

T. G. Springer,

Carburetor.

No. 100684.

Patented Mar. 8. 1870.

Fig. 1.

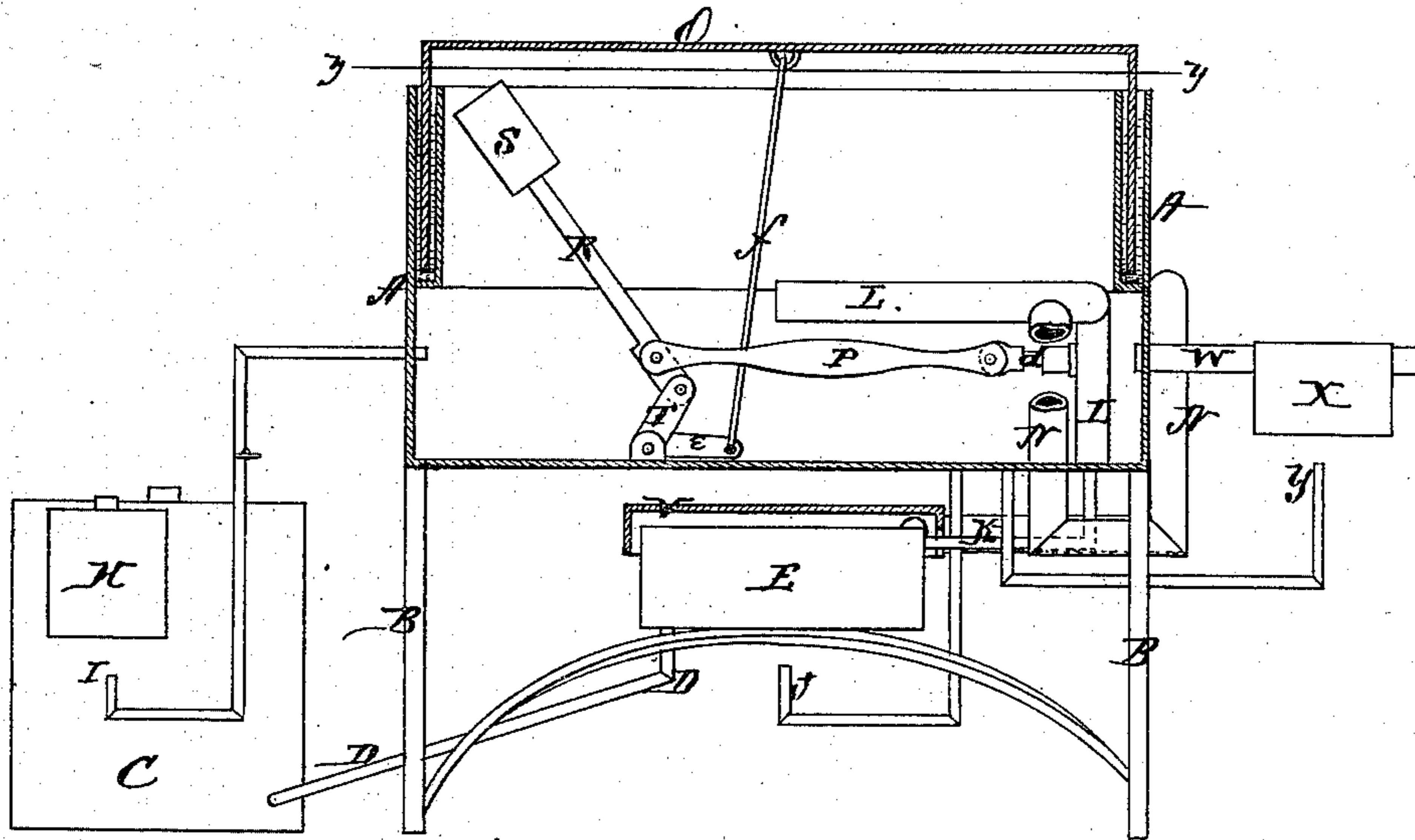


Fig. 2.

