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ATTACHMENT FOR HYDROCARBON MOTORS.

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1,201,178. Patented Oct. 10, 1916.

Fig. 1.

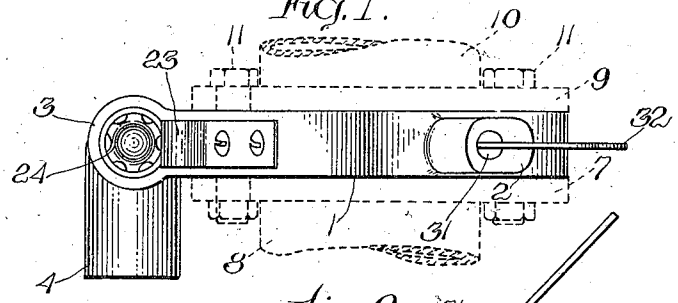


Fig. 2.

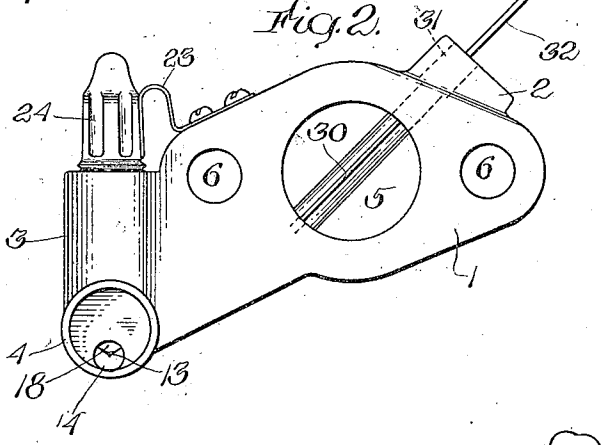
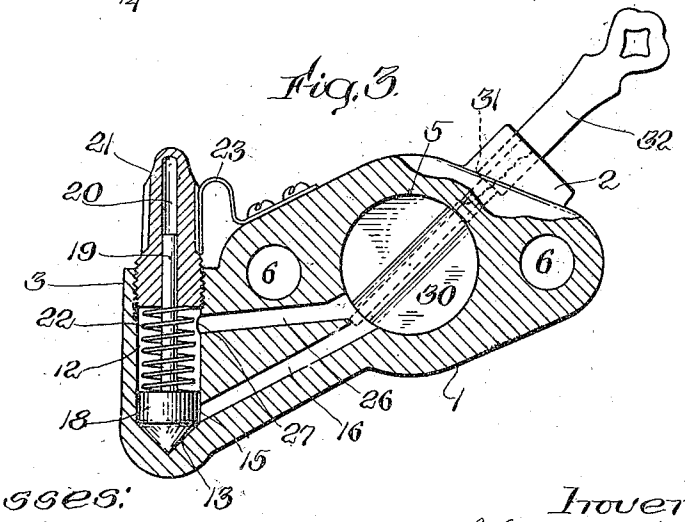


Fig. 3.



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UNITED STATES PATENT OFFICE.

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ATTACHMENT FOR HYDROCARBON-MOTORS.

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To all whom it may concern:

Be it known that I, WALTER W. HARDING, a citizen of the United States, residing at Allston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Attachments for Hydrocarbon-Motors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to hydrocarbon motors and more particularly to attachments for furnishing an auxiliary supply of air and for locking the supply of gas cut off from the motor.

Many of the carbureters at present employed for supplying gaseous mixture to hydro-carbon motors are defective in that the character or quality of the mixture varies with different motor speeds and throttle openings. As a consequence, the motor will knock on heavy grades, lose power, and miss fire, and a large amount of fuel will be wasted. These objectionable results accompany the use not only of carbureters having no auxiliary air supplying devices, but also of those carbureters in which, owing to faulty construction or improper design, the auxiliary air supplying devices fail to operate regularly and effectively to maintain the mixture substantially uniform.

It is one of the objects of the present invention to provide an auxiliary air supplying attachment for hydro-carbon motors which shall be simple in construction and certain and efficient in operation to maintain the gaseous mixture of substantially uniform quality, irrespective of the speed of the motor or the extent of the throttle opening.

Another object of the present invention is to provide an auxiliary air supplying attachment which may be easily and conveniently secured at some suitable point in the air or gas supplying system of a hydro-carbon motor, and preferably between the carbureter and the manifold.

