

No. 617,948.

Patented Jan. 17, 1899.

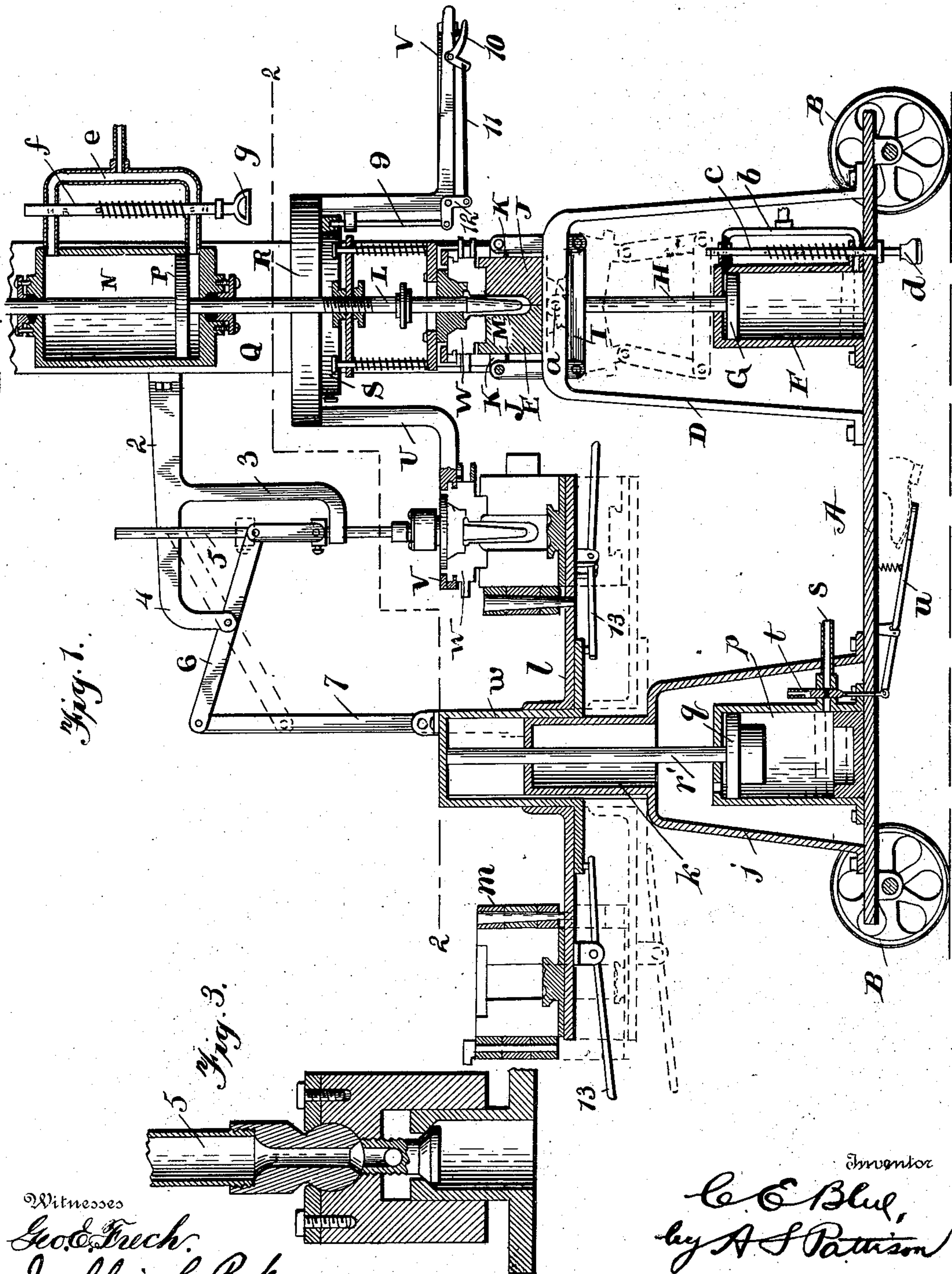
C. E. BLUE.

