April 16, 1946. R. V. BRADLEY 2,398,513

BUBBLE FORMING DEVICE

Filed Feb. 4, 1946 2 Sheets-Sheet 1

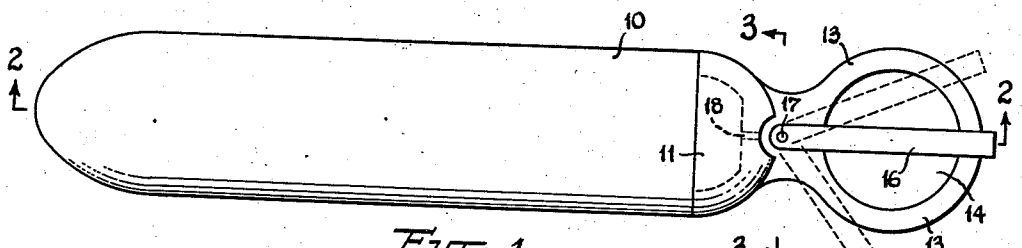


Fig-1

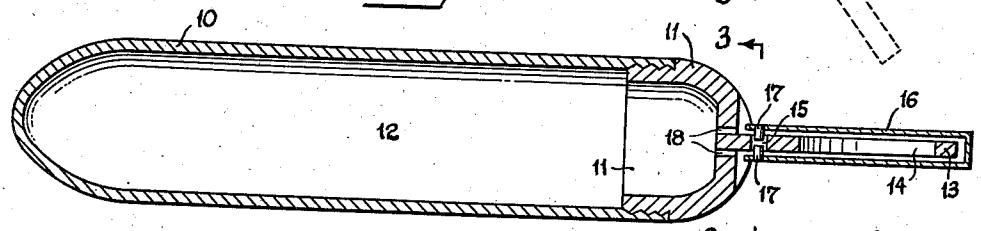


Fig-2

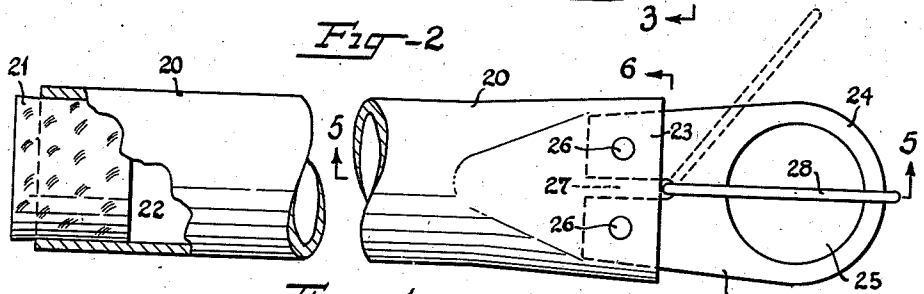


Fig-4

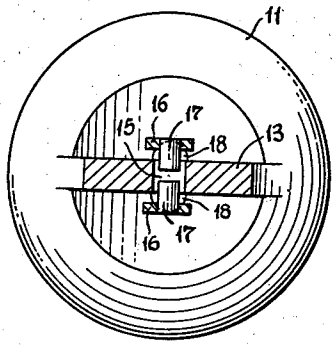


Fig-3

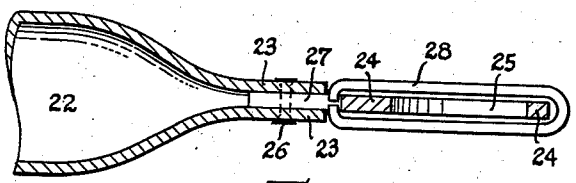


Fig-5

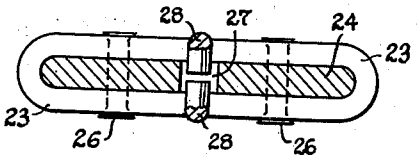


Fig-6

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BUBBLE FORMING DEVICE

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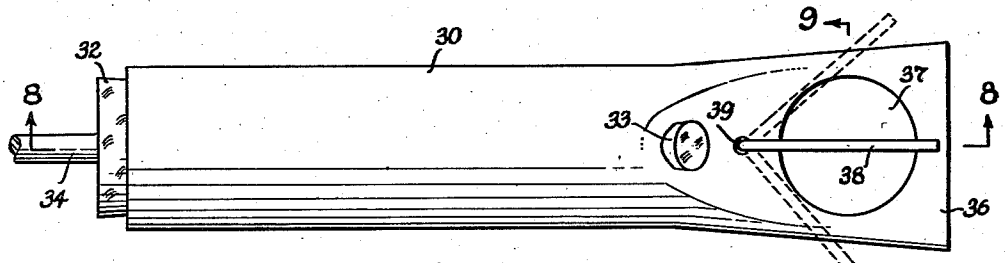


Fig-7

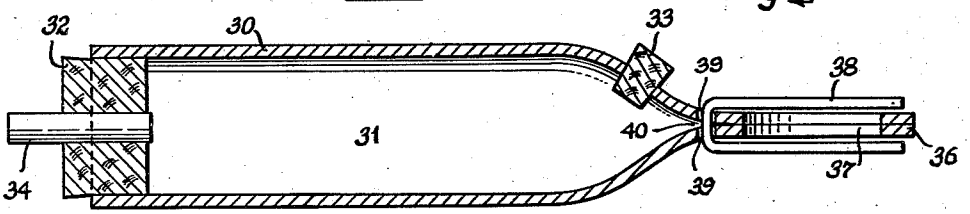


Fig-8

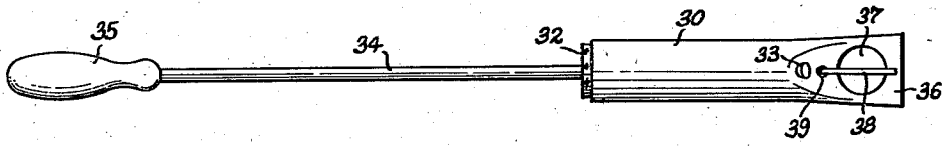


Fig-10

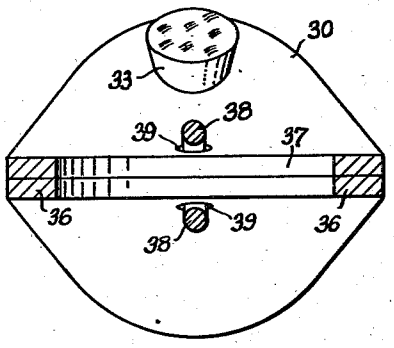


Fig-9

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UNITED STATES PATENT OFFICE

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BUBBLE FORMING DEVICE

Robert V. Bradley, Charlotte, N. C.

Application February 4, 1946, Serial No. 645,259

10 Claims. (Cl. 46—7)

This invention relates to a bubble forming device and more especially to a member having a reservoir and an annular portion associated therewith with means provided whereby the bubble forming solution can flow slowly from the reservoir to the annular member, and said annular member having associated therewith a pivoted wiper which, when the bubble forming device is waved in the air, and given a turn of approximately 180 degrees before it is waved the opposite direction, the wiping member will oscillate on its pivot from one side of the annular member to the other to deposit a film on the annular member. The turning of the bubble forming device occurs at each end of the swing of the operator so as to deposit a new film on the annular member to form bubbles as the bubble forming device is swung in the opposite direction.

It is an object of this invention to provide a bubble forming device comprising a reservoir serving as a handle and an annular member associated therewith, whereby a quantity of bubble forming solution can be stored in the handle reservoir with one or more openings whereby the bubble forming liquid may flow outwardly onto an annular member associated with the handle reservoir together with an oscillatable wiper adapted to pass from one side of the annular member to the other to deposit the film of the bubble forming solution onto the annular member.

