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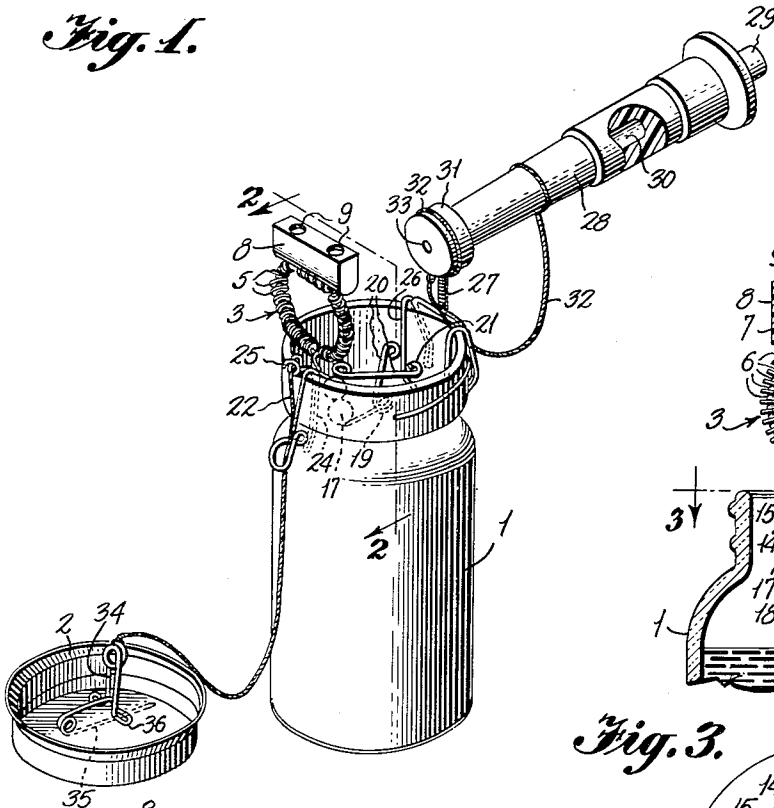
R. V. HOLLIS

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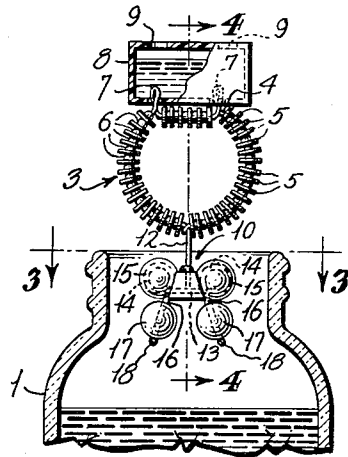
BUBBLE BLOWER

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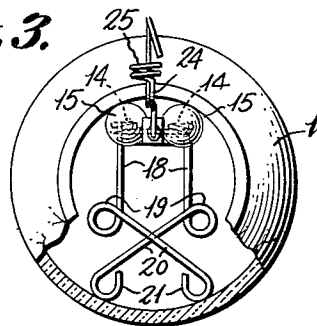
*Fig. 1.*



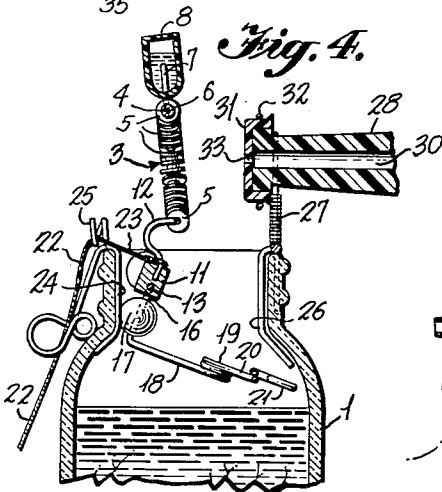
*Fig. 2.*



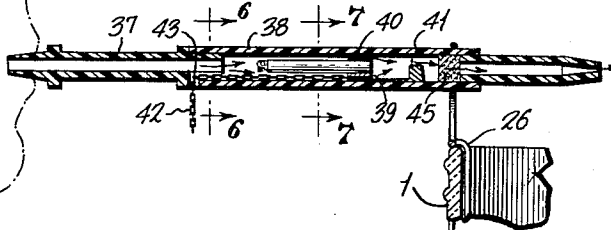
*Fig. 3.*



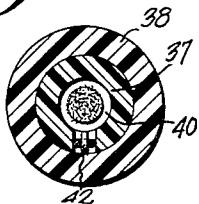
*Fig. 4.*



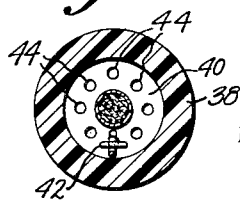
*Fig. 5:*



*Fig. 6.*



*Fig. 7.*



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**BUBBLE BLOWER**

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Application August 18, 1953, Serial No. 374,853

7 Claims. (Cl. 46—7)

This invention relates to bubble blowers, which primarily may be considered a toy.

