

[54] **METHOD AND APPARATUS FOR
PRESERVING SOLVENT-DISPERSED
CHEMICALS**

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312/31.2; 220/327

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[58] **Field of Search** 206/1.8, 1.7, 205;
220/306, 327; 312/31, 31.2; 35/26

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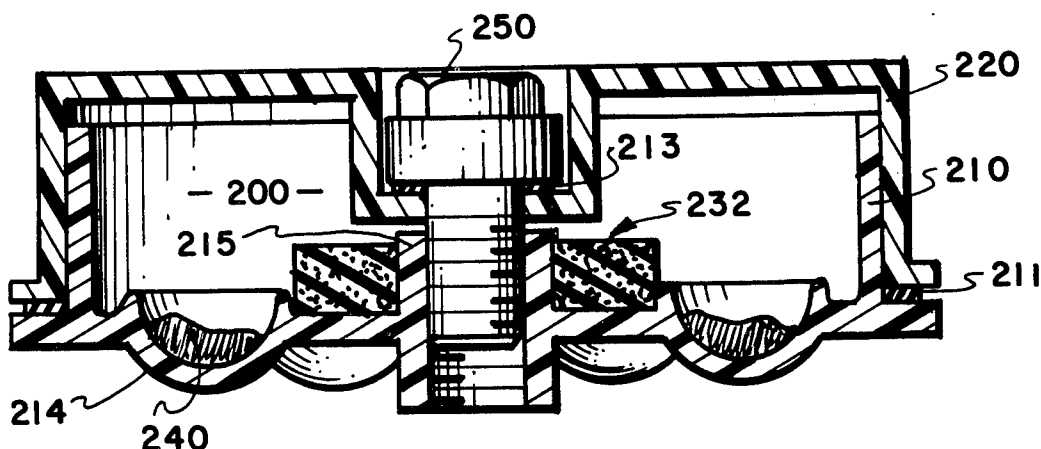
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[57]

ABSTRACT

A circular, dished container is provided with a hermetically sealed cover and is subdivided into a number of upwardly open compartments. One of these compartments is filled with a spongy mass capable of retaining a quantity of liquid solvent. The other compartments receive specimens of the chemicals to be preserved; these chemicals being held in a liquid or semi-liquid state by dispersal in the same liquid solvent. Desiccation of the chemical specimens — artists' paints, for example — is prevented by the maintenance of a solvent-saturated or carrier-saturated atmosphere through evaporation from the enclosed sponge, once the cover is secured on the container.

