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Landsinger et al.

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[54] **GLOBULE DISPLAY TOY**

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[21] Appl. No.: **116,781**

[52] **U.S. Cl.** ..... **40/106.21**, 46/41, 272/8 P, 350/5, 353/2

[51] **Int. Cl.** **G09f 13/24**

[58] **Field of Search** ..... 40/106.21; 350/4, 350/5; 353/1, 2; 272/8 P; 46/41

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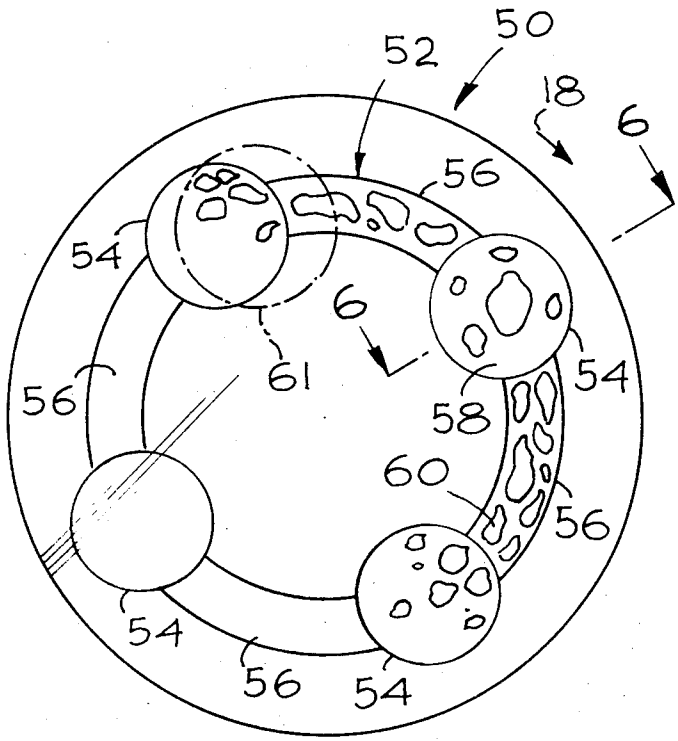
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Assistant Examiner—John F. Pitrelli
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[57] **ABSTRACT**

A disc having a thin chamber filled with immiscible fluids such as glycerine and air to form floating bubbles, the chamber having barriers or chamber regions of different thicknesses to provide a sudden change in movement of the bubbles. In one disc, several barriers extend partially across the chamber so that the bubbles slither around the barrier. In another disc, the chamber includes thick regions connected by narrow tubes so that the bubbles suddenly accelerate when they enter the thick regions.