MACHINE FOR MANUFACTURING GLASSWARE.

(Application filed Apr. 28, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
Geo. C. French.
Josephine C. Peck

Inventor
C. E. Blue,
by A. S. Patterson
Attorney

No. 617,948.

Patented Jan. 17, 1899.

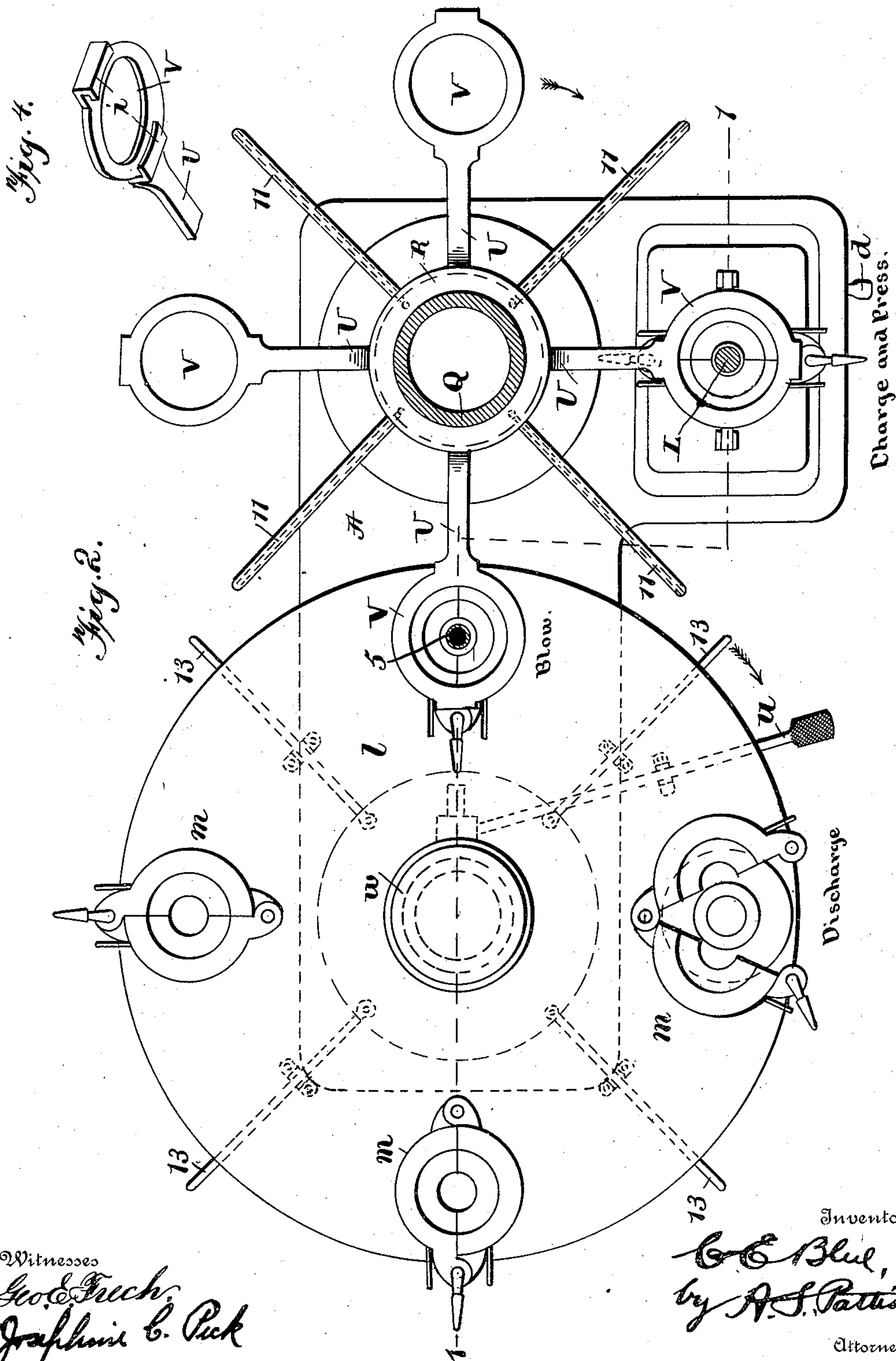
C. E. BLUE.

