

No. 881,913.

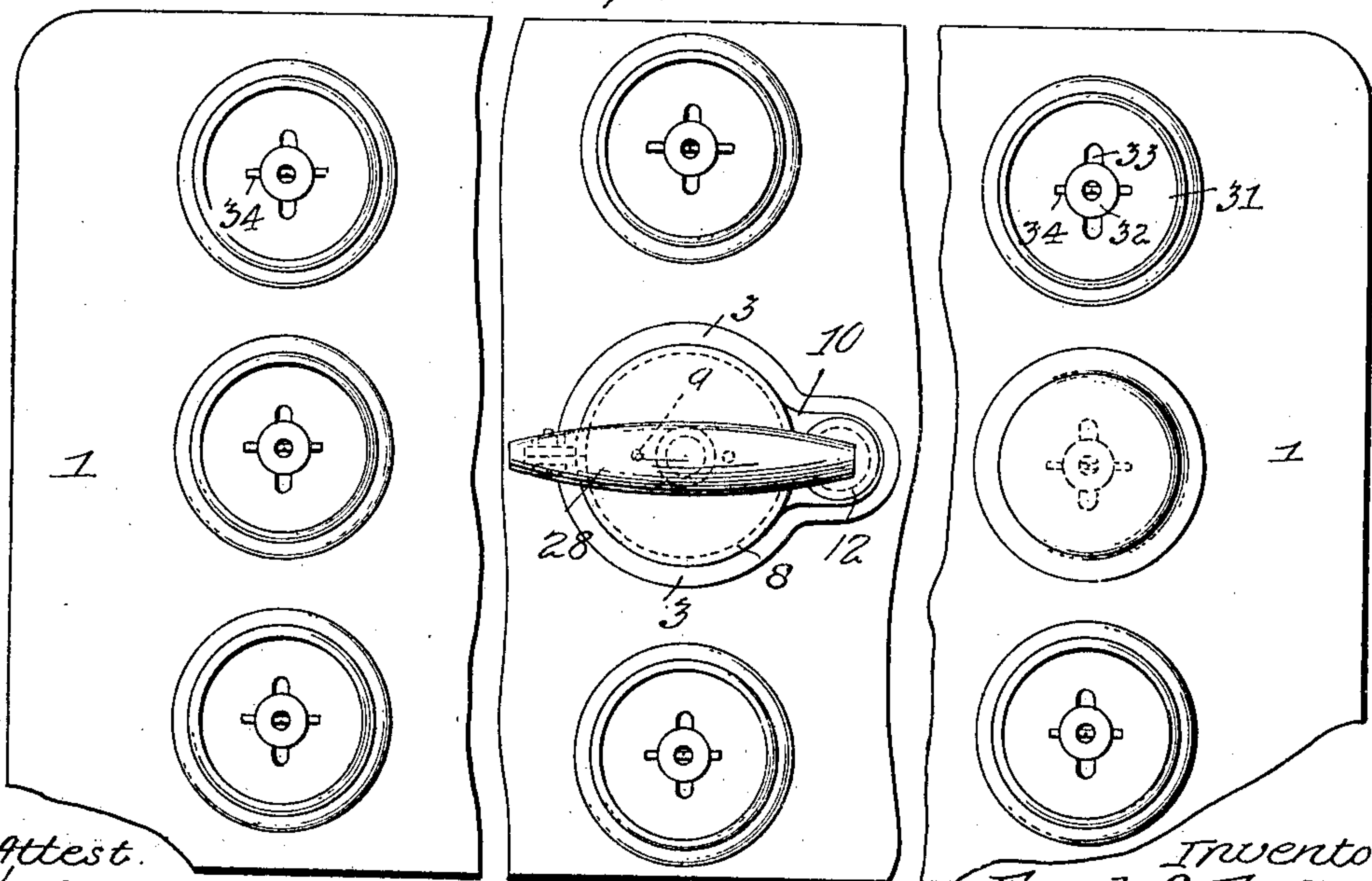
