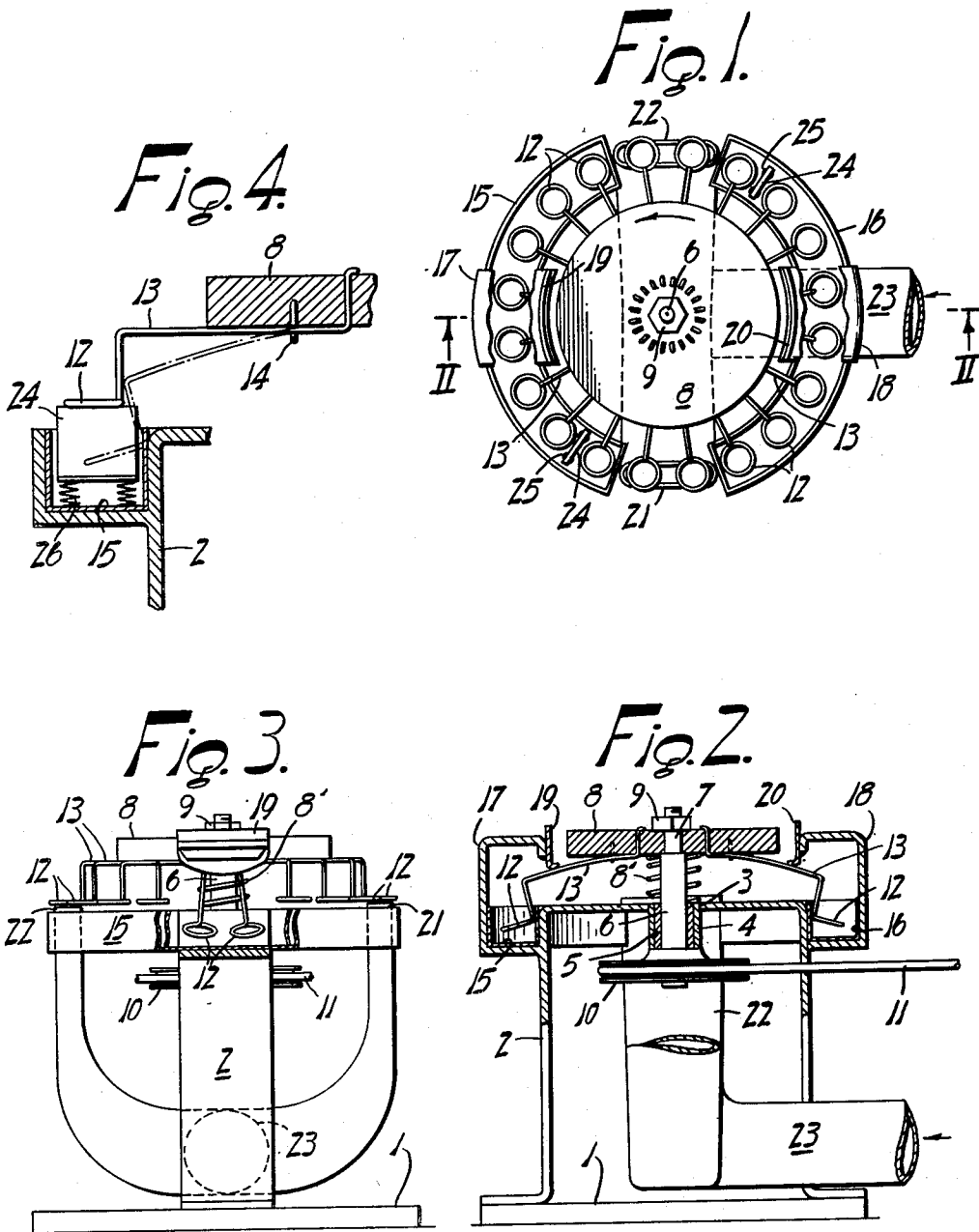


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C. H. SCHMIDT, JR  
BUBBLE PRODUCING MACHINE

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INVENTOR.  
Charles Henry Schmidt, Jr.  
BY  
Bean Brooks Buckley & Bean  
ATTORNEYS

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## BUBBLE PRODUCING MACHINE

Charles Henry Schmidt, Jr., Kenmore, N. Y.

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1

This invention relates generally to a bubble producing machine, and more particularly to a machine for producing multiple continuous streams of bubbles which are blown upwardly.

Bubble producing machines of the aforementioned type have many uses and adaptations. Such machines may be used as amusement devices, and are particularly appealing to young children. In addition, such machines are readily adapted to use for advertising purposes. For example, the bubble producing machine of the instant invention can be enclosed within an enlarged replica of a drinking glass or the like, and made to simulate an effervescent beverage. Other uses and adaptations will become apparent upon an understanding of the instant invention.

Accordingly, it is an object of the instant invention to provide a bubble producing machine arranged to produce one or more continuous streams of bubbles.

In addition, it is an object of this invention to provide a bubble producing machine arranged to produce a continuous stream of bubbles which are blown upwardly either in a vertical or a diagonal direction.

