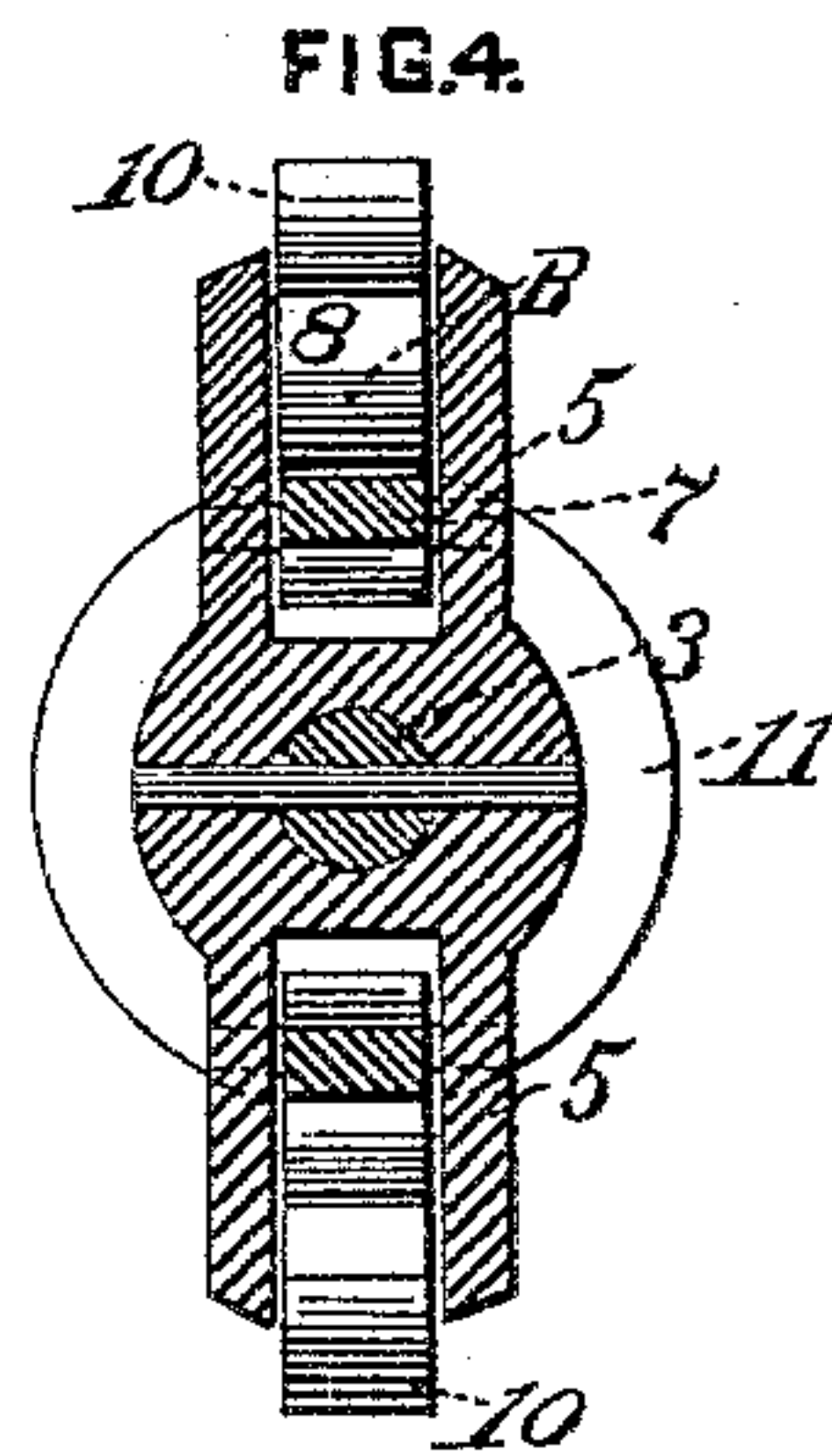
