MECHANICAL BUBBLE BLOWING DEVICE

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8 Claims. (Cl. 46--8)

The present invention relates to mechanical bubble blowing devices and, more particularly, to a new and improved means for producing bubbles. An important object consists in providing a toy, such as a boat, train or the like, with simple, efficient and economical means intermittently operable to form and release bubbles as the toy is moved along the ground or other flat surface.

A further object is to provide a bubble boat toy with means including an air compressor, a liquid reservoir, a bubble releasing mechanism having a looped member arranged to alternately be dipped into the bubble solution in the reservoir and be moved adjacent an outlet air opening in the top of the reservoir. The air compressor and bubble releasing mechanism may be operatively connected to a driving shaft that, in turn, is rotated by the ground-engaging wheels of the toy and the parts are so synchronized that the looped member of the bubble releasing mechanism is moved adjacent the air opening at the same time as the air is forced from the compressor through the air opening, so that the film of bubble solution on the looped member is formed into numerous bubbles which are discharged from the toy as the latter is pushed or pulled along the ground.

Another object comprehends the provision of a bubble blowing device which avoids the unsanitary and mechanically dangerous act of blowing via the mouth through a stem held to the lips, as is required with many bubble blowing devices, and the only human factor involved being that of pushing the toy along the floor or other surface by hand or else pulling with a string. On the other hand, a motor, such as a spring motor, can be employed in the toy to provide completely automatic operation, here again retaining sanitary and safe operation.

A still further object is to provide a bubble blowing mechanism which can be adapted by anyone of normal mechanical skill to a stationary form and which can be operated by any suitable means such as an electric motor, the resulting arrangement serving for purposes of decoration or general attraction, such as when employed as an amusing table-piece in a night club or as an attractive mantel or wall attachment.

An additional object is to provide a toy such as a boat or a train which is capable of interesting action and simulates after a fashion an observable action of a real machine, such as the substitution of clusters or puffs of bubbles for puffs of smoke.

Also, an object is to provide a bubble blowing toy from which the bubble liquid cannot be spilled by ordinary handling or inverting of the toy, thus preventing loss of liquid as such and also preventing damage to clothing or furniture, the latter condition permitting safe operation of the toy indoors. Furthermore, as in the case of the bubble boat, the toy can be employed as a pull-toy for very young children and as a push-toy for somewhat older children, thus providing a toy that will serve a reasonably wide age group.

Other objects and advantages of the invention will be apparent from the following description when taken in conjunction with the accompanying claims and drawings.

Referring to the drawings in which is shown:

Figure 1 is a perspective view of a toy boat constructed in accordance with the invention.

Figure 2 is a plan view of Figure 1 with the cover or smokestack removed.

Figure 3 is a longitudinal sectional view taken substantially along the line 3--3 of Figure 2 and showing the bubble releasing mechanism in its lowermost position with the smoke stack in place.

Figure 4 is a view similar to Figure 3 and showing the bubble releasing mechanism in its raised position.

Figure 5 is a sectional view taken substantially along the line 5--5 of Figure 3, and Figure 6 is a sectional view taken substantially along the line 6--6 of Figure 3.

Referring to the drawings in which like numerals indicate like parts in the several views, 10 designates a child's toy which, for the purpose of illustration, is shown in the form of a boat having a hull or base 11 that is formed with an elongated opening 12 (Fig. 3) and the spaced parallel sides 13 (Fig. 2) having reduced or cut-away portions 14 for receiving the ground-engaging wheels 15 and 16. A crank shaft 17 (Fig. 5) has an intermediate offset portion 18 which is connected to the horizontal end portions 19 by the bent portions 20. The end portions 19 extend transversely through bearings 21 fixed or otherwise secured to the sides 13 of the hull and constitute axles for the wheels 15 and 16. At least one of the wheels, such as 15, is keyed or otherwise non-rotatably connected to the shaft 17 so as to rotate the drive shaft 17 when the toy is pulled or pushed along the ground. The ends of the shaft 17 are provided with suitable means for retaining the wheels on their axles and for locking at least one of the wheels to the axle, and the attachment device consists of or is covered by caps 22 or other means and so shaped as to
provide suitable appearance, to prevent marring of furniture or scratching the body of the operator. Recesses 23 and 24 are formed in the underside of the hull at the front and rear thereof so as to receive rollers 25 which are journaled in the recesses by the rods or pins 26. The wheels 16 and rollers 25 preferably are provided with rubber tires 27 so as to protect the surface over which the toy is moved and insure proper driving traction for the wheels.

