

No. 744,009.

PATENTED NOV. 10, 1903.

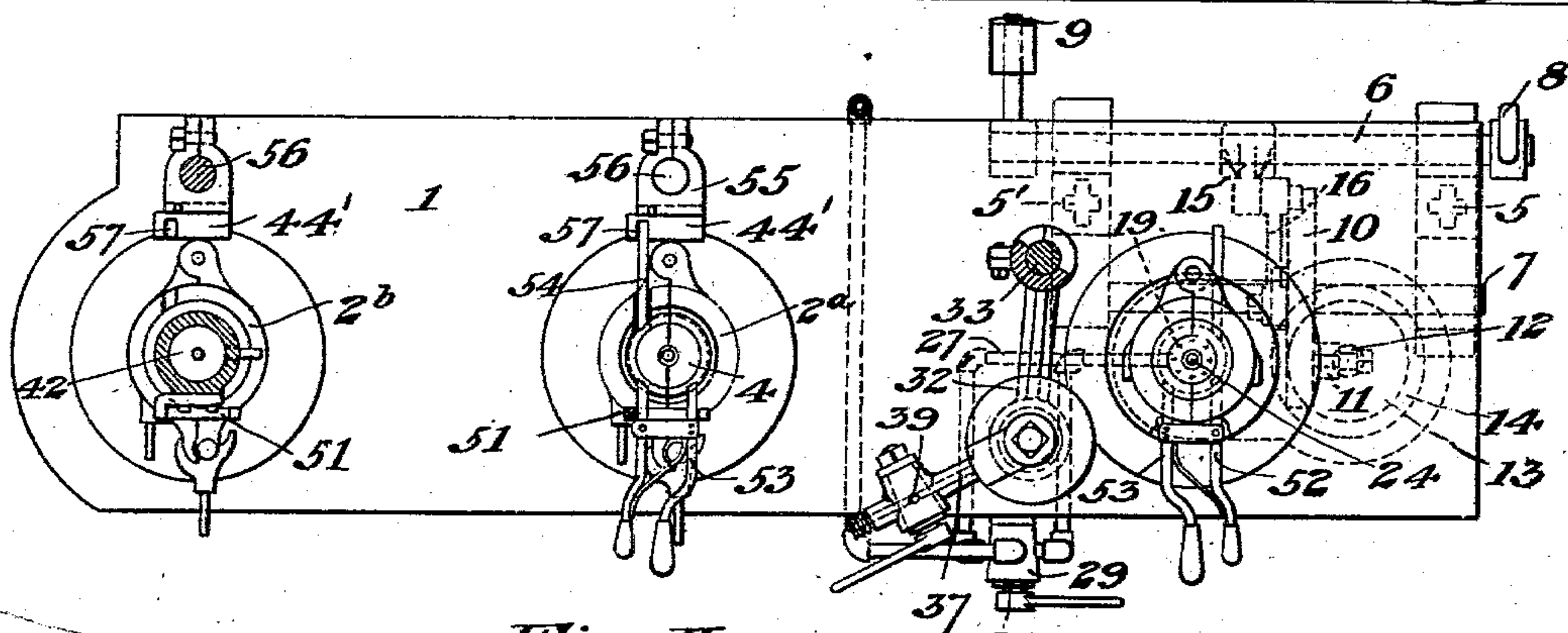