MACHINE FOR MANUFACTURING GLASSWARE.

(Application filed Apr. 28, 1898.)

(No Model.)

2 Sheets—Sheet 2.



UNITED STATES PATENT OFFICE.

CHARLES EDWIN BLUE, OF WHEELING, WEST VIRGINIA.

MACHINE FOR MANUFACTURING GLASSWARE.

SPECIFICATION forming part of Letters Patent No. 617,948, dated January 17, 1899.

Application filed April 28, 1898. Serial No. 679,131. (No model.)

To all whom it may concern:

Be it known that I, CHARLES EDWIN BLUE, a citizen of the United States, residing at Wheeling, in the county of Ohio and State of West Virginia, have invented new and useful Improvements in Machines for the Manufacture of Glassware, of which the following is a specification.

My invention relates to improvements in machines for the manufacture of glassware, and pertains to that type of machines in which the glass is pressed and then expanded into its finished shape by a blowing operation.

One object of my present invention is to provide a machine with a press-mold and a vertically-moving mold or molds in which the pressed article is blown, the pressed article being transmitted from the press-mold to the blow-mold by suitable supports.

Another object of my present invention is to provide a stationary press-mold, a neck-ring carrier, and a vertically-movable mold or molds in which the pressed article is blown, and a plurality of suitable supports adapted to support the neck-ring, which in turn supports the pressed article and by means of which it is transmitted to the blow position to be expanded in the blow-mold.

Another object of my present invention pertains to a machine so constructed and arranged that the movement of the blow-mold carries the blow-head thereupon for blowing the pressed article.

My invention consists in the construction and arrangement of parts, which will be fully described hereinafter, and in which—

Figure 1 is a vertical sectional view taken on the dotted line 1 1 of Fig. 2. Fig. 2 is a horizontal sectional plan view taken on the dotted line 2 2 of Fig. 1. Fig. 3 is a detail sectional view of the blow-head and its valve. Fig. 4 is an inverted view of one end of the neck-ring supports.

Referring now to the drawings, A indicates a supporting-base, preferably supported upon wheels B, by means of which it is readily moved around as desired.

D is a support extending upward from one end of the base A and to which the two parts of the press-mold E are pivoted at their lower inner corners at the point a. Situated below this press-mold E is a motor for the purpose

of opening and closing the molds, which motor in this event comprises a cylinder F, carrying a piston G and a piston-rod H, extending through its upper end. Air is admitted to the opposite ends of this cylinder through the pipes b, the admission of air to opposite ends thereof being controlled through the medium of a valve c, having at its lower end a treadle d. The operation of this part of the invention is well understood and need not be particularly described.

Connected to the upper end of the piston-rod H is a cross bar or head I, to the opposite ends of which the lower ends of links J are pivoted, the upper ends of these links being pivoted to ears K, projecting outward from the upper ends of the two parts of the press-mold E. From this construction it will be at once understood that a downward movement of the piston-rod separates the two parts of the press-mold, thus opening it, and an upward movement of the piston-rod closes the two parts of the press-mold ready to receive the charging and pressing operation.

L is a plunger-rod, carrying at its lower end the usual plunger M for pressing the charged glass within the press-mold, the said plunger-rod passing upward and through a cylinder N, carrying within the cylinder a piston P. Air is admitted to opposite ends of this cylinder through the pipes e and is controlled through the medium of a valve f, having at its lower end a handle g. The operation of this part of my invention is also well understood for admitting air to either end of the cylinder for raising or lowering the plunger.

