

Sept. 25, 1934.

W. E. ARMSTRONG

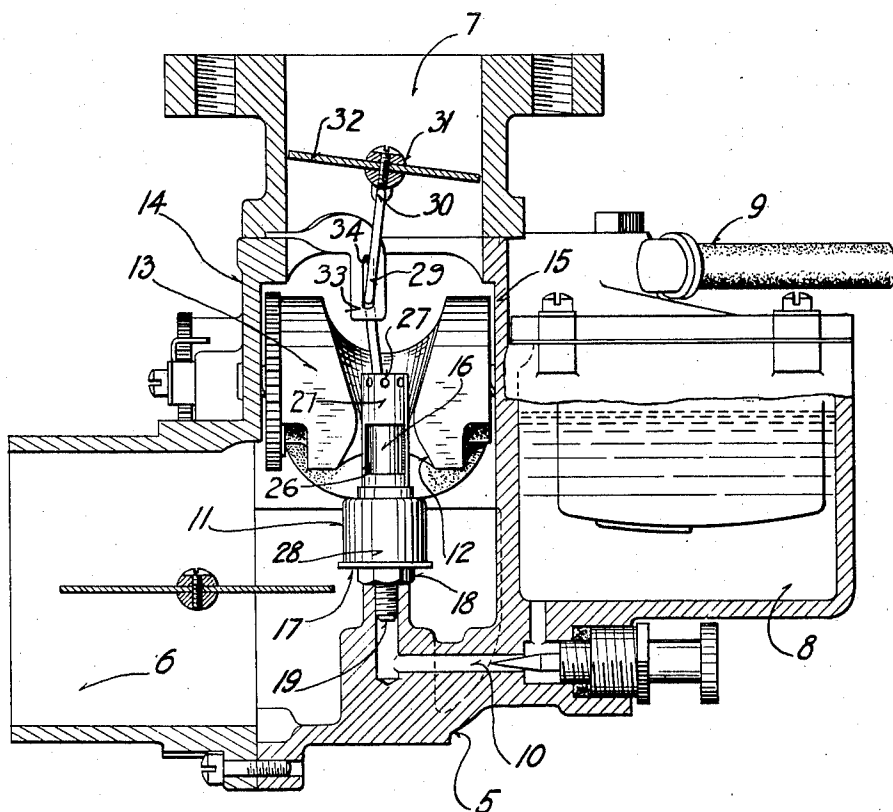
1,974,733

CARBURETOR

Filed May 12, 1932

2 Sheets-Sheet 1

FIG 1.



INVENTOR

Werner E. Armstrong.

BY

Ira Milton Jones.

ATTORNEY

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2 Sheets-Sheet 2

FIG - 2.

