2 Sheets—Sheet 1.

G. H. BURROWS.

Carbureting Apparatus.

No. 233,978. **Patented Nov. 2, 1880.**

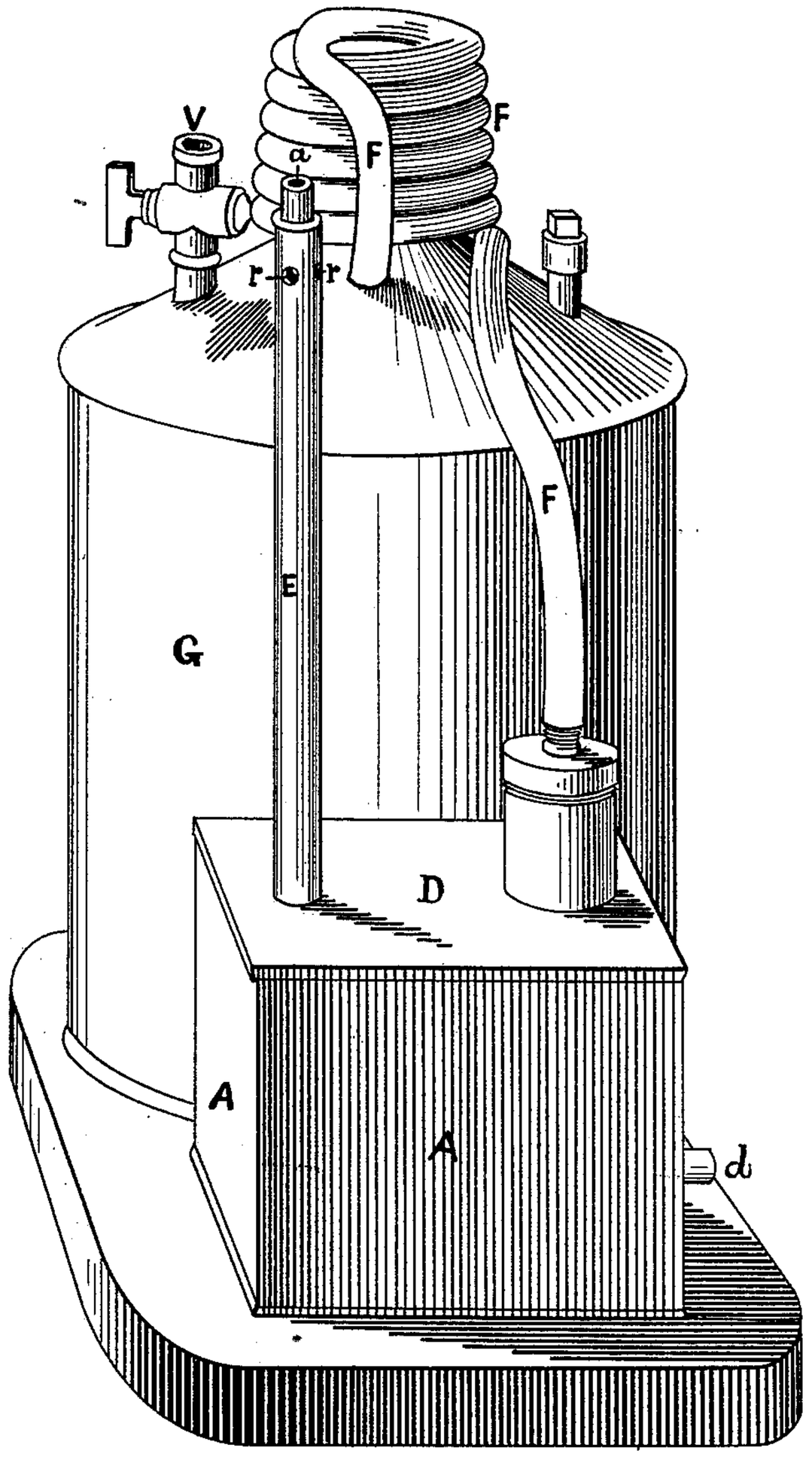

FIG. 1.

