R. I. HENDERSON.

CARBURETER.

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1,393,366. Patented Oct. 11, 1921.

Fig. 1.

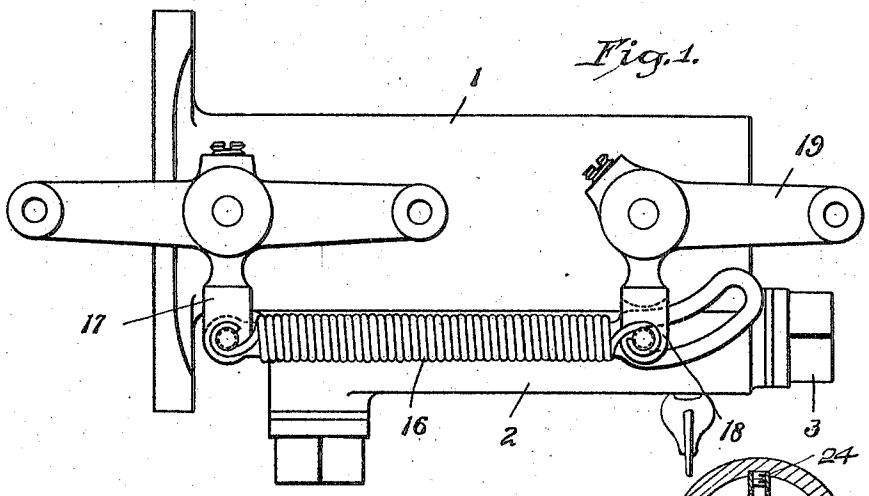
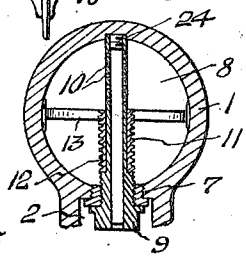


Fig. 3.



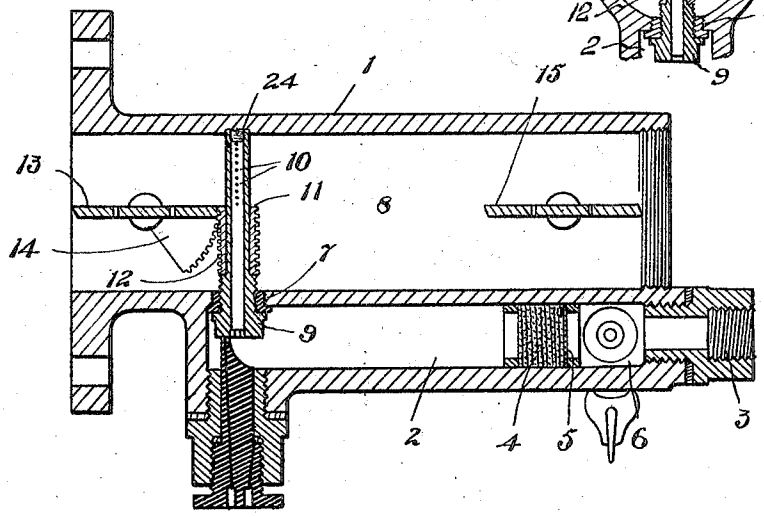


Fig. 2.

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CARBURETER.

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Application filed June 23, 1920. Serial No. 391,075.

To all whom it may concern:

Be it known that I, ROBERT IRWIN HENDERSON, a subject of the King of Great Britain, and resident of the city of Toronto, county of York, Province of Ontario, in the Dominion of Canada, have invented certain new and useful Improvements in Carbureters, as described in the following specification and illustrated in the accompanying drawings, that form part of the same.

The principal objects of the invention are to accurately and definitely regulate the supply of fuel according to the speed of the engine to effect a thorough carburetion thereof and to greatly simplify the construction and manipulation of the carbureter.

A further object is to dispense with the use of a float regulated supply.

The principal feature of the invention consists in the novel construction of the fuel distributing member whereby a series of discharge openings are progressively uncovered and covered according to the opening and closing of the throttle, thereby definitely regulating the supply of fuel according to the speed of the engine.

A further and important feature consists in supplying heating means to the fuel distributer and in the novel construction of the carbureter whereby the fuel is drawn directly to the distributer through the supply to the suction means.

In the drawings, Figure 1 is a plan view of a carbureter constructed according to this invention.