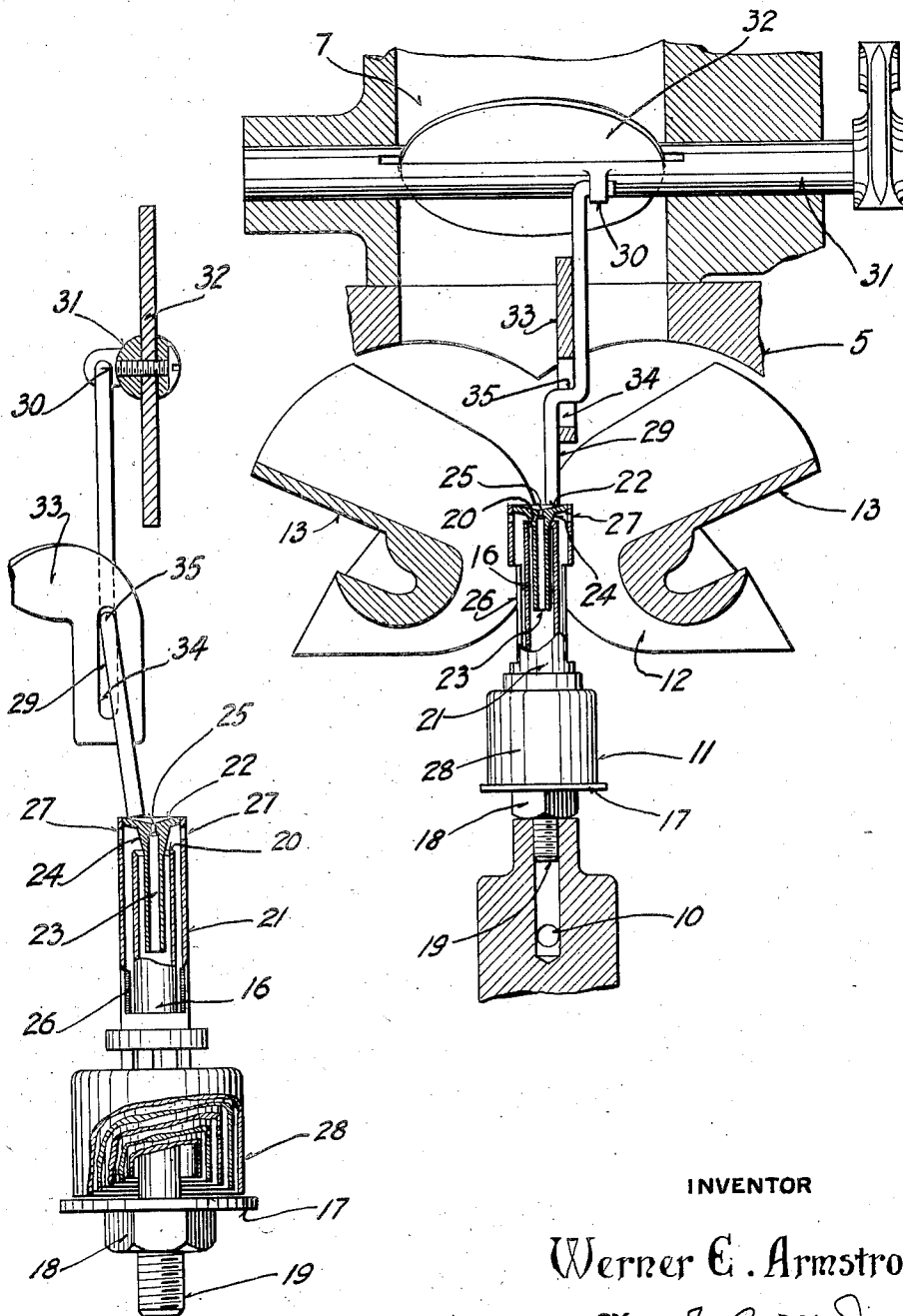


FIG - 3.

INVENTOR

Werner E. Armstrong.

BY

Lee Milton Jones

ATTORNEY

UNITED STATES PATENT OFFICE

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CARBURETOR

Werner E. Armstrong, Milwaukee, Wis., assignor
to Briggs & Stratton Corporation, Milwaukee,
Wis., a corporation of Delaware

Application May 12, 1932, Serial No. 610,847

1 Claim. (Cl. 261—51)

This invention relates to certain new and useful improvements in carburetors and refers more particularly to carburetors of the type shown in the co-pending application of Werner E. Armstrong, Serial No. 589,116, filed January 27th, 1932.

As described in the co-pending application, the carburetor to which this invention appertains embodies a fuel jet having a movable element responsive to the flow of air through the carburetor venturi within which the jet is positioned, to regulate the volume of fuel discharged from the jet.

The degree of movement of the movable jet element and the consequent adjustment of the jet discharge area, being responsive to the flow of air through the venturi, is substantially coordinated with the operating conditions of the engine, and thus roughly follows with the adjustment of the throttle valve. However, it has been found that at times the jet will remain in a lifted position for a short period after the throttle has closed.

This results in fuel waste and poor idling, and it is, therefore, an object of this invention to provide means for positively controlling the movable jet element from the throttle valve, to insure coordination therebetween.

A more specific object of this invention resides in the provision of a positively mechanical stop positively controlled from the throttle valve to limit the lift of the movable jet element to a certain distance at each degree of throttle opening.

With the above and other objects in view which will appear as the description proceeds, this invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described and more particularly defined by the appended claim, it being understood that such changes in the precise embodiment of the hereindisclosed invention may be made as come within the scope of the claim.

In the accompanying drawings, one complete example of the physical embodiment of this invention is illustrated constructed according to the best mode so far devised for the practical application of the principles thereof, and in which:

Figure 1 is a view partly in section and partly in elevation of a carburetor embodying this invention;

Figure 2 is an enlarged view partly in section and partly in elevation taken through Figure 1 on the plane of the line 2—2; and

Figure 3 is an enlarged detail view illustrating the parts in their positions of maximum opening.

Referring now more particularly to the accompanying drawings, the numeral 5 represents the body of the carburetor having an air inlet 6 and an outlet 7 connectable with an engine manifold. A float chamber 8 is carried by the body to control the admission of fuel to the carburetor from a feed line 9, and the float chamber is communicated through a passage 10 with a fuel jet indicated generally by the numeral 11.

The jet 11 extends upwardly into a Venturi opening 12 formed by two complementary rotatable elements 13 which are mounted for simultaneous rotation in opposite directions between the front and rear walls 14 and 15 respectively of the carburetor body.

The specific construction of the rotatable elements 13 has no bearing upon the present invention and may be ascertained by reference to the aforementioned application. It is noted however that the upper end portion of the jet 11 is disposed in the constricted throat of the Venturi opening and is concentric therewith.