Witnesses:

H. S. Talbot

W. R. Marble

Inventor:

George H. Burrows

By Sylvenus Walker

Atty

2 Sheets—Sheet 2.

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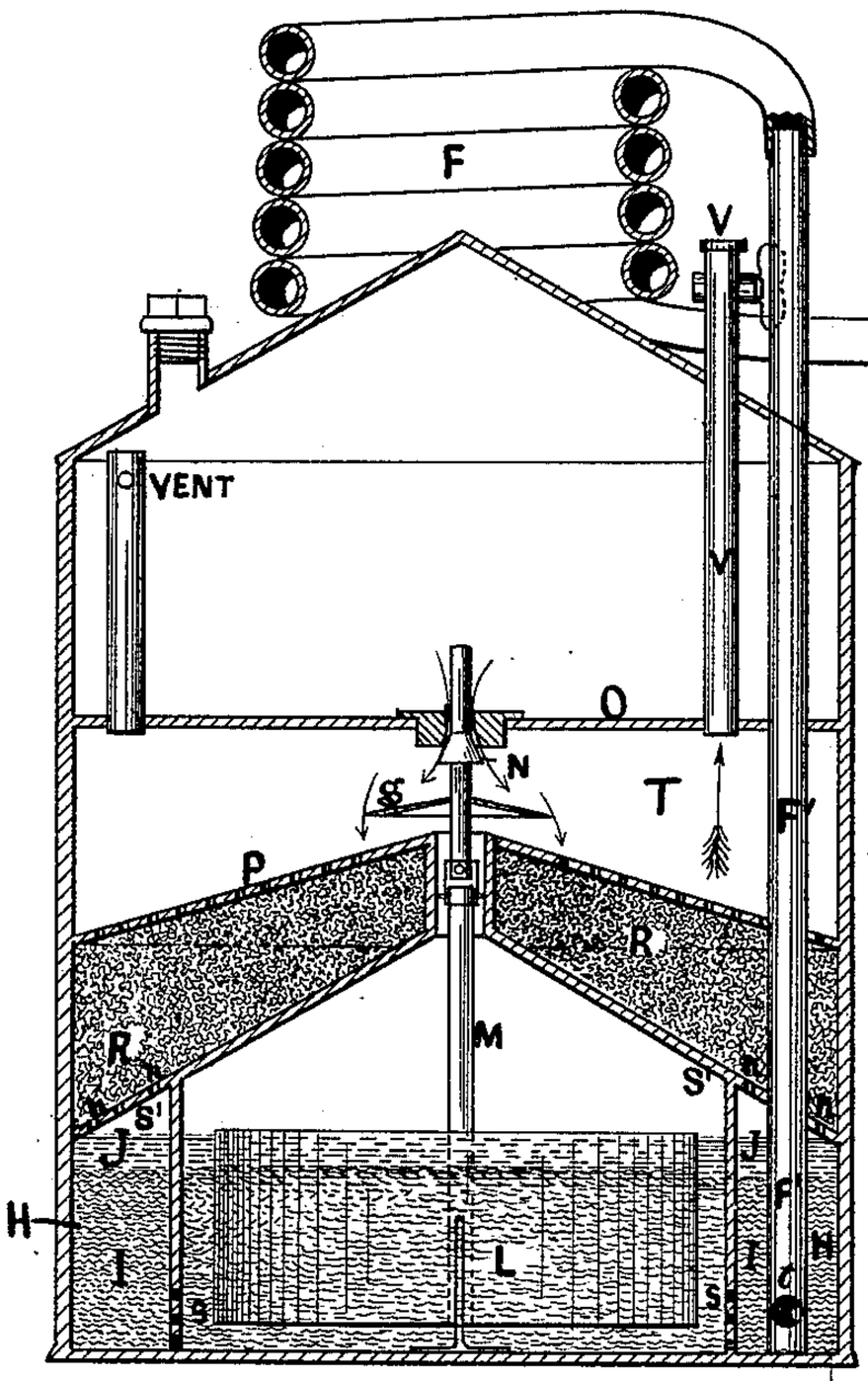

FIG. 2.