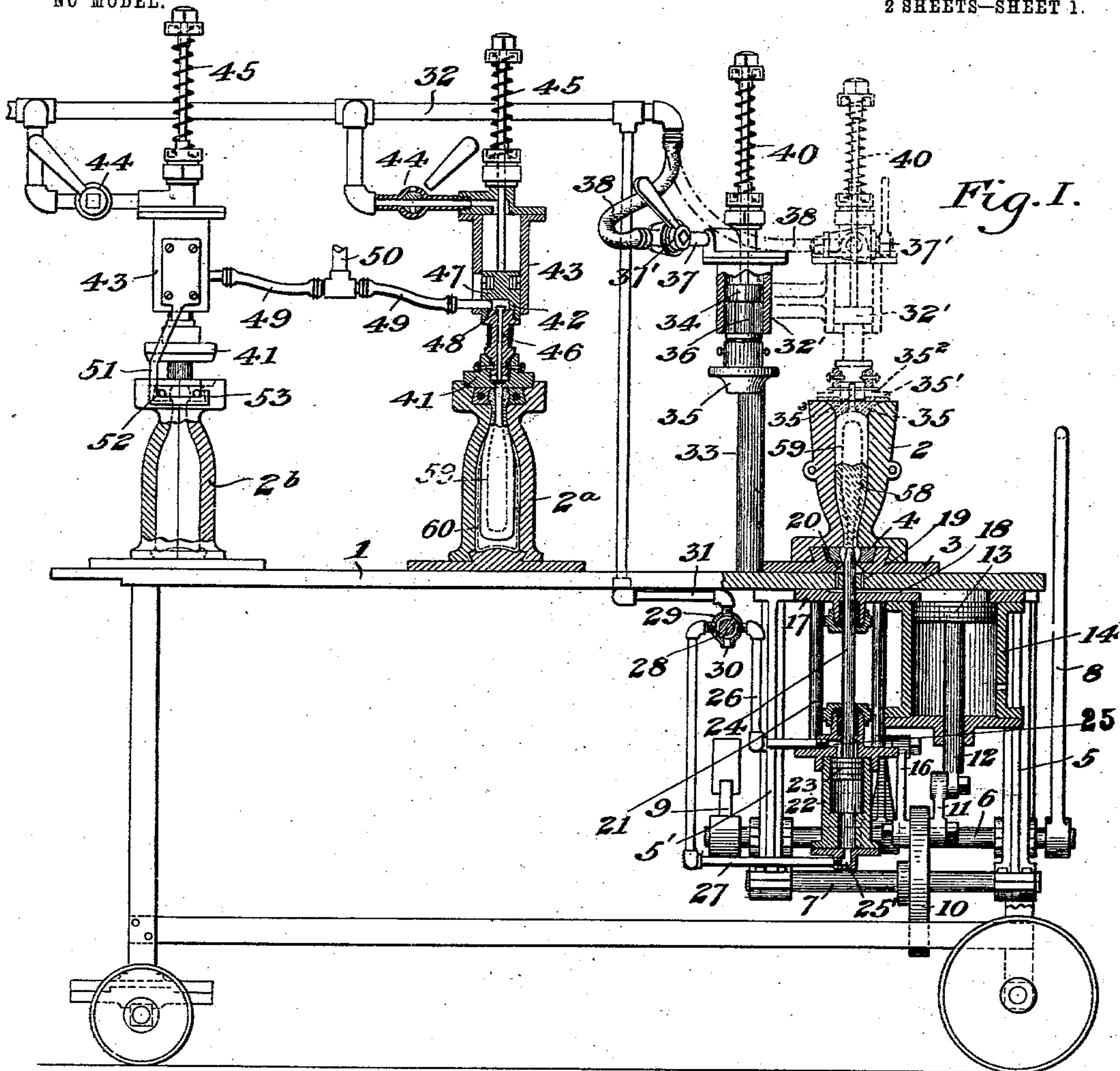
J. PROEGER.