An elongated block 28 which may constitute a lower deck or cabin is mounted in the hull 14 and has an elongated opening 28 that registers with the opening 29 in the hull or base 11 (Fig. 4). A diaphragm or compressor plate 30 (Fig. 4) having a central elongated slot 31 is arranged to be vertically displaceable within the openings 29 and 28 in the hull 14 and lower deck 28, and is spaced from the inner walls of these openings so as to be moved or rocked therein. A flexible, pneumatically tight, waterproof membrane 32, preferably of rubberized nylon, extends over the upper surface of the plate 30 and the slot 31 (Fig. 5) so as to object outwardly and has a loose marginal outer portion 33 of such size and dimension as to be clamped around its edge between the hull 11 and the deck 28 as at 34, in order to form a pneumatic sealed anchorages continuously around the juncture of the walls of the openings 12 and 28. The intermediate portion of the flexible membrane 32 may be cemented to the top of the plate 30 or else clamped to the plate by a sheet of fiber (not shown) or other suitable material having the same shape and size as the plate and being held thereto over the membrane by the bolts or rivets 35. The intermediate offset portion 18 of the shaft 17 extends transversely below the plate 32 so as to movably engage the bottom of it (Fig. 5) and impart a vertical reciprocating or rocking movement to the plate when the crank shaft is rotated by the wheels during the operation of the toy.

A crank strap 36 extends longitudinally of the slot 31 and below the offset portion 18 of the shaft 17 so as to be movably engaged by the latter. The ends of the strap 36 may be secured to the underside of the plate 30 by the bolts or rivets 35 which also hold the sheet-like membrane clamp, providing the membrane is not otherwise attached, such as by cementing to plate 30. The offset portion 18 of the crank shaft 17 is preferably provided with spaced annular rings or washers 37 which are soldered or otherwise secured thereto and extend into the opening 31 of the plate 30.

Alternatively, a thin metal spool can be placed over the shaft section 18 and secured thereto by wings pinched on the shaft at each end of the spool. The spool or rings 37 are spaced so as to engage opposite sides of the strap 36 for the purpose of properly positioning the plate 30 in order that the inclined portions 20 of the crank shaft 17 do not engage the plate 30 thereby toward the middle of the downstroke of the crank shaft when the latter is rotated by the wheel 15. The opening 31 in the plate 30 provides a clearance for the rings or washers 37 when the toy is in operation. A bottom cover 38 preferably provided with perforations or air holes 39 (Fig. 4) may be secured to the underside of the base or hull 11 by suitable retaining means, such as the screws 40 (Fig. 5), so as to protect the membrane 32, crank mechanism and their associated parts.

A block 41, preferably of the shape shown in Figure 1, is superimposed on the block 28 so as to simulate in appearance the upper deck of a toy boat. The block 41 is formed with an opening or hollow portion 42 (Fig. 4) which registers with the opening 29 in the lower block or deck 28, and these blocks may be secured to each other and to the base or hull 11 by any suitable retaining means to provide a fluid tight seal, such as screws or the like.

