

No. 742,342.

PATENTED OCT. 27, 1903.

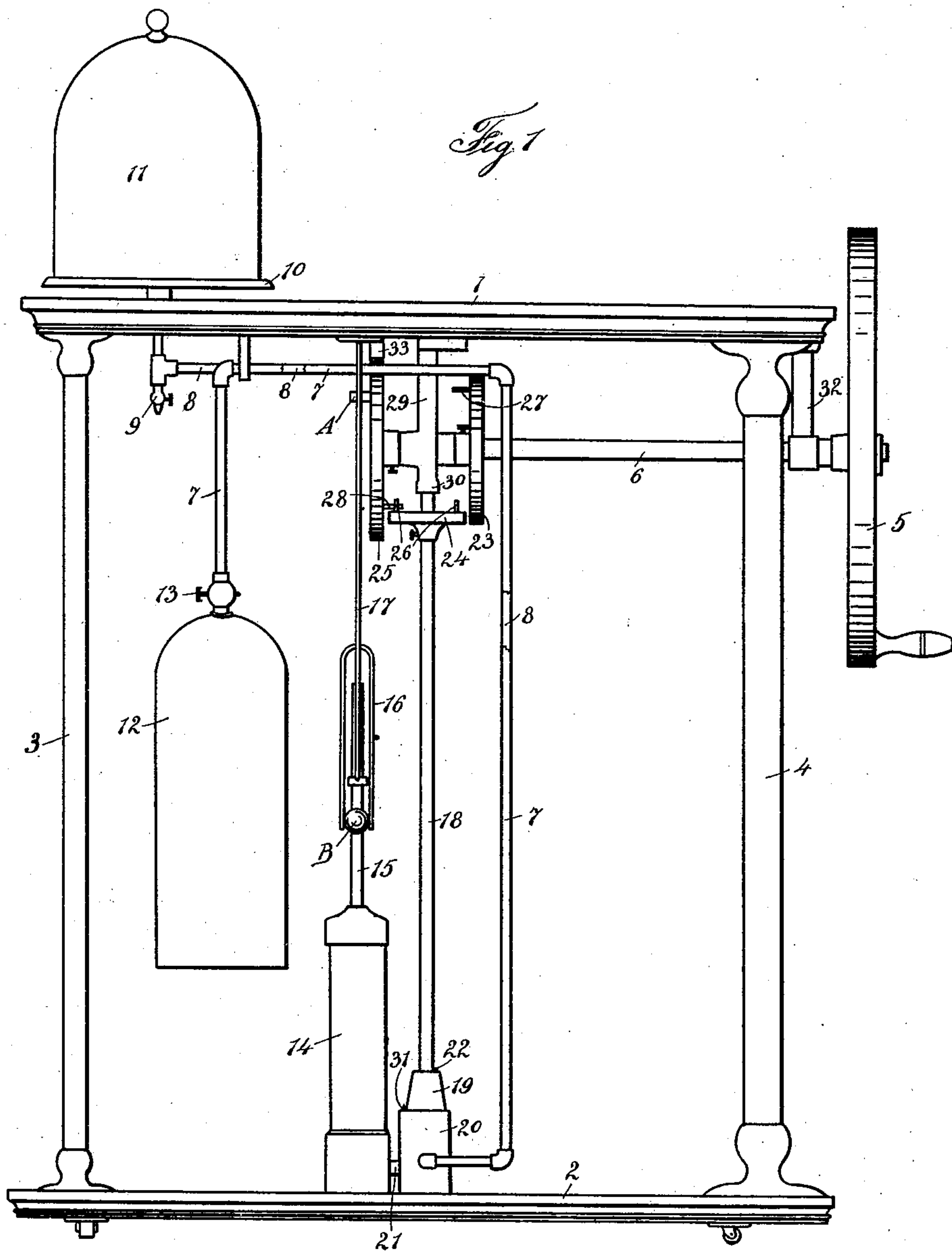
G. H. MOHLER.

AIR PUMP.

