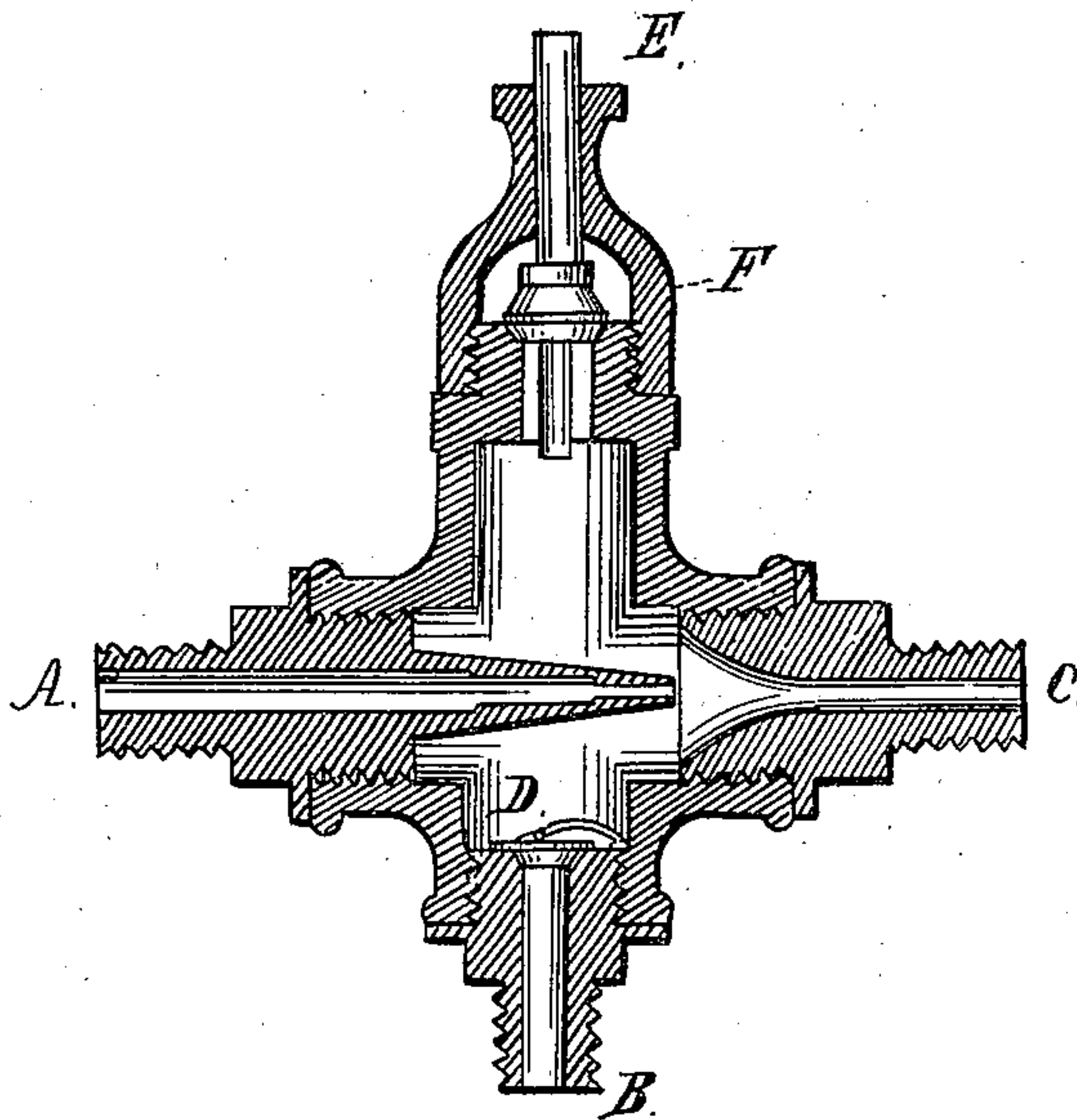


C. A. SEELY.
MANUFACTURE OF VAPOR GAS.

No. 92,105.

Patented June 29, 1869.



Witnesses:

Adolf Dierschke

Adolph Rock

Inventor:

Charles A. Seely

UNITED STATES PATENT OFFICE.

CHARLES A. SEELY, OF NEW YORK, N. Y.

IMPROVEMENT IN THE MANUFACTURE OF VAPOR-GAS.

Specification forming part of Letters Patent No. 92,105, dated June 29, 1869; antedated April 10, 1869.

To all whom it may concern:

Be it known that I, CHARLES A. SEELY, of the city, county, and State of New York, have invented an Improvement Relating to the Vapor-Gas for which Letters Patent were issued to me November 17, 1868; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing and the letters of reference marked thereon.

The nature of my invention consists in the mixing of atmospheric air with my vapor-gas and in the devices for effecting the mixture.

To enable others skilled in the art to make and use my invention, I will proceed to describe it minutely.

