L. B. WHITE.

FUEL VAPORIZING DEVICE FOR INTERNAL COMBUSTION ENGINES.

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Fig. 1.

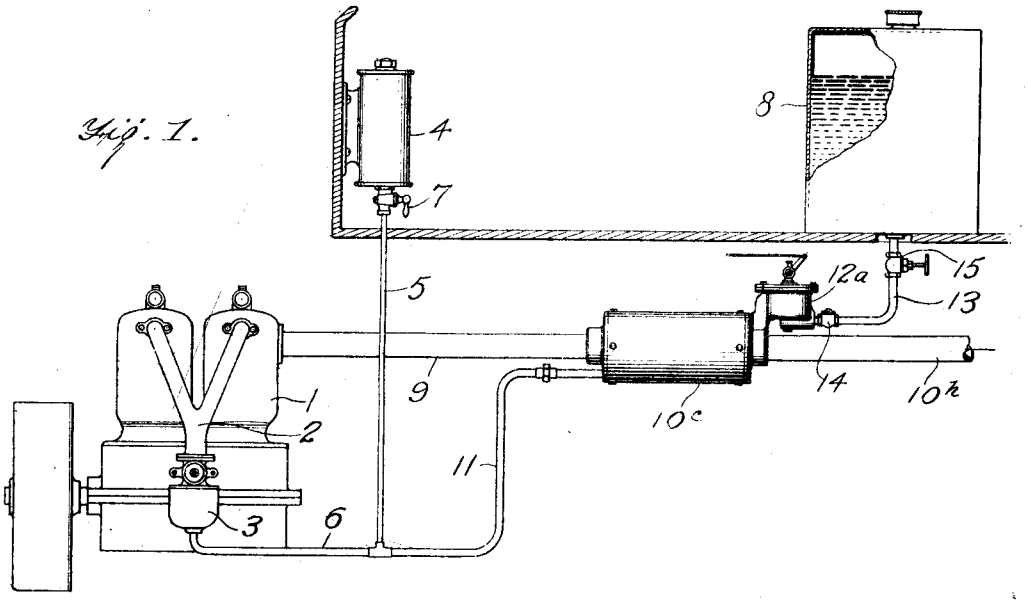
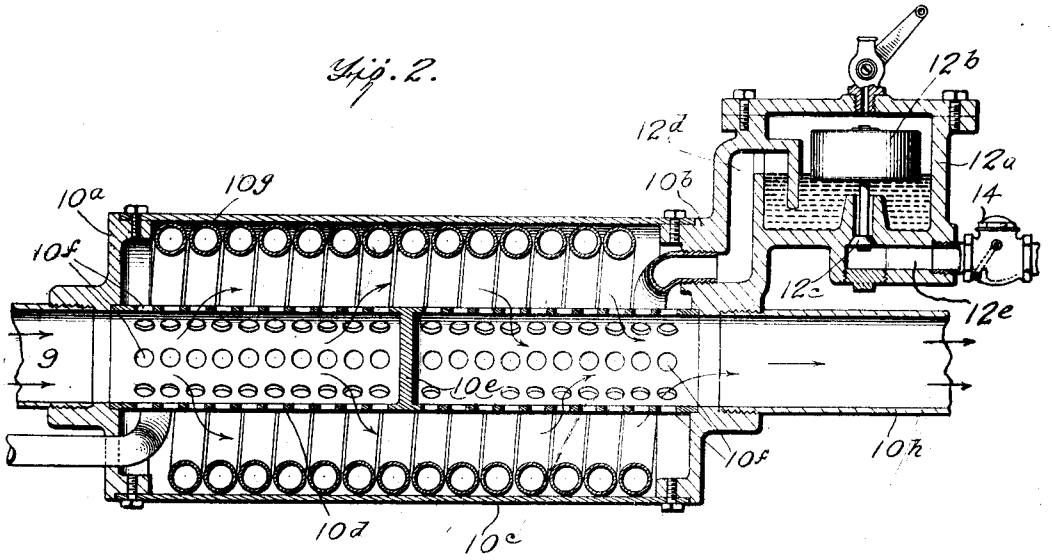


Fig. 2.



WITNESSES

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FUEL-VAPORIZING DEVICE FOR INTERNAL-COMBUSTION ENGINES.

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To all whom it may concern:

Be it known that I, LEWIS B. WHITE, a citizen of the United States, and a resident of Manson, in the county of Vance and State of North Carolina, have made certain new and useful Improvements in Fuel-Vaporizing Devices for Internal-Combustion Engines, of which the following is a specification.

My invention relates to improvements in devices for vaporizing fuel for use in internal combustion engines, and it consists in the combinations, constructions and arrangements herein described and claimed.

An object of my invention is to provide a device by means of which kerosene or other heavy oils which are not as volatile as the lighter oils, such as gasolene can be used successfully in internal combustion engines.

A further object of my invention is to provide a device by means of which the heat of the exhaust, which is ordinarily wasted is utilized for heating a liquid fuel to its vaporizing temperature.

A further object of my invention is to provide a device of the type described which may be readily attached to automobiles or other devices of the existing types without any material change in these devices.

Other objects and advantages will appear in the following specification and the novel features of the invention will be particularly pointed out in the appended claim.