APPARATUS FOR MAKING GLASSWARE.

APPLICATION FILED JAN. 23, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES

Geo. H. Starkey.

F. A. Barber

Fig. II.

INVENTOR

Julius Proeger,

By Wm. L. Pierce

his Attorney.

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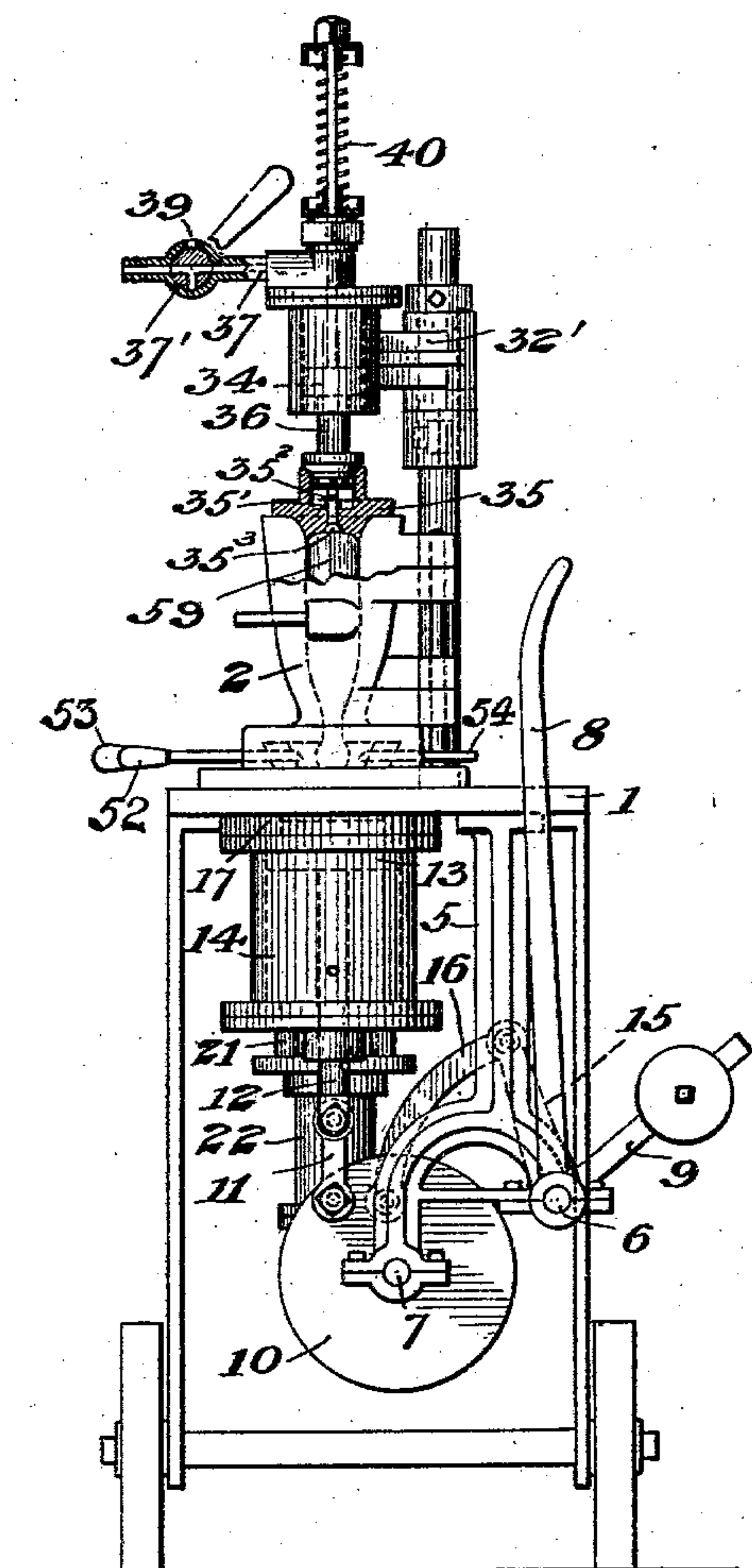
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APPARATUS FOR MAKING GLASSWARE.

APPLICATION FILED JAN. 23, 1902.

NO MODEL.

2 SHEETS—SHEET 2.

Fig. III.



WITNESSES:

Geo. H. Harvey.
F. A. Barber

INVENTOR,

Julius Proeger.

by Wm. L. Pierce.
his Attorney.

UNITED STATES PATENT OFFICE.

JULIUS PROEGER, OF GREENSBURG, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO TOLEDO GLASS COMPANY, OF TOLEDO, OHIO, A CORPORATION OF OHIO.

APPARATUS FOR MAKING GLASSWARE.

SPECIFICATION forming part of Letters Patent No. 744,009, dated November 10, 1903.

Application filed January 23, 1902. Serial No. 90,914. (No model.)