10 Claims, 7 Drawing Figures



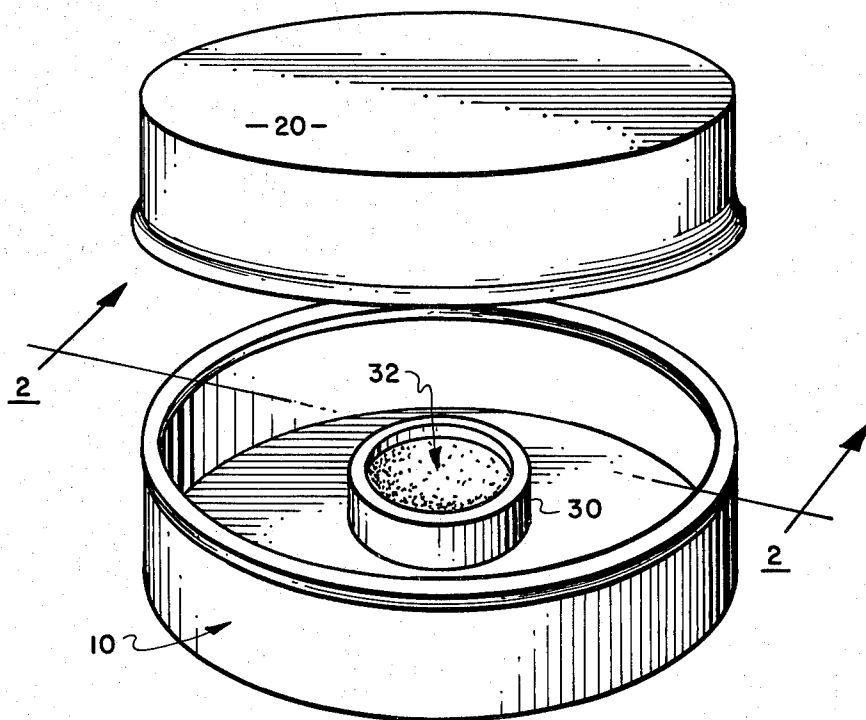


FIG. 1

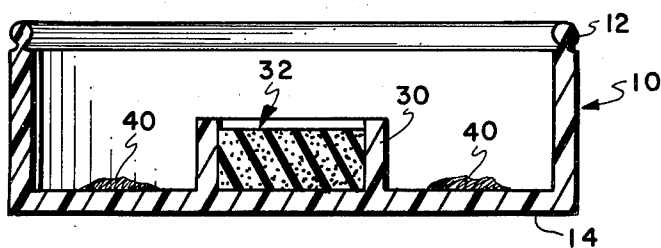


FIG. 2

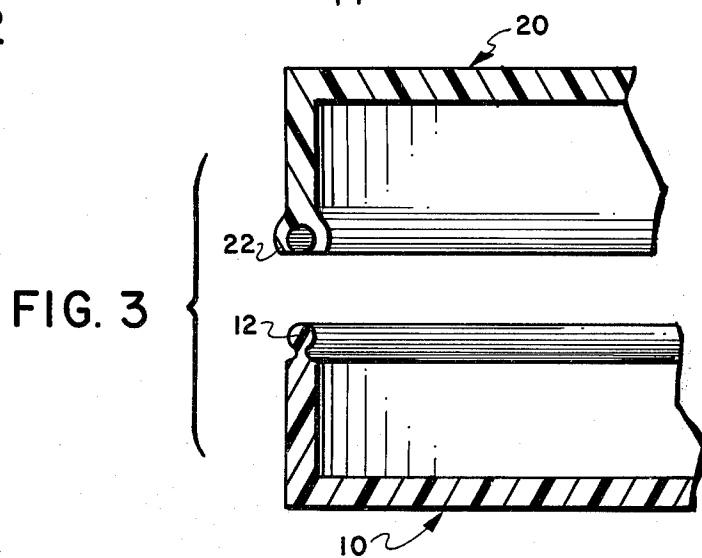


FIG. 3

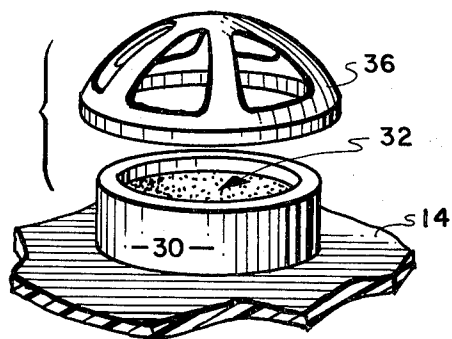


FIG. 4

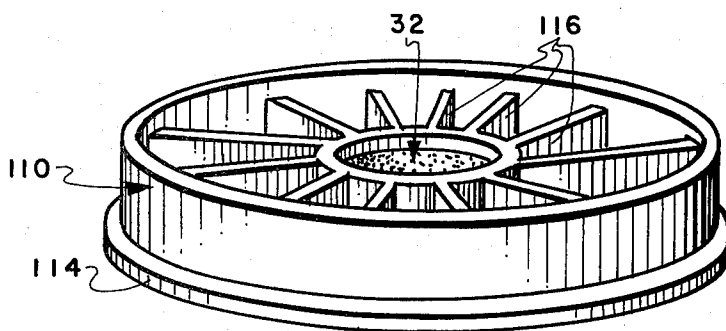


FIG. 5

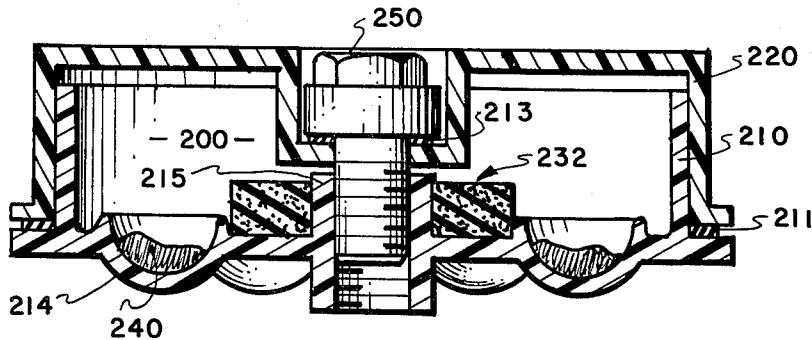


FIG. 6

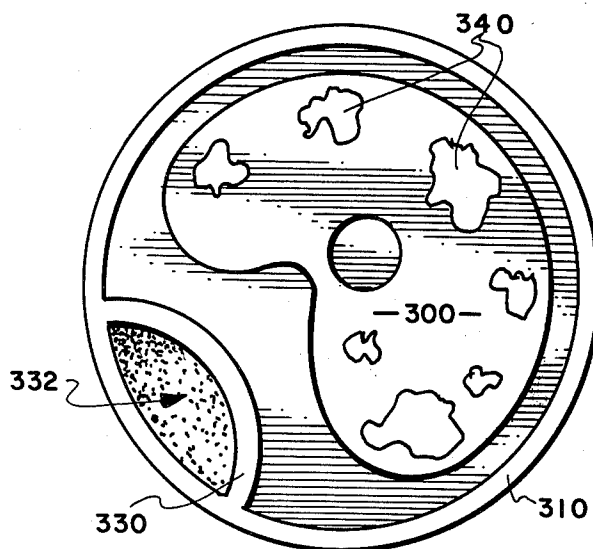


FIG. 7

METHOD AND APPARATUS FOR PRESERVING SOLVENT-DISPERSED CHEMICALS

INTRODUCTION

The instant invention relates to devices for preserving small quantities of solvent-dispersed chemicals in an atmosphere saturated with the appropriate solvent vapor.

It relates, more particularly, to the preservation of artists' colors at their proper consistency during periods of non-use.

There are many instances in the industrial arts and other fields where a requirement exists for the use of a number of differing chemical substances, paint colors or a series of reagents, for example, which have to be readily accessible for repeated use and yet be unaffected by exposure to the atmosphere at other times. Difficulties arise if these substances must be dispersed in a volatile solvent; as solvent is lost from the composite mass, the utility of the substance declines. For example, the artist must have access to his paints while he is at work, yet, inevitably, these paints will harden and become useless in time due to continuous evaporation of the solvents.

These problems are further compounded by the general availability of colors and other solvent-borne substances in small, hermetically sealed jars or tubes. It is difficult, if not impossible to dispense only the exact amount needed at a particular time and the practitioner is often faced with having a large quantity of useful and valuable chemicals on the workbench or palette at the end of the working day, which, if left unprotected, will become waste before he resumes his labor hours or days later.

It is, therefore, a primary object of the invention to teach a method of preserving such solvent-dispersed chemical substances from desiccation, and to teach the construction of appropriate containers wherewith said method may be carried out.

It is a further objective of the instant invention to provide such containers in forms convenient in use and economical in manufacture.

SUMMARY

The invention attains its objects by providing a hermetically sealable, two-piece container in which the chemical substances to be preserved may be stored and into the base of which a porous, spongy mass is affixed in a space separated from, but communicating with, the main volume of the container. The porous mass referred to above is adapted to receiving and retaining a quantity of liquid solvent.

