Jan. 12, 1926. 1,568,976

E. JONES ET AL

REGULATING VALVE

Filed Oct. 22, 1925

Fig. 1.

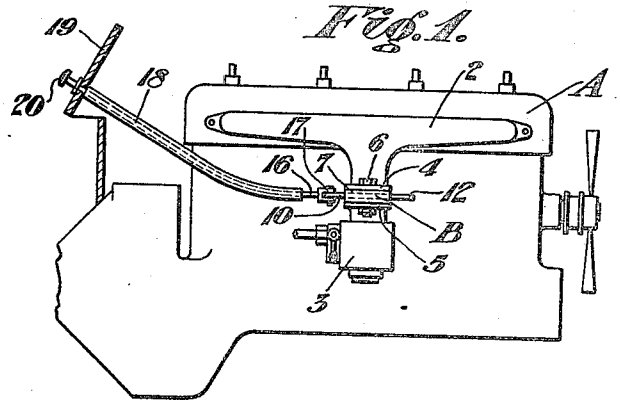


Fig. 8.

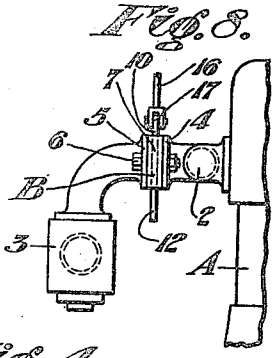


Fig. 2.

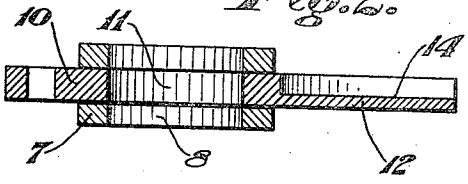


Fig. 4.

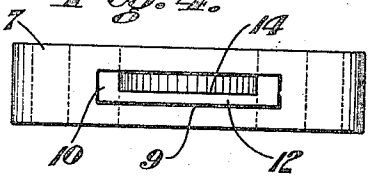


Fig. 3.

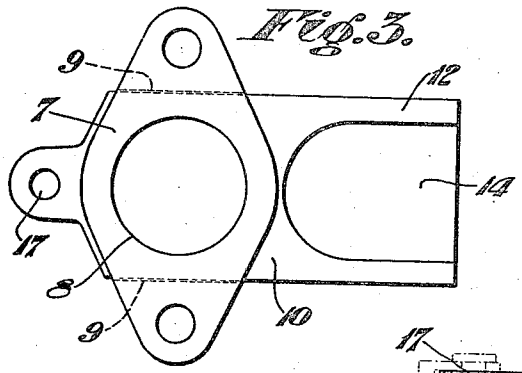


Fig. 5.

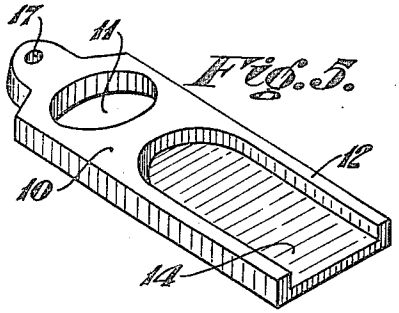


Fig. 7.

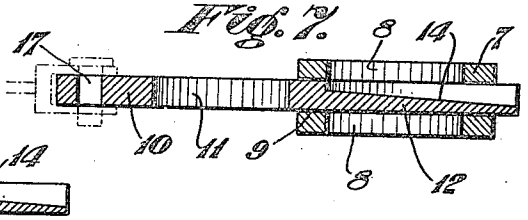
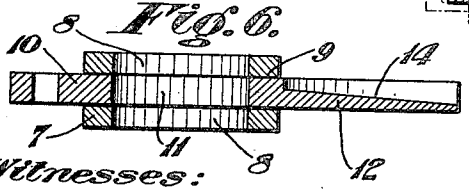


Fig. 6.



Witnesses:

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UNITED STATES PATENT OFFICE.

EVAN JONES, OF PITTSBURGH, AND WILLIAM R. McKRELL, OF AVALON, PENNSYLVANIA.

REGULATING VALVE.

Application filed October 22, 1925. Serial No. 64,107.

To all whom it may concern:

Be it known that we, EVAN JONES and WILLIAM R. McKRELL, citizens of the United States, and residents of Pittsburgh and Avalon, respectively, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Regulating Valves, of which the following is a specification.

This invention relates to valves and more particularly to valves especially adapted for use in the intake manifold of internal combustion engines of automobiles and has for its object the provision of such a valve which may be operated from the driver's seat of an automobile to control the flow of explosive mixture from the carburetor to the engine, and permit a regulatable supply of air to enter the manifold.

Another object is to provide a valve of this class which may be used to completely stop the flow of the explosive mixture from the carburetor to the engine when coasting down grades with the engine acting as a brake.

A still further object is to provide a valve having the novel construction, design and combination of parts hereinafter described and illustrated in the accompanying drawings.

In the drawings:

Figure 1 is a side elevation of an internal combustion engine of an automobile of standard design having the invention applied thereto.

