

No. 766,876.

PATENTED AUG. 9, 1904.

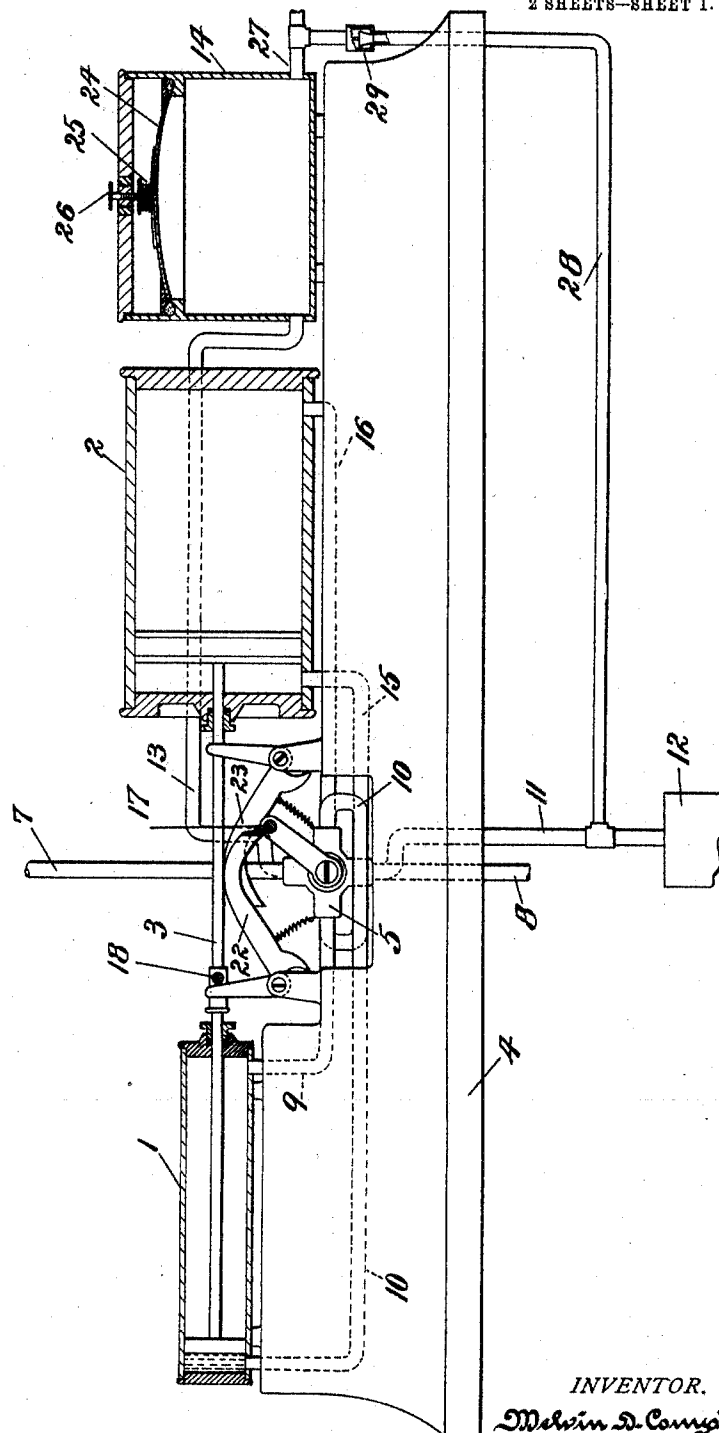
M. D. COMPTON.
MOTOR DRIVEN EXHAUSTER AND COMPRESSOR.

APPLICATION FILED SEPT. 4, 1903.

NO MODEL.

2 SHEETS--SHEET 1.

Fig. 1



WITNESSES:

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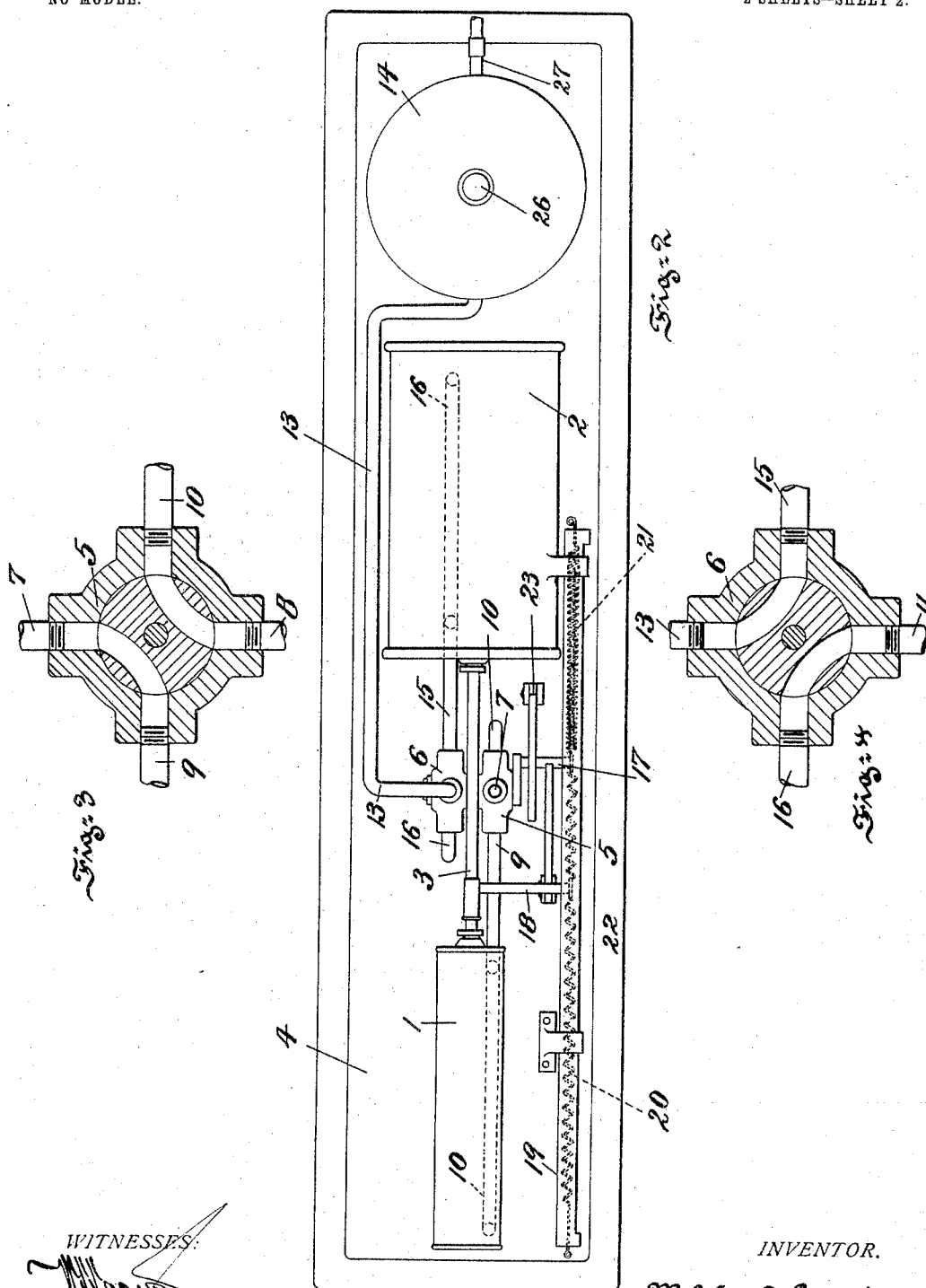
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2 SHEETS—SHEET 2.



WITNESSES:

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INVENTOR.

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UNITED STATES PATENT OFFICE.

MELVIN D. COMPTON, OF NEW YORK, N. Y.

MOTOR-DRIVEN EXHAUSTER AND COMPRESSOR.

SPECIFICATION forming part of Letters Patent No. 766,876, dated August 9, 1904.

Application filed September 4, 1903. Serial No. 171,919. (No model.)

To all whom it may concern:

Be it known that I, MELVIN D. COMPTON, a citizen of the United States, residing at the city of New York, in the county of New York and State of New York, have invented a certain new and useful Motor-Driven Exhauster and Compressor, of which the following is a specification.

One object of the present invention is to provide simple, reliable, and efficient means for increasing the pressure of, for example, gas from the mains and feeding the same at substantially uniform pressure for use.

Another object of the invention is to provide for maintaining independent of the apparatus a supply of gas in the event of stoppage of the apparatus, for example, from some external cause; and another object of the invention is to provide for shutting off the supply of gas through the apparatus in the event of failure of the supply of water for driving the same.

To these and other ends hereinafter set forth the invention, stated in general terms, comprises the improvements to be presently described and finally claimed.

The nature, characteristic features, and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is a view, partly in central section, illustrating apparatus embodying features of the invention. Fig. 2 is a top or plan view of the same, and Figs. 3 and 4 are diagrammatic views illustrating the controlling-valves.

In the drawings, 1 is a water or driving cylinder, and 2 is a driven or working cylinder. These cylinders are fitted with pistons each connected with the piston-rod 3, and they may be mounted along with the other parts of the apparatus upon a suitable base 4, so as to cause the apparatus to constitute a unit. Each of these cylinders is provided at or near its ends with ports, and there is a four-way valve or its equivalent for each cylinder. The valve for the water-cylinder is designated 5, and the valve for the other cylinder is designated 6.

7 is an inlet and 8 an outlet pipe for water.

9 is a pipe leading from the valve 5 to the

right-hand end, and 10 is a pipe leading from the valve to the left-hand end, of the cylinder 1.

