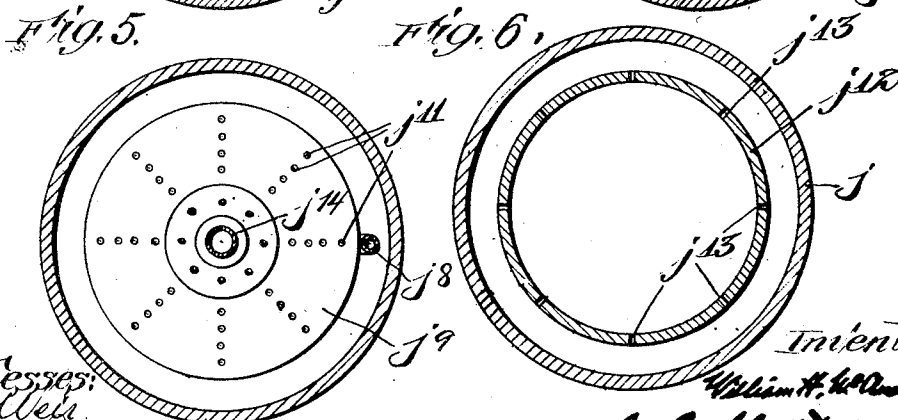
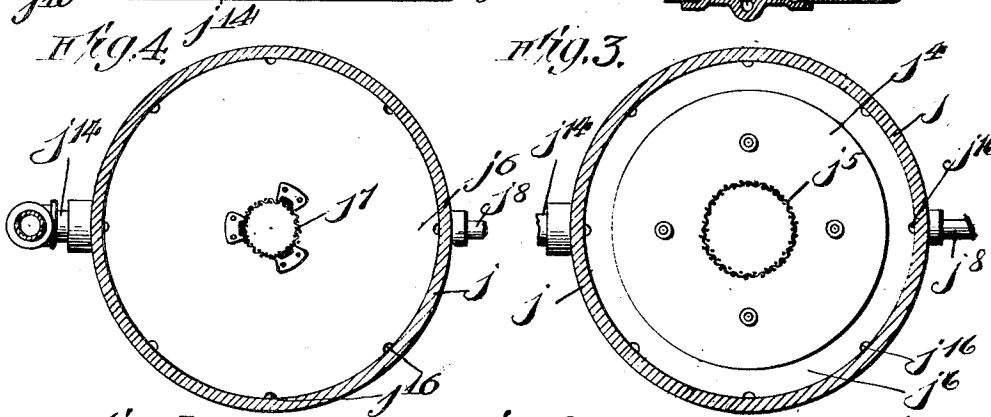
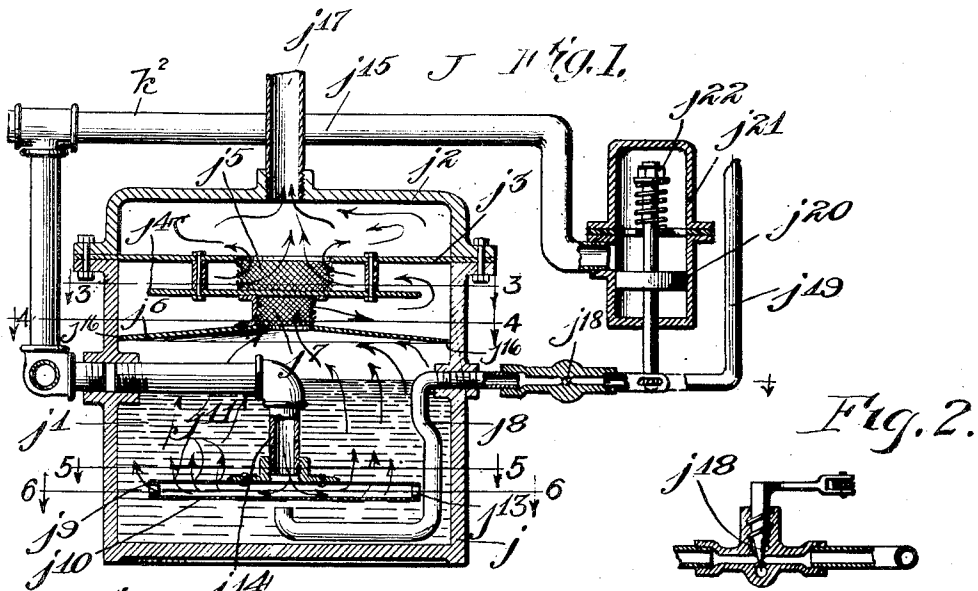


1,057,254.

Patented Mar. 25, 1913.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

WILLIAM H. McANDREWS, OF CHICAGO, ILLINOIS.