Because of the large effective surface area presented by the porous mass, as compared to the surface of the chemical substances in the enclosed volume, the solvent necessary to attain a saturated atmosphere within the container will be drawn preferentially from the sponge, thereby materially reducing evaporation from the substances to be protected from desiccation. Once the atmosphere within the container is saturated, further evaporation of solvent will occur only to the extent that vapor leaks from the container through the seals provided between its component halves. Such leakage can be held to very low magnitudes, or completely prevented, ensuring the almost indefinite preservation of the chemical substances, such as artists' paints, stored in the container of the invention.

The container may be further elaborated by the addition of working or storage spaces, carrying handles and other auxiliary devices; notably the cover can be used as a mixing surface when the base is used for storing paints.

The initial cost of the container and the need for periodic replenishment of the solvent stock are more than compensated by the saving in materials and clean-up efforts which would otherwise be unavoidable.

In addition, with the use of the present invention, it becomes possible to prepare for a painting session well in advance by placing the painting materials to be used on the palette of this invention and closing the palette. Thus, a painting session may be prepared for ahead of time without the loss of valuable time, for example, during a classroom session; and further, the same palette preparation may be used for more than one painting session without the necessity of discarding left-over painting materials and reparing the palette for a subsequent session. Still further, the palette of this invention, once prepared, is portable and may be carried by the painter without the danger of exposed painting materials coming into contact with other than its intended surfaces.

An embodiment of this invention is a method for preserving solvent-dispersed chemicals in a compartmented, hermetically sealable container, comprising the steps of placing a porous mass in one of said compartments; placing said chemicals in at least one other of said compartments; saturating said porous mass with solvent; and sealing said container.

Another embodiment of this invention is a sealable container for preserving solvent-dispersed chemicals, comprising a dished, compartmented base; a cover; a peripheral seal between said base and said cover; and a porous, solvent-retaining mass affixed in one compartment of said base.

A specific embodiment of the invention is an artist's palette, comprising a dished, compartmented base for receiving portions of paint; a cover; a peripheral, hermetic seal between said base and said cover; and a porous, solvent-retaining mass entrapped in one compartment of said base for retaining solvent, whereby, upon engagement of said seal between the base and the cover, the enclosed volume of the palette is kept saturated by solvent retained in said porous mass.

Another embodiment of the invention is a method for preserving artists' colors from desiccation in a compartmented, sealable palette, comprising the steps of placing a porous, solvent-saturable wick in one of said compartments; placing said colors in other compartments; saturating said wick with solvent; and sealing said container.

Still another embodiment of the invention is a container for preserving artists' colors on a palette from desiccation, comprising a dished base, substantially circular in plan; a cover for said base; seal means engaging said base and said cover; partition means, subdividing said dished base; and a porous mass, secured in one subdivision of said base, for retaining solvent; whereby, upon placing said palette in other of said subdivisions of the dished base, saturating said porous mass with solvent, and engaging said seal between the base and the cover, the palette is stored in an enclosed atmosphere saturated with solvent evaporating from said porous mass, thereby preserving said colors from desiccation.

Many other advantages and potential uses will become apparent from the description of the preferred

embodiment below and others will suggest themselves to one skilled in the art of preserving solvent-borne chemicals, once exposed to the teachings of this disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

The preferred embodiment of the invention is illustrated in the accompanying drawings, in which:

FIG. 1 is a perspective view of the controlled-atmosphere container of the invention;

FIG. 2 is a transverse section of the base portion of the embodiment of FIG. 1, taken along section line II—II;

FIG. 3 is an enlarged, sectional view of the hermetic seal of the embodiment of FIG. 1;

FIG. 4 is a partial perspective view of an alternate embodiment of the sponge-dish with a cover;

FIG. 5 is a perspective view of a container base provided with a number of radial subdivisions;

