No. 881,431. PATENTED MAR. 10, 1908.

C. L. MEYER & N. P. HICKEY.

APPARATUS FOR CARBURETING AIR.

APPLICATION FILED AUG. 13, 1906.

2 SHEETS—SHEET 1.

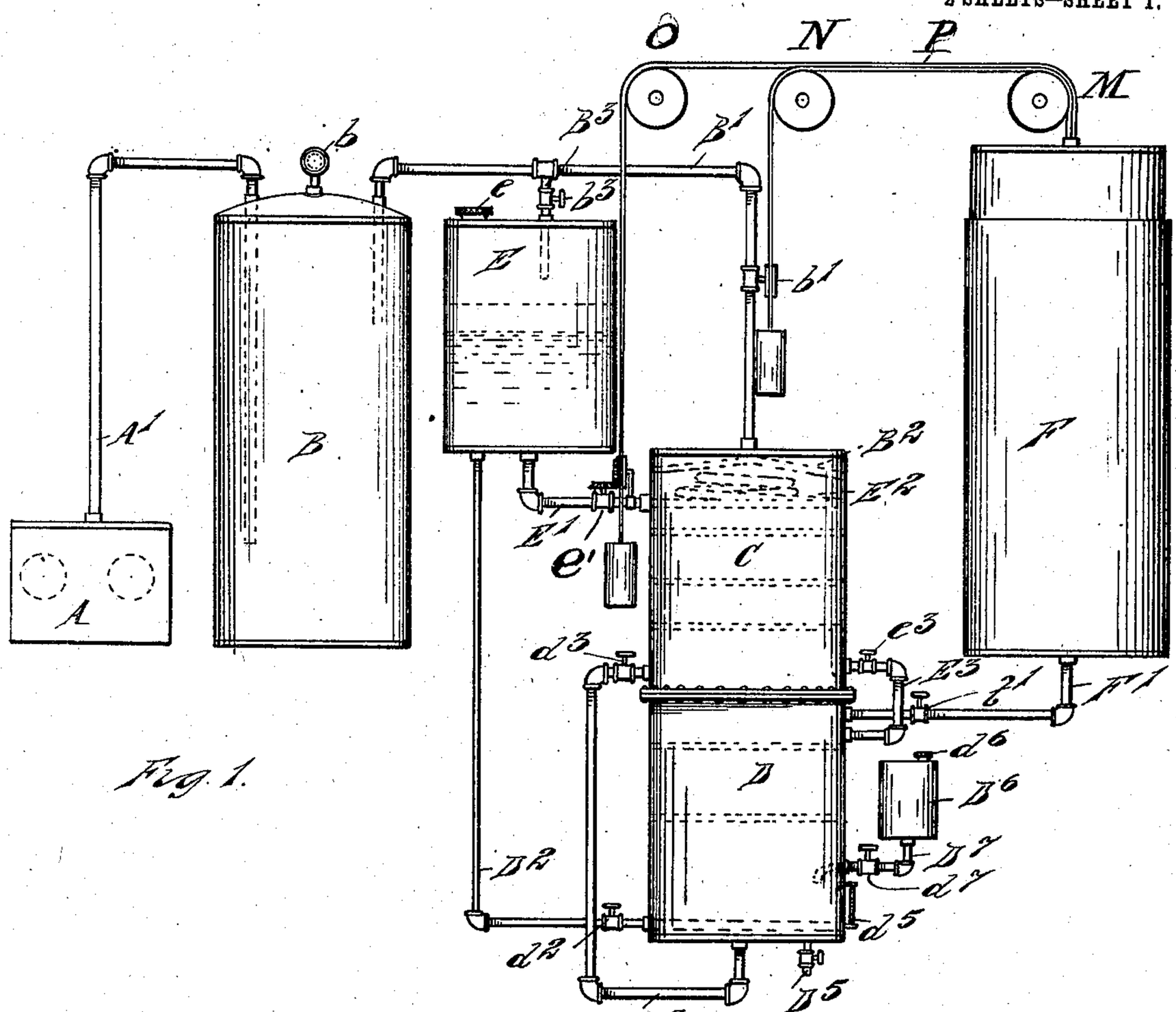

Fig. 1.