APPLICATION FILED JULY 12, 1900.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

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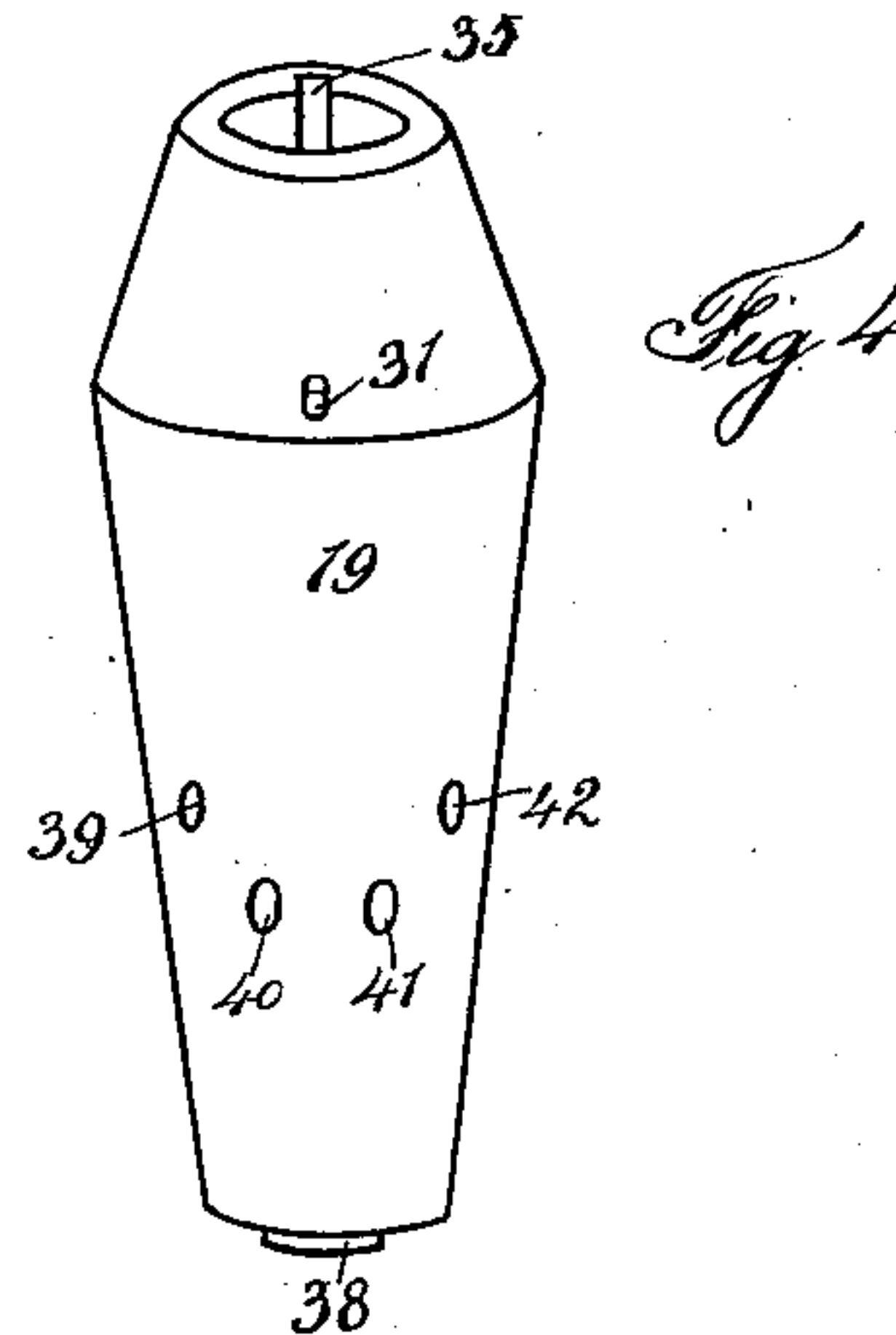
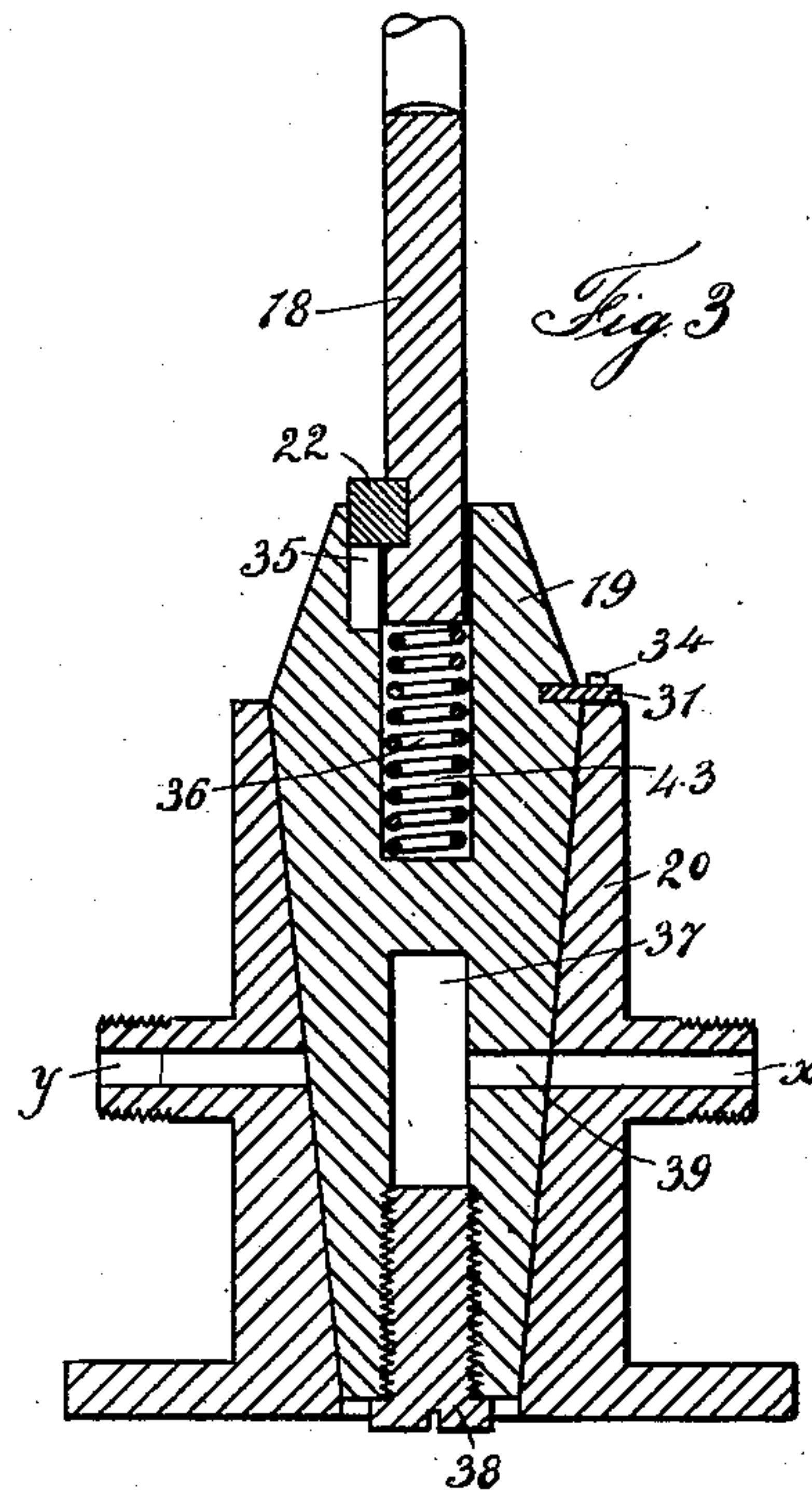
