

T. H. DODGE.  
Gas Regulator.

No. 11,154.

Patented June 27, 1854.

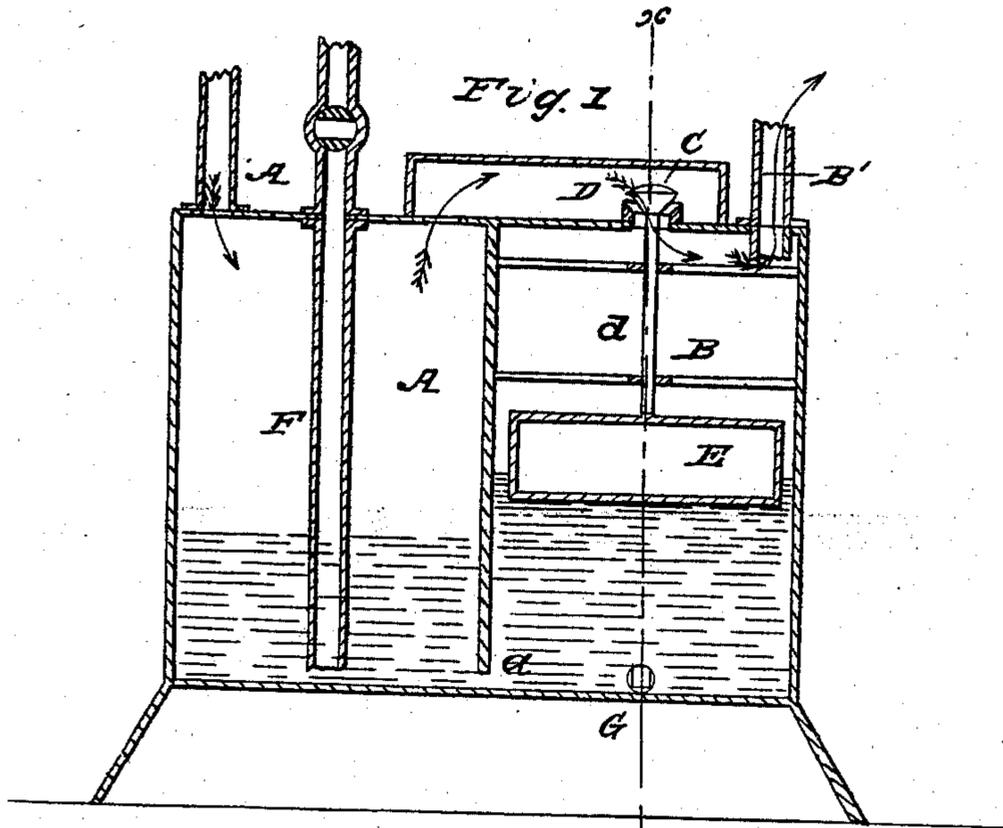
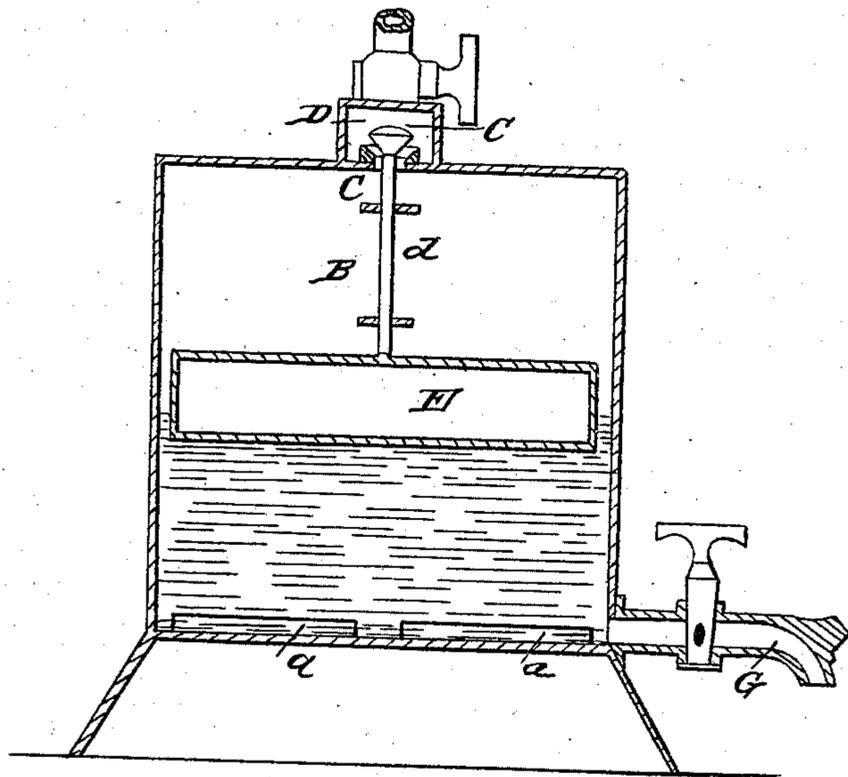


Fig. 2



Witnesses  
John A. Sanphier  
Anna J. Stevens.