11 is a pipe leading, for example, from the gas-meter 12 to the valve 6, and 13 is a pipe leading from the valve 6 to the equalizer 14 to be presently described.

15 is a pipe leading to the left-hand end, and 16 is a pipe leading to the right-hand end, of the cylinder 2.

The plugs of the valves 5 and 6 are both connected with a crank-arm 17. The piston-rod 3 is provided with an arm 18, which serves to reciprocate the bar 19, arranged to slide in suitable ways on the bed.

20 and 21 are springs having their ends respectively connected with the bar 19 and with the crank-arm 17.

Disposed in range of the arm 18 are the tails of detents 22 and 23, which latter are pivoted to the base and are provided with fingers adapted to engage the crank-arm 17 and with stops. As shown, these detents are equipped with springs which tend to draw them into engagement with the crank-arm 17 or lacking that into position for being held by their stops.

The equalizer 14 consists of a receptacle having a flexible elastic wall or diaphragm 24, and there may also be provided a spring 25, having one of its ends in engagement with the diaphragm 24 and the other of its ends in engagement with an adjusting-screw 26.

27 is a pipe for conveying the gas under pressure for consumption.

28 is a by-pass provided with a check-valve 29 and adapted to close downward, as shown in the drawings.

In use water is alternately admitted and exhausted from the ends of the cylinder 1, causing the piston-rod to reciprocate back and forth, so that gas is taken into the ends of the cylinder 2 and passed therefrom to the equalizer 14. Assuming that the parts occupy the position shown in Figs. 1 and 2, the piston-rod is moving toward the left, the spring 20 is under tension, and the detent 22 is holding the crank-arm 17. Water is passing by way of 7 and 9 to the right-hand end of the cylinder 1 and exhaust-water is passing from the

left-hand end of the cylinder 1 by 10 and 8. Gas is passing under compression by 15 and 13 to the equalizer and is being drawn into the right-hand end of the cylinder 2 by way of 11 and 16. The arm 18 contacting with the tail of the detent 22 lifts it, whereupon the spring 20 rapidly throws the bell-crank over until it is engaged by the detent 23, and this is true irrespective of the speed of the piston. However, this movement of the crank-arm 17 reverses the position of the plug-valves and causes a stroke of the pistons toward the right, and at each stroke there is a repetition of the described movements. Obviously the springs 20 and 21 cause the valves to move quickly, which is advantageous, and the arrangement of the ports of the valve 6 causes the gas under compression to have communication only with the equalizer and not with the meter. Furthermore, if the water-supply should be interrupted there is no communication for gas through any part of the cylinder 2 between the pipe 11 and the equalizer 14. This is obviously advantageous. Under such circumstances or any others causing stoppage of the apparatus the pressure in the equalizer will of course fall off, and the pressure in the mains will cause the check-valve 29 to open, thus affording a supply of gas by way of the by-pass 28, it being understood that the pressure in the equalizer when the apparatus is running is sufficient to keep the check-valve 29 seated.

It will be obvious to those skilled in the art to which my invention appertains that modifications may be made in detail without departing from the spirit thereof. Hence I do not limit myself to the precise construction and arrangement of parts hereinabove set forth and illustrated in the accompanying drawings; but,

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of cylinders and their pistons and their motive-fluid connections, with valve devices for controlling the cylinder

outlets and inlets for the fluid acted upon, and means operated by the pistons for instantly actuating and positively holding each and all of said valve devices, substantially as described.

2. The combination of cylinders and their pistons and their motive-fluid connections, with valve devices for controlling the cylinder outlets and inlets for the fluid acted upon, and means operated by the pistons for instantly actuating and positively and simultaneously holding each and all of said valve devices irrespective of the speed of the piston, substantially as described.

3. The combination of cylinders and their pistons, a four-way plug-valve and its fluid connections for controlling the actuating fluid, a four-way plug-valve and its connections for controlling the cylinder outlets and inlets for the fluid acted upon, a crank-arm for operating the plugs of the valves for positively positioning the plug-valves to control all the valve outlets and inlets, springs having one of their ends connected with the crank-arm and the other of their ends operated by the pistons, detents for holding the plugs, and a projection connected with the pistons for releasing the detents, substantially as described.

4. The combination of cylinders and their pistons, a four-way plug-valve and its fluid connections for controlling the actuating fluid, a four-way plug-valve and its connections for controlling the cylinder outlets and inlets for the fluid acted upon, a crank-arm for operating the plugs of the valves, a reciprocating bar operated by the pistons, springs having their ends attached to the crank-arm and to the bar, detents for holding the plug-valves, and a projection operated from the pistons and adapted to trip the detents, substantially as described.

In testimony whereof I have hereunto signed my name.

MELVIN D. COMPTON.

In presence of—

K. M. GILLIGAN,
W. J. JACKSON.