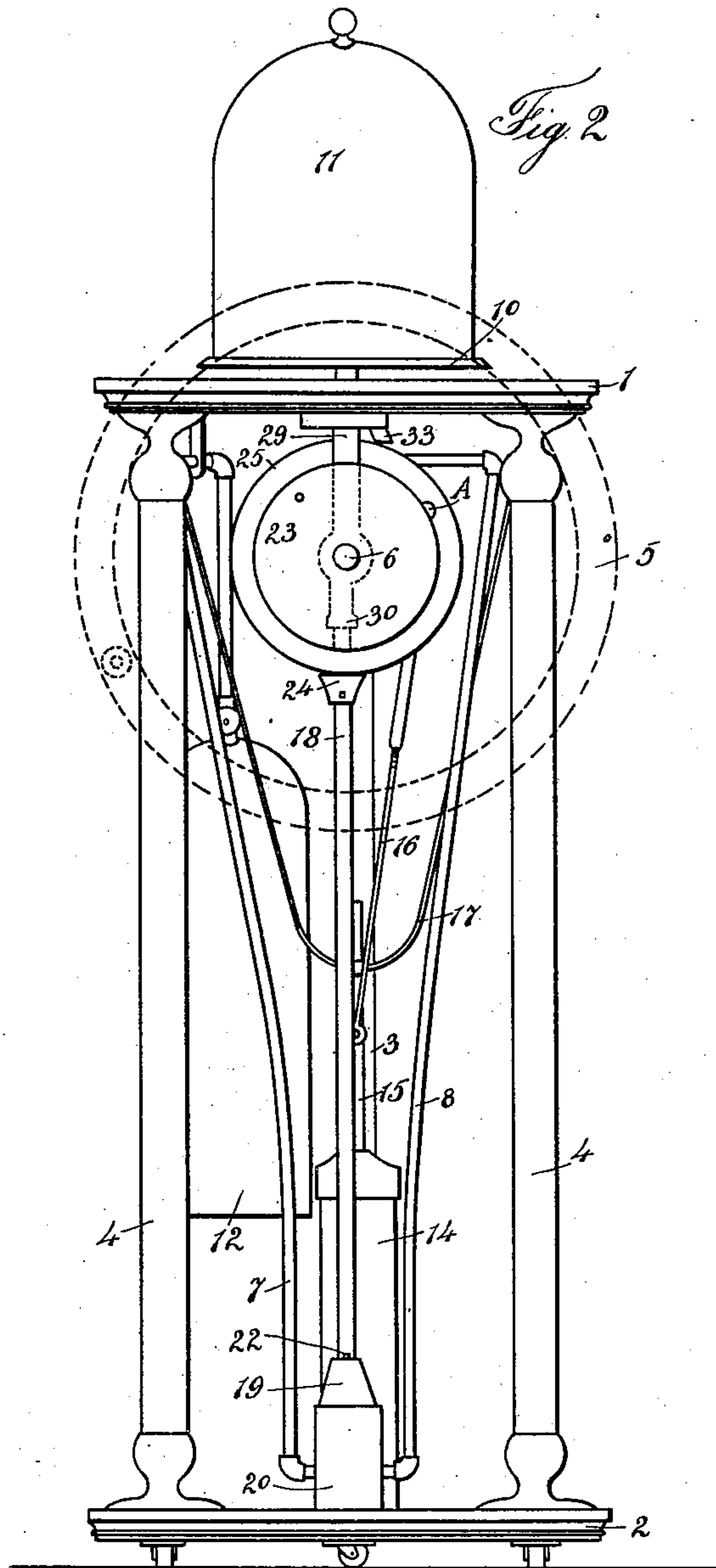
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2 SHEETS—SHEET 2.