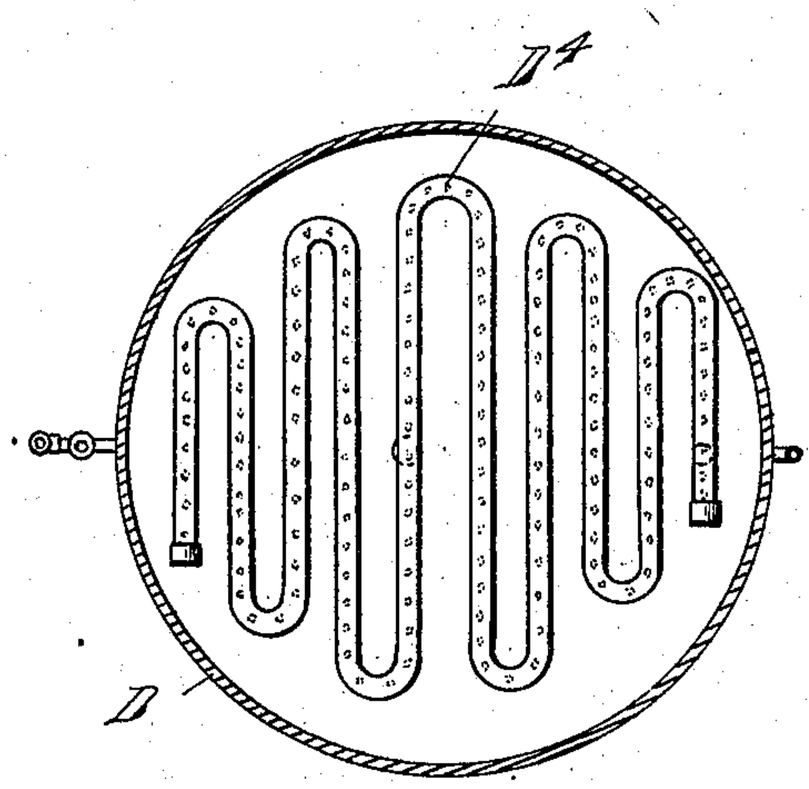

Fig. 5.

