

No. 881,914.

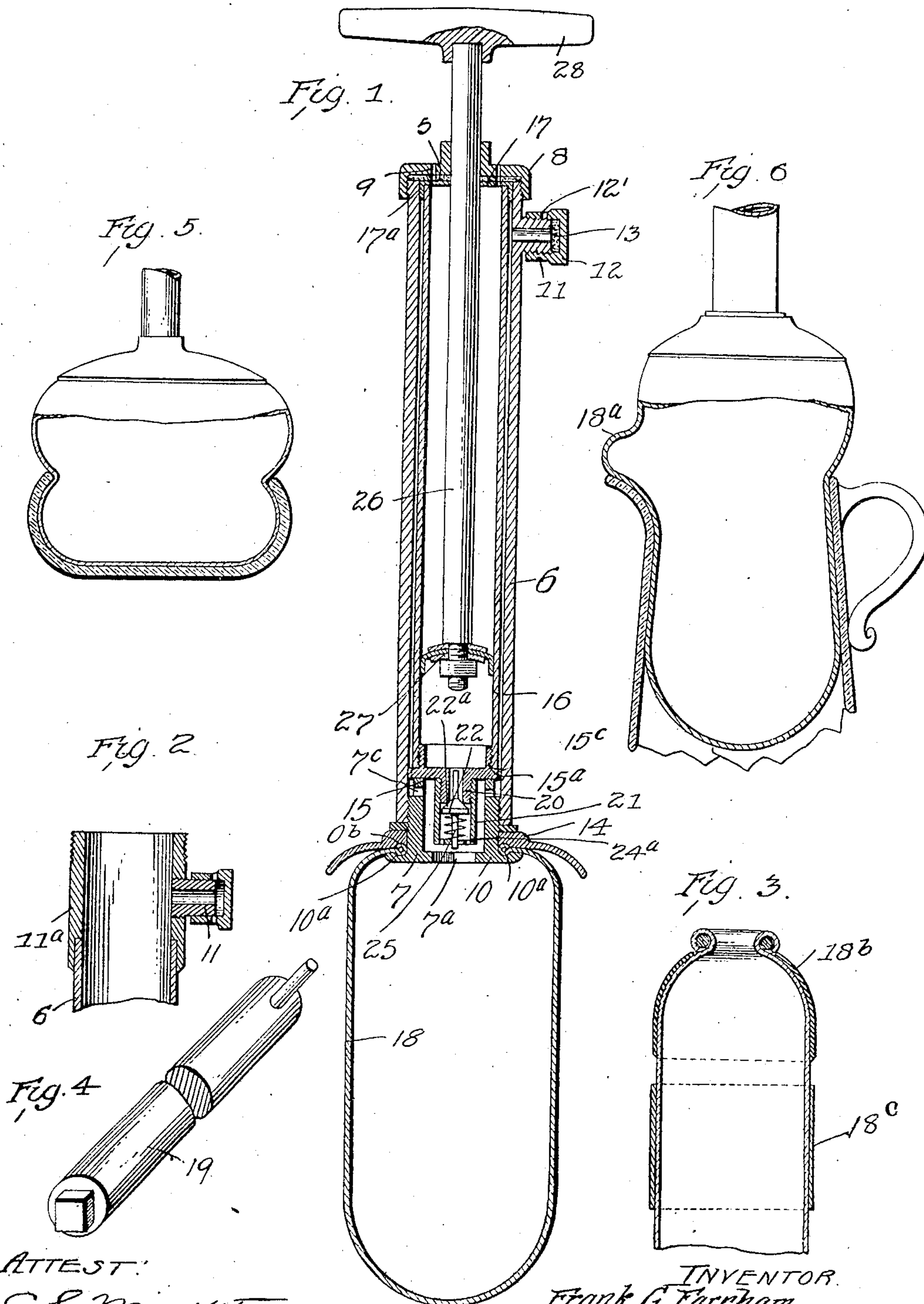
PATENTED MAR. 17, 1908.

F. G. FARNHAM.

DEVICE FOR MANIPULATING GLASS ARTICLES.