Q is a column or standard projecting upward from the base A adjacent the standard D for the press-mold, and surrounding this column is a ring R. This ring is supported upon a collar S, which is clamped in any suitable manner to the column Q, and this ring R is provided with a plurality of projecting arms U, having their outer ends of a ring shape, as shown at V. The under sides of these ring-shaped portions are provided with jaws z, with which the neck-rings W are constructed to interlock for supporting the neck-ring through the medium of these arms U. The neck-ring and these arms are provided with registering tongues and grooves,

the said jaws *i* of the ring *V* forming the tongue and groove of that member to coact with the tongue and groove of the neck-ring.

j is a standard projecting from the opposite end of the base *A*, the said standard having a projection *k*, which forms a bearing for the blow-mold table *l* and around which the said table is adapted to rotate. Situated upon this table is a plurality of blow-molds *m*, adapted to be opened and closed and which may be of the usual form. The arms *U*, which support the neck-ring, are adapted to travel in a path which intersects the path of the blow-mold at the blowing position, whereby the neck-ring will support the pressed article over the blow-mold.

The blow-mold table *l* is also vertically movable upon the standard *j*, as shown in dotted lines in Fig. 1, and this vertical movement is provided by means of any suitable motor or actuating element. In this instance I show the motor consisting of a cylinder *p*, carrying a piston *q* and a piston-rod *r'*. Air is admitted to the lower end of this cylinder through the pipe *s*, and the admission of the air is controlled by a valve *t*, actuated through the medium of a treadle *u*, as clearly illustrated in Fig. 1.

A standard 2 projects outward from the column *Q* and is provided with a downwardly-projecting arm 3 and an outwardly-projecting arm 4. These arms form a support and guide for the blow-head rod 5, as shown, and intermediately pivoted to the outer end of the arm 4 is lever 6, one end of this lever being pivotally connected with the blow-head rod 5 and the opposite end connected to the upper end of a link 7, which in turn has its lower end connected with a vertically-movable sleeve *w*, around which the blow-table *l* rotates. The operation of this part of my invention is that when the blow-table is elevated, as shown in solid lines in Fig. 1, the blow-head is depressed in position upon the top of the blow-mold, and air is automatically admitted through the construction of the blow-head, which is fully shown and described in my Patent No. 584,665, dated June 15, 1897, and need not be more fully described herein.

The operation of my invention is as follows: The press-mold *E* is stationary, and of which there is but one, while there are a plurality of neck-rings and supports and also preferably a plurality of blow-molds supported upon a rotating table. Glass is placed within the press-mold at the pressing and charging point, as indicated in Fig. 2. The press-mold is then opened outward, leaving the pressed article supported by the ring and its arm *U*. The blow-table is in its lowest position, and this pressed article is carried around to the blow position by rotation of the arms *U*. When it reaches this point, the table *l* is moved upward, carrying the blow-mold around the pressed blank or article, and in this movement of the press-mold the blow-head is carried to position and the arti-

cle automatically blown. A further movement of the ring-supporting arms, as indicated by arrow in Fig. 2, will disengage the arms from the blow-rings and then the blow-table is turned in the direction indicated by arrow and either lowered before or after it reaches the discharging-point. At the discharging-point the turning-out boy opens the mold, taking out the article and places the neck-ring upon the press-mold ready for another charging and pressing operation. This operation is repeated, as is well understood. The rotation of the supporting-arms *U* and the blow-mold table *l* is independent, and the arms *U* are locked in proper position to coact with the blow-mold through the medium of a pin 9, adapted to engage an opening in the collar *S*, the said pin being actuated through the medium of a handle 10 and its intermediate rod 11 and bell-crank lever 12. The blow-table *l* is locked in its proper position through the medium of the levers 13, having their inner ends adapted to engage with the sleeve 2, which supports the blow-table *l*.