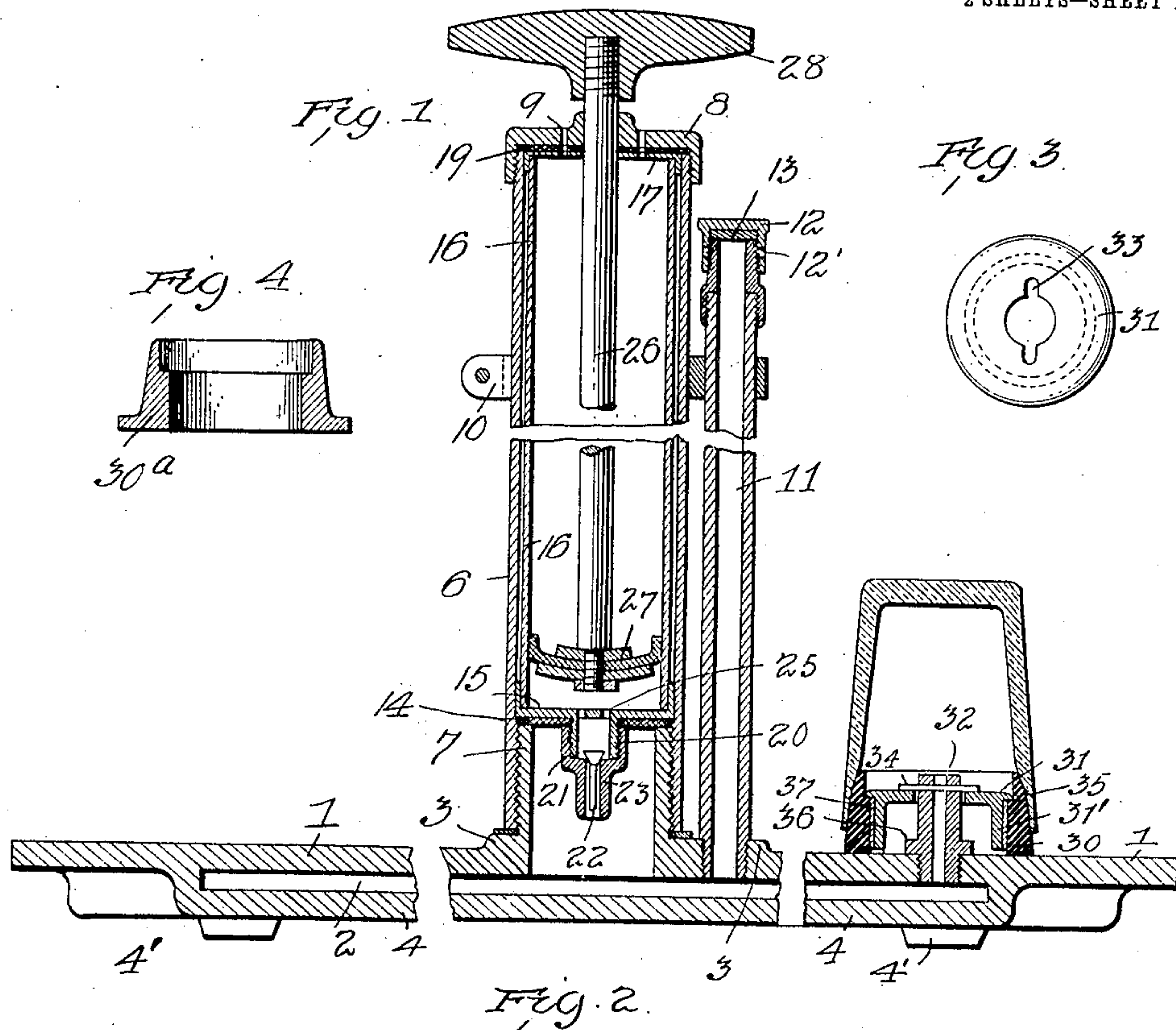
PATENTED MAR. 17, 1908.

