

(No Model.)

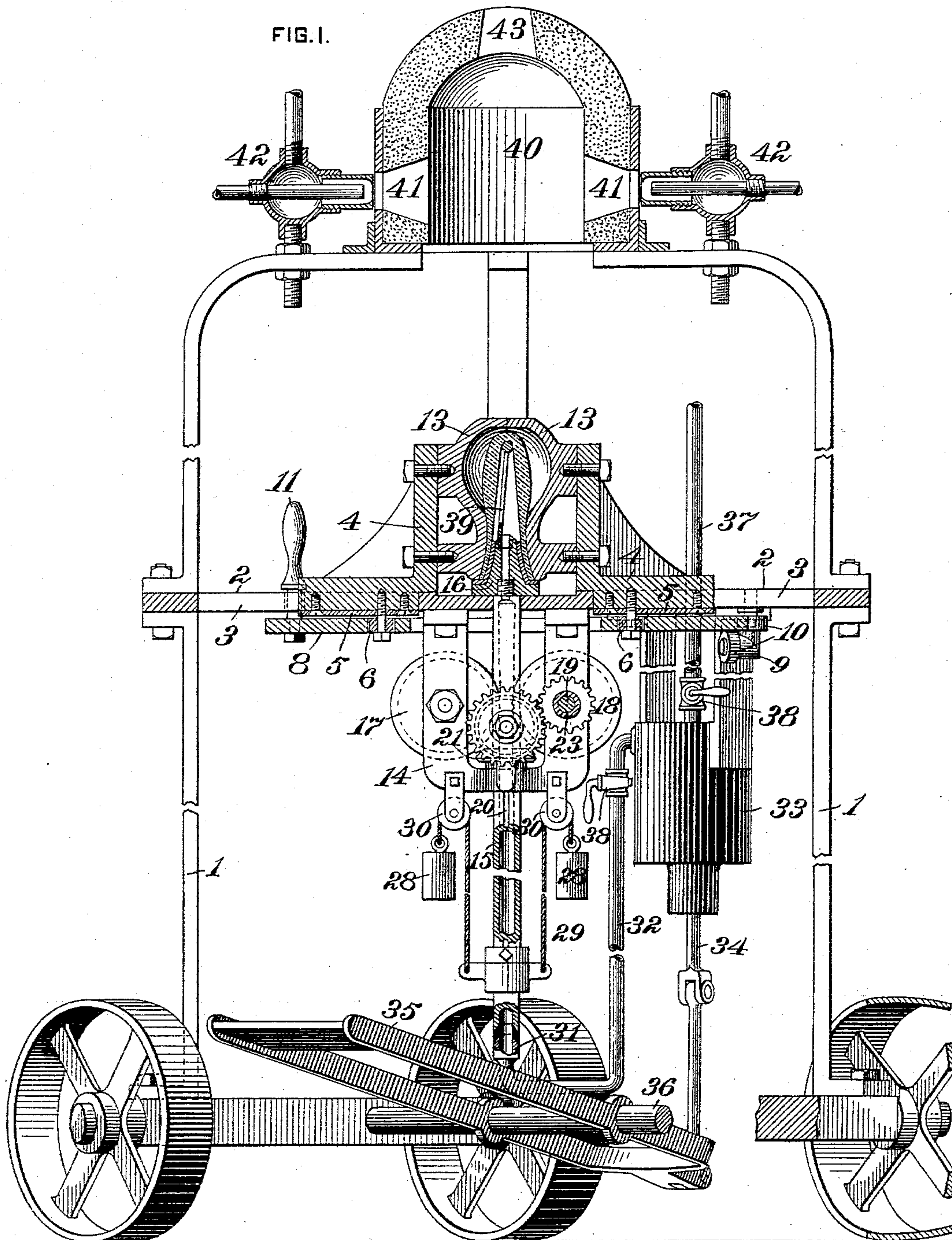
4 Sheets—Sheet 1.

