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(58) Field of search

B8D

Selected US specifications from IPC sub-class B65D

(54) Fluid container

(57) A container 1 has a float 2, which floats upon the surface of a fluid 4 within the container to prevent deterioration of the fluid. The float can move relative to the container side wall by being sized relative to the diameter of the container to produce a clearance between its edges and the inside walls of the container, or the float may have a flexible material capable of bending freely provided around its edges, (Figure 2). The float may have a hollow cavity filled with an appropriate weight formed by a liquid, solid, or gas. (Figure 3). The float may float at the interface between the two fluids having different properties (Figure 4). The container may have a neck (Figure 2) or a spout 8. The fluid may be a liquid food, cosmetic or petroleum product.

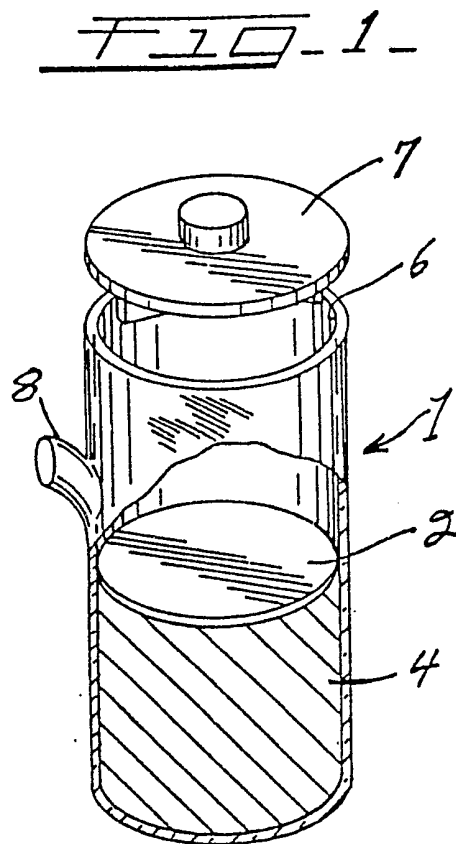
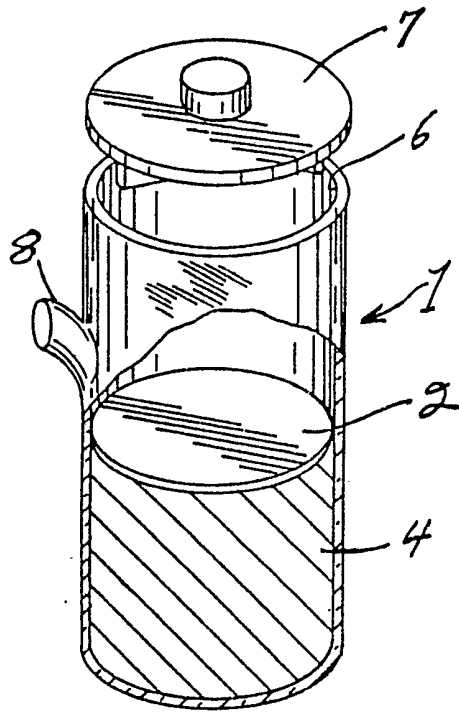
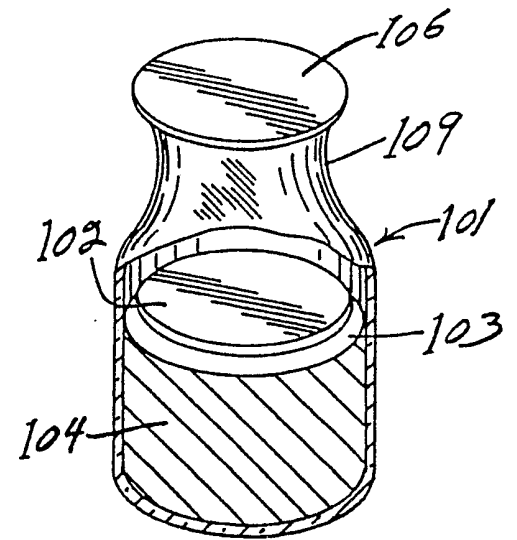
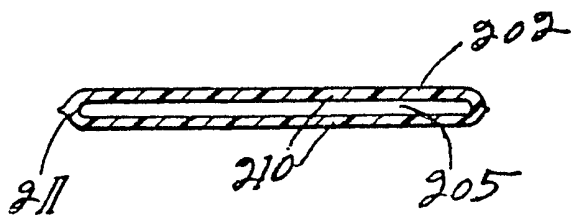
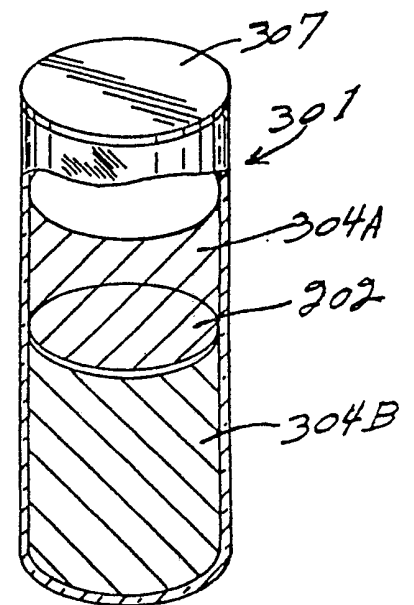


FIG. 1.FIG. 2.FIG. 3.FIG. 4.

