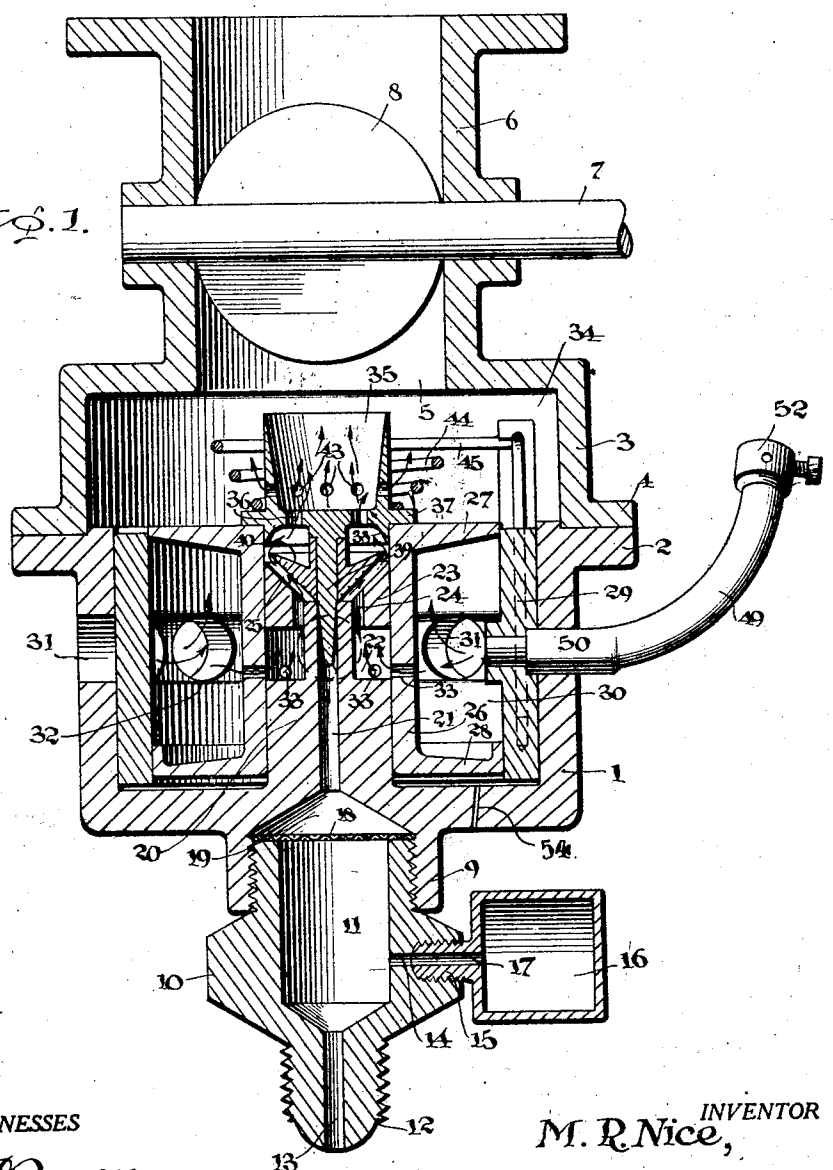
Sept. 21, 1926. 1,600,294

M. R. NICE

CARBURETOR

Filed March 13, 1923 2 Sheets-Sheet 1

Fig. 1.



WITNESSES

R. S. Rousseau

INVENTOR

M. R. Nice,

BY

Munn & Co.

