

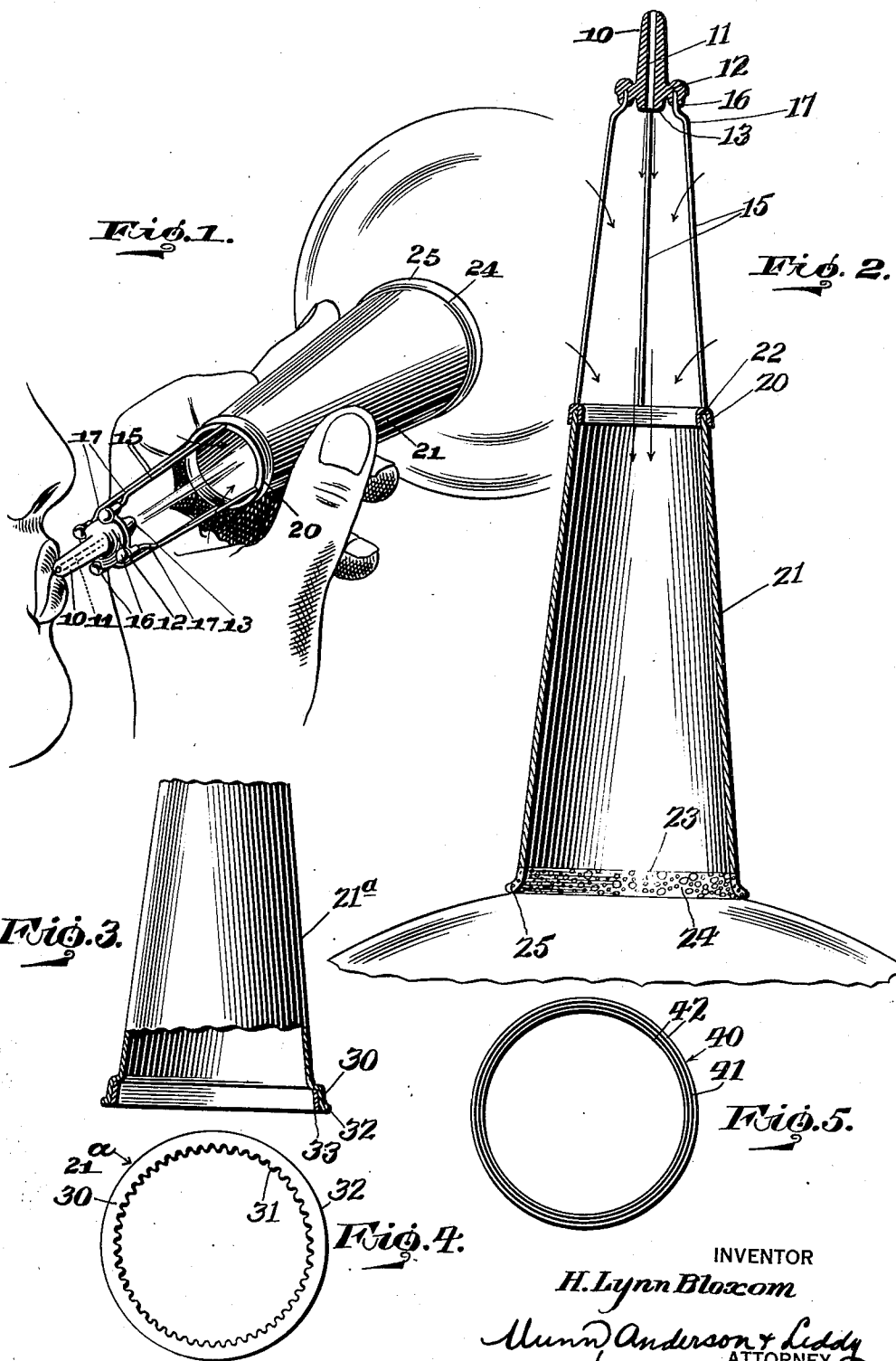
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BUBBLE BLOWER

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BUBBLE BLOWER

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This invention relates to bubble blowers.

It has been proposed to provide a bubble blower in which an air supply is provided in connection with a mouthpiece so that additional air is forced through a tube into a bubble but in such constructions usually the auxiliary air is supplied through a side opening in a bubble-forming tube or the auxiliary air is forced directly into the bubble-forming tube adjacent the mouthpiece whereby either a turbulence of the air is caused which will break the bubble or the auxiliary air is supplied to the bubble with excessive pressure which will again cause breaking of the film unless the device is handled by an expert or by one who has patiently experimented until the proper blowing pressure has been obtained.

It is an object of the present invention to provide a bubble blower for forming large bubbles in which auxiliary air is supplied under mild pressure so that the film can be expanded under a reasonable pressure and without causing breaking of the bubble and without requiring special care in the blowing operation.