A bubble fluid reservoir or container including a lower shell 43, preferably of any suitable light durable metal, is positioned in the opening 42 of the upper block or deck 41 and is closed by an outer shell 44 in the form of a smokestack or funnel. The shells 43 and 44, around their outer edges, are provided with abutting outwardly extending flanges 45 and 46, respectively, which may be welded or otherwise secured together and fastened to the block 41 adjacent the wall of the opening 42 so as to provide a tight seal. The bottom shell 43 is spaced from the plate 30 and the flexible membrane 32 and coasts therewith to form a compressed air chamber 47 in which is movable the plate 30 and the loose portion of the membrane 32, secured to a type compressor that is operated by rotation of the crank shaft 17 when the wheels 15 and 16 are moved along the ground. The bottom of the shell 43 adjacent the forward end thereof is provided with a vertically extending protrusion or nipple 48 (Fig. 4) and with a spout 49 that is spaced laterally or longitudinally from the nipple 48. Also, the bottom of the shell 43 has extending rearwardly from the spout 49 a raised portion or plateau 50 (Fig. 4) that is divided or separated longitudinally by a centrally disposed U-plate or plateau portion 51. The bracket 6 has a depending arm 63 and a spaced depending arm 64 having a greater length than the arm 63 and being upwardly as at 65 (Fig. 6) to form a spaced outer arm 66. The lateral portion 60 of the rod 53 has extending rearwardly from the loop 64 a horizontal arm portion 55 bent upwardly at 56, bent horizontally at 57 and downwardly at 58, then longitudinally and rearwardly at 59, laterally as at 60 (Fig. 6), so as to be connected to an inverted U-shaped bracket 61 secured by the bolts 62 to the underside of the raised or plateau portion 50 of the bottom shell 43. The bracket 61 has a depending arm 63 and a spaced depending arm 64 having a greater length than the arm 63 and being upwardly as at 65 (Fig. 6) to form a spaced outer arm 66. The lateral portion 60 of the rod 53 is bent so as to provide a rear end portion 67 which extends transversely through aligned openings in the arms 53 and 54 so as to be pivotally connected to the bracket in order to allow the loop 53 to be swung vertically by the pivotal connection of the end portion 67 with the bracket 61. The loop 64, when in its lowermost position (Fig. 3), is arranged to rest on the bottom of the shell or reservoir 43 so as to surround or enclose the nipple 48. The upper shell 44, which is preferably shaped to form a stack or funnel, is pressed inwardly to provide a conical or truncated portion 68 which at its apex has an air opening 69 (Fig. 3) substantially in vertical alignment with the nipple 48 but spaced therefrom so as not to interfere with the flow or gas through the opening 69. The rear side or wall 70 of the conical shaped portion 68 may be sloped more nearly toward the horizontal than the forward portion thereof for a purpose subsequently to be described, and is provided
with a slot 71 that communicates with the opening 59 so as to receive and constitute a stop for the arm 55 of the rod 53 when the latter is moved to its extreme upward position, as shown in Figure 4, and to permit loop 54 to pass through and come to rest above the level of the air or gas opening 68. The slot 71 may be provided with a rubber insert so as to cushion the movement of the rod and absorb the shock so that the liquid film on the loop will not be jarred off. The horizontal portion 57 of the rod 53, when the latter is in its lowermost position, passes through a slot 72 on the front side of the spout 43 to establish a clearance therewith, and the vertical portion 56 extends downwardly through the spout while the horizontal portion 59 extends longitudinally through the tunnel 52 so as to be pivotally connected by the portion 57 to the bracket 61. A flexible rod or wire 73 is connected at its forward end to the diaphragm plate 30 by the bolt 35 and has a loop or hook 74 at its opposite end through which loosely extends the portion 59 of the bubble releasing rod 53, so that movement of the plate 30 and membrane 32 by rotation of the crank shaft 17 will cause simultaneous movement of the rod 53 about the pivotal connection of the portion 57 with the arms 63 and 64 of the bracket 61. The upper deck 41 may have a vertical discharge opening 75 which communicates with the compressed air chamber 47 and is closed by a screw or plug 76 (Fig. 3). After a long interval of time, and probably only after rough handling of the toy, enough bubble liquid might have become splashed over into the compressor chamber 47 via spout 49 to accumulate in an amount sufficient to make its removal desirable, this being accomplished by removal of drain plug 18 and the rearward tipping of the boat to provide drainage. The toy boat may be pushed or pulled along the ground or other flat surface and, as shown, has a cord or string 77 connected as at 78 to the front of the hull in order to be conveniently pulled by a child. The bottom shell 48 of the reservoir is of substantial area in order to receive an ample supply of liquid bubble solution 19 up to a height that will not reach the top of nipple 45, the latter being well below the top of spout 49 such that the liquid cannot overflow into the air compressor chamber 47, and the reservoir is so constructed and arranged as to essentially prevent spilling or leaking of the bubble solution therefrom, either into the air compressor chamber 47 or else external to the boat.

