the new and improved device of the present invention provides a simple, economical, and practical structure for rapidly mounting and safely holding an air treating medium within any conventional metallic container. Furthermore, the advantageous and novel structure disclosed hereinabove is especially suited for use with a glass housing which is advantageously employed for observation of chemical treating media with color indicators added thereto. The new air treatment device is also especially adapted for use with chemical media that have advantageous air treating characteristics but may tend to sift through openings in a housing, by gravity.

The substantial advantages of the invention are realized by providing a housing construction which includes a perforate cover and magnetic pole elements projecting through the cover and outward thereof a predetermined distance. The arrangement is such that the perforate wall of the housing faces the wall of the container to which the housing is magnetically secured, the projecting magnetic pole pieces providing desired, predetermined spacing between the perforate cover and the container wall. The new device may be instantly applied to any conventional container or the like and can be as easily removed and applied to a new or different container whenever desired. Advantageously, although not necessarily, the new device is applied to the inside of a container lid, so that the perforate wall faces upward, preventing any sifting out by gravity of any small particles of the air treating medium.

While the present invention has been described with respect to specific preferred embodiments, by way of illustration only, the scope of the invention is to be determined as set forth hereinafter in the appended claims.

I claim:

1. A device for treating air within an enclosure having an internal surface of magnetizable material, comprising

- (a) an active chemical air treating means for effecting a change in at least one characteristic of the air within the enclosure;
- (b) a housing for holding said chemical means within said enclosure;

(c) said housing having a wall portion provided with at least one orifice to accommodate the free flow of air therethrough; and

(d) magnetic spacing means projecting outward a predetermined distance from said wall portion to separate said wall portion and orifice a predetermined distance from said internal surface to accommodate the free circulation of air therebetween;

(e) said magnetic spacing means cooperatively related to said wall portion for holding said housing to said internal surface with said orifice facing said surface, whereby said orifice is maintained in a fixed spaced relation with said internal surface.

2. A device for treating air within a container having a ferrous internal surface, comprising

(a) an active chemical air treating means for effecting a change in at least one characteristic of the air enclosed within the container;

(b) a housing for holding said chemical means within said container;

(1) said housing being fabricated from a transparent, heat resistant glass to accommodate external observation of said treating means and having an opening to permit the insertion of said chemical means therein;

(c) a housing cover secured across and closing said opening;

(1) said cover having a series of perforations therein to accommodate the free flow of air therethrough;

(2) said perforations having predetermined dimensions of a magnitude to substantially preclude the passage of said chemical treating means therethrough;

(3) said cover defining a pair of pole ports; and

(d) a magnetic mounting assembly for affixing said device to the ferrous internal container surface;

(1) said mounting assembly including at least one pair of oppositely magnetized poles;

(2) said poles being maintained substantially within said housing but having end portions projecting outwardly through said pole ports in the housing cover for a predetermined distance, whereby said mounting assembly will hold said device in predetermined spaced relation with said container surface to accommodate the free flow of air between said cover and said surface and through said perforations for treatment by said chemical means.

3. A device for treating air within an enclosure having an internal surface, comprising

(a) an active chemical air treating means for effecting a change in at least one characteristic of the air within the enclosure;

(b) a housing for holding said chemical means within said enclosure;

(c) said housing having a wall portion provided with at least one orifice to accommodate the free flow of air therethrough;

(d) spacing means projecting outward a predetermined distance from said wall portion to separate said wall portion and orifice a predetermined distance from said internal surface to accommodate the circulation of air between said internal surface and said wall portion; and

(e) magnetic mounting means cooperatively related to said wall portion and spacing means for holding said housing to said internal surface with said orifice facing said surface, whereby said orifice is maintained in a fixed openly spaced facing relation with said internal surface.

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