L. A. PAZANDAK.

CARBURETER.

APPLICATION FILED JAN. 2, 1915.

1,205,658.

Patented Nov. 21, 1916.

Fig. 1.

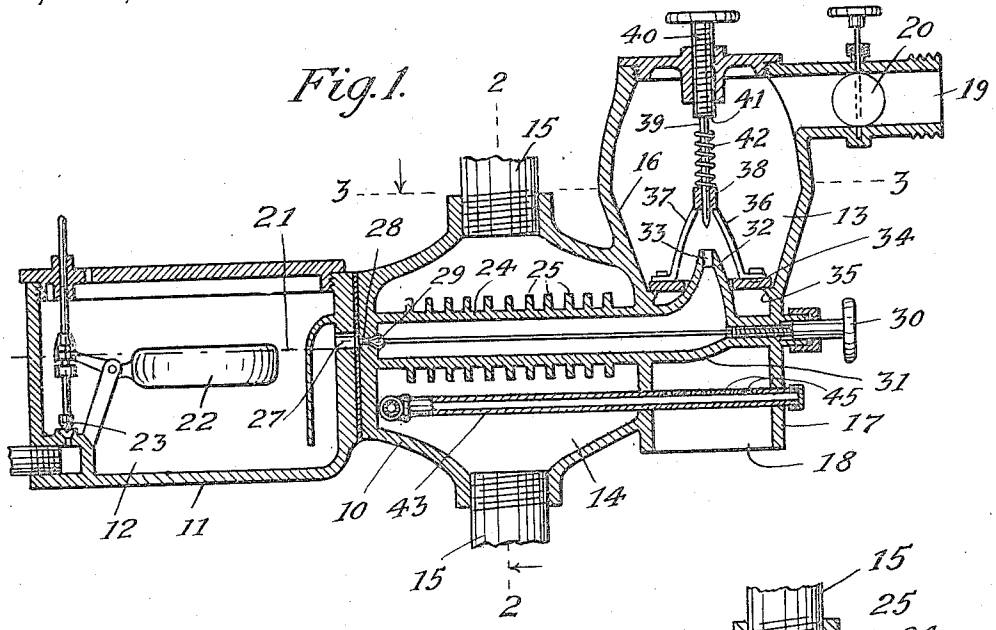


Fig. 2.

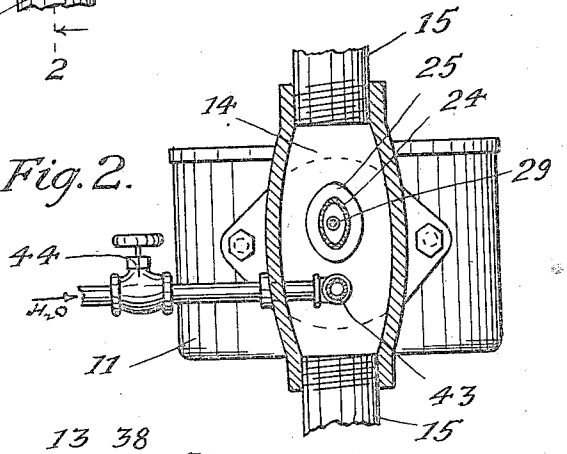
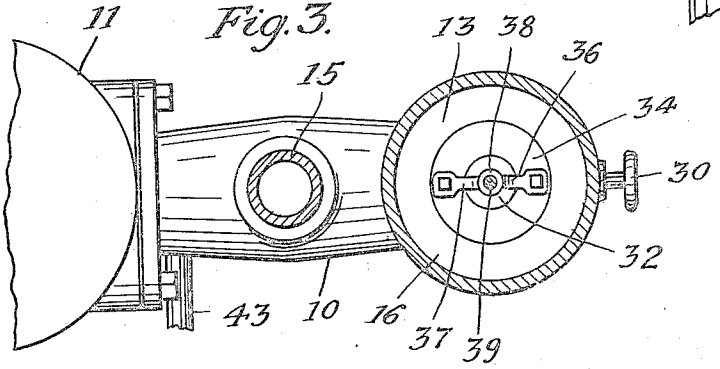


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

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CARBURETER.

1,205,658. Specification of Letters Patent. Patented Nov. 21, 1916.

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To all whom it may concern:

Be it known that I, LOUIS A. PAZANDAK, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

My invention relates to carbureters and has for its object to provide a carbureter wherein the gas from the fuel will be generated by heat, preferably from the exhaust of the engine, before any part of the fuel comes into contact with the air with which it is mixed. The generated gas is delivered into the mixing chamber as a pure gas and there encounters the incoming stream of air, where the mixing is completed and from which the explosive mixture passes to the engine.

It is also an object of my invention to provide an automatic air-intake in connection with the mixing chamber which will admit air in amounts proportional to the vacuum created by the engine that is proportional to the speed of the engine.

A further object of my invention is to provide means for injecting steam into the current of air supplied to the mixing chamber before said air encounters the generated fuel, and I accomplish the generation of the steam in the same manner as the generation of the fuel; that is, I carry water through a pipe of sufficient size which extends through the heating chamber, which, as above pointed out, is preferably formed in the exhaust passageway of the engine, where the heat of the exhaust gases may be utilized for the purpose of generating both the fuel gas and the steam.

The full objects and advantages of my invention will appear in connection with the detailed description thereof and are particularly pointed out in the claims.

In the drawings, illustrating the application of my invention in one form, Figure 1 is a sectional view of the carbureter embodying the principles of my invention. Fig. 2 is a section taken on line 2—2 of Fig. 1. Fig. 3 is a section taken on line 3—3 of Fig. 1.

