Feb. 20, 1962 R. Y. ALLEN ETAL 3,021,639

SOAP BUBBLE TOY

Filed June 15, 1959

2 Sheets-Sheet 1

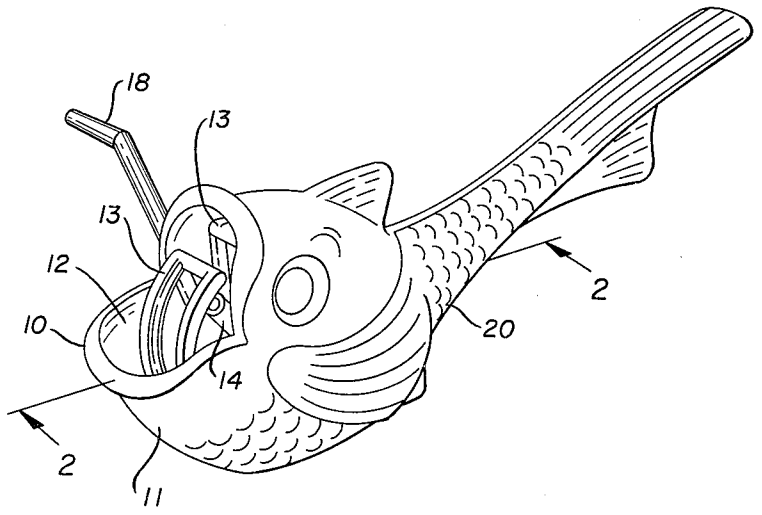


FIG. 1

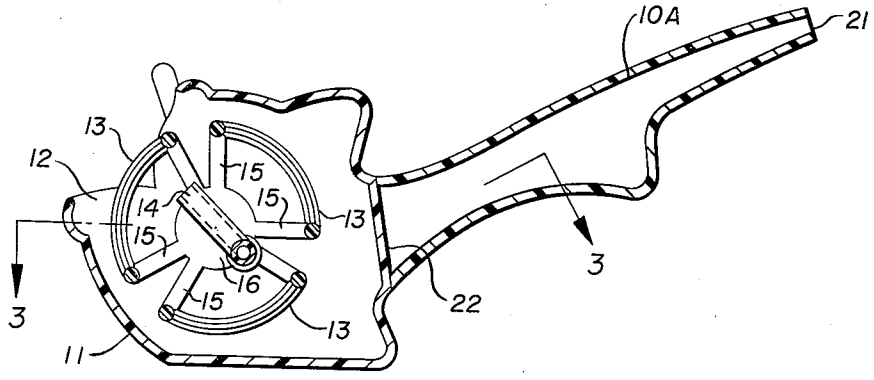


FIG. 2

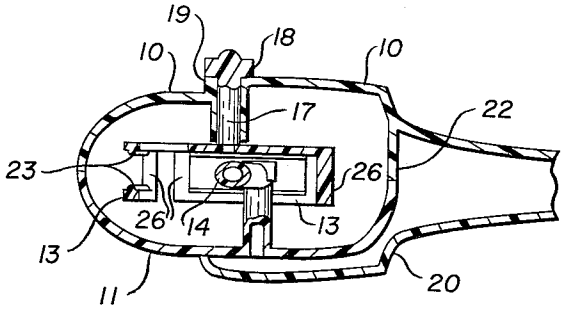


FIG. 3

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2 Sheets-Sheet 2

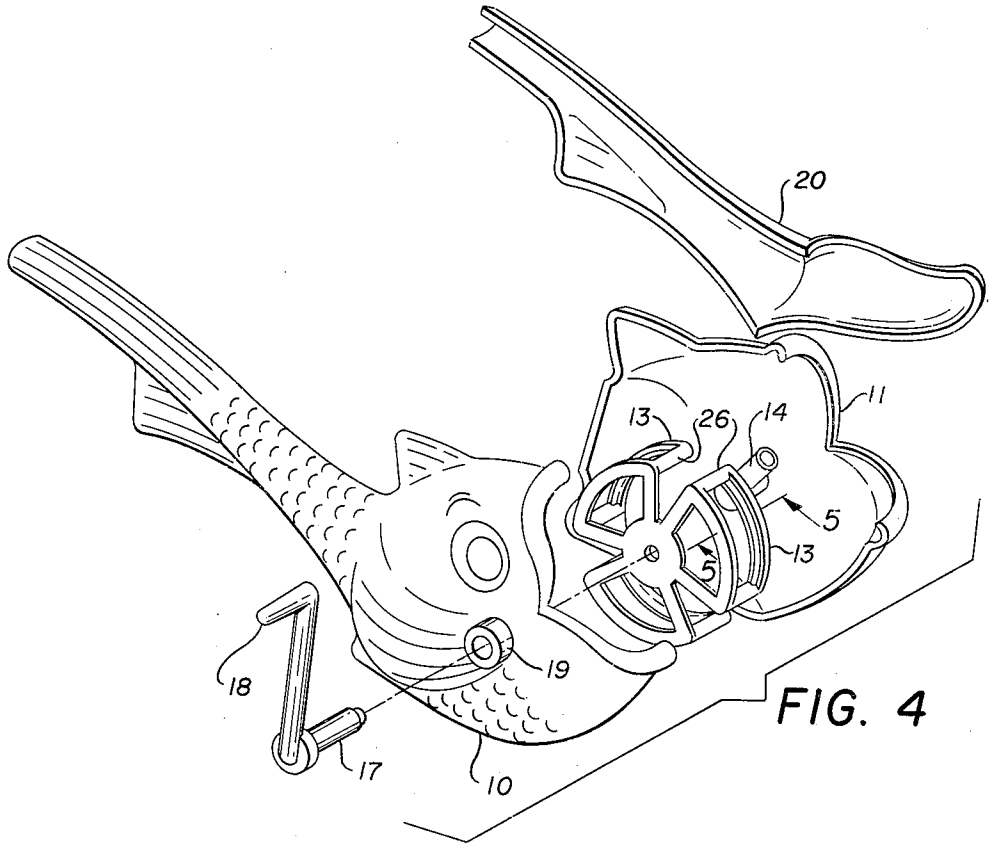


FIG. 4

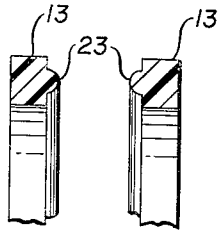


FIG. 5

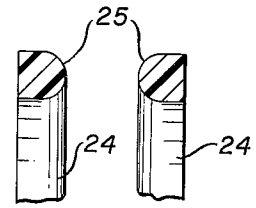


FIG. 6

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SOAP BUBBLE TOY

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2 Claims. (Cl. 46—7)

This invention relates to a soap bubble toy and more particularly to a toy incorporating novel means for forming soap films and directing air therethrough.

The principal object of the invention is the provision of a soap bubble toy of simple and efficient design capable of forming soap bubbles with a minimum of effort.

A further object of the invention is the provision of a soap bubble toy wherein a housing in the form of an ornamental object holds liquid soap and a film forming device therein and forms an integral passageway directed into one side of the film forming device.

A still further object of the invention is the provision of a soap bubble toy incorporating liquid soap and a film forming device including several frames movable into and out of the liquid soap in the housing.

A still further object of the invention is the provision of a film forming device in a soap bubble toy in which arcuately bowed rectangular frames form soap film originating structures.

The soap bubble toy disclosed herein comprises an improvement in the art relating to such toys and wherein a novel and highly efficient soap film forming structure is employed to continuously form arcuate rectangular sections of soap film which are moved over a blow pipe so that soap bubbles are readily and easily formed. The structure for forming the soap film sections is mounted for rotation on an ornamental housing which also forms a container for liquid soap. The blow pipe comprises primarily a portion of the housing arranged in a novel manner to bring the air for forming the soap bubbles into proper position in the soap film forming mechanism.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being the intention to cover all changes and modifications of the example of the invention herein chosen for purposes of the disclosure, which do not constitute departures from the spirit and scope of the invention.