Another object of the instant invention is to provide a bubble producing machine wherein a plurality of loop means are moved through a container filled with film-forming liquid and then past a blower means whereby to produce a stream of bubbles which are blown upwardly.

It is also an object of the instant invention to provide means for removing excess liquid from the loop means and returning it to the liquid container prior to the passage of air through said loop means to form a bubble.

Another object of the instant invention is to provide a bubble producing machine having the aforesaid characteristics and which is inexpensive to manufacture, simple in construction, and reliable in operation.

These and other objects of the instant invention will become apparent upon reading the ensuing detailed description thereof taken together with the accompanying drawings wherein:

Fig. 1 is a top plan view of the instant invention with parts broken away for greater clarity.

Fig. 2 is a side view in section taken along line II-II of Fig. 1;

Fig. 3 is a view in side elevation, and with certain parts in section, taken at a right angle to the view of Fig. 2; and

Fig. 4 is a fragmentary detail view of one of the loop means of the instant invention.

Referring now to the accompanying drawing, 55

2

the instant invention is seen to comprise a base 1 to which is secured in any known manner an inverted U-shaped support member 2. Support 2 is centrally apertured, as at 3, and a sleeve 4 is secured therein, as by welding. A bearing member 5 is carried within sleeve 4, and a shaft 6 is rotatably journaled within said bearing member.

At its outer end shaft 6 is provided with a reduced portion 7 on which is mounted a hub member 8. Member 8 is fixedly secured against rotation on portion 7 of shaft 6 by any conventional means, such as a key, and is held in place thereon by a nut 9. At its inner end, shaft 6 fixedly carries a driven drum 10, and a drive cable 11 extends around drum 10 to any suitable driving means, not illustrated. A spring member 8' extends between hub member 8 and support 2, being fitted around shaft 6, and serves to maintain hub member 8 in proper spaced relation with support 2 without interfering with the rotation of hub member 8. If desired, other spacing means can be used for this purpose.

A plurality of loop members 12 are secured to hub member 8, being carried at the outer end of slender arms 13 which are secured at their inner ends to said hub member in any conventional manner. Arms 13 are shown as extending outwardly and downwardly to loop members 12, but other shapes can be utilized if desired. At a point between loop members 12 and the point of attachment of arms 13 to hub member 8, a tension spring member 14 extends between each of said arms and said hub member, whereby after downward deflection of said arms and said loop members for a purpose to become apparent, said springs 14 will restore said arms and loop members to their normal position. Alternatively, arms 13 can be made sufficiently resilient in themselves so that springs 14 can be dispensed with. As shown in Fig. 1, loop members 12 form a circle around shaft 6 in plan view.

Two trough-like containers 15 and 16 for film-forming liquid are mounted on the upper side portions of support 2. Any suitable bubble or film-forming medium can be used. Said containers extend in an arcuate direction to coincide in plan view with said loop members, and in the particular embodiment herein illustrated, said containers 15 and 16 together extend beneath most of said loop members. Said containers are spaced beneath the normal level of said loop members. Bracket members 17 and 18 extend outwardly from support 2 and around and over containers 15 and 16, respectively, and carry at their upper ends cam-shaped deflecting members

3

19 and 20, respectively, which deflecting members are arranged in the path of movement of arms 13 to deflect said arms downwardly. Therefore, as said loop members 12 are moved to pass beneath deflecting members 19 and 20, said deflecting members contact arms 13 to depress loop members 12 downwardly into the film-forming liquid in containers 15 and 16. As said loop members pass beyond said deflecting members, they are restored to their normal position by springs 14.

Means are provided for directing a stream of air upwardly through the liquid-laden loop members, and said means are shown to include duct means 21 and 22, which duct means extend upwardly from base 1 to the spaces between containers 15 and 16. At their lower ends, duct members 21 and 22 connect to a conduit 23 which is arranged for connection to suitable blower means, not illustrated. Thus, after said loop members 12 pass beneath deflecting members 19 and 20 to pick up film-forming liquid, they pass over ducts 21 and 22 and the upwardly directed streams of air pass therethrough to form bubbles which are blown upwardly.

Means for removing excess liquid from said loop members are provided intermediate deflecting members 19 and 20 and ducts 21 and 22, respectively, and comprise scraper members 24 and 25 which members are mounted on springs 26 within containers 15 and 16, respectively, as illustrated in Figs. 1 and 4. The top of each of said scraper members is arranged to bear against the bottom of loop members 12 as they pass thereover, whereby any excess liquid is removed from said loop members and returned to said containers. In this way, waste of the liquid medium in containers 15 and 16 is prevented. Also, the spring mounting of said scraper members insures that they will accommodate themselves to variations in the height or level of said loop members.

