

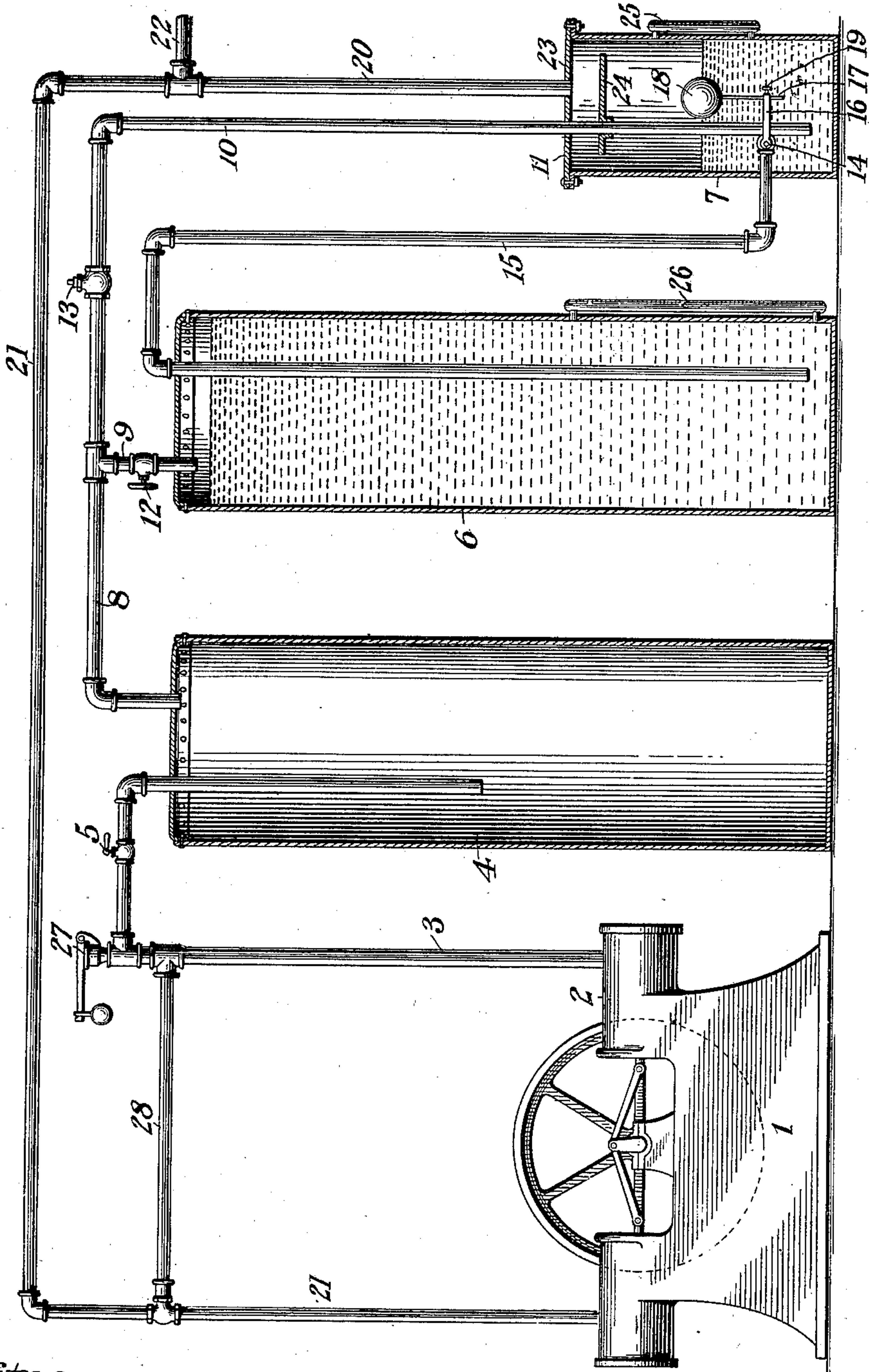
No. 663,683.

Patented Dec. 11, 1900.

H. W. ROYAL.
CARBURETER.

(Application filed Apr. 10, 1900.)

(No Model.)



Witnesses.

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UNITED STATES PATENT OFFICE.

HENRY W. ROYAL, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-HALF
TO WILLIAM B. BROWN, OF SAME PLACE.

CARBURETER.

SPECIFICATION forming part of Letters Patent No. 663,683, dated December 11, 1900.

