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GAS SAVER FOR INTERNAL COMBUSTION ENGINES

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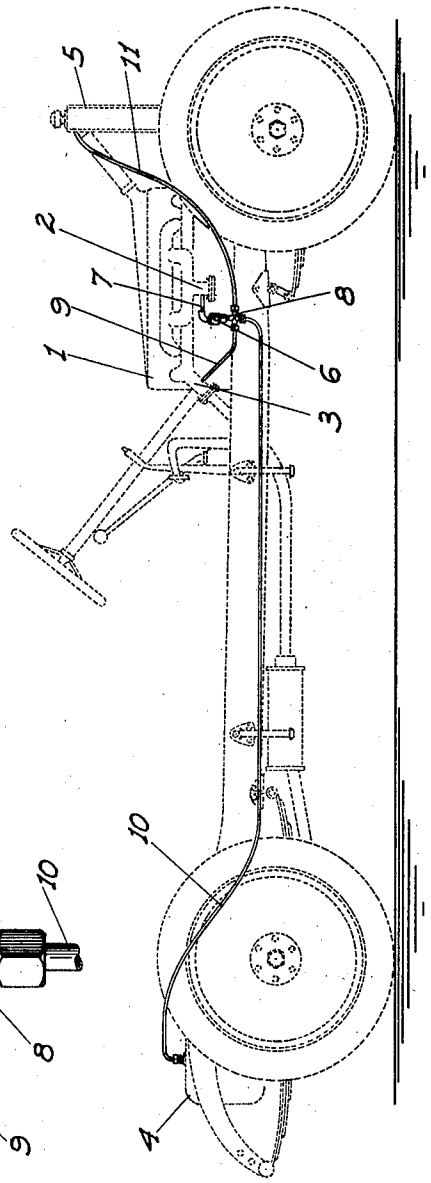


Fig. 1

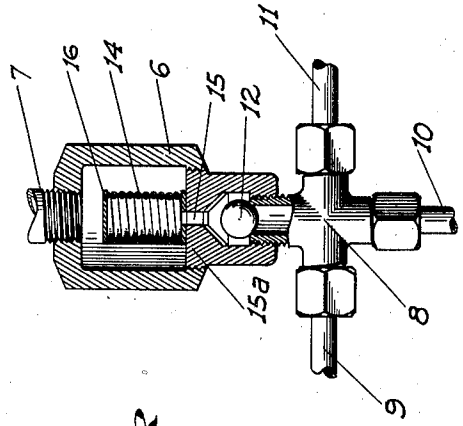


Fig. 2

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UNITED STATES PATENT OFFICE.

HENRY ALLEC, OF STOCKTON, CALIFORNIA, ASSIGNOR OF ONE-THIRD TO JAMES A. FENNO AND ONE-THIRD TO JOHN PISENTI, BOTH OF STOCKTON, CALIFORNIA.

GAS SAVER FOR INTERNAL-COMBUSTION ENGINES.

Application filed November 29. 1924. Serial No. 752,894.

To all whom it may concern:

Be it known that I, HENRY ALLEC, a citizen of France, residing at Stockton, county of San Joaquin, State of California, have invented certain new and useful Improvements in Gas Savers for Internal-Combustion Engines; and I do declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, and to the characters of reference marked thereon, which form a part of this application.

This invention relates to improvements in motor vehicle accessories, and particularly to gas saving devices for enabling better and more efficient operation of the engine being obtained from a given quantity of fuel in the main tank than is otherwise the case.

The principal object of my invention is to provide a device of this character by means of which certain volatile fumes in the main gas tank, and which are now wasted, will be utilized in the engine, thereby giving an increased mileage per gallon of fuel actually drawn from the tank to the carbureter.

Of course such fumes are not present in any quantity if the car has been standing still for any length of time. When the car is travelling, however, even on smooth roads, the gasoline in the tank is constantly agitated and a portion thereof leaves the main body of the liquid and rises above the same as a highly volatile mist or fumes. Since nearly all tanks are provided with an air bleed hole, these fumes are rapidly dissipated into the atmosphere and are lost.

Another object of my invention is to provide means arranged in connection with the gas saving feature of the device, for causing any steam which may be in the radiator to be fed into the engine, thereby aiding in eliminating and preventing the formation of carbon.

A third object is to provide a means also arranged in connection with the above features for enabling much quicker warming up of the engine being had in cold weather than is ordinarily possible. All these features are actuated by the suction induced with the operation of the engine, and do not function when the engine is not running.

A still further object is to provide a device for the above purposes which may be readily and easily installed on any motor vehicle without removing any parts which are already provided thereon.

A further object is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Fig. 1 is a side outline of a motor vehicle chassis showing my device as installed in connection therewith.

Fig. 2 is a full sized sectional view of an automatic suction actuated valve member.