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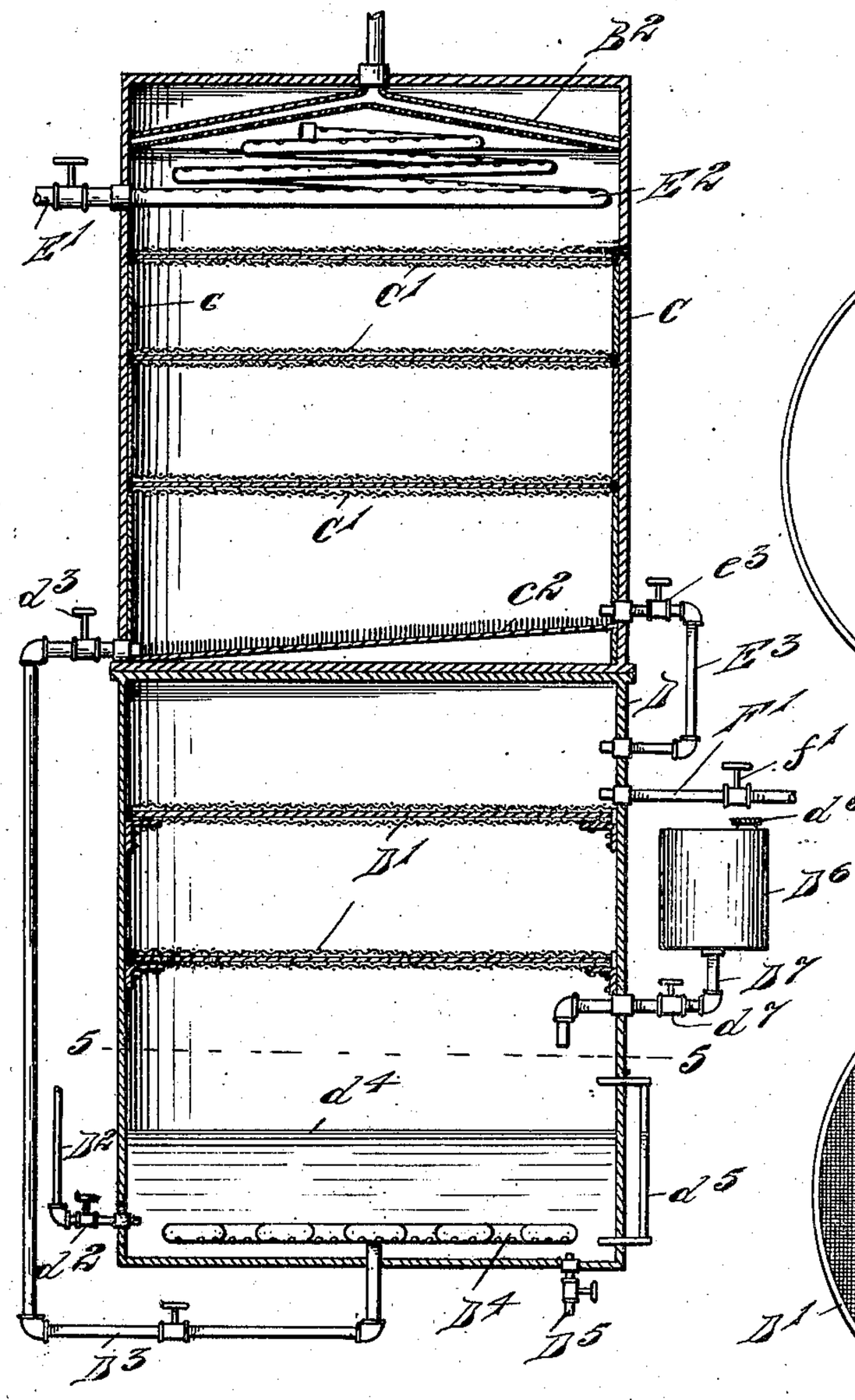

Fig. 2.

