

L. E. FISH.

Apparatus for Carbureting Gas and Air.

No. 149,111.

Patented March 31, 1874.

Fig. 1

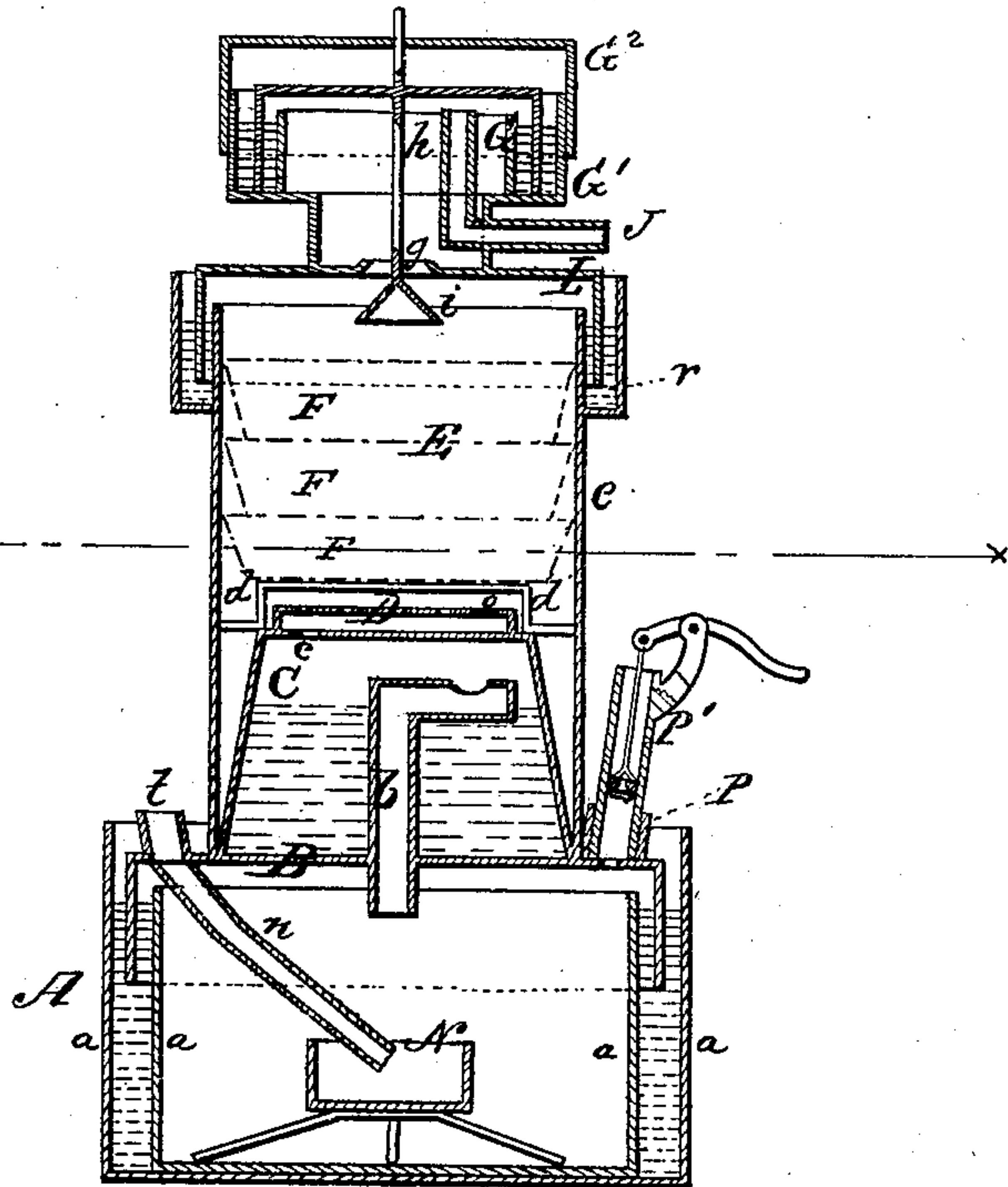


Fig. 3.

