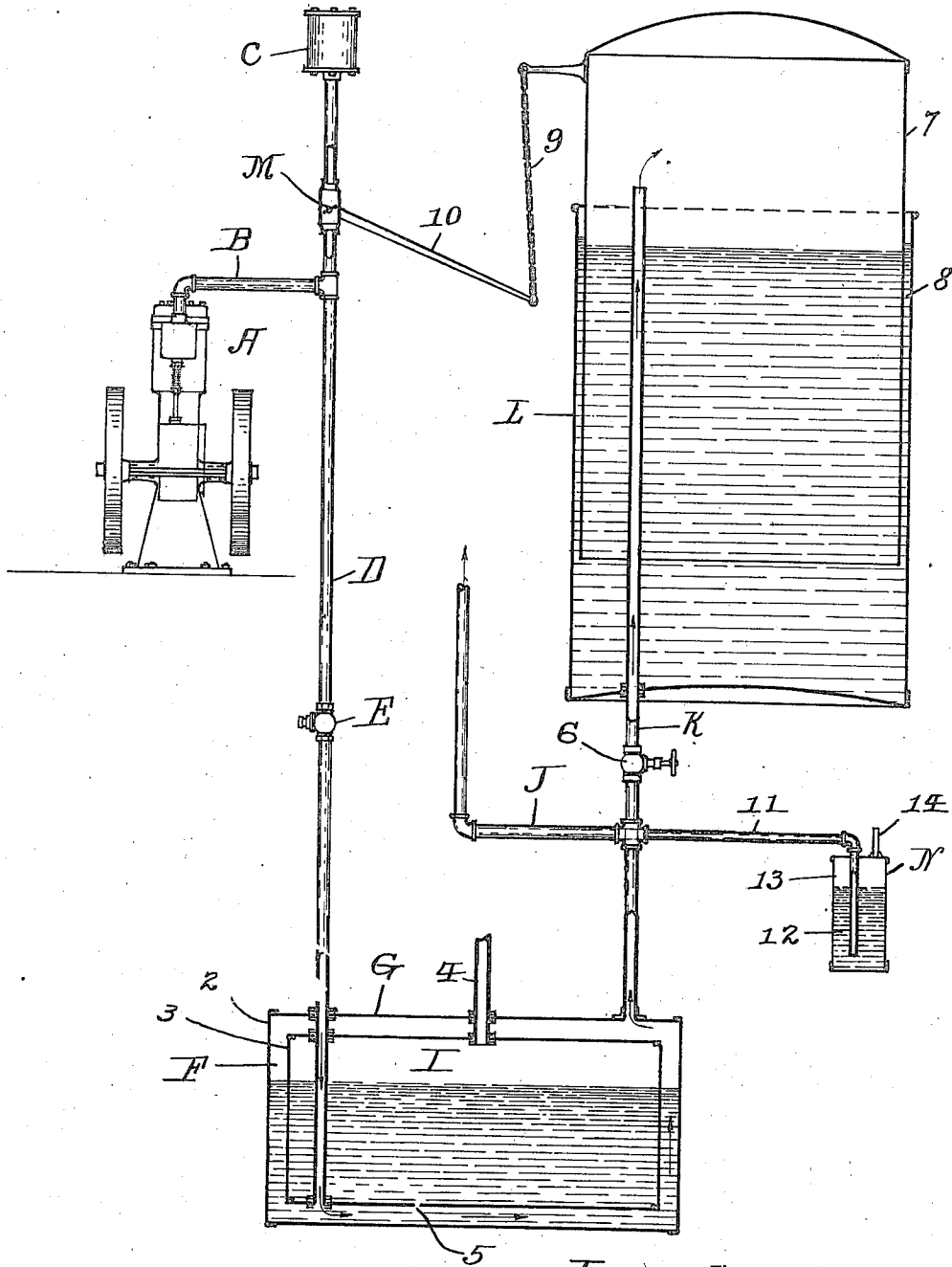


F. PFEIFER.  
 APPARATUS FOR GENERATING GAS.  
 APPLICATION FILED JUNE 16, 1917.

1,296,116.

Patented Mar. 4, 1919.



Inventor:  
 Frank Pfeifer,  
 by: *E. Bradley*  
 Attorney.

# UNITED STATES PATENT OFFICE.

FRANK PFEIFER, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO FRANK PFEIFER, L. A. HURD, AND ALBERT ANDERSON, TRUSTEES, DOING BUSINESS UNDER THE NAME OF EXHAUST HEAT, LIGHT & POWER COMPANY.

## APPARATUS FOR GENERATING GAS.

1,296,116.