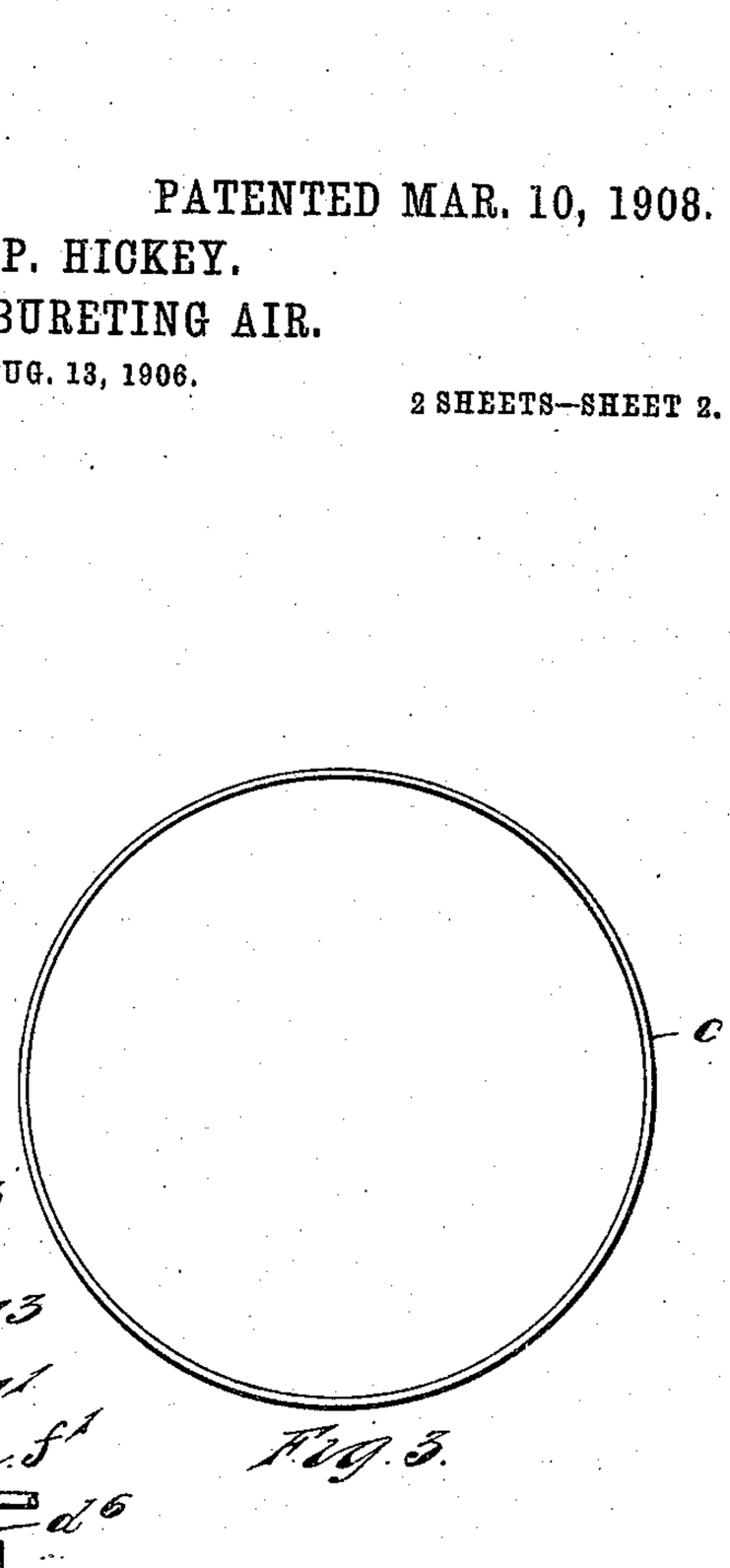

Fig. 3.

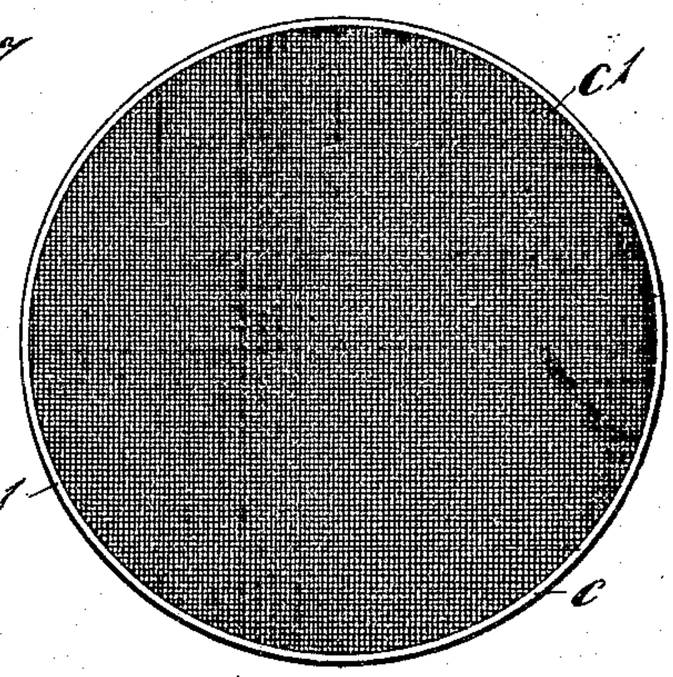

Fig. 4.

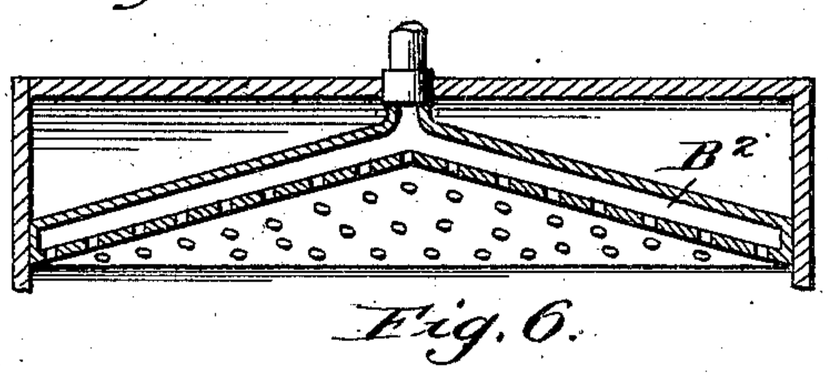

Fig. 6.