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GEORGE H. MOHLER, OF FREMONT, NEBRASKA, ASSIGNOR TO JOSEPH PASCOE, OF FREMONT, NEBRASKA.

AIR-PUMP.

SPECIFICATION forming part of Letters Patent No. 742,342, dated October 27, 1903.

Application filed July 12, 1900. Serial No. 23,325. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. MOHLER, residing at Fremont, in the county of Dodge and State of Nebraska, have invented certain useful Improvements in Air-Pumps; and I do hereby declare that the following is 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, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to a novel improvement in air-pumps and embodies an air-exhaust and an air-compressing mechanism, as will be described more fully hereinafter.

In the accompanying drawings I have shown in Figure 1 the side elevation of an air-pump embodying my invention. Fig. 2 shows an end view thereof with portions removed. Fig. 3 shows a central sectional view of the valve as used in my device. Fig. 4 shows a perspective of the valve as detached.

My invention comprises, essentially, a suitable standard comprising the table 1, the legs 3 and 4, and the base 2. Secured to the table 1 is a hanger 32 and a hanger 29, said hanger 29 being adapted to revolvably support, in conjunction with said hanger 32, an ordinary shaft 6, provided with an operating-wheel 5. Secured to this shaft are the disks 23 and 25, the first of which is provided with an inwardly-projecting pin 27 and the second with an inwardly-projecting pin 28, said pins being placed within a plane passing through the center of said shaft 6 and upon opposite sides of said shaft, as will be understood in referring to Fig. 1. The disk 25 is further provided with a second projecting pin A, which pin is adapted to movably receive a pitman 16, the lower bifurcated end of which is secured to a ball B, secured to the piston-plunger 15.

Secured to the lower portion of the table 1 is a pawl 33, which is adapted to loosely slide upon the disk 25 when said disk is turned in a proper direction, but immediately binds and checks this disk when the shaft 6 is turned in a wrong direction.

The hanger 29 is provided with the lower

socket projection 30, within which is held the upper end of a rock-shaft 18, and this rock-shaft 18 is provided with a table 24, provided with two upwardly-extending pins 26 upon opposite sides and so arranged that when one pin comes within the path of the disk-pin 27 and the remaining pin within the path of the disk-pin 28 this shaft 18 is rocked from side to side in opposite directions as these revolving pins 27 and 28 encounter the pins 26.

Secured to the base 2 is a valve-housing 20, provided with the escape-ways *x* and *y*, preferably extending in opposite directions, one of said escape-ways being in communication with the pipe 7 and the remaining escape-way in communication with the pipe 8, as more clearly shown in Fig. 2. Rocking within the conical seating within this housing 20 is an approximately cone-shaped valve 19, which valve is provided with the escape-ways 39, 40, 41, and 42, the upper opening 43, and the lower opening 37, which opening 37 is closed below by means of the screw 38. The opening 43 has an additional opening 35 in the shape of a keyway, within which is held a key 22, forming part of the rock-shaft 18, as clearly shown in Fig. 3, so that as the shaft is reciprocated from side to side the cone-shaped valve is carried with the same.

Working within the seating 43, as is shown in Fig. 3, is a spring 36, so that the valve 19 is normally forced downward into a closed seating within the valve-housing 20. This spring also permits the ready removal of the shaft 18, which by virtue of the said spring is normally pressed upward and so revolvably held within the socket 30. In order to move this shaft 18 within the socket, it is simply necessary to depress the shaft, when it may be removed. After the shaft 18 is removed the cone-valve 19 of course can also be readily removed.

To prevent the cone-valve 19 being carried too far in being rocked by the shaft 18, I provide a pin 34, forming part of the housing 20, and a pin 31, which pin 31 is secured to the cone 12 and in striking the pin 34 acts as a stop. Extending from this housing 20 and communicating therewith is a pipe 21, which pipe is positioned a suitable distance below

the escape-ways x and y , as is shown in Fig. 1. In Fig. 4 I have shown the cone-valve 19 provided with the openings 39 and 42 and the openings 40 and 41. It will be noticed that the openings 40 and 41 are positioned below the openings 39 and 42. These openings 40 and 41 are so positioned that they would come in alinement with the pipe 21, while the openings 39 and 42, as has been set forth, are adapted to come in alinement with the escape-ways x and y .

Positioned adjacent to the valve-housing 20 is an ordinary pump 14, provided with a piston, the rod 15 of which projects beyond the pump and is given stability by means of the brace-rods 17, as will be understood in referring to Fig. 2, while the pitman 16 is secured to this piston-rod 15. The pipe 21, in alinement with the openings 40 and 41, enters this pump 14 and is in direct communication therewith.

The table 1 above is provided with a disk 10, into which is lead a cocked pipe 8, provided with the cock 9, and this pipe 8, extending downward, is connected to the escape-way y , while a pipe 7 extends from the escape-way x and is lead into a receptacle 12, as is shown in Fig. 1, the receptacle being secured by any suitable means, while the pipe is provided with the stop-cock 13.

