DIXWELL & DORR.

Gas Regulator.

No. 10,786. Patented April 18, 1854.

Fig. 1.

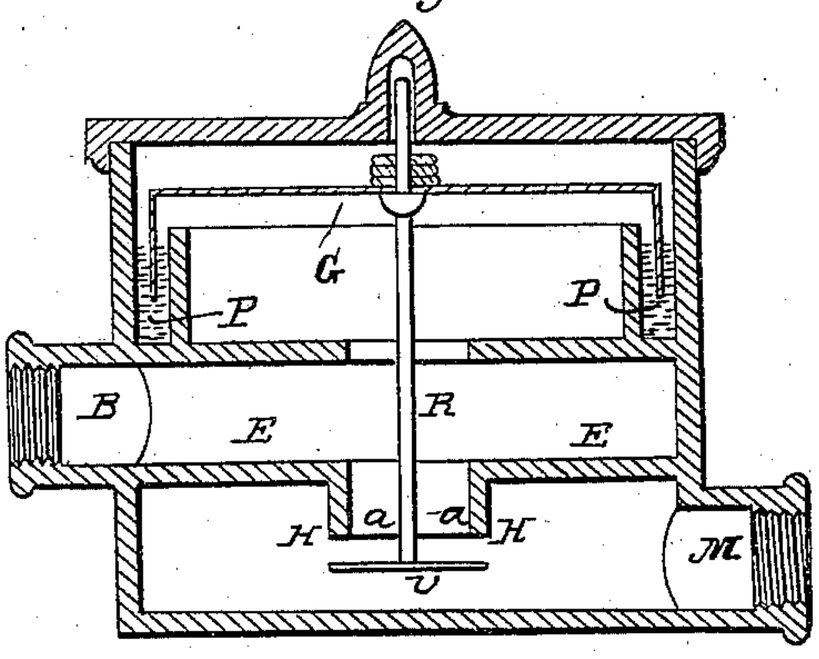


Fig. 2.

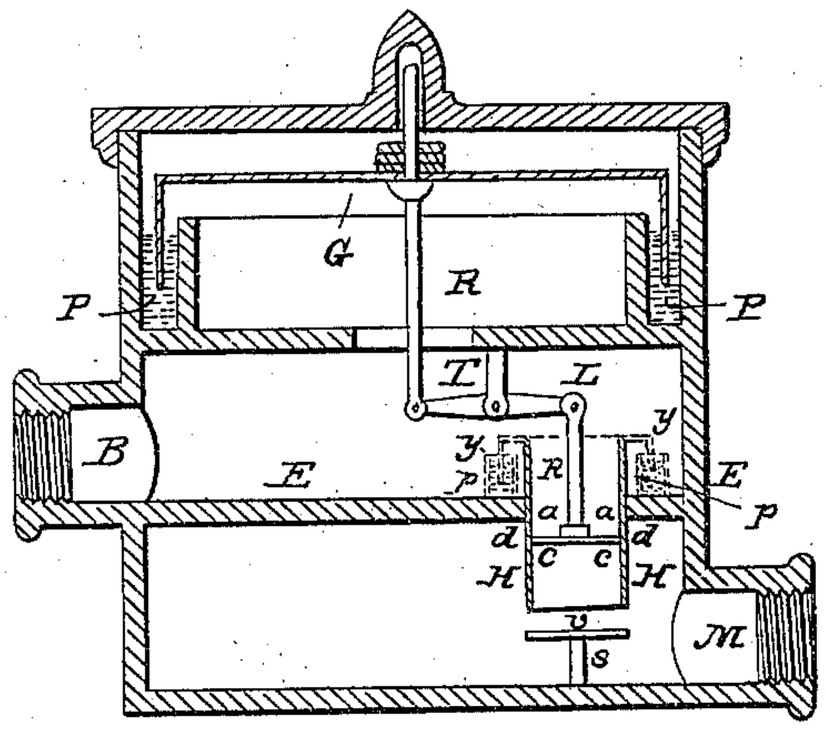


Fig. 3.

