

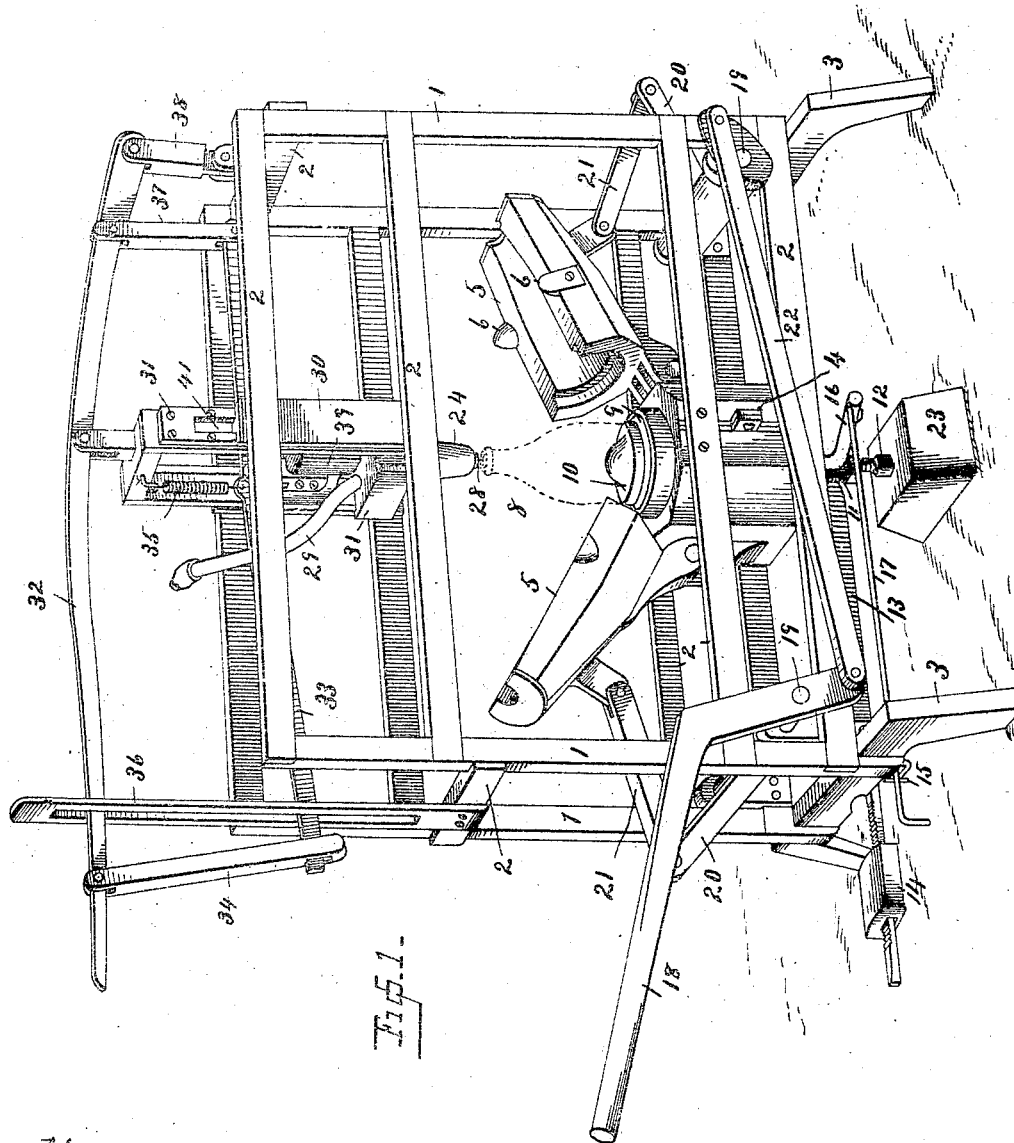
(No Model.)

3 Sheets—Sheet 1.

C. L. STARTUP.
MACHINE FOR BLOWING GLASS.

No. 453,795.

Patented June 9, 1891.