Another object of the invention is the provision of a bubble blower in which a tubular member has a porous bubble-supporting member with a mouthpiece spaced sufficiently from the inner end of the tubular member to provide an auxiliary air inlet entirely open to the atmosphere so that when air is blown through the mouthpiece air can be forced into the tubular member under a reasonable pressure which will expand the film of the bubble without undue pressure and thus prevent ready breakage of the bubble.

A further object of the invention is the provision of a bubble blower which includes a tubular member having at its outer end either a porous section or an extended peripheral portion for retaining the edges of the film securely onto the tubular member so that the film may be expanded by a large volume of air which is forced against the film at a pressure which will not break the bubble thereby permitting the film to expand to a great extent to produce large bubbles, the air being supplied by a mouthpiece which is spaced from the inner end of the tubular member at a predetermined distance from the inner end of the tubular member so that when air is forced through the mouthpiece it will draw in the proper quantity of auxiliary air which will give the desired air pressure for expanding the film without causing breakage thereof.

This invention will be best understood from a consideration of the following detailed description, in view of the accompanying drawing form-

ing a part of the specification; nevertheless, it is to be understood that the invention is not confined to the disclosure, being susceptible of such changes and modifications as define no material departure from the salient features of the invention as expressed in the appended claims.

In the drawing:

Figure 1 is a view in perspective of a bubble blower constructed in accordance with the principles of my invention,

Figure 2 is a vertical section of the bubble blower,

Figure 3 is a fragmentary vertical section of a modified form of the bubble-supporting end of the tubular member,

Fig. 4 is a bottom plan view of another form of the invention, and

Figure 5 is a bottom plan view of still another form of the invention.

Referring more particularly to the drawing, 10 designates a mouthpiece having a central vertical passage 11. This mouthpiece may be formed of any suitable material and provided with an annular flange 12. On the underface of the flange is provided a boss 13 and the lower end of the passage 11 opens through the extreme lower end of said boss.

Wires or metal members 15 have their upper ends, as shown at 16, rigidly connected to the underface of the flange 12. The members 15 extend downwardly and are curved outwardly, as shown at 17, and then extend in a straight line downwardly and at a slight angle to the vertical axis of the mouthpiece 10. A ring 20 which is U-shaped in cross section is spaced from the flange 12 a predetermined distance and is supported by the legs or members 15. This ring has a greater diameter than the diameter of the flange 12 and the lower ends of the legs 15 are secured to the right portion of the ring 20 in spaced relation. In Figs. 1 and 2 four of these legs are provided although a less number or greater number may be utilized for the purpose. The members 15 may be formed of any kind of material suitable for the purpose of retaining the mouthpiece in spaced relation with the upper open end of a tubular member 21.

The tubular member 21 which is frusto-conical in shape has its upper end, as shown at 22, received between the side walls of the ring 20 and these side walls are pinched onto the upper end of said tubular member whereby the tubular member is fastened to said ring.

The tubular member 21 may be formed of metal, paper or from composition material and where

it is formed of a material which will absorb moisture its inner and outer walls may be coated with wax or it may be saturated with paraffin down to the line indicated at 23. The extreme lower end, as shown at 24, is uncoated when the tubular member is formed of paper or an absorbent composition material so that this portion will absorb a certain amount of moisture and aid in retaining the film more securely to the thickened or peripheral portion 25 of the section 24. On the other hand the tubular member may be devoid of wax or paraffin throughout its length. If the tubular member 21 is formed of metal an absorbent ring is secured to the lower end to form a band of such material at 24 or a corrugated metal ring may be substituted for the absorbent material.

In Fig. 4 is shown a modified form of the lower end of a tubular member 21 in which the extreme end 30 is provided with an offset flange to enlarge the peripheral portion of the lower end of said tubular member. The inner walls of the portion 30 are corrugated as shown at 31 in order to increase the contacting surface at this point when the member 21 is made of metal. The outer surface, as shown at 32, is enlarged to provide a thickened ring.

When the member 21a is formed of metal instead of paper or some absorbent composition material, a ring formed of absorbent material is secured to the inner face of the offset flange 30, as shown at 33 in Fig. 3.

In Figure 5 is disclosed a bottom plan view of a modified form of the bubble-engaging end of the tubular member. In this construction the outer end 40 is enlarged or thickened with the outer face being provided with one or more concentric grooves 41 which will retain the bubble more firmly onto the end of the tubular member due to the fact that a plurality of surfaces contact the film. The grooves 41 will form two or more outstanding rings 42.

In all of the forms shown, the surface area of contact is increased. This increased area not only provides for sufficient solution being collected to feed the film with the necessary materials to increase the size of the bubble as desired but provides for more secure contact of the film with the supporting surface of the tube.