C. ULFIG.

MACHINE FOR MANUFACTURING GLASSWARE.

No. 533,623.

Patented Feb. 5, 1895.



WITNESSES:

Chas F. Miller
J. E. Gaither

INVENTOR,

Charles Ulfig
by Daniel S. Wolcott

Att'y.

(No Model.)

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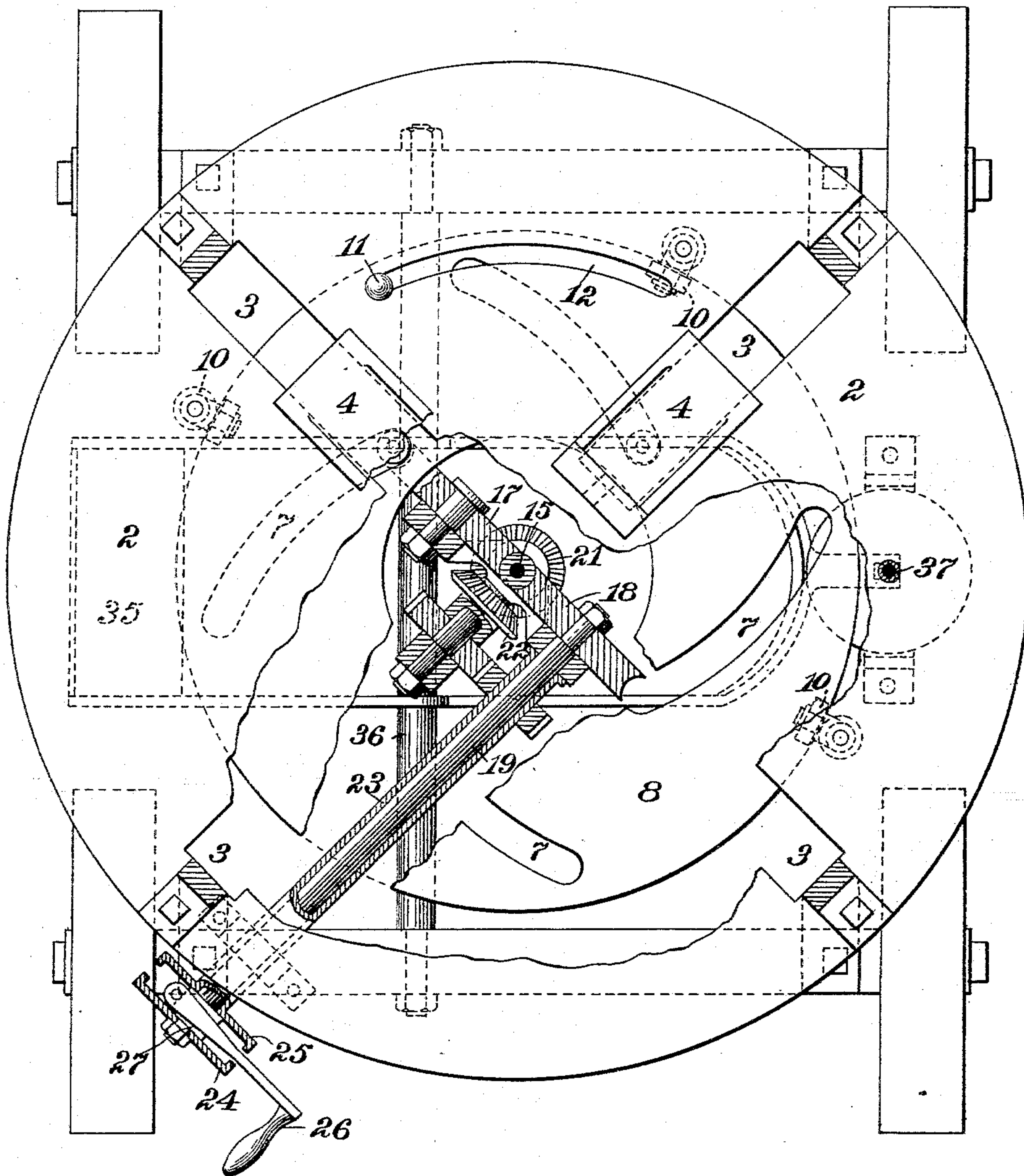
C. ULFIG.