Application filed April 10, 1900. Serial No. 12,352. (No model.)

To all whom it may concern:

Be it known that I, HENRY W. ROYAL, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented a certain new and useful Carbureter, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to carbureters; and the object in view is to provide a carbureter of simplified and improved construction which is entirely automatic in action, thus doing away with the constant attention of an operator. In machines of the class referred to in order to obtain the best results and produce a gas which shall be of the necessary richness and at the same time economical it is essential that the hydrocarbon in the carbureter be maintained at a certain uniform level. In order to accomplish this, a regulating-valve is associated with the oil-supply pipe, which leads from the supply-tank into the carbureter, said valve being so arranged that it opens automatically when the level of the hydrocarbon is lowered and admits sufficient oil to again bring the oil to the necessary level, whereupon the valve, which is actuated by a float, closes and prevents further admission of oil. In order to primarily fix the level of the oil in the carbureter, the float of the valve is adjustable and capable of being fixed when the proper adjustment has been ascertained. To obtain the best results, air under compression must be forced into the hydrocarbon-tank and the carbureter, so as to effect the necessary pressure behind the carbureted air, and to insure the proper operation of the regulating-valve in the carbureter the pressure in the carbureter must be less than the pressure in the hydrocarbon-tank, this being effected by means of a reducing-valve, which is interposed between said tanks. These and other objects of the invention will appear more fully in the course of the ensuing description.

The invention consists in a carbureter embodying certain novel features and details of construction and arrangement of parts, as hereinafter fully described, illustrated in the drawing, and incorporated in the claims.

The accompanying drawing represents a vertical sectional view, partly in elevation, of

a carbureter constructed in accordance with the present invention.

Referring to the drawing, 1 designates a gas-engine provided with a compression-cylinder 2, in which the air is compressed and forced through a discharge-pipe 3 into an air-tank 4, the pipe 3 passing through the top of the air-tank and terminating about midway of the height of said tank and being also provided at an intermediate point with a cut-off valve 5.

6 designates the hydrocarbon-tank, and 7 the carbureter. Leading from the top of the tank 4 is an air-supply pipe 8, having a branch 9, which passes through the top of the hydrocarbon-tank 6, and another branch 10, which leads downward through the top 11 of the carbureter to a point near the bottom of the carbureter, where the air is discharged and caused to pass upward through the hydrocarbon contained in the carbureter. The branch 9 is equipped with a cut-off valve 12, and a reducing-valve 13 is associated with the pipe 10 between the tank 6 and carbureter 7, so that a less pressure of air within the carbureter may be obtained than the pressure in the oil-supply tank 6.

The tank 6 may be filled with the hydrocarbon; but in order to secure the best results the hydrocarbon within the carbureter must be maintained at a certain level. If this level is materially increased or diminished, the gas will be either too rich or too poor, on the one hand producing an unsatisfactory light and on the other hand adding too much to the cost of production. In order to maintain the oil at a predetermined level, I employ a regulating-valve 14, which is associated with the discharge end of an oil-supply pipe 15, the receiving end of which is arranged in the tank 6, adjacent to the bottom thereof. The pipe 15 extends outward through the top of the tank 6 and thence downward outside of the tank and laterally into the carbureter below the normal oil-level, thus forming a connection by means of which the oil is conveyed to the carbureter. The air-pressure within the tank thus insures the proper feeding of the oil through the supply-pipe 15 into the carbureter. Associated with the valve 14 is a lever-arm 16, the end of

which is provided with an opening for the passage of the stem 17 of a float 18. The stem 17 may be adjusted up or down through the opening in the lever 16 and is fixed at the desired adjustment by means of a binding-screw 19, as clearly shown. After the proper level of the oil has been ascertained the float is by the means above described adjusted with relation to the lever-arm 16, and thereafter it will operate automatically to maintain the oil at the proper level. As the oil is consumed the float 18 begins to descend; but this immediately effects an opening of the valve 14, and an additional supply of oil feeds into the carbureter to take the place of that which has been consumed and to restore the oil to its normal level. It will thus be seen that the device operates automatically and requires no attention. The carbureted air is taken off from the carbureter 7 by means of a supply-pipe 20, having one branch 21, which leads to the engine for driving the same, and another branch 22, which supplies the burners.