One of the objects of the invention is to provide a bubble blower including a film supporting annulus adapted to be reciprocally freely suspended within a vessel of bubble making liquid in such a manner that it rests submerged in said fluid when at the lower limit of its range of reciprocation, and stands above the mouth of the vessel at the upper limit of its movement, the suspending means being a flexible element such as a string, which passes over the side of the vessel at the mouth, the annulus being supported by an underlying guiding frame which is freely gravitationally descendable with said annulus and which cooperates with the sides of the vessel to hold said annulus in stable upright position when at its upper limit of reciprocation with the axis of the annulus in a determined axial plane of the vessel.

Another object of the invention is to provide a film supporting annulus as described, adapted to be suspended in a vessel such as a jar, the inside walls of which converge toward the mouth, the supporting frame being weighted beneath said annulus and having forward extensions normally out of contact with the wall of the vessel, said frame being tiltable upwardly when it reaches the region of convergence of the walls of the vessel to bring said extensions against the walls of the vessel to hold said frame and annulus stably while the annulus is in its bubble blowing position.

Still another object of the invention is the provision of the film sustaining annulus, the supporting frame therefor and the suspending means as above described in which the suspending means passes through an eye in a guide member seated upon the mouth of a jar circumferentially at one side, the eye determining a definite radial position of that part of the suspending means between said eye and frame when said suspending means is tensioned, bringing the annulus and frame to a position in which the axis of the annulus is in the same radial plane as said eye.

A further object of the invention is the provision of a film supporting annulus comprising a circumferential series of closely spaced disks constituting a reservoir for bubble liquid held by surface tension, sufficient for a plurality of bubble blowing sequences.

Another object of the invention is to provide a film supporting annulus as described, having a reservoir for bubble liquid carried thereby above its upper arc and communicating with said annulus.

Still another object of the invention is the provision of a nozzle adapted to be supported on the mouth of the vessel at the side, confronting said annulus with its axis substantially in line with the axis of said annulus.

A further object of the invention is the provision of bubble blowing mechanism as described, the vessel having a closure to which the end of the suspending element remote from the annulus may be attached, the attaching means serving as a spool about which the slack portion of the suspending element may be wound when it

is desired to close the vessel with the annulus and supporting frame unit within it.

Other objects of the invention will appear as the following description of a practical embodiment thereof proceeds.

In the drawings which accompany and form a part of the following specification, and throughout the several figures of which the same reference numerals have been employed to denote identical parts:

Figure 1 is a perspective view of a bubble blower embodying the principles of the invention, part of the nozzle being shown in section;

Figure 2 is a vertical section taken along the line 2—2 of Figure 1;

Figure 3 is a section taken along the line 3—3 of Figure 2;

Figure 4 is a section taken along the line 4—4 of Figure 2;

Figure 5 is an alternative form of nozzle shown in axial section;

Figure 6 is a cross-section taken along the line 6—6 of Figure 5;

Figure 7 is a cross-section taken along the line 7—7 of Figure 5.

Referring now in detail to the several figures of the drawings, the numeral 1 represents a conventional jar having a screw cap 2, the inner wall of the jar converging toward the mouth in a zone adjacent the mouth. The film supporting annulus 3 is of such size as to pass freely through the mouth of the jar toward one side of the diameter thereof. The annulus, as shown, consists of a wire 4 strung with sequins 5, separated by beads 6, also strung on the wire. The wire is bent, in the upper arc of the annulus, to provide two upwardly extending spaced loops 7. These extend freely through holes in the bottom of the reservoir 8, which is supported upon the annulus by means of said loops. The upper face of the reservoir is provided with relatively large holes 9, so that when the annulus and reservoir are submerged within the jar, the bubble liquid in the reservoir 8 is replenished. The close spacing of the sequins enables the annulus to hold, through surface tension, sufficient liquid for a succession of blowing operations, and the reservoir holds an additional quantity of bubble liquid which slowly discharges upon the annulus through the small holes which surround the loops 7.

The frame 10 which supports the annulus comprises, in the illustrative construction shown, a small block 11 which carries an upright post 12 at the top, the annulus being secured to the upper end of said post at the middle of its lower arc. A wire 13 has its middle portion passing transversely through said block, which as shown, is bent to form weight receiving loops 14 at opposite sides of said block. A pair of weights 15 are secured in said loops. The wire extends downwardly from both loops, providing shanks 16 to which a second pair of weights 17 are secured. Both pairs of weights are symmetrically positioned with respect to a medial vertical plane through the block 11 and embracing the axis of the annulus, and the weights of a pair are so positioned that when they are in contact with the adjacent wall of the jar the line between their points of contact with the jar will be perpendicular to said medial plane. While two pairs of weights are shown in the illustrative example, a single pair, for instance the lower pair 17, may suffice.

