(No Model.)

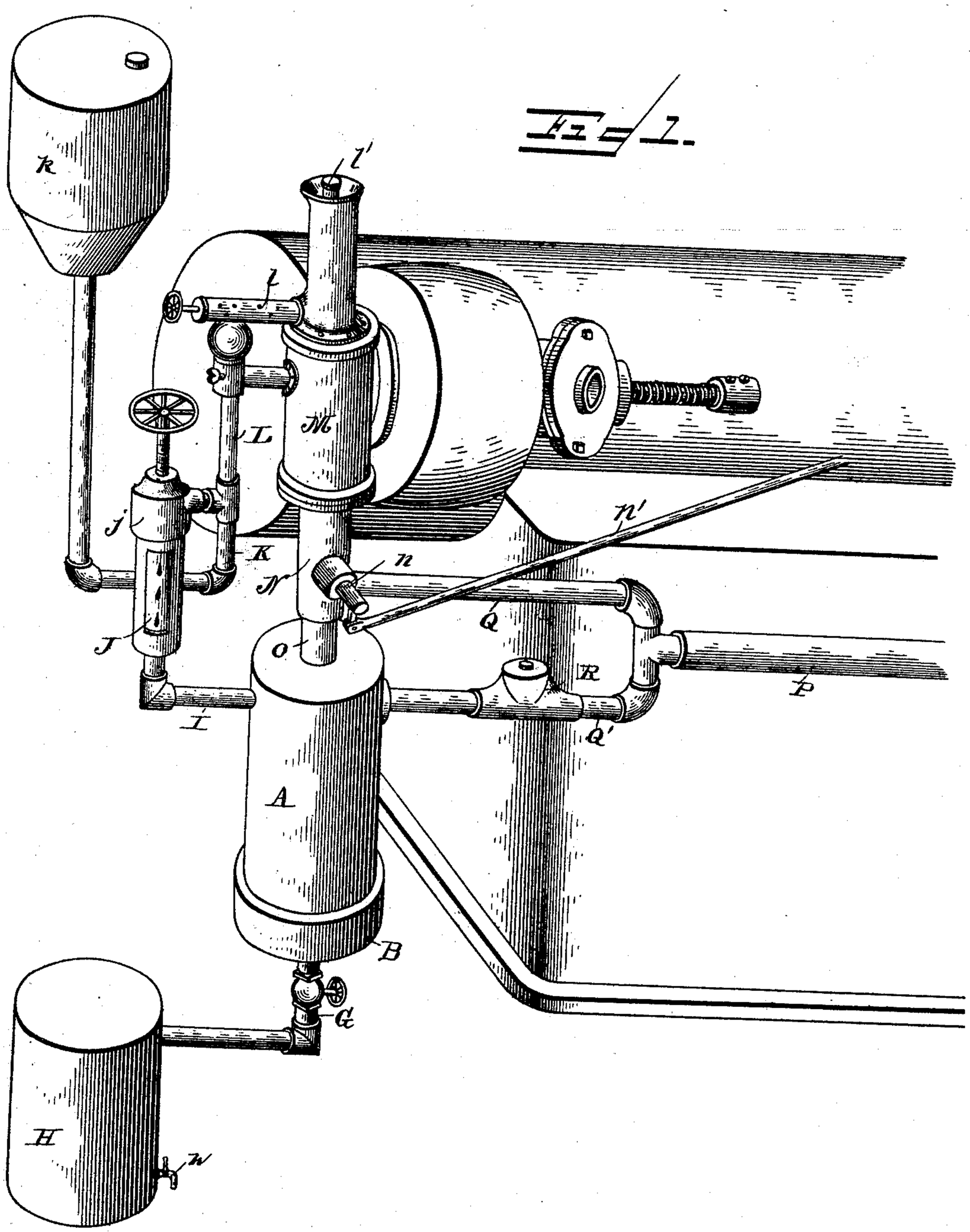
2 Sheets—Sheet 1.

J. E. CAPS.

CARBURETOR FOR GAS ENGINES.

No. 509,462. Patented Nov. 28, 1893.

Fig. 1.



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D. P. Wolhaupter.

