

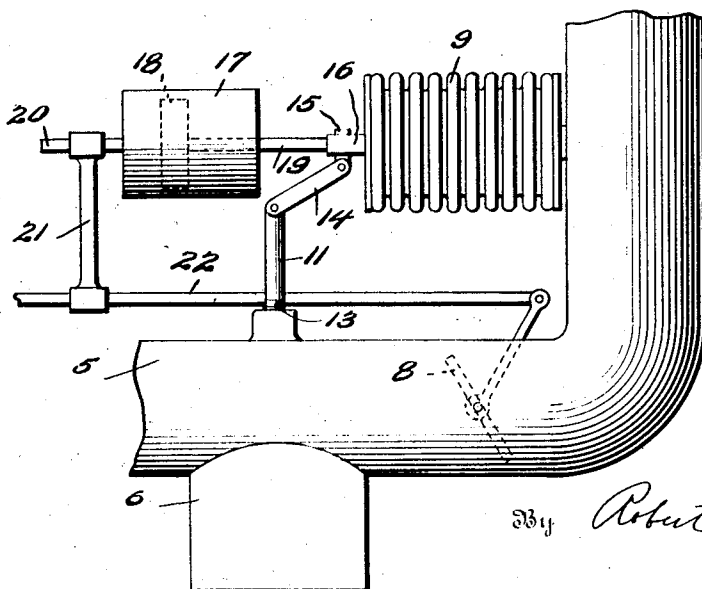
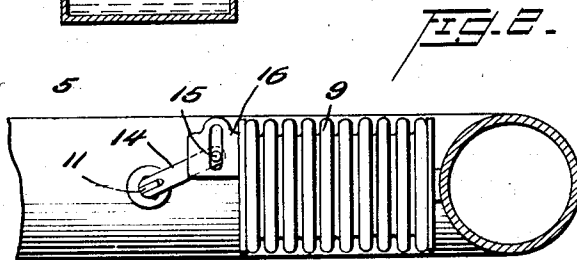
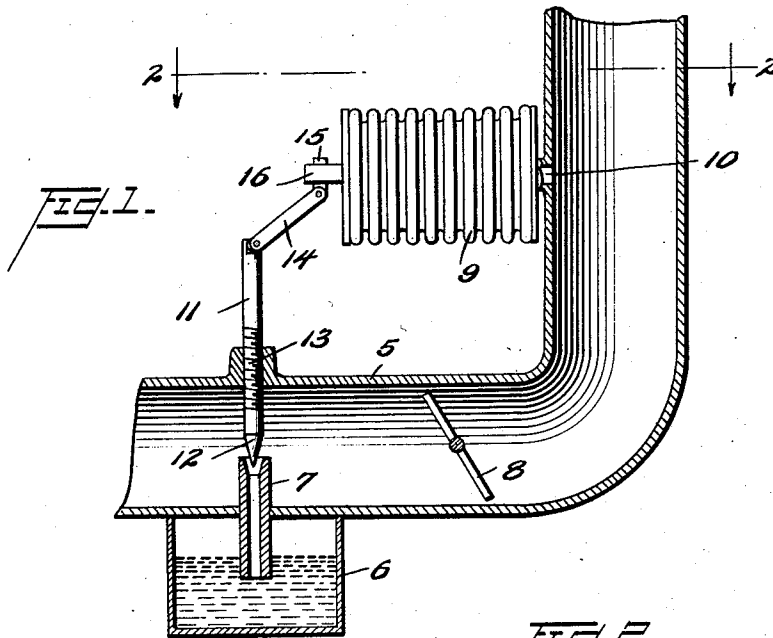
Sept. 27, 1927.

1,643,479

J. M. WILLIAMS, JR

CARBURETOR ECONOMIZER

Filed June 9, 1923



Inventor

J. M. Williams, Jr.

By

Robert H. Young

Attorney

UNITED STATES PATENT OFFICE.

JOHN M. WILLIAMS, JR., OF MONTCLAIR, NEW JERSEY.

CARBURETOR ECONOMIZER.