The invention is illustrated in the accompanying drawing, wherein:

FIGURE 1 is a perspective view of the soap bubble toy.

FIGURE 2 is a vertical section on line 2—2 of FIGURE 1.

FIGURE 3 is a horizontal section on line 3—3 of FIGURE 2.

FIGURE 4 is an exploded perspective view of the several parts of the soap bubble toy.

FIGURE 5 is an enlarged cross section on line 5—5 of FIGURE 4.

FIGURE 6 is a view similar to FIGURE 5 showing a modified form of this portion of the device.

By referring to the drawings and FIGURE 1 in particular it will be seen that the soap bubble toy comprises a housing formed of body sections 10 and 11 which are joined to one another on their vertical center lines and which housing defines a bubble emitting opening 12 and receives and rotatably supports a plurality of separate and distinct arcuate rectangular soap forming frames 13. Still referring to FIGURE 1 of the drawings it will be seen that a blow pipe 14 is provided in proper relation

to the plurality of arcuate rectangular frames 13 so that air directed therethrough as hereinafter described, will engage each of the arcuate rectangular soap film frames 13 as the same are moved in an annular path thereover.

The arcuate rectangular soap film frames 13 are each supported on a pair of radially positioned arms 15 which are joined at their innermost ends on a common hub 16. It will be observed that the arms 15 are off center with respect to the frames 13 and that the hub 16 is also off center with respect thereto. The hub 16 has a central aperture as may be seen by referring to FIGURE 4 and is mounted thereby on the end of a crank shaft 17 which includes an offset handle 18 as also best illustrated in FIGURE 4. The shaft 17 is positioned through a journal 19 in a wall of the body member 10 and terminates substantially in the central portion of the housing as may be seen in section in FIGURE 3 of the drawings so that the hub 16, which is cemented to the terminal inner end of the shaft 17 in the final assembly of the toy, is rotatably supported within the housing formed by the body members 10 and 11. The blow pipe 14 is L shaped as best seen in FIGURES 3 and 4 of the drawings and it will be observed that the upright portion thereof with the discharge orifice in the end thereof is positioned in a location corresponding with the outer center line of the plurality of radially positioned soap film frames 13 with the discharge opening thereof aimed at the opening 12 in the housing and positioned off center with respect to the annular path of the circumferentially spaced soap film frames 13. The opposite end of the blow pipe 14 extends through the body member 11 and communicates with the exterior thereof and air is directed into the same through a secondary body member 20 which overlies the side of the body member 10 of the housing and is spaced with respect thereto as best seen in FIGURE 3 of the drawings. The rearward extending portion of the secondary body member 20 matches the rearward extending portion 10A of the body member 10 and the same are joined to one another along their vertical edges, with their extreme outer ends forming an opening 21 through which air is directed into the soap bubble toy.

It will be observed by referring to FIGURES 2 and 3 of the drawings that the body member 10 has a transverse partition 22 therein dividing the main portion thereof from the rearward extension 10A thereof so that air blown into the rearmost portion of the toy through the opening 21 will not enter the housing formed by the body members 10 and 11 and in which the liquid soap is positioned as heretofore described but will flow around the same and through the blow pipe 14 as heretofore described.

By referring now to FIGURES 3, 4 and 5 of the drawings it will be observed that the inner surfaces of the longer side portions of the soap film frames 13 are ribbed as at 23 so that relatively small contact areas are defined which facilitate the separation of the soap film from the frame 13 when the frame 13 carrying the soap film is in line with the blow pipe 14. Alternately the inner surface of the longer sides of the soap film frames 13 may be rounded so as to define arcuate cross sections as disclosed in the modification of FIGURE 6 in which a modified soap film frame 24 has cross sectionally arcuate inner surfaces 25 on its longer side sections. The ends 26 of the rectangular soap film frames 13 are circular in cross section and this construction is essential to the separation of the soap film from the soap film frames 13 without tearing the soap film and destroying the bubble being formed when a soap film frame 13 is in line with the blow pipe 14 as heretofore described.