F. G. FARNHAM.

DEVICE FOR MANIPULATING GLASS ARTICLES.

APPLICATION FILED FEB. 3, 1905. RENEWED JULY 20, 1907.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 7

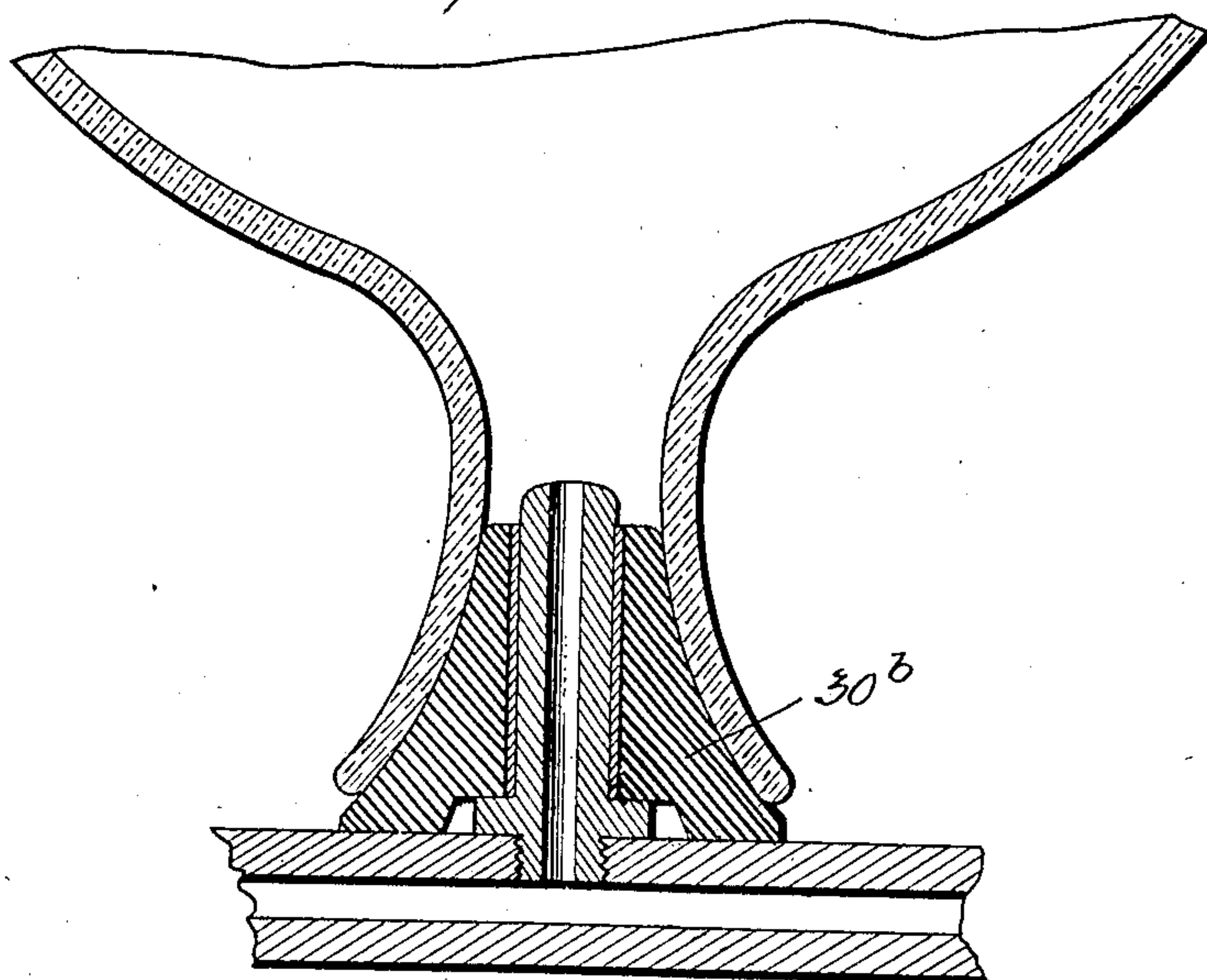