Inventor  
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# UNITED STATES PATENT OFFICE.

THOMAS H. DODGE, OF NASHUA, NEW HAMPSHIRE.

## GAS AND LIQUID REGULATOR.

Specification of Letters Patent No. 11,154, dated June 27, 1854.

*To all whom it may concern:*

Be it known that I, THOMAS H. DODGE, of Nashua, in the county of Hillsboro and State of New Hampshire, have invented a new and useful Improvement in Regulators for Equalizing the Flow of Gases and Fluids; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, is a vertical section through the center of a gas regulator, constructed according to my invention. Fig. 2, is a vertical section at right angles to Fig. 1, in the line, *x, x*.

Similar letters of reference indicate corresponding parts in both figures.

This invention is intended principally to be employed as a gas regulator to regulate the consumption of a number of burners, by causing the pressure on each that is lighted, to be uniform and uninfluenced by the number of the others that are lighted, or by the pressure on the main. It is also adapted to regulate the flow of fluids at a given pressure, without regard to the quantity used, or any variation in the size of the outlet, or in the pressure on the main or inlet.

The invention consists in the employment of two chambers, placed side by side, and communicating with each other at the bottom through an open passage, and at the top by a passage which is opened and closed by a valve attached to a float which is placed in one of the chambers, to be acted upon by water or the liquid contained in the lower parts of the chambers. The chamber containing the float is in communication with the outlet where the gas or fluid is consumed or discharged, and the other chamber receives the inlet pipe. The pressure of the gas or fluid on the surface of the water or liquid in the inlet chamber forces the water or liquid upward in the outlet chamber, in which the pressure varies according to the number of burners lighted, or the area of the outlet, and thus causes the water level to vary, and the float to give the valve a suitable amount of opening. The float and valve are also influenced by variations in the pressure in the inlet pipe, so as to contract the opening of the valve when the pressure increases, and vice versa.

To enable others skilled in the art to

make and use my invention I will proceed to describe its construction and operation.

A, is the inlet chamber, receiving the inlet pipe, A'; and B, the outlet chamber receiving the outlet pipe, B'. The two chambers consist of sheet metal with a single partition across the center, and narrow passages *a, a*, at the bottom of the said partition forming a free communication between the two chambers. In the top of the inlet chamber, A, there is an open passage, *b*, and in the outlet chamber, B, an opening, *c*, fitted with a conical valve, C, which opens upward. The openings, *b*, and *c*, are covered by a valve box, D, which forms a means of communication through them between one chamber and the other. E, is the float which is attached to the valve by a rod, *d*. F, is a pipe for supplying the regulator with water, and G, is a cock for drawing off the water.

The chambers are filled with water to such a height that when the valve, C, is closed, as will be the case when the inlet is closed, the level will be at a short distance below the float which will be suspended by the valve. When the inlet and outlet are open, and the gas enters the chamber, A, it will force down the water in that chamber, and up in the inlet chamber until it reaches and lifts the float and opens the valve, C, to admit the gas to the outlet chamber, B, from which it passes off by the outlet pipe. It will be understood that the nearer the pressure in the two chambers approaches to an equilibrium, the less will the level in the outlet chamber be raised, and vice versa. Now, if some of the burners are shut off, and the gas escapes less freely from B, there is a tendency to restore the equilibrium between the chambers, and the level in the outlet chamber will be reduced, the float will descend, and the opening of the valve contracted, to reduce the supply of gas, but on the contrary, if more burners are turned on, the gas escapes more freely, and there is a greater tendency to destroy the equilibrium, causing the level to rise in the outlet chamber, and the float to ascend, and give a greater opening to the valve, and thereby increase the supply. When the pressure in the main or inlet increases, the escape at the outlet is less free, and there is a tendency to restore the equilibrium between the chambers, causing the opening of the valve to be contracted; but when the pressure decreases,

the tendency to equilibrium is diminished and the opening of the valve is increased.

The pressure on the outlet may be varied, by adding to, or subtracting from the quantity of water in the regulator. If it is desired to increase the pressure, more water should be added, but if to diminish it, some should be drawn off.

The explanation of the operation of the apparatus as a gas regulator, serves to illustrate its operation as a regulator for other fluids or liquids. The liquid employed at the bottom of the chambers must always be of greater specific gravity than that whose flow is to be regulated. The apparatus will serve to regulate the pressure of steam for a steam engine, irrespectively of the pressure

in the boiler, and in that case, the chambers should be supplied with mercury in place of water, as represented.

What I claim as my invention, and desire to secure by Letters Patent, is:—

The employment for regulating the flow of gases and fluids of two chambers having communications at top and bottom, and being partly filled with water or other liquid, and furnished with a valve and float, all arranged and operating substantially as described.

THOMAS H. DODGE.

Witnesses:

JOHN C. LANPHIER,  
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