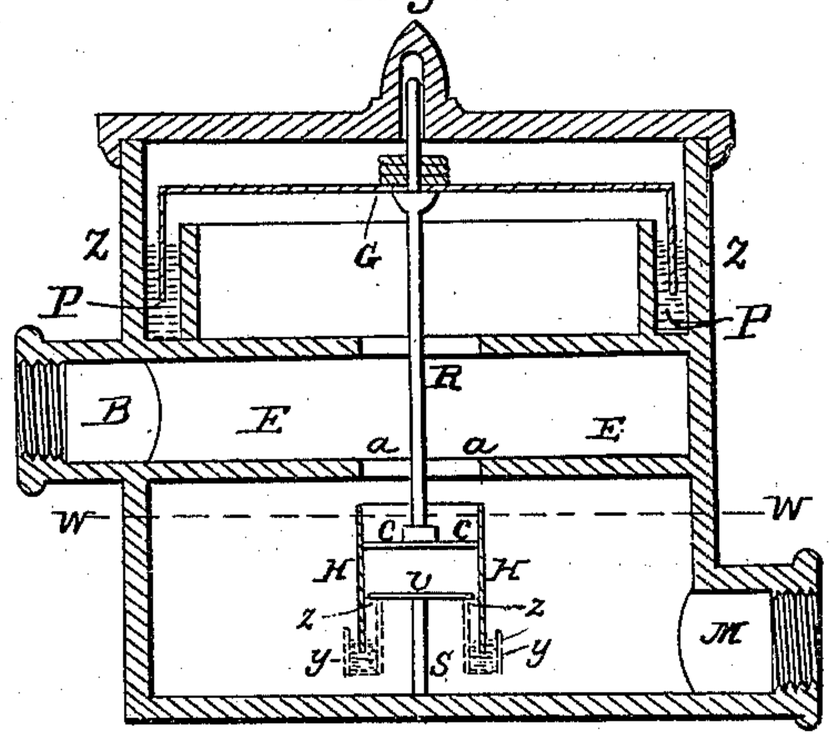


Fig. 4.

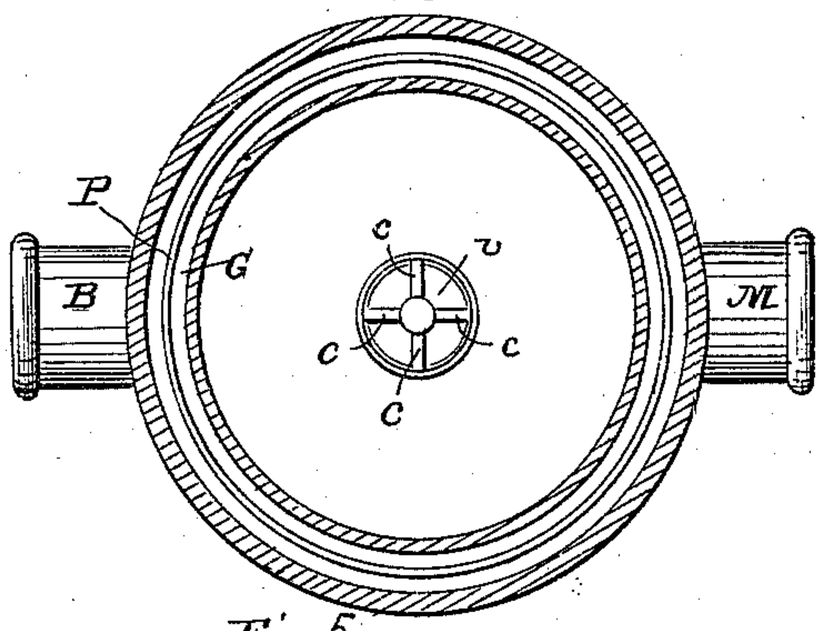
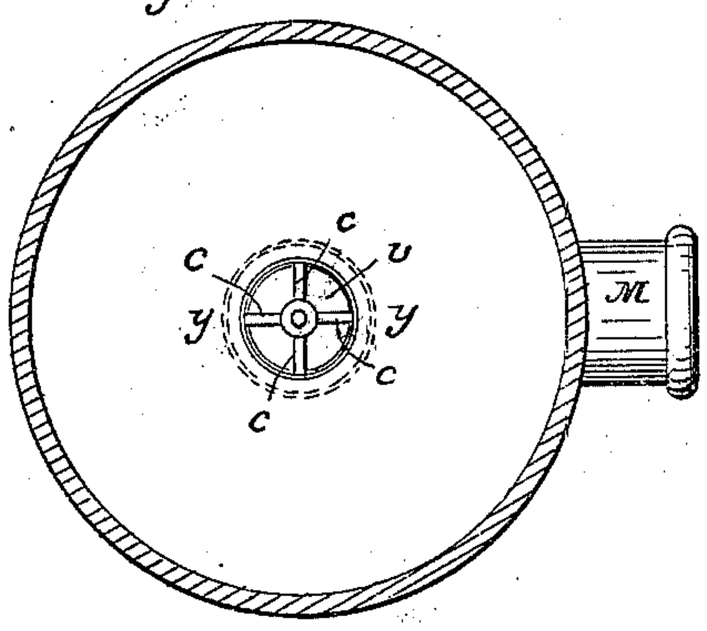


Fig. 5.



UNITED STATES PATENT OFFICE.

GEORGE BASIL DIXWELL, OF BOSTON, MASSACHUSETTS, AND JAS. A. DORR, OF NEW YORK, N. Y.

GAS-REGULATOR.

Specification of Letters Patent No. 10,786, dated April 18, 1854.

To all whom it may concern:

Be it known that we, GEORGE BASIL DIXWELL, of Boston, in the county of Suffolk and State of Massachusetts, and JAMES A. DORR, of the city, county, and State of New York, have invented a new and useful Improvement in Gas-Regulators; and we declare the following to be a full, clear, and exact description of the same, reference being had to accompanying drawings, which form a part thereof.