Below the weights 17 both end portions of the wire 13 are bent forwardly substantially at right angles to the shanks 16, forming the limbs 18 which, in the interest of greater length with consequent increase in flexibility for adjustment, are each bent into a transverse loop 19 intermediately, with the terminal portions 20 freely

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diagonally intersecting and bent to form rounded ends 21.

The unit comprising the annulus 3 with the reservoir 8 and including the frame 10, is suspended by a string 22 attached to the block 11 above the weights 17, which string passes over the mouth of the jar. When the string is let go slack, the unit descends into the jar by gravity, to the bottom thereof, it being presumed that the depth of the bubble liquid in the jar is sufficient to submerge the entire unit, including the reservoir. During descent, the position of the unit with respect to its angular displacement is desultory, since it may swing with the tortional movement of the string so that no parts of it may be in contact with the wall of the jar or only the pair of weights 17. Since the forwardly extending limbs 18 overbalance the unit, it will when down in the body of the jar, assume a repose position inclined to a greater extent than as shown in Figure 4.

While the unit is suspended in the lower part of the jar the flight 23 of the string 22, which extends between the mouth of the jar and the frame 10, is vertical so that there is no component of force tending to tilt the frame contra to its normal position of forward tilt. However, as the unit rises under the pull of the string, the flight 23 gradually changes from a vertical position to one more nearly horizontal, creating a component of force which tilts the unit backward.

At the initial pull of the string, no matter what may have been the position of angular displacement of the unit within the jar, it automatically arranges itself in a phase of angular displacement in which the flight 23 of the string is substantially in the medial vertical plane embracing the axis of the annulus and with respect to which, as has been stated, the weights of the respective pairs are symmetrically arranged. When the frame 10 is pulled up to the point at which the weights 17 contact the convergent part of the interior wall of the jar adjacent the mouth, the frame tilts back, using the weights 17 as a fulcrum until the ends 21 of the limbs 18 contact the wall of the jar at the opposite side, this position of parts being shown in Figure 4, the annulus being preferably so disposed that its axis is inclined slightly upward in a direction opposite to the string 22 so as to be substantially in line with the jet emanating from the mouth of the person doing the blowing, who is presumed to be holding the jar in his hand. When the unit is in this position, it is stably supported by the two weights 17 contacting the jar at one side, and the ends of the two limbs 18 contacting the jar at the opposite side, and the unit will retain this stable position so long as the flight 23 of the string remains tensioned.

The adjustability of the limbs 18 is for the purpose of fitting the frame to jars of different diameters. The terminal portions of the limbs may be bent in one direction or the other so as to contact the wall of the jar at the proper point in the backward tilt of the frame 10. The invention may be considered operatively complete, in the embodiment of the structure which has thus far been described, since the air for the bubbles can be impinged directly against the film supported by the annulus by a jet direct from the mouth of the person doing the blowing, without the intermediary of a nozzle or mouthpiece, and it is sufficient to have the string overlie the mouth of the jar at any point on the side remote from the one doing the blowing. However, it is frequently desirable to have the string pass over the mouth of the jar at a fixed point, and this is particularly true if a nozzle or mouthpiece is employed in the blowing. Figures 1, 3 and 4 show a spring clip 24 detachably embracing the rim of the jar at the mouth, having an open eye 25 into which the string may be introduced; and Figures 1 and 4 show a spring clip 26 supported on the rim of the bottle mouth, having an upright flexible post 27 formed with a loop at its upper end closely surrounding a nozzle 28, the latter being supported by

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said clip. The flexibility of the post 27 enables the nozzle to be aimed at the center of the annulus. The nozzle 28 is a tubular member having a mouthpiece 29 at one end. It normally has a relatively large bore 30 at its discharge end for blowing large bubbles. As shown, it is provided with an auxiliary cap 31 tethered to the nozzle by means of a cord 32, and is frictionally fitted to the mouth end of the nozzle, as shown in Figure 4. It has a bore 33 of reduced size used for blowing chains of small or "bullet" bubbles. The bubble blower may be sold as a toy, particularly without the string guiding clip 22, nozzle clip 26, and nozzle 28. The end of the string remote from the reciprocable unit may be tied to a fastener 34, secured to the conventional paper liner within the screw cap 2. This permits the string to be wound about the fastener and the lid to be screwed upon the jar, enclosing the entire mechanism of the bubble blower within the jar, when not in use.

