

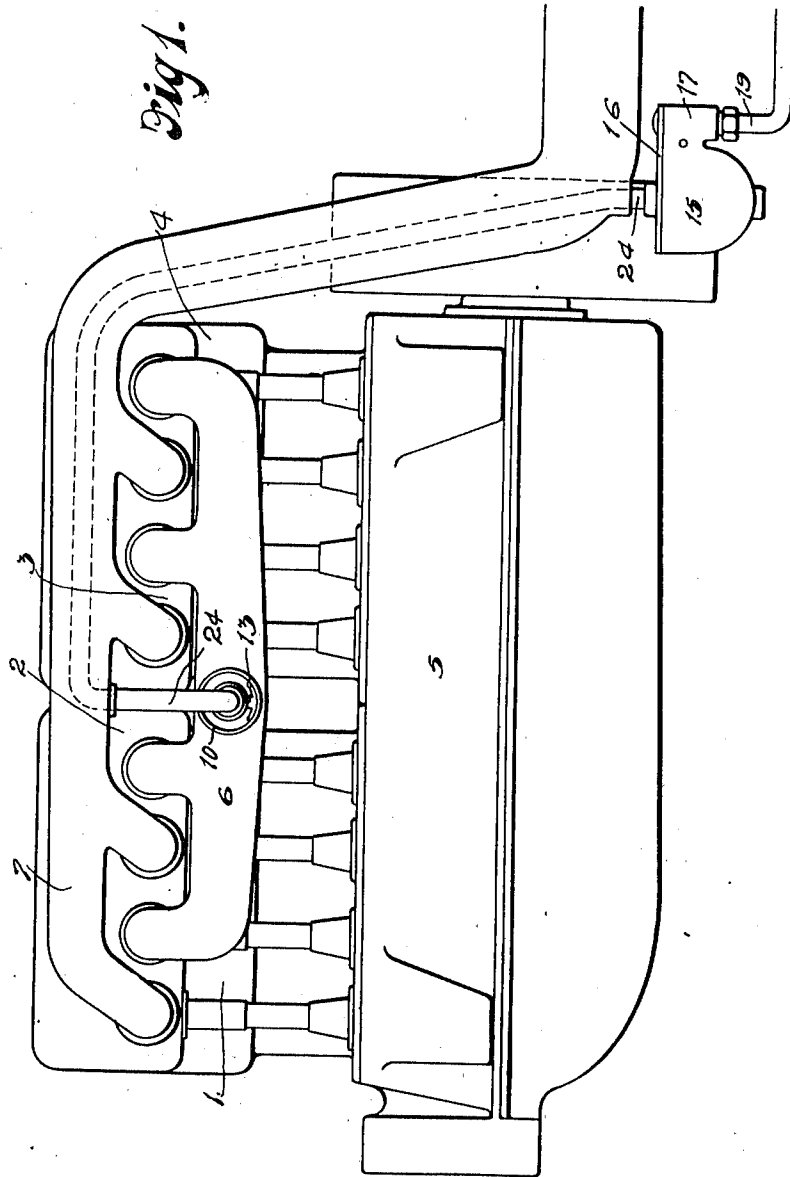
J. W. MOWBRAY.
CARBURETER.

APPLICATION FILED SEPT. 3, 1912.

1,061,626.

Patented May 13, 1913.