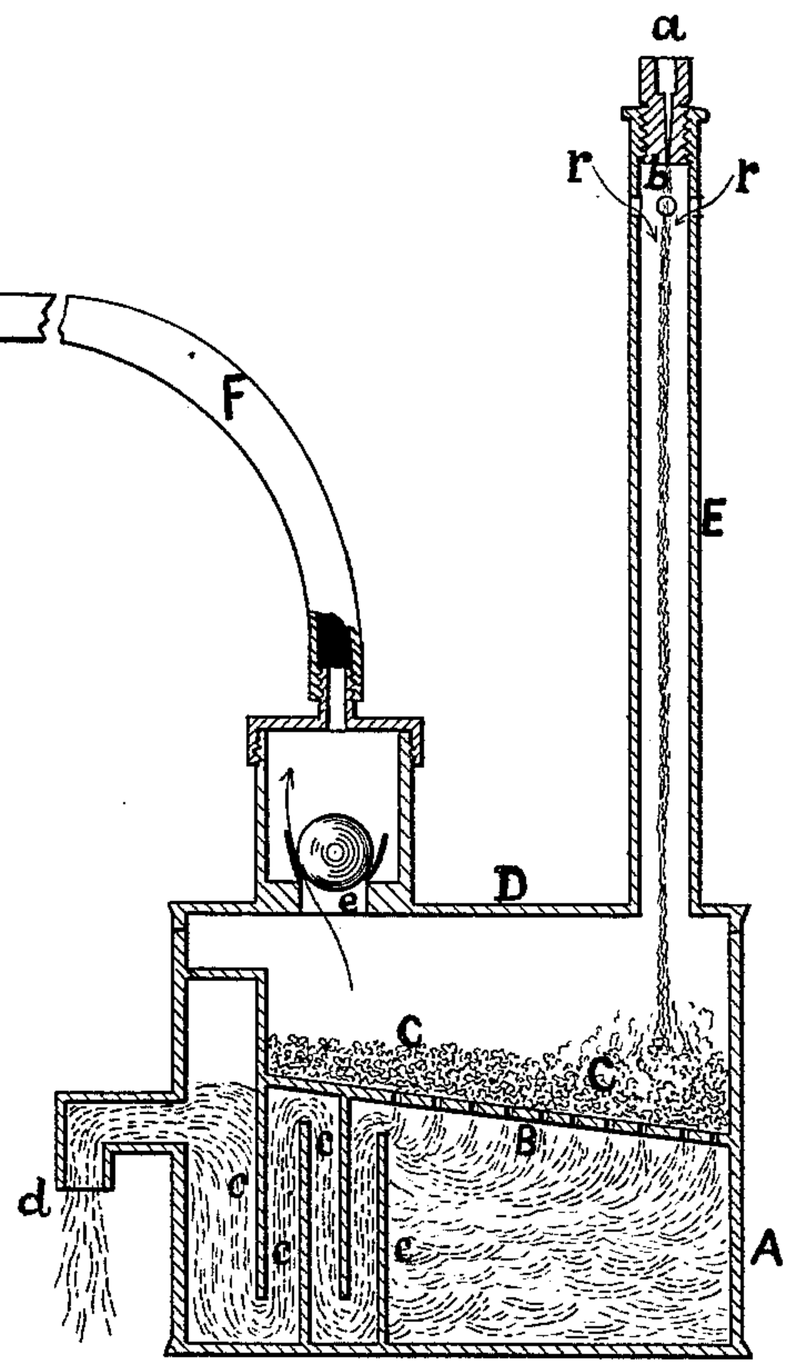

FIG. 3.