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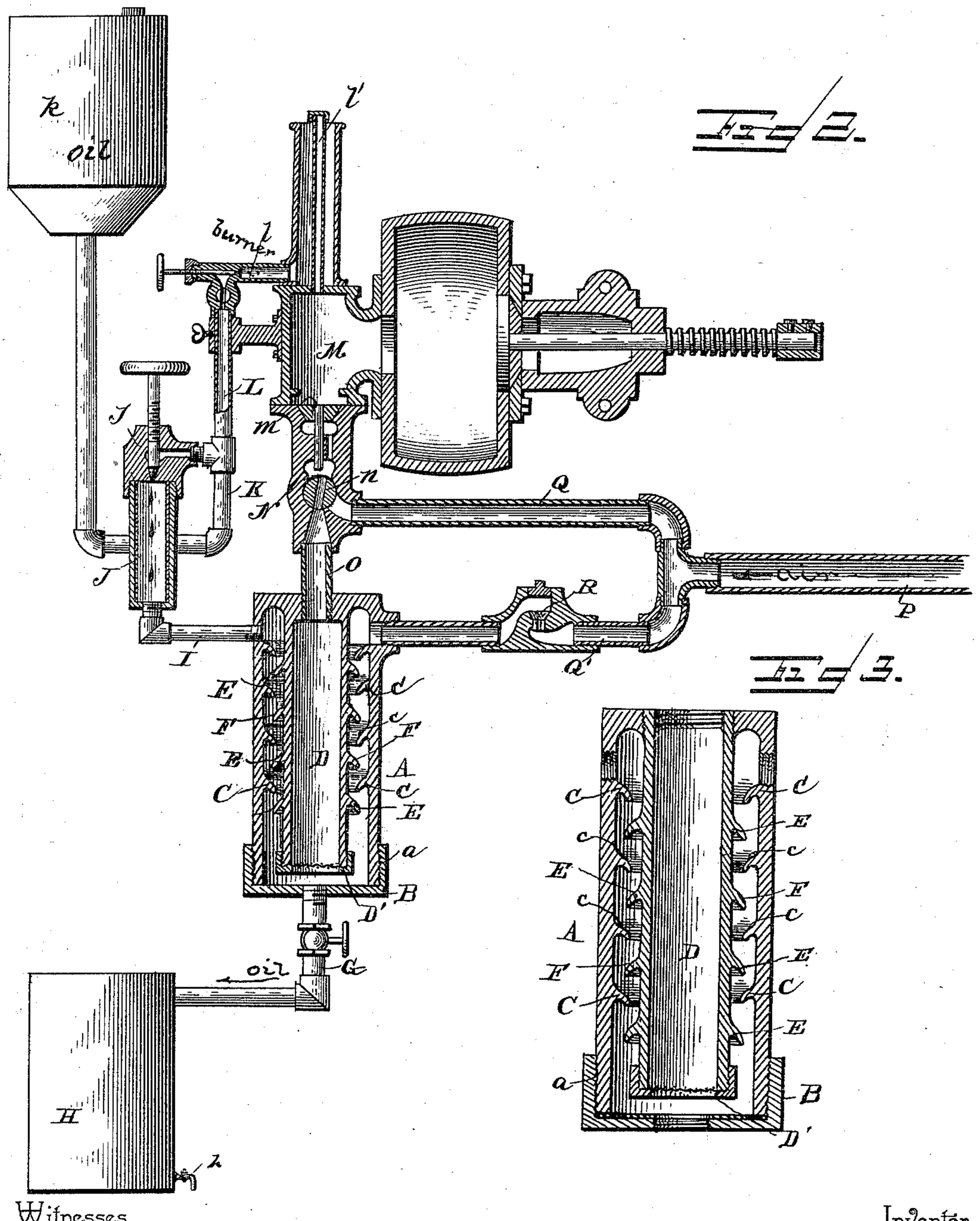

Fig. 2.

Fig. 3.

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UNITED STATES PATENT OFFICE.

JOHN E. CAPS, OF KANSAS CITY, MISSOURI.

CARBURETOR FOR GAS-ENGINES.

SPECIFICATION forming part of Letters Patent No. 509,462, dated November 28, 1893.

