SIMONDS, SILVESTER & CALDWELL.

Gas Regulator.

No. 42,023. Patented March 22, 1864.

Fig. 1.

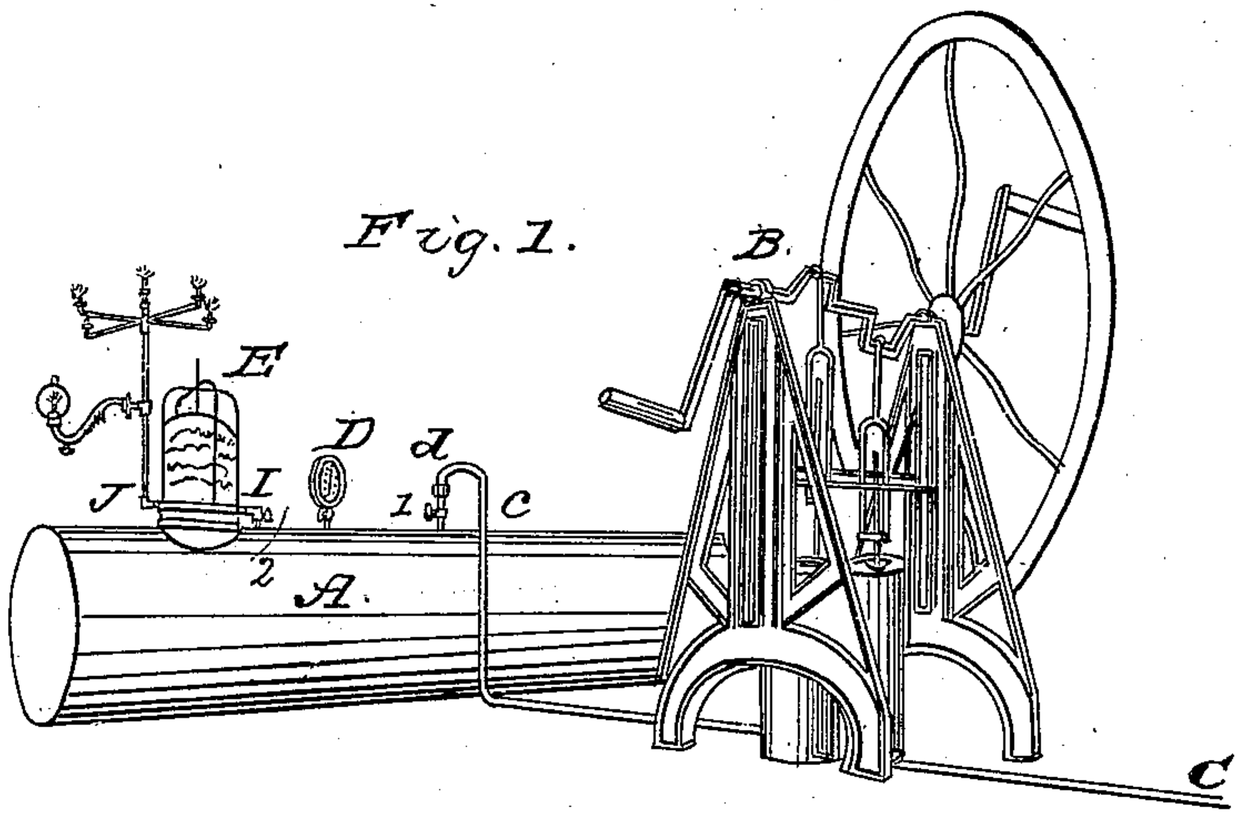


Fig. 3.