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FIG. 2.



WITNESSES:

Chas F. Miller
J. E. Gaither

INVENTOR,

Charles Ulfig
by *Danvers B. Wolcott*
Att'y.

(No Model.)

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C. ULFIG.

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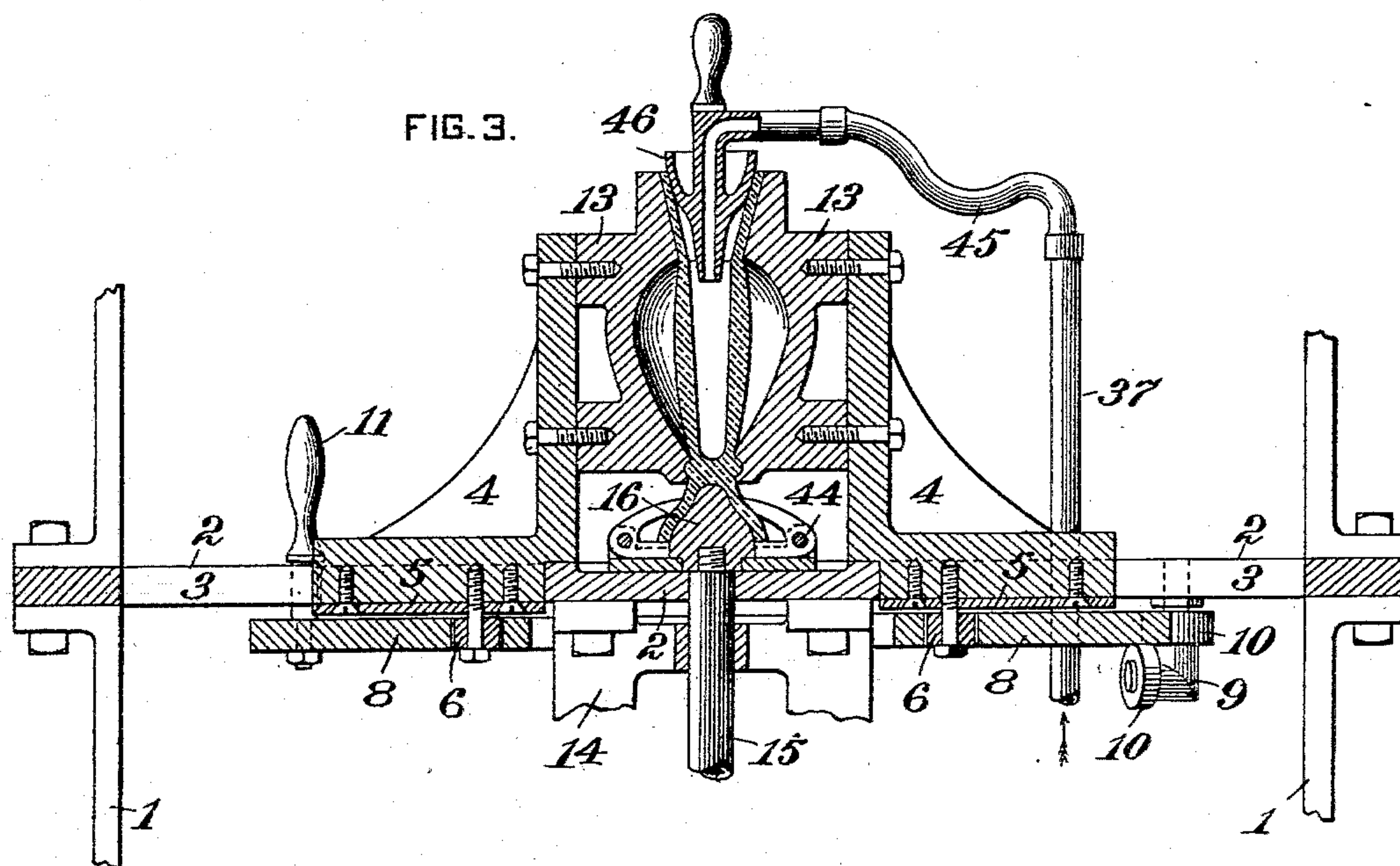
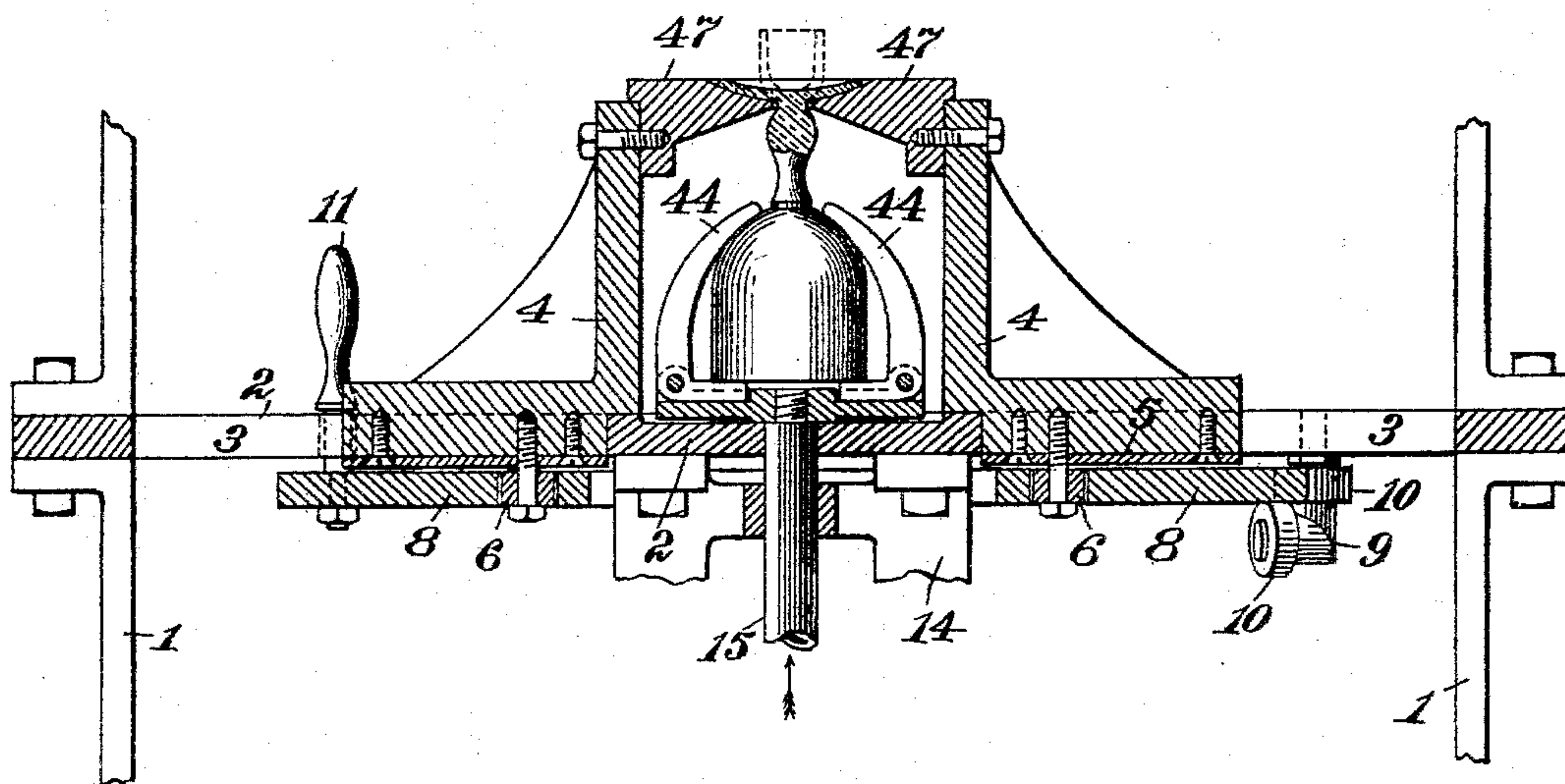