An ordinary bell-jar 11 is adapted to fit upon the disk 10.

When all the instrumentalities have been properly arranged, as shown in Fig. 1, for instance, on turning the operating-wheel 5 in a proper direction the bell-jar 11 would be exhausted, while the receiver 12 would be conjointly supplied with compressed air. It would be impossible to rotate this wheel 5 in the wrong direction or against the stroke because of the pawl 33. In its upward passage the piston within the pump 14 would draw the air through the valve 19 and pipe 8 out of the bell-jar 11. During this operation the opening 40 registers with the pipe 21, while the opening 39 communicates with the opening x , as would be understood in referring to Fig. 3, the communication between the openings 39 and 40 being provided by means of the central opening 37 within the valve 19. No air would escape out of the openings 41 and 42, for the reason that when the openings 39 and 40 register these openings 41 and 42 are blind, for the reason that they face solid portions within the valve-housing 20. Now in its upward stroke the air would be exhausted out of the bell-jar 11, this air filling the pump 14. By the time that the piston were in its highest position the pin 28 would engage the pin 26, as is shown in Fig. 1, to throw the valve 19 to bring the opening 42 into communication with the escape-way y , so that the opening 41 would be brought into communication with the pipe 21, bringing the pipe 7, secured to the receiver 12, into place, so that the air that had just been drawn from the bell-jar

11 would now be forced into the receiver 12, the valve-openings 39 and 40 being blind in this operation in that they in turn had been brought against solid portions of the valve 20. The shafting 6 being revolved would in its next half-revolution bring the pin 27 into action and again throw the valve 19 to block off the receiver communication and again bring into play the bell exhaust-duct, so that the operation could be continued until the working of the pump became so hard as to show that the proper exhaust or compression had been provided. In order to remove the receptacle 12, it is simply necessary to close its connected cock 13 and remove the same from the pipe 7. The receiver 11 of course would have to remain as long as this air-rarefied receptacle is to be used.

Now having thus described my said invention, what I claim as new, and desire to secure by United States Letters Patent, is—

1. The combination with a suitable standard provided with a main driving-shaft, of two disks mounted on said driving-shaft, each disk being provided with an inwardly-extending pin, a vertical rock-shaft positioned between said disks, a disk secured to said vertical rock-shaft provided with two upwardly-extending lugs adapted to be engaged by aforesaid disk-pins, a valve-housing, a two-way valve within said housing secured to said rock-shaft, an air-pump actuated by the driving-shaft in communication with said two-way valve, an intake-pipe extending from a suitable receiver entering one of said valve-ways, an exit-pipe extending from the remaining valveway in communication with a compressed-air tank, said instrumentalities being so arranged that in operating aforesaid air-pump, the exhaust-stroke is adapted to empty said receiver and compress the air within said tank.

2. The combination with a suitable supporting-standard of a driving-shaft of two disks secured to said driving-shaft each disk being provided with a pin, said pins being at opposite points and facing toward one another, an air-pump, the piston-rod of which is in connection with one of said disks, a rock-shaft, a table secured to said rock-shaft provided with projecting lugs within the path of aforesaid pins, a valve-housing in connection with said pump and provided with two escape-ways, a two-way valve within said housing, its ports or ways being adapted to come in alinement with the two escape-ways within said valve-housing, the aforesaid rock-shaft being removably secured to said two-way valve, the pipe connecting aforesaid air-pump to said valve-housing coming in alinement with each of the aforesaid two-way valves, said two-way valves being adapted to come alternately in communication with the two escape-ways within aforesaid valve-housings, an air-exhaust receiver in pipe communication with one of said escape-ways within said

valve-housing, and a compressed-air tank in
pipe communication with the remaining es-
cape-way, within said valve-housing, said in-
strumentalities being arranged so that afore-
5 said driving-shaft simultaneously operates
aforesaid pump and rock-shaft to actuate said
valve in such a manner that the pump ex-

hausts air from the receiver and directs and
compresses it within said compressed-air tank,
as set forth.

GEORGE H. MOHLER.

In presence of—

ROSCOE H. PECK,
SETH C. WILSON.