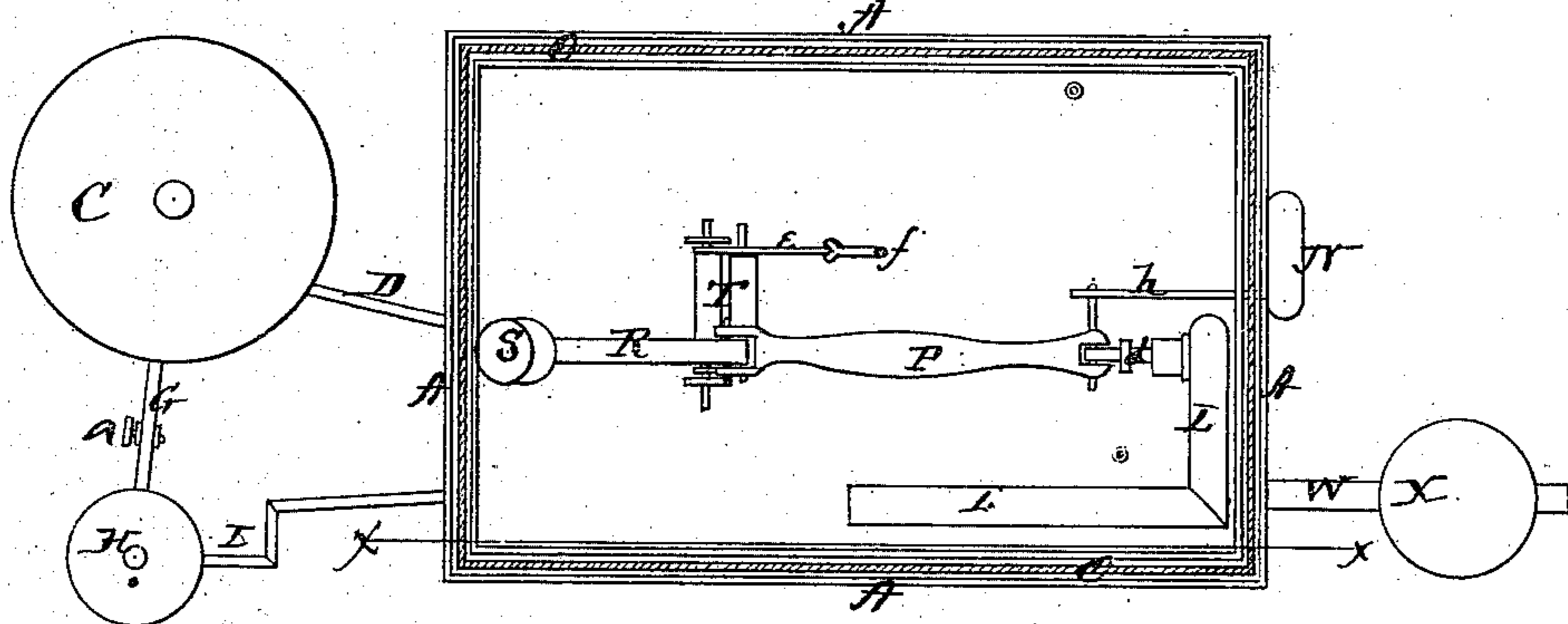
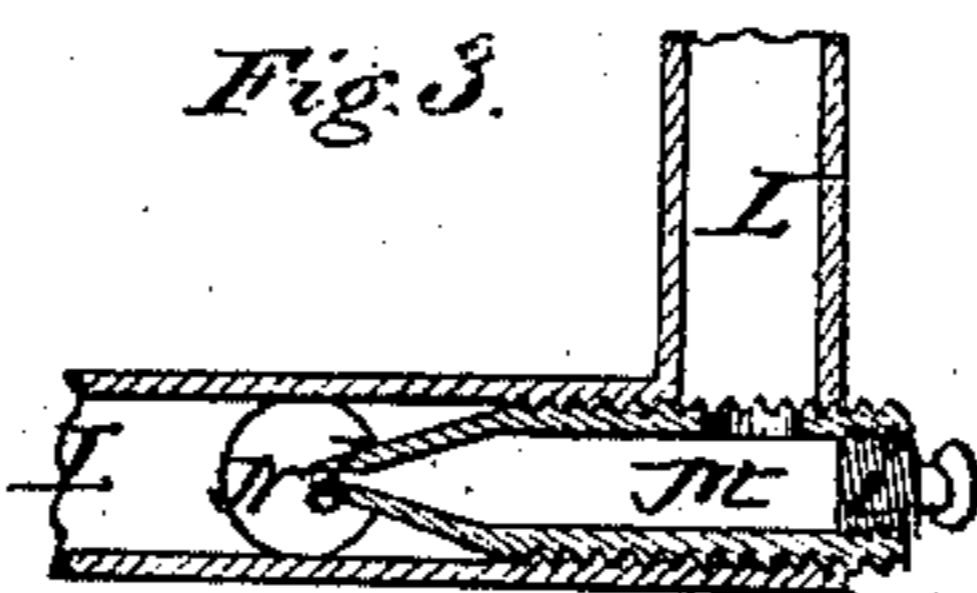


