

(No Model.)

2 Sheets—Sheet 1.

R. S. THAIN.
SOAP BUBBLE PIPE.

No. 430,095.

Patented June 10, 1890.

Fig. 1.

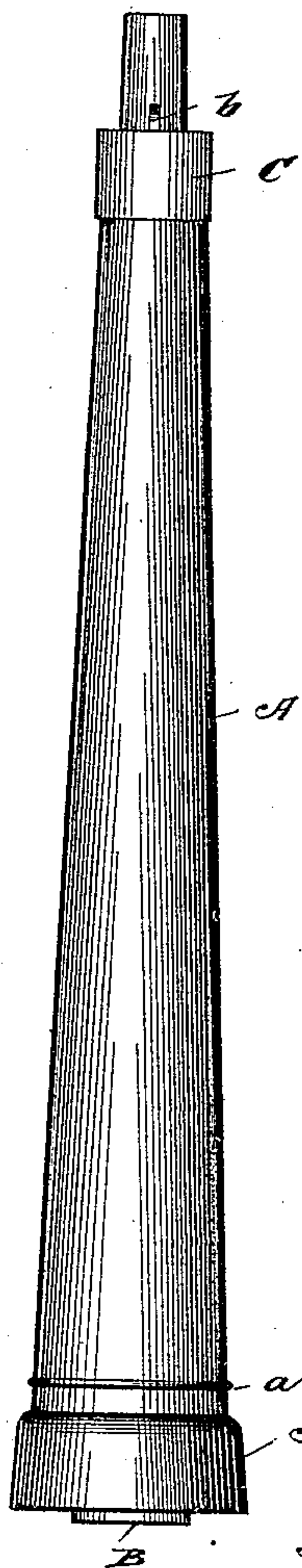


Fig. 2.

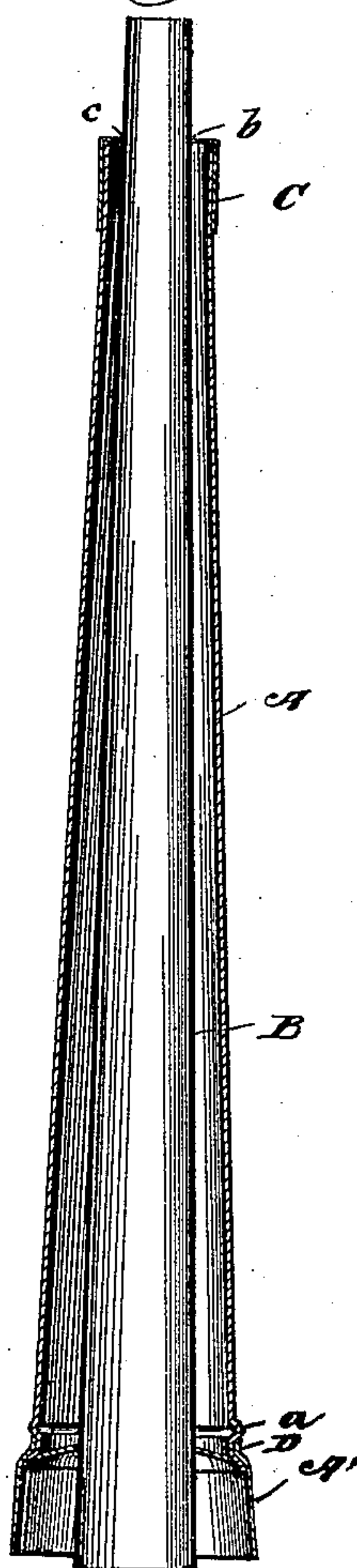


Fig. 5.

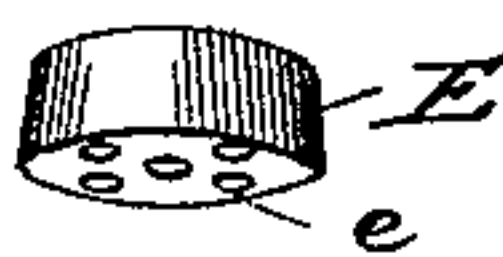


Fig. 3.

