

March 29, 1932.

B. LUKS ET AL

1,851,438

AUXILIARY AIR VALVE

Filed Nov. 21, 1930

2 Sheets-Sheet 1

Fig. 1.

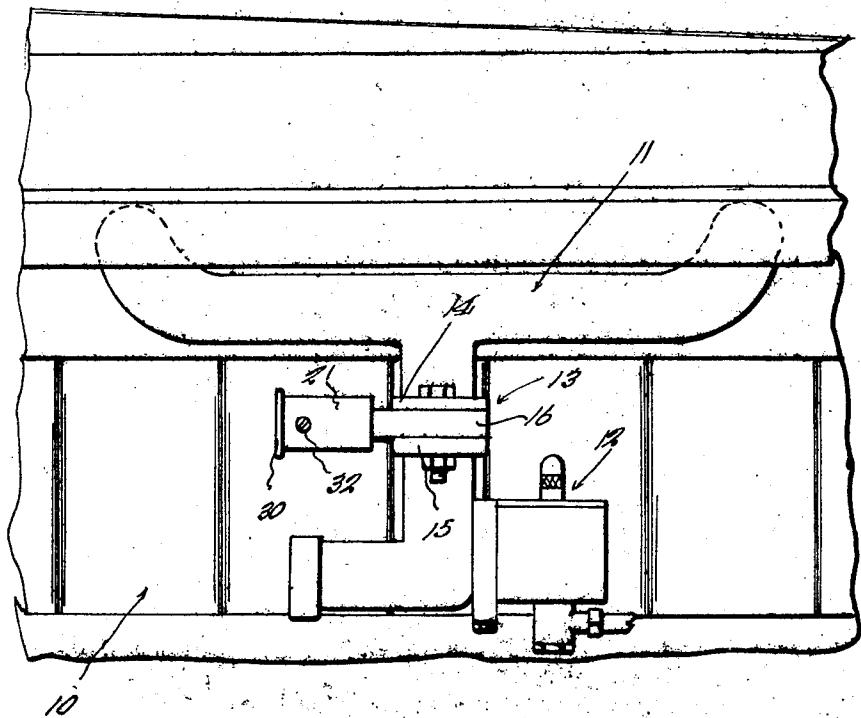


Fig. 5.

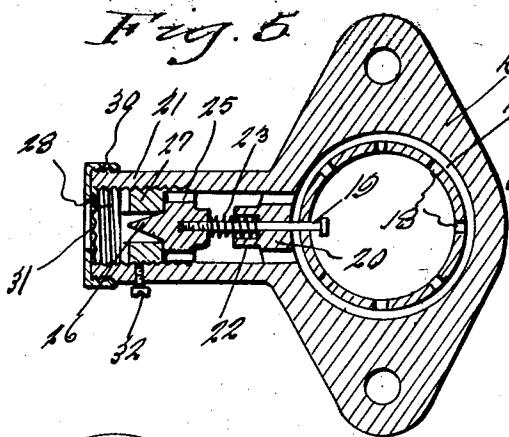


Fig. 2.

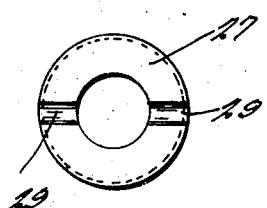
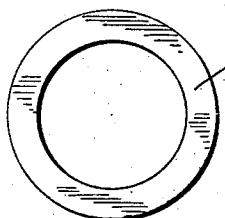


Fig. 6.



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2 Sheets-Sheet 2

Fig. 2.