To all whom it may concern:

Be it known that I, JULIUS PROEGER, a citizen of the United States, residing at Greensburg, in the county of Westmoreland and State of Pennsylvania, have invented or discovered new and useful Improvements in Apparatus for Making Glassware, of which the following is a specification.

In the accompanying drawings, which make part of this specification, Figure I is a front elevation of my invention, the right-hand side being shown in vertical section. Fig. II is a plan view of the same. Fig. III is an end elevation as viewed from the right of Figs. I and II.

The object of my invention is to provide mechanism for manufacturing hollow glassware rapidly, cheaply, and perfectly.

My invention, though capable of application to various forms of hollow glassware, is particularly adapted to the manufacture of bottles with narrow necks.

The principle of my invention consists, in part, in causing the glass to fill the narrow or neck part of the mold under an unequal pressure in such a manner that the neck of the glass object is completely formed with all beads, collars, and the like.

On the table 1 stand the preliminary mold 2 and the two finishing-molds 2^a and 2^b. The mold 2 is inverted or has its neck downward and is supported on the base-block 3, which contains the neck-ring 4.

Supported on the under side of table 1 are the hangers 5 5', which support the shafts 6 and 7. The shaft 6 has at its end beyond the table a hand-lever 8 for rocking the shaft and at its opposite end the weighted arm 9 for balancing the lever and the parts operatively connected therewith, so that the said lever and parts will remain in whatever position they may be put. The shaft 7 carries a disk 10, provided with a wrist-pin, which is connected by the link 11 to the piston-rod 12 of the piston 13, working in cylinder 14. Shaft 5 has a radial arm 15, connected to the disk 10 by the link 16.

Secured to the under side of the table and opposite the base-block 3 is a plate 17, provided with an air-duct 18, leading from the

upper end of cylinder 14 to an annular series of air-ducts 19 in the table 1. The ducts 19 communicate with a passage 20 in block 3, the passage registering with the opening of the neck-ring 4.

Supported by rods 21 21 beneath the table is a cylinder 22, containing the piston 23, carrying the vertical rod 24, whose upper end constitutes a nose for forming the preliminary opening in the bottle-neck. The cylinder has at opposite sides of the piston 23 ports 25 and 25', leading by tubes 26 and 27, respectively, to the valve 28 in the valve-casing 29. This casing has at its under side an exhaust-port 30 and at its upper side air-inlet pipe 31, connected to main high-pressure pipe 32, leading from a source of fluid-pressure. (Not shown.) When the valve 28 is as shown in Fig. 1, fluid-pressure from pipe 31 is admitted to the bottom of cylinder 22, and the exhaust-port 30 is connected with the top of the cylinder. When the valve is rotated a quarter of a revolution, the exhaust-port 30 is connected with the bottom of the cylinder, and the pipe 31 is connected with the top of the cylinder.

A swinging carrier 32' is supported on standard 33, secured to the top of the table. Within the carrier is a piston 34, carrying the head 35, detachably secured to the piston-rod 36. The head 35 is loosely connected by screws, as shown, so that the head may accurately close the bottom of mold 2 even though the latter be inclined by reason of the table warping or sagging. The head has a vertical opening, in which is slidably seated the stem 35³ of the index-rod 35², movable in slots 35' in the head. Fluid-pressure is admitted to the top of the cylinder by inlet-pipe 37, connected to pipe 32 by the flexible pipe 38. The inlet-pipe 37 is provided with a valve 37', which in the position shown in Fig. III admits pressure to the piston 34, but when rotated one-quarter revolution to the left, as in Fig. I, opens the upper part of the cylinder to the air through exhaust-port 39. When the exhaust-port is opened to the cylinder, spring 40 on the piston-rod 36 returns the piston to its normal or upper position. Finishing-molds 2^a and 2^b are provided with similar blowing mechanism.

ism. The blowing-head 41 is loosely and detachably connected to the piston 42, which travels in the cylinder 43. Pressure from pipe 32 is admitted to and exhausted from cylinder 43 by the valve 44 operating like valve 37'. The piston 42 is returned to its upper position by spring 45. The piston 42 is composed of two parts, the lower part 46 being hollow and carrying the valve 48. The upper part 47 of the piston has a chamber above the valve 48 communicating with low-pressure pipe 49, fed from pipe 50. Each blowing-head has a pipe 49 leading from pipe 50.

