

1,203,485.

FIG. 1.

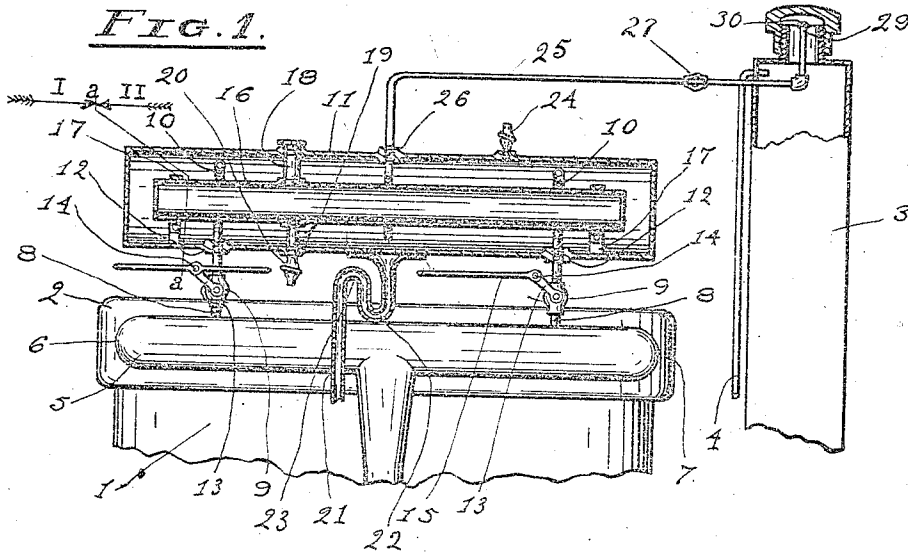


FIG. 3.

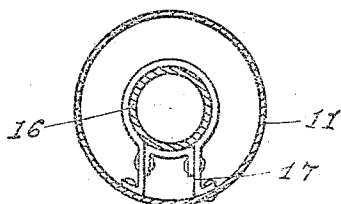
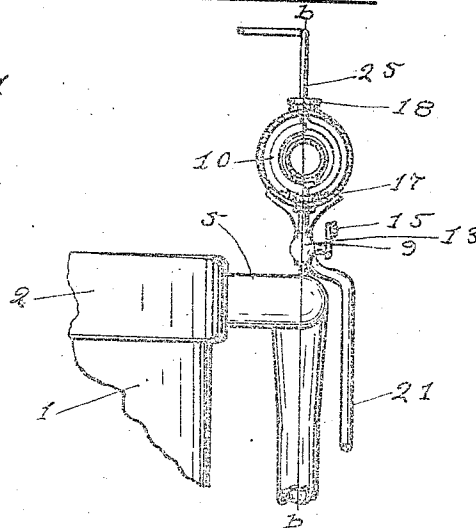


FIG. 2.



Emil C. Bayer.

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Samuel E. Chaney.

Claude T. Goble.

W. F. Davidson,
Attorney

Attorney:

UNITED STATES PATENT OFFICE.

SAMUEL E. CHANEY AND CLAUDE T. GOBLE, OF KANSAS CITY, MISSOURI.

MOISTURE-SUPPLYING APPARATUS FOR EXPLOSIVE-ENGINES.

1,208,485.

Specification of Letters Patent. Patented Oct. 31, 1916.

Application filed February 12, 1913. Serial No. 73,037.

To all whom it may concern:

Be it known that we, SAMUEL E. CHANEY and CLAUDE T. GOBLE, citizens of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Moisture-Supplying Apparatus for Explosive-Engines, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to apparatus for supplying moisture to the combustion chamber of an automobile internal combustion engine to prevent overheating and to increase the power of the engine.

It is not claimed that moisture admitted to the combustion chamber of a perfectly designed engine of the type which is governed by missing explosives will increase the power of the engine, although it is known that engines of this type which are not thoroughly waterjacketed, and which carry the compression to extremely high pressure will not only develop more power when hot, by admitting moisture with the fuel gases, but such engines can be prevented from stopping and compelled to pull a full load by the admission of moisture with the gases when otherwise the engine would stop and not run at all.

Automobile engines are generally constructed to compress to a very high degree owing to the throttling governor being universally employed to control the speed, and the fact that any degree of throttling reduces the volume of gases admitted to the combustion chamber likewise the compression. The compression usually in the highest grade engine as well as the cheaper makes being carried to a high degree owing to the speed at which the engines operate. In fact the compression of automobile engines is universally carried to a degree that will produce high speed with the fuel gases throttled sufficiently to develop about one half the maximum power of the engine, the result being a great reduction instead of increase of power when the throttle is open for full power to climb a hill at average speed. It is essential that some convenient and inexpensive means be supplied to ad-

mit moisture to the combustion chamber with the fuel gases when these conditions are present.

The present invention seeks to provide an improved apparatus that will collect watery vapor produced by the heat of the combustion of the fuel gases in the combustion chamber and deliver the watery vapor to the combustion chamber with the fuel gases, together with means of regulating the quantity so that when conditions are encountered that would otherwise stop or decrease the power of the engine, the required amount of moisture can be admitted and the engine continued in operation and the power thereof increased.

With these and other objects in view the invention consists in the improved features of construction, manipulation, combination and arrangements of parts hereinafter set forth and more particularly pointed out in the appended clauses, an application of the invention being illustrated in the accompanying drawings.

In the drawings:—Figure 1 is a view in elevation of certain parts of an internal combustion engine and its accessories and the improved apparatus illustrating an application of the invention, certain parts being broken away to show the interior, and certain other parts being shown in section taken on line b—b of Fig. 2. Fig. 2 is a view in elevation of certain parts of the engine and the apparatus, with certain parts of the apparatus shown in section on line a—a of Fig. 1. Fig. 3 is an enlarged fragmentary sectional view taken on line a—a of Fig. 1.