APPLICATION FILED FEB. 25, 1905. RENEWED JUNE 29, 1907.

2 SHEETS—SHEET 1.



ATTEST:

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2 SHEETS—SHEET 2.

Fig. 7.

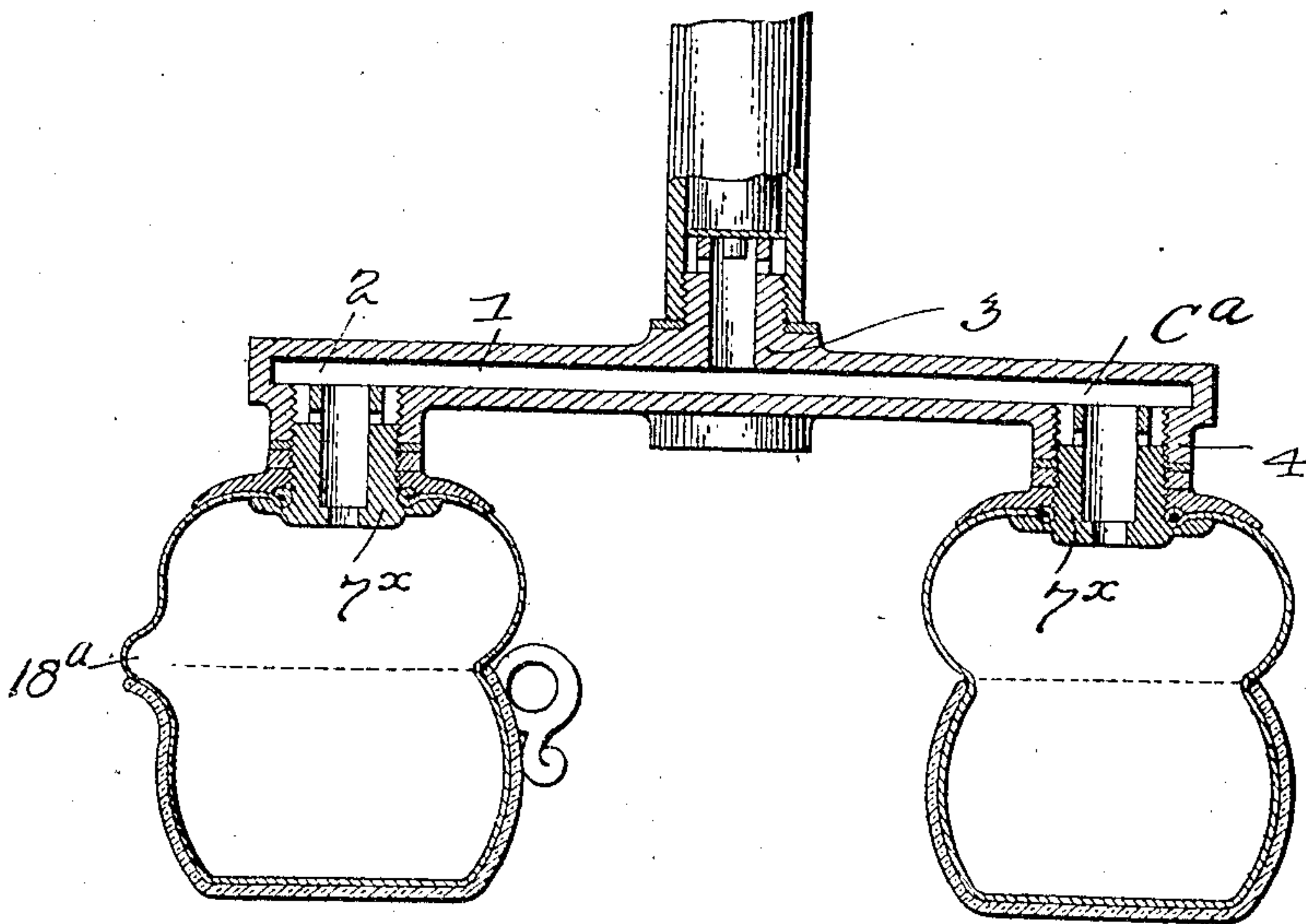
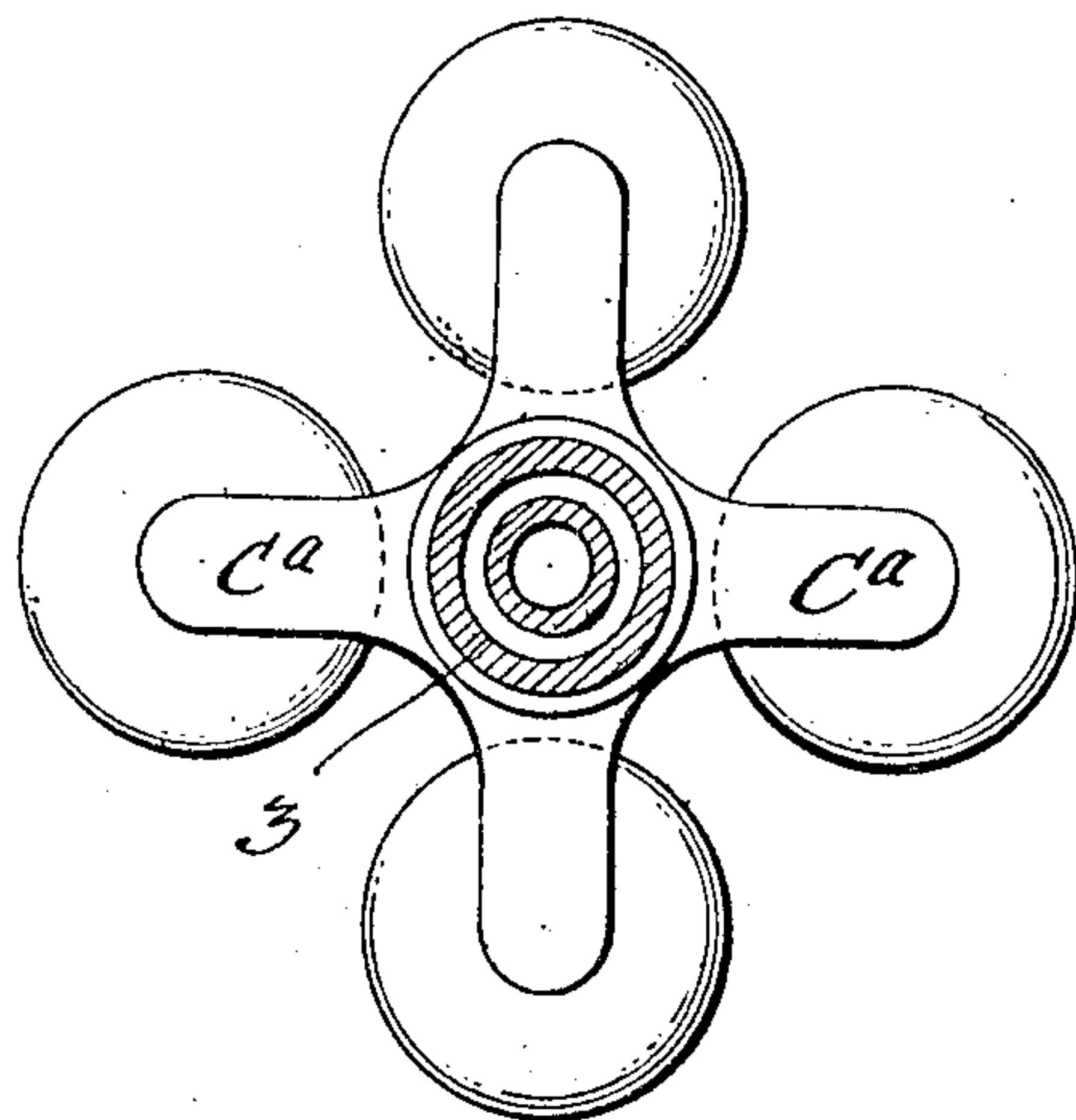


Fig. 8.