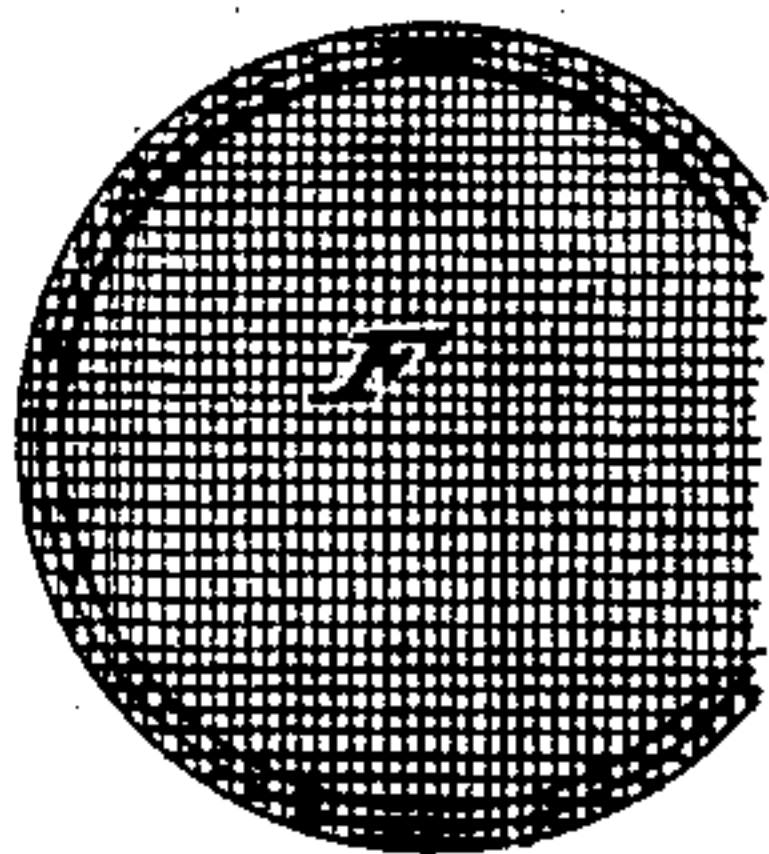
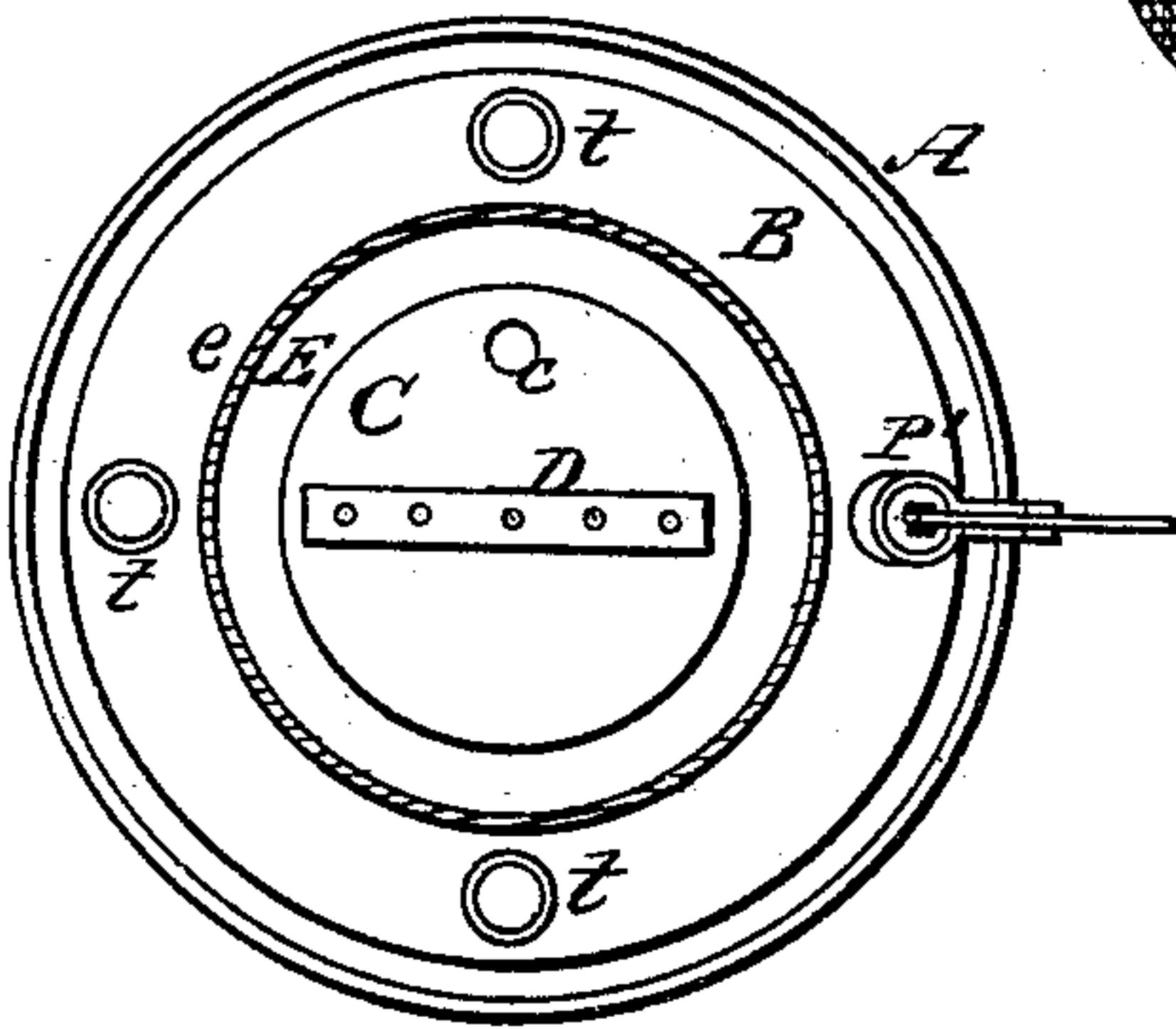


Fig. 2



WITNESSES

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INVENTOR -

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ATTORNEYS.

