No. 777,876. PATENTED DEC. 20, 1904.

C. M. ZÜRN.

MACHINE FOR MAKING GLASSWARE.

APPLICATION FILED MAR. 4, 1904.

NO MODEL. 4 SHEETS—SHEET 1.

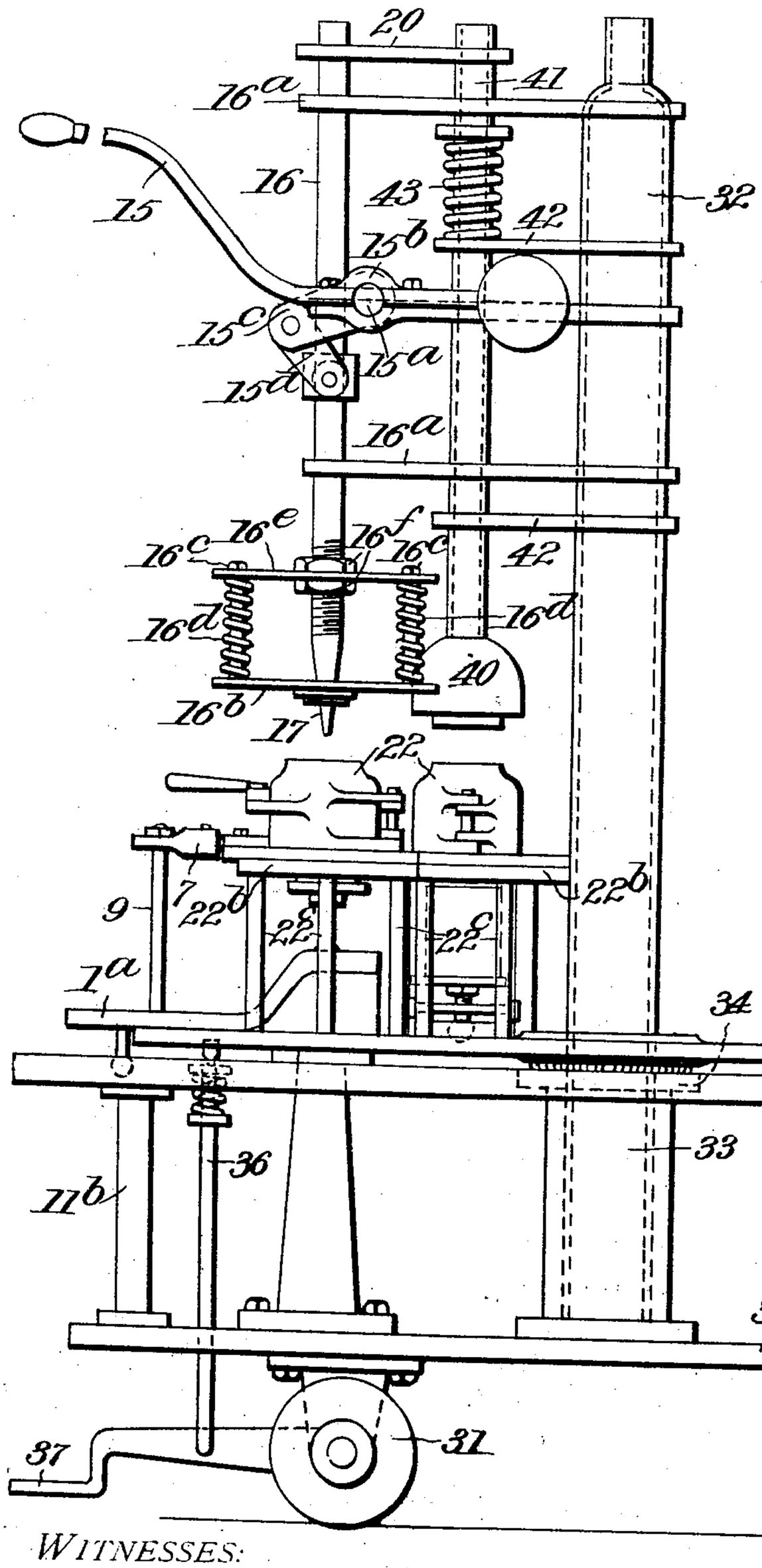

Fig. 1.