The jet per se comprises a central stem or standpipe 16 open throughout its entire length and provided at its lower end with a flange 17, a hexagonal portion 18, and a threaded stem 19 by which the jet is mounted in the discharge end of the passage 10.

The extreme upper end of the central stem or standpipe 16 has its inner peripheral edge chamfered to provide a valve seat 20.

Slidably telescoped over the stem 16, is an outer sleeve or tube 21. The upper end of this sleeve is closed by a concave wall 22 from the center of which an inner tubular stem 23 depends to be telescopically received in the upper end portion of the stem 16.

At its upper end the inner stem 23 is taperingly enlarged to afford a metering cone 24, the major diameter of which is substantially equal to the inner diameter of the valve seat 20 so that when the sleeve 21 is in its normal lowermost position, the stem 16 is closed except for a small idling orifice 25 in the center of the concave closure 22. The flow of fuel from the jet is thus restricted to the volume which may pass through the orifice 25.

Being located in the throat of the venturi, the outer sleeve 21 is subjected to the vacuum producing the flow of air therethrough, so that under certain conditions the sleeve 21 and the inner stem 23, which together form the movable jet element, are lifted to uncover the outer open end of the stand-pipe 16. Longitudinal slots 26 are cut into the opposite sides of the sleeve 21

to reduce the effective vacuum on the end of the sleeve and prevent a too rapid lifting of the jet element and the consequent increase in the fuel flow. The slots 26 also permit the air passing through the venturi to enter the space between the sleeve 21 and the stand-pipe 16 and emulsify the fuel as it issues from the stand-pipe.

At the upper end of the sleeve 21, directly beneath the closure wall 22, is a plurality of discharge ports 27 through which the air entering the space between the stand-pipe and the sleeve 21 and the fuel issuing from the uncovered open end of the standpipe, issues.

The area of the open end of the standpipe is determined by the degree of lift of the sleeve 21, through the metering cone 24 and as will be readily apparent, the maximum area of opening is obtained when the sleeve 21 is lifted to the position at which the lower small end of the metering cone aligns with the valve seat 20 at the open end of the standpipe. In lifting the sleeve 21, from its normal position, its weight must be overcome by the flow of air through the venturi, and to control further lifting of the sleeve, a series of weights in the form of inverted telescoped cups 28 are provided. These cups normally rest on the flange 17 and are successively picked up by the sleeve 21 as it is lifted in the manner described in detail in the aforementioned co-pending application.

As hereinbefore brought out it sometimes happens that the flow of air through the venturi is sufficient to elevate the sleeve 21, even though the throttle is in its closed or partially closed position. This condition results in fuel waste and is overcome in the present invention by means of a stop pin 29. The pin 29 has its lower end positioned above the closure wall 22, but to one side so as not to obstruct the orifice 25, and has its upper end 30 linked to the shaft 31 of the throttle valve 32 in the outlet discharge 7. A guide 33 is suitably mounted from the body of the carburetor and has an elongated slot 34 within which an offset portion 35 of the stop pin is slidably mounted so that when the throttle shaft 31 is rotated in the customary manner to open

and close the valve 32, the stop pin 29 will be raised and lowered.

In this manner, the possible lift of the sleeve 21 is at all times positively limited by the position of the throttle valve 32 so that the fuel discharge is positively and properly co-ordinated with the position of the throttle valve.

In Figure 1, the throttle valve is shown closed and the sleeve 21 of the jet in its lowermost position. In Figure 2, the throttle valve is partially open and the movable jet element likewise is in an intermediate position of elevation defined by the stop pin 29, and in Figure 3, the valve is shown in its fully open position with the jet sleeve 21 in its maximum position of elevation.

From the foregoing description, taken in connection with the accompanying drawings, it will be readily apparent to those skilled in the art to which an invention of this character appertains, that this invention affords a simple and efficient means for positively co-ordinating the flow of fuel from the jet with the position of the throttle valve.

What I claim as my invention is:

In a carburetor, a fuel jet having a movable element to regulate the flow of fuel therefrom, said movable element responding to the flow of air through the carburetor to increase the fuel discharge from the jet, a throttle valve, a wire stop pin bent medially to provide upper and lower substantially vertical portions offset with respect to each other and connected by a medial horizontal portion, means to freely pivotally mount the upper end of the stop pin from the throttle valve so that opening of the throttle valve lifts the stop pin, and a fixed guide having a vertical slot to receive the medial horizontal portion of the stop pin and hold the same during movement thereof in a position with the extremity of its lower portion in the path of movement of the jet element so that the degree of movement of the jet element in response to the flow of air through the carburetor is at all times limited by the position of the throttle valve.

WERNER E. ARMSTRONG.