Fig. 5

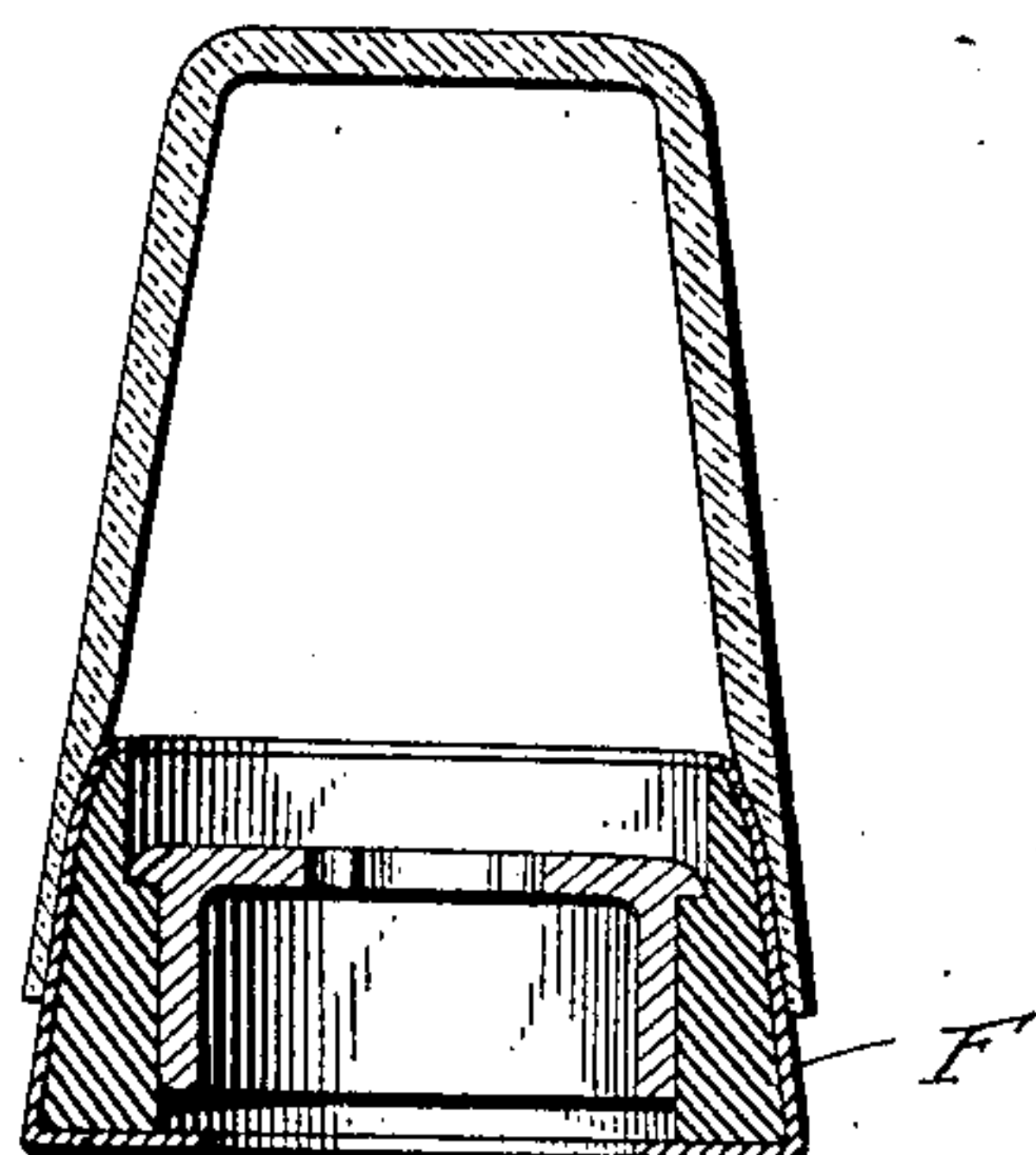
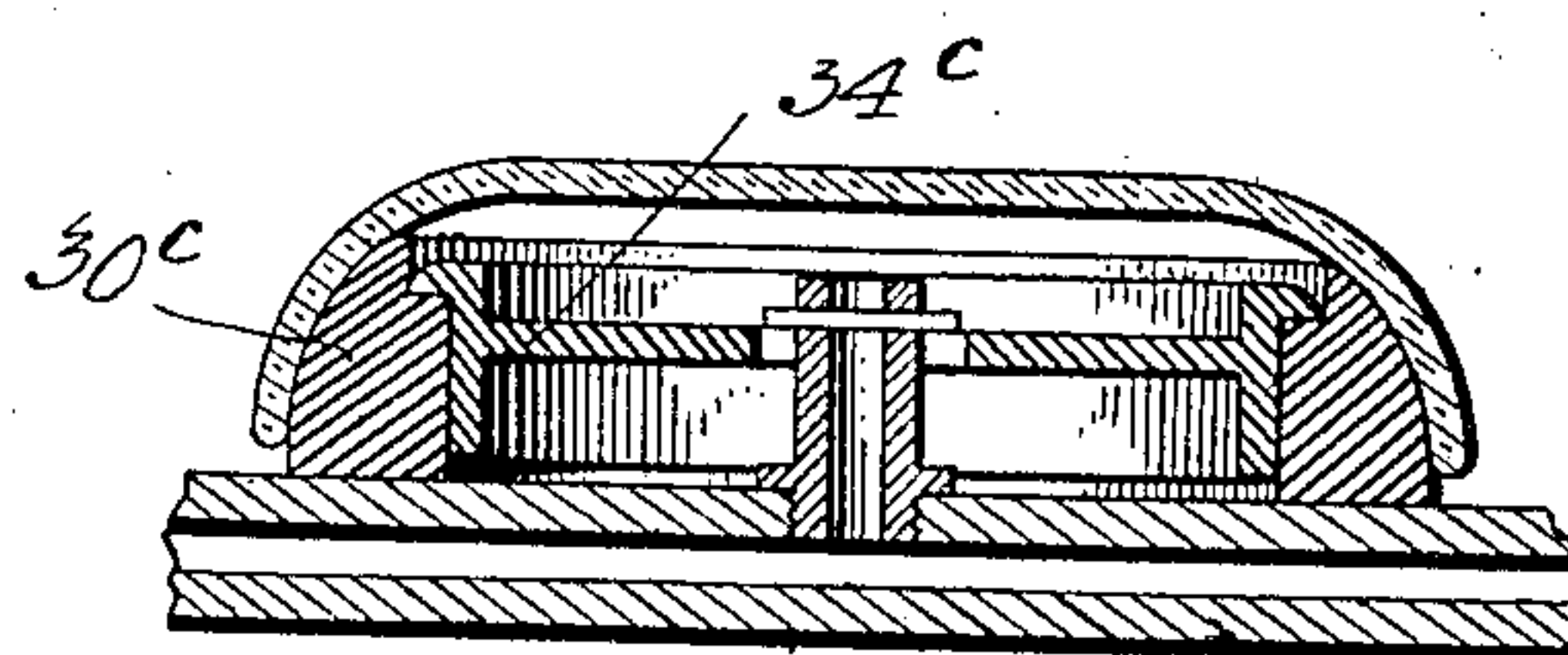