My invention is illustrated in the accompanying drawings forming part of this application in which,

Figure 1 is a general view showing the arrangement of the various parts of the apparatus, and Fig. 2 is a detail sectional view through the muffler and the feed regulating device.

Referring now to the drawings I have shown therein an engine 1 of the usual type, having two cylinders which are connected by the intake manifold 2 with the carbureter 3. The latter may be of any suitable type. Secured to the dash board of the automobile (or other device) is an auxiliary fuel reservoir 4, which communicates by means of a pipe 5, with a pipe 6 leading to the carbureter. The pipe 5 is controlled by means of a valve 7 and the auxiliary reservoir 4 is designed to contain a readily volatile fluid, such as gasolene.

At 8 I have shown a supply tank for the kerosene or other relatively non-volatile fuel. The engine 1 is provided with the usual exhaust pipe 9. This communicates with the muffler, the construction of which is best shown in Fig. 2.

The muffler consists of two heads 10^a and 10^b which carry the outer cylindrical casing 10^c and an inner tube 10^d which is divided into two compartments by means of a partition 10^e. The tube is provided with perforations 10^f which establish communication between the interior of the tube 10^d and the interior of the casing 10^c. A coil of pipe 10^g is disposed between the inner tube 10^d and the outer casing 10^c. This pipe is made of a special alloy which will withstand the high heat and which will permit the passage of the highly heated fuel therethrough without clogging. The coil 10^g communicates by means of a pipe 11 with the pipe 6 leading to the carbureter. The head 10^b is provided with an outlet 10^h.

At one end of the muffler is a fuel feed regulator. This consists of a chamber 12^a having therein a float 12^b which operates a valve 12^c. The interior of the chamber 12^a is in communication with the pipe 10^g by means of a passage 12^d. The fuel tank 8 communicates with the inlet 12^e of the fuel regulating device by means of a pipe 13, a check valve 14 and valve 15 being provided.

From the foregoing description of the various parts of the device the operation thereof may be readily understood. When the engine is to be started the valve 7 is opened, while the valve 15 on the pipe 13 is closed. The volatile fuel, such as gasolene in the auxiliary tank 4 will now flow down the pipe 5 and through the pipe 6 to the carbureter. On cranking the engine the latter will start and the exhaust products will pass through the pipe 9 through the muffler and out by the pipe 10^h. This will heat the muffler and after the engine has run for a short while the valve 7 is closed while the valve 15 is opened. The kerosene will now pass by the pipe 13 past the check valve 14 and into the chamber 12^a. As soon as the float has risen far enough it will cut off any further supply until the level of the fuel in the chamber has again lowered owing to the suction from the engine. Fuel passing through the coil 10^g is now highly heated and is in such condition that it can be used for the running of the engine as efficiently as gasolene. The vaporized kerosene is

drawn through the carbureter and the mixture is delivered to the engine through the intake manifold 2 in the usual manner.

I have found by experiment that it is not necessary to use the auxiliary tank to start the engine every time that the latter stops. When the engine has been running for some time and the apparatus is thoroughly heated the muffler will still be hot enough to permit the device to be started on the kerosene.

It will be observed that in this device I have utilized a part of the necessary apparatus on every automobile, to wit, the muffler, for heating kerosene. The appearance of the muffler on the outside is substantially that of the ordinary muffler, with the exception that in connection with this muffler I use a fuel feed regulating device. I desire to call attention to the fact that this fuel feeding device is on the opposite side of the muffler from the engine, so that after the engine is started the latter sucks in the heated kerosene vapor through the carbureter. This obviates the necessity of having a fuel regulating device in the carbureter, and the arrangement described permits the use of a carbureter whose fuel feeding device is out of commission.

It is a well known fact that the float feeds of carbureters are apt to get fuel soaked so that they do not work accurately. In the ordinary device a fuel soaked float will not only cause an inefficient working of the engine but will many times completely stop the engine. It is immaterial with my apparatus whether the float in the carbureter will work or not, since it is gaseous fuel which is being drawn through the carbureter and not liquid fuel.

It will be understood that the exhaust which passes through the pipe 9 into the pipe 10^d is caused to pass through the perforations 10^f into the space in which the pipe 10^g is located and then again into the pipe 10^d at the rear of the partition 10^e and out through the pipe 10^h. This insures the products of combustion coming into intimate contact with the pipe or coil 10^g, thereby heating the latter to a degree entirely sufficient to vaporize the kerosene. Furthermore this does not interfere with the action of the device as a muffler.

The apparatus can be readily installed on automobiles or motor boats of the existing type, and when once installed needs very little attention, since the device is of simple construction and not liable to get out of order.

--I claim:

In a combined muffler and vaporizer, an inner tube for the passage of exhaust products of combustion having a central partition, said tube being perforated on both sides of said central partition, heads secured to said tube, an outer cylindrical casing secured to said heads, a coiled pipe disposed in the space between said inner tube and said outer casing, the coils of said pipe forming a baffle for the products of combustion, said pipe having an inlet end and an outlet, the opposite ends of said pipe being carried by the heads and the outlet end of said coiled pipe being adjacent to the inlet end of said inner tube.

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