It is another object of this invention to provide a bubble forming device comprising a handle member having a reservoir therein for holding a quantity of bubble forming solution and having an annular member associated with the handle reservoir, with the handle reservoir having one or more openings therein whereby the bubble forming fluid may flow onto the annular member, together with a movable wiping member adapted to move across a member having a hole therethrough to deposit a film of the bubble forming solution over the hole, thus eliminating the necessity of dipping the member into a bubble forming solution to deposit a film thereon as has heretofore been the practice in bubble forming devices.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds when taken in connection with the accompanying drawings, in which—

Figure 1 is a top plan view of a bubble forming device;

Figure 2 is a longitudinal sectional view taken along the line 2—2 in Figure 1;

Figure 3 is a cross sectional view taken along the line 3—3 in Figures 1 and 2;

Figure 4 is a top plan view of a slightly modified form of the invention;

Figure 5 is a longitudinal sectional view taken along the line 5—5 in Figure 4;

Figure 6 is a cross sectional view taken substantially along the line 6—6 in Figure 4;

Figure 7 is a top plan view of still another modified form of the invention;

Figure 8 is a longitudinal sectional view taken substantially along the line 8—8 in Figure 7;

Figure 9 is a cross sectional view taken along the line 9—9 in Figure 7;

Figure 10 is a top plan view of the structure as shown in Figure 7 on a smaller scale so as to show the entire handle member associated therewith.

Referring more specifically to the drawings, the numeral 10 indicates a substantially cylindrical member closed at its left hand end and open at its right hand end and having threadably mounted therein a closure 11, the members 10 and 11 forming a reservoir 12 for the storage of a bubble forming solution.

Integral with the closure 11 is a sheet-like member 13 having a circular opening 14 therein, and also having a transverse hole 15 in which is pivotally mounted the free ends of a U-shaped member 16, said free end having projections 17, and 18 integral therewith which project into the hole 15 in a loose manner so as to allow swinging movement of the member 16, which is termed a wiper, for depositing a bubble forming solution in the form of a film across the opening 14 in the member 13.

The closure member 11 has one or more openings 18 through which the bubble forming solution contained in reservoir 12 may flow out onto the member 13 so that it can be deposited in the form of a film over the circular opening 14 when the wiper 16 is caused to pass across the opening 14 from one side to the other by a swinging movement of the entire device, the limit of the swing being substantially as shown in dotted lines in the lower right hand portion of Figure 1.

Figures 4, 5 and 6 show a modified form of the invention in which a handle reservoir, indicated at 20, has one end thereof closed by a suitable closure such as a stopper 21. This member 20 is hollow, thus forming a reservoir 22 for a bubble forming solution. The right hand end of this member, as shown in Figures 4 and 5, is flattened as at 23 and fits snugly onto the shank of a member 24, having a circular opening 25 therein. The member 24, if desired, can be secured tightly

in the flattened portion 23 by means of rivets 26. This shank portion of member 24 is slotted as at 27 for the entire distance of the portion disposed within the portion 23 of the handle reservoir member 20. This slot 27 extends slightly beyond the end of flattened portion 23. In this exposed portion of the slot are adapted to be loosely secured the inturned ends of a wiper member 28 which is adapted to swing on the inturned ends as a pivot from one side of the annular member to the other to completely cross the circular opening 25 to deposit a film of the bubble forming solution across the opening 25. One of the positions assumed by the swinging of the wiper 28 is shown in dotted lines in Figure 3, and it is evident that this will swing to the other side of and beyond the opening 25 in the same manner.

