

H. C. MEYER.
AUXILIARY AIR VALVE.
APPLICATION FILED MAR. 22, 1916.

1,220,872.

Patented Mar. 27, 1917.

Fig. 1.

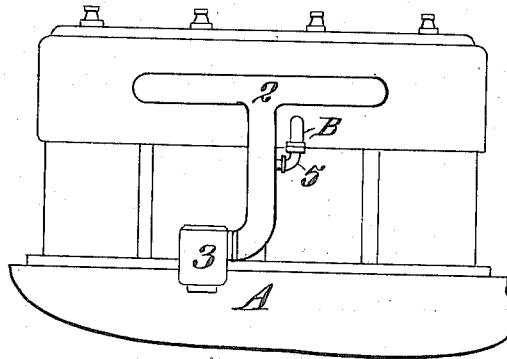


Fig. 2.

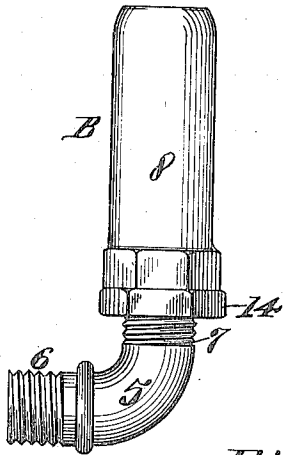


Fig. 3.

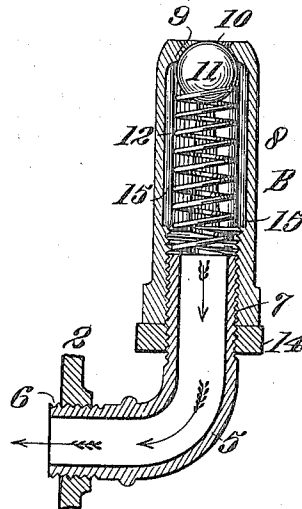


Fig. 4.

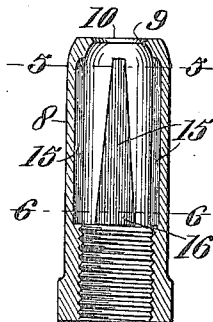


Fig. 5.



Fig. 6.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HENRY C. MEYER, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO JAMES E. HOCKEN,
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AUXILIARY AIR-VALVE.

1,220,872.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HENRY C. MEYER, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Auxiliary Air-Valves, of which the following is a specification.

This invention relates to an auxiliary air valve for internal combustion engines.

It is an object of the present invention to provide a simple, compact, cheaply manufactured and easily applied mechanism for internal combustion engines whereby a variable volume of air proportional to the speed of the engine may be automatically admitted to the intake manifold when the engine is running. Further objects will hereinafter appear.

The invention consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a side elevation of an engine, showing the application of the invention.

Fig. 2 is a side elevation of the gas saver.

Fig. 3 is a central, vertical section through same.

Fig. 4 is a central, vertical section through the cap.

Fig. 5 is a cross section on line 5—5 of Fig. 4.

Fig. 6 is a cross section on line 6—6 of Fig. 4.

Referring to the drawings in detail, A indicates a standard type of internal combustion engine; 2 the intake manifold; and 3 the carbureter. The purpose of the present invention is to provide a simple form of mechanism, such as indicated at B, by which a variable amount of air, proportional to the speed of the engine, may be admitted to the intake manifold.

The construction of the auxiliary air valve, generally indicated at B, will be as follows: 5 indicates an elbow, one end of which is threaded, as at 6, to permit it to be screwed into the intake manifold 2 at any convenient point between the carbureter and the inlet valves. The opposite end of the elbow is also threaded, as at 7, and considerably extended or lengthened for purposes to be hereinafter described.

Adapted to be screwed down over the threaded end 7 of the elbow is a cylindrical-

shaped cap 8 provided with a valve seat 9 in its upper end and an opening 10 for the admission of air. Adapted to normally close the opening is a ball-check 11 which is held against the seat 9 by means of a coil spring 12, interposed between the ball and the upper threaded end 7 of the elbow. The threaded long end of the elbow permits the tension of the spring to be increased or decreased by screwing the cap 8 up or down upon the threaded section and a lock nut 14 permits the cap to be locked against movement when an adjustment has been made.

Formed interiorly of the cap is a plurality of grooves 15 which communicate with the valve seat 9 and the upper opening 10. These grooves are comparatively narrow at the upper end and increase considerably in width toward the lower end, as indicated at 16. The interior bore of the cap is just large enough to permit the ball-check to move up and down interiorly thereof, thus not only forming a perfect guide for the ball-check and spring 12, but it also provides a means whereby the volume of air admitted through opening 10 may be increased or decreased proportionally to the movement of the ball-check 11.

The operation of the device will be as follows:

With the engine running there is a tendency to form a vacuum in the manifold and thus cause the valve 11 to open and admit auxiliary air because of a difference between the atmospheric pressure on the outside of the casing 8 and the pressure inside the casing and manifold. As the vacuum increases the valve will be moved farther away from its seat and the increasing size of the grooves 15 will allow of a greater quantity of air entering therethrough. As the vacuum decreases the valve will be moved toward its seat cutting off, or entirely preventing, the flow of air therethrough. The degree of opening of the valve for a given vacuum is determined by the tension of the spring 12 which may be easily adjusted.

The device as a whole, constructed as here shown, can be made in one size as the adjustable mounting of the spring and the increasing area of the V-shaped grooves permit varying amounts of air to be admitted to the manifold which are proportional not only to the size of the engine but also to the speed developed. The device is, further-

more, so simple in construction and easy to adjust to any size engine that it may be installed by the average person.

The materials and finish of the several parts of the gas saver are such as the experience and judgment of the manufacturer may dictate.

I wish it understood that various changes in form, proportions and minor details of construction may be resorted to within the scope of the appended claims and that I do not wish to limit myself to the specific design and construction here shown.

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

1. An auxiliary air valve comprising an elbow adapted to be connected with the intake manifold on an internal combustion engine, an elongated cap having an air intake opening formed in one end adjustably mounted on the elbow, said cap having a plurality of V-shaped grooves formed on its interior sur-

face, a ball-check adapted to normally close said opening, and a spring engageable with the ball-check.

2. An auxiliary air valve comprising an elongated cylindrical shaped member having an air intake opening in one end and a plurality of V-shaped grooves formed on its interior surface, a threaded extension on the end opposite the air intake adapted to receive the threaded end of an elbow or nipple to form a connection with an intake manifold, a valve adapted to close the air intake opening, a spring engageable with the valve and means for increasing or decreasing the tension of the spring.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HENRY C. MEYER.

Witnesses:

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W. W. HEALEY.