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PHOTO-LITHOGRAPHED BY SACKETT & WILHELMS LITHO. & PTG. CO. NEW YORK.

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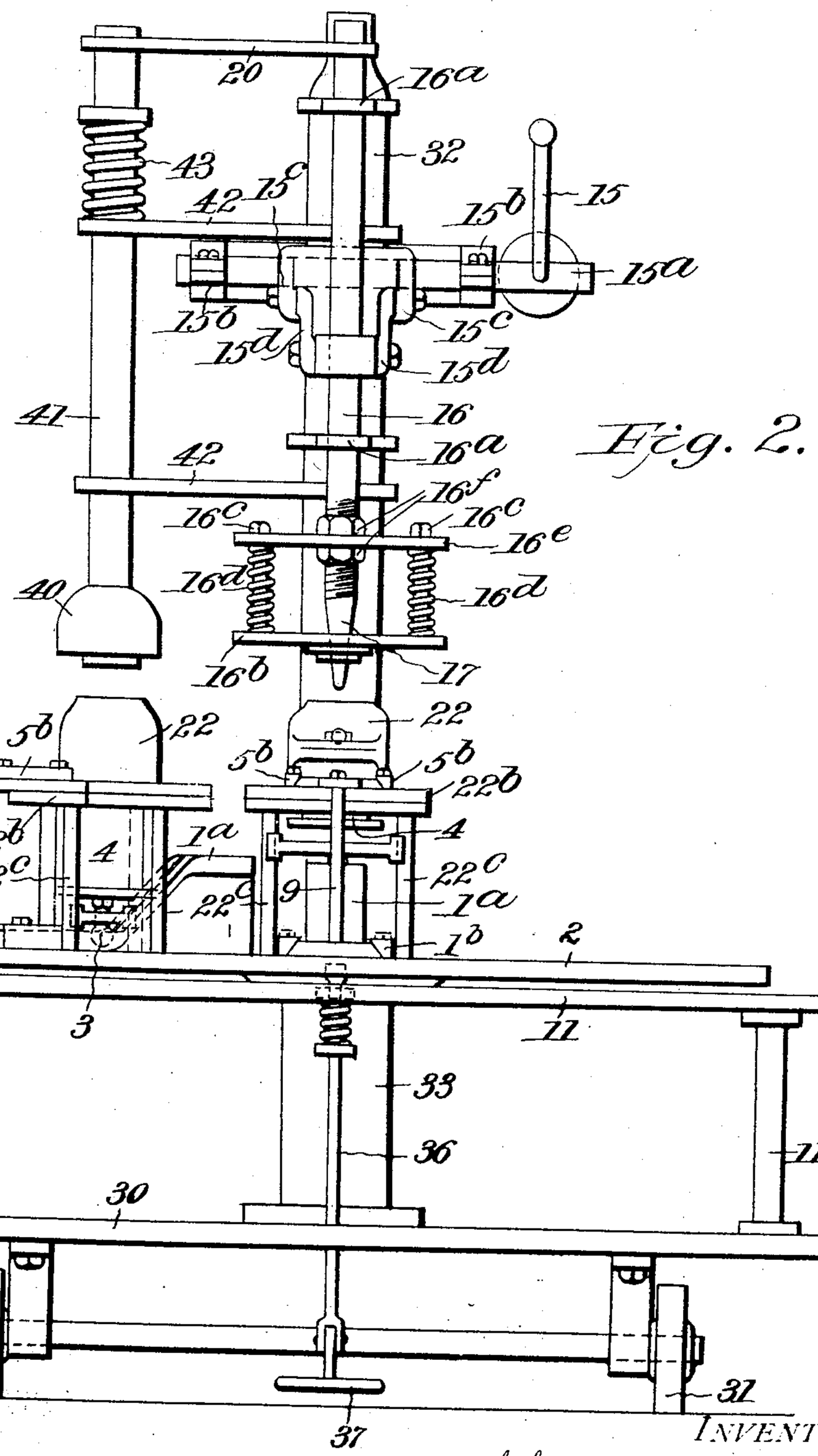

Fig. 2.