Application filed June 9, 1923. Serial No. 644,509.

This invention relates to a carburetor economizer.

The broad object of the invention is to automatically vary the proportion of fuel and air in accordance with the demands of the engine and variation of the load imposed thereon; also to provide means for obtaining a relatively rich mixture of fuel and air and to that end temporarily suspending the functioning of the means for automatically varying the proportions of fuel and air.

With the above and other objects in view, the invention consists in the novel construction, combination and arrangement herein fully described, shown and claimed.

In the accompanying drawings.

Figure 1 is a diagrammatic sectional view illustrating the invention.

Figure 2 is a section on the line 2—2 of Figure 1.

Figure 3 is a vertical sectional view showing means for dampening the action of the bellows shown in Figure 1.

In the drawings 5 designates the intake or induction pipe of an internal combustion engine and 6 a carburetor having a fuel nozzle 7 which discharges into the intake pipe 5, while 8 designates a throttle valve arranged in the pipe 5 between the nozzle 7 and the engine (not shown).

In carrying out the present invention, I employ a sylphon or bellows 9 which is constantly in communication with the intake pipe 5 through a port 10, the latter being located between the throttle valve 8 and the engine. The bellows 9 is connected to the stem 11 of a needle valve 12 which is used to increase or decrease the output of the fuel nozzle 7. The valve 12 has a threaded portion 13 which screws through the wall of the intake pipe opposite the nozzle 7 and rotative movement is imparted to the needle valve 12 by means of a linkage member 14 shown in the form of a lever arm fastened to a stem 11 of the needle valve and having a pivotal connection at 15 with a projection 16 on the movable end of the bellows 9.

In operation, when there is a high degree of suction in the intake pipe 5, produced by the operation of the engine, said suction causes the bellows 9 to contract, thereby moving the lever arm 14 and turning the needle valve in a direction which will in-

crease the size of the discharge end of the nozzle 7 and thereby cause a greater output of fuel from the nozzle. This high degree of suction takes place when a heavy load is imposed on the engine, while the latter is running at a comparatively low speed. As the speed of the engine increases the degree of suction decreases, permitting the bellows 9 to expand. This turns the needle valve 12 in the opposite direction and by partially closing the valve 12, reduces the output of the fuel nozzle, thereby economizing in fuel consumption.

As illustrated in Figure 3, the action of the bellows 9 may be damped or retarded by using in connection therewith, a dash pot 17 containing a piston 18 connected by a coupling rod 19 to the movable end of the bellows 9. This is important in some cases to prevent too quick movement or action of the bellows. In order to quickly obtain a rich mixture, the action of the economizer may be temporarily suspended by moving the cylinder of the dash pot away from the bellows 9. The means for doing this is shown as comprising a stem or arm 20 projecting from the cylinder of the dash pot and having secured thereto a strut 21 which is secured at its other end to the operating rod 22 of the throttle valve 8, the rod 22 being pivotally connected to the operating arm 23 of said throttle valve. Whenever a rich mixture is required, the throttle 8 is opened by means of the rod 22, which causes movement of the strut 21 and the cylinder of the dash pot, which in turn acts on the bellows and temporarily suspends the action thereof. This furnishes a comparatively rich mixture as long as may be required and thereafter the economizer mechanism resumes its action and regulates the proportion of fuel and air in accordance with the demands of the engine as indicated by the degree of suction in the intake pipe or passage leading from the carburetor to the engine.

The apparatus herein above described is not intended to regulate the flow of the mixture to the engine but is intended to vary the proportion of air and fuel in accordance with the load imposed on the engine.

I claim:

In combination with the fuel-regulating

valve of an internal combustion engine, means controlled by the vacuum pull of the engine for automatically adjusting said valve to vary the proportion of fuel and air, said means comprising a bellows in communication with the intake pipe at a point between the throttle valve and engine, a dash pot connected with said bellows to damp the action thereof, and linkage between said dash pot and said throttle valve to render the bellows inoperative under certain circumstances. 10

In testimony whereof I affix my signature.

JOHN M. WILLIAMS, JR.