Aug. 2, 1955 C. BURCKHARDT 2,714,260

SPECIFIC GRAVITY DEMONSTRATION ARTICLE

Filed May 24, 1954

FIG. 1

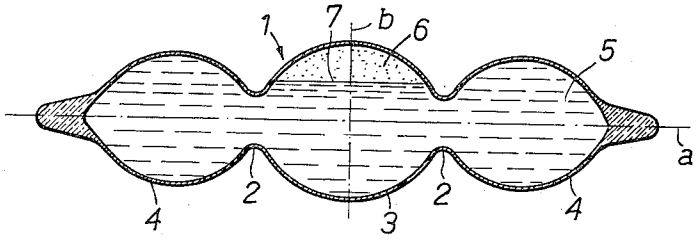


FIG. 2

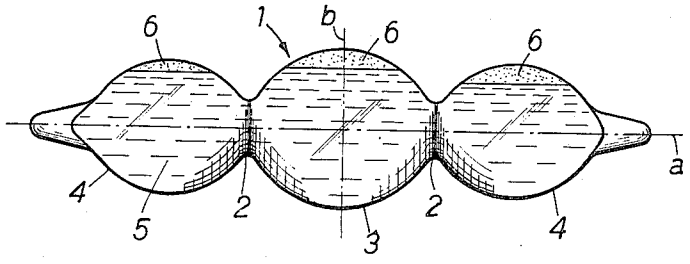
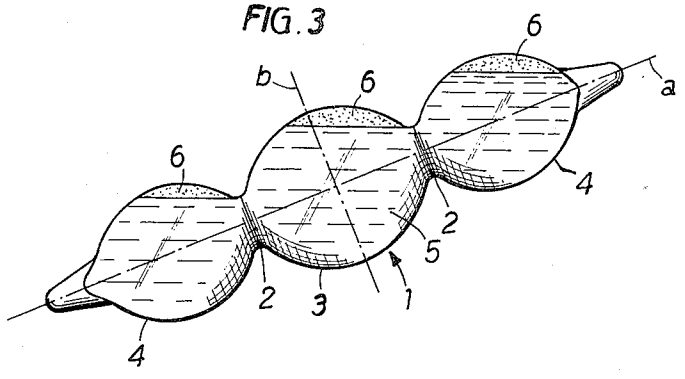


FIG. 3



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SPECIFIC GRAVITY DEMONSTRATION ARTICLE

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2 Claims. (Cl. 35—19)

The present invention relates to demonstration articles and more particularly to such demonstration articles, which may be used in physics teaching courses for the demonstration of physical laws.

An object of the invention is to provide an article, by means of which the influence of the specific gravity upon fluids e. g. under the influence of the centrifugal force can be demonstrated. Suitable fluids for this purpose are for instance, air and ether. It is evident that the greater the difference in specific gravity between the two fluids and the less their viscosity, the better they will be suited for the present purpose.

In order that the invention may be better understood and put into practice one embodiment of the invention is hereinafter described by way of example with reference to the accompanying drawings. In said drawings:

Fig. 1 is a longitudinal section through the demonstration article.

Fig. 2 is a front view of the article in horizontal position, and

Fig. 3 is a front view of the article in inclined position.

In the drawing, the numeral **1** designates an oblong container made of transparent material, e. g. glass, which with respect to its longitudinal axis forms a symmetric body generated by rotation and in addition is symmetric with respect to a transverse middle plane. By means of constricted portions **2** the container **1** is divided into a middle chamber **3** and two outer chambers **4**, which chambers communicate with each other over the passages formed by the constricted portions **2**. The largest transverse diameter with respect to the axis *a* of the two outer chambers **4** is smaller than the largest diameter of the chamber **3**.

The container **1** is filled with two fluids **5** and **6** of different specific gravity e. g. with ether and air. Naturally it is possible to use two other fluids of different specific gravity as for instance, water and oil. The only condition to be met is that at least one of the fluids is a liquid.

The volume ratio of the two fluids **5** and **6** is chosen according to the shape of the container, such that in the horizontal position of the latter all the lighter fluid **6** may be contained in the middle chamber above the level of the passages formed by the constrictions **2**. The dividing plane of the two fluids, for this case, is indicated by the dash line **7** in Fig. 1.

It will be understood that normally all three chambers **3**, **4** contain a part of the lighter fluid as shown in Fig. 2. Such a distribution of the lighter fluid can be effected in a simple manner by tilting the container **1** accordingly. In tilted position of the container, as shown in Fig. 3, one of the chambers **3**, **4** can at the most hold only such a quantity of lighter fluid that the horizontal dividing

plane between the two fluids in each chamber will coincide with the horizontal tangential plane through the vertex of the constriction **2** positioned above the respective chamber. The volume ratio of the two fluids, the shape and disposition of the constricted portions and the size of the chamber spaces lying above the vertex of the constricted portions are adapted with respect to each other in such a manner that if the container is tilted from one inclined position, in which all lighter fluid is contained in the higher outer chamber, over the horizontal into a second inclined position in which said outer chamber is lower than the two other chambers, the flow of the lighter fluid from the middle chamber into the other outer chamber will start, before all the lighter fluid from the first outer chamber has passed into the middle chamber. This means that it is not possible to assemble all lighter fluid in the middle chamber, if use is made of gravitation only.

If on the other hand, the container having a fluid distribution as shown in Fig. 2 is placed upon a horizontal support and imparted a revolving motion around its vertical middle axis *b* the influence of the specific gravity of the two fluids will become apparent, due to the heavier fluid **5** being driven outwards with more force than the lighter fluid **6**, so that the latter will be driven from the chambers **4** into the middle chamber **3**. By means of rotation a distribution of fluids is obtained such that the two outer chambers **4** will only hold heavier fluid **5**, while the lighter fluid **6** will be fully assembled in the dome-shaped portion of the middle chamber **3**.

While the form of the container herein shown or the fluids mentioned are admirably adapted to fulfill the object primarily stated, it is to be understood that it is not intended to confine the invention to the one form or embodiment herein disclosed. For instance the three chambers could be given spherical or cylindrical form. On the other hand it is also possible to shape the container not as a rotational body but with a substantially level or slightly convex lower side, while the three chambers could also have equal volume.

I claim:

1. A demonstration article, comprising an oblong container of transparent material, symmetrical with respect to a transverse middle plane, two non-mixing fluids of different specific gravity contained in said container at least one of which is a liquid, the container having a middle chamber and two outer chambers and constricted passages connecting said chambers, the volume of the middle chamber situated above the level of the constricted connecting passages being at least equal to the total volume of said fluid of smaller specific gravity whereby, when the container is tilted from one inclined position in which all lighter fluid is contained in the higher outer chamber, over the horizontal into a second inclined position, in which said outer chamber is lower than the two other chambers, the flow of said lighter fluid from the middle chamber into the other outer chamber will start, before all of the lighter fluid has passed into the middle chamber.

2. A demonstration article according to claim 1, wherein said container with respect to its longitudinal axis is shaped as a rotational body, the largest diameter of said outer chamber being smaller than the largest diameter of the middle chamber and said connecting passages between said chambers being constituted by constrictions in the wall of the container.

No references cited.