While I here show and describe the press-mold as opening outward and as hinged at its lower inner edge, it will be readily conceived that this mold may be made solid and be carried simply up and down through the movement of the piston-rod *H* without departing from the spirit and scope of my claims.

While I have here shown fluid-pressure motors for actuating the press-mold and the blow-mold supports, it will be readily understood that any other form of motor or actuating member may be used without departing from the spirit and scope of my claims.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A machine for the manufacture of glassware, comprising a press-mold adapted to disengage the pressed blank, a laterally-movable blow-mold supported adjacent the press-mold, a neck-ring adapted to cooperate with the press-mold and to support the pressed blank, and a neck-ring support movable in a path intersecting both of said molds, substantially as described.

2. A machine for the manufacture of glassware comprising a press-mold adapted to disengage the pressed blank, a laterally-movable blow-mold supported out of vertical alinement with the press-mold, a neck-ring, and a neck-ring support laterally movable in a different path from that of the blow-mold but intersecting the press and blow molds, substantially as described.

3. A machine for the manufacture of glassware comprising a press-mold adapted to disengage the pressed blank, a movable blow-mold support, a plurality of blow-molds supported thereby, and a press-blank support movable in a path intersecting the press-mold, and the path traveled by the blow-mold, substantially as described.

4. A machine for the manufacture of glassware comprising a press-mold adapted to disengage the pressed blank, a laterally and vertically movable blow-mold support, a plurality of blow-molds carried thereby, a laterally-movable press-blank support movable in a path intersecting the press-mold, and the path traveled by the vertically and laterally movable blow-mold, substantially as described.

5. A machine for the manufacture of glassware comprising a press-mold adapted to be disengaged from the pressed blank, a separate ring therefor, a rotatable support for the said ring, a rotatable and vertically-movable blow-mold support, and a blow-mold supported thereon, the parts adapted to cooperate substantially as described.

6. A machine for the manufacture of glassware comprising a press-mold adapted to be disengaged from the pressed blank, a neck-ring independent of and adapted to cooperate with the press-mold, a movable support for the neck-ring, a blow-mold adapted to embrace the pressed article, the neck-ring and its support constructed to disengage each other by the movement of the support when the neck-ring is engaged upon the blow-mold, substantially as described.

7. A machine for the manufacture of glassware comprising a single vertically-movable press-mold, a plurality of horizontally-movable neck-ring supports moving over the said press-mold, a neck ring or rings adapted to be supported by the said supports, and a plurality of vertically and horizontally movable blow-molds, the neck-ring supports and blow-mold adapted to move in a common path, whereby the parts are capable of cooperation substantially as described.

8. A machine for the manufacture of glassware comprising a stationary press-mold support, a press-mold consisting of vertically-separable portions hinged at their lower inner edges to the said supports, a vertically-movable actuating member connected with the parts of the press-mold outside of their pivotal points, a neck-ring separate from the press-mold, a movable support for the press-ring, and a vertically and horizontally movable blow-mold, the parts adapted to cooperate substantially as described.

9. A machine for the manufacture of glassware comprising a press-mold, a blow-mold, a plunger adapted to coact with the press-mold, a blow-head adapted to cooperate with the blow-mold, the blow-mold having a vertical movement, and a connection between the blow-head and the blow-mold whereby when the blow-mold is moved upward the blow-head is moved downward to coact therewith, substantially as described.

10. A machine for the manufacture of glassware comprising a press-mold, a plunger adapted to coact therewith, a vertically-movable blow-mold, a vertically-movable blow-head, an intermediately-pivoted lever, one end of the lever connected with the blow-head and the other with the blow-mold support, whereby the parts are adapted to cooperate substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES EDWIN BLUE.

Witnesses:

A. G. HUBBARD,
HARRY W. BENNETT.