Aug. 8, 1950 F. O. ANDEREGG 2,517,537

DRY-STORAGE BOX

Filed April 9. 1947

FIG. 1

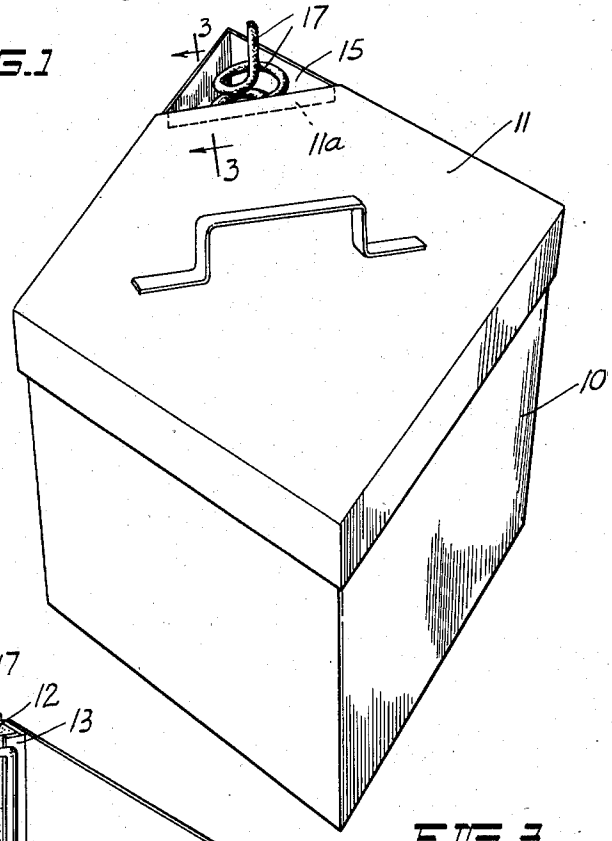


FIG. 2

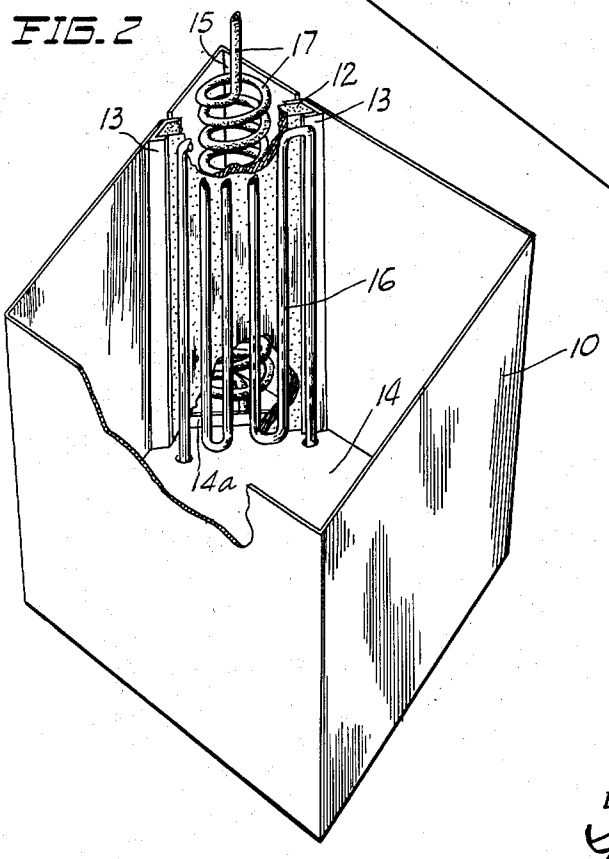
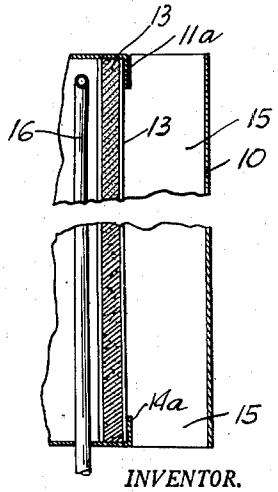


FIG. 3



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DRY-STORAGE BOX

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3 Claims. (Cl. 34—74)

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This invention relates to storage boxes; and particularly to those designed to prevent normally dry food products, such as crackers, or other normally dry items from becoming damp and soggy in humid weather.