1 Claim, 8 Drawing Figures



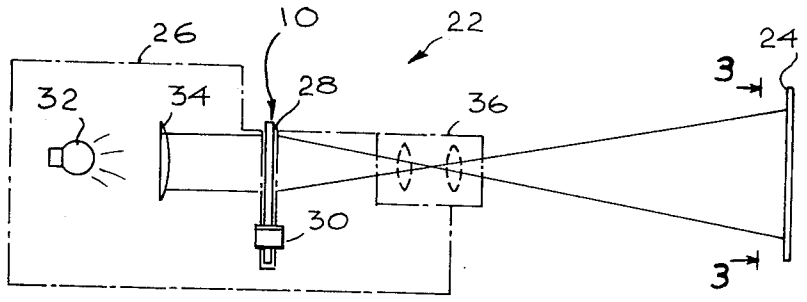


Fig. 1

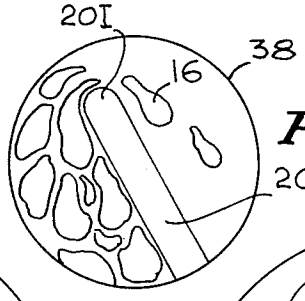


Fig. 3

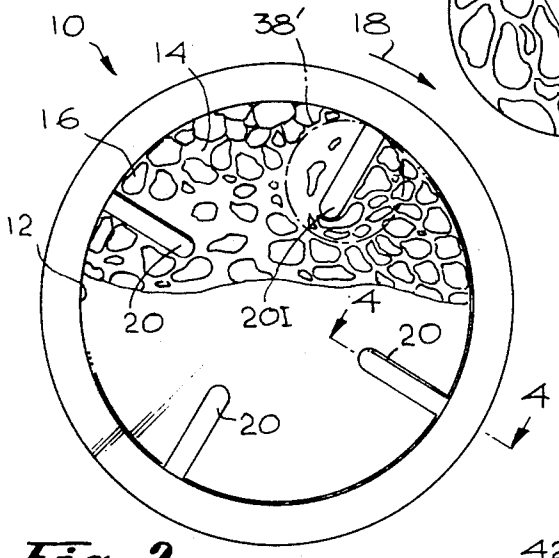


Fig. 2

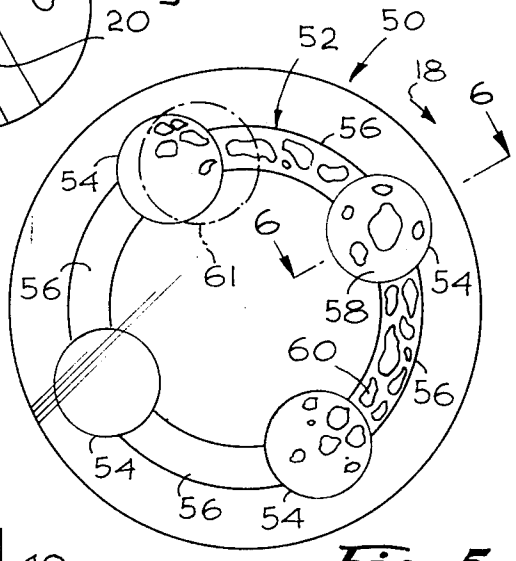


Fig. 5

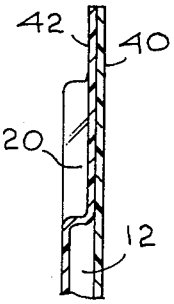


Fig. 4

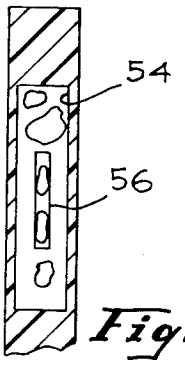


Fig. 6

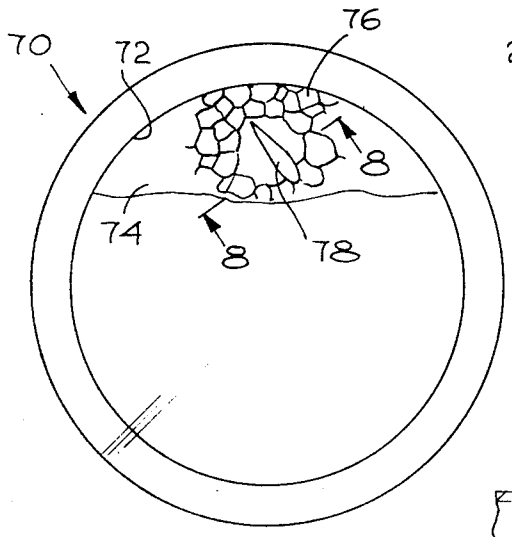


Fig. 7

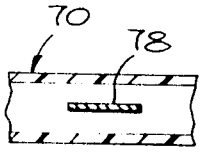


Fig. 8

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GLOBULE DISPLAY TOY

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to toys and to entertainment apparatus for presenting visual displays.

2. Description of the Prior Art

Interesting display devices can be provided by containers filled with immiscible fluids, so that one fluid forms globules or bubbles that float in the other. The containers can be made thin so that the boundaries of the bubbles can be seen and so that the containers can be easily held in a projector or viewer. The novelty of such displays depends largely upon the motion of the bubbles therewithin. Accordingly, a display device which promoted interesting bubble movements would be especially entertaining.

OBJECTS AND SUMMARY OF THE INVENTION

An object of the present invention is to provide apparatus that creates novel and interesting visual displays.