The cylinder 1, cylinder head 2, radiator 3, overflow pipe 4 and intake manifold pipe 5 are of the usual construction employed as power equipment to operate automobiles.

Near the ends 6 and 7 of the manifold pipe are the pipe nipples 8 connecting from the manifold to the stop cocks 9 and communicating therewith, the pipes 10 connecting with the stop cocks and with the tank 11 at the bosses 12 and continuing to the upper part of the tank, and forming free communication between the upper part of the tank and the manifold when the stop cocks 9 are open. The stop cocks have connected thereto the ordinary levers 13, to

which is pivoted at 14, the operating bar 15 by which the stop cocks may be opened and closed. The bar 15 may lead to any location that will be convenient to the operator of the car, so that the cocks can be opened and closed at the will of the operator.

The tank 11 is supported by the nipples 8, stop cocks 9, and pipe 10 which is amply sufficient owing to the cock being constructed of thin sheet metal and possessing very light weight.

Approximately centrally located in the tank 11 is the container 16 formed of porous material preferably of tiling so that it will absorb moisture freely, yet contain liquid without perceptible leakage. The container is supported by the brackets 17, which rest upon the inner side of the tank 11, and is supplied with a filling pipe 18, and a drain pipe 19 fitted with a drain cock 20, both the filling pipe and the drain pipe reaching to the exterior of the tank 11.

The tank 11 has leading from the interior thereof, the drain pipe 21, the latter being provided with return bends 22 and 23 which form a trap so that water collected in the tank will rise to the return bend 23 and overflow always draining the tank, but preventing air from being drawn into the tank through the pipe.

The stop cock 24 is provided as an inlet passage to admit air to the tank 11, but this is usually closed as it is seldom desirable to admit atmosphere direct to the tank.

The pipe 25 connects to the tank 11 at the boss 26 and leads into the radiator 3 and to near the cap nut 26, the stop cock 27, being provided for the purpose of opening and closing communication from the radiator to the tank. The usual overflow pipe 28 is lower than the intake end 29 of the pipe 25 so that water will not be drawn from the radiator, the cap 30 protecting the pipe 25 from receiving water while the radiator is being filled, and allowing the free passage of atmosphere and water vapor to the pipe.

The container 16 is filled with glycerin or other substance that will collect moisture so that air or water vapor entering the tank will deposit moisture thereon and increase the amount of moisture that will enter the pipes 10 and the manifold 5, the object being to direct the moisture to the combustion chamber or interior of the cylinder 1 in sufficient quantity when required. The heat from the combustion of the gases in the combustion chambers of the cylinder 1 will heat the water in the radiator almost immediately when the engine is started and form a water vapor, and this vapor will be drawn by the suction created in the manifold through the pipe 25, and tank 11, pipes 10 and stop cocks 9 to the manifold

where it will mingle with the fuel gasses and enter the combustion chambers in the cylinders 1.

It is obvious that a certain amount of moisture will be supplied from the atmosphere with the stop cock 24 open and the stop cock 27 closed and that the container 16 will increase the amount, while a greater degree of moisture will be drawn into the manifold and combustion chambers when the stop cock 27 is open and the stop cock 29 is closed, as with this manipulation the water vapor from the radiator will be drawn to the combustion chambers.

In operation the engine is manipulated as usual and when the cylinders become overheated, and when the throttle is opened to a considerable degree which increases the compression in the combustion chambers, the stop cocks 9 are opened and the power of the engine is increased. When the atmosphere is damp and saturated with considerable moisture the stop cock 27 may be closed and the stop cock 24 opened as with the aid of the container filled with a collective substance sufficient moisture will enter the manifold for ordinary purposes, but when the atmosphere is dry, and when steady heavy pulling is required of the engine the stop cock 24 is closed and the stop cock 27 opened so that an increased quantity of moisture may be drawn from the water vapor in the radiator.

The improved apparatus is of chief importance for supplying moisture to the combustion chambers of automobile engines to prevent stopping of the engine and to increase the power of the engine at times when it would otherwise stop or run at greatly reduced power and speed. The improved apparatus may also be advantageously employed in connection with stationary, marine, tractor and aerial engines.

What we claim as new and desire to secure by Letters Patent, is:—

1. An apparatus for supplying moisture to the combustion chamber of an internal combustion engine comprising valves mounted on the manifold of an engine, a tank mounted above said valves and connected thereto, a porous shell mounted within said tank, a radiator, a pipe arranged to supply moist vapor from the radiator to the bottom of said tank whereby moisture will rise therefrom and collect on said shell, a valve to admit air into said tank, and pipes connected with said valves mounted on the manifold arranged to collect said air and vapor from the top of said tank and deliver said air and vapor to said manifold.

2. An apparatus for supplying moisture to the combustion chamber of an internal combustion engine comprising, valves mounted on the manifold of an engine, a tank mounted on said valves and connected

thereto, a porous shell mounted within said tank adapted to contain glycerin to aid in collecting moisture thereon, a radiator, a pipe arranged to supply moist vapor from
5 the radiator to the bottom of said tank whereby moisture will rise and collect on said shell, means to regulate air admitted into said tank, and pipes connected with said valves mounted on the manifold ar-
10 ranged to collect said air and vapor from

the top of said tank and deliver said air and vapor to said manifold.

In testimony whereof we affix our signatures in the presence of two witnesses.

SAMUEL E. CHANEY.
CLAUDE T. GOBLE.

Witnesses:

REBECCA JOFFEE,
LEMUEL J. HUSTED.