It is an object of the invention to provide a storage box of this type that will be highly effecetive in use.

It is a further object to provide the same of relatively simple construction, susceptible of relatively low cost production and operation and possessing easily cleansed, substantially unencumbered storage space.

A feature of the invention is the provision of a porous wall section between the interior of the box and an exterior duct for warm air, together with means for lowering the vapor pressure of the water vapor in the interior air of the box adjacent such porous wall section, whereby moisture content of such interior air is condensed on the interior surface of said wall section and passes through the pores of the wall section to be evaporated by the warm air flowing through the exterior duct.

These and further objects and features of the invention will be considered hereinafter.

In the accompanying drawing:

Fig. 1 is a perspective view of a preferred construction of dry-storage box pursuant to the invention.

Fig. 2 is a similar view with cover removed and certain wall portions broken away to reveal otherwise hidden parts, and

Fig. 3 is a fragmentary vertical section taken on the line 3—3, Fig. 1.

Referring now to the drawing: The box proper 10 is for the most part of any suitable substantially air-tight and moisture impermeable construction, provided with a normally closed opening affording access to the interior. As illustrated, the box 10 is rectangular in shape and of sheet metal construction provided with a removable and replaceable tight-fitting, telescopic cover 11.

One corner of the box 10 is arranged to be partitioned off diagonally by a porous wall member 12 extending from top to bottom of the box. For accommodating such wall member 12 and retaining it removably in position, internally-extending channel guideways 13, are provided at the particular box corner portion concerned, advantageously by securing separately formed channel elements to the interior faces of the box side walls at that location, so the porous wall member may be slipped into and out of position from the open top when the box is uncovered.

The bottom wall 14 of the box 10 is cut short

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diagonally at the corner concerned, being advantageously bent upwardly to provide a substantially sealing flange 14a at the lower outer margin of the porous wall 12. That corner portion of the box bottom is left open, providing the lower opening of a warm air duct 15.

The box cover 11 is also cut short diagonally at the corner concerned, so that the warm air duct 15 has an upper opening. It is advantageously bent downwardly to provide a corresponding substantially sealing flange 11a at the upper outer margin of the porous wall 12.

The porous wall 12 is porous in the sense that interconnecting pore passages extend from one face of the wall to the other. To that extent it is pervious to the passage of moisture. An ideal material for such wall is that produced under the trade-mark "Microporite" as fully described in U. S. Patents No. 1,932,971 and No. 2,105,324, both issued to Hutteman et al., or the somewhat similar specially processed dehumidifying material set forth in my U. S. Patent No. 2,255,041 issued under date of Sept. 9, 1941. In such materials a network of interconnected microscopic pores is provided throughout a cementitious body. Other materials of like nature may also be employed.

Means are provided within the box for reducing the vapor pressure of the water vapor in the interior air thereof to such an extent as to cause condensation of such contained moisture at the interior wall surface of the porous wall 12. Such means advantageously take the form of a cooling coil 16 disposed in close proximity to the inner wall face of the porous wall 12. Such coil may be arranged for connection by suitable means (not shown) to the usual domestic water supply, whereby ordinary cold tap water will pass through the coil and cool it sufficiently for the purpose intended. Where a fairly large quantity of water is used domestically, sufficient cooling may be obtained by merely connecting the coil into the normal supply piping system.