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THKJ



# UNITED STATES PATENT OFFICE.

FRANK GUNN FARNHAM, OF HONESDALE, PENNSYLVANIA.

## DEVICE FOR MANIPULATING GLASS ARTICLES.

No. 881,914.

Specification of Letters Patent.

Patented March 17, 1908.

Application filed February 25, 1905, Serial No. 247,362. Renewed June 29, 1907. Serial No. 381,547.

*To all whom it may concern:*

Be it known that I, FRANK GUNN FARNHAM, a citizen of the United States, residing at Honesdale, Pennsylvania, have invented certain new and useful Improvements in a Device for Manipulating Glass Articles, of which the following is a specification.

My said invention relates to improvements in the means for dipping cut glass articles in an acid bath.

It is well known that the finishing and polishing of cut glass articles is rendered much cheaper and more effective if, after cutting, they are dipped in a bath of suitable acid or acids, but in thus dipping great care must be used in preventing the acid from coming in contact with the inner or uncut surface of the article. Just why the contact of the acid with the uncut surface of the glass will pit it and hence produce detrimental effects, while securing beneficial results in its application upon the exterior surface is a mooted question. Such however is the case.

In a companion application filed by me on the 3d day of February, 1905, Serial Number 244,047, I have described and claimed an apparatus for thus dipping articles having smooth flaring mouths. There are a large number of articles, however, such as vases, cream pitchers and sugar bowls and others too numerous to mention in which the mouths are contracted instead of flared and are of such shape as to preclude the formation of an air tight connection, and hence the use of the means disclosed by my present application.

It is, therefore, the object of the present invention to provide a simple, convenient, and effective device for manipulating such articles, by which they may be dipped in the acid without allowing contact thereof with the interior of the article and without danger to the workman.

A further object is to provide for rapidity in manipulation and immunity from danger of breaking or damaging the articles operated upon.

With these and other objects in view the invention includes an expansible acid proof member, adapted to be expanded within a glass article, with associated expanding and manipulating means.

The invention further includes an inflatable acid proof member having attached means for inflating and manipulating the same.

The invention further includes an air forcing device with a removable inflatable acid proof member carried thereby; and finally the invention includes the various features of construction and arrangement of parts hereinafter described and particularly pointed out in the claims.

The invention is illustrated in the accompanying drawings in which—

Figure 1 is a sectional view of the complete apparatus, Figs. 2 and 3 are detail views, Fig. 4 is a view of the wrench, Figs. 5 and 6 are detail views or modifications, and Figs. 7 and 8 are respectively a sectional elevation and a sectional plan of a modification adapted for manipulating a number of articles at a time.

Referring by reference characters to these drawings the ordinal 6 designates a cylinder of any suitable acid proof or acid resisting material which is provided with a removable tubular plug 7 threaded into its lower end and a removable cap 8 threaded upon the upper end. Within this cylinder is removably located the barrel 16 of an air pump, the lower end of which is closed by the valve-carrying part 15, hereinafter more fully described, while the upper part carries a removable cap 17. The exterior diameter of the pump barrel is less than the interior diameter of the cylinder 6 so as to leave an annular space, and the pump barrel is centered in the cylinder by the depending annular flange 17<sup>a</sup> of the cap at the top and the laterally extending flange 15<sup>a</sup> of the part 15. Within the pump barrel works a piston rod 26 carrying a suitable pump piston 27 at one end and having a suitable operating handle 28. Air is admitted to the pump barrel through alining openings 9 in the caps 8 and 17. I prefer to place a packing disk 5 between the caps 8 and 17 as shown, which will of course be provided with corresponding openings. The openings in the cap provide means by which a spanner may be used to unscrew the cap when the pump barrel is to be removed.

The valve plug or member is provided at its lower end with an annular flange 10 having an annular groove 10<sup>a</sup> in its upper face. A washer 14 encircles this member between flange 10 and the lower end of the cylinder 6, and this washer has a corresponding, but oppositely located, groove 10<sup>b</sup>.