Witnesses

W. A. Courtland
Harmon Winter

Inventor
Charles L. Startup
by A. Smith
his Atty

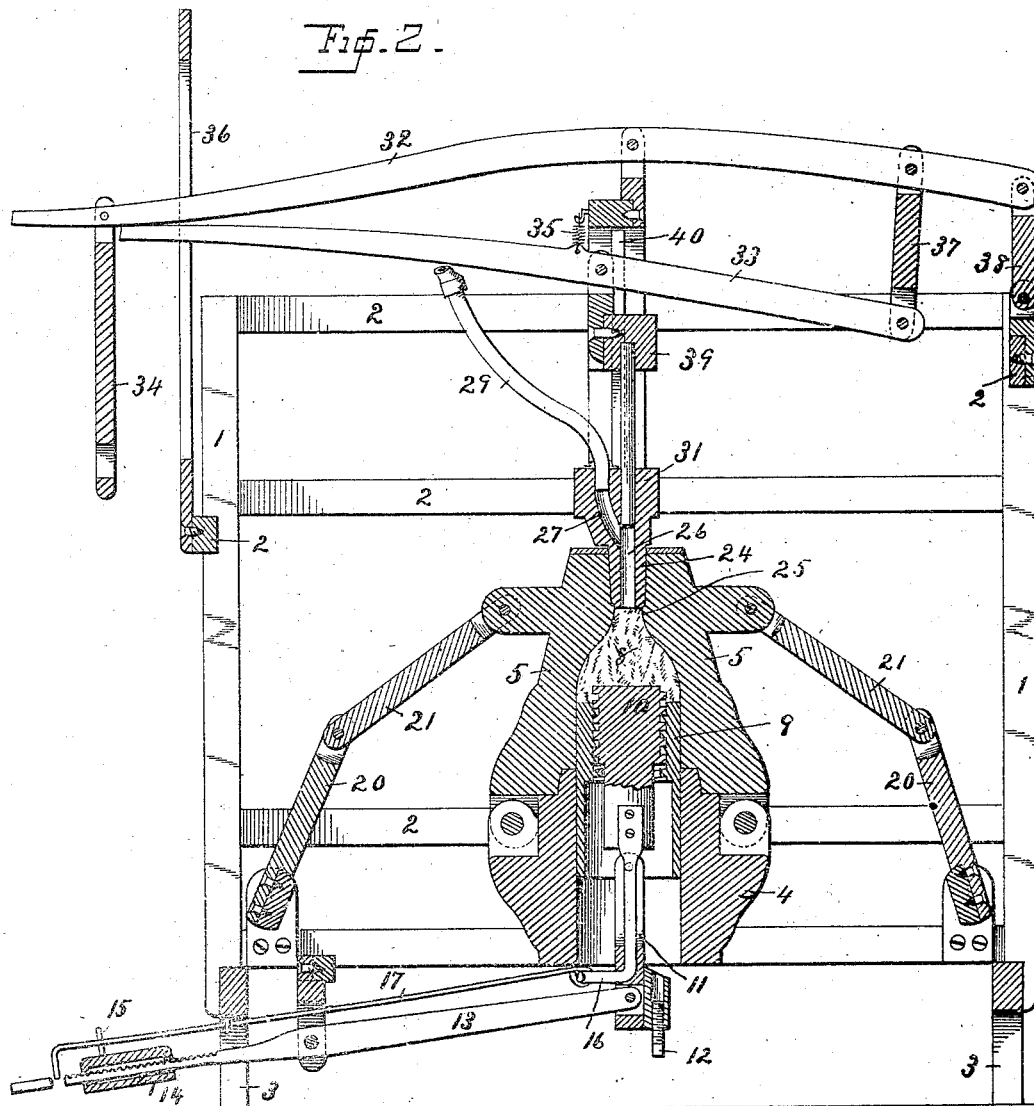
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3 Sheets—Sheet 3.

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Fig. 3.