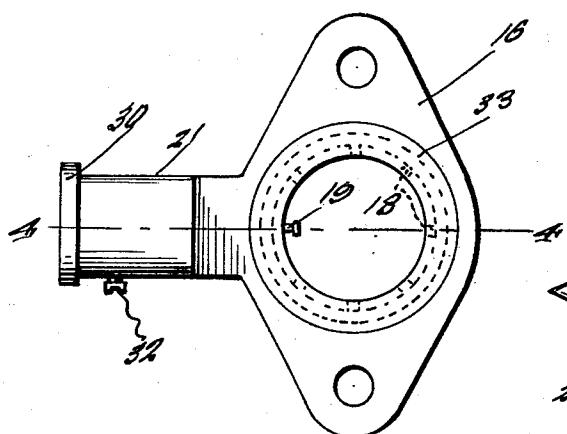


Fig. 8.

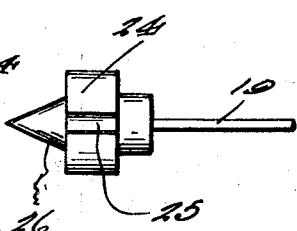


Fig. 3.

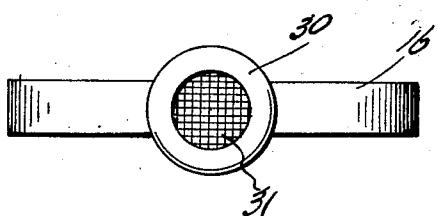
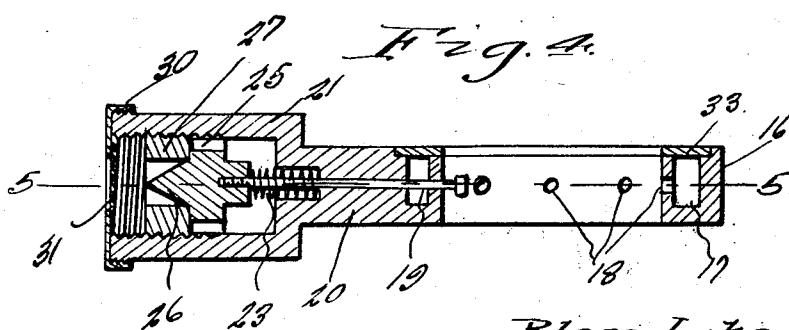
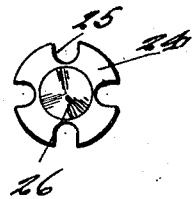


Fig. 9.



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# UNITED STATES PATENT OFFICE

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## AUXILIARY AIR VALVE

Application filed November 21, 1930. Serial No. 497,302.

This invention relates to an automotive appliance designed for use and association with a conventional carburetor and intake manifold of an internal combustion engine of the type used in present day motor vehicles.

More specifically related, the invention conception comprehends a novel suction actuated automatically proportioning air valve in the form of an accessory or attachment designed to be interposed between the carburetor and intake manifold.

The purpose of the invention is to provide a suction-opened spring-closed automatically operating additional air inlet valve which introduces supplemental air in a properly and uniformly distributed manner to mingle with the fuel charge and to aid in vaporizing the charge, whereby to provide a more efficient and highly combustible mixture for introduction into the cylinders.

Our primary aim is to generally improve upon additional air supply devices of this general classification by providing a structure which is characterized by unusual simplicity in structural arrangement and parts, a device which serves to better proportion the amount of additional air in relation to the speed of the motor, and otherwise co-act with the carbureted fuel charge to better fulfill the requirements of a valve of this species.

In the drawings:

Figure 1 is an elevational view showing the additional air supply valve incorporated in the intake manifold.

Figure 2 is a top plan view of the valve per se.

Figure 3 is an end view observing the structure seen in Figure 2 from left to right.

Figure 4 is a longitudinal section on the line 4-4 of Figure 2.

Figure 5 is a horizontal section on the line 5-5 of Figure 4.

Figure 6 is a plan view of a removable cover annulus.

Figure 7 is an end elevation of the removable valve seat ring.

Figure 8 is a side view of the valve element itself.

Figure 9 is an end view of the valve element

seen in Figure 8 observing it from left to right.

In the drawings, in Figure 1, the motor is generally denoted by the numeral 10. The intake manifold is designated at 11, and the carburetor at 12. The improved attachment is represented as a unit, by the numeral 13 and it will be observed that it is interposed between the usual existing flanges 14 and 15 of the companion sections of the intake manifold.