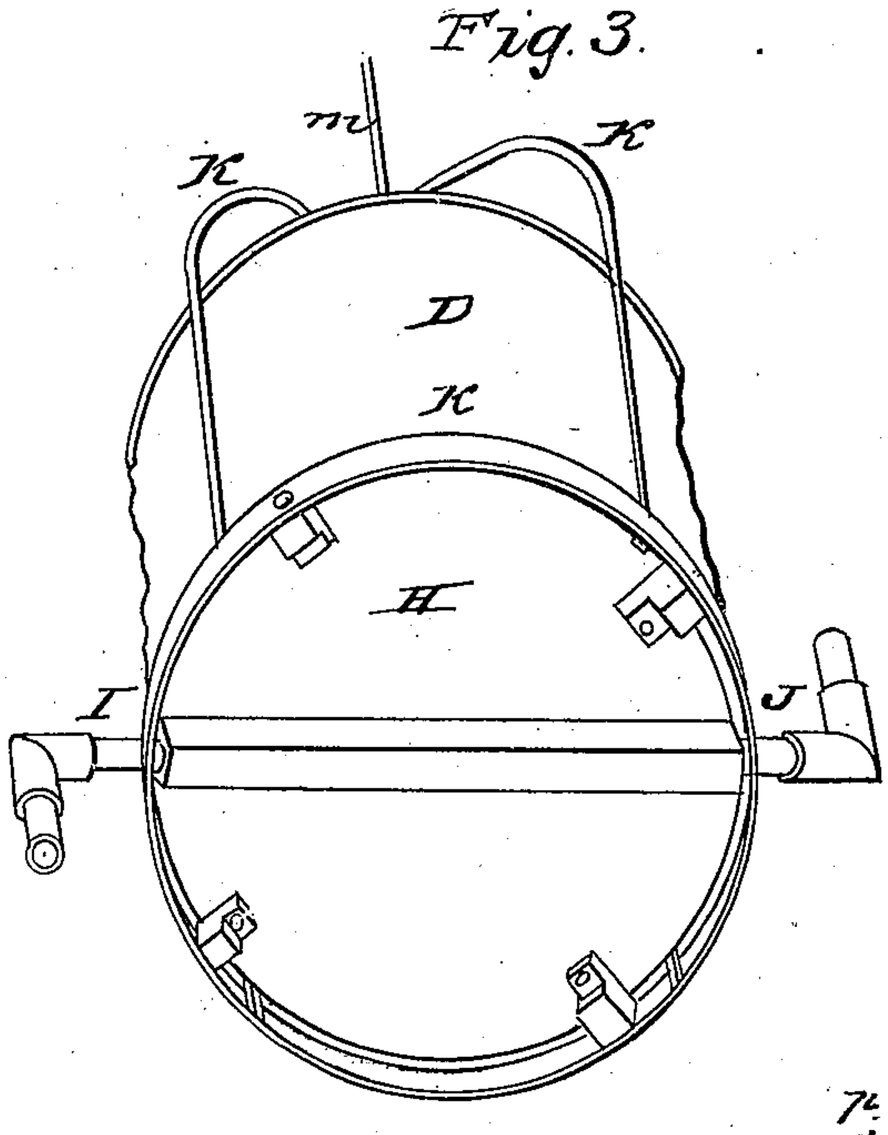
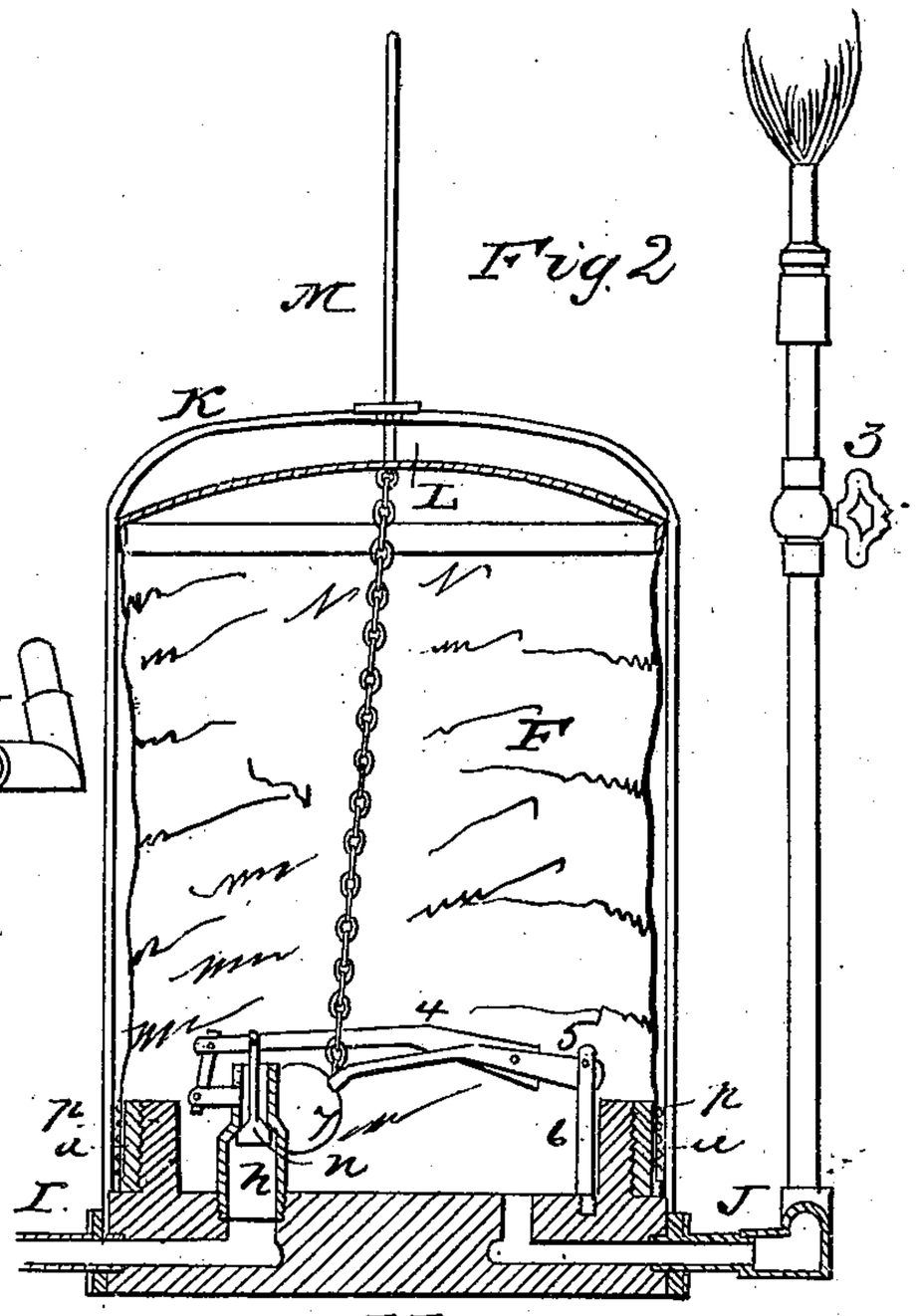


Fig. 2



H

Witnesses

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UNITED STATES PATENT OFFICE.