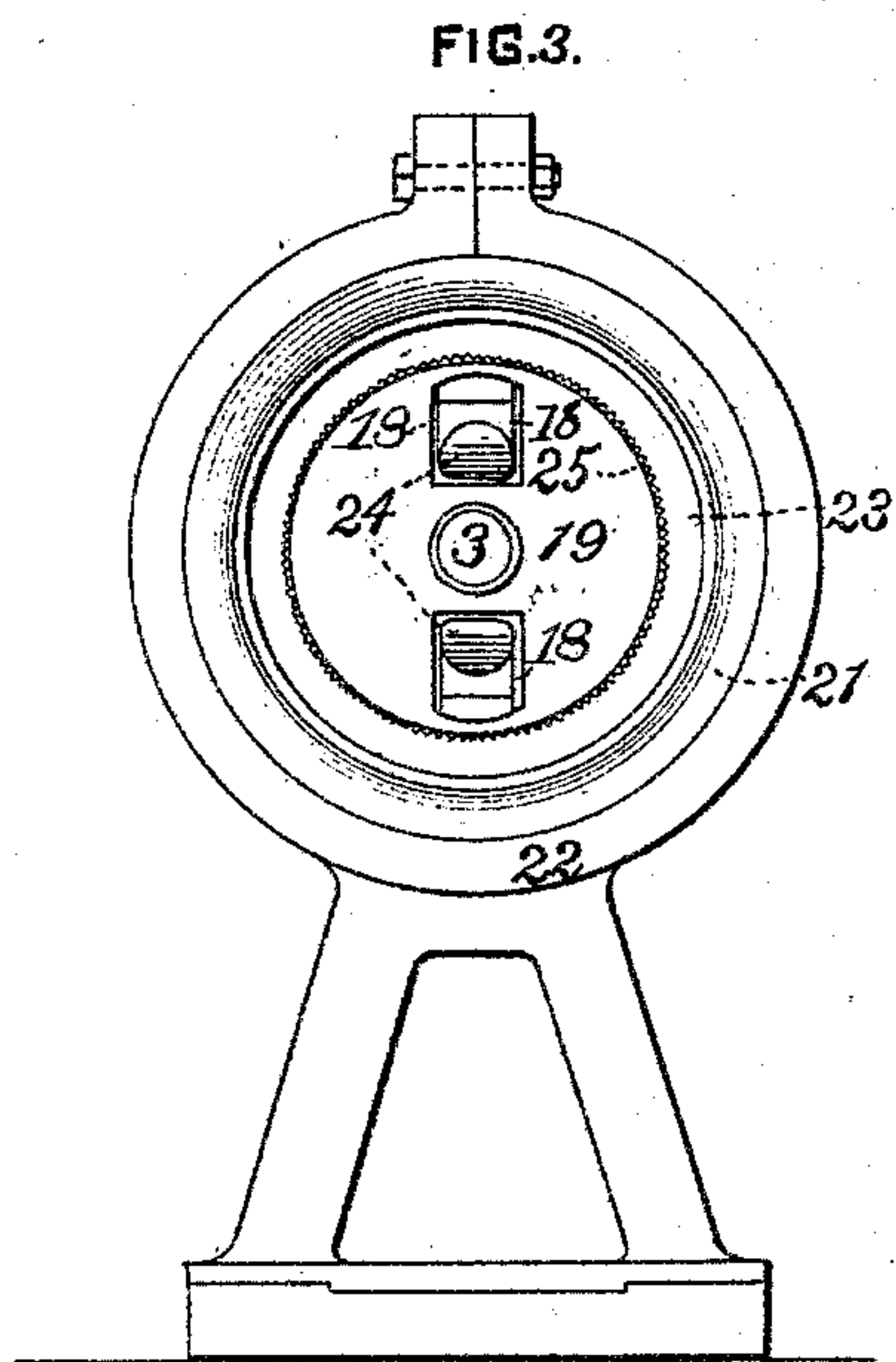
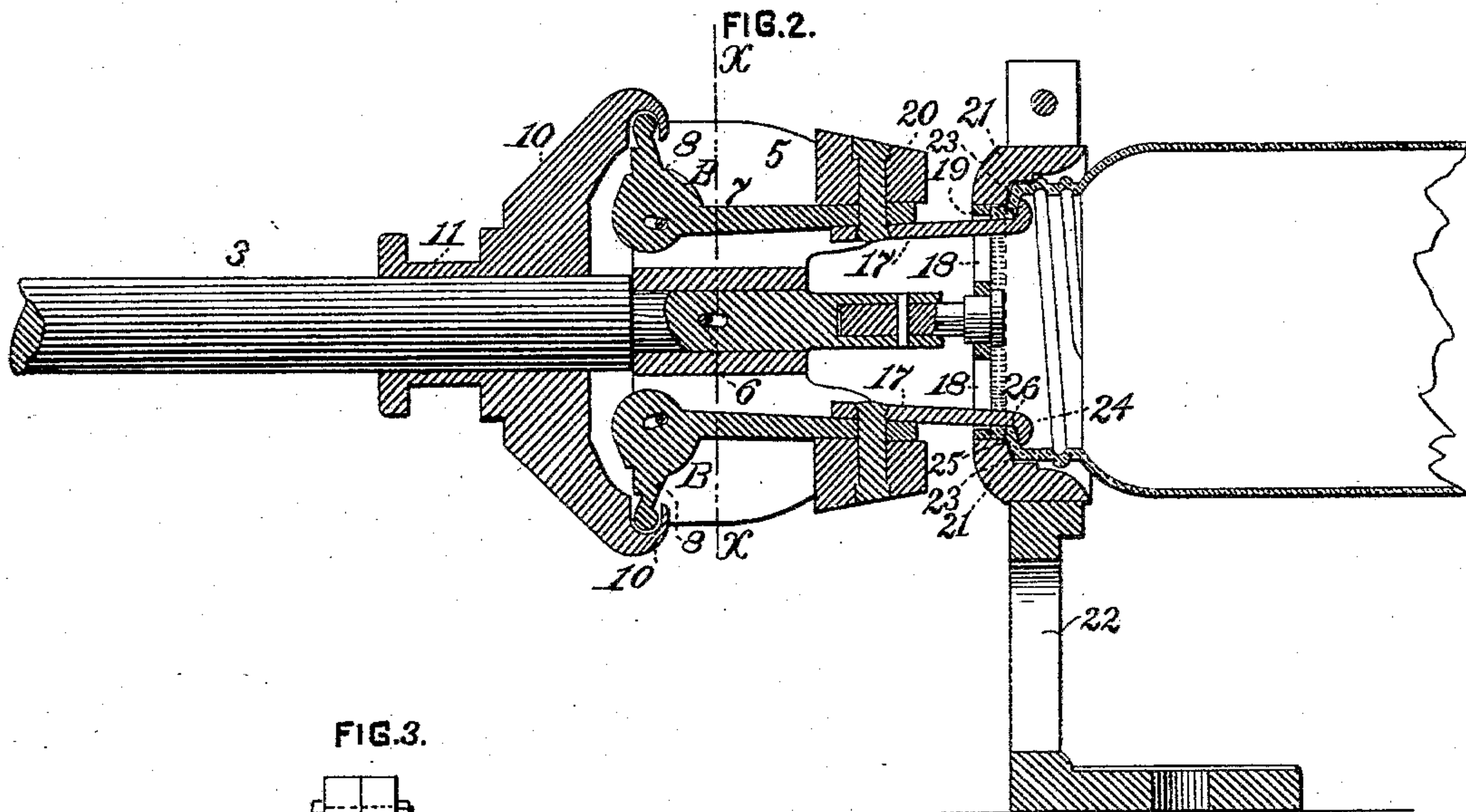
