Aug. 26, 1924. 1,506,538

A. E. LEGGETT

AUXILIARY AIR VALVE

Filed June 8. 1921

Fig. 1.

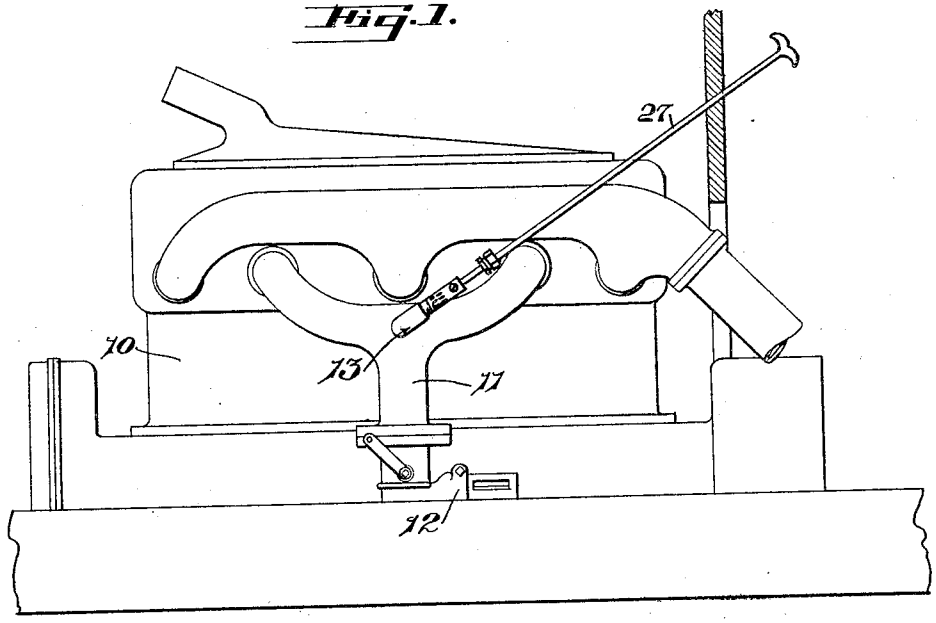
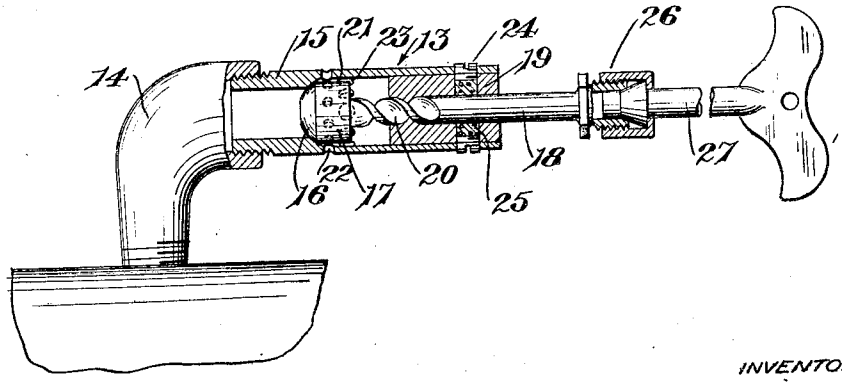


Fig 2.



INVENTOR.
ALBERT E. LEGGETT.
BY Chas. E. Townsend
ATTORNEY.

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UNITED STATES PATENT OFFICE.

ALBERT E. LEGGETT, OF SANTA ROSA, CALIFORNIA.

AUXILIARY AIR VALVE.

Application filed June 8, 1921. Serial No. 475,204.

To all whom it may concern:

Be it known that ALBERT E. LEGGETT, a citizen of the United States, residing at Santa Rosa, in the county of Sonoma and State of California, has invented new and useful Improvements in Auxiliary Air Valves, of which the following is a specification.

This invention relates to internal combustion engines, and particularly pertains to an auxiliary air valve therefor.

It is a principal object of the present invention to provide a valve adapted to be used in conjunction with the gaseous fuel supply system of an internal combustion engine, and designed to deliver variable amounts of air to the gaseous fuel whereby the richness of the gaseous mixture may be varied.