At 18 is shown an inflatable bag or body, preferably of rubber having a thickened or



beaded edge designed to be clamped in the grooves and between the flange. It will be understood that this bag is designed to be placed within the cut glass article to be  
 5 dipped and air forced into it by the air pump to cause it to be expanded within and securely hold the cut glass article, as indicated in Figs. 5 and 6.

While the bag will accommodate itself  
 10 within certain limits to varying sizes and shapes of glass articles, some of the articles differ so widely as to make it necessary or desirable to make different sizes or shapes of bags and have them removable and inter-  
 15 changeable. For this purpose all the bags are formed with uniform beaded mouths. When a bag is to be removed and a fresh one substituted the pump barrel 6 is removed from the cylinder and a long tool or wrench  
 20 19 inserted, its angular lower end engaging an angular opening 7<sup>a</sup> in the plug 7, whereby said plug may be unscrewed to allow the mouth of the plug to be released. When the mouth of a fresh bag has been sprung over  
 25 the flange the plug will be screwed back into the cylinder to clamp it firmly in place and the wrench removed and the pump put back into place when the device is ready for use.

In order to avoid undue fraying or wearing  
 30 of the bag during its insertion into and removal from the article I prefer to make it smaller in diameter than the mouth of the article to be manipulated, the elasticity of the bag allowing it to expand to hold the  
 35 article as indicated in Figs. 5 and 6. As a convenient means of supporting the valve, I provide the cap or part 15 with a threaded boss 20 upon which is screwed a cap 21. A valve spindle 25 guided at one end in an  
 40 opening 24<sup>a</sup> in the cap and at its other end in the central opening of the cap 15, carries a disk 22 upon which rests a rubber valve 22<sup>a</sup>. The lower end of the cap is perforated to provide air passages as shown.

It is necessary to provide means for letting  
 45 the air out after the articles have been dipped for the purpose of releasing them. To provide for this I form lateral openings 7<sup>c</sup> in the upper portion of the plug 7, which  
 50 upper portion is rabbeted or recessed so as to allow said openings to communicate with the annular space between the cylinder and the pump barrel. The cap or member 15 has notched edges as shown at 15<sup>c</sup> so as not  
 55 to interrupt the air communication. On the cylinder 6 near its upper end, I provide a tubular extension 11 which is threaded to receive a threaded cap 12 having a milled head by which it may be turned and an open-  
 60 ing 12'. A washer 13 between the cap and the threaded tubular projection 11 effects an air tight joint. It will thus be seen that after the article has been dipped the bag may be quickly deflated to effect its removal by  
 65 unscrewing the cap until the opening 12'

clears the end of the tubular projection when the compressed air will at once escape up through the base between the cylinder and pump barrel. In some cases I may make  
 70 the cylinder 6 out of rolled sheet metal instead of cast. In this event, I prefer to cap the cylinder 6 with a thicker piece of metal 11<sup>a</sup> and permanently fastened thereto and I then screw in and solder the valve tube 11 thus securing an air tight joint. I also cap  
 75 the bottom in a similar manner. The object is to save weight by using a thin outer tube and have an air tight joint and a wall thick and strong enough to take a thread which will not wear out in a short time.

While the inflatable members or bags may  
 80 be made regular in shape, there are some articles, such as pitchers for instance, which while they would be effectively held by a bag of regular contour, would yet expose  
 85 some portion of the inner surface to the action of the acid. To avoid this, I may provide a bag with an irregular portion 18<sup>a</sup> to fit the irregular contour of the glass article as indicated in Fig. 6. I may in some cases  
 90 find it desirable to strengthen the upper portion of the inflatable bag by reinforcing it with a sheet of similar material as indicated at 18<sup>b</sup> Fig. 3.

