T. CUFF.

AUXILIARY AIR VALVE.

APPLICATION FILED SEPT. 27, 1916.

1,235,189. Patented July 31, 1917.

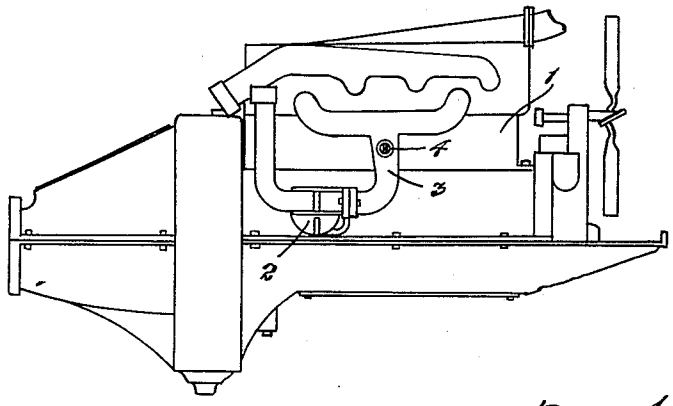

Fig 1

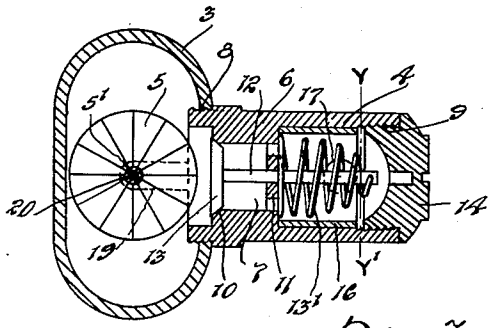

Fig. 3

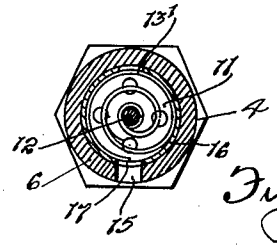

Fig. 5

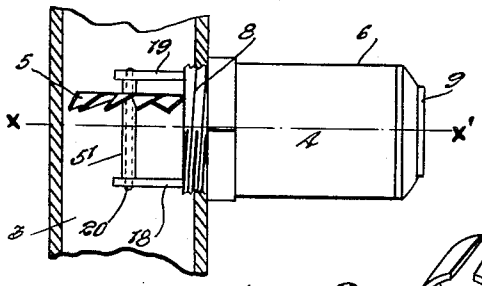

Fig 2

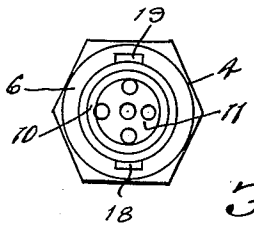

Fig. 4

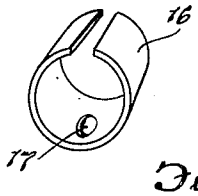

Fig 6

WITNESSES

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AUXILIARY AIR-VALVE.

1,235,189. Specification of Letters Patent. Patented July 31, 1917.

Application filed September 27, 1916. Serial No. 122,494.

To all whom it may concern:

Be it known that I, THOMAS CUFF, of the town of Govan, in the Province of Saskatchewan, Canada, have invented certain new and useful Improvements in Auxiliary Air-Valves, of which the following is the specification.

The invention relates to improvements in air plugs particularly adapted for attachment to the intake manifold of an internal combustion engine and the object of the invention is to provide an air plug of simple and inexpensive construction which can be readily attached to the manifold of an engine and which can be adjusted to admit air to the manifold to mix with the upcoming explosive mixture passing through the manifold from the carbureter to the engine and while supplying such a valve to embody with it a rotatably mounted fan which, when the valve is installed, rotates in the manifold to effect an efficient mixing of the air admitted through the valve and the explosive mixture coming up through the manifold.

