Feb. 14, 1933. J. E. HALFORD 1,897,388

VALVE OILING AND GAS DILUTING DEVICE

Filed May 12, 1931

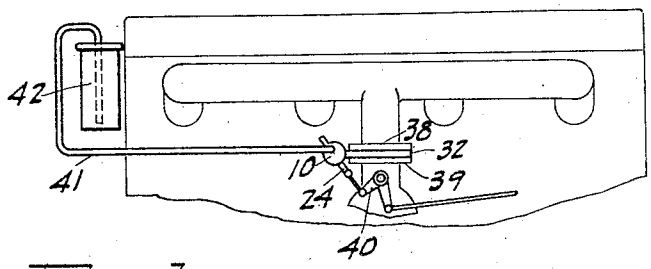

Fig. 1.

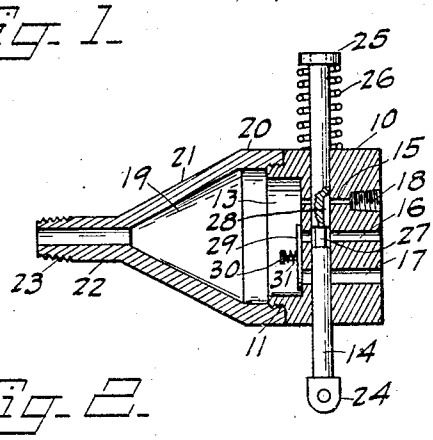

Fig. 2.

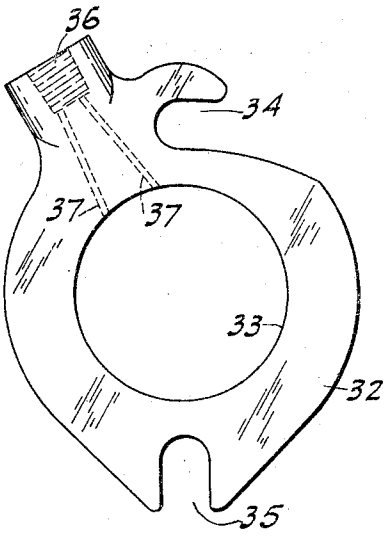

Fig. 4.

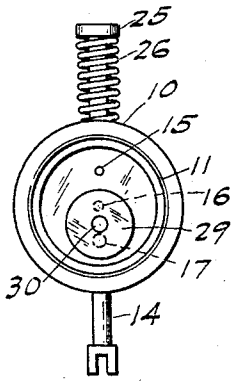

Fig. 3.

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UNITED STATES PATENT OFFICE

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VALVE OILING AND GAS DILUTING DEVICE

Application filed May 12, 1931. Serial No. 536,820.

This invention is for an auxiliary oiling device for the valves of internal combustion engines and has special reference to a means of oiling the valves by admixture with the intake gases through the intake manifold and controlled by the throttle.

The main object of the invention is to provide means for supplying additional valve oil to the valves of an internal combustion motor when the motor is idling, at which time the valves are usually insufficiently oiled, a certain speed being required for proper distribution of the usual oil supplied to the motor.

Another object of the invention is to provide means for partially cutting off the auxiliary supply of oil when the motor is speeded up and provide additional air and oil, at medium, and moistened air only at high speeds, whereby efficiency is established in the oiling of the valves at low speeds without diluting the gas, a partial dilution of the gases with air at medium speeds, and a further dilution with moistened air at high speeds, thus increasing the life, power and economy of the engine.

A still further object of the invention is to control the oiling and gas dilution and moistening coincident with operation of the throttle, and governed by the speed of the engine, the controlling means being operated coincidently by the throttle and intake suction.

Other objects and advantages of the invention will become apparent as the following description is read on the drawing forming a part of this specification.

The invention consists of a plunger operated valve adapted to successively open three different ports in a housing which is cylindrical in form at one end and conical in form at the opposite end and provided with a pipe threaded portion at the apex, which is adapted to be secured in a pipe tap in the intake manifold or interposed filler between the intake manifold and carburetor of an internal combustion engine.

The invention is adequately illustrated in the accompanying drawing in which:

Fig. 1 is a fragmentary elevation of an internal combustion engine with my invention applied thereto;

Fig. 2 is a vertical section through the oiler;

Fig. 3 is an internal view of the oiler with the conical portion removed;

Fig. 4 is a plan view of the mounting member.

Similar reference characters identify similar parts throughout the several views.

The invention consists of a head 10 of cylindrical form, having a reduced portion 11 provided with an external thread as indicated, the head being recessed as at 13. A transverse aperture is provided to slidably receive the plunger 14 which is cylindrical in form. A plurality of different diameter apertures 15, 16 and 17 extend through the head, the aperture 15 terminating in a pipe tap 18 for reception of an oil pipe nipple.

The body 19 consists of a cylindrical portion 20, internally threaded to cooperate with the threaded portion of head 10, and continuing into the conical portion 21, the apex continuing into a hex portion 22 and a pipe threaded portion 23 adapted to cooperate with a pipe tap provided in the intake manifold or in the mounting member Fig. 4.

The valve plunger 14 is of cylindrical form and has an enlarged end 24 which is provided with coupling means to cooperate with the engine throttle lever, the opposite end having a nut 25 cooperating with the threaded end, and adapted to cooperate with a compression spring 26. The plunger is restricted at one point shown at 27. A groove 28 in the plunger provides a restricted flow of oil to the aperture 16.