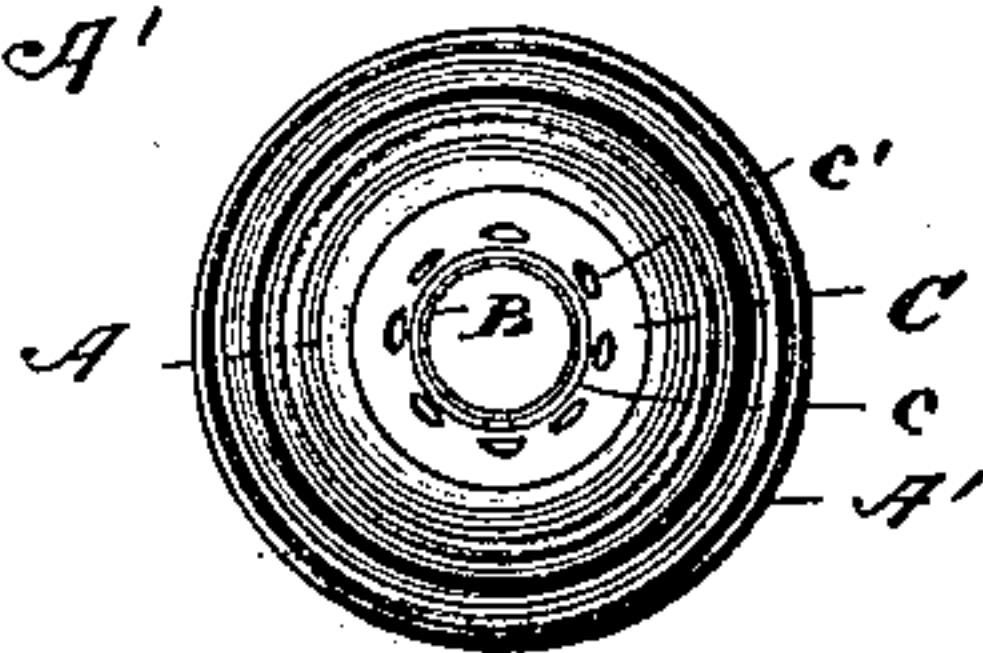
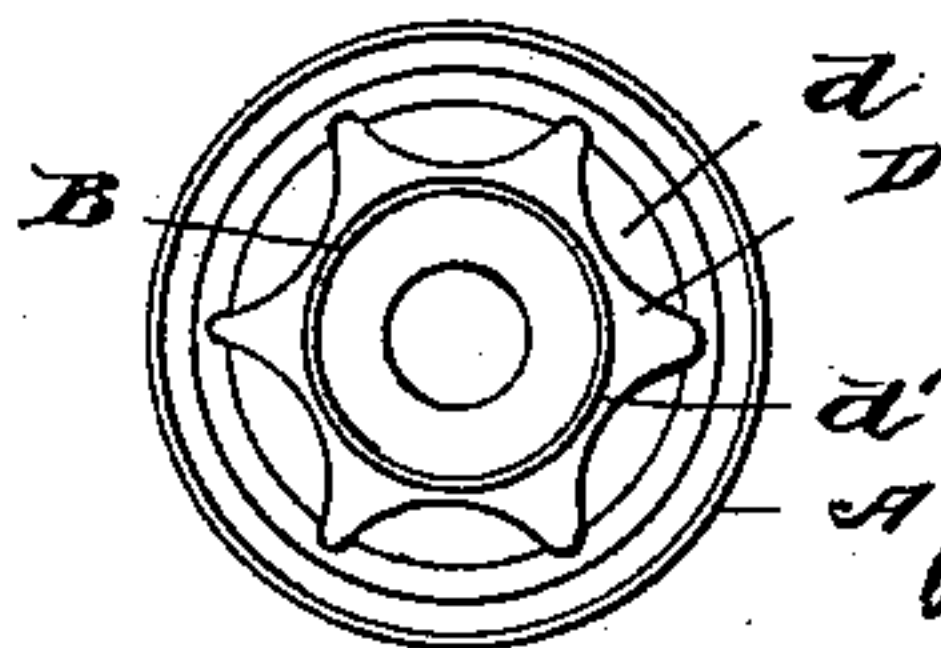


Fig. 4.



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Fig. 6.