Those skilled in the art of assembling plastic toys and the like will observe that the body members 10 and 11 and the secondary body member 20 are cemented to one

another to form the housing shown in FIGURES 1, 2 and 3 so that the liquid soap may be retained in the housing in which the plurality of soap film frames **13** will be engaged when they are rotated by the crank **18** on the shaft **17**.

In operation liquid soap is poured into the bubble toy through the bubble emitting opening **12** until a pool of the same is formed of a depth to cover the soap film frames **13** when in lowermost position in the housing. The crank **18** is then turned manually while air is blown into the opening **21**. The soap film frames **13**, each of which is circumferentially disconnected to its adjacent frames, revolve in an annular path into and out of the liquid soap. Each of the frames **13** carries an arcuate rectangular soap film the edges of which are engaged on the ribs **23** and the ends **26** as heretofore described so that when the soap film frame **13** is in line with the upward and outward facing blow pipe **14** air coming therefrom is directed centrally thereagainst and a bubble formed of the soap film which rises upwardly through the opening **12** in the soap bubble toy and separates from the toy and floats away therefrom. A single breath blown into the toy by a child while the crank **18** is turned will produce a great many bubbles varying in size from a half inch to an inch and one half in diameter. The toy is so formed that each frame **13** produces an individual bubble with a minimum of effort and the size of the bubble is controlled by the rapidity of rotation of the frames **13** with respect to the blow pipe. In other words the soap film frames **13** slowly produce larger and fewer bubbles while rotating the soap film frames rapidly produces a large quantity of relatively smaller bubbles. It will be observed that it is practically impossible for a child playing with the toy to accidentally suck liquid soap into the blow pipe due to its positioning and arrangement and it will be observed that the soap bubble toy meets the several objects of the invention and having thus described our invention what we claim is:

1. A soap bubble toy comprising a hollow housing having an upwardly directed opening formed therein, a shaft journaled in a wall of said housing and projecting thereinto and terminating in the central portion of the housing, a hub fixed to the terminal inner end of said shaft within said housing and having a plurality of radially positioned arms, a plurality of separate and distinct arcuate rectangular soap film frames secured to the outer ends of said arms in laterally offset relation thereto, each of said soap film frames being circumferentially disconnected to its adjacent frames, each of said frames being defined by a pair of side members and a pair of end members interconnecting said side members, a blow pipe within said housing including a first portion extending from that side of the housing opposite said shaft into the confines of said rectangular frames and including an open-ended extension portion which extends substantially diametrically with relation to the annular path of said frames, said open end of the extension being disposed closely adjacent to the inner sides of said rectangular frames, the interrelationship between said open-ended extension and said frames being such that when one of the frames is disposed adjacent said opening in the housing, the open end of said extension is disposed substantially symmetrically with respect to the frame adjacent the opening in the housing whereby the open end is disposed substantially equidistantly between the end members of the associated frame, and the side members of the associated frame are also disposed substantially equidistantly from the open end of the extension and said associated frame will thereby receive the full discharge of a fluid stream issuing from said open end, from one end member of the frame to the other, said blowpipe opening to the outer side of said housing, said housing including a trough-like extension projecting therefrom, a secondary body member secured to said trough-like extension and forming therewith an air passageway leading to said housing, said secondary body member having an extension joined with said housing on the outer side thereof and leading around to said blowpipe opening with such extension forming with the outer side of said body a continuation of said air passage leading to said blowpipe, and means for manually turning said shaft.

2. Apparatus as defined in claim 1, wherein the side and end members of each frame have transversely rounded inner side surfaces to facilitate separation of soap bubbles from the frame and to prevent tearing of the bubbles.

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