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NO MODEL. 4 SHEETS—SHEET 3.

Fig. 3.

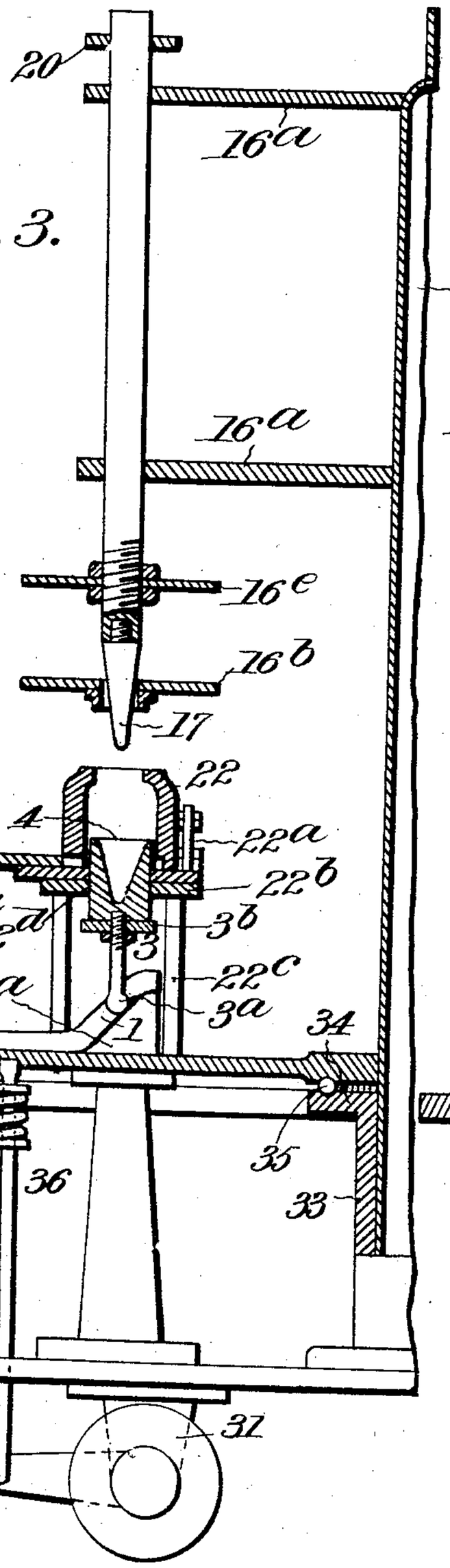
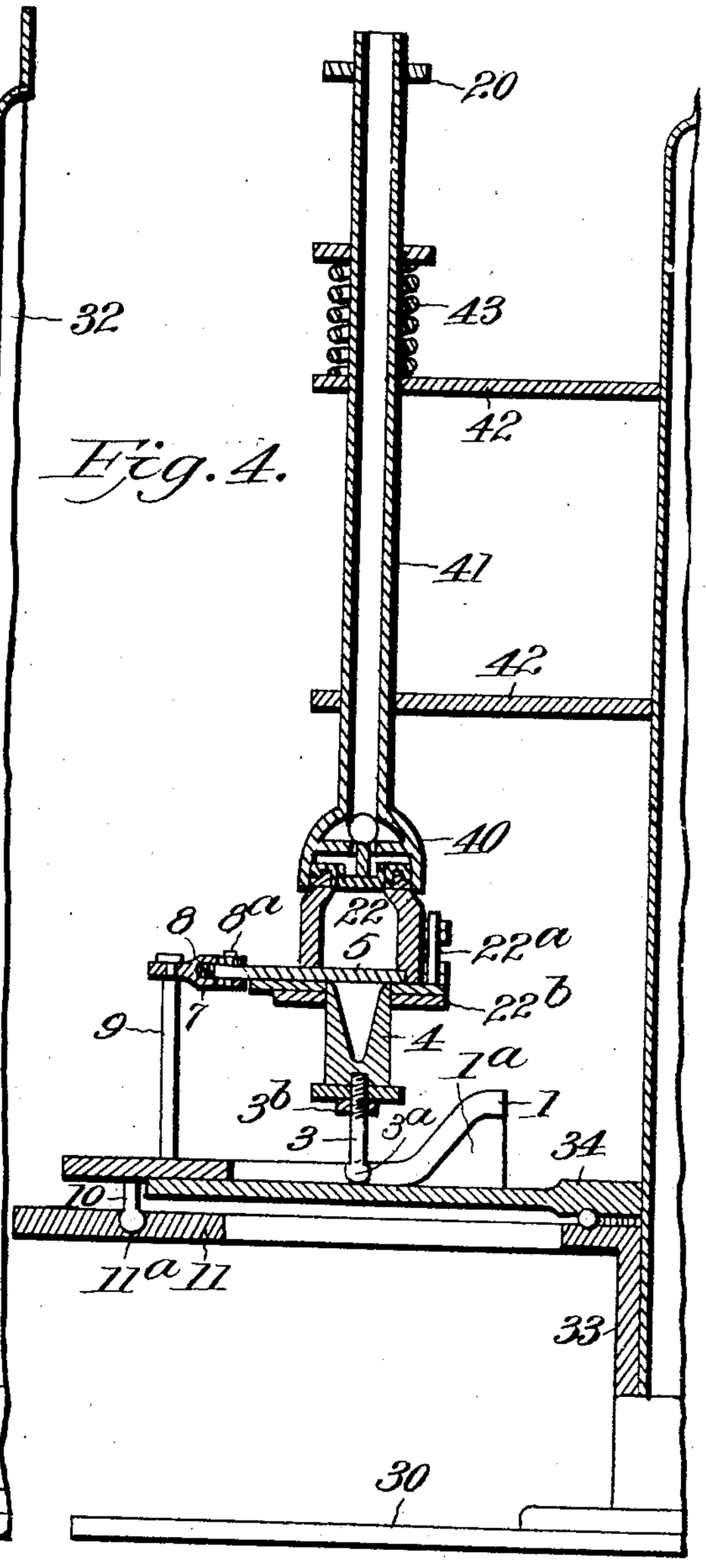