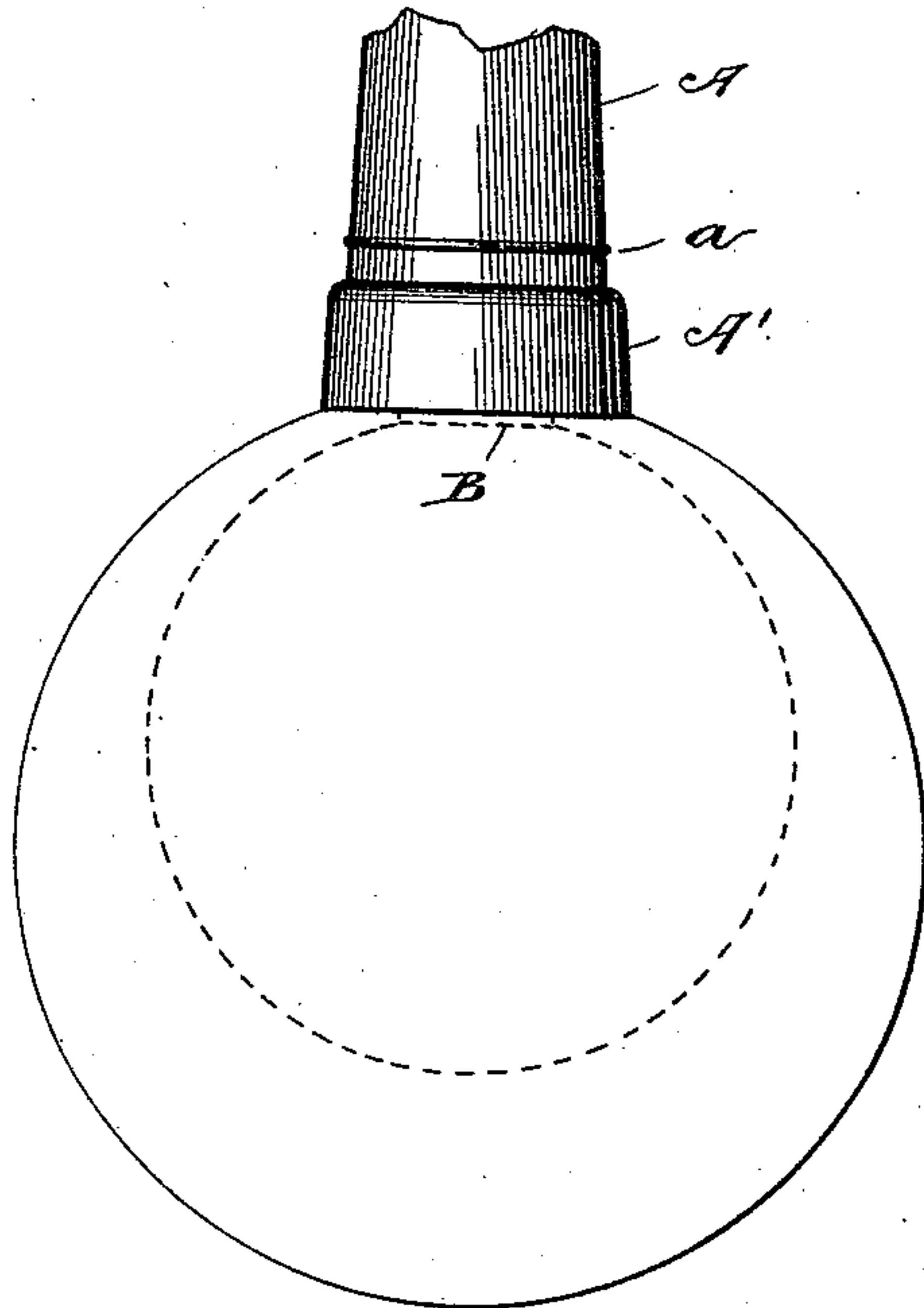