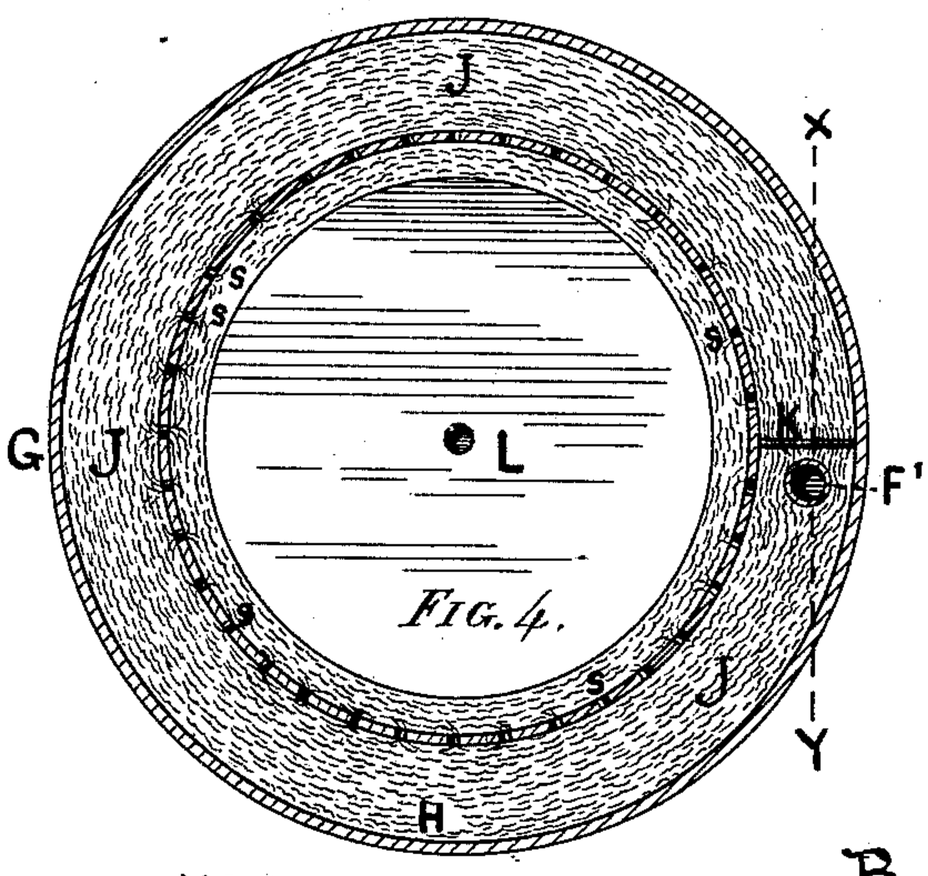

FIG. 4.

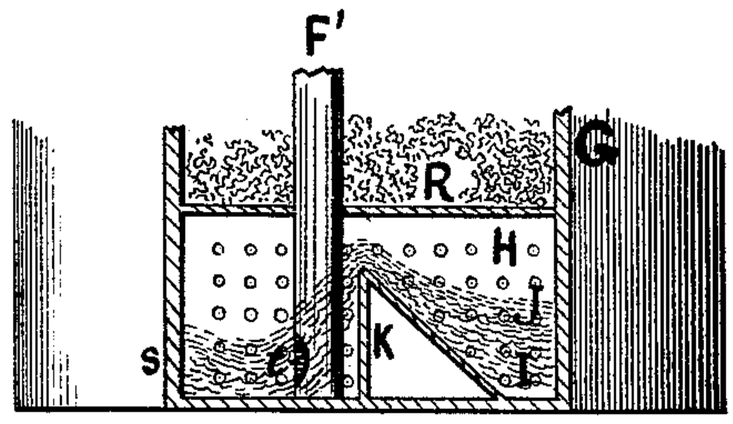

FIG. 5.

INVENTOR:

George H. Burrows

By Sylvenus Walker

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WITNESSES:

H. S. Talbot

W. R. Marble

UNITED STATES PATENT OFFICE.

GEORGE H. BURROWS, OF SOMERVILLE, MASSACHUSETTS.

CARBURETING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 233,978, dated November 2, 1880.

Application filed June 18, 1879.

To all whom it may concern:

Be it known that I, GEORGE H. BURROWS, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Carbureting Apparatus, of which the following is a specification.

The object of my invention is to provide a cheap, simple, and efficient apparatus for generating or producing illuminating-gas; and it consists in the construction, combination, and arrangement of the parts forming the apparatus, whereby a small stream of water may be forced by pressure downward through the center of an enlarged tube, whereby air is drawn into the same near its top through openings, and the water and air in their descent are brought in contact with iron turnings or chips, placed in a closed vessel or chamber upon a perforated plate or inclined partition, so as to agitate the chips or turnings by the force of the water, which passes with reduced pressure through an outlet in the end of the chamber near its bottom.

The air drawn in passes upward through a condensing pipe or tube provided with a suitable valve, and thence downward through a pipe or tube to a point near the bottom of the carbureter, where it escapes in a channel filled with glycerine, and within or under a portion of the body of glycerine, and in a horizontal direction, so as to impart rotary motion to the glycerine, upon which is floated crude petroleum to the depth of about one-fourth of an inch. This with the glycerine in its rotation is caused to pass over an obstruction or abrupt incline, forming a dam, by which means a portion of hydrocarbon vapor is taken up from the petroleum as the air escapes through it.

The desired quantity of petroleum admitted from a reservoir is regulated by a float and valve, and the petroleum, as it passes from the reservoir, descends upon and percolates through a body, stratum, or chamber filled with iron turnings, forming a filter or packing, and the gas passes upward into and through the iron turnings saturated with the descending petroleum, and thence to the gas-receiving chamber, connected with the usual gas-pipes for conducting the gas to the burners ready for lighting or combustion, as hereinafter more fully described and set forth.

Figure 1 is a perspective view of my invention. Fig. 2 is a vertical central section of the carbureter. Fig. 3 is a similar view of the air-forcing apparatus or tromp. Fig. 4 is a horizontal section of Fig. 2 near its bottom. Fig. 5 is a vertical section through Fig. 4 at the point indicated by dotted lines X Y.