Automobiles as at present constructed are usually provided with a removable plug or switch key for the electric switch which controls the ignition circuit of the motor. Such plugs or keys are commonly of simple construction and uniform in all cars of the same model or manufacture. As a consequence the unauthorized starting and use of automobiles is of common occurrence.

It is one of the objects of the present invention to provide a simple and inexpensive attachment for hydro-carbon motors which may be easily and conveniently secured to the manifold or carbureter and which is controlled by its special and individual key to cut off the supply of gaseous mixture to the motor, thus effectively preventing the unauthorized use of the automobile.

A further object of the present invention is to provide an attachment embodying an auxiliary air supply and a gas lock especially designed to be secured between the carbureter and the manifold of the motor of a well-known make of automobile.

With these objects in view, the present invention consists in the attachment hereinafter described and more particularly defined in the claims.

In the accompanying drawings which illustrate what is now considered the preferred form of the present invention, Figure 1 is a top plan view of the specific form of my attachment designed for use upon the motors of Ford automobiles, showing the manner of securing the attachment between the flanges of the carbureter and the manifold; Fig. 2 is a rear elevation of the same with the gas valve open; and Fig. 3 is a vertical section showing the internal construction of my attachment and with the gas valve closed.

In the specific embodiment of the present invention illustrated in the drawings, the body of the attachment consists of a casting comprising a plate-like body portion 1, having flat opposite faces, the lock containing boss 2, the circular valve chamber boss 3, and air intake pipe 4. The body portion is provided with a gas passage 5 and the bolt holes 6, and is adapted to be clamped between the flange 7 of the carbureter 8 and the flange 9 of the gas manifold 10 by means of bolts 11 passing through said flanges and the bolt holes, the gas passage 5 then registering with the gas passages in the carbureter and manifold.

The valve chamber boss 3 is counterbored to form the valve chamber 12, having the conical valve seat 13 at its bottom. An air intake opening 14 in the valve seat at the apex thereof communicates with the air in-

take pipe 4, while an air outlet opening 15 adjacent the upper margin of the valve seat is connected with the gas passage 5 by means of the air supply passage 16. The passage of air from the air inlet opening 14 to the air outlet opening 15 is controlled by an air valve 18, having the stem 19. The upper end of the valve stem is guided by the recess 20 in the screw plug or cap which closes the upper end of the valve chamber 12.

The tendency of the valve under the action of gravity to remain in contact with the valve seat, and thus cut off communication from air inlet opening 14 to air outlet opening 15, is augmented by the spring 22 one end of which engages the valve 18 and the other the screw cap 21. By adjusting the screw cap downwardly or upwardly the force of spring 22 may be increased or diminished as may be required, the cap being held in adjusted position by means of the locking spring 23 adapted to enter one or another of the notches or flutings 24 formed on the screw cap 21.

The air valve is raised from its seat by the so-called suction of the motor extending from the gas passage 5 through the suction passage 26 and opening 27 and into the valve chamber 12 above the valve 18.

The locking device illustrated in the drawings comprises the damper or butterfly valve 30, pivotally mounted in the gas passage 5 in the body 1 of the attachment. The shank or spindle 31 of the valve is extended through the lock which is located in the boss 2, and is adapted to receive the key 32 which is freely removable when the valve is closed, but which in the preferred construction is securely held in place when the valve is open in the normal operation of the motor.

It will readily be seen that my improved attachment is easily and quickly secured in place, it being necessary only to disconnect the carbureter from the manifold, move them apart a short distance, insert the body 1 between the manifold and carbureter, and then clamp the flanges of manifold and carbureter firmly against the body by means of bolts passing through the registering bolt holes in flanges and body. Preferably the air intake pipe 3 will be connected with a jacket or stove upon the exhaust pipe so that the entering air shall be warm.

When the operator wishes to start the motor, he raises the bonnet and inserts the key 32 in the lock and turns the valve 30 into its open position, leaving the key in the lock where it is securely held. The motor may then be set in operation. While the motor is running the valve 18 operates automatically to supply a regulated quantity of auxiliary air to the gaseous mixture within the manifold, the quantity of auxiliary air supplied through the valve varying with the speed at which the motor is running and with changes in the throttle opening. During the running of the motor a vacuum is created in the manifold which varies with different motor speeds and with different throttle openings. When the vacuum in the manifold is relatively low the pressure of the exterior air is insufficient to overcome the weight of the valve 18 supplemented by the force of the spring 22 so that the valve remains in engagement with its seat 13 and no auxiliary air is admitted to the interior of the manifold. When the vacuum in the manifold increases to a certain degree the pressure of the exterior air raises the valve 18 from its seat permitting an auxiliary supply of air to flow from the intake pipe 4 through the inlet opening 14 across the face of the valve and the valve seat 13, through inlet opening 15 and passage 16 into the gas passage 5 where it mingles with the over-rich gaseous mixture passing through the manifold from the carbureter and dilutes the mixture. The distance which the valve is raised from its seat varies with the degree of the vacuum within the manifold so that the quantity of auxiliary air admitted through the valve opening to the interior of the manifold is correspondingly varied. The valve, therefore, regulates automatically the quantity of auxiliary air delivered to the gaseous mixture within the manifold.