The warm air duct 15 may be supplied with heated air in any suitable manner. For instance a heating coil 17, disposed within such duct 15 in proximity to the exterior face of the porous wall 12 and arranged for connection by suitable means (not shown) to a source of supply of hot water, may produce the desired circulation of warm air through the duct. If enough hot water is used domestically to keep the supply pipes hot, such heating coil 17 may be merely connected into the hot water supply piping. In many instances, however, it may be preferable to substitute for the coil 17 a tiny gas flame at the bottom of the duct.

It will be noted that the interior of the box 10

is substantially unobstructed by the operative parts of the apparatus, that is to say, the operative parts—effectively arranged as they are at one corner of the box—occupy a minimum of space and do not obstruct the box interior. Accordingly, a maximum of storage space is afforded. In fact, the cooling coil 16 may even be embedded in the interior face portion of the porous wall 12. This will not only provide slightly more storage space, but will actually add to the operating efficiency of the device. For the latter reason, the heating coil may also be arranged in the same manner with respect to the exterior face portion of the porous wall.

In practice, the working parts of the box need be kept in operation only so long as necessary to effect the desired results, such operation ordinarily being intermittent with the intervals determined by observation. Obviously the length of any period of operation or the frequency of the operative intervals will vary according to the location and circumstances of use. These can be easily ascertained by a user and adjusted to meet the need. When the working parts are not in operation, the interior of the box is protected from the atmosphere by the tight fitting cover 11. The porous wall 12, it will be noted, does not afford free access of air to the interior of the box, for its porosity is of microscopic or submicroscopic character and its thickness is substantial—ordinarily not less than ¼ inch.

In operation, the interior air of the box 12 is relieved of moisture by reason of the fact that cooling coil 16 lowers the vapor pressure of the water vapor to the point of moisture condensation, which latter occurs at the interior face of porous wall 12. Such condensed moisture is caused to pass through the porous wall and to be evaporated at the exterior face thereof by reason of the warm air passing through duct 15, which again raises the vapor pressure of the water and carries it away as vapor.

Obviously, the tight-fitting cover 11 may be replaced by a tight-closing door or other closure in any appropriate one or more of the wall panels of the box.

I claim:

1. A dry-storage container comprising a substantially air-tight box equipped with a tight-fitting closure affording access to its interior; a porous wall portion disposed diagonally across a corner of said box thereby partitioning the box corner from the remainder of said box and defining a warm air duct through said storage box, said porous wall portion having a substantially microscopic interconnected pore structure separating the warm air duct which it defines from the interior of said storage box; and means proximate the interior face of said porous wall portion for reducing the vapor pressure of water vapor held by the air within said storage box to an extent that the water vapor in such air condenses substantially thereat.

2. A dry-storage container comprising a substantially air-tight box equipped with a tight-fitting closure affording access to its interior; channel guideways disposed interiorly of said box bordering a corner thereof; a porous wall portion disposed in said channel guideways diagonally across the corner of said box, thereby partitioning the box corner from the remainder of said box and defining a warm air duct through said storage box, said porous wall portion having a substantially microscopic interconnected pore structure separating the warm air duct which it defines from the interior of said storage box; and a cooling coil disposed substantially against the interior face of said porous wall portion for reducing the vapor pressure of water vapor held by the air within said storage box to an extent that the water vapor in such air condenses substantially thereof.

3. A dry-storage container comprising a substantially air-tight box equipped with a tight-fitting closure affording access to its interior; channel guideways disposed interiorly of said box bordering a corner thereat; a porous wall portion disposed in said channel guideways diagonally across the corner of said box, thereby partitioning the box corner from the remainder of said box and defining a warm air duct through said storage box, said porous wall portion having a substantially microscopic interconnected pore structure separating the warm air duct which it defines from the interior of said storage box; the bottom and top of said box terminating short of the corner portion of said box; the corner-forming side walls of said box thereby defining an open-ended duct contiguous with the exterior face of said porous wall portion; and means for passing warm air through the duct so defined.

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