The carbureter is provided with a removable cover 23, which is removably bolted to a flange at the top of the carbureter, as shown, and provided with openings for the admission of the pipes 10 and 20. A baffle-plate 24 is arranged near the top of the carbureter, but within the same and beneath the pipe 20, for preventing particles of oil which are carried upward from entering the service-pipe 20. This baffle-plate 24 is supported upon the air-supply pipe 10 and is of less diameter than the internal diameter of the carbureter, so as to leave an annular space around its edge, providing sufficient room for the carbureted air to pass upward into the supply-pipe. The oil which accumulates on the lower surface of the baffle-plate 24 will ultimately find its way by gravity to the main body of the oil in the carbureter.

The carbureter is provided with a gage 25, and the hydrocarbon-tank 6 is provided with a similar gage 26, whereby the level of the oil in said tanks may be observed at any time. A safety-valve 27 is arranged in the discharge-pipe 3, so as to discharge any excess of pressure. 28 designates a pipe which is interposed between the discharge-pipe 3 and the engine-supply pipe 21 in order to regulate the working of the engine in accordance with the amount of pressure in the tank 4.

From the foregoing description it will be seen that after filling the hydrocarbon-tank 6 and starting the machine no further attention is required until the supply of oil in the tank 6 has been nearly consumed, and then the only thing necessary to be done is to again fill said supply-tank. The oil is fed automatically from the supply-tank 6 into the carbureter, the pressure in the supply-tank being in excess of that in the carbureter, and the level of the hydrocarbon in the carbureter 7 is automatically maintained at a uniform level to produce the best quality of gas

in the most economical manner. It will also be seen that the hydrocarbon will be prevented from entering and clogging the service-pipe. Owing to the fact that the regulating-valve 14 is at all times submerged in the oil, a ground-valve and socket will be employed to withstand the action of the oil.

I do not desire to be limited to the exact details of construction hereinabove set forth, but reserve to myself the right to change, modify, or vary the construction within the scope of this invention.

Having thus described the invention, what is claimed as new is—

1. In a carbureter, the combination with an air-compressor, of a hydrocarbon-supply tank, a carbureter in communication therewith, a reducing-valve interposed between said tank and carbureter, to enable a lower pressure to be obtained in the carbureter than in the oil-supply tank, and means within the carbureter for maintaining the hydrocarbon at a predetermined level, substantially as described.

2. In a carbureter, the combination with an air-compressor, of a hydrocarbon-tank, a carbureter, an oil-supply pipe leading from the tank to the carbureter, an automatic regulating-valve within the carbureter associated with the oil-supply pipe, and an air-supply pipe communicating with the hydrocarbon-tank and carbureter and having a reducing-valve interposed between the same, to enable a lower pressure to be obtained in the carbureter than in the oil-supply tank, substantially as described.

3. In a carbureter, the combination with an air-compressor, of a hydrocarbon-tank, a carbureter, an oil-supply pipe leading from the hydrocarbon-tank to the carbureter, an automatic regulating-valve within the carbureter associated with the discharge end of said pipe below the oil-level, an air-supply pipe leading from the compressor and having branches leading into the hydrocarbon-tank and carbureter, and a pressure-reducing valve associated with the air-supply pipe between the hydrocarbon-tank and carbureter, to enable a lower pressure to be obtained in the carbureter than in the oil-supply tank, substantially as described.

4. In a carbureter, the combination with an air-compressor, of an air-tank communicating therewith, a hydrocarbon-tank, a carbureter, an air-supply pipe leading from the air-tank to the carbureter and having a branch leading into the hydrocarbon-tank, means for obtaining a lesser pressure in the carbureter than in the hydrocarbon-tank, an oil-supply pipe leading from the hydrocarbon-tank to the carbureter, and an automatic regulating-valve within the carbureter associated with said oil-supply pipe, substantially as described.

5. The combination of a carbureter, an oil-tank, a suitable air-supply leading to the oil-tank and carbureter, and a pressure-regula-

tor in the air-supply intermediate of the carbureter and oil-tank, whereby a lower pressure may be obtained in the carbureter than in the oil-tank, substantially as described.

5 6. The combination of a carbureter, an oil-tank, a suitable air-supply leading to the oil-tank and carbureter, automatic means for regulating the level of oil in the carbureter, and a pressure-regulator in the air-supply in-
10 termediate of the carbureter and oil-tank,

whereby a lower pressure may be obtained in the carbureter than in the oil-tank, substantially as described.

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

HENRY W. ROYAL.

Witnesses:

E. E. LODGE,

ALLEN C. CLARK.