

UNITED STATES PATENT OFFICE.

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AUXILIARY AIR VALVE FOR GAS-ENGINE MANIFOLDS.

Application filed November 1, 1924. Serial No. 747,258.

To all whom it may concern:

Be it known that I, SAMUEL J. PATTON, a citizen of the United States of America, residing at Helena, in the county of Shelby and State of Alabama, have invented certain new and useful Improvements in Auxiliary Air Valves for Gas-Engine Manifolds, of which the following is a specification.

My invention relates to new and useful improvements in an air valve for the admission of an additional supply of air to the manifold of internal combustion engines or any conduit for the carburized mixture to effect a marked reduction in the amount of fuel consumed and to accelerate the engine. It is important that the air supply, as thus admitted, should be carefully and effectively filtered so that foreign matter shall not gain admission to the motor through this auxiliary air inlet and to this end, as a special feature of my invention, I provide the valve with a carefully designed filtering inlet which comprises a check valve especially designed and adapted to close the air inlet when the air valve therein is closed, and, when said air valve is opened, to rise and form a baffle for the entering air to give it a circuitous course through several filtering screens.

My invention also contemplates the manipulation of the air inlet valve by a control leading to the dash with means to stop the valve in its full open and closed positions.

My invention also comprises the novel details of construction and arrangements of parts, which in their preferred embodiment only are illustrated in the accompanying drawings which form a part of this specification, and in which:—

Fig. 1 is a fragmentary view in side elevation of the carburetor intake manifold and auxiliary inlet valve of an internal combustion engine, the dash of the motor car being shown in cross section.

Fig. 2 is a corresponding view enlarged of the intake manifold showing the air inlet valve in cross section.

Similar reference numerals refer to similar parts throughout the drawings.

In the embodiment of my invention illustrated, I show a carburetor 1 for an internal combustion engine having an intake manifold 2 leading from the carburetor to

the motor block which has an exhaust manifold 3^a, all of these parts being of any standard construction. At some point in the intake manifold 2 I tap and thread an opening to receive the body 3 for the one-way auxiliary air inlet valve 4, which as shown is of the plug type having a stem 5 projecting through a gland 6 and receiving a crank arm 7 to which an operating rod 8 is connected. This rod 8 is extended rearwardly, preferably through the dash 9, so its handle 10 can be grasped from within the car and the valve opened or closed as occasion may require. The valve body 3 beyond the valve has an intake end 11 downturned at right angles to the body and terminating in an enlarged threaded seat 12 into which the screen chamber 13 is screwed. The screen chamber is of substantially larger diameter than the intake end 11 and it has a bottom opening 14 therein of lesser diameter than the chamber. A foraminous screen 15 is placed in the bottom of the chamber and this covers the opening 14. A cylindrical foraminous screen 16 is introduced in the center of the chamber, resting on the screen 15 and having a diameter larger than the opening 14 below the bore of the intake end 11 above, the upper end of the screen being received in an offset seat 17 provided in said intake end. A plunger 18 in the form of a light imperforate metal disk is inserted in the cylinder 16 and adapted in lowered position to rest on the screen cylinder 16 and practically close the port 14. This plunger has a guide stem 19, working through a spider 20 set in the upper end of the seat 17, and adapted to strike the valve body 4 when the plunger stands about midway of the cylindrical screen 16. The screen 16 holds the screen 15 and the spider 20 in position.

In operation, with the valve 4 closed the motor fuel flows through the intake manifold having the normal richness as produced by the action of the carburetor 1. When it is desired to thin the mixture by admitting an auxiliary air supply, the handle 10 is grasped and the rod 8 is pushed until the stop lug 21 on the valve stem strikes the forward stop shoulder 22 in the gland 6 and this arrests the valve 4 in its full open position. The suction exerted by the engine piston will then lift the light plunger 18 and an air supply will flow in, passing first

through the bottom screen 15 and then being deflected by the plunger 18 so as to pass in the direction of the arrows twice through the screen cylinder 16 and then flow upwardly past the spider 20 and through valve 4 into the motor. This most effectively filters and cleans the air. When it is desired to close the air valve it is only necessary to pull on the rod 8 until the stop shoulder 21 engages the rear stop shoulder on the gland 6. The stop shoulders are so set that the valve will never assume a dead center position relative to its operating rod 8 and obviously the valve can be adjusted to admit more or less of its full supply of air according to the desire of the operator. The oxygen in the air will be burned with the gas mixture and will materially reduce the gasoline or motor fuel consumed.

The fitting should be cleaned so as to remove the collection of dust and this is very easily done by unscrewing the screen chamber 13, whereupon the screens 15 and 16 can be taken out and thoroughly cleaned and the old or new parts assembled in the chamber and the latter readily and easily replaced. For convenient manipulation the chamber 13 is made of hexagon shape to afford a convenient tool grip.

While I have shown my improved auxiliary air intake valve connected only to the manifold of an internal combustion engine, it is understood that it can be connected into any part of the carburetion system where it is desired to introduce an auxiliary supply of air.

My invention is also capable of another important use for the removal of carbon in the engine and to this end I provide a suitable fluid mixture in a container, with the engine running, and the air valve open, I apply the mixture over the intake end of the air inlet valve body, causing it to draw in with the auxiliary air supply as it is necessary to remove the container from time to time to avoid charging the cleaning mixture too fast, but in practice by so applying the mixture of water and baking soda the spark plugs and valves can be kept clean.

Though I have described with great particularity the details of the embodiment of the invention herein shown, it is not to be construed that I am limited thereto, as changes in arrangement and substitution of equivalents may be made by those skilled in

the art without departing from the invention as defined in the appended claims.

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

1. In combination with an intake manifold of an internal combustion engine, of an auxiliary air inlet valve comprising a valve body, a valve therein, a screen chamber removably attached to the inlet end of said body and having an air inlet, a screen covering said inlet, a screen forming a partition extending from said inlet to the intake end of the valve body, and a check valve movable in said screen partition to close the air inlet to said chamber and form an air baffle in said screen partition adapted to direct the air through said partition.

2. An auxiliary air inlet valve according to claim 1, in which said check valve is adapted to be raised responsive to suction in the manifold, in combination with means to stop the valve in an intermediate position in said screen partition.

3. An auxiliary air inlet valve for the intake manifold of internal combustion engines, comprising a valve body adapted to screw into the manifold, a valve in said body to control the admission of air therethrough, and a screened intake end for the body, comprising an enlarged chamber detachable from the body and having an air inlet port, a flat internal screen covering said port, a cylindrical screen extending from the first-mentioned screen to the inlet port and spaced from the surrounding chamber walls, a light check valve movable with an easy fit in said screen cylinder and adapted in lowered position to close the intake port of the screen chamber, and means to arrest the opening movement of said check valve responsive to suction at an intermediate point in said screen cylinder.

4. An air intake valve according to claim 3, in which said intake end of the valve body is recessed to receive the upper end of the screen cylinder and a spider guide, and a stem on the check valve adapted to be guided by the spider and to engage the upper end of the valve body to arrest the check valve at an intermediate position in the screen cylinder, substantially as described.

In testimony whereof I affix my signature.

SAMUEL J. PATTON.