Another object is to provide fluid-filled containers that are shaped to encourage entertaining movement of globules or bubbles therein.

In accordance with one embodiment of the present invention, a display device is provided which includes a thin chamber filled with glycerine and air and shaped to encourage interesting movements of air bubbles therein. The chamber has a thin disc shape, and includes several finger-like barriers extending radially inwardly. As the disc is slowly rotated and the bubbles rise against the barriers, the bubbles elongate, move around the barrier, and suddenly accelerate when reaching the end of the barrier. The effect is a slithering movement with sudden acceleration at the end, which is entertaining to observe. If an inverting projector is used to project an image of a portion of the disc onto a screen, then the bubbles appear to be globules that slither over a barrier and rapidly plop to the bottom of the container.

In another embodiment of the invention, the chamber is formed by several thick portions connected by thin tube portions. The bubbles of air move slowly through the glycerine in the tube portions and suddenly accelerate towards the top of the thick portions when they enter therein. Again, projection on a screen by an inverting projector creates an image wherein the bubbles appear to plot into the thick chamber portions.

The entertainment value of the display devices can be increased by including bubble pricking members in the chambers. Such members, which can have the form of flat torpedoes, eliminate the barrier between bubbles as the members pass through them. Thus, the bubbles suddenly grow together as the torpedo moves through the chamber, thereby creating an interesting effect.

The novel features of the invention are set forth with particularity in the appended claims. The invention will be best understood from the following description when read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a simplified view of display apparatus constructed in accordance with the invention, showing the projection of an image on a screen;

FIG. 2 is a front view of a display wheel of the apparatus of FIG. 1 during slow rotation thereof;

FIG. 3 is a view of the area 3—3 of FIG. 1;

FIG. 4 is a view taken on the line 4—4 of FIG. 2;

FIG. 5 is a front view of a display wheel constructed in accordance with another embodiment of the invention;

FIG. 6 is a view taken on the line 6—6 of FIG. 5;

FIG. 7 is a front view of display apparatus constructed in accordance with yet another embodiment of the invention; and

FIG. 8 is a view taken on the line 8—8 of FIG. 7.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 2 illustrates a transparent container in the form of a wheel **10** with a thin but wide chamber **12** that contains glycerine **14** and air **16** to form interesting patterns. The glycerine **14** preferably contains a dye so that the air globules or bubbles **16** are easily differentiated from the glycerine. Many air bubbles **16** are formed when the container is shaken, and if the container is turned in the direction of arrow **18,** the bubbles constantly tend to move therein towards the top of the chamber. The movement of the bubbles is hampered somewhat by four barriers **20** which extend partially across the chamber to partially block the movement of bubbles therein. The bubbles move in a novel and interesting manner around the barriers **20,** which adds interest to the display.

As the bubbles approach a barrier **20,** they appear to be pressed against the barrier, and the bubbles tend to elongate. The elongation is particularly noticeable at the region of a bubble which is passing around the inner end **20I** of a barrier. As soon as a bubble passes around the inner barrier end **20I,** it is then free to rapidly move upwardly in the chamber.

The container **10** is thin, and is well adapted for holding in a projector for display on a screen. FIG. **1** illustrates a projector **22** for displaying an image of the disc **10** on a screen **24.** The projector includes a housing **26** with a slot **28** for receiving the disc **10,** and with a pair of bearings **30** for rotatably supporting the disc in the slot. A lamp **32** and condenser lens **34** form a light source for shining light through an upper region of the disc **10.** A lens assembly **36** forms an image of an upper portion of the disc on the screen **24.** The image on the screen **24** is inverted and is illustrated at **38** in FIG. **3,** this image representing the inversion of the area **38'** in FIG. **2.** The fact that the image **38** is inverted adds greatly to the novelty of the display. The bubbles **16** appear to be gelatin-like objects that slither up the barrier **20** and then "plop" or drop in an uncontrolled fashion down the other side of the barrier. The fact that people are acquainted with objects that fall in an uncontrolled manner rather than rising, generally makes the inverted image more entertaining to children.