SPECIFICATION

Fluid container having a float

5 This invention relates to containers, and more particularly it relates to fluid containers for holding liquid seasonings and other liquid food ingredients such as those used in homes, restaurants, etc.; to fluid containers used to hold liquid cosmetics; and to fluid
10 containers used to hold oil, gasoline, and other liquid petroleum products, etc. Such liquid seasonings and other liquid food ingredients, liquid cosmetics, and oil, gasoline, and other liquid petroleum products will simply be referred to herein as "fluids".

15 There are presently available a great number of different types and shapes of containers for holding fluids. Regarding the shapes of these fluid containers, some, for example, have a narrow, round neck and a fat body, others have no neck distinguish-
20 ably different from the body, and still others have a rounded body with a long narrow neck; the list of different shapes would be virtually endless. The shapes of these various fluid containers are selected for use according to the tastes of the persons using
25 them.

However, although there is already a virtually innumerable variety of different fluid containers, there has, as yet, not been provided a fluid container having a float inside of it. The main object of this inven-
30 tion is to provide a fluid container having a float therein, which has not previously been available.

Although there are a vast number of different fluid containers in use in daily life, the most common method of use has been when a fluid is placed inside
35 the fluid container and stored there, to simply close the main fluid inlet or main opening of the fluid container with a cover, cap, etc., and to leave open any other inlets or openings. Thus the surface of the fluid inside the fluid container has been constantly ex-
40 posed to the air, resulting in the oxidation, deterioration, etc., of the fluid surface, and causing a considerable drop in the quality of the fluid. This type of fluid container, therefore, has the drawback of not being able to maintain the freshness of the fluid kept inside
45 it for a long period of time.

In addition, when two types of fluids having different properties are placed inside the upper and lower portions of a fluid container of which the open-
50 ing is closed with a cover, cap, etc., oxidation or deterioration occurs at the contact surfaces or interface of the two fluids, thereby having the drawback of lowering the quality of both fluids.

Thus, the general objective of this invention is, in order to solve the problems described above, to pro-
55 vide an inexpensive and convenient fluid container including means which by preventing the surface of the fluid from being exposed to the air, or by preventing different liquids from contacting each other, prevents the oxidation, deterioration, etc., of the fluid
60 placed inside the fluid container and maintains the quality of the fluid for as long as possible.

To achieve the objectives described in the above apparatus in accordance with the invention com-
65 prises a fluid container and a float inside the body of the fluid container, which floats upon the surface of a

fluid within the container. The float is sized relative to the diameter of the container to produce a clearance between the edges or sides of the float and the inside walls of the fluid container, or the fluid container is
70 provided with a float having a flexible material capable of bending freely which is provided around the edges or sides of the float. The invention further comprises a fluid container including a float having a hollow cavity filled with an appropriate weight
75 formed by a liquid, solid, or gas.

The foregoing and other objects and advantages of the invention will be better understood from the following detailed description taken in conjunction with the accompanying figures of the drawings, wherein:

Figure 1 is a perspective view partially in section of a fluid container according to this invention;

Figure 2 is a view similar to *Figure 1* but showing an alternative form of the invention;

85 *Figure 3* shows a cross-sectional view of a float in accordance with the invention; and

Figure 4 is a view similar to *Figures 1* and *2* but showing still another form of the invention.

In *Figure 1*, the body of the fluid container 1 is
90 made of plastic, glass, ceramic, or some other material of the type generally used for containers. The body has an opening 6 formed at its upper end, which may be closed by a cover or lid 7. In this example, a pouring spout 8 is provided on one side of the container body.

A fluid 4 is placed inside the fluid container 1 and a float 2 made of plastic, rubber, rigid waterproof paper, or some other appropriate material is also
100 container within the fluid container 1 and floats on the surface of the fluid 4. In the example shown in the drawings, the body of the container 1 is round in cross section and the float 2 has the shape of a round disk. The diameter of the float is slightly less than the inner diameter of the container so that the float is
105 able to slide up or down in the container. This float 2 may be inserted into the fluid container 1 beforehand and the fluid 4 poured into the fluid container 1 at some later time, or the float 2 can also be inserted into the fluid container 1 through the opening 6 after
110 the fluid 4 has been poured into the fluid container 1. Even if the fluid 4 is poured into the fluid container 1 after the float 2 has previously been inserted into the fluid container 1, because the float 2 is made of a material which has a lower specific gravity than the
115 fluid 4, the float 2 will always float on the surface of the fluid 4.

