E. O. MARTIN.

GAS-REGULATOR.

No. 187,026. Patented Feb. 6, 1877.

Fig. 1.

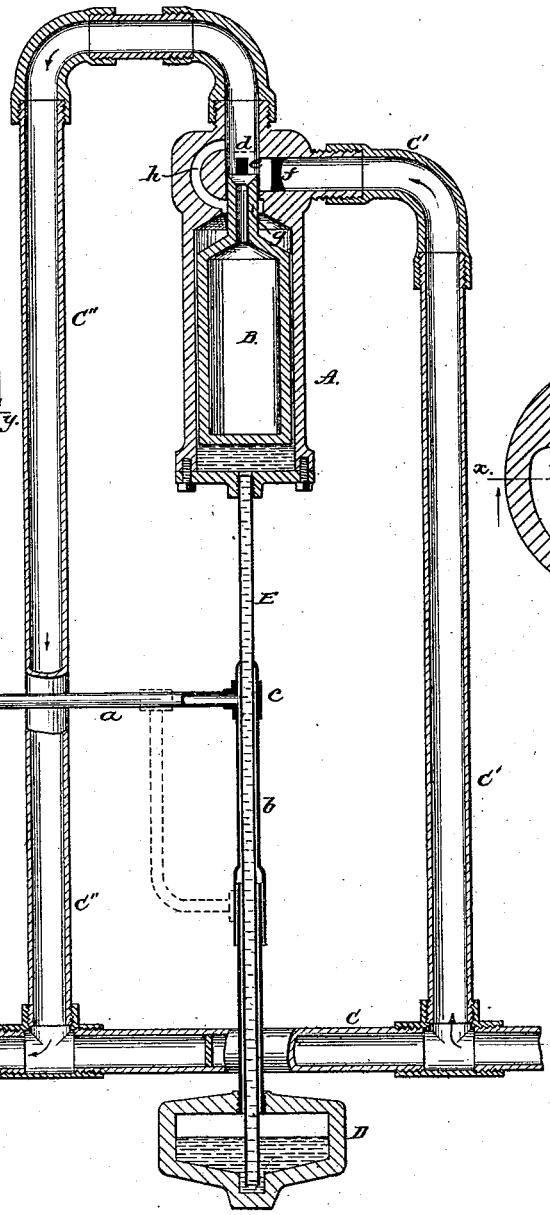


Fig. 2.

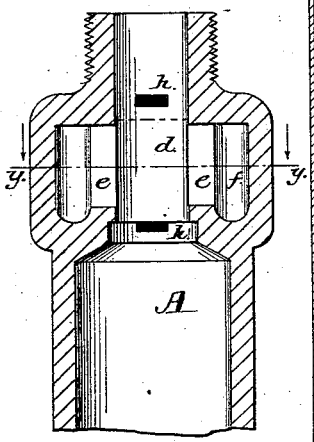
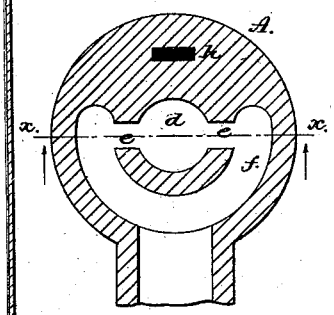


Fig. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

EMORY O. MARTIN, OF GREECE CITY, PENNSYLVANIA.

IMPROVEMENT IN GAS-REGULATORS.

Specification forming part of Letters Patent No. **187,026**, dated February 6, 1877; application filed November 18, 1876.

To all whom it may concern:

Be it known that I, EMORY O. MARTIN, of Greece City, in the county of Butler and State of Pennsylvania, have invented a new and Improved Gas-Governor, of which the following is a specification:

Figure 1 is a side elevation, in section, of my improved gas-regulator. Fig. 2 is a central vertical section of the valve-seat and a portion of the float-chamber, taken on line *x x* in Fig. 3; and Fig. 3 is a horizontal section on line *y y* in Fig. 2.