The device 13 as shown in Figure 5 comprises a casting 16 whose configuration resembles that of an ordinary intake manifold gasket. This casting is centrally apertured to provide a passage for fuel mixture and the wall around the opening is channelled as at 17 to provide an air circulating and distributing channel. The wall of this channel is formed with air discharge ports 18 circumferentially spaced to equalize and render the charge of air uniform for incorporation with the upwardly passing column of gas.

One of the ports 18 serves to accommodate the headed end of the valve stem 19 and this is mounted in an appropriate guide 20 and projects into a valve casing 21 which is formed integral with one side of the casting. Incidentally, the part 20 is provided with a socket extension as at 22 to accommodate the adjacent ends of the coil spring 23. This spring surrounds the valve stem, is confined in the casing and bears at its opposite end against the valve head as shown in Figure 5.

This valve head comprises a disc-like flange 24 which as shown in Figure 9 is provided with circumferentially spaced notches 25 in its periphery to provide air intake passages. There is a concentric conical projection 26 which constitutes a pilot which is projectable into the central opening of the valve seat ring 27.

This ring has its margins threaded and tapped into the screw-threads 28 on the inner wall of the cylindrical casing 21. At diametrically opposite points, the outer face of this valve ring is provided with depressions constituting screw-driver kerfs 29. The numeral 30 represents a removable retaining cap for holding the strainer screen 31 in place.

The valve seat ring is adjustable, and the adjustment is maintained by way of the provision of a retaining set screw at 32.

The numeral 33 in Figure 6 merely designates a removable annulus which as seen in Figure 4 constitutes the cover plate for the open top of the cored channel 17. Particular emphasis is placed on the single casting 23 which defines the gasket-like body 16 with 10 the annular channel having its inner wall apertured to afford uniform distribution of the incoming air, together with the removable annulus forming a cover plate for said channel.

15 Further, we wish to emphasize the integral formation and lateral extension of the part 21 which is so shaped and designed internally and externally to provide a casing to accommodate the valve mechanism. Then too, 20 the removable screen retaining cap 30 is important. Likewise the adjustability of the valve seat ring 27 and the retaining set screw 30 is important.

Moreover, the provision of the notched 25 flange constituting the valve head and the centralized conical extension constituting a pilot to facilitate seating of the valve and insure proper operation thereof under all 30 circumstances. The provision of the headed valve stem having screw-threaded connection of the valve head and accommodating the spring 23 is a feature of assembly which facilitates manufacture.

35 A highly important distinction to be observed is the adjustable valve seat ring 27 which can be threaded in or out to regulate the sensitivity of operation of the spring-pressed valve head, whereby to permit positive controlling and proper proportioning 40 of the air intake in relation to the fuel charge and speed of the motor.

It is thought that the description taken in connection with the drawings will enable a 45 clear understanding of the invention to be had. Therefore, a more lengthy description is thought unnecessary.

While the preferred embodiment of the invention has been shown and described, it is to be understood that minor changes coming 50 within the field of invention claimed may be resorted to if desired.

We claim:

An auxiliary air intake valve device designed for incorporation between intake 55 manifold and carburetor and comprising a gasket-shaped body having an annular channel therein the inner wall of which is perforated to communicate with the intake manifold, a flat extension on one side of the body, 60 a cylinder connected with the outer end of the extension, a valve stem passing through the extension and through one of the perforations in the channel wall, a valve in the cylinder connected with the outer end of the stem, said extension having a socket in its

outer end in communication with the cylinder, a spring on the stem having one end resting against the valve and the other located in the socket, said extensions having ports therein connecting the channel with the cylinder, and a ring-shaped valve seat in the cylinder the inner face of which is engaged by the valve under the action of the spring.

In testimony whereof we affix our signatures.

BLASE LUKS.  
JOSEPH G. LUKS.

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