Application filed January 26, 1893. Serial No. 459,787. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. CAPS, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented a new and useful Carburetor for Gas-Engines, of which the following is a specification.

This invention relates to carburetors for gas engines; and it has for its object to provide certain improvements in carbureting devices especially adapted for use in connection with explosive gas engines, whereby the air and gas shall be more thoroughly commingled to form the necessary explosive gas which is ignited in the usual ignition chamber of a gas engine.

To this end the main and primary object of the present invention is to provide an improvement in carbureting devices and the feed therefor, which can also be adapted for use in other connections where carburetors are employed.

With these and many other objects in view which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts, hereinafter more fully described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a perspective view of a portion of a gas engine having my improved carbureting devices connected therewith. Fig. 2 is a central vertical sectional view of the carbureting devices. Fig. 3 is an enlarged detail sectional view of the carburetor separated from its connections.

Referring to the accompanying drawings:—A represents a cylindrical carbureting chamber closed at its upper end, and having a lower exteriorly threaded end *a*, which is inclosed by the removable screw cap B, tightly fitting over said open end to form an air tight joint, as is necessary in devices of this character. The outer shell of the cylindrical chamber A is provided with a parallel series of annular interior inwardly projecting deflecting and drip shelves or ledges C. The combined deflecting and drip shelves or ledges C, not only project inwardly within the chamber, but are also downwardly curved or inclined upon their upper faces as at *c*, to provide for the free drip of the oil from ledge to ledge as will be more fully described, and said ledges are arranged in parallel series from a point near the upper closed end of the chamber to within a suitable distance of the removable bottom cap thereof. The cylindrical carbureting chamber A, is further provided with the inner depending escape tube D, for the escape of the commingled air and gas. The said escape tube D, is either separate or integrally formed with the shell of the chamber, and depends from the upper closed end of the same to a point in close proximity to the removable bottom thereof, in order to provide between such tube and the sides of the chamber a carbureting space extending the full height or length of said chamber. The tube D, is provided with a circumferential or exterior series of annular combined deflecting and drip flanges E. The circumferential series of combined deflecting and drip flanges E encircling the tube D, are arranged in parallel series and are downwardly curved upon their upper faces at F, so as to be disposed centrally between the edges of the drip shelves or ledges C, and also to project into the spaces between such drip shelves or ledges, in order to form therewith a tortuous passage throughout the entire carbureting space formed between the inner escape tube and the outer shell of the chamber. As illustrated in the drawings the lower open end of the escape tube is inclosed by the screen fender cap D′, or it may be provided with a series of such screens arranged therein to prevent the escape of dirt and other foreign matter into the same.

The carbureting chamber described, is never allowed to have any accumulation of oil therein, and in order to provide for keeping the same entirely free of any accumulations of surplus oil at the bottom of the same, the removable bottom cap B, of the carburetor is pierced to receive the oil drain pipe G, which leads to a suitable collecting air tight vessel H having a suitable draw-off cock *h*. The drain pipe G, is provided with a suitable cock or valve, but is constantly kept open so that the lower open end of the escape tube D, is constantly kept uncovered, so that the carbureting gas finds a ready escape to the point of use, while at the same time if the gas engine were stopped and the feed of

the oil were continued, still there would be no accumulation of oil at the bottom of the carburetor, on account of the constant drain.

An oil feed pipe I, enters the carburetor near the top thereof, directly above the uppermost drip shelf or ledge, so that the oil fed into the chamber must distribute itself over said upper shelf or ledge before dripping onto the upper deflecting and drip flange directly thereunder, and owing to the tortuous disposition of the ledges and flanges, the oil is necessarily thoroughly distributed throughout the entire carbureting space so as to be completely exposed to the air circulating throughout the carbureting space. A glass feed tube J, is connected to the oil feed pipe I, and also to the needle valve *j*, so as to provide for properly regulating the flow of oil by observation, and the valve *j*, is connected to the main supply pipe K—, leading from the supply tank *k*, and also connected by the valved pipe L, to the ordinary burner *l*, employed for heating the ignition tube *l'* of an ordinary gas engine. The ignition tube *l'*, is connected to the ignition chamber M, of an ordinary gas engine, such as illustrated in the drawings, and said ignition chamber is provided with the ordinary bottom valve *m*, for controlling the inlet of gases into the same through the valve casing N. The valve casing N', is provided with separate ports and controlled by a two-way valve *n*, which is operated by means of a suitable connecting rod *n'*, leading to the ordinary governor of the engine, and one of the ports of said valve casing is connected by the pipe O, to the top of the carburetor A, to carry off the combined air and gas from the central escape tube D.