Furthermore, even if the float 2 is flipped over by the act of pouring the fluid 4 into the container because the float 2 is made such that there is no differ-
120 ence between the top and bottom surfaces, there is no problem.

Thus, the float 2 always floats on the surface of the fluid 4 inside the fluid container 1. Also, as the fluid 4 inside the fluid container 1 is removed, the float 2
125 descends together with the surface of the fluid 4; conversely, if the fluid 4 is added to, the float 2 will rise inside the fluid container 1 by exactly the amount of fluid 4 added.

Figure 2 shows an overall view of a float 102 con-
130 tained inside a fluid container 101 having a narrow

neck 109. Even if the fluid container 1 has such a narrow neck 109, because the float 102 can be made of a soft, flexible material such as flexible plastic, the float 102 can be easily inserted into the fluid container 101 through the opening 106 by bending or folding the float 102 as needed or by rolling it into a cylindrical shape and then passing it through the narrow neck 109. Once the float 102 is inside the main body part of the container 101, the properties of the material of which the float 102 is made cause it to naturally resume its original shape, and it will then float on the surface of the fluid 104.

In addition, in cases where the fluid container 101 is shaped so that it has irregularities in both wide and narrow parts, it might be considered that the engagement or contact between the float 102 and the inside wall of the fluid container 101 when the fluid 104 is consumed or added to would prevent the float 102 from floating on the surface of the fluid 104. In order to ensure that the float 102 always remains floating on the surface of the fluid 104 even in these cases, a flexible flap or lip 103 made of a material which is capable of bending freely is provided around the periphery of the float 102. The flap 103 may be sized to closely contact the inner wall of the container 101, to always ensure the fluid 104 against exposure to the air. Because of the bending of this flexible flap 103, it is possible for the float 102 to move smoothly up and down along the inside walls of the fluid container 101 and thus always remain floating on the surface of the fluid 104 while contacting the container. Furthermore, by providing this flexible flap 103 capable of bending freely on the float 102, there is also the added convenience that, by bending this flexible material 103, the float 102 can easily be inserted into a fluid container 101 having a narrow neck 109 or opening 106.

Figure 3 shows a cross-sectional view of a float 202 having a hollow cavity 205 inside it. The float 202 is formed by two spaced apart thin walls 210 which are sealed together around their outer edges 211. The formation of a hollow cavity 205 inside the float 202 enables the float 202 to always float on the surface of the fluid. In addition, by placing an appropriate amount of water, oil, heavy gas, solid material, etc., into this hollow cavity 205, the float 202 can be made more stable.

Furthermore, as shown in Figure 4, when using this kind of float 202, if, for example, one type of fluid 304A and another type of fluid 304B, the fluids have different specific gravities, are placed inside a single fluid container 301, by giving the float 202 a heavier specific gravity than the upper fluid 304A and a lighter specific gravity than the lower fluid 304B, the float 203 can be made to float at the interface between the two fluids 304A and 304B. Thus, the two fluids are kept separate, and deterioration such as oxidation can be prevented from occurring at the contact surfaces of two fluids 304A and 304B having different properties.

It will be apparent from the foregoing that, by including a float inside a fluid container so that the float floats on the surface of a fluid within the fluid container, this invention prevents the surface of the fluid from contacting the air or prevents contact be-

tween two different fluids within the container, thus protecting the fluid against oxidation and deterioration, and allowing the quality of the fluid to be maintained for long periods of time. Furthermore, because it is possible to mass produce this fluid container out of plastic or some other inexpensive material, it also has the advantage of being extremely economical.

75 CLAIMS

1. A fluid container comprising a body portion forming an enclosure for a fluid, said body portion being formed by side walls and having an opening therein, a float inside said enclosure of said body portion, said float being adapted to have a lower specific gravity than the fluid whereby said float floats upon the surface of the fluid, said float having a slightly smaller diameter than said body portion whereby a small clearance is formed between said float and said side walls.

2. A fluid container as described in Claim 1, wherein said float comprises a central portion and a flexible portion around the periphery of said central portion, said flexible portion being adapted to bend freely.

3. A fluid container as described in Claim 1, wherein said float comprises walls forming a hollow cavity, said hollow cavity being filled with a weight formed by a liquid, solid or gas.

4. A fluid container substantially as described with reference to any of Figures 1, 2 and 4, with or without Figure 3.