FIG. 4.



WITNESSES:

Chas F. Miller.
F. C. Gaither

INVENTOR,

Charles Ulfig
by Danm S. Wolcott
Att'y.

(No Model.)

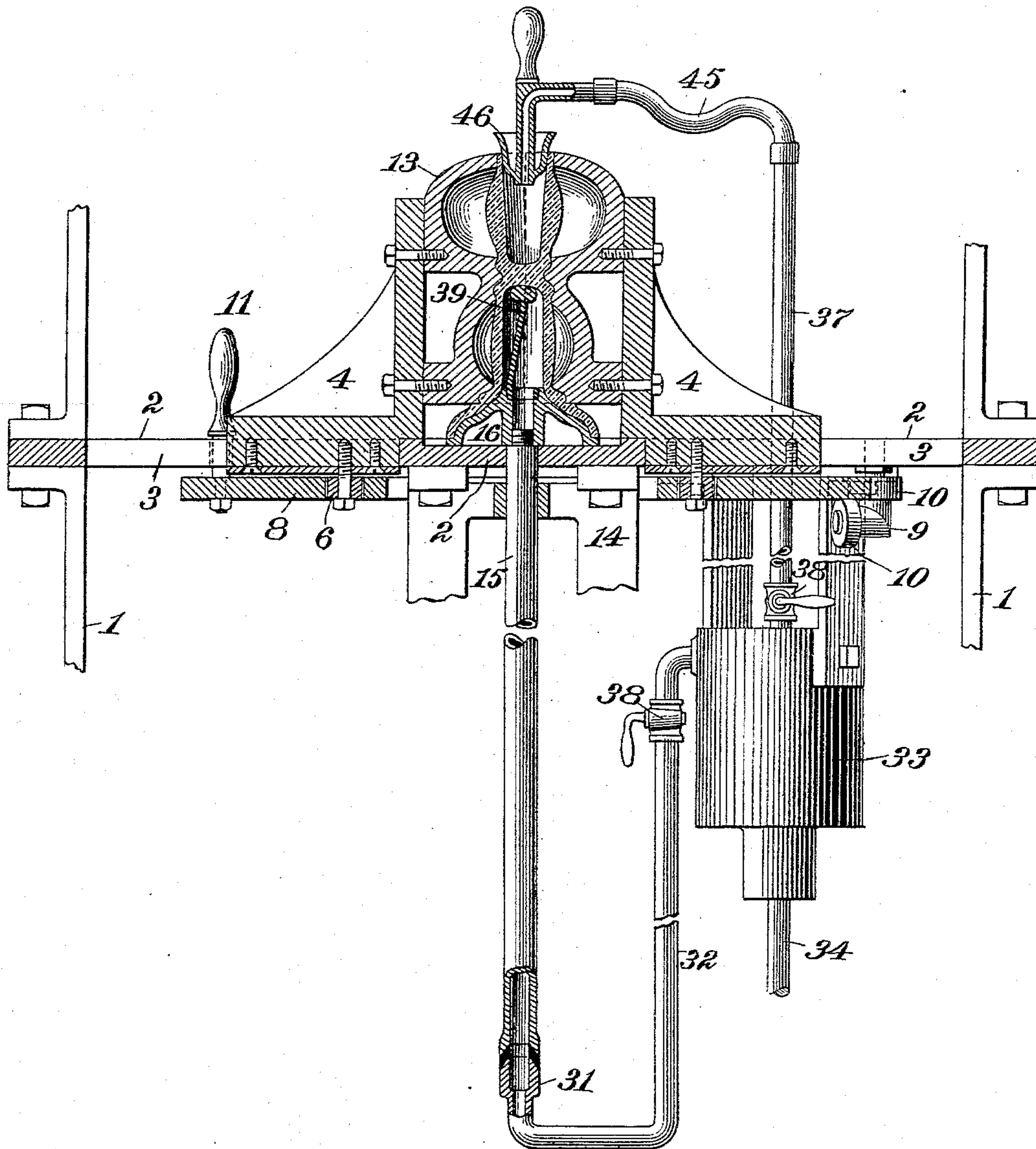
4 Sheets—Sheet 4.