The various adjunctive parts of the bubble blower as described may be sold without the jar, since any jar of the smaller "mason" type for example, is adapted to be used. The fastener 34 is made with a safety pin type impaling point 35 which is inserted through the paper lining of the lid of any jar of the type indicated, and which frictionally clips the liner between said point and the foot 36 formed on said pin.

Figure 5 shows an alternative type of nozzle made in two separable sections, a mouthpiece section and a section 38 constituting a smoke generating chamber. Within said chamber is a cigarette holder including a base 39, having a circular cigarette holding clip 40 at one end and a counter-weight 41 at the other end. Said cigarette holder is slidable upon the floor of the smoke generating chamber and is withdrawable upon separation of said sections by means of a small chain 42 attached to said base with its free end extending through a notch 43 in the forward end of the section 38 at the lower side thereof. A lit cigarette is placed with its butt end in said clip and extends forwardly out of contact with any surrounding structure so as to enable it to sustain combustion throughout its unsupported length. The clip 40 has a series of holes 44 about its periphery, by-passing some of the air which is blown into the mouthpiece. By this device, bubbles are blown filled with smoke. A filter 45 is positioned within the section 38 beyond the cigarette holder through which the smoke passes, said filter being a safety device to prevent the escape of lit flakes of tobacco.

Incidentally, it may be stated that if a tuft of steel wool saturated with gasoline were held in the jet of air between the mouth of the blower and the film supporting annulus, the bubbles blown would be filled with combustible mixture and would burst with a spectacular flash when contacted by a flame manipulated by an assistant. This, of course, would be a theatrical stunt and not recommended in the use of a bubble blower as a toy.

While I have in the above description disclosed a practical embodiment of the invention, it will be understood by those skilled in the art that the specific details of construction and arrangement of parts, as shown and described, are by way of illustration and not to be considered as necessarily limiting the scope of the invention.

What I claim is:

1. Bubble blower comprising in combination a jar for bubble making liquid the inner wall of which has a convergent portion adjacent the mouth, and a reciprocable unit therein, said unit including a frame, a film sustaining annulus carried by said frame extending above it with its diametrical plane upright, a weight carried by the lower part of said frame exceeding the weight of said annulus, a suspending string attached to said frame between said annulus and weight at such point as to cause said unit normally to tilt when freely suspended so as to bring said weight into contact with the inner wall of said jar below said convergent portion and thereby to bring said annulus

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within the projected area of the mouth of said jar, said frame including stabilizing means extending toward the wall of said jar opposite that contacted by said weight, said stabilizing means being of such length as to contact the convergent portion of said wall when tilted upward by the camming action of said weight with said convergent portion when said frame is pulled sufficiently upward by said suspending means, said annulus being so relatively inclined with respect to said frame as to obliquely overlie the circumference of the mouth of said jar when said weight and stabilizing means are in contact with said convergent portion.

2. Bubble blower as claimed in claim 1, said annulus comprising a wire bent into a substantially circular loop, and a circumferential series of spaced sequins threaded on said wire.

3. Bubble blower as claimed in claim 1, said annulus comprising a wire bent into a substantially circular loop, and a circumferential series of alternate sequins and spacing beads threaded on said wire.

4. Bubble blower as claimed in claim 1, said annulus comprising a wire bent into a substantially circular loop, a circumferential series of spaced sequins threaded on said loop, and a reservoir secured to said annulus above its upper arc having an aperture in its top and bleed apertures in its bottom directed toward said annulus.

5. Bubble blower as claimed in claim 1, including a member having an eye for the passage of said suspending string, said member including means for detachably securing it to the mouth of said vessel.

6. Bubble blower as claimed in claim 1, including an air nozzle detachably securable to the mouth of said vessel, and having a mouthpiece, said nozzle being directable toward the axis of said annulus.

7. Bubble blower including a reciprocable unit adapted to be operated within a jar the inner wall of which has

a convergent portion adjacent the mouth, said unit comprising a frame, a film sustaining annulus carried by said frame extending above it with its diametrical plane upright, a weight carried by the lower part of said frame exceeding the weight of said annulus, a suspending string attached to said frame between said annulus and weight at such point as to cause said unit normally to tilt when freely suspended to bring said weight into contact with the inner wall of the jar below the convergent portion and thereby to bring said annulus within the projected area of the mouth of said jar, said frame including stabilizing means adapted to extend toward the wall of said jar opposite that one which the weight is adapted to contact, said stabilizing means being of such length as to contact the convergent portion of said wall when tilted upward by the camming action between said weight and said convergent portion when said frame is pulled sufficiently upwardly by said suspending means, said annulus being so relatively inclined with respect to said frame as to obliquely overlie the circumference of the mouth of the jar when said weight and stabilizing means are in contact with the convergent portion of the jar.

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