In Figures 7 to 10, inclusive, still another modified form of the invention is shown in which a cylindrical member 30 serves as a handle and as a storage reservoir, it being hollow and providing a storage reservoir 31 within the member 30. The left hand end of this cylindrical member is adapted to be permanently or temporarily closed by a stopper 32, this stopper 32 being preferably glued or otherwise fixedly secure therein, although if desired, it could be removed for refilling; but I prefer to provide a suitable opening near the other end of the member 30 in which a suitable stopper 33 is disposed which can be removed for refilling the reservoir 31. Fixedly secured in stopper 32 is an extended rod or other member 34 which can, if desired, have a handle member 35 on its free end whereby greater leverage can be obtained in a swinging movement than from the forms shown in Figures 1 to 6, inclusive.

The member 30 is flattened at its right hand end in the drawings as at 36 and has a circular opening 37 therein which is adapted to be traversed by a U-shaped wiper 38 having its free end open and having its medial portion loosely penetrating an opening 39 in the base of the flattened portion 36. At the point where this opening 39 penetrates the flattened portion 36, the upper and lower portions of this flattened portion are not in contact with each other, thus leaving a small opening 40 through which the bubble forming solution may flow into the opening 39 and outwardly onto the wiper 38 and onto the flattened portion 36 so that by swinging of the wiper 38 from one dotted line position to the other as shown in Figure 7, the bubble forming solution will be deposited in the form of a film over the opening 37.

In all forms of this invention, I have shown the handle reservoir portion as being circular in cross section, but of course, it could be in any desired shape; that is, it could be oval in cross section or square in cross section or any desired shape without departing from the spirit of the invention.

The material used in the construction of this device can be of any desired type, such as plastic, hard rubber, sheet metal, or any other suitable material.

In the drawings, the wiper members 16, 28, and 38 are shown as having a slight clearance between their associated members having the openings 14, 25, and 37 therein. It is evident that, in operation, one or the other leg of the wiper will be in sliding contact with the member having the opening therein, so as to deposit a film across the opening.

In all forms of the invention, the openings are shown as circular. It is evident that any desired shape of opening may be employed as it is not necessary that the openings be circular for the proper formation of bubbles.

In operation, with the reservoir having the bubble forming solution therein, the wiper arm is disposed on one side or the other of the apparatus, or in one of the dotted line positions shown in the drawings, after it has been thrown across the opening to deposit a film thereover. The apparatus is then swung through the air and a plurality of bubbles are formed by the air passing through the opening. At the end of the swing, the entire apparatus is rotated axially, substantially through one hundred and eighty degrees before the swing is started in the other direction. The turning of the bubble forming device substantially one hundred and eighty degrees is accomplished just before the end of a swinging operation so as to cause the wiper arm to move to the other side and pass across the opening to deposit a film thereonto at which time the apparatus is swung in the reverse direction to cause air to pass through the opening thus to form a plurality of bubbles. This operation is repeated back and forth as long as desired, it not being necessary to dip the portion having the opening therein into a jar of bubble forming solution as the solution is applied constantly to the exterior of the portion having the opening therein where it is readily available for being deposited by the wiper onto that portion having the opening therein and forming a film across the opening.

In the drawings and specification there has been set forth a preferred embodiment of the invention, and although specific terms are employed, they are used in a generic and descriptive sense only, and not for purposes of limitation, the scope of the invention being defined in the claims.

I claim:

1. A bubble forming device comprising a handle having a reservoir therein and a sheet-like member extending from end of the handle and having an opening therein, the end of the handle adjacent the sheet-like member having an opening therein through which a bubble forming solution may flow from the reservoir onto the sheet-like member, and a movable wiping member associated with the sheet-like member, and extending across the opening in the sheet-like member and being adapted to be moved across the opening in the sheet-like member by the waving of the apparatus in the hand of a user.

2. A bubble forming device comprising a hollow handle forming a reservoir in which a bubble forming solution is adapted to be stored, one end of the handle having projecting therefrom a sheet member provided with an opening therethrough, the end of the handle adjacent the sheet member having a hole therethrough, through which the bubble forming solution in the reservoir may flow onto the sheet member, the sheet member having associated therewith a movable wiping member adapted to move across the opening when the apparatus is swung in the hand of a user to deposit a film of the bubble forming solution across the opening.

