

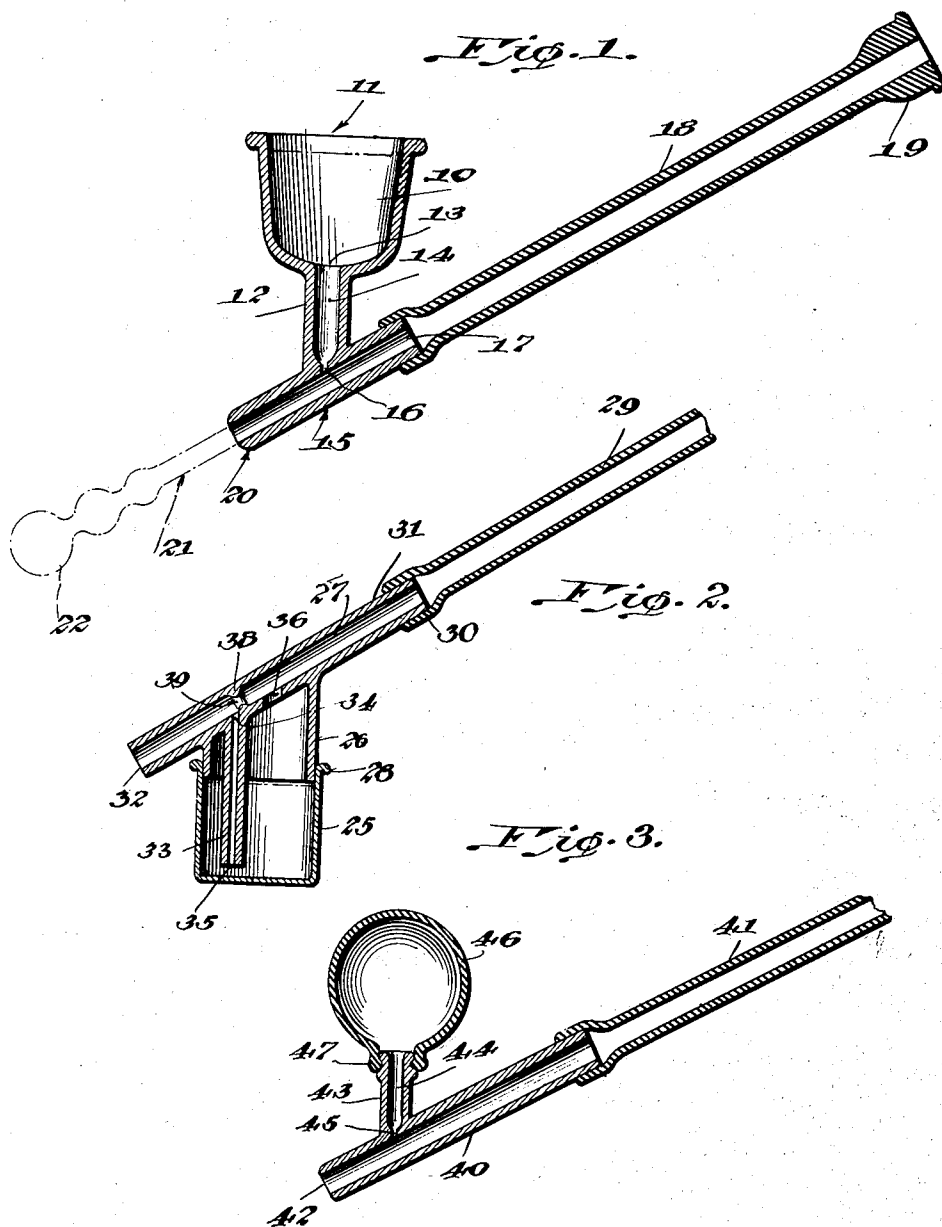
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BUBBLE BLOWER

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WITNESS

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BUBBLE BLOWER

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1 Claim. (Cl. 46—31)

This invention relates to a bubble blower.

An object of the invention is the provision of a device in which a reservoir is provided with a bubble solution connected by a restricted port with a tube through which air is forced for creating a plurality of successive bubbles at one end of the tube, the solution from the reservoir passing through the port to the tube either under the influence of the force of gravity or by a pressure mechanically created on the fluid.

Another object of the invention is the provision of a bubble blower in which a tube is employed for carrying a stream of air under pressure past a port through which is discharged a bubble-producing solution from a reservoir, the bubbles being formed in succession and at a rapid rate from one end of the tube.

A further object of the invention is the provision of a device which when supplied with the proper bubble solution will produce a continuous shower of bubbles as long as the air pressure is properly applied for carrying the solution through a tube as it is discharged from a restricted port in communication with a reservoir, it being necessary to maintain a difference in pressure between the surface of the liquid and the port where the solution enters the tube, the pressure may be either the natural, hydrostatic pressure of the liquid, pneumatic pressure from the air stream applied to the surface of the liquid, or pressure may be applied directly by means of a piston, a diaphragm, or a bulb.

This invention will be best understood from a consideration of the following detailed description, in view of the accompanying drawing forming 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 which shall define no material departure from the salient features of the invention as expressed in the appended claim.

In the drawing:

Figure 1 is a longitudinal vertical section of one form of the invention,

Figure 2 is a longitudinal vertical section of a modified form of the invention, and

Figure 3 is a vertical longitudinal section of a further modified form of the invention.

