

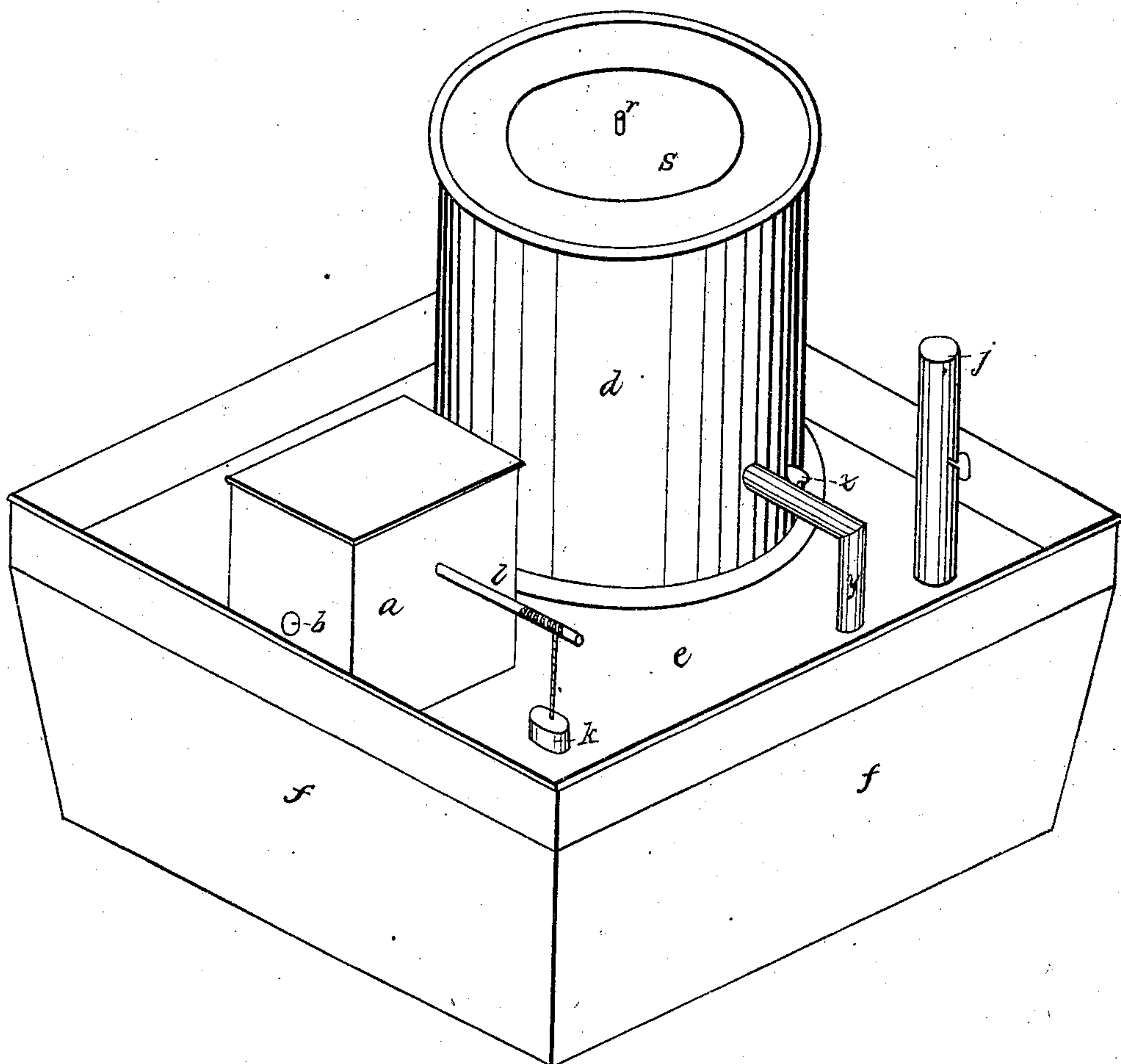
E. H. Covel.
Carbureters.

2. Sheets.
Sheet. 1.

No 24,199-

Patented May 31, 1859.

Fig. 1.