In operation, assuming that the reservoir 43 is filled to the desired level with a liquid bubble solution 19 and the diaphragm 30 and membrane 32 are in their lowermost position, as shown in Figure 3, the loop 74 on the rod 73 will then slide forwardly so as to cause the horizontal portion 57 of the rod 53 to be moved downwardly into the slot 72 on the front side of the loop 54 to rest on the bottom or floor of the reservoir and encircle the nipple 48. As the toy moves forwardly, the movement of the drive wheels 15 and 16 imparts rotation to the shaft 17 which now has its intermediate offset portion 10 in its lowermost position as shown in Figure 5, and continued rotation of the shaft and the engagement of the portion 18 with the underside of the plate 30 raises the latter together with the membrane 32 so as to compress the air or gas in the chamber 47 and force the same outwardly through the spout 49 into the reservoir where it discharges through the air opening 69. Simul-

taneously with this upward movement, the rod 73 is moved from the position shown in Figure 3 to that disclosed in Figure 4 so as to simultaneously cause the rod 53 to swing about its pivot 56 and raise the loop 54 upwardly through or over the opening 69 and this movement is limited by engagement of the arm 55 with the cushion in the slot 71 in the conical portion 70 of the shell 44 so that the parts assume the position as shown in Figure 4. As the loop 54 moves upwardly from the reservoir through the opening 69, it carries a film of the bubble solution therewith. The operation of the compressor 47 and the bubble releasing rod 53 are so synchronized that when the loop passes through the opening 69 the compressed air discharged into the reservoir chamber causes a bubble 80 to be formed which is quickly released from the loop. When the offset portion 18 of the shaft reaches its uppermost position, the loop 54 is moved slightly above the opening 69 so as to insure the withdrawal of the formed bubble 80 without danger of impinging against the conical wall 68, and the reduced slope of the rear side 70 of the conical wall will further prevent the bubble from being broken by contact with the shell 44. On the downstroke of the crank shaft 17, the plate 30 and membrane 32 are moved downwardly as a result of the engagement of the strap 35 with the offset portion 18 of the shaft 17, and the connection of the rod 73 with the rod 53 causes the latter to be lowered and the loop 54 to rest on the bottom of the reservoir and enclose the nipple 48. At the same time, air is sucked in through the openings 69 and spout 49 into the compressor chamber 47 so as to be compressed upon the upstroke of the crank shaft 17. It will be noted that the rod 73 is slidably and operatively connected to the rod 53 in such a manner as to operate the looped end portion 54 in synchronism with the compressor. In other words, as the plate 30 moves upwardly from its lowermost position, this movement together with the forward tipping of the plate 30, as a result of the crank shaft 17 lifting rearwardly of the center of the plate, causes loop 54 to rise suddenly due to the upward pressure exerted by the rod 73 against the portion 59 of the rod 53. As the plate 30 continues to rise, the loop 54 arrives and remains at its uppermost position (Fig. 4), while the loop or hook 74 on the rod 73 slides rearwardly and the flexible rod 73 is moved upwardly so as to assume a nearly straight shape as shown in Figure 4. Further, the loop 54 is moved to its lowermost position for reloading when no air is being compressed in the chamber 47. Toward the end of the downstroke of the plate 30, the loop 54 suddenly drops for reloading so that it is practicable with this arrangement to maintain the loop in its uppermost position for about 180° of the operating cycle. The sharp inclination of the rear wall 70 of the conical portion 68 provides means for preventing the bubbles, as they are formed, from breaking against this wall and to clear the same in a region of the best or maximum air flow. The design offered for the portions 58, 70 and 44 serves the purpose not only of simulating a smokestack but also of providing an annular space or vessel about the air opening 69 and at a different vertical level from it such that if the toy is inverted, the annular space will be below the air opening 69, thus preventing spillage of bubble liquid external to the device.