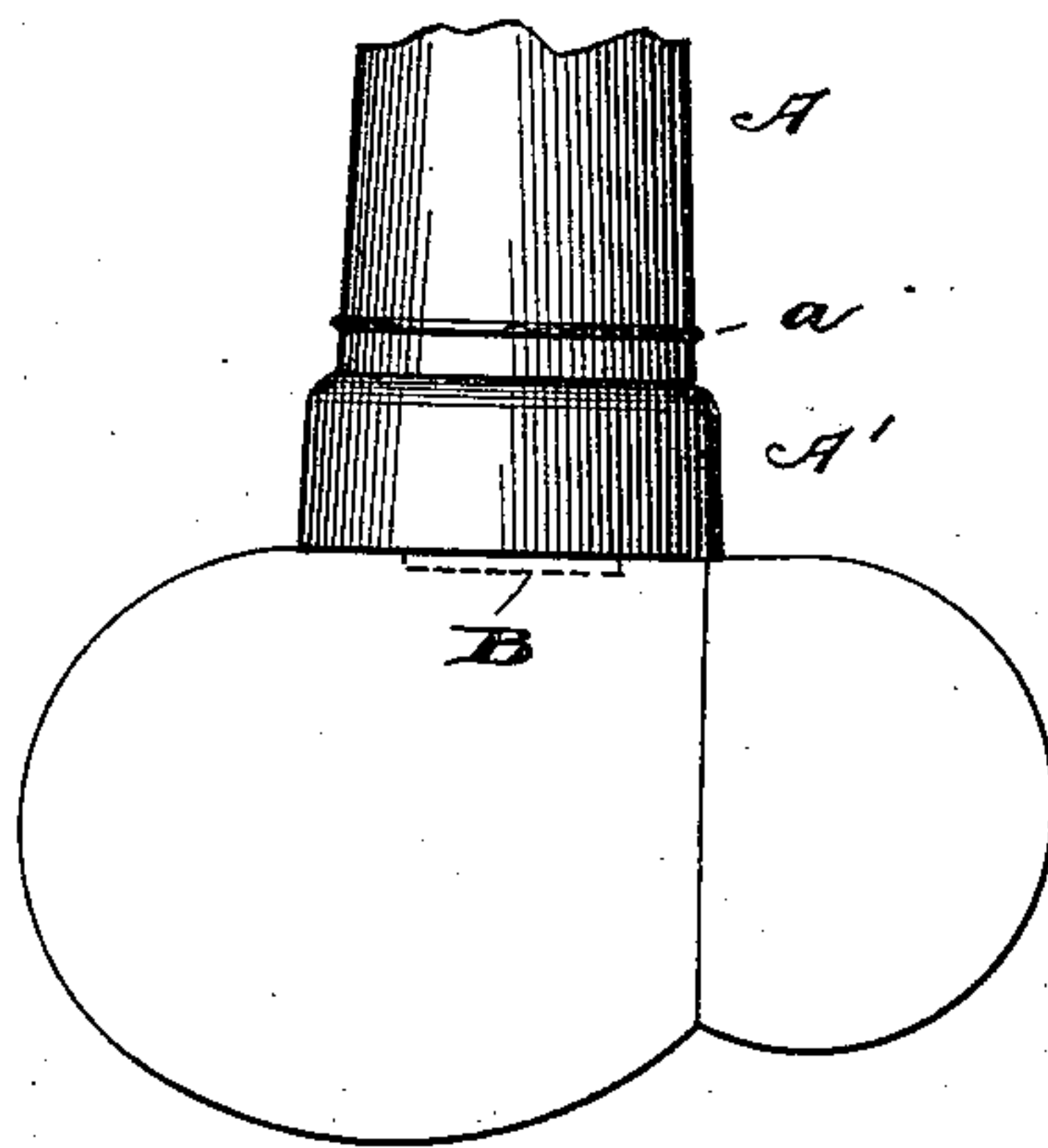