Witnesses:

J. J. Everett

John S. Hollen g. heere

Inventor:

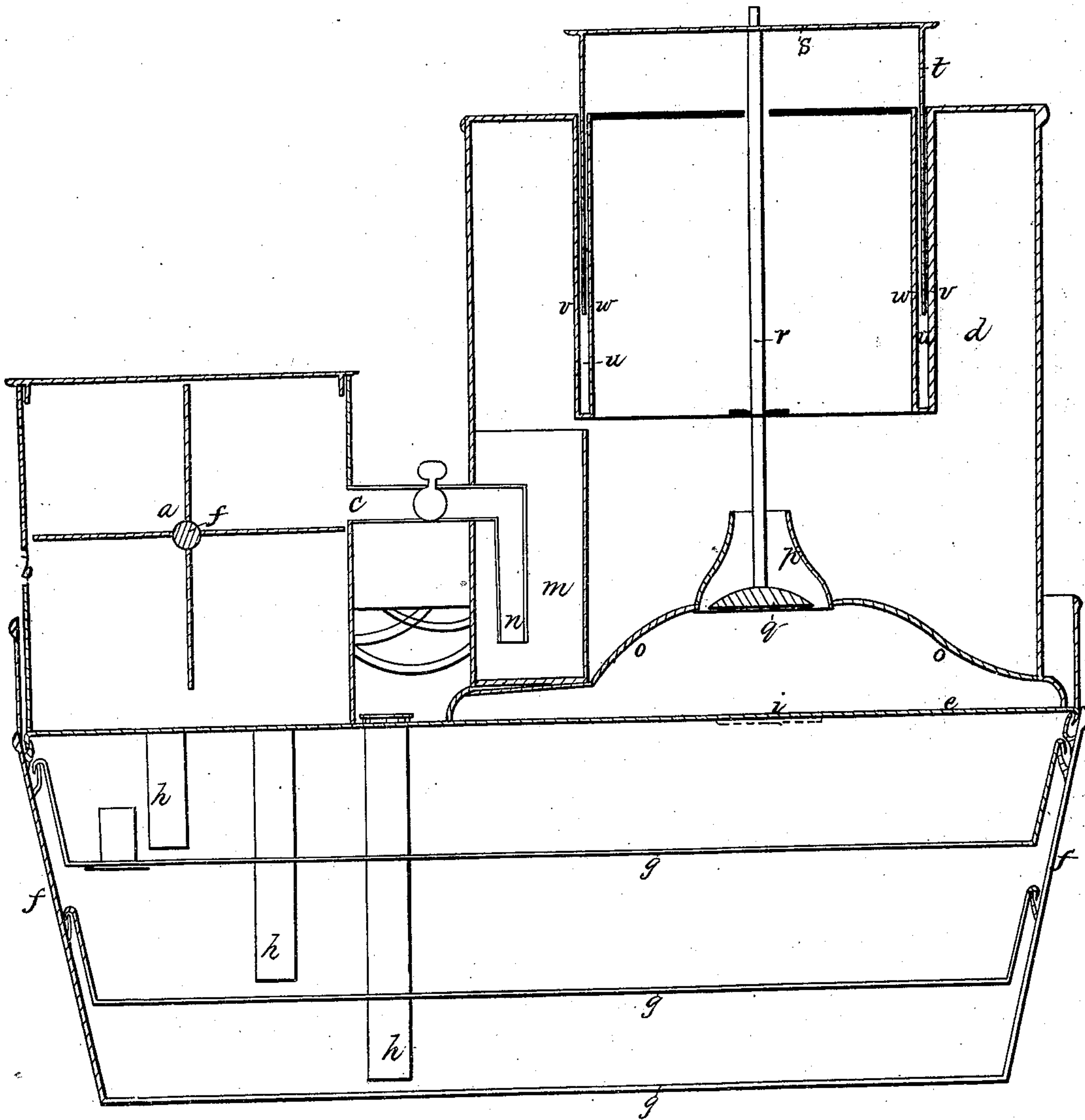
E. H. Covel

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No 24.199-

Patented May 31. 1859.

Fig. 2.



Witnesses:

Inventor:

J. J. Everett
John Hollingshead

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UNITED STATES PATENT OFFICE.

E. HALL COVEL, OF NEW YORK, N. Y.

GAS-REGULATOR.

Specification forming part of Letters Patent No. 24,199, dated May 31, 1859; Reissued June 24, 1873, No. 5,465.

To all whom it may concern:

Be it known that I, E. HALL COVEL, of the city of New York, in the county and State of New York, have invented certain new and useful Improvements on Gas or Air Regulators; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings and to the letters and marks thereon.

The improvements of this invention are shown by the drawings, forming part of this specification, applied to an apparatus for charging atmospheric air with the vapor of hydrocarbons, and to which they are specially applicable, although not entirely limited. In this kind of apparatus it is very desirable to have reliable means for controlling the quantity of air being fed to the hydrocarbon surfaces and to the burners within a certain period of time, as it is also desirable to regulate the pressure of the air or the gas.