In order to keep outflowing air in a beam-like
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7. path lying along the axis of the conical member 68, so as to prevent the bubbles from breaking upon the wall thereof, the width and length of the slot 71 is necessarily kept small and restricted. In other words, air from the slot tends to bend the main air beam forward, thus the plane of the air opening 69 may be tilted rearwardly in order to oppose and neutralize the bending effect of the jet of air from the slot 71. The forward motion of the boat tends to cause the same to run into the emerging bubbles 88 and this may be avoided by proper tilting of the plane of the air opening 69. If the nipple 48 in the bottom of the reservoir is omitted, the loop 54 will cause formation of a small bubble at the surface of liquid pool within the area defined by the loop when the latter is raised from the surface of the reservoir or when it is dropped into the reservoir, and so as to form foam which will cover the entire surface of the reservoir. The nipple 48 fills up the space where the foam-forming bubbles tend to be created, with the result that the formation of such foam is substantially reduced. The nipple 48 also serves the purpose of orienting or aligning the loop 54 prior to anchoring the bracket 61 to the underside of the shell 50. The spout 47 is of such a length as to extend appreciably above the liquid level of the bubble solution 73 in the reservoir so as to reduce or prevent suction of foam into the compressor chamber 41 and to prevent loss of liquid from the reservoir into the compressor. The hull 11 and decks 28 and 41 are preferably made of wood or other light durable material while the shells 43 and 44 may be cast of plastic or pressed from a plastic sheet and cemented or welded at the adjoining lips 42. Metal sheets, such as iron or aluminum, can also be pressed to form the shells 43 and 44 and soldered, welded or folded at the adjoining lips 42. The perforated bottom cover plate 38 permits unhampered compressor operation and is provided to enhance the appearance of the boat and to protect the membrane 32 and the crank mechanism.

It will be understood that the bubble mechanism, while shown associated with a toy boat, may be with equal efficiency installed on other devices and types of toys of various sizes, shapes and designs either movable or stationary, hand-powered or motor-driven, so as to provide simple, efficient and attractive mechanical means for producing bubbles in a sanitary manner and which does not require frequent reloading. Further, the form of the invention shown and described is merely illustrative and such changes may be made as come within the scope of the following claims.

I claim:

1. A bubble blowing device including a bubble solution closed container having a gas opening in the top thereof, a member movable in the container and having an end arranged alternately to be dipped into the bubble solution in the container and moved through and over said opening, means for intermittently forcing gas through said opening, and means for actuating said member so that when the end thereof is dipped into the bubble solution and then moved through and over the gas opening, gas is forced through said opening and the liquid film adhering to said end is released and discharged in the form of bubbles.

2. A bubble blowing device including a closed bubble solution container having a restricted gas opening in the top thereof, a member pivotally connected to the device and having an arm pro-

vided with a looped end arranged alternately to be dipped into the bubble solution in the container and moved through and over said gas opening, means for intermittently forcing gas into the container and above said opening, and means operatively connected to said member so that when the end thereof is dipped in the bubble solution and then moved through and over the gas opening, the liquid film adhering to said end is released and discharged in the form of bubbles.