Fig. 4.



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NO MODEL. 4 SHEETS—SHEET 4.

Fig. 5.

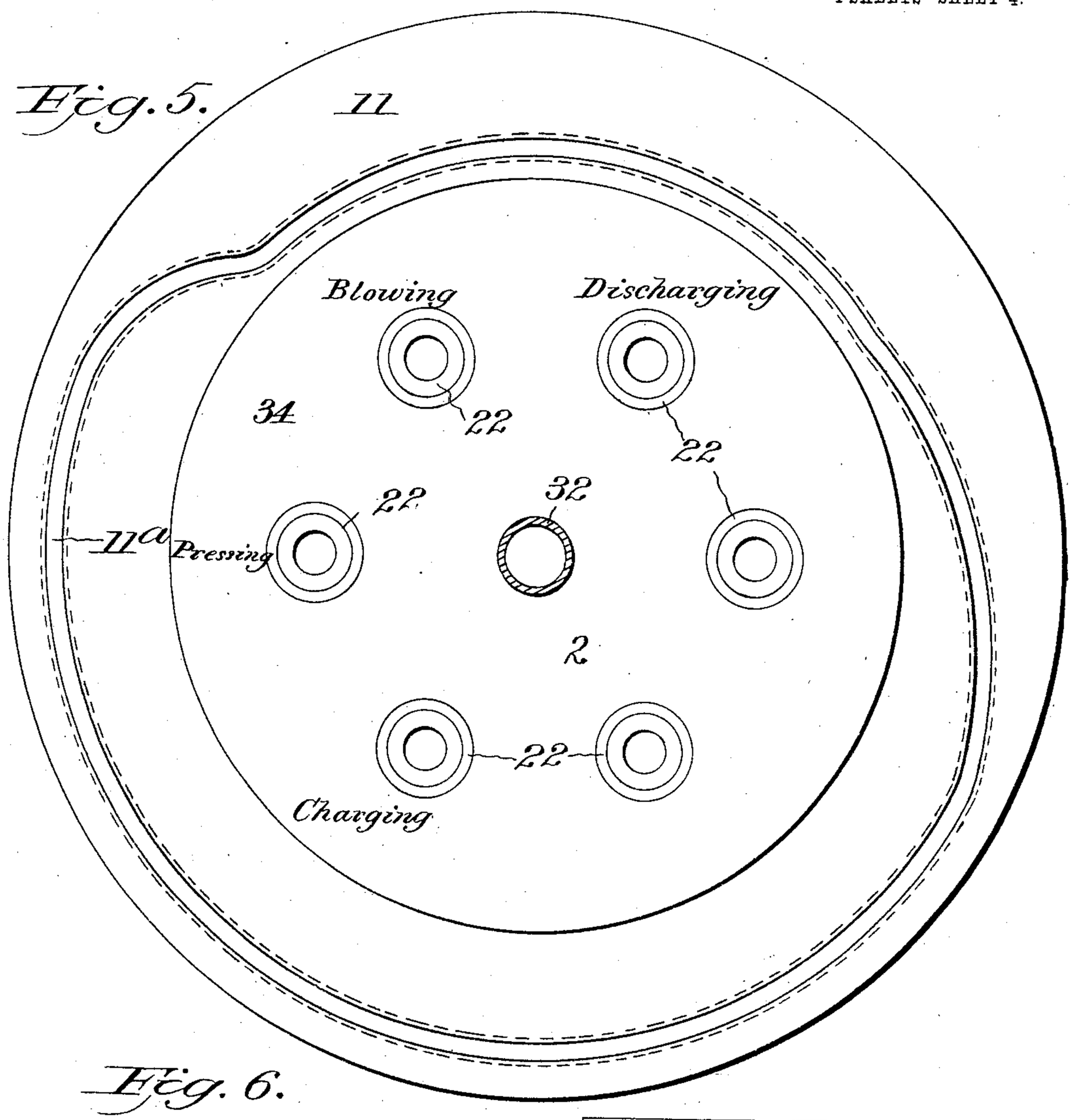
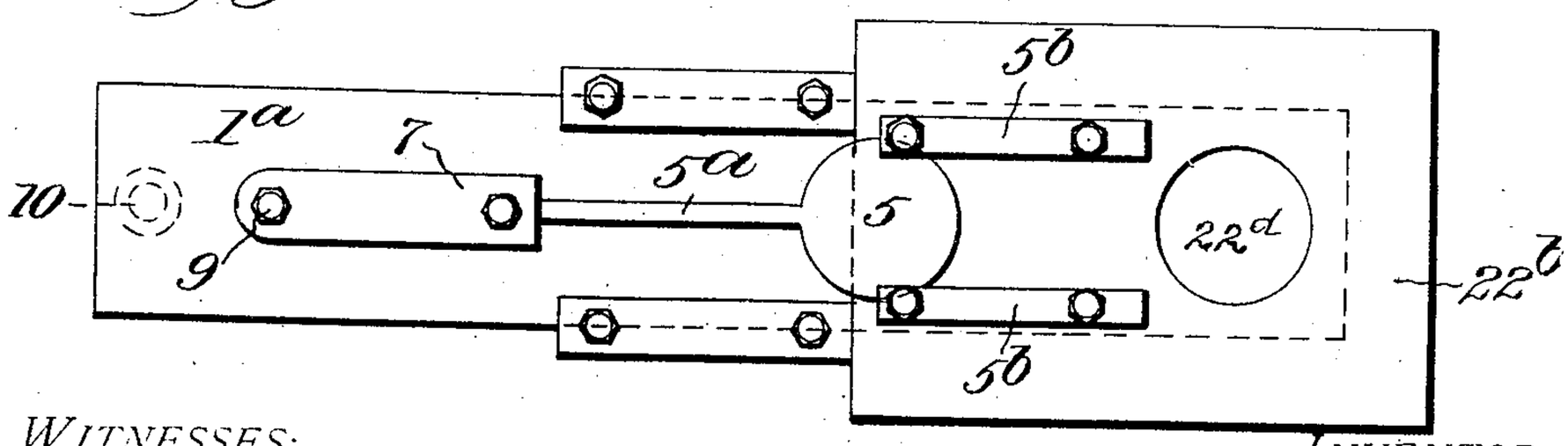


Fig. 6.