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UNITED STATES PATENT OFFICE.

CHARLES L. MEYER AND NICHOLAS P. HICKEY, OF DETROIT, MICHIGAN, ASSIGNORS TO THE COMMERCIAL GAS COMPANY, LIMITED, OF WINDSOR, CANADA, A CORPORATION OF CANADA.

APPARATUS FOR CARBURETING AIR.

No. 881,431. Specification of Letters Patent. Patented March 10, 1908.

Application filed August 13, 1906. Serial No. 330,306.

To all whom it may concern:

Be it known that we, CHARLES L. MEYER and NICHOLAS P. HICKEY, both citizens of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Apparatus for Carbureting Air, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to apparatus for carbureting air, and the object of our improvements is to provide an improved apparatus that shall charge air with combustible vapor.

In the drawings:—Figure 1, is an elevation of the entire apparatus. Fig. 2, is a central section of the primary and secondary carbureters. Fig. 3, is a plan view of a circular frame for holding sheets of wire netting and felt between said sheets. Fig. 4, is a plan view showing the frame of Fig. 3 with the wire netting in place. Fig. 5, is a section on the line 5—5, Fig. 2. Fig. 6, is a detail sectional view of the upper part of the carbureter and of the rose B^2.

A, represents an air compressor.

B, is a reservoir, and A^1, is a pipe leading from the delivery ports of the compressor to the reservoir B.

b, is a pressure gage on the reservoir.

C, is the primary carbureter.

B^1, is a pipe leading from the reservoir B, to the carbureter C, and terminating in a rose B^2 toward the upper end of said carbureter.

b^1, is a cock in the pipe B^1.

D, is a secondary carbureter shown, as secured to, and axially in line with, the primary carbureter C and below the latter.

c, indicates circular or annular frames adapted to support sheets of wire netting inclosing sheets of felting between them. These frames, with attached parts, form diaphragms C^1 and D^1 in the carbureters C and D.

E, is a reservoir for a volatile combustible fluid.

B^3, is a pipe communicating with a pipe B^1, and with the reservoir E.

b^3, is a cock in the pipe B^3.

e, is a screw plug stopping the hole through which the hydrocarbon forming the combustible material may be introduced into the reservoir E.

E^1, is a pipe leading from the bottom of the reservoir E to the top of the primary carbureter C, and ending in a coil E^2, (Fig. 2) having small apertures through its upper surface in the rose B^2.

The rose B^2 is in the form of a double walled hollow cone with its opening downward, and its lower wall is pierced with a large number of small apertures.

D^3, is a pipe leading from the lower end of the primary carbureter C to the lower end of the secondary carbureter D, and ending in a coil D^4, having small apertures opening downward through its walls.

D^5, is a pipe having a cock therein through which the secondary carbureter D may be drained.

D^2, is a pipe leading from the lower end of the reservoir E to the lower end of the secondary carbureter D.

d^2, is a cock in the pipe D^2.

d^5, is a glass gage by which the height of the fluid in the secondary carbureter D may be observed.

D^6, is a reservoir for hydrocarbon liquid having a screw plug d^6 closing a supply opening therein.

D^7, is a pipe leading from the lower end of the reservoir D^6 to the lower end of the secondary carbureter D, and having a cock d^7 therein.

E^3, is a pipe connecting the top of the secondary carbureter D with the bottom of the primary carbureter C.

e^3, is a cock in the pipe E^3.

F, is a gasometer serving as a reservoir for carbureted air.

F^1, is a pipe forming a communication between the top of the secondary carbureter D and the bottom of the reservoir F.

f^1, is a cock in the pipe F^1.