Now my invention has for its objects, controlling the quantity and the pressure of the atmospheric air fed upon the hydrocarbon surfaces and the pressure of the charged air or gas on the burners, as also the degree of richness of the charged air.

My invention also embraces a provision for suspending the action of the apparatus upon the closing of the burners.

Figure 1, of the drawings is a perspective view of the regulator and an apparatus for charging the air, Fig. 2, being a vertical section of the same.

The regulator is made up of a rotary air-pump or blower (*a*), the ingress port or passage of which is marked (*b*) and the outlet port (*c*); and of an air holder or receiver (*d*), constructed to some extent like a gasometer, and having appropriate valves and passages for letting in and out the air.

By the figures of the drawings the regulator is shown placed upon a charging apparatus, (*e*) indicating the upper plate thereof, (*b*) the sides, (*g*) the vaporizing pans or surfaces, (*h*) the feeding pipes to the pans, (*i*) the opening for atmospheric air to pass in, and (*j*) the pipe for the charged air to pass out. These openings as shown by the drawings, are covered with perforated plates.

The rotary pump is designed to be operated by some mechanical means of a known or fixed power, the drawing shows a weight

(*k*) attached to a cord surrounding the shaft (*l*) as the means for giving rotation, but it is intended in most instances to use clock-work actuated by a spring or springs. The air forced in by such pump will have a known pressure and consequently when it reaches the receiver or air reservoir can be subjected to such pressure as may be necessary in order to control the valve which allows the air to pass from the receiver into the charging apparatus. The air receiver has a basin (*m*) containing water into which the pipe (*n*) from the pump terminates, thus forming a fluid valve. The bottom (*o*) of the air receiver has a valve seat (*p*) for the controlling valve (*q*), the stem (*r*) of which, it will be perceived, at its top is affixed to the top plate (*s*) of a cylinder (*t*) which plays within the annular space (*u*) formed by the two cylinders (*v*) and (*w*), this annular space containing water or some other appropriate fluid and thus forming a fluid joint.

A small opening in the shell of cylinder (*t*) indicated in Fig. 2, by a red mark is made for the purpose of allowing the air within to escape under excessive pressure. Now it will be seen that, with a known power applied to actuate the rotary pump and with a known weight placed upon the top of cylinder (*t*) the pressure of the air within the receiver will be known and that when the passage of the charged air to the burners is closed or the keys of the burners turned the resistance offered by the air within the receiver will suspend the action of the pump and the process of charging the air cease. It will also be seen that as the valve (*q*) is controlled by the movements of the cylinder (*t*) an increase of action of the pump from undue interference or otherwise will elevate the valve and diminish the area for the passage of the air. It will, further, be seen that if, after the regulator has been arranged and set to control the degree of pressure, additional weight be placed upon the top of cylinder (*t*) with the view of allowing a greater quantity of gas to pass out of the charging apparatus, that the increase of pressure will act upon the pump and retard its movements, thus correcting the evil arising from the interference with the set action of the apparatus.

When the means for actuating the pump

and for controlling the valve which guards the air inlet have been properly adjusted to the amount of air to be charged and used, the improvement here set forth becomes a self operating regulator requiring only the proper supply of material with which to charge the air to fulfil all the requirements of a permanent and well regulated gas apparatus—the turning of the keys of the burners or of the main pipe from the charging apparatus, to be turned for closing or opening, in order to put in motion or to suspend all the functions of the apparatus.

In some instances it is found that the air in the apparatus will become too highly or richly charged with the illuminating matter and in order to correct this it has been usual to pass a stream of fresh air into the base of the burner. Instead of this correcting the evil it creates a greater, for as the atmospheric air does not commingle with the charged air or gas the two pass out of the burner independently, though through the same channel, and produce blowing, and thus a flickering light results. I correct this difficulty by having a commingling chamber in my apparatus which has a perforated bottom and is divided into small compartments and which I place immediately under-

neath the egress pipe (*j*) in the upper charging pan. One end of a tube (*y*) terminates in this chamber the other end of it being in the air receiver (*d*). A stop cock or key (*z*) in this pipe on being turned to any degree desirable will allow just such quantity of air to pass into the commingling chamber as may be deemed requisite and full and perfect union of the charged and pure air will thus follow. By these means the charged air can readily be reduced to the proper degree of richness and the blowing through the burner be obviated.

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

1. The combining of the rotary pump or air forcer with the air receiver and its fluid valve arrangements in the manner herein set forth whereby the one controls the action of the other and through their joint action the charging apparatus is controlled substantially as described.

2. I claim connecting the commingling chamber of the charging apparatus with the air receiver for the purposes set forth.

E. HALL COVEL.

Witnesses:

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