Similar letters of reference indicate corresponding parts.

My invention relates to gas-regulators for controlling the supply of gas used in steam-boilers as fuel; and it consists in the arrangement of a mercury-chamber, from which projects a tube connected with a float-chamber containing a float, upon the upper end of which a valve is formed, that closes or opens the gas-supply ports as the float is moved by the action of the mercury when its level is changed by the increase or diminution of pressure upon the surface of the mercury in the said chamber, the chamber being connected with the boiler, so that the boiler-pressure acts through the agency of the column of mercury and float in controlling the supply of gas, and by this means regulating the boiler-pressure.

Referring to the drawing, D is a mercury-chamber, which is connected with the steam-room of the boiler by means of the pipes *a b*, which are connected at right angles by means of the T *c*. A pipe, E, passes downward through the T *c* and pipe *b* into a cavity formed in the bottom of the mercury-chamber D. A steam-joint is made between the T *c* and pipe E, and there is sufficient space between the pipes E and *b* to form an open passage between the mercury-chamber D and the steam-room of the boiler. The pipe E extends upward, and is connected with a float-chamber, A, that contains the float B. Upon the upper end of the float-chamber A a valve-seat, *d*, is formed, in which the supply-ports *e e* are made, which connect with a semi-annular passage, *f*, provided in the upper part of the casting of the chamber A. A valve, *g*, is formed upon the upper end of the float B, which is cylindrical and beveled downward toward its center, forming a sharp edge, which removes deposits made by the gas upon the valve-seat. A passage, *h*, connects the space above the valve-seat with the chamber A, for the purpose of equalizing the pressure on the valve *g*. C is a gas-supply pipe, that leads directly to the boiler-furnace, and C′ is a branch pipe leading to the supply-ports *e e* of the regulator. C″ is a pipe leading from the gas-regulator to the pipe C. A stop-cock is placed in the pipe C, between the pipes C′ and C″, and the pipes C′ C″ are also provided with stop-cocks, by which the gas may be entirely shut off from the regulator, if required. The pipe *a* is connected with the boiler, so that the pressure upon the surface of the mercury contained in the chamber is the same as that carried by the boiler. The length of the pipe E is such that the column of mercury contained by it is counterbalanced by the pressure upon the surface of the mercury in the chamber D. The pipe C is stopped between the pipes C′ and C″, and the gas flows through the pipe C′, through the ports of the regulator and pipe C″, to the boiler-furnace. If the supply of gas is too great, an increase of pressure in the boiler results, and an increased pressure is exerted upon the surface of the mercury in the chamber D, which drives the mercury through the tube E into the float-chamber A, which raises the float B, and causes the valve *g* to close the ports *e* more or less, allowing only enough gas to pass to the boiler-furnace to maintain the required boiler-pressure.

When the pressure in the boiler decreases, the operation is the reverse of that just described. It requires only a small increase or diminution of boiler-pressure to effect the opening or closing of the valve. If it is found necessary to vary the pressure, a portion of the pipe E may be made of flexible material, and the pipes *a* and *b* may be connected by means of a flexible pipe, as indicated in dotted lines, instead of being rigidly connected by a T, when the mercury-chamber may be raised, diminishing the distance between the mercury-chamber and float-chamber, thus practically shortening mercury-column, so that less pressure is required to operate the valve.

I do not confine my invention to any par

ticular proportions or arrangements of parts, as they may be varied to meet the requirements of the boilers to which it is applied.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The mercury-chamber D, provided with pipes *a b*, in combination with the float-chamber A, pipe E, pipes C′ C″, float B, valve *g*, and valve-seat *d*, having ports *e*, substantially as herein shown and described.

EMORY OSCAR MARTIN.

Witnesses:
WM. C. DAUBENSTECK,
R. O. MARTIN.