A flap valve is provided to close the apertures 16 and 17 during periods of heavy pulling or quick starting, when the engine speed is low and throttle open, at which time the flap valve closes, and which consists of a plate 29 slidably mounted on a pin 30 and urged to closed position by a spring 31 and which is opened through the vacuum created within the intake manifold.

The mounting member consists of a plate 32 having a bore 33 adapted to register with the carburetor and intake manifold bores, and

having slots 34 and 35 whereby the member may be installed between the intake manifold and carburetor merely by loosening the bolts and sliding the member in position.

A tapped hole 36 is provided to receive the end 23 of the oiler, or a street L may be interposed. A plurality of apertures 37 communicate between the tapped hole 36 and bore 33.

The invention is installed by securing the oiler in the aperture 36 of mounting member 32, placing member 32 between the intake manifold flange 38 and carburetor flange 39, drawing up the flange bolts, connecting the end 24 of plunger 14 to the throttle lever 40 and connecting an oil pipe 41 between the tapped hole 18 and a supply of oil in a tank 42. A tube connection is preferably made between the port 17 and an air moistening device not shown, and which may consist of a connection to the upper part of the radiator, as to the top of a closed tank containing water and having an air inlet tube extending down into the water whereby air is drawn through the water.

The operation of the device is as follows. When the engine is idling, the restriction on plunger 14 lines up with aperture 15 permitting oil to be drawn into the intake manifold, thus oiling the valves and preventing air dilution.

As the engine is partly speeded up, plunger 14 is drawn down closing port 15 and opening port 16 allowing additional air to be drawn into the motor, and coincidently therewith, oil through the groove 28. Further retraction of the plunger 14 closes port 16 and opens port 17, admitting water moistened air to the intake manifold at the higher speeds. With the throttle open and engine turning over slowly, the valve 29 closes ports 16 and 17. Economy in gasoline consumption and efficiency in oiling are thus provided, the life of the valves is increased, and the power is increased by admission of moisture at high speed, the excessive heat being converted into steam and thus reducing the temperature without sacrificing pressure.

Having described an operative method of constructing and using the device, it will be understood that variations in construction and arrangement which are consistent with the appended claims may be resorted to without detracting from the spirit or scope of the invention or sacrificing any of the advantages thereof.

I claim:

1. A valve oiling and gas diluting device, in combination, means for selectively admitting oil, oil and air or air to the intake manifold of an internal combustion motor and operable coincidently with the throttle of said motor.

2. An oiling and gas diluting device, in combination with an intake manifold, an air supply and an oil supply; throttle controlled means for supplying said oil, oil and air or air alone to said intake manifold successively with increase of throttle opening.

3. An oiling and gas diluting device, in combination, a housing, a plunger valve transversely slidable therein, and a plurality of spaced longitudinal apertures successively aligning with an annular groove in said plunger valve, a supply of oil for one of said apertures, the others of said apertures providing air intakes.

4. In combination, a housing provided with a threaded end, a plurality of spaced apertures longitudinally disposed and communicating with the interior of the housing and a plunger transversely disposed and adapted to successively open said apertures to the interior of said housing by retraction of the plunger, one of said apertures being in communication with an oil supply, the others of said apertures acting as air passages.

5. A valve oiling and gas diluting device, in combination, a valve having a plurality of ports, a plunger adapted to successively open said ports coincident with opening of the throttle of an internal combustion motor, a supply of oil for one of said ports, the others of said ports providing air intake passages.

6. In combination, a cylindrical housing having a conical portion terminating in a threaded end, a plurality of apertures extending longitudinally through the cylindrical end, a transverse aperture communicating with said plurality of apertures, a resiliently retracted plunger slidable in said transverse aperture, and an annular groove in said plunger adapted to successively register with said plurality of apertures.

7. A valve oiling and gas diluting device in combination with an intake manifold, an air supply, and a supply of oil, throttle controlled means for supplying said oil, air and moistened air to said intake manifold, successively with increase of engine speed, and means for cutting off said air and moistened air on decreased engine speed with increased throttle opening.

8. An oiling and gas diluting device, in combination, a housing, a plunger valve transversely slidable therein and a plurality of spaced longitudinal apertures, successively aligning with an annular groove in said plunger valve, and a spring urged, vacuum actuated valve for a plurality of said apertures.

9. In combination, a housing provided with a threaded end, a mounting plate adapted to be interposed between the flanges of an intake manifold and a carburetor and provided with a passage therethrough, a tapped hole for said threaded end, a plurality of apertures communicating between said threaded hole and said passage, a plurality

of spaced apertures communicating with the interior of said housing, a plunger adapted to successively open said apertures by retraction of said plunger, and a spring urged flap valve within said housing and covering two of said spaced apertures.

10. A valve oiling and gas diluting device, in combination, a valve having a plurality of ports, a plunger adapted to successively open said ports coincident with opening of the throttle of an internal combustion motor, a flap valve normally closing a plurality of said ports and actuated by a vacuum produced within the intake manifold, and means for mounting said device adapted to be interposed between the carburetor and intake manifold flanges.

11. In combination, a cylindrical housing having a conical portion terminating in a threaded end, a series of apertures extending longitudinally through the cylindrical end, a transverse aperture communicating with said series of apertures, a resiliently retracted plunger slidable in said transverse aperture, an annular groove in said plunger adapted to successively register with said series of apertures, a longitudinal groove extending upwardly from said annular groove, a spring urged flap valve covering the inner ends of a plurality of said apertures, and mounting means for said housing adapted to be interposed between the carburetor and intake manifold and having an aligning passage for gases and communicating passages between said aligning passage and said housing.

In testimony whereof I have affixed my signature.

JAMES E. HALFORD.