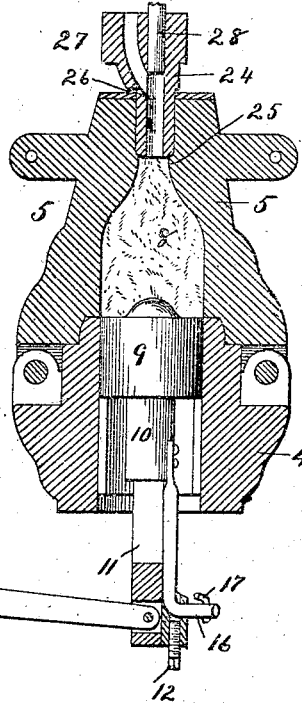
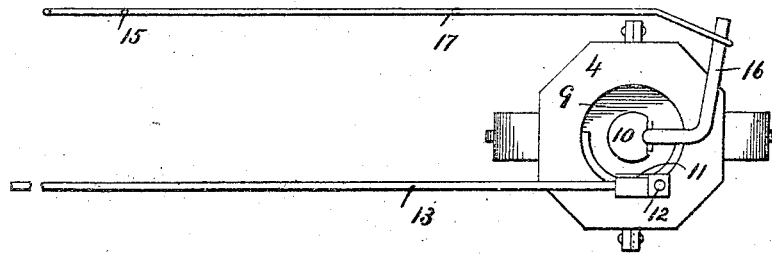


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES LAVENDER STARTUP, OF ELLENVILLE, NEW YORK.

MACHINE FOR BLOWING GLASS.

SPECIFICATION forming part of Letters Patent No. 453,795, dated June 9, 1891.

Application filed February 2, 1891. Serial No. 379,873. (No model.)

To all whom it may concern:

Be it known that I, CHARLES LAVENDER STARTUP, a citizen of the United States, residing at Ellenville, in the county of Ulster and State of New York, have invented certain new and useful Improvements in Machines for Blowing Glass; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to that class of machines in which a blast of air artificially produced is used to blow glass into various hollow shapes, and will be hereinafter more particularly described and claimed.

In the drawings, Figure 1 is a perspective view of a machine embodying my invention. Fig. 2 is a central and vertical section of the same. Fig. 3 is a detail sectional view of the mold and parts adjacent thereto. Fig. 4 is a bottom view of the parts illustrated in Fig. 3.

Various attempts have been made to design machines for blowing glass into simple forms—such as bottles—by the use of an air-blast other than that derived from the lungs of the operator; but none of these, so far as I know, have been capable of practical use.

My invention is designed to overcome the difficulties heretofore encountered by combining with the action of the blast a mechanical action upon the body of the molten glass tending to assist the action of the blast, and in certain details of the construction embodied in the machines illustrated, in which—

1 represents the upright posts, and 2 the cross-bars of any proper frame resting on the legs 3. Mounted in this frame is a mold 4, which is preferably made in two parts and bolted together, as shown in Fig. 1. The upper portion of this mold is made in one or more parts 5, which are hinged to the stationary portion of the mold and may be swung over so as to open the mold by the action of the lever 18, the link 22, the crank-shafts 19, having arms 20, and the links 21, or by some equivalent arrangement of links and levers.

When the two portions 5 of the mold are closed, being held in position by the projecting lugs 6 6, the mouth of the mold may be closed by inserting the air-nozzle 24. This

air-nozzle has a perforation 26 running there-through, in which the spindle 28 plays up and down. The air-duct 27 supplies the air at the proper pressure, which comes through the pipe 29, and discharges the same through the opening 26 into the interior of the mold whenever the spindle 28 is drawn up, as shown in Fig. 3. When the spindle 28 is forced down, as shown in Fig. 1, it protrudes through the nozzle 24 and shuts off the supply of air through the air-duct 27. The nozzle 24 is attached to the frame 31, which slides up and down in the guide 30, which fits into grooves 41. The lever 32, pivoted on the link 38, controls the motion of this slide. The spindle 28 is mounted in the cross-head 39, which is normally drawn up by the spring 35, except when forced down by the lever 33 and held in that position by the catch 34. The levers 32 and 33 move up and down in the guide 36.

The plunger 9 furnishes a movable bottom to the mold 4. This plunger is controlled by the lever 13, which is pivoted to a projection 11 on the plunger. This lever 13 has a counterweight 14 and an adjustable stop consisting of the screw 12, mounted on the shank projection 11. In the plunger 9 is mounted the screw 10, which may be twisted or partially rotated by the crank 16 and the rod 17 connected thereto, as clearly shown in the drawings. The adjustable stop 12 rests upon the block 23, and thereby limits the downward motion of the plunger.