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No. 777,876. Patented December 20, 1904.

UNITED STATES PATENT OFFICE.

CHARLES M. ZURN, OF BRIDGETON, NEW JERSEY.

MACHINE FOR MAKING GLASSWARE.

SPECIFICATION forming part of Letters Patent No. 777,876, dated December 20, 1904.

Application filed March 4, 1904. Serial No. 196,503.

To all whom it may concern:

Be it known that I, CHARLES M. ZURN, a citizen of the United States, residing at Bridgeton, in the county of Cumberland and State of New Jersey, have invented new and useful Improvements in Machines for Making Glassware, of which the following is a specification.

This invention relates to glass-blowing machines suitable for the manufacture of bottles, jars, and the like, and particularly to that class thereof which have a rotary table carrying a plurality of molds successively to the charging, pressing, blowing, and discharging positions where such operations are performed mainly by automatic mechanism.

The object of the invention is to produce an improved machine of the kind characterized particularly by improvements with respect to the means for charging the mold, introducing a false bottom thereunder, depressing the plunger, and blowing the bottle or jar, such operations being performed simultaneously upon successive molds as they are brought around by the rotation of the table.

In the accompanying drawings, Figures 1 and 2 are side elevations disclosing particularly the pressing and the blowing mechanism, respectively. Fig. 3 is a vertical section, partly broken away, through the pressing mechanism. Fig. 4 is a similar section through the blowing mechanism. Fig. 5 is a diagrammatic plan view illustrating the various positions. Fig. 6 is a detail in plan of the sliding frame or carriage which operates the charger and which carries the false bottom.

Referring specifically to the drawings, 30 indicates the bed of the machine supported upon wheels 31, so that it may be moved to the place desired. Projecting centrally from the bed is a hollow post or standard 32, which is reinforced at the bottom by an outer shell 33, having at the top an annular flange 34, upon which the circular rotating table 2 is carried, with ball-bearings 35 between. The table may be rotated by hand or any other suitable means.

At 11 a stationary annular track is indicated, located slightly below and projecting beyond the outer edge of the table 2. This track is supported by standards 11^b on the bed of the machine. The track has in the upper face thereof a cam-groove 11^a, which effects the movement of the charger and false bottom in a manner to be hereinafter described. The course or curvature of the groove is related to the charging, pressing, blowing, and discharging positions, as illustrated in Fig. 5, to effect the proper and suitable movement of the apparatus. A spring-latch 36, controlled by a treadle 37, engages a circular rack on the under side of the table and holds it steady at rest during the pressing and blowing operations. Depression of the treadle releases the latch and allows the table to be turned before the next operation.

The table is illustrated with six molds, giving two idle molds at all times. The molds are indicated at 22, of the well-known split variety, the halves being hinged together at the back upon a pin 22^a. Each mold is supported upon a frame comprising a plate 22^b, supported by standards 22^c on the rotary table. The molds are bottomless, and the plate 22^b has an opening 22^d to permit the entry of the charger 4, into which the charge of glass is placed at the charging position. This charger is carried upon a threaded stem 3, having a round head 3^a, which travels in opposite inclined grooves 1, produced in the adjacent sides of a recess or slot between plates 1^a, forming part of a frame or carriage which slides radially between guides 1^b on the top of the table 2. The shape of the grooves is such that when the carriage is drawn out the charger is lifted, and when the carriage is forced in or toward the central post the charger is lowered. This action is positive, because the head 3^a is engaged during both movements. The stem 3 is threaded into the charger 4 and fixed by a jam-nut 3^b, so that the position of the charger 4 may be varied to proper adjustment. At the outer end of each carriage is a standard 9, carrying at the upper end a sleeve 7, which receives the stem 5^a on the false bottom 5. This slides into and out of the mold between guides 5^b, fixed to the top of the plate 22^b. The sleeve 7 and spring 8 are provided to cushion the movement and produce a tight fit of the false bottom against the back wall of the mold. A pin 8^a, fixed to