To summarize the operation of the instant invention, cable 11 is driven to drive drum 10 and hub member 8 in the direction shown by the arrow in Fig. 1. Loop members 12 are thereby rotated, and, as they pass deflecting members 19 and 20, they are depressed into the liquid in containers 15 and 16, respectively. Said loops then pass over scrapers 24 and 25, respectively, whereby any excess liquid is removed from said loop members, and they then pass over ducts 21 and 22, respectively, whereby bubbles are formed and blown upwardly by the upwardly directed streams of air.

Thus, the instant invention fully accomplishes its aforesaid objects, and provides a bubble producing machine which produces plural continuous streams of bubbles which are blown upwardly. Obviously, the instant invention is susceptible of many modifications and is not to be limited to the specific details of construction disclosed herein. Thus, the number of air ducts and containers can be varied to vary the number of streams of bubbles which are produced, and changes can be made in the various component parts, all without departing from the inventive concept, and it is intended that the instant invention shall be limited solely by the scope of the appended claims.

Having fully disclosed the instant invention in a preferred embodiment thereof, and having completely described its mode of operation, what is claimed as new is as follows:

1. A bubble producing machine comprising support means, dipper means mounted on said support means for movement about a substan-

4

tially vertical axis, said dipper means including a loop-forming member, container means for film-forming liquid carried by said support means, means for moving said loop-forming member into and through said container means, and means for directing a stream of air through said looping member.

2. A bubble producing machine comprising a base member, a plurality of loop-forming means supported on said base member for movement in a substantially horizontal plane, carrier means for film-forming liquid supported on said base member, conduit means supported on said base member arranged to direct air through said loops, and means for moving said loop-forming means first into contact with liquid in said carrier means and then past said conduit means.

3. A bubble producing machine comprising a loop assembly mounted for movement about a substantially vertical axis, said loop assembly including means defining a plurality of loop means, container means for film-forming liquid arranged along the path of movement of said loop means, duct means arranged to direct a stream of air through said loop means, and means for moving said loop means first into said container means and then past said duct means.

4. A bubble producing machine comprising support means, a dipper assembly rotatably supported on said support means, said dipper assembly including means defining a plurality of spaced openings, multiple bubble medium container means spaced from each other along the path of rotation of said dipper assembly, duct means between said container means along the path of rotation of said dipper assembly for directing streams of air through said openings, and means for rotating said dipper assembly to pass the openings therein into said each container means and then exteriorly thereof for exposure to said duct means, whereby multiple continuous streams of bubbles are produced.

5. A bubble producing machine comprising a support means, a dipper assembly mounted on said support means for movement about an upwardly extending axis, said assembly including multiple aperture-defining means, container means for film-forming medium mounted on said support means, means for moving said aperture-defining means into said container means and then exteriorly thereof, and means for directing a stream of air upwardly through the medium-laden apertures in said assembly, whereby to produce a stream of bubbles blown upwardly.

6. A bubble producing machine comprising support means, dipper means including substantially horizontally extending loop-forming means mounted on said support means for movement about a substantially vertical axis, container means for film-forming liquid carried by said support means and spaced beneath said dipper means, means for deflecting said loop-forming means into said container means, and means for directing an air stream through said loop-forming means.

7. A bubble producing machine comprising a base member, hub means supported on said base member for movement about a substantially vertical axis, a plurality of spaced loop-forming means flexibly connected to said hub means for movement thereby, container means for film-forming liquid carried by said base means and arranged adjacent the path of movement of said loop-forming means, duct means carried by said base means and arranged to direct a stream of

5

air through said loop-forming means, means for driving said hub means to move said loop-forming means past said container means and said duct means, and means for momentarily deflecting said loop-forming means into said container means.

8. A bubble producing machine comprising a support member, a dipper assembly rotatably mounted on said support member, said dipper assembly including multiple loop-forming members, container means for bubble medium mounted on said support member along the path of movement of said loop-forming members, means for moving said loop-forming members into said container means and then exteriorly thereof, means for scraping across said loop-forming members to remove excess bubble medium therefrom following movement thereof into said container means, and means for directing a stream of air through the medium-laden loop-forming members.

9. A bubble producing machine comprising a support, a loop assembly mounted on said support for movement about a substantially vertical axis, multiple loop-forming members normally lying in a substantially horizontal plane and resiliently secured on said loop assembly, container means for film-forming liquid carried by said support in spaced relation beneath said loop assembly, means for moving said loop-forming members about said axis, means for deflecting said moving loop-forming members into said container means, scraper means carried by

6

said container means and arranged to scrape along one side of said loop-forming members as the latter move away from said container means whereby to remove any excess liquid from said loop-forming members and return the same to said container means, and means for directing a stream of air through the liquid-laden loop-forming members.

10. A bubble producing machine comprising support means, a dipper assembly including loop-forming means mounted on said support means for movement about a substantially upright axis, container means for film-forming medium mounted on said support means, means for moving said loop-forming means into said container means and then exteriorly thereof, scraper means adjacent the exit end of said container means and arranged to resiliently bear against said loop-forming means for removing excess liquid therefrom, and means for directing a stream of air through the medium-laden loop-forming means.

CHARLES HENRY SCHMIDT, JR.

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