It is a great desideratum, in the use of gas, to maintain at the burners a low uniform pressure, and various contrivances have been invented to acomplish this object.

The machine called Clegg's regulator, which is represented in Figure 1 of the annexed drawing, is the most common, but its accuracy is seriously impaired by the disturbing pressure of the gas in the main on the surface which is interposed between the main and the branch. This difficulty has been counteracted practically, by making the floating gasometer very large in proportion to the aperture through which the gas enters; and, thus constructed, the machine is in common use. Kidder has counteracted the same difficulty by using two surfaces of equal size, upon which the disturbing pressure of the gas in the main operates, and which are so arranged as to balance each other; thus doubling the disturbed surface, and using one half of it to neutralize the other half.

Our invention consists in preventing, almost entirely, the varying pressure of the gas in the main from disturbing the regulation by disconnecting the surface, which is subject to that varying pressure from the regulating gasometer, and connecting it permanently with some other fixed part of the machine.

The accompanying drawing, Fig. 1, shows a section through the ordinary well known, or Clegg's gas regulator, in which the valve or surface V obstructs the passage of the gas through the aperture (*a*, *a*) and is moved by the rising and falling of the gasometer G. M, is the main pipe which conducts the gas from the source of production. B is the branch pipe which conducts it to the burner. P is the well known packing of mercury, water, or other liquid, in which the gasometer floats, and which prevents the escape of the gas. R is the rod which connects the valve V with the gasometer. H, H, is the valve seat, or inlet pipe. In this machine the regulation is produced by the pressure of the gas in the branch operating on the gasometer G, which by its movement causes the surface V to approach or recede from the pipe H, H, but the accuracy of the regulation is impaired by the fact that the surface V, while it is subject to the varying pressure of the gas of the main, is connected with the regulating gasometer by the rod R, and necessarily communicates to that gasometer all the perturbations which disturb it.

The accompanying drawing, Figs. 2 and 3, show some of the forms in which we accomplish the object, and they are the best which we have essayed; but the same principle may be developed in many other forms.

In Fig. 2, the same letters represent the same parts that they do in Fig. 1. S, is a standard which supports the surface N and keeps it immovable at any point at which it is set; and this point may be adjusted at pleasure, and the standard may be connected with any fixed point. C, C, are arms or braces which connect the rod R with the pipe H, H, which enters the aperture, and forms the valve seat, and which for the purpose of this combination must be detached from the diaphragm E, so that it can be moved up and down by the action of the gasometer and made to approach or recede from the surface V. In this arrangement it is evident that if the pipe H, H, were connected directly with the gasometer it would be moved toward the surface V as the pressure diminished in the branch, which is the reverse of what the necessities of the machine require; and therefore it is necessary to interpose the lever L, in the rod R, in order to reverse the motion of the gasometer and communicate a proper direction to the movement of the pipe H, H. T, is the standard which supports the lever. The small leakage which would occur at *d*, *d*, may be prevented by using a liquid packing as at *p*, *p*, if it is thought desirable, as shown by the dotted lines *y*, *y*. But as this arrangement requires the use of the reversing lever L which is objectionable, because of the multiplication of parts, we have devised the form shown at Fig. 3 which dispenses with the lever. In this the same letters represent

the same parts as in Figs. 1 and 2. In this form the gasometer moves H, H, directly, but the rod R is lengthened so that H, H, is let down far enough to cover the surface V and to allow the gas to approach the aperture above it in place of below it, as in the other forms. The leakage around V at *x*, *x*, is the same as at *d*, *d*, in Fig. 3, and if it be desired to prevent it, the liquid packing may be applied as in Fig. 3, by a cup fixed to the bottom of Y, as shown in the dotted line *y*, *y*.

Fig. 4 represents a horizontal section of the regulator represented by Fig. 3 made through the dotted line *z*, *z*.

Fig. 5 represents a horizontal section of the same regulator through the dotted line W, W.

It is obvious from the description of the above machines that other forms may be used which are included within the principle invented by us, but it is enough to say that every arrangement of valves and valve gear, in which the disturbing pressure of the gas in the main is received on a permanent immovable surface disconnected from the gasometer and in which the valve is not balanced to counteract that pressure is included within our invention.

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

An improvement on the form of gas regulator hereinbefore described as Clegg's and other similar gas regulators by disconnecting from the regulating gasometer thereof the surface which is interposed between the main and the branch and upon which the disturbing pressure of the gas in the main operates and which in those regulators is connected with the regulating gasometer and connecting the regulating gasometer with a tube or its equivalent apparatus which is not disturbed by the varying pressure of the gas in the main in manner substantially as herein described.

GEO. BASIL DIXWELL.
JAMES A. DORR.

Witnesses:
LEWIS HURST,
O. W. TYLER.