C. ULFIG.
MACHINE FOR MANUFACTURING GLASSWARE.

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FIG. 5.



WITNESSES:

Chas F. Miller.
J. E. Gaither.

INVENTOR,

Charles Ulfig
by Danm S. Walcott
Att'y.

UNITED STATES PATENT OFFICE.

CHARLES ULFIG, OF GREENSBURG, PENNSYLVANIA.

MACHINE FOR MANUFACTURING GLASSWARE.

SPECIFICATION forming part of Letters Patent No. 533,623, dated February 5, 1895.

Application filed December 10, 1894. Serial No. 531,354. (No model.)

To all whom it may concern:

Be it known that I, CHARLES ULFIG, a citizen of the United States, residing at Greensburg, in the county of Westmoreland and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Machines for the Manufacture of Glassware, of which improvements the following is a specification.

10 The invention described herein relates to certain improvements in machines for the manufacture of hollow articles of glassware from pressed blanks, and has for its object a construction whereby repeated handling and heating of the articles by different operators is avoided, the successive operations of placing them on the blow pipe, heating the blank, placing it in the mold and expanding therein being performed by one operator.

20 In general terms, the invention consists in the construction and combination substantially as hereinafter described and claimed.

In the accompanying drawings forming a part of this specification, Figure 1 is a view partly in elevation and partly in section of my improved machine. Fig. 2 is a top plan view of the machine, certain parts being broken away. Fig. 3 is a sectional elevation of a portion of the machine, showing the arrangement of parts for top blowing. Fig. 4 is a similar view, showing a construction illustrating the adaptation of the machine for mechanical shaping of articles as distinguished from shaping by blowing; and Fig. 5 is a sectional elevation, showing simultaneous top and bottom blowing.

35 In the practice of my invention the supporting posts or standards 1 are preferably secured to the axles of a truck, in order that the machine can be readily moved about.

40 The bed plate 2, which is bolted to the upper ends of the posts or standards, is provided with a series of two or more radial slots 3, for the reception of a like series of slides 4. As shown in Fig. 2, the edges of the slides overlap the sides of the slots and plates 5, whose edges also overlap the sides of the slots, are secured to the under sides of the slides, thereby holding the slides as against vertical movement.

50 Pins having friction rollers 6 mounted thereon are attached to the under sides of the

slides and project down into curved slots 7, formed in the rotatable disk 8, which is supported by brackets 9, below the bed plate. To facilitate the shifting of the disk 8, friction rollers 10, bearing on the under side and edge of the disk are mounted on the brackets. The disk is shifted by means of a handle 11, projecting up through a curved slot 12, in the bed plate, as shown in Fig. 2. The sections 13 of the mold are secured to the inner faces of the slides 4, as shown in Figs. 1, 3, 4 and 5.