ATTORNEYS

Sept. 21, 1926. 1,600,294

M. R. NICE

CARBURETOR

Filed March 13, 1923 2 Sheets-Sheet 2

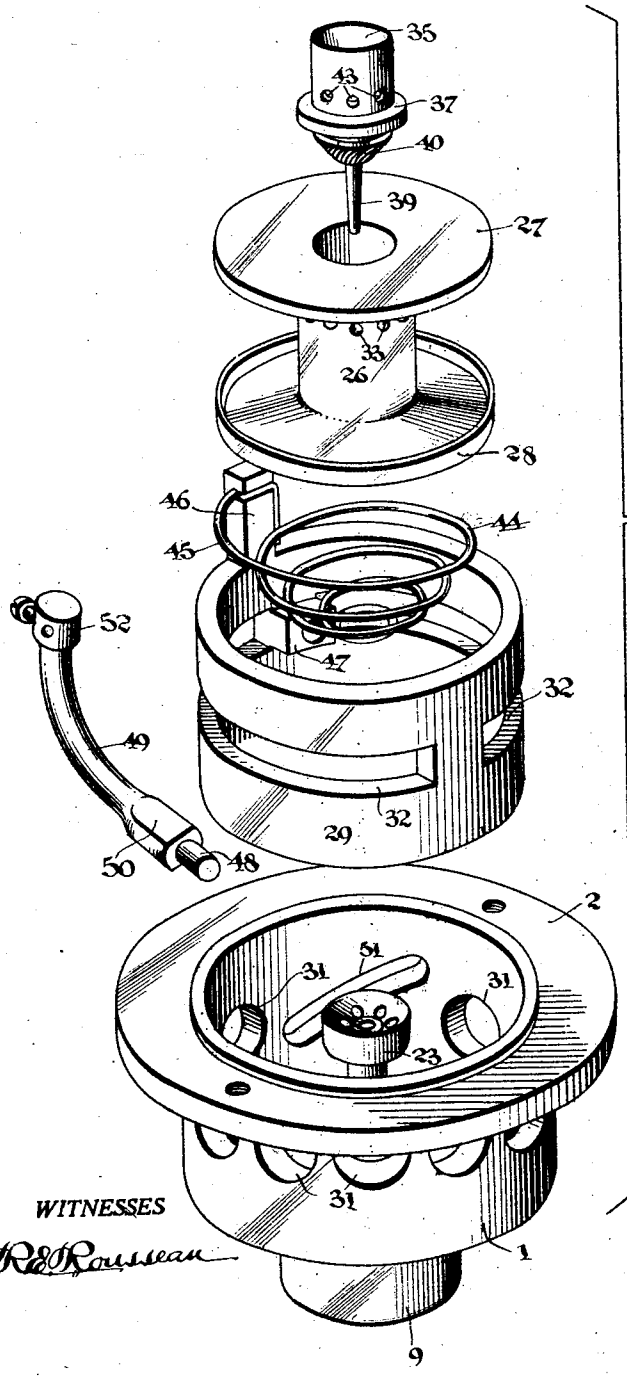


Fig. 2.

Fig. 3.

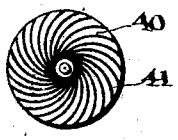
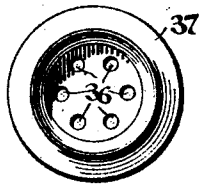


Fig. 4.



WITNESSES

R. & J. Rousseau

INVENTOR

M. R. Nice,

BY Munn & Co.

ATTORNEYS

Patented Sept. 21, 1926. 1,600,294

UNITED STATES PATENT OFFICE.

MELVIN R. NICE, OF FRANKFORD, PENNSYLVANIA.

CARBURETOR.

Application filed March 13, 1923. Serial No. 624,746.

This invention relates to carburetors adapted for use in connection with internal combustion engines and has for its object the provision of a device which will supply an economical combustible mixture at all times in accordance with the requirement of the engine.

Another object of the invention is the provision of a carburetor having a primary and secondary air supply and a fuel supply controlled by the same suction-operated mechanism.

A further object of the invention is the provision of a carburetor having a primary and secondary air supply and a manual control for varying the secondary air supply.

A still further object of the invention is the provision of a carburetor having a primary and secondary air supply and fuel supply controlled by the same suction-operated mechanism and a manual control for varying the fuel supply and the secondary air supply.

Other objects and advantages will become apparent during the course of the following description.

The invention is illustrated by way of example in the accompanying drawings, in which:—

Figure 1 is a vertical section of a carburetor constructed in accordance with my invention.

Figure 2 is a view in perspective of the carburetor with the parts in detached relation.

Figure 3 is a bottom plan view of a conical baffle.

Figure 4 is a top plan view of the cup carrying the fuel valve.

Referring more particularly to the drawings, 1 designates a body member in the shape of a cup having a flange 2 at its upper peripheral edge upon which is mounted an inverted cup-shaped member 3 having a flange 4 in contiguous relation with the flange 2. The cup-shaped member 3 is provided with a central opening 5 in its top from the periphery of which is extended a conduit 6 which is adapted to be connected to the manifold of an internal combustion engine. A shaft 7 is mounted transversely of the conduit 6 to which is rigidly connected a throttle valve 8 for controlling the flow of mixture to the engine.

Projecting from the cup-shaped member 1 and centrally from the bottom portion is a hollow internally threaded boss 9 into which is adapted to be screwed the upper end of a plug 10 having a fuel chamber 11. The lower reduced end 12 of the plug is threaded and provided with a passage 13 adapted to be connected to a fuel lead. A radially disposed passage 14 is formed in the plug 10 and opens into the chamber 11. The outer end of the passage 14 is enlarged and internally threaded and into which is screwed a nipple 15 which is integrally formed with an air chamber 16. The nipple 15 is provided with a passage 17 adapted to aline with the passage 14 whereby the chamber 11 is connected with the chamber 16.