WARREN A. SIMONDS AND ALBERT H. SILVESTER, OF BOSTON, AND CHARLES CALDWELL, OF CHELSEA, MASSACHUSETTS.

IMPROVED APPARATUS FOR REGULATING THE PRESSURE OF GAS.

Specification forming part of Letters Patent No. **42,023**, dated March 22, 1864.

To all whom it may concern:

Be it known that we, WARREN A. SIMONDS and ALBERT H. SILVESTER, of Boston, in the county of Suffolk and State of Massachusetts, and CHARLES CALDWELL, of Chelsea, in the county and State aforesaid, have invented a new and improved method of reducing the pressure of gas in town and city works and wherever it may be used and compressed to a high pressure; and we do hereby declare that the following is a full and exact decription thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of our invention consists in attaching a regulator to the supply-pipe from the street-main for the purpose of reducing the pressure to any desired standard below the street-pressure; also, for regulating and reducing the pressure of gas while escaping from a vessel or reservoir when charged to three hundred pounds to the square inch, more or less.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation.

Figure 1 is a perspective view of our apparatus as complete for reducing the pressure of compressed gas at a high pressure. Fig. 2 is an interior and sectional view of the regulator. Fig. 3 is a perspective view of the bottom or base of the regulator.

Fig. 1, letter A represents a cylinder-shaped vessel or reservoir, into which the gas may be forced with the double-cylinder force-pump B. Pipe C, from the pump, to be connected to the supply-pipe of the street-main to supply the pump with gas, from thence to be forced through the pipe C into the reservoir A to such pressure as may be desired, which will be indicated by the pressure or steam gage D, after which shut the valve-cock 1 and disconnect the pipe C from the reservoir A at the union-joint *d*. Cock 2 supplies the regulator E with gas at a very low pressure only as fast as it is consumed or burned for illuminating purposes.

Fig. 2, letter H represents the bottom or base of the regulator, on the inside of which, near the double rim, (which is made so as to be screwed together at *a p p a*,)is attached a valve-chamber, *h*, inside of which is a cone-shaped valve, *n*, and a valve-seat at the upper part of the chamber *h* ground air-tight. The rod attached to the valve is connected with lever 4 near the end, and near the opposite end of lever 4 is connected another lever, 5, with a rivet to work in a slot, so that it may work up or down with ease. Lever 5 is made fast at one end to a post, 6, while the other has a leaden weight or ball, 7, so as to open the valve *n* and drop down against any pressure below three hundred pounds. The diaphragm F is fastened to the rim of the oval top L, and also to the rim *a*, which is screwed to the inside rim, *p*. *k k* is a skeleton frame, the rim of which is fastened with screws to the bottom or base H. Rod *m* and chain 8 are connected together and fastened in the center of the oval top L. The chain 8 is also connected to a swivel-joint on the lever 5 near the leaden ball 7. Through the center of the top frame, *k k*, is an aperture or hole for the rod *m* to pass through. It also serves as a guide for the diaphragm F in rising and falling while being inflated through the pipe or inlet I or depressed by the escape of gas through the pipe or outlet J, cock 3, to the burner. When the diaphragm is full, the valve *n* is shut by means of the chain 8, which, through its attachments, before described, acts upon said valve in a manner conforming to the inflation or depression of the diaphragm. The gas is supplied to the chamber of the diaphragm through the regulating-valve *n* no faster than it is allowed to escape through the outlet-pipe J. Any number of burners may be attached.

Fig. 3 is an exterior view of the bottom or base of the regulator, showing the projection across the center drilled and tapped for the connection of pipes I and J, also showing the projections to which the rim of the frame *k k k* is attached and fastened with screws.

We do not claim as our invention the compression of gas in a cylinder-shaped reservoir or vessel by the action of a force-pump, as that is not new.

What we do claim as our invention, and desire to secure by Letters Patent, is—

1. A regulator with a double leverage, connected to the rod of the valve *n*, as herein described.

2. The connection of a chain to the end of lever 5 near ball 7, also to the center of the oval top L, to be operated substantially as and for the purpose herein set forth.

3. The attachment of a leaden ball to one end of lever 5, for the purpose as herein specified.

4. The attachment of the diaphragm F to the rim of top L and to the screw-ring *a*, the same to operate as herein set forth.

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CHARLES CALDWELL. [L. S.]

In presence of—
J. L. C. AMEE,
WM. C. DRESSER.