The operation of my invention is the following: The plunger 9 being in its lowermost position, as shown in Figs. 1 and 3, or being in a still lower position than is there illustrated, the right quantity of glass at the right temperature, so as to render it pasty, is placed in the mold, the hinged portions of which are thrown back, as shown in Fig. 1. The lever 18 is then thrown up and the mold closed. The plunger 9 is then forced up by the pressure of the operator's feet on lever 13. The screw 10 is given a partial rotation by means of the rod 17, and thereby forced into the mass of glass 8, which has been forced into the upper end of the mold. The nozzle 24 and the spindle 28 projecting through the same, are then forced down into the mouth of the mold and part way into the mass of glass. The plunger 9 is then drawn down, either by its

own weight or by the application of external force, and the mass of glass 8 being held by the screw 10 is thus drawn out. At the same time or shortly after the beginning of this drawing operation the catch 34 is released and the spring 35 draws up the spindle 28, thereby opening the air-duct 27 and admitting the air to the interior of the mold under pressure. The spindle 28 having made a small impression in the mass of glass, this readily swells under the air-pressure, aided also by the drawing down of the plunger, and the glass is blown out into the shape of the mold, forming a bottle, as shown in Figs. 1 and 3. As shown in Figs. 1 and 3, the upper end of the screw 10 may be rounded over to form the depression in the bottom of the bottle usually desired. The adjustable stop 12 causes the plunger to arrest its movement when the right length of the bottle has been attained. The mold is then opened, as in Fig. 1, bottle removed, a new mass of glass put in the mold, and the operation repeated.

The advantage of my invention outside of the mechanical perfection of the apparatus exists largely in the combination of the mechanical action upon the glass produced by the screw and the plunger, with the blowing action of the compressed air, whereby the tendency of the glass to cool and stick in the mold before it can be blown is overcome. It is understood, of course, that after the plunger has reached the lower end of its stroke, or perhaps a little before that time, the screw 10 is withdrawn from the glass.

It is understood that various forms of the different parts of my invention may be employed without departing from the spirit thereof.

The spindle 28 may be made to project farther through the nozzle. The screw 10 may be of less diameter. The shape of the mold may be changed, &c., and I do not wish to restrict myself to the proportions illustrated.

Having therefore described my invention, what I claim as new, and desire to protect by Letters Patent, is—

1. The combination, in a glass-blower, of the mold, the air-inlet to said mold, the plunger

moving in said mold, and the screw mounted in said plunger and capable of being independently projected into and withdrawn from the interior of said mold, substantially as described.

2. The combination, in a glass-blower, of the mold which has an upper hinged portion, an air-nozzle which may be inserted in the mouth of the mold, a movable bottom to said mold, and a screw mounted in said movable bottom and capable of being independently projected into and withdrawn from the interior of said mold, substantially as described.

3. The combination, in a glass-blower, of the mold which has an upper hinged portion, a lever and connections for opening and closing said hinged portion, an air-nozzle which may be inserted in the mouth of the mold, a movable bottom for said mold, a lever and connections for operating said movable bottom, a screw mounted in said movable bottom, and connections for rotating said screw, so that it may be inserted into and withdrawn from the mass of glass within the mold, substantially as described.

4. The combination, in a glass-blower, of the mold, the air-nozzle which may be inserted in the mouth of said mold, the spindle which passes through said nozzle and into the mold, cutting off the air-supply when down and uncovering the air-duct when drawn up, together with the movable bottom for said mold, and the screw mounted in said movable bottom, substantially as described.

5. The combination, in a glass-blower, of the mold, the air-nozzle which may be inserted in the mouth of said mold, the spindle which passes through said nozzle and into the mold, cutting off the air-supply when down and uncovering the air-duct when drawn up, together with the movable bottom for said mold, and the adjustable stop which limits the motion of said bottom, substantially as described.

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

CHARLES LAVENDER STARTUP.

Witnesses:

ISAAC A. COON,
JESSE C. HANSEE.