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DECARBONIZER AND GAS SAVER FOR INTERNAL COMBUSTION ENGINES.

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1,318,915.

Fig. 1.

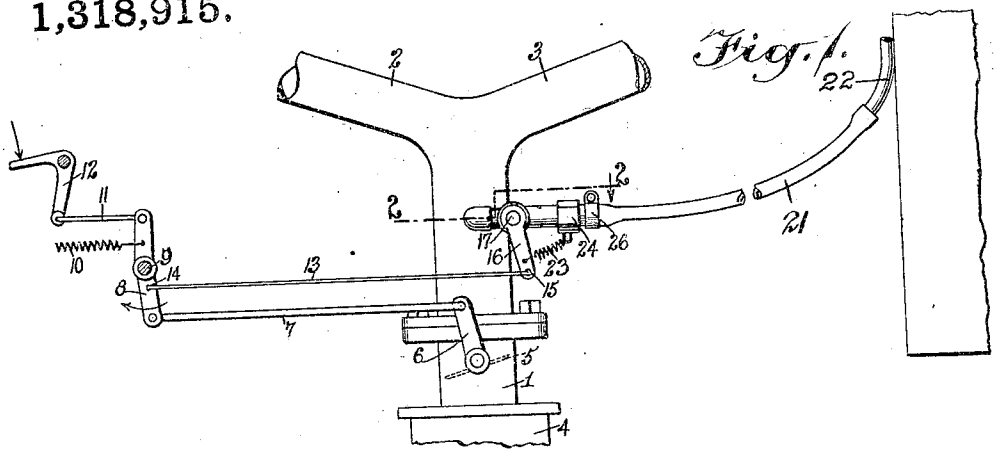


Fig. 2.

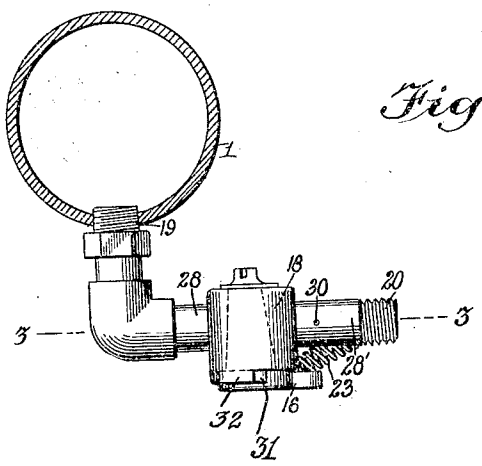
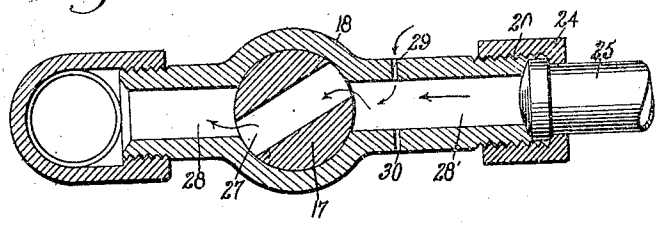


Fig. 3.



WITNESSES

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DECARBONIZER AND GAS-SAVER FOR INTERNAL-COMBUSTION ENGINES.

1,318,915. Specification of Letters Patent. Patented Oct. 14, 1919.

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To all whom it may concern:

Be it known that I, MICHAEL PIERZCHALSKI, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Decarbonizer and Gas-Saver for Internal-Combustion Engines, of which the following is a full, clear, and exact description.

This invention relates to internal combustion engines and has for an object the provision of an improved attachment for preventing deposit of carbon on the cylinders of the engine.

Another object in view is to provide an attachment for an internal combustion engine when a maximum result is secured from a given supply of fuel.

A still further object of the invention is an attachment for an internal combustion engine connected with the accelerator pedal for adding to the explosive mixture auxiliary air and steam or water in addition to the air supplied to the mixture by the carbureter.

In the accompanying drawing:

Figure 1 is a detail fragmentary side view of part of an engine and radiator with an embodiment of the invention applied thereto.

Fig. 2 is an enlarged fragmentary sectional view through Fig. 1 on line 2—2, the valve being shown in a different position.

Fig. 3 is a sectional view through Fig. 2 on line 3—3, the same being on an enlarged scale and showing the valve in open position.

In the construction of internal combustion engines for general use, and particularly for use on automobiles, a carbureter is provided for mixing the fuel, as for instance gasolene with air, and supplying this mixture to the intake valve, which in turn directs the mixture to the various cylinders of the engine. A valve is usually provided between the carbureter and the engine somewhere in the intake manifold, said valve being controlled by a suitable pedal known as the accelerator pedal on automobiles. After the engine has been started and it is desired to secure more power the accelerator pedal is depressed and the valve between the engine and the carbureter is open more and more according to the speed or power desired, said opening permitting more fuel to be drawn through the carbureter into the engine. By this construction and arrangement the mixture drawn into the engine is controlled by the position in which the carbureter has been set and the effect of depressing the accelerator pedal is merely to allow a larger volume to enter rather than to vary the quality of the mixture. In the present invention means have been supplied for automatically varying the quality of the mixture when the accelerator pedal has been depressed and at the same time prevent carbonization.