The disc **10** is formed in the manner shown in FIG. **4,** by two sheets **40** and **42** of clear plastic whose faces are adjacent to one another. One of the sheets **42** is depressed along its perimeter and sealed therealong to the perimeter of the other sheet **40.** The sheet **42** therefore forms the thin chamber **12** between itself and the sheet **40.** The barriers **20** are formed by finger-like depressions in the sheet **42** which, like the perimeter, may be joined to the sheet **40.** Such joining can be made by adhesives or by the application of heat.

A variety of fluids can be utilized in the chamber **12.** The use of air and a liquid results in bubbles that can move fairly rapidly through the chamber. Glycerine is useful in restricting the speed of bubble movement to a moderate range. Of course, in addition to glycerine, additional liquids of different colors can be included which are immiscible in the glycerine, to create globules of a liquid that floats in another liquid. The fact that the chamber **12** is thin means that the outlines of even small bubbles, of a diameter greater than the thickness of the chamber **12,** can be easily seen.

FIG. **5** illustrates a disc **50** with a chamber **52** which includes four pad-like regions **54,** and four tube-like regions **56** that connect the pad-like regions in series. The container is filled with glycerine **58** and air bubbles **60.** When the disc **50** is rotated in the direction of arrow **18,** the bubbles move in an opposite direction through the tubes and pad regions. As shown in FIG. **6,** the tubes **56** are much thinner than the pads **54.** Accordingly, the bubbles spread out and move slowly through the tubes, and then appear to shrink and move rapidly into the pad regions. When a bubble reaches a pad region, it floats rapidly upwardly therein. When the disc **50** is inserted into the slot **28** in the projector of FIG. **1,** an inverted image of a region such as region **61** may be projected onto the screen. In the inverted image, the bubbles appear to move slowly down along the tube and then "plop" down into the pad region.

It has been found that small, light-weight, elongated members floating in a container can pierce the boundaries between adjacent bubbles. FIG. **7** illustrates a disc **70** with a wide, flat chamber **72** filled with glycerine **74** and air bubbles **76.** In addition, a bubble piercing member **78** is included. The bubble piercing member **78** can float in the chamber, and when it passes through bubbles it breaks the boundary between adjacent bubbles. Typically, a short time after the disc member is shaken, bubbles begin to rise to the top of the chamber. However, the bubbles remain separate from one another by thin films of glycerine. When the bubble piercing member **78** floats along the top of the chamber, every time it passes into the boundary between adjacent bubbles, it eliminates the boundary and forms one larger bubble. Accordingly, the piercing member leaves a constantly growing bubble in its wake. The bubble piercing member **78** is preferably elongated to facilitate movement through the fluids in the chamber, and has a small thickness, as illustrated in FIG. **8,** to enable its free movement in a thin chamber.

Thus, the invention provides pattern display devices which produce novel and entertaining effects. Some of the devices include thin and wide chambers with barriers for causing a change in bubble shape and movement. The barriers can extend like a wall so that bubbles must move around them, or may take the form of narrowed regions such as thin tubes that connect thicker regions. The display devices may be used with inverting viewing mechanisms such as projectors, so that bubbles of gas in a liquid appear to fall downwardly after passing through barrier regions. A further novel effect is obtained by the use of elongated members freely floating in the chambers, that pierce bubbles therein.

Although particular embodiments of the invention have been described and illustrated herein, it is recognized that modifications and variations may readily occur to those skilled in the art and, consequently, it is intended that the claims be interpreted to cover such modifications and equivalents.

What is claimed is:

1. The display device comprising:

means defining a sealed, transparent, elongated passageway, including a plurality of tube portions and at least one pad portion connecting a pair of said tube portions, said pad portion being thicker and wider than either of said pair of tube portions;

at least two substantially immiscible fluids disposed in said passageway, one of said fluids substantially filling said passageway and another of said fluids being of lower specific gravity and in the form of discrete globules buoyantly dispersed in said one fluid and of a size to extend between opposite walls of said passageway, one of said fluids being a liquid and another being a gas, to provide bubbles that can rise rapidly; and

means for providing an inverted image of a portion of said passageway whereby said bubbles appear to rapidly fall into said at least one pad portion.

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