3. A bubble forming apparatus comprising a hollow handle for containing a bubble forming solution, said handle having projecting from one end thereof a sheet member provided with an opening therethrough, said handle having a hole

therein adjacent the sheet member and communicating with the interior portion of the handle whereby the bubble forming solution stored in the handle may flow onto the sheet member, said sheet member having an opening therethrough and a pivoted wiping member disposed on the sheet member and adapted to be swung across the opening by swinging movement being imparted to the apparatus to deposit a film of the bubble forming solution across the opening.

4. A bubble forming apparatus comprising a hollow handle providing storage for a bubble forming solution, one end of the handle having a plug therein and a sheet member integral with the plug and extending outwardly therefrom, said sheet member having an opening therein, said plug having a hole therethrough adjacent the point where the sheet member extends from the plug and whereby the bubble forming solution may flow from the interior of the handle onto the sheet member, the sheet member having associated therewith a movable wiping member adapted to be moved across the opening in the sheet member when swinging motion is imparted to the apparatus to deposit a film of bubble forming solution across the opening.

5. A bubble forming apparatus comprising a tubular member having one end closed and having its other end flattened, a sheet member confined between the flattened end of the tubular member, the tubular member being adapted to contain a bubble forming solution, the sheet member being slotted in that portion which extends into the flattened portion of the tubular member and said slot extending slightly outwardly beyond the flattened end of the tubular member, said sheet member having an opening therein, said slot permitting the flow of a bubble forming solution from the interior of the tubular member onto the sheet member, a wiping member pivoted in said slot and being adapted to be swung across the opening by swinging movement being imparted to the apparatus to deposit a film of bubble forming solution across the opening.

6. A bubble forming apparatus comprising a tubular member having one end closed and having the other end flattened to make a liquid tight seal, the flattened portion of the tubular member having an opening therethrough, and also having a transverse hole therethrough at a point where the walls of the flattened tubular member do not coincide with each other and whereby a bubble forming solution disposed in the tubular member may flow outward onto the flattened portion, a pivoted wiper disposed in said hole and being adapted to be swung across the opening in the flattened portion to deposit a film of the bubble forming solution across the opening.

7. A bubble forming device comprising a handle having a reservoir therein and a planar member extending from one end of the handle and having an opening therein, the end of the handle adjacent the planar member having an opening therein through which a bubble forming solution may flow from the reservoir onto the planar member, and a movable wiping member associated with the planar member and extending across the opening in the planar member and being adapted to be moved across the opening in the planar member by the waving of the apparatus in the hand of a user.

8. A bubble forming device comprising a handle having a reservoir therein and a flat member extending from one end of the handle and having an opening therein, the end of the handle adjacent the flat member having an opening therein through which a bubble forming solution may flow from the reservoir onto the flat member, and a movable wiping member associated with the flat member and extending across the opening in the flat member and being adapted to be moved across the opening in the flat member by the waving of the apparatus in the hand of a user.

9. A bubble forming device comprising a hollow handle forming a reservoir in which a bubble forming solution is adapted to be stored, one end of the handle having projecting therefrom a planar member provided with an opening therethrough, the end of the handle adjacent the planar member having a hole therethrough, through which the bubble forming solution in the reservoir may flow onto the planar member, the planar member having associated therewith a movable wiping member adapted to move across the opening when the apparatus is swung in the hand of a user to deposit a film of the bubble forming solution across the opening.

10. A bubble forming device comprising a hollow handle forming a reservoir in which a bubble forming solution is adapted to be stored, one end of the handle having projecting therefrom a flat member provided with an opening therethrough, the end of the handle adjacent the flat member having a hole therethrough, through which the bubble forming solution in the reservoir may flow onto the flat member, the flat member having associated therewith a movable wiping member adapted to move across the opening when the apparatus is swung in the hand of a user to deposit a film of the bubble forming solution across the opening.

ROBERT V. BRADLEY.