A screen 18 is held in place at the lower end of the conical chamber 19 formed in the bottom of the cup-shaped member 1 and separates said chamber from the chamber 11, said screen being rigidly secured by means of the plug 10.

Located centrally of the cup-shaped member 1 and formed integrally therewith is a post 20 having a central passage 21 extending vertically of the post. The post is cut away to form an annular groove 22 thereby providing a boss 23 above said groove which is provided with a plurality of vertical passages 24 opening at their lower ends into the groove 22 and at their upper end into a conical seat 25 formed at the upper end of the boss 23.

Slidably mounted on the post 20 is a plunger 26 having upper and lower peripheral flanges 27 and 28, respectively. The post 20 is received by a bore 26ª located centrally of the plunger 26. The peripheries of said flanges are adapted to be slidably engaged with the inner wall of a sliding sleeve 29 which has its outer cylindrical wall in engagement with the inner cylindrical wall of the cup-shaped member 1. The space between the plunger 26, its flanges 27 and 28, and the inner wall of the sleeve 29 forms an air chamber 30 which is supplied with air through a plurality of perforations 31, formed in the wall of the cup-shaped member 1. Arcuate-shaped slots 32 formed in the sleeve 29 are adapted to register with the perforations 31 when the sleeve 29 is in its lowermost position. A series of perforations 33 formed in the wall of the plunger 26 connect the annular groove 22 of the post 20 with the air chamber 30.

The portion of the body of the carburetor

which is located within the cup-shaped member 3 and above the cup-shaped member 1 forms a mixing chamber 34. A cup-shaped member 35, located in the mixing chamber, is provided with a plurality of perforations 36 in its bottom portion. The bottom portion of the cup-shaped member 35 is extended laterally to form an annular flange 37 which rests on the top of the plunger 26 while a depending flange 38 extends downwardly into the hollow plunger and engages the inner wall of the same.

Projecting centrally from the base portion of the cup-shaped member 35 is a fuel valve 39. Said valve projects downwardly into the fuel passage 21 in the post 20.

A conical baffle 40 is mounted in the conical seat 25 of the boss 23 and has its conical surface provided with spiral grooves 41 as shown more particularly in Figure 3. These grooves connect with the vertical passages 24 and provide a communication between the annular groove 22 and the cup-shaped member 35. The cup-shaped member is provided with a plurality of perforations 43 in its side wall which places the cup-shaped member in communication with the mixing chamber 34 at a point below the open end of the cup-shaped member. A coiled spring 44 surrounds the cup-shaped member 35 having its lower end in engagement with the annular flange 37 whereby the cup-shaped member is forced into position on the top of the plunger 26 and has an arm 45 extended to the slidable sleeve 29 and rigidly connected with an upstanding lug 46 formed integrally with the sleeve 29. It will be noted that the spring maintains the cup-shaped member in its lowermost position and against the top of the plunger 26 when the sleeve 29 is in any position.

Adjacent the lug 46 and on the sleeve 29 is provided a bearing 47 into which extends the reduced end 48 of an operating arm 49. Said rod is provided with an enlarged portion 50 which is slidable within an inclined slot 51 formed in the wall of the body member 1 so that as the arm is shifted the enlargement 50 will move upwardly or downwardly in the slot and thereby raise or lower the sleeve 29, as the case may be.

The outer end of the arm 49 is provided with a collar 52 for connecting the arm to an operating rod which is generally extended to the dash of an automobile whereby the same may be continuously actuated by the operator of the car on which the device is used.

The operation of my device is as follows:

Fuel is fed by suction through the passage 13 and into chamber 11 when the engine is operating. Fuel then is filtered by means of the screen 18 and passes through the conduit 21 in the post 20 and past the fuel valve 39 through the spiral passages 41 in the baffle 40. The fuel is further broken up and mixed with the air which is passed through the vertical conduits 24 in the boss 23. Air enters the passages or ports 31 in the body member 1, filling the chamber 30. Air is then drawn through the radial passages 33 in the plunger 26 and into the groove 22 in the post 20. The passages 24 are in communication with the annular groove 22. Suction of the engine raises the cup-shaped member 35 against the tension of the spring 44 thereby raising the fuel valves 39. The combustible mixture expands in the cup-shaped member 35, with some of it passing through the radial perforations 43 and the rest passing through the open end of the cup-shaped member 35 and into the mixing chamber 34.

As the engine speeds up the plunger 26 is raised and the flange 27 is removed from its peripheral engagement with the inner wall of the sleeve 29 whereby secondary air from the chamber 30 passes up around the flange 27 into the mixing chamber 34 and mixes with the mixture from the cup 35 and thence passes through the conduit 6 to the engine.