Fig. 6



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UNITED STATES PATENT OFFICE.

FRANK GUNN FARNHAM, OF HONESDALE, PENNSYLVANIA.

DEVICE FOR MANIPULATING GLASS ARTICLES.

No. 881,913.

Specification of Letters Patent.

Patented March 17, 1908.

Application filed February 3, 1905, Serial No. 244,047. Renewed July 20, 1907. Serial No. 384,760.

To all whom it may concern:

Be it known that I, FRANK GUNN FARNHAM, a citizen of the United States, residing at No. 515 West Park street, Honesdale, Pennsylvania, have invented certain new and useful Improvements in Devices for Manipulating Glass Articles, of which the following is a specification.

My present invention relates to means or apparatus for handling or manipulating cut glass articles during the finishing process when it is necessary to subject the cut surface to the action of an acid bath.

In devising the present invention I have aimed to provide means by which a considerable number of articles may be simultaneously dipped into an acid bath so as to insure the proper treatment of their outer surfaces, while at the same time the access of acid to the inner surfaces of the articles is effectually prevented.

A further object has been to provide a device for holding a plurality of glass articles with means whereby such articles may be readily secured thereto and as readily detached therefrom after having been dipped.

A further object was the provision of means for rendering the device capable of holding articles differing as widely as possible in shape and size.

With these and other objects in view the invention comprises an acid proof device having pneumatic means for holding a glass article thereto.

The invention further includes a carrying member adapted to receive one or more articles in an inverted position, and pneumatic or suction means for holding such article or articles to said carrier.

The invention also includes a carrying means with removable and interchangeable devices for fitting the mouth of different glass articles. And finally the invention includes the various features of construction and arrangements of parts hereinafter more particularly described and pointed out in the appended claims.

The invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a vertical sectional view, Fig. 2 is a plan view, Fig. 3 is a detail view of the holder 31, and Figs. 4, 5, 6 and 7 are views of modifications.

Referring by reference characters to these drawings the ordinal 1 designates a base or bed plate conveniently made of cast metal

with an air space or channel 2 extending longitudinally thereof. Lugs 4' may project from the bottom of the portion 4 which is below the air space or channel to protect the under part of the body from the floor or other object upon which it may be placed. This base or bed plate is shown for convenience as of substantially rectangular shape and adapted to hold eight tumblers, but it will be understood that it is shown as merely representative of any desired shape and size, and designed to hold articles of various sizes and shapes, the only requirement as to the articles being that they shall all have flaring mouths or walls with smooth inner surfaces.

Upon the upper side of the base plate is formed a boss 3 from which projects a tubular stud or nipple 7, preferably cast integral with the bed or base plate. A tube 6 has its lower end screwed upon the nipple or projection 7, the parts being correspondingly threaded for this purpose. This forms a protection to and includes the barrel or cylinder of an air pump or exhausting device, the purpose of which is to hold the glass articles to the bed plate by producing a vacuum therein, as will hereinafter more fully appear. The top of the tube 6 is preferably threaded and covered by a screw cap 8 having openings 9 serving both to allow of the escape of air and for the insertion of the prongs of a suitable spanner (not shown) for removing the cap.

A clamp 10 surrounds the tube 6 and serves to connect thereto and support a tube or pipe 11, which is suitably connected at its lower end with the boss 3. This pipe is designed to provide means for breaking the vacuum after the articles have been dipped and are to be removed from the base plate. I prefer to secure to the upper end of the soft metal tube 11 a ferrule or sleeve of harder metal, upon the top of which is screwed the cap 12 having air holes 12' which enable air to be admitted to the tube without completely removing the cap from the thimble. The harder metal of the ferrule avoids the danger of wear and damage to the threads which would occur were the cap frequently screwed and unscrewed on the soft metal tube 11. A washer 13 effects an air tight joint when the cap is screwed down.

Within the tube 6, and preferably formed independently thereof and removable therefrom, is located the vacuum producing device or pump. This comprises a tube or

cylinder 16 having its lower end closed by the inverted cap 15, suitably secured thereto, and its upper end closed by the loose or removable cap 17. The annular walls of the top and bottom caps act as guides, making an easy fit inside the tube 6, and leaving an annular air space between the outer wall or surface of the pump barrel and the inner wall of the tube 6.