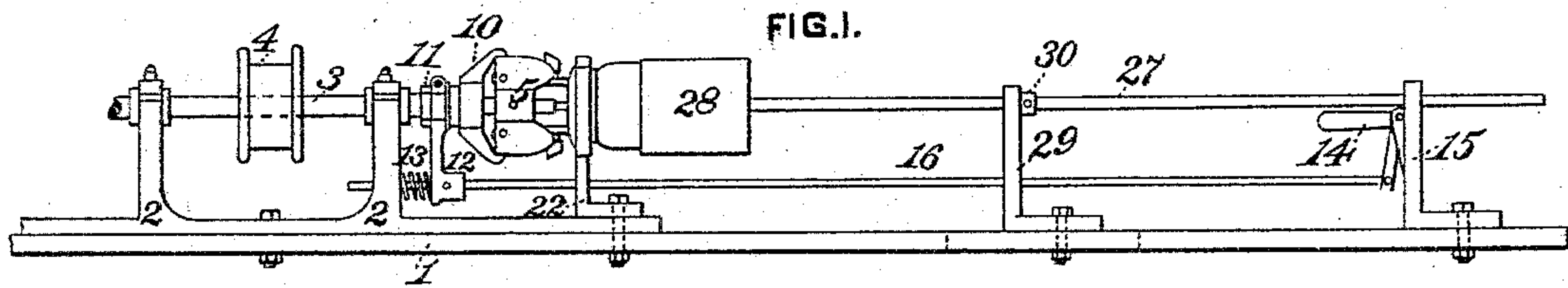