To the under side of the central portion of the bed is bolted a frame 14, provided with a bearing for the hollow shaft 15, which, for convenience, is termed the blow pipe. This blow pipe projects up through a central opening in the base plate and on its upper end is secured the nipple or plug 16, to fit into the mouth of the blank to be blown. On the arms of the frame 14 are mounted the grooved wheels 17 and 18, arranged to bear upon opposite sides of the blow pipe, as shown in Figs. 1 and 2. One of these wheels, as 17, is mounted upon a pin and the other is secured upon the inner end of a shaft 19, whose outer end preferably projects beyond the edge of the base plate, as shown in Fig. 2. The wheel 17 serves to hold the blow pipe in frictional engagement with the wheel 18, which, by its rotation in suitable direction, will raise or lower the blow pipe. As shown in Fig. 1, the blow pipe is provided with a longitudinal groove 20 for the reception of a feather of the bevel pinion 21 fitting said blow pipe. This pinion intermeshes with a similar pinion 22, which is driven by interposed gearing by sleeve 23 surrounding the shaft 19, as shown in Fig. 2. On the outer ends of the shaft and sleeve are secured the disks 24 and 25, respectively, which are provided with notched flanges for engagement with the handle 26 pivoted to a collar 27, loosely mounted on the shaft 19 between the disks 24 and 25. This construction permits of the handle being shifted into engagement with the disk 24, for rotating the shaft and the wheel 18 for raising or lowering the blow pipe or with the disk 25 for rotating the sleeve 23 for rotating the blow pipe.

The weight of the blow pipe and parts carried thereby is counterbalanced by weights 28, connected to one end of ropes 29, which

pass over pulleys 30 mounted in the frame 14, and have their opposite ends attached to the blow pipe, as shown in Fig. 1. The lower end of the blow pipe is provided with a suitably shaped seat for the reception of the conical nipple 31, on the pipe 32, extending from the cylinder 33. The rod 34 of the piston of the cylinder is connected to a treadle 35, pivotally mounted on the cross bar 36, of the frame of the machine. A second pipe 37, which may be employed as an escape or for top blowing as hereinafter described, is connected to the cylinder 33. The pipes 32 and 37 are provided with suitable valves 38, for regulating the flow of fluid pressure from the cylinder.

In operating my improved machine, a pressed blank is placed over the plug or nipple 16, the blank being internally supported, if necessary, by a prop 39, whose lower end is attached in any suitable manner to the plug or nipple. The grooved wheels 17 and 18 are then rotated, thereby raising the blow pipe so that the article will enter the glory hole furnace which consists of a hood 40, preferably lined with refractory material and supported a suitable distance above the bed plate 2 of the machine, and in line with the blow pipe. The hood is open on its lower side for the entrance of the article to be heated, and is provided with a series of two or more lateral openings 41, for the entrance of the flames from the burners 42 and with an opening 43 in its top for the escape of products of combustion. The burners 42 may be constructed to burn either oil or gas, as desired. After the blank has been raised into the glory hole, the handle 26 is shifted so as to engage the disk 25 on the sleeve 23, and then rotated, thereby rotating the blow pipe and the blank carried thereby so as to insure an equal heating of all parts thereof. As soon as the blank has been properly heated, the handle 26 is again shifted into engagement with the disk 24, and the shaft rotated lowering the blank between the parts of the mold, and causing the lowering end of the blow pipe to engage the nipple on the pipe 32, whose valve 38 is then opened. The disk 8 is then rotated by a pull on the handle 11, thereby causing the slides 4 to move inward and close the parts 13 of the mold around the blank. The operator then depresses the treadle 35, shifting the piston of cylinder 33 and forcing air through the blow pipe into the blank, causing it to expand and conform to the mold. The parts of the mold are then separated by a reverse movement of the disk 8, the blown article removed, another blank placed in position, and the above operation repeated.

