To all whom it may concern:

Be it known that I, Floyd T. Romberger, a citizen of the United States, residing at Elizabethville, in the county of Dauphin and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Supplying Water-Vapor to the Cylinders of an Internal-Combustion Engine, of which the following is a specification.

My invention relates to improvements in apparatus for supplying a suitable amount of water-vapor to the cylinder or cylinders of an internal combustion engine, such as the engine of an automobile, or stationary engine, the water-vapor being preferably first introduced into the carburetor to become mixed with the explosive charge therein, which is fed to the cylinder or cylinders, while the water-vapor may be introduced directly into the cylinder or cylinders, or the supply manifold pipe thereof.

An important object of the invention is to provide means whereby the usual current of air passing about the cylinder or cylinders of the engine, or other parts thereof, which is caused by the operation of a fan, the travel of the engine, or both, is forced through or in proximity to a volume of water, thus obtaining the water-vapor or air saturated with or carrying the water, which is supplied to the carburetor or the cylinders of the engine.

A further object of the invention is to provide apparatus of the above mentioned character, which is simple in construction, inexpensive to manufacture, strong and durable.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same, Figure 1 is a side elevation of apparatus embodying the invention; and, Fig. 2 is a central vertical longitudinal sectional view through a portion of the apparatus.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention, the numeral 5 designates an internal combustion engine, as a whole, embodying a plurality of cylinders. For the purpose of illustration, this may be considered to be an automobile engine. The explosive charge is fed to the cylinders of the engine through an intake manifold 6, having connection with the discharge end of a carburetor 7, of any well known or preferred type. This carburetor has an air intake end 8, as shown.

The numeral 8 designates a rotatable fan, carried by a shaft 9, journaled through one end of a bracket 10. This fan is driven by a belt 11, engaging a pulley 12, carried by the crank shaft 13 of the engine. The function of the fan 8 is to create a current of air traveling rearwardly over or about the cylinders of the engine or other parts thereof, and to draw the air through the radiator (not shown) in advance thereof, as is well known.

My apparatus comprises a water-vapor generator, comprising a closed shell or casing 9, preferably arranged forwardly of the engine, and suitably supported in this position. This shell is provided at its lower end with a drain valve or cock 10. The shell 9 is provided near its lower end with a float chamber 10, in communication therewith. The float chamber has communication with a water supply pipe 11, through the medium of a tapered opening 12. This tapered opening is covered and uncovered by a float valve 13, having a longitudinal opening to receive a stationary guide 14, as shown. The pipe 11 is preferably equipped with a cut off valve 15, and this pipe may communicate with the radiator of an automobile or any other suitable source of water, having a suitable elevation or pressure. It is thus apparent that when the valve 15 is open the water will pass into the shell 9, and the float valve will function to retain the water level constant.

Passing into the forward side of the shell 9 is an air intake horn 16, flaring forwardly, with its enlarged end portion more or less horizontally arranged rearwardly of and in proximity to the rotatable fan 8'. It is thus apparent that a portion of the air current from the fan will be driven into and through the horn 16, and as the automobile is propelled, additional air current will be driven into and through the horn 16. I have found that some degree of success may be obtained by relying solely upon the air current caused...
by the travel of the automobile, in which event the location of the horn with respect to the engine is more or less immaterial.

The lower end of the horn 16 extends into the lower portion of the shell 9 and is preferably submerged in the water therein. Attached to this lower end of the horn is a spherically curved plate 17, having a central aperture 18, for the passage of the air, and small openings or apertures 19, to permit the air to bubble freely through the water. Arranged above the plate 17 is a spherically curved deflector 20, preferably attached to the horn 16 and having a smaller diameter than the interior of the shell 9. I have found that some degree of success may be obtained by terminating the outlet end of the horn near and above the water level in the shell. The rear side of the shell 9 is provided with an outlet opening having communication with a water-vapor pipe 21, which is connected with the air intake end 8 of the carbureter.

Leading into the upper end of the shell 9 is an auxiliary water-vapor supply pipe 22, having a cut off valve 23 connected therewith. The pipe 22 is adapted to supply the water-vapor to the cylinders of the engine independently of the carbureter and for that purpose the same may lead into the supply manifold 6, as shown, or may have direct communication with the cylinder or cylinders.

The numeral 24 designates a priming conduit, having a receptacle 25 for the reception of gasoline or the like. This priming conduit is preferably equipped with a cut off valve 26. When the valve 26 is open and the liquid fuel placed in the receptacle 25, it is obvious that it will be drawn into the manifold 6 and supplied to the cylinders, until cranking or starting the engine.

In operation, a portion of the air from the fan 8 and a portion of the current of air caused by the travel of the automobile, are forced into and through the horn 16. This air discharges through the opening 18 into the water and passes upwardly through the apertures 19. The air is made to travel through the water, and becomes more or less saturated with the water, or water-vapor. The air saturated with the water, or containing the water-vapor, is fed into the carbureter, and such air takes up the vaporized fuel, and discharges into the cylinder or cylinders of the engine. The usual sparking system for firing the charge in the cylinders may be employed.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size, and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described the invention, I claim:

1. Apparatus of the character described; comprising a receptacle to hold water; means to feed water into the receptacle and to maintain a desired water level therein; an air inlet conduit leading into the receptacle and having its discharge end disposed below the water level thereof for a substantial distance; a deflector plate arranged within the receptacle and spaced a substantial distance below the water level thereof and having a main centrally arranged opening to receive air from the air inlet conduit and discharge the same beneath the deflector plate which is provided outwardly of the centrally arranged openings with apertures for the passage of the air as it ascends through the water whereby the air is sprayed through the water; and a gas take off conduit connected with the receptacle above the water level.

2. Apparatus of the character described; comprising a receptacle to hold water; automatic means to feed water into the receptacle and maintaining the water level substantially constant; an air inlet conduit leading into the receptacle and having its discharge end exposed below the water level thereof for a substantial distance; a deflector plate arranged within the receptacle at a substantial distance beneath the water level thereof and spherically curved and having its concave side arranged lowermost, the deflector plate having a centrally arranged opening to receive the air from the air supply conduit so that the air is conducted beneath the deflector plate for contact with the concave side thereof, the deflector plate being provided outwardly of the centrally arranged opening with apertures for spraying the ascending air through the water; a second deflector plate disposed within the receptacle above the water level thereof; and a gas take off pipe connected with the receptacle above its water level.

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

FLOYD T. ROMBERGER, M. D.

Witnesses:
C. L. PARKER,
G. C. JARVIS.