3. A bubble blowing toy including a closed bubble solution container having an air opening in the top thereof, a member pivotally connected to the toy and having an arm provided with a looped end arranged alternately to be dipped into the bubble solution in the container and moved through and over said air opening, an air compressor having a passage communicating with said container and said air opening, said compressor including a diaphragm plate for forcing air therefrom into the container and through said air opening, means operatively connecting the diaphragm plate to said member for alternately moving the looped end of said member into the solution and through and over the air opening, and means for operating the diaphragm member to that when said looped end is dipped in the bubble solution and moved adjacent the air opening, air is forced through said opening and the liquid film adhering to the looped end is released and discharged in the form of bubbles when the looped end is positioned over said opening.

4. A bubble blowing toy arranged to be moved along the ground and including in combination a base, a rotatable shaft connected to the base and extending transversely thereof, ground-engaging means keyed to the shaft to rotate the same when the toy is moved along the ground, a diaphragm air compressor connected to the base, means operatively connecting said shaft to the compressor for actuating the latter upon rotation of the ground-engaging means, a reservoir mounted on the base and arranged to receive a liquid bubble solution, said reservoir having an air passage communicating with said compressor, said reservoir being closed by a top member having an air opening, a member pivotally connected to the base and having an arm provided with a looped end arranged alternately to be dipped into the bubble solution and moved through and over said air opening, and means operatively connecting said member to the ground-engaging means so that as the toy is moved along the ground and the compressor is operated, the looped member is alternately dipped into the bubble solution and moved upwardly through and over the air opening so that the liquid film adhering to the looped member is released and discharged in the form of bubbles from the toy by the air from the compressor as the same discharges through the air opening when the looped end is positioned over said opening.

5. A bubble blowing toy arranged to be moved along the ground and including in combination a base, a rotatable shaft connected to the base and extending transversely thereof, ground-engaging wheels mounted on the end of said shaft, at least one of said wheels being keyed to the shaft to rotate the latter when the toy is moved along the ground, a diaphragm air compressor connected to the base, means operatively connecting said shaft to the compressor for actuating the same upon rotation of the wheels, a reservoir mounted on the base and arranged to re-
ceive a liquid bubble solution, said reservoir having a bottom provided with an upwardly extend- ing tubular spout communicating with the compressor, said reservoir and spout being closed by a top member having an air opening therein laterally spaced from said spout, a member pivotally connected to the base and having an arm provided with a looped end and arranged alternately to pivot with a looped end and arranged alternately to be dipped into the bubble solution and moved through and over said air opening, and means operatively connecting the member to said air compressor so that as the toy is moved along the ground the compressor is operated, air is initially drawn into the compressor through said spout and then discharged therefrom and the looped member is alternately dipped into the bubble solution and moved upwardly through the air opening so that the liquid film adhering to said member is released and discharged in the form of bubbles from the toy by the compressed air forced through said spout and said air opening when the looped end is positioned over said opening.

6. A bubble blowing toy arranged to be moved along the ground and including in combination a base having spaced side members, a rotatable shaft connected to the base and extending transversely therethrough, said shaft having wheels mounted on the ends of said shaft, at least one of the wheels being keyed to the shaft to rotate the same when the toy is moved along the ground, an air compressor movably connected to the base, means operatively connecting said shaft to the compressor for actuating the same upon the rotation of the wheels, a reservoir mounted on the base above said compressor and arranged to receive a liquid bubble solution, said reservoir having a bottom provided with an upwardly extending spout communicating with the compressor for conducting air from the compressor into the reservoir during the operation of the toy, said reservoir and spout being closed by a top member having an air opening therein spaced from said spout for allowing the air to escape, a member pivotally connected to the reservoir and having a looped arm arranged to be dipped into the bubble solution in the reservoir and moved through and over said air opening, and means operatively connecting said member to said air compressor so that as the toy is moved along the ground and air is initially drawn into the compressor through said spout and then discharged therefrom, and the compressor is operated, the looped arm is alternately dipped into the bubble solution in the reservoir and moved upwardly through the air opening so that the liquid film adhering to the looped arm is discharged by the compressed air in the form of bubbles from the toy when the looped end is positioned over said opening.