As shown in Fig. 3, the machine can be easily and quickly changed for top blowing by substituting for the nipple 16 a snap 44, or other suitable clamping device for holding the blank while being raised into the glory hole. A flexible pipe 45, is connected to the pipe 37 from the blowing cylinder and a plug

or nipple 46 provided with a handle, is connected to the opposite end of the flexible pipe. The operation of the machine is the same as heretofore stated, except that after the mold sections have been closed around the heated blank, the plug 46 is inserted in the upper end of the blank, the valve 38 in pipe 37 opened, and that in pipe 32 closed, so that on the operation of the piston by the treadle 35, air under pressure will flow by the pipe 37 into the blank.

As shown in Fig. 5, the machine is adapted for simultaneous top and bottom blowing, a perforated nipple 16 being placed on the end of the blow pipe. In such double blowing after the blank has been heated and inclosed in the mold sections, the valves 38 in the pipes 32 and 37 are opened, so that on the operation of the piston in the cylinder 33, air under pressure will flow through pipes into opposite ends of the blank.

As shown in Fig. 4, the machine can be employed for the mechanical shaping of articles of glass-ware, such as the feet of goblets, which are pressed in the form of cups. In using the machine for this purpose, a snap 44 or other suitable clamp for holding one end of the article is substituted for the nipple 16, on the hollow shaft or blow pipe 15, and suitable molding or shaping sections 47 are secured to the slides 4. The article is heated as before described, and lowered between the mold sections, which are then moved in so as to underlie the portion to be shaped. The article is then rotated by means of the handle 26, and the cup portion is flattened by a suitable hand tool.

It will be readily understood by those skilled in the art, that an article can be expanded and shaped either wholly or in part by means of a hand or power plunger forced in the open upper end of an article when heated, lowered between suitable mold sections attached to the slides 4. When it is desired to form seamless articles, paste mold sections are employed and the blow pipe and blank are rotated during the blowing operation.

A reverberatory hood is not necessary in heating small glass articles such as bulbs for incandescent lamps, and may, therefore, be omitted in such cases.

I claim herein as my invention—

1. In a machine for the manufacture of glass articles, the combination of mold sections, means for moving the sections toward and from each other, a shaft rotatable and vertically movable between the mold sections and provided with means for supporting the article, and a glory hole or heater arranged above the mold sections, and within range of movement of the shaft, substantially as set forth.

2. In a machine for the manufacture of glass articles, the combination of mold sections, means for moving the sections toward and from each other, a hollow shaft or blow pipe vertically movable between the mold sections, a glory hole or heater arranged above the

mold sections, and in line with the blow pipe and an air compressor connected to the blow pipe, substantially as set forth.

3. In a machine for the manufacture of glass articles, the combination of mold sections movable toward and from each other, a blow pipe provided with a nipple for the reception of one end of the article to be shaped, and connected to an air compressor, and a nipple or plug having a flexible connection to the air compressor whereby top and bottom blowing may be simultaneously effected, substantially as set forth.

4. In a machine for the manufacture of glass articles, the combination of mold sections movable toward and from each other, a blow pipe, grooved wheels bearing against said pipe, a shaft for rotating said wheels, gearing for rotating the blow pipe, a sleeve surrounding said shaft for operating the gearing, notched disks secured on the ends of the shaft and sleeve, a handle adapted to engage

said disks, and a glory hole or heater arranged above the mold sections, and within the range of movement of the blow pipe, substantially as set forth.

5. In a machine for the manufacture of glass articles, the combination of radially movable slides, mold sections secured to said slides, a rotatable disk provided with curved slots engaging projections on the slides, a shaft provided with means for supporting the article, means for rotating and moving the shaft vertically, and a glory hole or heater arranged above the mold sections and within the range of movement of the shaft, substantially as set forth.

In testimony whereof I have hereunto set my hand.

CHARLES ULFIG.

Witnesses:

F. E. GAITHER,

DARWIN S. WOLCOTT.