(No Model.)

H. SEMPLE.
MACHINE FOR FINISHING GLASSWARE.

No. 414,451.

Patented Nov. 5, 1889.



WITNESSES.

Daniel B. Wolcott
P. E. Gaither

INVENTOR.

By *Harry Semple*
George H. Christy Att'y

UNITED STATES PATENT OFFICE.

HARRY SEMPLE, OF STEUBENVILLE, OHIO, ASSIGNOR OF TWO-THIRDS TO AUGUSTUS H. HEISEY, OF CHARTIERS, AND JOHN NICHOLSON, JR., OF ALLEGHENY, PENNSYLVANIA.

MACHINE FOR FINISHING GLASSWARE.

SPECIFICATION forming part of Letters Patent No. 414,451, dated November 5, 1889.

Application filed November 15, 1888. Serial No. 290,895. (No model.)

To all whom it may concern.

Be it known that I, HARRY SEMPLE, a citizen of the United States, residing at Steubenville, in the county of Jefferson and State of Ohio, have invented or discovered a certain new and useful Improvement in Machines for Finishing Glassware, of which improvement the following is a specification.

According to the present practice, in the manufacture of that class or kind of glassware which requires the finishing of certain parts to a certain predetermined shape and size for the reception of special fittings required in their use—as, for example, jars, lantern-globes, large-mouthed bottles, &c.—the article is formed by blowing in a suitable mold, removed therefrom, the “blow-over” broken off, and then placed in the annealing-oven. As the piece of glassware is quite hot when removed from the mold, it frequently happens that the part requiring the special finish above referred to is so distorted in the handling incident to the removal of the blow-over and the transfer of the article to the annealing-oven as to render it useless; and, further, after the article has been annealed, the part from which the blow-over has been removed, and which is generally the part of the article requiring the special fitting above referred to, must be ground down so as to remove the rough, uneven edges formed in breaking off the blow-over. This grinding operation breaks up the outside glaze, thereby weakening the glass and rendering it more liable to crack and break in handling or other rough usage to which the article is subjected in selecting, packing, and subsequent use.

The object of the invention described herein is to provide for the shaping and reduction of that part of the article requiring the special fitting immediately after the removal of the blow-over and imparting a smooth, glazed surface to the portion from which the blow-over has been removed.

In general terms, the invention consists in the construction and combination of mechanical devices or elements, all as more fully hereinafter described and claimed.

In the accompanying drawings, forming a

part of this specification, Figure 1 is a view in side elevation of my improved glass-finishing machine. Fig. 2 is a sectional view on an enlarged scale of those parts of the machine directly operative on the article and their connections. Fig. 3 is a view in elevation of the mold-head end of the machine; and Fig. 4 is a transverse section on the line *x x*, Fig. 2.