UNITED STATES PATENT OFFICE.

LEANDER E. FISH, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR
OF ONE-HALF HIS RIGHT TO JOHN H. RUSSELL, OF SAME PLACE.

IMPROVEMENT IN APPARATUS FOR CARBURETING GAS AND AIR.

Specification forming part of Letters Patent No. 149,111, dated March 31, 1874; application filed
March 19, 1874.

To all whom it may concern:

Be it known that I, LEANDER E. FISH, of Washington, in the county of Washington and District of Columbia, have invented a new and valuable Improvement in Gas-Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a vertical central section of my gas-machine. Fig. 2 is a horizontal sectional view of the same, and Fig. 3 is a detail view.

This invention has relation to apparatuses which are designed for purifying illuminating-gas and regulating the flow of the same to the burners; and it consists in the combination of a fluid-sealed gas-holder with a carbureter, a purifier, and a gas-regulator, the said holder being constructed to contain air under pressure, and provided with feed-openings and an air-inlet pipe, which latter is intended to communicate with a forcing-pump, as will be hereinafter explained.

The following is a description of my invention:

In the annexed drawings, A designates the tank for a gas-holder, B, which tank receives the broad rim of this holder between walls *a*, which form an annular space for containing water or other fluid, and thereby making a fluid seal for the holder. On top of the holder B is a carbureting-chest, C, for containing any suitable hydrocarbon oil, which chest communicates with the interior of the holder B by means of a bent pipe, *b*. The air or gas, as the case may be, passes from the holder into the chest C, and flows over the surface or through the body of the oil therein, thus becoming charged with the vapor of this oil. The gas then passes through an opening, *c*, and into a thickly-perforated distributor, D, on top of the chest C, from which distributor the gas is given off in jets into a purifying-chamber, E. This chamber E contains a number of pans, F, which are supported above the distributor D upon a bridge, *d*, and which may

be made of wire-gauze or perforated sheet metal, so that the gas will freely rise through the pans on its way to a governor or automatic regulator, arranged on top of the wall *e* surrounding the chamber E. In the first pan, F, or that next to the distributor D, are put wood shavings and pumice, on which the superfluity of oil in the gas will be condensed or arrested. The pans above this one containing the shavings and pumice contain, say, the hydrate of lime and charcoal, acetate of lead and charcoal, and in the highest pan I put gum camphor and charcoal. These chemicals and absorbents remove the impurities from the gas, such as sulphureted hydrogen, carbonic acid, some ammonia, and bisulphide of carbon, thus purifying the gas and causing it to burn more brilliantly, and preventing the deposit of heavy hydrocarbons in the pipes and fixtures. The camphor in the highest pan of the series will add volume to the gas, and also increase the brilliancy and purity of the flame. The gas thus purified rises through an opening, *g*, into a regulator, G. This regulator is an inverted cup, the rim of which dips into water, oil, or other fluid, which is contained in a vessel, G¹, thus allowing the cup G to rise and descend as the pressure of gas increases or diminishes. A stem, *h*, is fixed vertically and centrally to the cup G, to the lower end of which stem a cone-valve, *i*, is secured, which closes against a seat surrounding the opening *g* by the ascent of said cup. The upper portion of the valve-stem *h* passes freely through the center of a removable cap, G², which fits closely over the vessel G¹. The cup G is thus guided and prevented from tilting in the vessel G¹. J is the outlet-pipe leading to the burners, which pipe rises inside of the cup G above the highest point of the liquid therein. This regulator is constructed on a cover, L, the rim of which dips into a fluid contained in an annular space, *r*, surrounding the upper end of the wall *e*, thus forming a liquid seal. By removing the cover L, access can be had to the chamber E for introducing or removing the pans F, and for supplying oil to the chest C through an opening, *o*.

The apparatus represented in the drawings is designed for enriching and purifying coal-gas; also, for carbureting air, and also for carbureting hydrogen gas. If I carburet air, I supply the air to the holder B through a pipe, P, which should be attached in a suitable manner to an air-forcing engine, P', shown in Fig. 1. I thus force the air into the holder under pressure. If I use hydrogen gas, I manufacture this gas inside of the holder, and for this purpose I use iron turnings in a solution of diluted sulphuric acid. The turnings are contained in a centrally-arranged cup, N, and supplied thereto through a bent pipe, n, passed through the top of the holder B. The top of this holder is also provided with feed-tubes *t t*, through which the acid and water are introduced into the tank A without the necessity of removing the holder therefrom.

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

1. An apparatus for carbureting, purifying, and regulating the flow of illuminating-gas, consisting of a holder, B, applied in the fluid-chamber of a tank, A, a carbureting-chest, C, applied in a purifying-chamber, E, and provided with a distributor, D, the removable pans F for containing purifying substances, and a regulator, G, provided with a valve, *i*, and constructed on a removable liquid-sealed cover, L, all combined substantially as described.

2. The air-forcing engine P', combined with the holder B and tank A, and with a carbureter and purifier, substantially as described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

LEANDER E. FISH.

Witnesses:

GEORGE E. UPHAM,
ROBERT EVERETT.