Referring more particularly to Figure 1, 10 designates a reservoir having an upper end 11 open to the atmosphere. A stem 12 is in communication at 13 with the reservoir 10. A central passage 14 of the stem is in axial align-

ment with the reservoir and both the reservoir and the stem are normally located in a vertical position.

A bubble-producing tube 15 is in communication with the passage 14 of the stem 12 through a restricted port 16.

One end 17 of the tube 15 is connected to a tube 18 which has a mouth-piece 19 adapted to be received by the mouth of the operator for forcing a stream of air under pressure through the member 18 and tube 15 and past the restricted port or orifice 16. It will be noted that the axis of the tube 15 is located at an acute angle to the axis of the stem 12 so that while the outer or bubble-forming end 20 of the tube 15 is located in a lower horizontal plane than the end 17, the stem 12 and the reservoir 10 may be maintained in a vertical position.

All of the elements of the construction disclosed in Figure 1 may be cast in a single piece and may be formed of metal, composition material, or any other material suitable for the purpose.

The operation of the device shown in Fig. 1 is as follows: The reservoir 10 is filled with a suitable solution capable of producing bubbles and this solution fills the passage 14 and through the port 16 tends to enter the tube 15 but due to the fact that the port 16 is considerably restricted soap solution will not flow freely through said port into the tube 15 and be discharged from the lower end 20 of the tube 15.

The soap solution in the reservoir 10 tends to flow by gravity through the port 16 so that when air pressure is forced through the tubes 18 and 15, and is forced past the restricted port 16, the solution will be carried through the tube 15 and collected at the free end 20.

The shape of the film which is produced at the lower end 20 of the tube 15 is shown in dotted lines so that there will be a series of enlargements along the tubular film 21 and these will break off, producing a shower of bubbles. An individual characteristic of this construction is that instead of bubbles being formed directly on the end of the tube 15 as is usual, the bubbles form, as shown at 22, at the end of the long tubular film 21 of the bubble solution which is carried by the smooth flow of the air stream towards the extreme end of the tubular film. Surface tension tends to reduce the diameter of the film in places. The resulting pressure changes with the aid of surface tension provide for a constriction and distension of the

film in such a way that the film breaks up into a shower of disconnected bubbles of approximately uniform diameter. There will be no break in the stream of bubbles as long as the solution and the air pressure are properly supplied. If the film breaks, the solution passing slowly through the orifice 16 into the tubular member 15 will collect at the end 20 of the tube 15 and thus seal it with fluid, so that upon renewing the air pressure the bubbles will start automatically.

Figure 2 produces similar results to that shown in Fig. 1 but in this device dependence upon the force of gravity is eliminated and air pressure is supplied directly to the surface of the liquid of the reservoir.

The reservoir 25 is supported by a projection 26 depending from a bubble-producing tube 27. The upper end 28 of the reservoir 25 is adapted to have a neat fit with the lower end of the member 26 so that the reservoir may be removed from the member 26 as desired.

The tubular member 29 is connected at 30 with the upper end 31 of the tube 27. The lower or outer end 32 of the tube 27 is adapted to produce the bubbles created by the film of soap solution and the stream of air.

The stem 33 has a restricted port at 34 for placing the stem in communication with the tube 27 at the upper end of said stem. The lower end of the stem, as shown at 35, is in open communication with the reservoir 25 adjacent its lower end.

A passage 36 connects the tube 27 with the tubular member 26 so that when air is forced through the tube 27 it will enter the passage 36 and exert a pressure on the surface of the liquid in the reservoir 25. A rib 38 is formed integrally of the tube 27 between the passage and of the port 34 to provide a restricted passage 39 between the upper and lower ends of the tube 31.

When air is forced through the tube 27 from the tube 29 some of this air will pass into the

tubular member 26 and exert a pressure upon the surface of the soap solution in the reservoir 25. This soap solution will pass upwardly through the restricted passage in the stem 33 and be discharged at the port 34 in the tube 27. The portion of the air which is forced through the passage 39 is discharged past the port 34 carrying the soap solution to the free end 32 of the tube 27, thereby creating a shower of bubbles in the same manner as described for the construction disclosed in Figure 1.

Figure 3 discloses a construction which gives like results with the construction shown in Figs. 1 and 2. A tube 40 is connected to a tube 41 through which air is adapted to be supplied under pressure. The opposite end 42 of the tube 40 is adapted to form the bubbles.

A stem 43 has an axial passage 44 which is in communication with tube 40 by means of a restricted port 45.

A reservoir 46 in the shape of a rubber bulb is connected at 47 with the stem 43. The bulb 46 is adapted to be supplied with the soap solution and when pressure is exerted on the walls of the bulb the solution will be passed through the tube 46 from the tube 40 so that when air is forced through the tube 40 from the tube 41, it will rush past the port 45 and cause a shower of bubbles to be created at the free end 42 of the tube 40.

I claim:

A bubble blower comprising a reservoir adapted to contain a soap solution, a tube adapted to have air forced therethrough, a stem at one end being in communication with the reservoir, the opposite end of the stem having restricted communication with the tube intermediate the ends thereof so that the soap solution will be fed directly to the stream of air and transversely to the path of the air through the tube, the tube being free from restrictions and having substantially the same cross sectional area throughout the length thereof.

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