Fig. 7.



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UNITED STATES PATENT OFFICE.

RICHARD S. THAIN, OF OAK PARK, ASSIGNOR TO THE WILBUR PUBLISHING COMPANY, OF CHICAGO, ILLINOIS.

SOAP-BUBBLE PIPE.

SPECIFICATION forming part of Letters Patent No. 430,095, dated June 10, 1890.

Application filed March 21, 1890. Serial No. 344,722. (No model.)

To all whom it may concern:

Be it known that I, RICHARD S. THAIN, a citizen of the United States, residing at Oak Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Soap-Bubble Blowers, of which the following is a specification.

My invention relates to a device for blowing soap-bubbles; and it has for its object to provide a bubble-blower with which a complete bubble may be formed within another; also, whereby two bubbles may be simultaneously produced, one of which will, by the continuation of blowing, be detached from the blower and caused to move down the outside of the first by gravity until it assumes a position directly beneath the bubble adhering to the blower, and remains suspended therefrom, and, also, whereby composite bubbles—*i. e.*, consisting of a larger number of small bubbles—may be made. The production of one bubble within another enhances the prismatic effect many fold, and the device, when skillfully handled, can be made to afford amusement, pleasure, and instruction.

The blower comprises in the preferred form two tubes concentrically arranged, the walls of the tubes, preferably, converging from the outer end of the blower toward the mouth end. Their length and relative diameter are largely a matter of judgment; but the best results are secured, according to my experiments, when the inner tube is, say, two-thirds the diameter of the outer one, and of such length as to project, say, a fraction of an inch beyond the outer tube at the end where the bubble is formed and at the mouth end a slightly greater distance, so as to adapt said end to be covered by the tongue in the act of blowing through the outer tube. As a means of securing these tubes together, I have shown in the drawings, and prefer to employ, a cap or collar whose flange is adapted to embrace the mouth end of the outer tube and centrally apertured for the passage therethrough of the inner tube, and also apertured through its substance between the walls of the two tubes for the passage of air expelled from the mouth to the interior of the outer tube. I prefer to make the outer tube in two transverse sections, the lower end bell-shaped and its con-

tracted portion or neck adapted to pass on the outside of the lower end of the outer tube, and a suitable stop—such as a circumferential bead—is provided in the upper section, against which the upper end of the contracted portion abuts. The lower end of the upper section will also, preferably, be projected below the contracted portion of the lower section interiorly thereof and flared out against the enlarged portion of the lower section, so that the two sections are locked together. To properly space the lower end of the inner tube, a disk having a central aperture and a serrated edge may be slipped over it from its upper end, and then the inner tube being inserted through the large end of the outer one, the smaller end passing through the collar, and preferably locked or soldered thereto, the various parts are securely locked together and will stand considerable hard usage without injury. The serrated disk has an additional function in use. I also provide an attachment cup-shaped in form and having perforations in its bottom, its walls being adapted to be secured to the lower end of the inner tube, so that a large number of small bubbles may be formed by expelling the air through the perforations in the bottom of the cup inside of a large bubble formed by blowing through the outer tube. All of the parts may be constructed from light thin sheet metal and are readily assembled.

In the drawings, Figure 1 is an elevation of the device; Fig. 2, a vertical section; Fig. 3, a plan view of the device looking down on the mouth-piece. Fig. 4 is a plan view looking into the device from the outer end. Fig. 5 is a view of the cup-shaped attachment. Figs. 6 and 7 are views showing forms of bubbles which may be produced by the device.

In the drawings, A represents a tube—say of metal—tapering from end to end and preferably made in two sections, the lower one of which is marked A'. The lower end of the upper section has a circumferential bead *a*, to form a shoulder or stop, and its lower end receives the contracted portion of the section A', which is bell-shaped by preference, and after the two parts are slipped into position the lower edge of the upper section is turned out under the shoulder of the lower

section, so that the two are firmly locked together. It is not necessary that the outer tube should have this bell-shaped end, but it may be cylindrical or in the form of a frustum of a cone—that is, having straight sides—
 5 or when in sections the sections may be secured together in different ways.

Concentrically arranged within the tube A is the tube B, which will preferably be of the
 10 same configuration as the upper section of the outer tube and of slightly greater length, projecting at its lower end a fraction of an inch below the lower end of the outer tube and at its outer end a greater distance, so as
 15 to adapt it to be conveniently covered by the tip of the tongue while blowing into the outer tube.

In order to secure the two tubes in proper relation to each other, I employ for the end of
 20 the device to which the mouth is applied a cap C, having a central aperture *c* of such size as to permit the passage of the end of the tube B therethrough, and having also the apertures *c'*, to permit the air expelled from
 25 the mouth to pass to the space between the tubes. The flange of this cap encircles the upper end of the outer tube and the inner tube will preferably be provided below its end with a projecting lug *b*, adapted, when
 30 the parts are assembled, to rest upon the upper side of the cap C.

To space the lower end of the tubes, I employ a disk D, having serrated edges to provide apertures *d*, and secure it over the inner
 35 tube by passing the small end through a central aperture *d'* in the disk, while the points of the disk will engage the walls of the outer tube, and, when the parts are assembled, will rest beneath the shoulder or offset of the bell-
 40 shaped section A', all as clearly seen in Figs. 2 and 4 of the drawings. This serrated disk also enables the production of a large number of bubbles by immersing the blower in the water, so that the disk is below its surface.
 45 Bubbles will then be generated at each of the apertures *d* in succession.