FIG. 6 is a transverse section through another embodiment of the container, employing a threaded lock between the base and cover; and

FIG. 7 is a controlled-atmosphere container, shown in plan view, adapted to receiving an artist's palette.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The preferred embodiment of the controlled-atmosphere container of the invention is illustrated in the perspective view of FIG. 1. The container consists of a dished base 10 and a cover 20. A smaller dish 30 is nestled within the base 10 and a sponge 32 is fixed or entrapped in it. The sponge 32 serves as a solvent reservoir for saturating the volume enclosed by the base 10 and the cover 20.

To prevent loss of solvent vapor from the protected, or controlled, volume, a hermetic seal, shown in FIG. 3, is incorporated into the mating edges of the base and the cover. This seal consists of a toroidal male member 12, integral with the peripheral wall of the base portion 10 and a female member 22 integral with the edge of the cover 20. When the base and the cover are brought into apposition, a slight downward pressure on the cover snaps the members 12 and 22 into the sealed position, as the lips of the member 22 expand slightly and entrap the bulbous portion of the member 12.

The preferred construction of the base 10 employs a hard plastic material, with a more compliant composition used for the cover 20. It is also possible to mold the sealing member 22 of rubber and attach it to the cover 20 by adhesive.

A transverse section of the base 10 of the container is shown in FIG. 2, taken along section-line II—II of FIG. 1. The sponge-dish 30 is located in the center of the base plate 14 and encloses the sponge 32. Individual masses 40 of the chemicals to be protected are introduced onto the base 14 as required.

The sponge 32 may be affixed in the dish 30 by adhesive bonding or by compressing a slightly larger sponge into the available space and retaining it in position by expansion against the periphery of the dish 30. It is also possible to provide a retaining cover. Such an embodiment is shown in FIG. 4, where a perforated cover 36 fits over the mouth of the sponge-dish 30. Alternatively, the sponge may simply be placed in the container without securing it thereto so that it may be easily removed and replaced.

Where the nature of the chemical substances to be protected does not permit retention on a flat surface, due to low viscosities, partitions may be provided to separate the individual specimens. A base 110, as shown in FIG. 5, subdivides the space between the perimeter of the base dish and the central sponge receptacle by means of radial walls 116. The partitions 116 extend to, and may be integral with, a flat bottom 114 and prevent the intermixing of the several substances charged into the pockets thus formed.

FIG. 6 shows yet another construction of the container, employing a threaded fastener to secure the seal between a base-dish 210 and a cover 220. A central boss 215 in the dish 210 is provided with a female thread which is engaged by a bolt 250 protruding through a coaxial orifice in the cover 220. Seals 211 and 213 are entrapped, respectively, between mating flanges on the perimeters of the base and the cover and between the bolt 250 and the cover; they ensure airtight sealing of the enclosed volume 200 from the atmosphere outside the container.

Specimens of chemical substances are stored in depressions 214 formed in the bottom of the base 210, similar in shape and function to the pockets of an egg carton. Solvent for saturating the volume 200 is retained in a doughnut-shaped sponge 232 which is held on the boss 215 by friction.

The bolt 250 could also be replaced by an expanding plug in which an elastomer sleeve is compressed against the sides of the bore of the boss 215 to grip the base 210 and secure the cover 220 thereto.

The container of the invention may also be adapted to receive conventional storage and work devices. An embodiment designed to hold an artist's palette is shown in FIG. 7, in plan view. A palette 300 is laid into a base dish 310; paint is stored on the palette in globs 340 and solvent, water or linseed oil, depending on the type of paint used, is stored in sponge 332 in a molded-in pocket 330. A cover similar to part 20 of the embodiment of FIG. 1 is used to seal the paint-bearing palette inside the preserving container.