Fig. 3.



Witnesses.

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THEODOR G. SPRINGER, OF ST. LOUIS, MISSOURI.

Letters Patent No. 100,684, dated March 8, 1870.

IMPROVEMENT IN GAS-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, THEODOR G. SPRINGER, of St. Louis, in the county of St. Louis, and in the State of Missouri, have invented certain new and useful Improvements in Gas-Machines; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon making a part of this specification.

The nature of my invention consists in the construction and arrangement of a "gas-machine," but more especially in operating the valve or valves which regulate the flow of the vapor into the gasometer by means of gravitation, as will be hereinafter set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a longitudinal vertical section of my machine through line *xx* of fig. 2.

Figure 2 is a horizontal section of the same taken through line *yy* of fig. 1.

Figure 3 is an enlarged section of a portion of the pipe through which the vapor and air are admitted into the gasometer.

A represents the gasometer, constructed in any of the known and usual ways, and resting upon suitable supports, B B.

C represents the gasoline-reservoir, connected by means of a pipe, D, to the retort E, in which the gasoline is converted into vapor.

The pipe D leads from at or near the bottom of the reservoir C, and from near the top of said reservoir another pipe, G, connects with a smaller reservoir, H, containing spirits of ammonia.

Under this latter reservoir is placed a burner, I, supplied with gas from the gasometer A.

The heat converts the spirits of ammonia in the reservoir H into ammoniacal gas which passes into the gasoline-reservoir C, creating a pressure upon the gasoline to force the same through the pipe D into the retort E. When the necessary pressure is brought within the fluid-reservoir, a stop-cock, *a*, in the pipe G is closed, so as to confine the ammoniacal gas on top of the gas-fluid in the reservoir C. The burner I is then turned off, so as to prevent the generation of any more such gas.

I am aware that compressed air has been used for forcing the gas-fluid in a small continuous stream from the reservoir; but this has at least one very serious, and, indeed, fatal objection. The gases arising from gasoline or other fluids used for generating gas will mix with the air above said fluid, and a portion, at least, of the air will then be forced out, making a very inferior quality of gas. Ammoniacal gas, on the con-

trary, will not mix with the gasoline, and, hence, there will be no foreign element in the gas or vapor generated from said fluid.

The retort or gas-generating chamber E has a burner, J, under it, supplied with gas from the gasometer, and in said chamber the gasoline or other fluid forced into it in the manner above described, is generated into vapor, and conducted through the pipe K into a larger pipe, L, within the gasometer A.

In the pipe L, within the gasometer, is placed a hollow screw, M, having a small vent, *b*, through which the gasoline vapor has to pass before it goes into the gasometer.

Directly at the vent *b* in the pipe L, an air-pipe, N, leads into said pipe, so as to bring the atmospheric air in contact with the gasoline vapor as it flows out of the vent *b*, and mix with the same, forming illuminating-gas.