In order to prevent any leakage of air at the bottom I insert a rubber packing or washer 14 between the cap 15 and the upper end of the nipple or projection 7, and it will thus be seen that when the cap 8 is screwed down, by the use of the spanner working the holes 9 as above referred to, the cap 15 of cylinder 16 will be forced down, thus compressing the washer 14 between the said cap 15 and the tube 7. If desired, a washer 19 may be inserted between the cap 8 and the inner cap on the upper end of the tube 16, in which event the holes 9 would pass through both caps and the washer as shown in Fig. 1.

The cap 15 is provided with a downwardly extending threaded nipple or projection 20, upon which is screwed the upper end of the valve holder 21, and I prefer to extend the washer 14 inward into close proximity to the outer wall of the nipple 20, so that it serves also as the packing for effecting an air tight joint between the parts 20 and 21. The valve 22 may be of any desired form, preferably a conical valve as shown, with a stem extending down into the contracted portion 23 of the valve holder. I prefer to continue the cap 15 across the center, and provide small openings 25 for the passage of the air as shown. Within the cylinder or tube 16 is located a plunger or rod 26, to the lower end of which is connected the ordinary pump piston 27, which may consist simply of a leather disk clamped between opposing plates as shown. The plunger 26 passes through a center passage in the cap 8, and is provided with a suitable handle 28 for operating the same. It will thus be seen that if a plurality of glass articles are placed in an inverted position over the openings which are provided in the base plate leading to the channel or air space 2, and air tight connections made between the glass articles and the base plate, the upward motion of the pump piston will exhaust the air from within the glass articles, and they will therefore be held firmly to the base plate by atmospheric pressure. They may then be readily dipped into the acid bath and removed therefrom without the acid coming in contact with any part of the interior of the glass articles, and without any danger whatever to the workmen. After the articles have been dipped they may be readily removed by the breaking of the vacuum through the tube and cap 12 as before referred to.

The means by which I effect an air tight

connection between the glass articles and the base plate will now be described. The base plate is provided with a plurality of openings corresponding in number to the number of articles which it is desired to dip any one time, the said openings being formed only in the upper portion of the base plate and extending down into the air space 2. Into each of these openings is screwed the lower end of a stud 32, which has a flange 36 for limiting its movement, and which also may be formed in the shape of a nut whereby the stud may be readily manipulated. Near its upper end each stud is provided with projections 34, and a metal holder 31 has a central opening corresponding to the stud, and diametrically arranged recesses in the edge of said openings, as indicated at 33, corresponding to the projections 34. The holder also has a downwardly extending annular flange or wall 31', the horizontal wall of the holder overlapping the vertical wall as shown at 35. This holder 31 is designed to carry the soft rubber ring 30 which forms the air tight connection with the glass article, by extending within the mouth thereof as indicated for convenience on the right of Fig. 1, and by the construction shown it will be seen that the holder 31, by a slight turn to bring the recesses 33 in line with the projections 34, may be removed and a fresh ring substituted corresponding in size and shape to any new article which it is desired to dip.

By the foregoing construction it will be seen that, while the ring 30 will be held clamped so firmly between the holder 31 and the base 1 as to form an air tight joint, it is capable of being so quickly and easily removed as to enable two sets of rings to be used, so that when one becomes acid soaked where exposed, the other may be readily substituted for it. I may find it convenient to place within each rubber ring 30 a metallic band 37, which would enable the rings to be the more readily removed and replaced.

At 30^a I have shown a ring which is made flaring towards the base and which may be used to secure more frictional contact on or against the bed 1. It may sometimes be found desirable to form the rings 30 of a cheaper material with a covering of soft rubber. Such a cover is shown at F in Fig. 5, of sufficient flexibility and elasticity to enable it to be sprung over the ring 30^a.