## CARBURETER.

1,057,254.

Specification of Letters Patent.

Patented Mar. 25, 1913.

Application filed November 3, 1905. Serial No. 285,738.

*To all whom it may concern:*

Be it known that I, WILLIAM H. McANDREWS, a citizen of the United States of America, and resident of Chicago, Cook county, Illinois, have invented a certain new and useful Improvement in Carbureters, of which the following is a specification.

My invention relates to carbureters for the generation of gas for heat, light and power, and is well adapted for use on automobiles propelled by internal combustion motors.

A special object of my invention is the provision of an improved carbureter adapted more particularly for use on automobiles driven by internal combustion motors, and the provision of certain details and features of improvement tending to increase the general efficiency and serviceability of a carbureter of this particular character.

To the foregoing and other useful ends, my invention consists in matters hereinafter set forth and claimed.

In the accompanying drawings, Figure 1 is a vertical section, on an enlarged scale, of my improved carbureter, showing certain connections and parts in side elevation. Fig. 2 is an enlarged detail of the valve controlling the supply of hydro-carbon to the carbureter. Fig. 3 is a horizontal section on line 3—3 in Fig. 1. Fig. 4 is a horizontal section on line 4—4 in Fig. 1. Fig. 5 is a horizontal section on line 5—5 in Fig. 1. Fig. 6 is a horizontal section on line 6—6 in Fig. 1.

Referring more particularly to Figs. 1 to 6 inclusive, my improved carbureter J comprises a tank or receptacle *j* adapted to hold a suitable quantity of oil or hydro-carbon *j'*. The said tank or receptacle has a cover *j<sup>2</sup>*, and this cover and the tank or receptacle are separated by a centrally apertured diaphragm *j<sup>3</sup>*. A plate or disk *j<sup>4</sup>* is hung from the central portion of the said diaphragm at a point below the central aperture thereof, and connected with the said aperture by means of a cylinder of wire gauze *j<sup>5</sup>*, or other suitable reticulated material. A little farther down, the slightly conical diaphragm *j<sup>6</sup>* is connected with the lower side

of the disk *j<sup>4</sup>* by another cylinder or ring of wire gauze or other reticulated material *j<sup>7</sup>*. It will be seen that this diaphragm *j<sup>6</sup>* has a central opening leading up into the interior of the gauze or reticulated cylinder *j<sup>7</sup>*. An oil inlet pipe *j<sup>8</sup>* leads to the bottom of the receptacle and supplies the interior thereof with suitable quantities of oil or hydro-carbon. It is evident that the pipe *j<sup>8</sup>* can extend downwardly on the outside if desired, and discharge into the bottom of the receptacle, or through the side near the bottom, so long as the oil is introduced into the tank at or near the bottom thereof. Just above the nozzle or outlet portion of this pipe *j<sup>8</sup>*, there are provided a couple of diaphragms *j<sup>9</sup>* and *j<sup>10</sup>* arranged one above the other, and the upper diaphragm *j<sup>9</sup>* being provided with perforations *j<sup>11</sup>*. The peripheral portions of these two diaphragms are rigidly separated by a ring *j<sup>12</sup>* having peripheral ring openings *j<sup>13</sup>*. The lower diaphragm *j<sup>10</sup>* is preferably imperforate. In addition, the upper diaphragm *j<sup>9</sup>* is provided with a centrally arranged aperture to which is suitably connected an air inlet pipe *j<sup>14</sup>*, the latter leading to the side of the receptacle and ultimately connecting with the air supply or pressure pipes *j<sup>15</sup>*. Around its outer edge, the diaphragm *j<sup>9</sup>* is provided with small openings *j<sup>16</sup>*. At its top, the said carbureter is provided with a gas offtake or pipe *j<sup>17</sup>*. With this arrangement, the air entering the receptacle through the pipe *j<sup>14</sup>* flows into the chamber provided between the diaphragms *j<sup>9</sup>* and *j<sup>10</sup>*. The air then escapes through the apertures or perforations *j<sup>11</sup>* and *j<sup>13</sup>*, where it then mingles with the body of oil or hydro-carbon *j'*. The gas thus formed then passes upwardly through the central opening in the diaphragm *j<sup>6</sup>*, where it then passes upwardly through the screen or reticulated cylinder *j<sup>7</sup>*. After this, the gas passes through the sides of the screen or reticulated cylinder *j<sup>5</sup>*, and then upwardly through the central opening in the diaphragm *j<sup>3</sup>*. From this point the gas escapes through the pipe or offtake *j<sup>17</sup>*. In this way, a superior form of gas is manufactured in said carbureter from air which is admitted