While for dipping large and heavy articles,  
 95 it is not wise to manipulate more than one at a time, I may provide for dipping a plurality of smaller articles such as cream pitchers, sugar bowls and the like at a single operation. Such a form of the invention is  
 100 disclosed in Figs. 7 and 8. In this form I use a single cylinder and pump barrel connected to a hollow base 1, which for the purpose of lightness and saving in metal, I may form in spider shape with a plurality of  
 105 radiating arms C<sup>a</sup> corresponding in number to the number of articles which it is desired to dip at any one time. These arms, have passages 2 leading from the aperture in the central boss 3 to which the cylinder is con-  
 110 nected. The outer ends of the arms have depending annular flanges 4 into which the threaded plugs 7<sup>x</sup> are inserted, the inflatable members or bags being held by these in substantially the same manner. In this event,  
 115 instead of providing a separate valve at the passage leading to each inflatable bag, I may provide a single check valve at the base of the pump cylinder.

When rubber bags are in constant use  
 120 their surfaces after a time become saturated with acid. When so saturated, if time is not given for evaporation, the glass will smear or become clouded on the inside. The practice is to have a good many balls  
 125 or bags, laying aside those which have been in use until the acid evaporates and substituting clean ones. It follows that a rubber bag as shown will from constant use be likely to smear to some extent. In order  
 130



therefore to make it unnecessary to change a bag except at rare intervals, I use a very thin inexpensive rubber protecting tube 18° about the same diameter as the deflated bag which I draw over it covering the equatorial section for a few inches, see Fig. 3. Should this become saturated it is quickly removed for evaporation and another substituted.

Having thus described my invention, what I claim is:—

1. A portable device for dipping glass articles, comprising a manipulating member including an air-forcing device, and an inflatable member connected to said manipulating member and adapted to be inflated by the air-forcing device, substantially as described.

2. A portable device for dipping cut glass articles and the like, comprising a manipulating member including an air forcing device, and an elastic inflatable body having a detachable connection with said manipulating member, substantially as described.

3. A device for dipping cut glass articles and the like, comprising a cylinder of acid resisting material, an air forcing device located within said cylinder, an inflatable rubber bag of acid resisting material having a detachable connection with said cylinder and means independent of the air forcing device for permitting the escape of air from said inflatable bag, substantially as described.

4. In a device for dipping glass articles, a manipulating member including an air forcing device, clamping means at the end of said member and an inflatable member held by said clamping means and adapted to be inflated by the air forcing device, substantially as described.

5. A device for dipping cut glass articles and the like, comprising an elongated member including an air forcing device, clamping rings or flanges having opposing grooves and carried by said member, and an elastic inflatable body having a bead held in said opposing grooves, substantially as described.

6. A device for dipping cut glass articles and the like, comprising a cylinder of acid resisting material, an air forcing device located within said cylinder and having an air channel between, an inflatable rubber

bag of acid resisting material having a detachable connection with said cylinder and means controlled from the upper end of the cylinder for permitting the escape of air from said inflatable bag through said channel, substantially as described.

7. In a device for dipping glass articles, an elongated member, a removable air forcing device therein, an inflatable member connected to said elongated member, and means operated through the elongated member on the removal of the air-forcing device for detachably clamping said inflatable member to said elongated member, substantially as described.

8. A device for dipping cut glass articles and the like, comprising a cylinder of acid resisting material, an air forcing device removably located within said cylinder, an inflatable rubber bag of acid resisting material, a grooved ring at the lower end of the cylinder, a plug threaded into the lower end of the cylinder having an opposing groove, and means whereby said plug may be operated through the cylinder on the removal of the air forcing device to clamp and release the bag, substantially as described.

9. A device for dipping cut glass articles, comprising a cylinder of acid resisting material, a pump barrel of less size removably held thereon with means for centering it, a check valve carried at the lower end of the pump barrel, an inflatable bag having its mouth secured to the lower end of the cylinder, a by-pass leading from the bag around the valve to the space between the pump barrel and cylinder, and an air outlet at the upper end of the cylinder with means for opening and closing same, substantially as described.

10. A portable device for manipulating glass articles, comprising an inflatable bag of acid-resisting material having a reinforced part, and a manipulating device connected with said bag and means for inflating said bag, substantially as described.

In testimony whereof, I affix my signature in presence of two witnesses.

FRANK GUNN FARNHAM.

Witnesses:

N. C. FARNHAM,  
M. J. HANLAN.