Upon a suitable bed-plate 1 is secured the head-stock 2, provided with suitable bearings for the shaft 3, on which is secured a pulley 4, whereby said shaft and its connections may be rotated. On the shaft 3, near one end thereof, is arranged a cross-head 5, so connected to said shaft—as, for example, by a pin passing through the head and a slot in the shaft—as to permit of a small longitudinal movement of the head on the shaft while rotating therewith, for the purpose hereinafter stated. In the cross-head 5 are formed two or more radial slots, in which are pivoted levers B, provided with angularly-arranged arms 7 and 8, the arms 7 extending along the shaft 3 and the arms 8 radially to said shaft, as shown. The levers are slotted at their pivotal point, so as to permit of a small movement thereof substantially parallel with the shaft, as will be hereinafter stated. The arms 8 of the levers B are connected by a loose joint to lugs or projections 10 on the sleeve 11, loosely mounted on the shaft, so as to be moved longitudinally thereof by the arm 12 engaging a groove in the sleeve 11, said arm being operated in one direction by the spring 13, interposed between the arm and the head-stock 2, and in the opposite direction by the lever 14, mounted on a post 15 on the bed-plate 1 and connected to the arm by a rod 16. (See Fig. 1.) On the arms 7 of the levers B are attached forming-fingers 17, having their operative ends suitably shaped for operating on the glass, as will be hereinafter set forth. These fingers project forwardly through radial slots 18 in the circular plate 19, detachably secured to the front end of the shaft 3, the diameter of said plate being dependent on the outside diameter of the part of the article to be finished. On the arms 8, or the fingers attached thereto, as above

stated, are secured weights adapted, when the shaft and cross-head are rotated, to pull the fingers outwardly and bear with greater or less force against the glass article being operated on, the portion of said article which it is desired to shape and finish having been previously inserted in the annular shaping-head 21. This mold-head, which is shown in the drawings of a shape or construction adapted to finish the neck and mouth of a glass jar, is firmly clamped in the rest or support 22, and is provided with a shoulder 23, adapted, in conjunction with the hooks 24 on the ends of the fingers, to form the seat for the seal-gasket of the jar, and with an annular portion 25, adapted, in conjunction with the wiping part 26 of the fingers and the circular plate 19, to form what is termed the "gasket-rim" or "neck" of the jar. In manufacturing other articles, as lantern-globes, &c., the construction of the operative portions of the mold-head will be modified in accordance with the character and shape of the portions of such other articles as are to be shaped and finished. The surface of the portion 25 of the mold-head is milled or roughened, so as to take a firm grasp upon the jar and prevent its rotation with the fingers.

Upon the base-plate 1, between the post 15 and the rest or support 22, is arranged a post 29, the bolt holding said post to the bed-plate passing through a slot therein, so as to permit of the adjustment of said post along the bed-plate. In the upper ends of the posts 15 and 29 are formed notches for the reception of the handle-rod 27 of the snap 28. The lever 14 is preferably so arranged as to permit of its being operated by the hand of the operator while resting upon the snap-handle, as shown in Fig. 1.

In using my improved machine the jar or other article is removed from the forming-mold in which it has been blown or pressed, placed in the snap 28, the blow-over on the end of the jar broken off, and the end of the jar heated sufficiently to render the glass plastic. The snap-handle is then placed in the notches in the posts 15 and 29 and pushed along so as to enter the heated end of the jar into the annular shaping-head 21 until the collar 30 on the handle comes in contact with the post 29, which has been previously adjusted so as to permit of the proper adjustment of the end of the jar with relation to the annular shaping-head. Previous to the insertion of the jar into the annular shaping-head the fingers 17 have been held at the inner ends of the radial slots in the plate 19 by the spring 13 acting through the arm 12, collar 11, lugs 10, and the arms 7, as will be readily understood. In addition to closing the fingers, the spring, operating through the same elements or devices, serves also to push the levers B forward along the pivot-pins an amount equal to the length of the slots in said levers, thereby moving the hooks 24 away from the shoulders 23, so as to admit of the

hooks catching against the inner surface of the gasket-seats, regardless, within reasonable limits, of the thickness of glass in such seats or a sinking down thereof. The same function or operation can be effected by forming a slot, as at 6, in the shaft, so that the whole head 5 can move forward. As soon as the glass jar has been adjusted, as before stated, the operator shifts the lever 14, thereby compressing the spring 13 and shifting the arm 12 and sleeve or collar 11 to the left, thus permitting the centrifugal action of the weights 20 to move the fingers 17 outwardly against the gasket-rim of the jar, and at the same time drawing the fingers backward, so as to bring the hooks 24 against the gasket-seat of the jar. This action of the fingers causes the glass to conform to the operative portions of the annular shaping-head, and also press the edge of the gasket-rim against the circular plate 19, which has previously been adjusted within the annular shaping-head, thus imparting a smooth uniform surface to such edge.