Heretofore numerous means have been provided for admitting air to the gaseous fuel of an engine, but in most cases these devices have been unsatisfactory, due to the fact that the air could not be accurately controlled, thoroughly mixed with the gas, or the control means readily operated; and it is a principal object of the present invention to provide an auxiliary air valve which may be instantly operated by a very slight movement, after which it will remain in its set position and will permit an inflow of air to the intake manifold of the engine in finely divided parts which will be thoroughly mixed with the gas.

The present invention contemplates the use of a valve casing having sets of perforations through and around the wall thereof and an internal valve seat, said casing carrying a valve member mounted upon a quick acting valve stem by which it may be instantly advanced or retracted,

The invention is illustrated by way of example in the accompanying drawings in which—

Fig. 1 is a view in side elevation showing one application of the present invention;

Fig. 2 is an enlarged view in central section through the valve member showing the construction and arrangement of the parts.

Referring more particularly to the drawing 10 indicates an internal combustion engine having an intake manifold 11 connected with a carbureter 12. Operatively connected with the intake manifold at a point between the engine and the carbureter is an auxiliary air valve 13 with which the present invention is particularly concerned.

As shown in the drawings the valve is connected with the manifold by a reducing elbow 14, one end of which is threaded into the manifold, the opposite end being interiorly threaded to receive the cylindrical casing 15 of the valve. This casing is tubular, being of the same outside diameter throughout its length and having two different inside diameters whereby a tapered valve seat 16 will be formed. This seat is adapted to receive the tapered end face of a valve plunger 17. The valve plunger is intended to reciprocate longitudinally of the casing and is mounted upon a stem 18. This stem extends through a nut 19 secured in the large bore of the casing. The stem is formed with a length of screw thread 20, which thread is of very long pitch so that a partial revolution of the stem will cause considerable longitudinal movement of the valve plunger. Attention is directed to the fact that the valve plunger is formed with a cylindrical portion of a diameter somewhat less than that of the large internal bore of the valve casing, thus forming an annular passageway 21 between the side of the plunger and the inner face of the casing. This arrangement is provided to allow circulation of air through sets of perforations 22 and 23 in the side wall of the casing, and thence through the reduced bore of the casing to the manifold. As shown, one set of small perforations 22 is provided near the valve seat 16, and a set of larger perforations 23 is disposed adjacent thereto and farther from the valve seat. These perforations are distributed around the circumference of the casing so that a plurality of finely divided jets of air may be drawn into the casing due to the engine suction of the manifold.

The nut 19 is held in position by set screws 24 which pass through the sides of the casing and extend into radial openings through the nut. These set screws also bear against pieces of cork 25, or other friction producing material which will tend to engage the surface of the valve stem 18 and will cause the valve to remain in any set position without accidental movement.

For the sake of convenience a coupling structure 26 is provided at the end of the valve stem and connects with an operating rod 27. This rod may be led directly to the

dashboard of the automobile, as shown in Fig. 1.

In the operation of the present invention, the valve is applied to the engine as previously described, and under normal conditions the valve plunger 17 is forced tight against the valve seat 16. This will cause the gas from the carbureter to be delivered to the engine without dilution. In the event that a leaner mixture is required, the valve stem 18 may be rotated a fraction of a revolution, thus instantly moving the valve plunger from its seat and permitting the suction of the engine to draw air in through the passageways 22 and 23. The effective area of the orifices will of course be regulated by the distance the valve plunger is moved from its seat and also the proportion of the openings 22 and 23 uncovered. The air will pass between the bevelled faces of the plunger and the valve seat and then unite with the gaseous fuel traveling through the manifold.

It will thus be seen that the valve structure here disclosed provides simple and instantly operating means for admitting desired quantities of fresh air to a gaseous mixture.

While I have shown the preferred form of my invention, it is to be understood that various changes might be made in the structure by those skilled in the art without departing from the spirit of the invention.

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

In a device of the character described comprising a tubular casing having lengths of different internal diameters whereby a valve seat will be formed at the juncture thereof; a valve plunger normally positioned upon said valve seat; a plurality of perforations through the side wall of the casing adjacent said plunger and opposite the eduction end of the casing; a nut in the outer end of the casing; a quick acting valve stem extending through said nut; means for rotating the same; and friction members carried by the nut to engage the circumference of the stem; and screws simultaneously holding the nut in position relative to the casing and exerting a desired pressure upon the friction members.

ALBERT E. LEGGETT.

Witnesses:
A. LOCKE,
A. J. CAUGHEY.