With the above objects in view the invention consists essentially in the arrangement and construction of parts hereinafter more particularly described and later pointed out in the appended claims, reference being had to the accompanying drawing in which:—

Figure 1 represents a view of the valve applied on the manifold.

Fig. 2 is an enlarged detailed side view of the valve as it appears screwed into the manifold.

Fig. 3 is a vertical sectional view longitudinally through the valve, the section being taken in the plane denoted by the line X—X′ Fig. 2.

Fig. 4 is an end view of the valve with the fan and valve removed.

Fig. 5 is a vertical sectional view through the valve, the section being taken in the plane denoted by the line Y—Y′ Fig. 3.

Fig. 6 is a perspective view of the adjustable air controlling sleeve.

Referring now to the drawing:—

1 represents an internal combustion engine of any approved type of which 2 is the carbureter and 3 the intake manifold leading from the carbureter to the engine cylinder.

As is well understood, the explosive mixture, comprising usually mixed gasolene and air, is passed up the manifold to the engine, the gasolene and air being admitted and mixed primarily in the carbureter.

In carrying out my invention I provide an air valve 4 carrying a fan 5 and apply the valve to the manifold in the location best shown in Fig. 1 of the drawing so that the air admitted through my valve is admitted to the mixture passed into the manifold from the carbureter.

The valve comprises a more or less cylindrical and open centered body piece 6, the open center forming an air passage 7. The body piece has one end externally screw threaded as shown at 8 and the other end internally screw threaded as indicated at 9 and it is supplied with a tapering shoulder forming a valve seat 10.

A spider 11 is located within the passage 7 and a valve stem 12 is slidably mounted in the spider and has the innermost end fitted with a valve 13 and the outer end carrying a spring 13′ which seats on the spider.

A screw cap 14 is screwed into the outer end of the body piece and closes the outer end of the passage 7.

The cylindrical body piece is supplied with an air inlet opening 15 which communicates directly with the passage 7.

A split sleeve 16 is inserted within the cylindrical body piece and is supplied with an inlet opening 17 adapted normally to register with the inlet opening 15. This sleeve is formed from spring material so that its natural tendency is to expand against the inner wall of the member 6. Accordingly, when it is turned for adjustment, it will retain the adjusted position.

The screw threaded end 8 of the cylindrical member is adapted to screw into the manifold so that when the valve is unseated the passage 7 communicates directly with the interior of the manifold.

The inner end of the member 6 is formed with a pair of diametrically opposing standards 18 and 19 which provide bearings for a supporting spindle 20 which carries the fan 5, it being noticed that the fan is fitted with a sleeve-like hub 5′ which is rotatably mounted on the spindle.

The fan and standards are designed and proportioned such that they can be readily inserted into the manifold through the same opening which receives the screw threaded end of the cylindrical member 8.

With this device installed on the manifold one adjusts the sleeve by moving it to admit

whatever quantity of air he desires to pass through the openings 15 and 17 into the passage.

This adjustment is governed by experience as the amount of air admitted will depend entirely on the working conditions of the engine.

The adjustment is made by inserting a bent wire through the opening 15 and forcing the sleeve one way or the other as wished.

In the operation of the engine, air is drawn in through the passage past the valve 13 to the manifold. This air will immediately be thoroughly mixed by the fan with the upcoming mixture from the carbureter and will accordingly provide a good firing mixture for the engine.

In this connection it is to be understood that the valve 13 will be opened on the suction stroke of the engine while the fan will be rotated by the flow of the mixture through the manifold.

What I claim as my invention is:—

The combination with the intake manifold of an internal combustion engine and an air inlet valve attached exteriorly to the manifold, of a pair of standards carried by the inner end of the valve and extending inwardly into the manifold and a rotatably mounted fan carried by the standards and positioned with its axis of rotation coinciding with the longitudinal axis of the manifold and transversely to the bore of the valve.

Signed at Winnipeg, this 15th day of May 1916.

THOMAS CUFF.

In the presence of—
GERALD S. ROXBURGH,
ROLAND FOSTER.