7. A bubble blowing toy arranged to be moved along the ground and including in combination a hull having an opening between the sides thereof, a shaft extending transversely across the hull, said shaft having an intermediate offset portion movable in said opening and having its ends extending through the sides of the hull, ground-engaging wheels on the ends of said shaft and at least one of the wheels being keyed to said shaft to cause rotation thereof, a hollow bulk mounted on the hull adjacent the opening therein to form a lower deck, an elongated hollow block mounted on the lower deck block to provide an upper deck, an air compressor movable in said hull and including a diaphragm plate spaced from the wall of the hull opening, a flexible membrane extending over the center plate and connected thereto, said flexible membrane having an outer portion projecting beyond the diaphragm plate and secured in sealing engagement at its edge to said hull so as to allow the plate and flexible member to be vertically displaced relative to the hull, a lower shell member spaced above said plate and coacting therewith to form an air compressor chamber, an upper shell member spaced from the bottom shell and coacting therewith to provide a reservoir for receiving liquid air, a liquid bubble solution, said shells having opposed abutting flanges, means connecting said flanges to the upper deck, said lower shell having its bottom provided with an upwardly extending tubular spout for communicating said air compressor chamber with said reservoir, said upper shell having an inwardly depressed conical portion provided with an air opening spaced laterally from said spout, a looped member, means pivotally connecting said member to said lower shell, said member arranged to be dipped into the bubble solution in the reservoir and be moved upwardly through said air opening, and means operatively connecting said looped member to said diaphragm plate, the offset portion of said shaft engaging the underside of said diaphragm plate so that as the toy is moved along the ground, the compressor is operated to force air through into the reservoir and through said air opening and said looped member is dipped into the bubble solution and then moved upwardly through the air opening in order that the liquid film adhering to the looped member may be released and discharged in the form of bubbles from the toy by the air forced through said spout and said air opening when the looped end is passed through said opening.

8. A bubble blowing toy including a base, an air compressor having a diaphragm plate movably connected to the base, a reservoir mounted on the base above said compressor and arranged to receive a bubble solution, said reservoir having a bottom provided with an upwardly extending spout communicating with the compressor, said reservoir and spout being closed by a top member having an air opening spaced from said spout and provided with a longitudinally disposed tunnel, a rod having a rear end pivotally connected to the underside of the bottom of said reservoir, said rod having a horizontal portion extending through said tunnel, a vertical portion extending through said spout and a forwardly projecting portion extending into said reservoir and terminating in a looped outer end arranged to rest on the bottom of the reservoir and be moved upwardly adjacent said air opening, said looped end enclosing the nipple when the former rests on the bottom of the reservoir, a flexible wire member connected at one end to the diaphragm plate and having a slideable connection at its opposite end with the portion of said rod extending through said tunnel, and means for actuating the diaphragm plate to force air through the spout into the reservoir and through the air opening and simultaneously to actuate said rod and move the looped end thereof so as to dip into the solution in the reservoir and then to be moved through the air opening, the parts being constructed and arranged so that the film adhering to the looped end is released and discharged in the form of bubbles from the toy by
the air from the compressor as the same discharges from the air opening when the looped end is passed through said opening.

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REFERENCES CITED
The following references are of record in the file of this patent:

UNITED STATES PATENTS

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,397,162</td>
<td>Dobbins</td>
<td>Nov. 15, 1921</td>
</tr>
</tbody>
</table>

FOREIGN PATENTS

<table>
<thead>
<tr>
<th>Country</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>Great Britain</td>
<td>1897</td>
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</table>