The operation of the above described device is as follows:—Air is supplied to the reservoir B by the compressor A. The air pressure in the reservoir B is communicated to the reservoir E above the fluid therein by the pipe B^3. Air is permitted to pass through the pipe B^1 into the rose B^2 and issue in jets from the small apertures in the lower wall of

said rose, the rate at which the air passes through the pipe B^1 and is delivered into the carbureter C through the rose B^2, is regulated by the cock b^1. The liquid from the reservoir E is permitted to pass through the pipe E^1 into the coil E^2, and to spray upward against the descending jets of air from the rose B^2, through the small apertures in the upper part of the wall of said coil. e^1, is a cock by which the rate of flow of the liquid from the reservoir E to the primary carbureter C may be regulated. As the jets of air and fluid are in opposite directions, the fluid is vaporized and the vapor well mixed with the air, but should any fluid escape without being vaporized, it falls upon the pads of the diaphragms C^1 and the air passing down through said diaphragms converts it thoroughly into vapor.

The bottom of the carbureter C is made slanting and there are a series of fins or projections C^2 for breaking up and gasifying any liquid that might reach the bottom of the carbureter C.

Should any liquid still escape, it is carried to the bottom of the primary carbureter C, and passes to the bottom of the secondary carbureter D. A body of gasolene or other carbureting fluid is kept in the bottom of the secondary carbureter D, being supplied thereto as required from the reservoir D^6 through the pipe D^7, and its supply regulated by the cock d^7. The air and vapor from the primary carbureter C pass downward through the pipe D^3, and into the coil D^4, and flows outward and downward through the apertures in the lower portions of the wall of the coil D^4, and bubbles up through the body of hydrocarbon d^4 in the secondary reservoir D, and passes through the diaphragms D^1, which are entirely similar to the diaphragms C^1, to the top of the carbureter D, and from thence it passes through the pipe F^1 at the rate controlled by the cock f^1 into the reservoir F. The relative pressure in the primary carbureter C and the secondary carbureter D may be adjusted by the pipe E^3, and e^3. No liquid ever falls on the diaphragms D^1, so that they remain dry and the gas passing upward through them is a perfectly dry and fixed gas.

By adjusting the relative pressures in the reservoir E and carbureter D, fluid may be passed in either direction through the pipe D^2, and its amount and rate of flow may be regulated by the cock d^2.

The pipe E^3 may form a by-pass by which the secondary carbureter D may be entirely cut out.

M, N, O, are fixed pulleys and P, is a cord secured at one end to the movable portion of the gasometer F, and passing over pulleys M, N, O, and downward and over wheels on the stems of the cocks b^1 and e^1, so that a movement of the gasometer will turn said cocks to regulate the rate of working of the apparatus.

An aluminium float is placed in the reservoir E to separate the fluid from the air above it.

What we claim is:—

1. In an apparatus of the kind described, a carbureter casing, an inlet for air provided with a broad rose at its end, a pipe for the induction of liquid fuel, said pipe being shaped into spirals within said casing, the spirals being formed into surfaces parallel with the foraminous surface of the rose and adjacent thereto, and provided with apertures opening toward said rose.

2. In an apparatus of the kind described, a carbureter casing, an induction pipe for air having a rose at its end having its foraminous surface in the shape of a cone, an induction pipe for liquid fuel formed into spirals within the casing, said spirals being arranged adjacent to the foraminous surface of the rose and arranged in a surface parallel to such surface, for the purpose described.

3. In a carbureter, the combination of means for delivering air in one direction in small streams extending over a considerable area, and an apparatus for delivering carbureting fluid in the opposite direction to and against the incoming air in a finely divided condition and over an approximately equal area to that over which the incoming air is distributed, said areas being located adjacent, and opposite, to each other.

4. In a carbureter, the combination of a delivery passage for air, a rose at the end of said delivery passage, and means adapted to deliver carbureting fluid in a divided condition in the opposite direction to that of the air flowing from said rose and over an area approximately equal to that of said rose, said rose and means for delivering the fluid being located adjacent, and opposite, to each other.

In testimony whereof we sign this specification in the presence of two witnesses.

CHARLES L. MEYER.
NICHOLAS P. HICKEY.

Witnesses:
JAMES MALONEY,
ELLIOTT J. STODDARD.