The tubular member 21, the mouthpiece 10 and the connecting links 15 may be cast or formed from the same materials as a unit or the parts may be made separately and then connected together and this is true whether the parts are manufactured from metal or some composition material or a combination of both.

Thus it will be seen that the tubular member 21 may be formed of metal and either a porous ring 33 or a corrugated ring may be secured in place, or the corrugations 31 may be cast integrally with the tubular member. A plurality of concentric grooves 41 may be cast into the bottom of the tubular member or the grooves may be formed by a plurality of spaced rings secured to the bottom of said member.

In blowing a bubble it is only necessary to dip the lower expanded end of the tubular member 21 into the soapy solution and then force air through the mouthpiece 10 and through the passage 11. This air then is directed by the boss 13 axially of the supporting members 15 whence auxiliary air will be drawn in through the spaces between the legs 15 and this air will be forced through the tubular member 21 and against the

inner surface of the film supported by the member 24 in Fig. 2 or the member 33 in Fig. 3.

Due to the fact that the inner end of the mouthpiece 10 is spaced a predetermined distance from the inner end of the tubular member 21, auxiliary air will be drawn into the tubular member 21 and the air which is thus drawn into the said member will be forced against the film at a pressure which will cause the film to expand evenly in all directions and at a pressure which will cause the film to expand without breakage. In this manner extremely large bubbles may be blown and released from the supporting end of the blower without breakage. The mouthpiece is supported by an open structure by one or more members and the diameter of these members is as small as possible so that the air admitted from the atmosphere will not be whirled in the slightest manner or will not be set up in a turbulent motion to cause breakage of the film at the outer end of said tubular member. Furthermore, the mouth orifice being located at predetermined points away from the inner end of the tubular member will cause the air to be forced into the tubular member in an even manner and will not create a vacuum.

The efficiency of this device depends on its simplicity, in that it has a straight mouthpiece in axial alignment longitudinally with the straight tubular member 21, with the mouthpiece connected to said member by a means which allows free access of auxiliary air to the tubular member whereby pulsations of the air created by alternate vacuums will be eliminated.

The mouthpiece is spaced from the adjacent end of the tubular member a distance which is approximately equal to two or three times the diameter of the inner end of the tubular member to obtain the maximum results.

When desired and when the tubular member 21a is formed of cardboard the waterproof coating may be dispensed with.

After the porous material at the outer end of the tubular member 21 becomes more saturated with the bubble blowing solution the periphery of the film formed at the outer end is more adhesively secured to the said end so that larger bubbles may be blown since the porosity of said end increases with use and the soapy solution is fed to the film from the saturated porous material. On the other hand, when metal is employed, the corrugations or grooves will act as storage for the solution which will be gradually fed to the film as the bubble is expanded.

While the drawing shows the wire inserts 15 for supporting the member 12 at a predetermined distance from the upper end of the member 21 it will be appreciated that the mouthpiece can be located nearer to the upper end of the member 21 and the members 15 may be made integral with the mouthpiece so that a relatively rigid straight and short section will be provided which is connected to the upper end of the tubular portion 21.

I claim:

1. A bubble blower comprising a tubular member having an outer film supporting end and a reduced inner open end, a mouthpiece having a passage disposed in line with the longitudinal axis of the tubular member and through which air is adapted to be forced, said mouthpiece being spaced outwardly from the inner end of the tubular member, means for supporting the mouthpiece in spaced relation with the inner end

of the tubular member, the space between the inner end of the tubular member and the mouthpiece being open entirely to the atmosphere so that air unobstructed may be drawn into the inner end of the tubular member at all points along the periphery of said inner end.

2. A bubble blower comprising a tubular member having a film supporting outer end and an open inner end, a mouthpiece spaced outwardly from the inner end of the tubular member and having a central passage through which air is adapted to be forced, wires connecting the inner end of the tubular member with the mouthpiece so that the inner end of the tubular member will be open to the atmosphere at all points along the periphery of the inner end of the tubular member.

3. A bubble blower comprising a tubular member having a film supporting end, a mouth piece having a passage through which air is adapted to

be forced, means for supporting the mouthpiece in spaced relation with the inner end of the tubular member, the space between the inner end of the tubular member and the mouthpiece being open to the atmosphere, the film supporting end of the tubular member being provided with corrugations for the storage of film-producing materials.

4. A bubble blower comprising a tubular member having a film supporting end, a mouthpiece having a passage through which air is adapted to be forced, means for supporting the mouthpiece in spaced relation with the inner end of the tubular member, the space between the inner end of the tubular member and the mouthpiece being open to the atmosphere, and means at the outer end of the tubular member for storing film-forming materials, said means also increasing the film-contacting surface.

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