the stem 5^a and working in a slot in the sleeve 7, assists in preserving the proper alinement of the parts. Projecting from the under side of the carriage is a pin 10, having a round head which fits and travels in the groove 11^a. As the molds and the carriages are carried around by the rotary table the pins 10, working in the groove 11, produce radial movement of the carriages, according to the shape of the groove, and this radial movement effects the insertion and withdrawal of the false bottom 5 and the lift and drop of the charger 4. The lift of the latter is effected at the charging position, and it remains in the mold during the pressing, after which it drops, and as it drops the false bottom enters at the blowing position.

The pressing-plunger is indicated at 17, carried at the lower end of a rod 16, which is supported and movable vertically in arms 16^a, projecting from the central post. The rod 16 also carries the mold-cover 16^b, connected by bolts 16^c and springs 16^d to the plate 16^e, which is held between jam-nuts 16^f on the threaded portion of the rod 16. As the flange descends the cover fits in and upon the top of the mold, closing the same tightly. The springs insure a tight fit and also allow the plunger to continue its descent somewhat further. Movement of the rod 16 is effected by a hand-lever 15, connected to a rock-shaft 15^a, supported in brackets 15^b, projecting from the central post and connected by a lever 15^c and links 15^d to a collar on the rod 16.

The blowing-head is indicated at 40, of known construction, having an automatic valve which opens when the head strikes the mold. The particular construction of the head is immaterial, and no extended description thereof is believed to be necessary. It is carried at the lower end of a pipe 41, which may receive air from any suitable connections. The tube slides vertically in guide-arms 42, projecting from the central post, and is normally lifted by a spring 43. It is also connected by an arm 20 to the rod 16. When the rod is depressed, the tube and blowing-head are also depressed, whereby as one mold is blown the following mold is pressed.

It is believed that the operation of the machine will be clearly evident from the above description; but it may be summarized as follows: The charger being filled at the charging position and the mold being closed around the same, the table is rotated to carry the mold to the pressing position, where the plunger is depressed by the means above described. This forces the molten glass out of the charger and into the mold, and upon rotation of the table to the blowing position the charger is withdrawn and the plate 5 is entered to form the bottom of the mold. The bottle or jar is then blown, which action, as stated before, is simultaneous with the pressing of the following mold, and further movement of the table carries the parts to the discharging position where the article is removed, after which the false bottom is retracted and the charger lifted for the succeeding operation.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for making glassware, the combination with a movable table, a plurality of molds carried thereby, and pressing and blowing mechanisms to which the molds are respectively movable, of chargers movable automatically into and out of the molds by the movement of the table, and bottoms for the molds removable when the chargers are entered.

2. In a machine for making glassware, the combination with a movable table, a plurality of molds carried thereby, chargers movable into and out of the molds, and pressing and blowing mechanisms to which the molds are severally movable, of bottoms for the molds, automatically actuated by the movement of the table to enter the molds when the chargers are withdrawn and withdraw from the molds when the chargers are entered therein.

3. In a machine for making glassware, the combination with a rotatable table and molds carried thereby, of chargers movable vertically into and out of the molds, a cam-track around the table, and radially-movable frames on the table, engaging with the cam and having inclined supports for the chargers, substantially as and for the purpose specified.

4. In a machine for making glassware, the combination with a rotatable table and molds carried thereby, of a cam-track around the table, frames movable radially on the table and actuated by the cam, and chargers and mold-bottoms supported by the frames, the supports for the chargers being inclined to convert the radial movement of the frames to vertical movement of the chargers, and the bottoms being arranged to work in or out of the molds as the frames are moved.

5. In a machine for making glassware, the combination with a rotatable table, and a cam-track around the same, of molds and radially-slidable frames carried by the table, said frames having inclines under the molds and projections engaging the track, chargers supported on the inclines and movable into and out of the molds by the slide of the frames, and bottoms connected to the frames and movable therewith into and out of the molds.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES M. ZURN.

Witnesses:
LUTHER C. MEYERS,
PHILIP M. MEYERS.