When it is desired to shut off the amount of secondary air from passing around the flange 27 of the piston 26 and the air admitted to the air chamber 30, the arm 49 is actuated when said arm moves upwardly in the slot 51, raising the sleeve 29 above the periphery of the flange 27. The raising of the sleeve 29 does two things—first, it relieves pressure on spring 44 and thereby permits the cup-shaped member 35 to be raised to a greater extent and likewise the fuel valve 39 from the upper end of the fuel conduit 21; secondly, it moves the arcuate shaped slots 32 over the perforation 31 of the body member 1 thereby cutting off the supply of air to the chamber 30 and likewise the supply of air to the vertical passages 24. When the arm 49 is operated, as has been described, a greater flow of fuel will be had with a constant decrease in the flow of air and therefore a richer mixture will be supplied to the engine.

It will be seen that the actuation of the arm 49 will materially aid in supplying a richer mixture when starting the engine.

A restricted passage 54 connects the portion of the air chamber 30 which is located below the flange 28 of the piston 26 and between the flange and the bottom of the member 1.

What I claim is:—

1. A carburetor comprising a hollow body member provided with radially disposed air passages, a sleeve movable in the body member and having elongated slots registering with the air passages in the body, a suction operated plunger movable in the sleeve and provided with a flange in engagement with

said sleeve for dividing the body member into an air chamber and a mixing chamber, said plunger being provided with a bore, and air passages connecting the bore with the air chamber, a fuel conduit projecting centrally within the hollow plunger, a metering pin controlling the flow of fuel from the conduit, a resilient means connected with the sleeve for resisting movement of the metering pin, and a fuel lead connected with the fuel conduit.

2. A carburetor comprising a hollow body member provided with radially disposed air passages, a sleeve movable in the body member and having elongated slots registering with the air passages in the body member, a suction operated plunger movable in the sleeve and provided with a bore, and air passages connecting the bore with the air chamber, a fuel conduit projecting centrally of the hollow plunger, a cup-shaped member provided with a perforated bottom, the metering pin depending therefrom and projecting into the upper end of the fuel conduit, and resilient means connected with the sleeve and engaging the cup-shaped member for maintaining the metering pin in closed position with the upper end of the fuel conduit.

3. A carburetor comprising a hollow body member provided with radially disposed air passages, a sleeve movable in the body member and having elongated slots registering with the air passage in the body member, a suction operated plunger movable in the sleeve and provided with a bore, and air passages connecting the bore with the air chamber, a fuel conduit projecting centrally within the hollow plunger, a boss on the upper end of the fuel conduit slidably engaged by the hollow plunger and having conically disposed air passages, and a conical seat, a cone-shaped baffle mounted in the seat for spraying air and fuel upwardly towards the mixing chamber, and a metering pin controlling the flow of fuel from the conduit.

4. A carburetor comprising a hollow body member, a sleeve slidably mounted in the body member, a hollow suction-operated plunger movable in the sleeve, a cup-shaped member mounted on the upper open end of the hollow plunger and provided with a perforated bottom and a metering pin depending therefrom and projecting into the open upper end of the fuel conduit, a boss on the upper end of the fuel conduit slidably engaged by the plunger, having vertical air passages, and a conical seat, a cone-shaped baffle mounted in the seat for spraying the air and fuel upwardly towards the perforated bottom of the cup-shaped member.

5. A carburetor comprising a hollow body member, a sleeve movable in the body member, a hollow suction-operated plunger movable in the sleeve, a fuel conduit projecting centrally within the hollow plunger, a cup-shaped member provided with a perforated bottom, and a metering pin depending therefrom and projecting into the upper end of the fuel conduit, a resilient means engaging the cup-shaped member for maintaining the metering pin in closed position with the upper end of the metering pin in closed position with the upper end of the fuel conduit, and manual means for reciprocating the sleeve for varying the supply of air to the air chamber and for releasing tension of the spring on the cup-shaped member, spiral grooves on the conical surface of the baffle in communication with the vertical passages in the boss and adapted to communicate with the fuel conduit when the metering pin is raised.

6. A carburetor comprising a hollow body member provided with radially disposed air passages, a sleeve movable in the body member, a hollow suction-operated plunger movable in the sleeve and provided with a flange in engagement with said sleeve for dividing the body member into an air chamber and a mixing chamber, and adapted to control the supply of secondary air to the mixing chamber, a fuel conduit projecting centrally within the hollow plunger, a cup-shaped member provided with a perforated bottom, and a metering pin depending therefrom and projecting into the upper end of the fuel conduit, a spring connected at one end with the sleeve, with its other end engaging the cup for maintaining the cup against the upper end of the hollow plunger, and the metering pin in closing position with the upper end of the fuel conduit.

MELVIN R. NICE.