Referring to the accompanying drawing by numerals, 1 indicates the upleg of the manifold and 2 and 3 represent the distributing legs, leg 1 being connected in any suitable manner with the carbureter 4. A butterfly valve 5 is arranged on the upleg 1, said valve being controlled by a lever 6, which lever is pivotally connected with rod 7. Rod 7 is pivotally connected with a double lever 8 journaled on the pivotal support 9, which double lever 8 is resiliently held in a given position by spring 10 and acted on by link 11 actuated by the accelerator pedal 12 for moving the parts as desired. When the operator moves the pedal 12 as indicated by the arrow, rod 7 will be pulled longitudinally against the action of spring 10 for opening valve 5, said opening being in proportion to the movement of the accelerator pedal 12. The construction just described is substantially the ordinary construction now in common use and forms no part of the present invention except in combination with the parts hereinafter fully described. The lever 8 in addition to actuating the link 11 actuates a link 13 pivotally connected at 14 to lever 8 and pivotally connected at 15 to arm 16, arm 16 being rigidly secured to valve plug 17 of the valve member 18. Valve member 18 is connected at 19 to the upleg 1 of the manifold and at 20 to a tube 21, which may be of metal, rubber, canvas or other material as desired, and may be connected by threads or otherwise at 20 to the valve member 18. The tube 21 is connected to the overflow 22 of the radiator so as to receive steam or water from the radiator as needed. If desired the tube 21 can be connected with the radiator at the upper part, which is necessary in case the radiator is not supplied with an overflow pipe 22. A spring 23 is connected with the arm 16 and with the valve member 18 by any suitable means, as for instance nut 24, which is used

in holding the metallic sleeve 25 in position as shown in Fig. 3, said sleeve fitting into the end of flexible tube 21. A clamp 26 is used for clamping the tube 21 to the sleeve 25. Though a particular sleeve and clamp is shown as means for connecting the tube 21 to the valve member 18, it will be understood that any suitable connection may be used without departing from the spirit of the invention. The spring 23 is provided so as to positively move the arm 16 and the plug 17 to a closed position whenever permitted by the position of link 13 and associate parts. The closing movement of the plug is limited by the lug 31 on the lever 16 engaging the shoulder 32 on the valve member 18. When the plug is operated by the treadle 12, through the medium of the lever 8, link 13 and lever 16, it will be moved to full open position, as shown in Fig. 3, and when the plug is in this position, its passageway will be at an angle to the passageway 28, as shown in said figure. This will cause an upward suction in the upleg 1 to draw the air and steam downwardly through the passageway 28′. In the valve member 18 one or more openings 29 are provided in the upper part and also one or more openings 30 are provided in the lower part as shown in Fig. 3, the same permitting the free entrance of a given quantity of air, while steam or water is supplied through the tube 21 to the sleeve 25, said steam or water mixing with the air as it enters the passageway 27 of plug 17. This mixture of air and steam, or air and water, dilutes the combustible mixture from the carbureter and supplies a given quantity of water or steam to the engine for preventing the forming of carbon on the cylinders. In case the overflow pipe 21 should supply water instead of steam, said water will accumulate in the passageway 28′ and will not flow into the carbureter when the valve 17 is closed, which is the case all the time except when the accelerator pedal 12 is depressed. In addition as the plug 17 opens air is immediately drawn in and mixes with the water in case there is any water in the passageway 28′, said mixture causing a vapor that will readily mix with the explosive mixture. It will also be evident that when the plug 17 opens any considerable amount of water passing into the passageway 28′ will be discharged out through the aperture 30.

As above stated the tube 21 is preferably connected with the overflow pipe 22, but may be connected with the upper part of the radiator without departing from the spirit of the invention. In either event it is desirable to have a small vent hole in the cap of the radiator in order to prevent undue pressure in the radiator and consequently in the passageway 28 which would cause an undesirable amount of steam or water to be supplied. It will also be noted that the steam or water and air from openings 29 and 30 are supplied only when the accelerator pedal is depressed and in proportion to the amount of depression of said pedal and consequently in proportion to the opening of the valve 5. When the engine is running idle no auxiliary air or steam is provided through valve 18, but as soon as the pedal 12 is depressed additional air and steam is supplied which naturally will make the mixture poor, so that a greater efficiency is secured as the combustion is better than where no additional air and steam is provided.

What I claim is:

1. In a device of the character described, the combination with an internal combustion engine of an auxiliary air and steam supplying member connected to the intake manifold thereof, said member comprising a valve casing having a longitudinal passageway therein, a pair of apertures near one end, a plug valve extending through said casing having an aperture extending therethrough, an operating arm connected with said plug valve, a spring connected with said arm and normally holding the arm in such a position that the valve will be closed, means for connecting the arm with the accelerator mechanism of said engine, and means for connecting said casing with the upper part of the radiator of said engine.

2. In a device of the character described the combination with an internal combustion engine of an auxiliary air and steam supplying member connected to the intake manifold thereof, said member comprising a valve casing having a longitudinal passageway therethrough, a pair of apertures near the intake end of the casing, one of said apertures being at the lowest end of the casing and the other aperture at the highest point, whereby water entering the casing may flow through said lower aperture and air may flow through both of said apertures when suction is applied to the opposite end of the casing, a plug valve extending through said casing having an aperture therethrough, an operating arm connected to the accelerator mechanism of said engine and to the plug for opening the plug when the accelerator mechanism is operated, a spring connected to said arm for normally holding the same in a given position, and means for connecting the inlet end of the casing with the upper part of the radiator of said engine.

MICHAEL PIERZCHALSKI.