Fig. 2 is a horizontal longitudinal section of the carbureter.

Fig. 3 is a transverse sectional view taken longitudinally through the fuel nozzle.

In the construction of the carbureter herein shown the body 1 is of cylindrical form having a chamber 2 arranged on the side wall, which chamber is connected with the motive fluid supply at the end 3. Adjacent to the end 3 and within the chamber 2 is arranged a filter formed of a plurality of very fine screens 4 before which is arranged a chamois leather 5, which screens and leather prevent the passage of impurities such as dirt and water to the interior of the carbureter.

A chamber 6 is arranged at the forward end of the filter and a suitable drain cock is connected thereto to drain off any water and dirt which may accumulate therein.

At the inner end of the chamber 2 a threaded hole 7 connects with the air passage 8 and in this threaded hole is secured the nozzle member 9. This member is of cylindrical form, closed at the outer end and having bored through its side walls two rows of holes 10. These holes are of a very small bore and the holes of one row are staggered in relation to the holes of the other row and the rows of holes are set preferably at the lateral sides of the nozzle, that is to say, they are arranged to discharge across the air passage 8.

A sleeve 11 encircles the cylindrical nozzle member 9 and is slidable thereon and its outer surface is preferably formed with an arrangement of rack teeth 12 which extend circumferentially thereof.

A throttle valve 13 is pivotally arranged within the air passage 8 adjacent to the nozzle 9 and upon the throttle valve is arranged a toothed quadrant 14, the teeth of which mesh with the teeth 12 of the sleeve 11 so that as the throttle valve is turned on its pivot the sleeve is moved on the nozzle 9 to cover or uncover the holes 10. The sleeve is so arranged in relation to the throttle that when the throttle is wide open the maximum number of holes is exposed and when the throttle is closed all but the outer one or two holes in the nozzle are closed, such holes providing sufficient fuel to allow the engine to idle.

As the throttle is turned to increase the flow of air the quadrant engages the toothed sleeve and slides it to uncover the holes in the nozzle progressively. The flow of air past these holes picks the small particles of fuel from the surface as they extrude through the holes and a very thorough atomization is effected.

The suction within the air chamber caused by the engine draws the motive fluid from the chamber 2 and such suction continued back to the supply tank carries the fuel without the necessity of any other form of feed.

A choke throttle 15 is arranged at the outer end of the body 1 and this choke throttle operates in unison with the main throttle 13, said throttles being connected outside of the body by means of the coil spring 16 connected to the arms 17 and 18 of the throttle spindles.

The choke throttle is provided with an operating arm 19 which enables it to be regulated independent of the main throttle

when started so that a direct suction of the engine will draw the motive fluid through the nozzle.

In order to create the very best conditions for carburetion it is desirable to heat the motive fluid and this may be accomplished very effectively by forming the nozzle 9 of resistance metal and passing an electric current therethrough.

This carbureter is extremely simple in its construction and in operation when the throttle valve is closed a sufficient amount of motive fluid for the idling of the engine escapes from the outermost holes in the nozzle.

Upon the opening of the throttle the quadrant 14 moves the sleeve 11 on the nozzle to open the holes in the diametrically arranged rows alternately. This alternate arrangement of the holes in the opposite rows allows practically a continuous increase in the fuel discharge openings as the sleeve is operated. The feed of the fuel is therefore very positive and is exactly proportioned to the throttle opening. The size and spacing of the holes will of course be proportioned to give the best results.

The choke throttle operates in unison with the main throttle so as to insure a proper suction within the carbureter chamber to draw the motive fluid from its source of supply. The motive fluid is thoroughly filtered in passing through the screens arranged in the chamber 2 and there will be very little possibility of any interference with the flow of fluid through the nozzle.

A screw plug 24 is preferably arranged in the outer end of the nozzle to allow its being cleaned.

What I claim as my invention is:—

In a carbureter, the combination with the body having an air passage therethrough and a throttle controlling said passage, of a tubular nozzle extending transversely of said passage and having discharge openings through the wall thereof, a sleeve encircling a portion of said nozzle within the air passage and slidable thereon and adopted to control said discharge openings, and means rigid with said throttle arranged within the air passage and directly engaging said sleeve to move it longitudinally on the nozzle as the throttle is turned.

ROBERT IRWIN HENDERSON.