directly to the hydro-carbon. After this, as explained, the gas is forced to pass upwardly through successive screening or more or less finely reticulated means before it is allowed to escape for use. The supply of oil to the carbureter is controlled by a needle valve  $j^{18}$  connected in the oil supply pipe  $j^{19}$ . It will be seen that this valve is operated by a spring-held piston  $j^{20}$ , which latter is inclosed in a cylinder  $j^{21}$ . The spring  $j^{22}$  tends to keep the said piston normally in an elevated position, and the valve closed. The cylinder  $j^{21}$  is, it will be seen, connected with the air pressure or supply pipes  $j^{15}$ . Consequently, the greater the air pressure the greater the amount of air passing through said carbureter, and the greater the supply of oil thereto. In other words, the oil supply is automatically controlled, and the greater the supply of oil to the carbureter, the greater the supply of air thereto, and vice versa. In this way, the said carbureter can be run on easy pressure, or can be crowded to its full capacity, without requiring any manual adjustment of any of its parts or controlling devices. The air passing through the body of oil impoverishes it to a considerable extent, but the new supply of oil being furnished to the chamber below, the air opening immediately enriches the upper portion of the oil body, so that the gas produced is of a substantially uniform quality.

The oil supply tank (not shown) is arranged in any suitable position and is connected by a pipe with the oil supply pipe  $j^{19}$  leading to the carbureter.

With further respect to the carbureter, it will be seen that the apertures  $j^{16}$  permit any oil of condensation occurring above the diaphragm  $j^6$  to flow back to the receptacle containing the main body of oil or hydro-carbon. A particular object of the carbureter J is to preserve at all times the correct proportion of air and oil. The air pressure is bound to vary somewhat, regardless of the particular use of said carbureter, and with the automatic valve, the correct proportion will always be retained. In other words, there is a certain proportion which gives the most combustible mixture which can be produced, and the automatic valve preserves this proportion at all times. Furthermore, in the carbureter fresh oil is constantly supplied at a point below, so that it rises and keeps full, rich oil at the top of the body of oil in the generator. In this way, the air is not permitted to impoverish the oil, so to speak, the oil through which air passes always being of the same gas-making value or quality.

One of the important features of the general construction consists in increasing the power of the engine without increasing the

speed. This is done by compressing the gas before it enters the cylinder of the engine. For example, this can be done by closing off the surplus air from the pump,—that is, the air which is ordinarily escaping into the atmosphere and which is not used for cooling the engine. The pump supplies a certain amount of air, and a certain portion of this air is used in cooling the engine, and what is left can be used for any other purpose whatever. As stated, this surplus air can be thrown into the carbureter, so as to increase the pressure at this point and thus supply the gas under pressure to the engine. Of course, the gas supplied to the engine is always under pressure, but the important thing is to increase the pressure in order to increase the power of the engine without increasing its speed. Ordinarily, and at all times, the air supplied from the pump goes partly to the engine to cool the same, and partly to the carbureter, and over and above this quantity there is a surplus which is going anywhere, wherever it is needed, or to the atmosphere if there is no way in which it can be used.

It is obvious that my improved carbureter can be used for various purposes and in various connections wherever gas is required either for lighting, heating or the development of power. For this reason, I do not limit myself to the exact details shown and described.

What I claim as my invention is:

1. In a carbureter, the combination of a receptacle for holding the hydro-carbon, a couple of thin horizontal walls arranged one above the other and with a slight space between, means for rigidly connecting together the horizontal portions of said upper and lower walls, there being air outlets arranged at intervals around the periphery of the structure thus formed by the connected upper and lower walls, means for supplying air to the chamber between the said upper and lower walls, the structure thus formed being submerged in the body of hydro-carbon, and an oil inlet arranged immediately below the central portion of said air supplying structure.

2. In a carbureter, the combination of a receptacle for hydrocarbon, a couple of submerged diaphragms rigidly separated at their edges by a ring having outlet openings, an air supply pipe leading to the chamber between the said submerged diaphragms, an oil supply pipe leading to a point immediately below the said submerged diaphragms, an upper pair of diaphragms comprising centrally apertured diaphragms arranged at a point above, a disk interposed between the two centrally apertured diaphragms, a cylinder of reticulated material connecting the aperture in

the lower apertured diaphragm with the lower surface of the said disk, a similar cylinder connecting the aperture in the uppermost diaphragm with the upper surface  
5 of the said disk, and a gas offtake pipe leading from the chamber of the said uppermost centrally apertured diaphragm.

Signed by me at Chicago, Cook county, Illinois, this 31st day of October, 1905.

WILLIAM H. McANDREWS.

Witnesses:

SARAH LEWIS,

ALBERT JOHN SAUSER.