51 represents an L-shaped support provided with an upturned end.

The neck-ring 4 is provided forwardly with two handles 52 and 53 and rearwardly with an arm 54. The cylinder 43 is carried by a block 44', having a tongue-and-groove connection with the collar 55, clamped to the post 56. The block 44 has an opening 57 for receiving the arm 54 at the same time that the support 51 receives the intermediate portion of the handles 52 and 53, as shown in Fig. I.

The operation is as follows: The parts being in position represented by full lines in Fig. I, a quantity of glass is placed in the mold 2 and the handle 8 pulled toward the front, causing piston 13 to descend and suck the glass into the neck-ring and the neck of the mold and around the nose of the piston-rod 24. The carriage 32' is then swung to the dotted position and the valves 37' turned, as shown in Fig. III, and the valve 28 turned to admit fluid above piston 23 and to open the exhaust to the cylinder 22 below the piston. The nose of the piston is thus withdrawn from the neck of the partially-formed bottle and the bottom tightly pressed against the mold 2. The handle 8 is then reversed, causing the piston 13 to blow air through the neck of the bottle into the mass of glass, so as to expand it to the shape of the mold 2. When the blank raises the stem 35' of the index-rod 35², the movement of handle 8 is stopped, the valve 37' is turned to exhaust the pressure from above piston 34, and the head 35 is swung to the position shown in full lines in Fig. I, the mold is unlocked, and the blank still held in the neck is transferred by a helper to a finishing-mold 2^a or 2^b by means of the handles 52 and 53. The arm 54 is placed in the opening 57 and the handles 52 53 upon the support 51. In this position the blank is accurately centered in the mold. After the finishing-mold is locked the valve 44 is turned to admit pressure above piston 42, causing the blowing-head to engage the top of the mold and neck-ring. The valve 48 is stopped by engagement of its lower end with a bar (see

Fig. I) left in the opening in the top of the mold just before the head is seated, causing the pressure from low-pressure pipe 49 to enter the blank and expand it to the shape of the mold, the air passing through the chamber in the part 47 of the piston 42 and the opening in which the valve 48 is seated. The valve 44 is then turned to exhaust-cylinder 43, and spring 45 raises the blowing-head off the mold. The mold and neck-ring are then opened and the bottle removed. When the handle 8 is pulled forwardly to suck the glass down, as described, the blank occupies the position indicated by the numeral 58. When the handle has been reversed, the blank is blown to the shape indicated by 59. The finished article is designated by the numeral 60.

In practice the head 35 will not be placed on the mold 2 until the suction of piston 13 ceases; but if it be placed thereon before the suction stops atmospheric pressure will still be exerted on the blank by way of the opening in which the stem 35' is seated.

I do not desire to be limited to the precise mechanism shown, as many modifications will readily suggest themselves to those skilled in the art of glass-making.

Having described my invention, I claim—

1. In glass-making apparatus, a single causative means for sucking glass into the form of a blank, and expanding the same.

2. In glass-making apparatus, a piston for sucking glass into the form of a blank and expanding the same.

3. In glass-making apparatus, a matrix, a core, a piston for inserting the core therein and withdrawing it therefrom, and a piston for sucking the glass in the matrix and expanding it therein.

4. In a glass-making apparatus, an inverted blank-mold and a removable bottom therefor to cover the mold when the blank is blown up, a piston for applying the bottom thereto, and a pivotally-supported carrier for the piston.

5. In glass-making apparatus, a mold, means for expanding the glass therein, and a signal carried by the mold and displayed when the glass in the process of blowing reaches a predetermined position.

6. In glassware-making apparatus, a mold, a removable bottom therefor, means for expanding the glass therein, and a signal movable in the said bottom when the blank has reached a predetermined position.

Signed at Pittsburg this 7th day of January, 1902.

JULIUS PROEGER.

Witnesses:

F. N. BARBER,
L. D. IAMS.