Referring now more particularly to the characters of reference on the drawings, the numeral 1 denotes the engine of a motor vehicle, 2 and 3 the intake and exhaust manifolds thereof respectively, 4 the main gas tank of the vehicle and 5 the radiator thereof.

My device comprises a hollow body 6 connected at its upper end to a pipe 7 which in turn is connected to the intake manifold 2. Connected to the lower end of the body is a cross fitting 8, to the various ends of which are connected tubes 9, 10 and 11 which lead to the exhaust manifold 3, the top of the gas tank 4 and the top of the radiator 5 respectively.

A check ball 12, opening upwardly is fitted into the body above the cross 8 and normally forms a closure between the latter and the body. A normally tightly closed compression spring 14 is fixed at its lower end in the body and at such end surrounds and projects above the passage 15, which extends through what may be considered a wall 15ª across the body above the ball 12. This spring projects into the body above

the wall to a point spaced from the upper end of the body a suitable distance. The upper end of the spring is covered with a solid cap 16 fixed thereon. The cap is of course spaced from the upper end of the body and pipe 7, and the spring is spaced from the side walls of the body as well.

In operation when the engine is not running, the ball is of course seated and the spring is closed, providing an air tight closure between the cross 8 and pipe 7. When the engine is started and a tendency to vacuum is created in the intake manifold, a similar condition is obtained in the pipe 7 and body 6. This tends to cause the spring 14 to open up, thus establishing communication between the pipe 7 and passage 15. The greater the suction the greater will be the extent of opening of the spring and consequently the greater will be the open area between the passage 15 and pipe 7.

At the same time, irrespective of the extent of the spring opening, the ball 12 will be lifted from its seat causing a suction to be set up in the cross 8 and tubes 9, 10 and 11. Therefore any fumes in the tank 4 will be drawn into the engine through the tube 10, as well as any steam in the radiator through the tube 11, and a certain amount of hot exhaust gases in the exhaust manifold 3 through the tube 9.

The gasoline fumes passing through the intake manifold increase the mileage of the car per gallon of fuel to a very marked degree, as I have found from experience. Any steam drawn into the manifold tends to keep the valves and cylinders free of carbon, as is well known.

The hot exhaust gases, had after a single explosion of the engine has taken place, aid materially in keeping the intake manifold warm at all times. This is of especial benefit when warming up the engine in cold weather. At the same time the size of the tube 9 is so small that a sufficient quantity of such gases is not drawn into the manifold as would detrimentally dilute the main fuel mixture.

While it might appear at first glance that the ball 12 and spring 14 are merely check valves of different forms but having the same function, I found from experience that such is not the case.

The ball 12 if used alone, while providing an air-tight seat, does not allow of any variation in the size of the passage area as is desirably had with different suctional pressures. The ball is either entirely clear of its seat or else it is firmly seated.

The spring, on the other hand, enables a desired variation of passage area with different suctional pressures to be easily had, but cannot be depended upon to provide an actually air-tight clousure for the passage 15. Thus both the ball and spring, while cooperating with each other, have their independent functions.

The hot gases entering the manifold 2 from pipe 9 not only warm the manifold itself, but aid in causing the fuel mixture to be properly vaporized before entering the cylinders of the engine.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described my invention, what I claim as new and useful and desire to secure by Letters Patent is:

1. A suction actuated check valve structure comprising a hollow body having an opening at one end adapted for connection to the intake manifold of a gas engine and having a passage leading from its opposite end, and a suction operated closure member for said passage mounted in the body and arranged to provide an opening from said passage to the manifold whose area constantly increases in proportion to an increase in suctional force.

2. A suction actuated check valve structure comprising a hollow body having an opening at one end adapted for connection to the intake manifold of a gas engine and having a passage leading from its opposite end, a closely wound compression spring fixed at one end in the body and surrounding the passage into the same, and a solid cap on the opposite end of the spring, said spring being opened by reason of a sectional pressure through the opening, and set up in the body.

3. A suction actuated check valve structure comprising a hollow body having an opening at one end adapted for connection to the intake manifold of a gas engine and having a passage leading from its opposite end, an orificed wall in the body a certain distance inwardly of the passage, a gravity seated and suction opened check valve for the passage between the latter and the wall, and a suction opened closure member for the wall orifice mounted in the body inwardly of said wall and surrounding the orifice therein; said closure member being arranged to provide between the wall orifice and the body therebeyond a passage whose area increases in proportion to an increase in suctional pressure.

4. A suction actuated check valve structure comprising a hollow body having an opening at one end adapted for connection to the

intake manifold of a gas engine and having a passage leading from its opposite end, an orificed wall in the body a certain distance inwardly of the passage, a gravity seated and suction opened check valve for the passage between the latter and the wall, a closely wound compression spring fixed at one end on the inner face of the wall and surrounding the orifice therein, and a solid cap on the opposite end of the spring; the manifold-connection opening being so disposed that with a suction in said opening away from the body the spring will be opened.

In testimony whereof I affix my signature.

HENRY ALLEC.