O represents the top or gas-holder of the gasometer, and is inserted within a water-tight chamber around the inner sides of the gasometer, as seen in fig. 1. Said chamber being filled with water prevents the gas from escaping, and allows the holder to rise and fall according to the gas within the gasometer.

The amount of gas within the gasometer is regulated in the following manner:

In the pipe L is a valve, *d*, connected with a pitman, P, which is at its other end pivoted to an arm, R, having a weight, S, at its upper end.

The arm R is at its lower end, below the point where the pitman T is pivoted to the same, pivoted to a frame, T, of suitable construction.

This frame is pivoted or hinged at its lower end to the bottom of the gasometer, and has an arm, *e*, projecting on one side, which arm is, by a rod, *f*, connected with the gas-holder O.

This mechanism being in the position shown in the drawing, the valve *d* is open, allowing the gasoline vapor to pass into the gasometer. When, now, the gas collects in the gasometer, the holder O will rise to a certain extent, and this action of the holder will turn the frame T and arm R until they are perpendicular, up to which time no change has taken place in the valve *d*; but as soon as the arm R passes the center of gravity, the weight S at once throws the arm R to the opposite side, instantaneously closing the valve *d*, preventing any more vapor from passing into the gasometer. In like manner, when the gas has passed out of the gasometer, the holder O falls, and reverses the action of the arm R and weight S, so as to open the valve.

A rod, *h*, connects the pitman P with a valve within the air-pipe N, outside of the machine, which valve is thus opened and closed at the same time as the valve *d*. Thus, it will be seen that I automatically

regulate the amount of gas manufactured, by means of the gravitation of the weight S.

I do not confine myself to the particular construction of this mechanism, as the same result can be obtained in various ways, my idea being to use the gravitation of one or more weights to open and close the valves instantaneously. The action of the valves must be instantaneous and not gradual, for obvious reasons.

The air admitted into the gasometer to mix with the vapor, in order to produce the same quality of gas at all times, should be of the same temperature and degree of dryness. For if atmospheric air be used, it is at certain times more moist than at others, and when moist or humid, it will not mix with the gasoline vapors as readily as when comparatively dry.

To obviate this, I place over the generating-chamber E a cap, V, connected with the tube N, so that the air before passing into the gasometer becomes heated, the generating-chamber being at all times hot.

At the same time, it will be seen that the gasoline vapor and the air will be of the same temperature, and, hence, they will mix more readily than if of unequal temperature.

The gas produced or manufactured in the gasometer is a very good illuminating-gas, but is not a permanent or fixed gas, and to make it such, it is passed through a retort, X, on its passage through the outlet-tube W, said retort being kept at a red heat by means of the burner Y, supplied with gas from the gasometer, which converts the gas into a permanent or fixed gas.

The screw M, as shown in fig. 3, is provided at its outer end with a tap, *i*, which can readily be removed for the purpose of cleaning the vent *b*, if the same should become clogged.

Having thus fully described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. Forcing the gas-fluid into the generating-chamber by means of pressure produced upon the same in the reservoir by ammoniacal gas, substantially as and for the purposes herein set forth.

2. Operating the valves in the vapor and air-pipes of a gas-machine instantaneously at the same time, by the gravitation of one or more weights, substantially as and for the purposes herein set forth.

3. In a gas-machine where atmospheric air is used to produce the gas by mixture with vapor from gasoline or other suitable fluid, heating said air to the same or nearly the same temperature as the gas-fluid, substantially as and for the purposes herein set forth.

4. The arrangement within the gasometer A of the frame T, with arm *e*, arm R, with weight S, and pitman P, all constructed as described, to operate the valves in the vapor and air-pipes by the gravitation of the weight S, the frame T being moved by the rising and falling of the holder O, substantially as herein set forth.

5. The arrangement over the generating-chamber E, of the cap V, for the purpose of heating the air before it is mixed with the gas vapors, substantially as herein set forth.

6. The hollow screw M, provided with vent *b* and tap *i*, substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 18th day of February, 1870.

THEODOR G. SPRINGER.

Witnesses:

C. L. EVERT,

ARTHUR N. MARR.