2 SHEETS—SHEET 1.



WITNESSES

J. M. Saphay
Roland Foster

INVENTOR

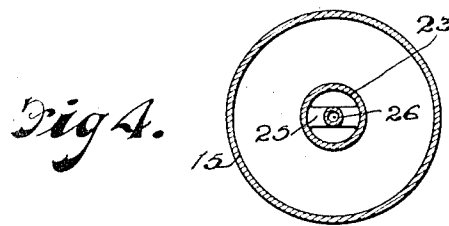
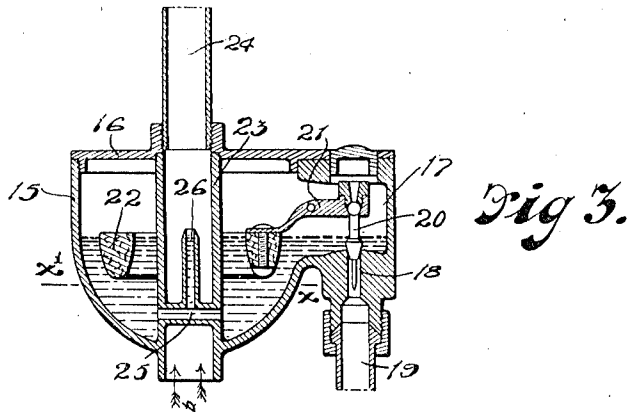
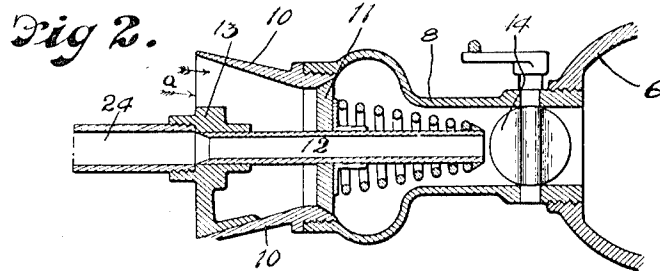
J. W. Mowbray.
By *Shank & Waterbury* Attys

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2 SHEETS—SHEET 2.



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By *Frank E. [Signature]* Atty

UNITED STATES PATENT OFFICE.

JAMES WILLIAM MOWBRAY, OF WINNIPEG, MANITOBA, CANADA, ASSIGNOR OF ONE-HALF TO JOHN HUDSON CHAMBERS, OF WINNIPEG, MANITOBA, CANADA.

CARBURETER.

1,061,626.

Specification of Letters Patent.

Patented May 13, 1913.

Application filed September 3, 1912. Serial No. 718,408.

To all whom it may concern:

Be it known that I, JAMES WILLIAM MOWBRAY, of the city of Winnipeg, in the Province of Manitoba, Canada, have invented certain new and useful Improvements in Carbureters, of which the following is the specification.

My invention relates to carbureters for gas engines and the object of the invention is to provide an improved carbureter which will insure of an effective and completely combustible firing mixture to the point of explosion of the engine on which the device is applied.

The invention consists essentially in the arrangement and construction of parts hereinafter more particularly described and later pointed out in the appended claim.

Figure 1 is a side view of an engine supplied with my device. Fig. 2 is an enlarged detailed vertical sectional view through the portion of the carbureter carried by the inlet manifold. Fig. 3 is an enlarged detailed vertical sectional view through the portion of the carbureter adjoining the exhaust manifold. Fig. 4 is a horizontal sectional view through the apparatus shown in Fig. 3.

In the drawings like characters of reference indicate corresponding parts in each figure.

The chief distinction between my carbureter and those at present in use is that the primary air and the explosive volatile liquid mixed with the air are heated to a high temperature to produce a gas which is non-combustible and then the auxiliary air is admitted with the result that an especially effective and completely combustible firing mixture is admitted to the manifold and consequently the cylinders. In carbureters at present on the market the explosive volatile liquid such as gasoline is jetted into the primary air at practically atmospheric temperature and is afterward mixed with the auxiliary air at atmospheric temperature and then directed to the cylinder. The final mixture of primary and auxiliary air and suspended vaporized liquid being in some instances heated prior to entering the cylinder.

In my carbureter the primary air and the suspended liquid fuel is in the form of a vapor heated to a high temperature to produce a non-combustible gas prior to admit-

ting the auxiliary air during its course from the primary mixing to the auxiliary mixing device with the result that an exceptionally effective charge is passed to the cylinder. Referring now to the drawing;—1, 2, 3 and 4 represent the cylinders of a gas engine mounted in the usual manner on the base and supplied with the usual inlet manifold 6 and exhaust manifold 7.