In assembling the parts the sections A A', when separately made, will first be secured together. Next the serrated disk will be slipped
 50 over the smaller end of the inner tube B, and its aperture will be of such size that it cannot be forced off the large end of said tube. The inner tube will then have its small end inserted through the outer end of the large
 55 one and passed up until the disk D comes to rest against the shoulder or stop formed by the section A'. The cap *c* may then be slipped over the small end of the inner tube, which projects beyond the outer one and forced to
 60 its place, the lug *b* being forced through the metal of the cap or passed through a suitable aperture therein, and then the cap turned to lock the parts together, or it may be fastened by solder or in any other convenient manner.

65 In Fig. 5 I have shown an attachment for forming a large number of small bubbles in-

side a large one. This attachment comprises a cup E, having perforations *e* in its bottom, and it is adapted to telescope with the inner tube. By first forming the large bubble by
 70 blowing through the outer tube and then by blowing through the inner tube, small bubbles will be formed at each of the perforations and inside of the larger one.

In Fig. 6 the "double bubble" is seen. 75 This is produced by first immersing the bell-shaped end of the blower in soapy water and then by covering the opening in the projecting end of the inner tube by the point of the
 80 tongue and expelling the air from the mouth. Covering meanwhile the upper end of the tube with the lips, a bubble will be formed at the bell-shaped end of the outer tube, and when distended to considerable size, if the
 85 tongue be removed from the open end of the inner tube and the air be expelled, gently at first, through the inner or both tubes simultaneously, a second bubble is produced at the
 90 outer end of the inner tube and inside of the bubble first formed; and then by continuing the blowing through both tubes simultaneously the size of the bubbles may be enlarged, or by blowing through first one and then the
 95 other the relative sizes of the bubbles may be changed, and by a puff of air through the inner tube the inner bubble may be detached, so as to float inside the outer one, which may also be detached by a puff or by shaking or moving the device.

In Fig. 7 a composite bubble is shown. 100 This is produced by blowing through both tubes simultaneously, and in so doing two or more bubbles will be produced, each forming complete from one of the tubes, and then by
 105 the continued blowing a second or several bubbles will be formed having their initial point of formation at the edge of the outer tube and adhering to the bubble first formed and gradually passing down by gravity, clinging to the wall of the first until suspended in
 110 the fashion of a basket to a balloon, or a chain of bubbles. The prismatic effect, of course, is heightened by the formation of two or more bubbles adhering to each other, and the number of bubbles which may be pro-
 115 duced will depend to some extent upon the depth to which the blower is immersed in the water. I have found that by immersing the end of the blower so that the water shall stand above the level of the disk D a very
 120 large number of bubbles can be formed, which, I presume, are formed by expelling the water through the apertures *d*.

I do not of course intend to limit my invention to the details of construction, as it is
 125 obvious that variations may be made in the structural features without departing from the spirit of my invention.

I claim—

1. A bubble-blower comprising, in combination, two tubes, one within the other, to
 130 provide concentric mouth-pieces, and the in-

ner one projecting beyond the outer one at their ends opposite the mouth-pieces, substantially as described.

2. A bubble-blower comprising, in combination, two tubes having concentric mouth-pieces, the inner mouth-piece projected beyond the outer and the inner tube also projected beyond the outer at its end opposite the mouth-pieces, whereby the inner bubble in forming is kept from contact with the outer, substantially as described.

3. A bubble-blower comprising, in combination, an inner and outer tube concentrically arranged, the inner tube projecting beyond the ends of the outer, and a perforated diaphragm secured in the annular chamber between the inner and outer disk toward the end thereof opposite to that at which the mouth is applied, substantially as described.

4. A bubble-blower comprising, in combination, an inner and outer tube, the inner tube projecting beyond the ends of the outer tube and secured thereto by a cap apertured for the passage of one of the projecting ends of the inner tube and having a flange adapted to fit over the end of the outer tube, and a perforated diaphragm apertured for the passage of the inner tube and having a serrated

edge to provide points to engage the inner wall of the outer tube, substantially as described.

5. In a bubble-blower, the combination, of an inner and outer shell concentrically arranged, the outer shell consisting of an upper tapered section and a lower flared section having a contracted neck, the lower end of the upper section projecting below the plane of the opening of said neck and secured thereto by being burred or flanged out against the wall of the lower section, substantially as described.

6. A bubble-blower comprising, in combination, an inner and outer tube concentrically arranged, a cup having its side walls adapted for telescopic connection with the lower end of the inner tube, and perforations in the bottom of said cup, whereby a number of small bubbles may be formed by blowing through the inner tube and expelling the air through said perforations, substantially as described.

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