F. G. BEE.

VAPORIZER.

APPLICATION FILED DEC. 31, 1913.

1,135,151. Patented Apr. 13, 1915.

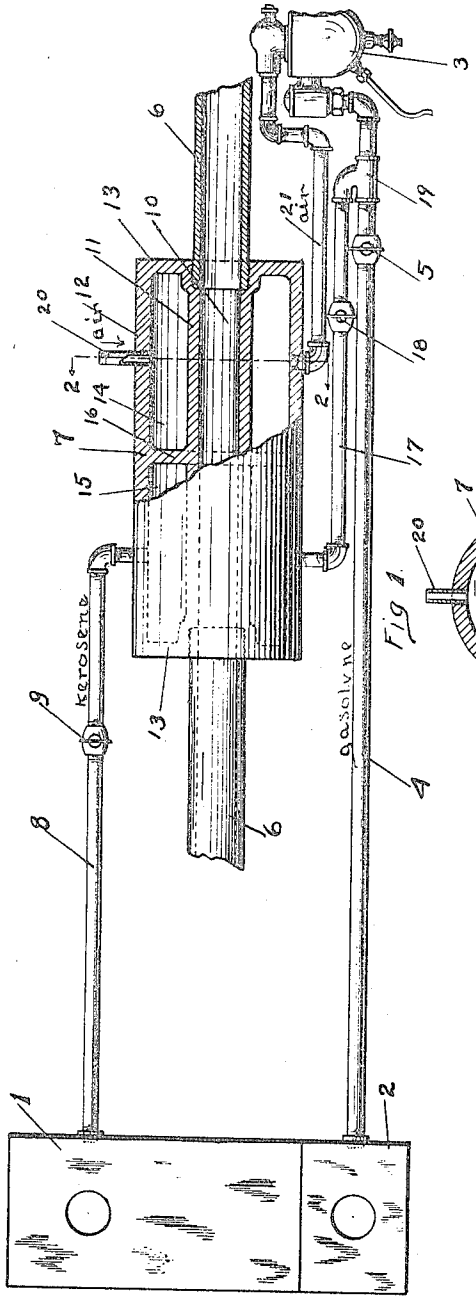


Fig. 1.

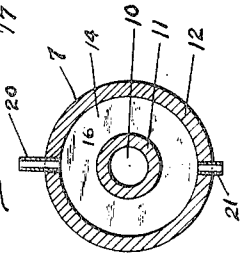


Fig. 2.

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VAPORIZER.

1,135,151. Specification of Letters Patent. Patented Apr. 13, 1915.

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To all whom it may concern:

Be it known that I, FREDERICK G. BEE, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Vaporizers, of which the following is a specification.

Various endeavors have been made to use kerosene in connection with hydrocarbon engines and by these endeavors, it is generally conceded that heat is necessary to assist in the volatilization of the oil. I have recognized this feature and my invention resides essentially in the provision of a vaporizing element adapted to be interposed in the exhaust pipe leading from the engine.

In its preferred form, my invention takes the form of a double walled element having a longitudinal passage therethrough, which element is disposed directly in the exhaust pipe. It will, therefore, be apparent that the exhaust gases are in no way impeded during their passage outwardly, but the heat therefrom is utilized to assist in the volatilization of the oil, it being understood that the oil itself is circulated through the double walled structure.

I have also found it desirable to pass the incoming air used in forming a combustible mixture about the exhaust gases, in a manner to slightly increase its temperature, this means preferably taking the form of passing the gases through a secondary chamber formed in the element above referred to.

The preferred embodiment of my invention is shown in the accompanying drawings, in which similar characters of reference designate corresponding parts, and in which:

Figure 1 is a view showing my type of vaporizer partly in elevation and partly in section, the remaining portions used in connection therewith being shown somewhat diagrammatically, and, Fig. 2 is a section taken on line 2—2 of Fig. 1.

In the use of kerosene, it has been found generally necessary to either provide a structure for initially heating the kerosene to effect its vaporization, or to start the engine on gasolene. I have resorted to the latter course in which I have provided a tank shown to the left of Fig. 1, as comprising a kerosene receptacle 1 and a gasolene receptacle 2. The gasolene receptacle is in direct communication with any preferred type of carbureter 3 by means of the pipe connection 4, which pipe has a shut-off valve 5 disposed therein. When it is desired to start the engine, the valve 5 is opened permitting a flow of gasolene into the carbureter, it being understood that the exhaust gases pass out through the exhaust pipe shown at 6. These gases are at a somewhat high temperature and to give the necessary heat when using kerosene, I have interposed my vaporizer directly in the exhaust pipe 6. This vaporizer is designated generally at 7 and is shown as being in communication with the oil receptacle 1 by means of the pipe connection 8 also provided with a shut-off valve 9.

The vaporizer itself comprises an element having a longitudinal passage 10 entirely therethrough, this element being of a double walled nature. The wall 11 of the longitudinal passage forms the inner wall of the element, while 12 indicates a second wall somewhat spaced from the first and formed concentrically therewith. The space between these walls is closed by the solid ends 13 and the chamber thus formed is divided into two compartments 14 and 15 by the provision of a central spacing wall 16. The compartment 15 is provided with a kerosene inlet opening to which the pipe connection 8 is attached and an outlet opening to which the outlet pipe 17 is connected, this latter pipe being also provided with a controlling valve 18 and ultimately leading to the carbureter 3 by the connection shown at 19. Likewise, the compartment 14 is provided with an air inlet pipe 20 and an outlet pipe 21, the latter leading, as indicated, to the carbureter 3.

As has been related, it is desirable to start the engine on gasolene, in which case the valve 5 is opened and the valves 9 and 18 closed, thereby permitting the flow of gasolene to the carbureter and the incoming air circulated through the compartment 14 before entering the carbureter. After the exhaust gases have sufficiently heated the element 7, the valve 5 is closed and the valves 9 and 18 opened, thereby permitting the flow of kerosene from the receptacle 1 through the compartment 15, where sufficient heat is absorbed to readily affect its vaporization when it enters the carbureter 3, the air entering through the inlet pipe 20 also being circulated in the compartment 14 before it enters the carbureter, whereby it will be evi-

dent that this air is also slightly heated to give better satisfaction in the running of the engine.

From the construction and operation described, it will be readily understood that simple and comparatively inexpensive means are provided for permitting the successful use of kerosene in the generation of gas for the operation of what are known as internal combustion engines and while my invention is designed to be used in connection with any type of internal combustion engine in which an exhaust pipe is used, it is obvious that the same will be of particular benefit when used in connection with the exhaust pipes of automobile engines.

What I claim, is:

The combination with the exhaust pipe of an internal combustion engine, and a carbureter, of a vaporizer, said vaporizer comprising an element closed at its ends and having a longitudinal passage therethrough for the exhaust gases, said element being formed of concentric inner and outer walls thereby forming a chamber therebetween, said inner wall forming the longitudinal passage, a solid spacing wall parallel with the closed ends of said element between said two first named walls dividing said chamber into non-communicating oil and air compartments, separate inlet pipes leading to each of said compartments, and separate outlet pipes for each of said compartments connected to the air and fuel supply openings of said carbureter.

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

FREDERICK G. BEE.

Witnesses:
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WALTER E. L. BOCK.