In Fig. 6 I have shown a ring 30^c of a shape and size adapted as a seat for a widely different type of glass article, to wit, a shallow circular dish. In this case the clamping device 34^c will be correspondingly modified.

In Fig. 7 I have shown a further modification of ring or plug 30^b adapted for articles of the general type of a water bottle, and in this form I may, if desired, dispense with the clamping device, as shown.

Having thus described my invention what I claim is:

1. A portable device for manipulating glass and like articles having open mouths comprising a support or carrier adapted to receive the said article in an inverted position, means on said carrier to extend within the mouth of the article to effect a tight joint, and means for exhausting the air from between said article and carrier whereby they are firmly held together, substantially as described.

2. A portable device for manipulating glass articles having open mouths comprising a support or carrier, a changeable seat carried by said support and having an exterior wall whereby it is adapted to fit the said mouth, and means for causing said article to be held with its mouth pressed against the seat, substantially as described.

3. A portable device for manipulating glass articles having open mouths comprising a support or carrier, a rubber ring having an exterior wall, means for detachably holding said ring to said carrier, and means for causing a glass article to be held with its mouth pressed against said wall of the ring, substantially as described.

4. In combination, a bed plate having an air passage and a plurality of openings leading to said passage, a plurality of rubber devices for fitting the mouths of glass articles, means for removably holding said devices to the bed plate in proximity to the said openings, and means for exhausting the air through the air passage from said articles, substantially as described.

5. In combination, a hollow base plate having a plurality of openings in its upper side, removable hollow plugs seated in said openings, rubber rings encircling said plugs, and a vacuum-producing device connected to said hollow base plate, substantially as described.

6. In combination, a hollow base-plate, a plurality of hollow plugs carried thereby, rubber rings encircling the plugs and adapted to form air-tight connections between the base-plate and glass articles, clamping means for said rings removably carried by the plugs, and vacuum-producing means connected to said hollow base plate, substantially as described.

7. A portable device for dipping glass articles having open mouths, comprising a base or carrying member having a seat on its upper face for the mouth of a glass article, and an air-exhausting pump extending upwardly from said carrying member whereby it serves as a lifting handle, substantially as described.

8. In combination, a base plate, an air pump rigidly connected thereto and extend-

ing vertically therefrom and communicating therewith and a vertical vacuum-breaking tube carried by said base plate with means for opening and closing the upper end, substantially as described.

9. In combination, a base plate having a longitudinal air passage, a hollow plug carried by said base plate and communicating with said passage, a rubber ring encircling the plug, a clamping device bearing on the ring and having a bayonet joint connection with the plug, and a vacuum-producing device connected to said base plate, substantially as described.

10. A portable device for manipulating glass articles having open mouths comprising a supporting plate having a seat for the mouth of such article, a tubular member projecting upward from said base plate whereby said member serves as a lifting handle, said supporting plate having an air passage leading from said seat to said tubular member, and an air pump located within such tubular member, substantially as described.

11. A portable device for manipulating glass articles comprising a base-plate of acid-resisting material having an air-passage and a seat for such article, a cylinder of acid-resisting material extending upward from said base-plate in position to serve as a lifting handle, and an air-pump located within said cylinder, substantially as described.

12. A portable device for manipulating glass articles comprising a base-plate having a seat for a glass article and a communicating air-passage, a tubular boss extending up from said base-plate, a tubular member connected to said boss, said member and base plate being of acid-resisting material, a pump-barrel within said tubular member and resting on said boss at its lower end, a removable cap on said tubular member for holding said pump-barrel therein, a pump-piston within said tubular member having its rod extending through said cap, and vacuum-breaking means located near the top of said tubular member, substantially as described.

13. A portable device for manipulating glass articles comprising a base plate, a seat for the mouth of a glass article, said seat having a downwardly-flaring acid-shedding wall, and means for holding said article with its mouth engaging the flaring wall of the seat, substantially as described.

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

FRANK GUNN FARNHAM.

Witnesses:

M. J. HANLAN,
M. E. SIMONS.