Specification of Letters Patent.

Patented Mar. 4, 1919.

Application filed June 16, 1917. Serial No. 175,222.

*To all whom it may concern:*

Be it known that I, FRANK PFEIFER, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented a new and useful Improvement in Apparatus for Generating Gas, of which the following is a specification.

This invention relates to improvements in means for generating gas from petroleum, the primary object being to provide simple and efficient apparatus for producing gas for use in operating internal combustion engines or other purposes. More particularly this invention relates to improved means for producing gas by commingling the exhaust gas from an internal combustion engine with hydrocarbon liquid such as gasoline, kerosene, etc., and for automatically maintaining the gas so produced at a substantially steady pressure and maintaining a constant supply.

To these ends my invention comprises the features of construction and combination of parts hereinafter more particularly described and claimed.

In the accompanying drawing forming part of this specification is illustrated diagrammatically a typical construction of my improved apparatus by the use of which my invention can be carried into practice.

In the drawing A indicates an internal combustion engine having the usual exhaust duct B, which empties into the muffler C, said duct being provided with a branch pipe D containing a check valve E, said pipe leading into the lower portion of an outer compartment F of a carbureter G. This carbureter is formed with a double inclosing wall, the outer and inner members 2 and 3 respectively, of which being spaced apart to produce the outer chamber F. The inner inclosing wall 3 forms the inner chamber I, and is provided with a supply duct 4 through which gasoline or other hydrocarbon liquid can be supplied to the inner compartment. This supply of hydrocarbon is admitted from the inner compartment onto the outer compartment through a perforation 5. The exhaust gases from the engine commingle with the hydrocarbon liquid in the outer compartment F and the enriched gases thus produced are passed upwardly

through the service pipe J for use in operating internal combustion engines or any other purpose for which the gas thus produced is adapted. A branch K containing the cut off valve 6 leads upwardly into the dome or movable element 7 of the gasometer L, said movable element being supported with its lower end immersed in the body of suitable sealing liquid 8, such as water or oil. The movable element 7 is connected by the chain or other fastener 9 to the outer free end of a valve operating arm 10, said arm being connected to the operating shaft of a butterfly valve M, which controls the flow of exhaust gases from the engine into the muffler. The control of these gases automatically forces a portion thereof through the branch D into the carbureter and controls the commingling of the products of combustion from the engine with the hydrocarbon liquid fuel in the carbureter and the consequent production of fixed gas.

In operation the generation of gas is entirely automatic, the operation of the valve M which is controlled by the pressure of gas in the gasometer being constant. Should a large amount of gas be consumed from the service duct J, the gas which is stored in the gasometer is drawn upon and the consequent lowering of the gas immediately effects the operation of the valve M, causing more of the exhaust gases from the engine to be forced into the carbureter, and more fixed gas to be generated until the dome returns into normal position. If it is desired to operate the system without the use of the gasometer, the valve 6 can be closed. The check valve E serves to prevent any backward movement of gases generated in the carbureter and a suitable safety seal N serves to allow the escape of gas from the system should any undue overpressure of gas exist. Said seal is connected by a branch duct 11 and enters a bath of liquid 12 in the chamber 13 from whence the surplus gas may escape through the vent 14 to the outer atmosphere.

In accordance with the patent statutes, I have described the principles of operation of my invention, together with the apparatus which I now consider to represent the best embodiment thereof, but I desire to have it understood that the construction shown is

only illustrative, and that the invention can be carried out by other means and applied to uses other than those above set forth within the scope of the following claim.

5 Having described my invention, what I claim as new and desire to protect by Letters Patent is:—

10 Apparatus of the class set forth, comprising, in combination with an internal combustion engine having a duct leading therefrom for exhaust gases, a muffler into which said duct empties, a valve controlling the admission of gas into said muffler, a carbureter having spaced walls forming an inner liquid  
15 holding chamber and an outer gas holding chamber, said chambers being connected above the level of liquid in said inner chamber, said inner chamber being also connected with a branch of said duct to com-

20 mingle the products of combustion from said engine with hydrocarbon fuel independent of said valve, a gasometer having a passage for gas connected with the inner chamber of said carbureter and a movable pressure element for controlling the pres- 25 sure of gas therein, a service supply duct from the outer chamber of said carbureter and means connecting the valve in said exhaust duct and the movable element of said gasometer for automatically controlling the 30 supply of exhaust gases from the engine to the inner chamber of said carbureter to equalize the pressure of gas in said service supply duct.

In testimony whereof, I have signed my 35 name to this specification.

FRANK PFEIFER.