The method of the invention and the containers adapted to carry the method into practice have been described with reference to certain uses, notably that of preventing desiccation of artists' colors. The method and containers are equally applicable in other uses where solvent-borne chemicals have to be maintained at a given consistency while remaining accessible to intermittent use.

The materials of construction for the containers may be chosen from the wide range of rigid and semi-rigid materials impervious to the flow of air or solvent vapor; plastics, glass, ceramics, elastomers and metals are equally adaptable to the base and cover portions of the container.

The solvent-retaining member may be a natural sponge, a porous elastomer or plastic, or a rigid porous mass, such as a sintered metal matrix, capable of holding a liquid solvent in capillary passages and presenting a large surface to aid evaporation.

The invention is particularly applicable to those artists' paints which depend on either evaporation of the carrier, media, base or solvent for drying; or which depend on the presence of air to initiate or accelerate a drying reaction.

There are a number of different classes of pigmented material which are useable as artists' colors. These include, for example, water colors in which the pigment

or color is soluble in water, the so-called oil-based paints which are generally comprised of a pigment carried in a polymerizable oil, which is soluble in various organic solvents such as turpentine. In addition, various synthetic polymerizable materials are employed as carriers or bases for colored pigments and these bases or carriers generally depend upon a polymerization reaction for hardening of the pigment in the carrier or base. These may be soluble in a variety of organic solvents in addition to water. Thus, as used in this specification, the words "solvent", "carrier", "media" and "base" refer to either the liquid carrier or liquid solvent which either evaporates or hardens after the material containing the paint pigment is applied to its desired surface. The thrust of the invention therefore is to maintain the paint material in a container saturated with the solvent (where drying is accomplished by evaporation of the solvent) or the carrier, base or medium where drying is accomplished by a hardening or polymerization reaction which is ordinarily initiated or accelerated by the presence of air or oxygen.

I claim:

1. A palette for artists comprising:
 - a dished base having an interior paint receiving section formed on a bottom plate, said base including an upstanding wall integrally connected to said bottom plate adjacent the periphery of said bottom plate, said bottom plate being circular, a boss attached to said bottom plate and located within said paint receiving section, said boss being centrally located upon said bottom plate;
 - a circular shaped cover having a depending annular wall located at the periphery of said cover, an opening centrally located within said cover, a movable locking member extending through said opening, with said cover placed upon said base said upstanding wall of said base being located in a close proximity to and in an overlapping arrangement with said annular wall of said cover and said locking member being located within said boss, said locking member being movable to a locking position to secure said cover to said base.
2. The palette as defined in claim 1 wherein:

said paint receiving section being divided into a plurality of separate compartments with each said compartment being adapted to receive a separate quantity of paint.

3. The palette as defined in claim 1 wherein: said bottom plate being extended laterally out from said upstanding wall, with said cover located upon said base said annular wall being located against said extended portion of said bottom plate.
4. The palette as defined in claim 3 including: sealing means located between said depending annular wall and said extended portion of said bottom plate when said cover is positioned upon said base.
5. The palette as defined in claim 1 wherein: sealing means located between said movable locking member and said cover to provide an air tight connection therebetween.
6. The palette as defined in claim 1 including: a porous solvent retaining substance positioned within said paint receiving section.
7. The palette as defined in claim 6 wherein: said porous retaining substance being disc shaped having a central opening therethrough, said boss located within said central opening.
8. The palette as defined in claim 1 wherein: said paint receiving section being divided into a plurality of separate compartments with each said compartment being adapted to receive a separate quantity of paint, said bottom plate being extended laterally out from said upstanding wall, with said cover located upon said base said annular wall being located against said extended portion of said bottom plate.
9. The palette as defined in claim 8 wherein: sealing means located between said depending annular wall and said extended portion of said bottom plate when said cover is positioned upon said base.
10. The palette as defined in claim 9 wherein: a porous solvent retaining substance positioned within said paint receiving section, said porous retaining substance being disc shaped having a central opening therethrough, said boss located within said central opening.

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