A represents a rectangular box or chamber, provided about midway from the top downward with a perforated inclined partition, B, upon which is placed a quantity of wrought-iron turnings or chips, C, which may be removed, if desired, by the removal of top D. This top is provided with a vertical pipe, E, having a small plug or inverted tip, *b*, with conical hole *a*, as shown. This plug is screwed into the upper end of the pipe E, and extends downward within the same about an inch, more or less. The pipe E has several horizontal air-inlet holes, *r*, formed in its sides opposite the lower end of the tip *b*, through which air is drawn into the tube E when a small stream of water is forced downward through said tip *b*. The air strikes upon the iron chips or turnings C with force, and the water passes through the same, and through the perforated partition into the lower chamber. This chamber is provided with several vertical partitions, *c*, near one end, some of which extend upward from the bottom, terminating before reaching the perforated partition B, and others extending downward from said partition, and terminating near the bottom, by which means the pressure of the water is reduced and its flow retarded as it passes out from the box A through the outlet *d*, as shown.

The water and air, striking upon or among the iron turnings C, separate the water passing downward and off at the outlet, while the air passes upward through the valve *e* into the condensing pipe or tube F, which leads to the carbureter G, which should be located several feet from the box A. The air, being lighter, passes up through said tube or pipe F, which enters the top of the carbureter G, and thence passes downward within the same, where it terminates near the bottom with a horizontal opening, *t*, within an annular space or chan-

nel, H, which is filled to the depth of about one inch with glycerine, I, and floating upon the top of which is about one-fourth of an inch of petroleum, J.

The opening *t* of the pipe F′ is located within the body of the glycerine near the fall of the same over the dam, so as to impart a rotary motion to the glycerine and petroleum. Within this channel, just back of the pipe F′, is provided an obstruction in the form of an inclined dam, K, which causes the current of the petroleum to be broken up at the point where the air issues from the said pipe F′, and passes up through it, and thus a portion of hydrocarbon vapor is mixed with the air in its passage through the petroleum, the depth or amount of which is regulated by a float, L, arranged within the bottom portion of the carbureter G, and provided with a vertical rod, M, which has at its upper end a valve, N, located in the bottom O of the petroleum-reservoir, so that when the said valve is open the petroleum passes downward and falls upon the conical shield *g*, and thence upon the perforated conical disk or partition P, and thence into and through the chamber filled with iron turnings R, the floor or bottom S′ of which is provided with perforations *n* near its outer edge and over the channel H, so that the petroleum or other oil or liquid giving off hydrocarbon vapor passes through the body of iron turnings R in its downward course. The hydrocarbon and air, or the gas formed by the mixture thereof, before reaching the saturated iron turnings R, passes up through said turnings, and is thereby further enriched or supplied with hydrocarbon vapor as it passes into the gas receiver or chamber T. The gas thence passes out at the top, as shown, through the cock and pipe V, to burners attached to common gas-pipe throughout the dwelling-house or other building, in the usual manner.

It will be seen in the drawings, Fig. 2, that small openings *s* are provided in the inner wall of the chamber H, surrounding the float L, so as to permit the glycerine to buoy or raise the float slightly as it passes from the said chamber H through the said openings *s*, and when the desired amount has passed downward the float is raised up sufficiently to close the valve N, and thus stop temporarily the flow of oil. I find that passing the air up through the moving body of glycerine with the petroleum floated thereon is an important and essential feature of my invention, for thereby I am enabled to render the burning of the gas very steady, as with any other liquid substituted for the glycerine the light will flicker and burn irregularly.

I am aware that carbureters are well known, and that floats have heretofore been employed therein to regulate the flow of oil or other hydrocarbon liquid used therein; therefore I do not broadly claim said devices.

I do not claim placing a carbureting-chamber below an oil chamber or reservoir and regulating the discharge of oil from the latter into said carbureting-chamber by means of a float and valve operating automatically.

I am also aware that wool or other fibrous material has been placed on perforated plates or diaphragms and kept saturated with oil for the purpose of forming a large evaporating-surface.

Having thus described my invention, what I claim is—

1. The chamber A, provided with a perforated partition, B, and having iron turnings C, and provided with vertical partitions *c* and outlet *d*, in combination with the water-inlet pipe E, provided with the air-inlet holes *r*, and the condensing-pipe F, having the valve *e*, substantially as described, as and for the purposes set forth.

2. In a carbureter, the inclined perforated partitions P and S, forming a chamber provided with iron turnings R, in combination with the chamber H, having the dam K, pipe F′, having the openings *t*, and the float L, having the valve N, as and for the purpose set forth.

3. In a carbureter, the annular chamber H, having the dam K, in combination with the pipe F′, having the opening *t*, as and for the purposes set forth.

GEORGE H. BURROWS.

Witnesses:
SYLVENUS WALKER,
JOHN HITCHCOCK.