8 represents a mixing chamber screw threaded into the manifold and opening to the same the said mixing chamber having the outer end thereof supporting a conical extension 10 forming a seat for the spring pressed valve 11 slidably mounted on a short hollow tube 12 carried by a spider 13 formed as part of the conical extension.

14 is a throttle valve of any suitable form located in the mixing chamber.

The arrows "a" Fig. 2 indicate the direction of flow of the auxiliary air.

15 represents a receptacle for the reception of an explosive volatile liquid such as gasoline which receptacle is fitted with a closed top 16 and a lateral branch 17 fitted with a vertically disposed duct 18 communicating with a feed pipe 19. A needle valve operates in the duct 18 and is carried by a pivoted lever 21 provided with a float 22, the float controlling the admission of the liquid to the receptacle.

23 is a vertical tube passing through the receptacle and opening at the bottom to the air and at the top to a pipe 24 threaded into the top 16. This pipe communicates directly with the tube 12 the end being threaded into the spider 13.

25 is a short horizontally disposed tube passing across the lower end of the tube 23 and opening to the interior of the receptacle. A vertically disposed spray nozzle 26 appears in the tube 23 and opens to the small tube 25.

I have not shown detailed drawings of the receptacle and contained parts as these are now in use and well known and simply serve as a carbureting device for the primary air, the primary air being passed up the tube 23 in the direction indicated by the arrows "b" while the liquid is sprayed through the nozzle into the primary air by atmospheric pressure. The receptacle 15 is connected to the exhaust manifold in any suitable way and the pipe 24 passes from the receptacle to

the mixing chamber 8 through the exhaust manifold as best shown in Fig. 1 of the drawings.

When the carbureter is in use the primary air and vaporized injected fuel liquid are drawn through the pipe 24 to the mixing chamber, being heated to a high temperature to produce a non-combustible gas by the exhaust gases in the manifold prior to mixing with the auxiliary air passed through the valve 11. This is the important feature of my invention as I can be insured practically of a perfect completely combustible gas being admitted to the cylinder.

It is essential in my invention that the air inlet of the primary mixing device be comparatively small as compared to the air inlet of the secondary mixing device, say approximately 1 to 10. Otherwise no non-combustible gas can be produced by heating as set forth, and this is requisite for the reason that if a combustible gas were produced, it would explode under heavy loads in the gasifying tube leading to the secondary mixing device. It has been found by practical experience that increasing the volume of primary air as compared to the secondary air makes it impossible to get sufficient heat to transform the liquid into a perfect gas and thereby utilize all the energy in the oil. It is also necessary to the successful operation of my carbureter that the throttle be located in such a position on the secondary mixing

chamber as to have effective control on the ingoing gas and secondary air. It must be located on the manifold side of the air intake of the secondary mixing chamber.

What I claim as my invention is:—

A carbureter comprising a device for mixing the volatile liquid and the primary air, having an air inlet tube provided with a spray nozzle located therein, the air inlet tube being of such a size at the point of the spray nozzle as to produce a vapor which when heated will not produce combustion, a tube or conduit located in a heated zone and forming an extension of the aforesaid tube to gasify and carry onwardly the vapor produced at the spray nozzle, a chamber into which the inner end of the gasifying tube extends provided with a secondary inlet opening, so proportioned in area to the primary air inlet as to introduce a volume of air into the chamber greatly in excess of the primary air introduced, to insure with the gas perfect combustion, and a throttle located on the manifold side of air intake of the chamber in such a manner as to control both the gas and secondary air.

Signed at Winnipeg this 31st day of July 1912.

JAMES WILLIAM MOWBRAY.

In the presence of—

L. GOULD,
ROLAND FOSTER.