Figure 2 is a sectional view through the valve of this invention.

Figure 3 is a plan view thereof.

Figure 4 is a side elevation thereof.

Figure 5 is a perspective view of the valve plate.

Figures 6 and 7 are sectional views of a slightly modified form of valve.

Figure 8 is an elevation showing the valve mounted vertically between a carburetor and engine manifold.

Referring more particularly to the drawings, the letter A designates an internal combustion engine, of a well known design, which is provided with the usual intake manifold 2 and carburetor 3. The intake manifold 2 is provided with the usual attaching flange 4 adapted to normally abut a similar flange or shoulder 5 on the carburetor 3, and the carburetor is secured in place by bolts 6 which pass through the flanges 4 and 5.

The regulating valve B of this invention is mounted between the flanges 4 and 5 of the manifold and carburetor and is secured in place by the bolts 6.

The valve B comprises a flat relatively thin body portion 7 having a centrally disposed circular opening 8 therethrough to permit the passage of the explosive mixture from the carburetor into the manifold. The body portion 7 is also provided with an elongated rectangular slot 9 in which a valve plate 10 is mounted for sliding movement.

The valve plate 10 is provided with an opening 11 equal in size with the opening 8 in the body portion 7 of the valve and adapted to be alined with the opening 8 when the valve is in open position.

The valve plate 10 is also provided with a cut-off portion 12 adapted to be moved into position across the opening 8 to stop the passage of explosive mixture from the carburetor into the manifold and motor.

The portion 12 is provided with a recess or depression 14 in its upper face which permits air to be drawn into the intake manifold 2 when the valve plate 10 is positioned with the portion 12 across the opening 8. The depression 14 may be of the same depth throughout or may be of constantly increased depth toward the forward end as shown in Figures 6 and 7. The inner end of the depression 14 is rounded or curved and the outer end is open. The rounded or curved inner end of the depression 14 permits a fine adjustment of the air volume entering through the valve so that the leaning of the explosive mixture to the engine may be better controlled.

The valve plate 10 is adapted to be reciprocated by a wire or other flexible element 16 which is connected at 17 to the valve plate and passes through a suitable guide tube 18 to the dash 19 of the machine and terminates in a suitable hand hold 20. It will be understood that various operating means may be used to reciprocate the valve plate and that the means shown is only illustrative.

The valve plate 10 may be adjusted to various positions so that air and an explosive mixture may both be drawn into the

manifold 2 or so that air or an explosive mixture alone may be drawn into the manifold.

When the engine is running at a good speed a materially leaner mixture of air and gas may be used as an explosive mixture than when starting or running slow. Therefore the valve plate 10 may be moved into position to partly close the opening 8 and move the rear end of the recess 14 into communication with the opening. This will permit air to be drawn into the manifold and less explosive mixture so that a lean mixture is provided for the engine. This operation of the valve alone will materially reduce gasoline consumption in an automobile.

If the automobile is coasting down a grade with the engine acting as a brake the valve plate 10 is completely closed so that air alone is drawn through the intake. This operation will cause a great saving in gasoline, cool the motor and cause a more efficient braking action of the engine.

While we have shown and described one specific embodiment of our invention, we do not wish to be limited thereto, since various modifications in design, construction and combination of parts may be made without departing from the scope of our invention as defined in the appended claims.

We claim—

1. The combination with an internal combustion engine having an intake manifold of circular cross section and carburetor, of a thin relatively flat valve body mounted between and having a circular port connecting said manifold and carburetor, and a thin relatively flat valve plate mounted in a suitable guide opening in said body for a transverse sliding movement, said valve plate being provided with an opening adapted to permit unobstructed passage of the explosive mixture from said carburetor through said manifold, and a cut-off portion adapted to be moved across said valve port to regulate or cut-off the flow of explosive mixture to said manifold, said cut-off portion of said valve plate being provided with a depression adapted to permit the entrance of air to said manifold when said cut-off portion is moved across said valve port, said depression having a rounded inner end so as to permit a relatively fine adjustment of the quantity of air admitted to said manifold when regulating the flow of explosive mixture through said manifold.

2. The combination with an internal combustion engine having an intake manifold of circular cross section and carbureter, of a thin relatively flat valve body mounted between and having a circular port connecting said manifold and carbureter, and a thin relatively flat valve plate mounted in a suitable guide opening in said body for a transverse sliding movement, said valve plate being provided with an opening adapted to permit unobstructed passage of the explosive mixture from said carbureter through said mainfold, and a cut-off portion adapted to be moved across said valve port to regulate and entirely cut-off the flow of explosive mixture from said carbureter to said manifold, said cut-off portion of said valve plate being provided with a depression having a rounded inner end and open outer end, said depression having a continually increasing cross section from said rounded inner end to its open outer end so as to provide an increasing supply of air to said manifold as said cut-off portion of said valve plate is moved across said valve port.

In testimony whereof, we have hereunto signed our names.

EVAN JONES.
WILLIAM R. McKRELL.