The vapor-gas as described in my patent of November 17, 1868, on account of its richness in carbon, requires to be burned from special burners provided with chimneys, in order to prevent its smoking. Moreover, certain precautions described in the said patent are necessary to prevent the condensation of the vapor-gas in the conducting-pipes. The utility of the vapor-gas is, therefore, by reason of these facts, somewhat circumscribed; and it is the object of my present invention to remove the objections in question from my vapor-gas. -I have found that when a proper amount of atmospheric air is mingled with my vapor-gas the tendency of the vapor-gas is to condense in the pipes, and to smoke at the burners is entirely removed. In short, the mixture approaches very nearly to the permanence and illuminating character of the gas ordinarily used for lighting.

One of the devices which I employ for mixing air with the vapor-gas is illustrated in the sectional drawing hereto attached.

A is a supply-pipe of vapor-gas, tapering toward the right and terminating in a fine jet within the funnel-shaped extremity of the exit-pipe C.

B is a pipe for the admission of air, furnished with a closely-fitting valve opening upward.

E is a valve having its seat at F and opening upward.

The operation of this apparatus is as follows: The vapor-gas, issuing with great force out of the jet A into the funnel of the pipe C, draws with it the surrounding air, and a partial vacuum is formed in the chamber surrounding the

jet-pipe. To supply this vacuum, the valve D is raised and fresh air enters through the pipe B. Thus it will be seen that the vapor-gas will constantly carry with it air. The proportion of air thus mixed with the gas may be in good degree controlled by a register or stop-cock, to be attached to the outward extremity of the air-supply pipe B. If the supply of vapor-gas mixed with air be more rapid than its consumption at the burners, the pressure in the mixer or injector, as also in the conducting-pipes, will increase till it might approach in amount that of the vapor-gas in the generator itself. To prevent such a state of things and to maintain the pressure of the mixed vapor-gas and air within constant limits, I make use of the valve E. This valve is to be adjusted by its weight or by a spring, so that it will lift at the desired limit of pressure of the gas. Immediately above and in contact or very near the stem of the valve E, I dispose an arm of a lever so that the lever shall be moved when the valve is lifted. The other arm of this lever is brought in connection with the stop-cock or valve, which controls the flow of vapor-gas from the generator into the jet-pipe A. The adjustment of the valve E with the lever and stop-cock is such that the lifting of the valve E determines the closing or the partial closing of the stop-cock and the flow of vapor-gas into the injector.

I have represented the mixer in a very simple and compact form, in order that the character and purpose of my invention might be more clearly and more easily comprehended. In practice, however, it is not in all respects in the form that will be suited to general use. The modifications of it which are sometimes desirable I will proceed to point out.

In place of the valve E, a movable or flexible diaphragm may be substituted, the rising and falling of which by variation of the pressure of the gas serving as the motive force for operating the inlet cock or valve of the vapor-gas. The diaphragm may also assume the form of a bellows of considerable capacity, so that the motive force shall be very ample; or the bellows may assume the form of a gasometer, in which the liquid used may be water or mercury. Now, it will readily be observed that these devices are all modifications of what are known and are in pretty extensive use as "gas-

regulators;" and I desire it to be distinctly understood that I make use of any of the ordinary gas-regulator devices with such simple modifications as the nature of my vapor-gas requires. I have found that gas-fitters generally have the knowledge and skill necessary to construct a good working apparatus with less instruction than here given. I need here only remark further that it is not necessary to have the gas-regulator device attached to the chamber of the jet-pipe, and, indeed, it is preferable to locate it beyond the chamber and on the pipe C.

The object of the valve D is mainly to prevent the escape of gas in case of back-pressure, and the valve is represented as being operated by its own weight and the pressure on either side of it. Instead of so operating the valve, the movement of the gas-regulator may be connected with the valve so that the valve shall be operated solely by such movement, the valve being closed only in case of back-pressure.

Instead of the injector for mixing air with the vapor-gas I have sometimes forced in the air by contrivances which I consider equivalent to a pump, the pump being operated by the elastic force of the vapor-gas. As examples of this method of mixing I mention a few simple forms of construction: The vapor-gas passes through a meter, which meter is connected with and operates a second meter, which second meter drives air into the vapor-gas. The vapor-gas passes into a gasometer, which gasometer, by its rising, operates a second gasometer containing air. The rising of the first gasometer is

made to depress the second gasometer, and thus to press out its air into the vapor-gas. In these cases and in any others coming within this branch of my invention the mixing apparatus consists in principle of these two parts, viz: an engine or motor operated by the elastic force of the gas and a pump worked by the engine or motor. When air is mixed with vapor-gas in the manner here described I wish it to be well understood that the automatic regulating devices of the same sort as above described in connection with the injector are to be used.

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

1. The mixing of air with my vapor-gas, in the manner and for the purposes described.
2. The automatic adjustment or regulation of the flow of vapor-gas and air and mixtures of them, in the manner and for the purposes described.
3. The combination of the mixing devices with the generator of the vapor-gas, in the manner described.
4. The combination of the regulating devices with the generator and the mixing apparatus, as described.
5. The combination of the regulating devices with the generator when the mixer is not employed.

CHARLES A. SEELY.

Witnesses:

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ADOLPHE ROCK.