When the operator wishes to leave his car without danger of its being stolen or used, he raises the bonnet and turns the key 32 which closes gas valve 30, and then by removing the key effectively prevents the starting of the motor, as he has in his possession the only key capable of opening the gas valve.

It will be observed that the air entering the air inlet opening passes merely across the face of the valve 18 to the air outlet opening 15, and not across or over any of the bearing or guiding surfaces of the valve or the valve chamber, thus avoiding the liability to interference with free action of the valve by dust or grit which may enter through the air inlet pipe. It will also be observed that the auxiliary air enters the gas passage 5 at right angles to the direction of flow of the gas, thus insuring thorough mingling of the air with the gas, and effectively breaking up and vaporizing any minute particles of fuel which may be carried bodily into the manifold.

While I prefer to secure my improved attachment between the manifold and carbureter, it is to be understood that the present invention is not limited to such an arrangement except where so specifically stated in the claims, as it is obvious that the attachment may be employed to advantage if located at other portions of the air or gas supplying system, or intake.

Having thus described what is now con-

sidered to be the preferred form of the present invention, and indicated its mode of operation, what is claimed is—

1. An auxiliary air supplying attachment for hydro-carbon motors, having, in combination, a valve chamber provided with a valve seat and with an air inlet opening and an air outlet opening adjacent the seat, and also provided with a suction opening, a valve located in the chamber between the suction opening and the seat, and at all times preventing the passage of air from the air inlet opening to the suction opening, and connections from the suction and the outlet openings to the intake of the motor, substantially as described.

2. An auxiliary air supplying attachment for hydro-carbon motors comprising a body having flat opposite faces and adapted to be secured between the manifold and the carbureter of the motor, and having a gas passage to conduct gas from the carbureter to the manifold, a valve chamber provided with a valve seat, an air inlet opening and an air outlet opening adjacent the seat, a suction opening, connections from the air outlet and the suction openings to the gas passage, and from the air inlet opening to the external air, and a valve located in the valve chamber between the suction opening and the air inlet and outlet openings, and preventing at all times the passage of air from the air inlet to the suction opening, substantially as described.

3. An auxiliary air supplying attachment for hydro-carbon motors, having, in combination, a valve chamber provided with a conical valve seat, an air inlet opening at the apex of the seat, an air outlet opening adjacent the outer margin of the seat, a suction opening, and connections from the air outlet and the suction openings to the intake of the motor, a valve in the chamber between the suction opening and the air inlet and outlet openings, and provided with a valve stem, a screw cap closing the valve chamber and having a recess to receive and guide the valve stem, a spring between the valve and the cap normally tending to hold the valve against the valve seat, and arranged to be put under greater or less compression by adjustment of the cap, and means for holding the cap in adjusted position, substantially as described.

4. An attachment for manifolds for hydro-carbon motors comprising a body having a centrally located gas passage to conduct gas from the carbureter to the manifold, and adapted to be secured between the manifold and the carbureter, a valve located in the gas passage, a cylinder lock for locking the valve in closed position, a pivoted spindle upon which the valve is rigidly secured, the spindle extending through the body to form the rotary lock cylinder and provided in its outer end with a key-receiving slot, and a key for the lock arranged to enter the slotted end of the spindle for opening and closing the valve, the key being removable only when the valve is locked in closed position.

5. An attachment for manifolds for hydro-carbon motors comprising a flat, plate-like body adapted to be clamped between the flanges of the manifold and the carbureter, and provided with a gas passage for conducting gas from the carbureter to the manifold, and also having a valve chamber provided with a valve seat and with air inlet and air outlet openings adjacent the seat, and with a suction opening, connections from the air outlet and the suction openings to the gas passage and air valve located in the chamber between the suction opening and the air inlet and outlet openings, and a gas valve pivotally mounted in the gas passage, a lock mounted in the body, and a removable key for locking the valve in closed position, substantially as described.

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