An air supply pipe P, leads from a suitable source of supply and is provided with the separate branches Q and Q', respectively, the former of which Q, is connected to the valve casing N, and the other of which Q', is provided with a check valve R, and is connected to the upper end of the carburetor directly above the upper drip shelf or ledge thereof.

Now it will be apparent that, when the engine is running properly, the air only enters into the top of the carburetor, and by reason of the specific construction thereof previously described, is thoroughly commingled with the dripping oil so as to vaporize and combine therewith, to form the necessary gas which is drawn through the escape tube D, and the two-way valve, by the suction of the engine, into the ignition chamber thereof, it being borne in mind that any surplus oil passes directly out of the bottom of the carburetor. If the engine were running too fast the governor would act in the ordinary manner and therefore throw the two-way valve *n*, in such a position as to shut off the supply of gas and air from the carburetor, and lead only air into the ignition chamber until normal action was again reached, as will be well understood by those skilled in the art.

Changes in the form, proportion and the minor details of construction which are embraced within the scope of the appended claims, may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A carburetor comprising an outer shell closed at both ends, an inner escape tube depending from the inner top of said shell to a point in close proximity to the bottom thereof and open at its lower end, said escape tube forming between the same and the outer shell an annular carbureting chamber, oil and air inlets communicating with the annular carbureting chamber or space at its upper end, and the top outlet pipe leading from the escape tube, substantially as set forth.

2. In a carburetor, an outer shell closed at both ends, a central escape tube secured to and depending from the inner top of the shell and open at the bottom, said inner escape tube projecting to a point in close proximity to the bottom of the shell and forming therebetween and said shell an annular carbureting space, alternately disposed drip ledges and flanges arranged in said annular carbureting space and forming a tortuous passage, the top oil and air inlets communicating with said carbureting space, and an outlet pipe leading from the upper end of the escape tube, substantially as set forth.

3. A carburetor having an outer shell closed at both ends, a central escape tube secured to and depending from the inner top of the shell and open at the bottom, said central escape tube projecting to a point in close proximity to the bottom of the outer shell, circular drip ledges and shelves arranged in the annular carbureting space formed by the outer shell and the inner tube, oil and air inlets communicating with the top of the annular carbureting space, an outlet pipe leading from the upper end of the escape tube, an adjacent drain vessel, and a constantly open drain pipe piercing the bottom of the carburetor and connected with the top of the said drain vessel to prevent accumulations of surplus water, substantially as set forth.

4. A carburetor comprising an outer shell having an inwardly projecting series of circular downwardly curved combined deflecting and drip ledges, and a central escape tube depending to a point near its bottom to form a surrounding carbureting space and provided with an integral circumferential series of circular combined deflecting and drip flanges curved downwardly and projecting into the spaces between the curved ledges of the shell to form a tortuous circulating and downward drip passage, a bottom drain for the carburetor, and separate oil and air supply pipes entering the carburetor above the uppermost ledge therein, substantially as set forth.

5. The combination with a carburetor, for gas engines, having an interior central escape

tube depending therein to form an interior annular carbureting space; of a carbureted air outlet pipe connected to the top of the carburetor in a line with its central escape tube, a valve casing connected to said outlet pipe and the gas engine, an air supply pipe having separate branches connected to the upper end of the annular carbureting space of the carburetor and to one side of said valve casing, respectively, a valve mounted in said valve casing and adapted to connect either the carbureted air outlet pipe or one of the air supply pipe branches with the gas engine separately, and a sight feed oil supply connected with the annular carbureting space of the carburetor, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN E. CAPS.

Witnesses:
JOHN H. SIGGERS,
E. G. SIGGERS.