As illustrated, a casing 10 is provided which may be cast integrally or may comprise the main portion 10 and a separate portion 11 bolted to the casing 10, as indicated in Fig. 3. The casing comprises a fuel chamber 12, a mixing chamber 13 and an intermediate heating chamber 14. As illustrated, the chamber 14 is formed in conjunction with the exhaust pipe 15, so that the exhaust gases of the engine must pass through said chamber 14. The mixing chamber 13 has a conically expanded lower wall 16 which extends into a pipe 17 opening through an aperture 18 for the admission of air into the mixing chamber 13. A delivery pipe 19 leads from the mixing chamber 13 to the manifold or engine cylinder and may be controlled to the extent desired by butterfly valve 20. The fuel in chamber 12 is kept at a fixed level 21 by means of a float 22 which controls the inlet valve 23.

Extending across heating chamber 14 is a pipe 24, which may, if desired, be oval in cross section, as shown in Fig. 2, and may be provided with a series of flanges 25 to increase the heat absorbing capacity of said pipe. The chamber 14 is provided with an aperture 27 the bottom of which is just below the normal fixed level 21 of the fuel in the mixing chamber. Another aperture 28 extends from aperture 27 into the interior of pipe 24 and is controlled by a needle valve 29 operated by manually-controlled means such as the hand nut 30. The pipe 24 has a portion 31 thereof which extends within the pipe 17 and is provided with an upstanding cone-shaped portion 32 formed with a delivery aperture 33 at the center thereof. It will be seen that the outer walls of the cone-shaped portion 32, and the inner walls 16 of the mixing chamber 13 have formed between them a peripheral passageway with diverging side walls so that said passageway increases progressively in width toward the extremity of the conical portion 32. A ring valve 34 rests upon a shoulder 35 at the bottom of the conical wall 16, in which position said valve engages with its inner edges the walls of the conical portion 32. The ring valve 34 is connected by means of arms 36, 37 with a collar 38 slidable upon a pin 39 which is secured to a screw bolt 40 threaded into the casing which closes the top of mixing chamber 13. The bolt 40 is provided with a shoulder 41 adjacent the junction of said bolt with the pin 39, and this shoulder may be positioned relative to collar 38 by means of screwing the bolt 40. A spring 42

loosely surrounds the pin 39 and resting at its lower end upon the collar 38 and being spaced at its upper end a suitable distance from shoulder 41.

The valve mechanism above described is operated by the suction induced by the engine, which lifts the valve ring 34 a distance proportional to the vacuum caused by such suction. The first part of the lifting movement is effected against gravity alone, collar 38 and spring 42 sliding freely upon pin 39, the collar constraining the valve ring 34 to move vertically. As the suction force increases the valve may be moved to compress the spring 42, and the ratio of compression to a given movement of the valve is, of course, controlled or adjusted by means of the screw 40. Since the walls surrounding the inner and outer edges of the ring valve 34 are diverging any movement of the valve from its seat will open the air passageway, and this opening will be progressively increased in proportion to the extent of movement of the valve. By this means a control of the air is effected by a single valve and without the necessity of primary and secondary air passageways, as is commonly employed.

As is well-known, certain types of fuel oils, particularly heavy oils, provide a much better explosive mixture if a certain percentage of steam or water vapor is present in the mixture. In my construction I am able to obtain this water vapor in the form of steam by extending a water-pipe 43 through the heating chamber 14 and across the air passageway 17, the flow of water into said pipe being controlled by a valve 44. Steam will be generated in the heating chamber which will pass through apertures 45 into the air passageway.

The manifold advantages of my invention are clear. The generation of the fuel gas is effected entirely by heat. The heating pipe 24, subject as it is to the exhaust gases, will become so hot that the fuel which escapes through the opening 33 will be a perfect gas before admixture with the air from chamber 18. The air itself will be very slightly warmed in passing over the portion 31 of the heater pipe 24 which extends within the air passageway, and said air will bear the proper proportion of water vapor in the form of steam injected through apertures 45 into the current of air. The mixture of air and generated gas effected in the mixing chamber 13, including as it does the right proportion of water vapor, will be highly efficient to produce a most effective explosive compound. There is no possibility of loss of fuel or of flooding the manifold or engine cylinders, because the fuel oil is all gasified before the same comes into the current of air and no drops or particles of condensed liquids can be carried into the discharge pipe.

I claim:

1. A carbureter comprising a casing having a fuel chamber, an outlet at the side of said fuel chamber, an expanded horizontal oval passageway communicating with said outlet, a second casing attached to the first and forming a chamber inclosing said passageway for directing the engine exhaust gases downwardly against said passageway to vaporize the fuel within, an upwardly-projecting nozzle on the end of said passageway, an air intake passageway below and about said nozzle, a mixing chamber formed in said casing above said nozzle, and means to mix and distribute the heated carbureted air.

2. A carbureter comprising a casing formed with a fuel chamber a mixing chamber and an intermediate chamber forming a portion of the exhaust passageway of the engine, a generator member extending across the intermediate chamber and having communication at one end with the fuel chamber and at the other end with the mixing chamber, said mixing chamber having a passageway for admitting air past the opening into the generator, and a water pipe extending through the intermediate chamber and into the air passageway and having apertures for the delivery of steam into said air passageway.

3. A carbureter comprising a fuel chamber, a mixing chamber, means for delivering fuel from the fuel chamber into the mixing chamber, means for admitting a current of air into and through the mixing chamber induced by the action of the engine, means for heating the fuel oil as it passes from the fuel chamber to the mixing chamber, whereby said oil is generated into a gas and said generated gas is delivered into the current of air in the mixing chamber, and a water supply pipe subject to said heating means and having apertures for delivery into said current of air of steam generated by said heating means.

In testimony whereof I affix my signature in presence of two witnesses.

LOUIS A. PAZANDAK.

Witnesses:
F. A. WHITELEY,
H. A. BOWMAN.