The heating of the portion of the jar to be finished, which is also the portion from which the blow-over has been broken off, restores the glaze, and as the glass becomes cold and rigid during the shaping and finishing operations there is no liability to distortion during its removal to and passage through the annealing-oven.

It will be readily understood by those skilled in the art that in lieu of rotating the fingers continuously in one direction they may be given an oscillating or back-and-forth rotary movement. The outward movements of the fingers may be effected by means of suitably-arranged springs, operative either directly upon the fingers themselves or upon the sleeve or collar 11. If desired, the fingers may be formed integral with the arms 7 of the levers, and said arms may be made sufficiently heavy to effect the desired outward pressure under centrifugal action, thereby avoiding the use of the separable weights 20.

It has heretofore been proposed to cut off the blow-over and finish the necks of jars while in the mold in which the jars were blown by means of shaping-fingers pivotally connected to a rotating shaft and operated in their outward movements by means of a collar engaging the end of the mold, said fingers operating in connection with a sharp shoulder in the mold to cut off the blow-over; but this device is incapable of so cutting off the blow-over as to prevent the formation of a fin around the neck end of the jar; and, further, as the fingers are moved outwardly a certain predetermined distance, it is evident that when the amount of glass placed in the mold is small, and the neck in consequence thereof not entirely filled out, the fingers will not have any appreciable effect on the inner surface of the neck, and when an excess of glass is placed in the mold, and the walls of the neck are consequently abnormally thick, that

the fingers will be forced into the glass and when rotated will tend to tear the glass apart at that point, whereas in the machine herein described, the fingers being moved outwardly
5 by centrifugal force, they accommodate themselves automatically to the thickness of the neck and always operate thereon.

I am aware of the construction shown in Fig. 6 in Letters Patent No. 314,975, dated
10 March 31, 1885, wherein lever-arms are represented as being weighted, so as normally to hold the formers away from the glass to be operated on; but it will be observed that the weighted arms referred to in practical use will make
15 contact with the upper extended rim or mouth of the mold, and thus be guided in their movements, so as to preclude any useful results from centrifugal action; and it will also be observed in said Fig. 6 that at the time
20 when the formers are operating on the glass the centers of gravity of the weights have passed the line passing through their pivoting-points, and that the centrifugal effect, if there be any, tends to prevent the formers
25 from performing their function rather than aid them. For these reasons Patent No. 314,975 does not contain the invention herein-after claimed.

I claim herein as my invention—

30 1. In a machine for forming glassware, one or more revolving or oscillating fingers weighted with reference to obtaining an outwardly-operative movement under centrifugal action, substantially as set forth.
35 2. In a machine for forming glassware, the combination of an annular shaping-head and revolving or oscillating fingers operative inside the article and weighted with reference to obtaining an outward operative movement
40 under centrifugal action, substantially as set forth.

3. In a machine for forming glassware, the combination of oscillating or revolving fin-

gers, a rotating plate, and an annular shaping-head, substantially as set forth. 45

4. In a machine for forming glassware, the combination of an annular shaping-head and revolving or oscillating fingers operative inside of the article and movable longitudinally while operating upon the article, substantially
50 as set forth.

5. In a machine for forming glassware, the combination of an annular shaping-head, a rotating plate, and revolving or oscillating fingers movable longitudinally with reference
55 to the rotating plate, substantially as set forth.

6. In a machine for forming glassware, the combination of revolving or oscillating fingers operative inside the article and an annular
60 shaping-head having a milled or roughened surface, substantially as set forth.

7. In a machine for forming glassware, the combination of revolving or oscillating fingers operative inside the article and movable out-
65 wardly by centrifugal action, a spring-actuated collar or sleeve for closing said fingers, and an annular shaping-head, substantially as set forth.

8. In a machine for forming glassware, the
70 combination of a revolving or oscillating cross-head, slotted as described, levers having angularly-arranged arms 7 and 8, pivotally mounted in said cross-head, the arms 7 being
75 provided with suitable shaping-fingers operative inside the article, a movable collar or sleeve connected to the arms 8 and adapted to control the movements of the levers, and an annular shaping-head, substantially as set
80 forth.

In testimony whereof I have hereunto set my hand.

HARRY SEMPLE.

Witnesses:

DARWIN S. WOLCOTT,
W. B. CORWIN.