March 25, 1930. A. D. AUSTIN 1,751,461

CARBURETOR

Filed Aug. 26, 1926

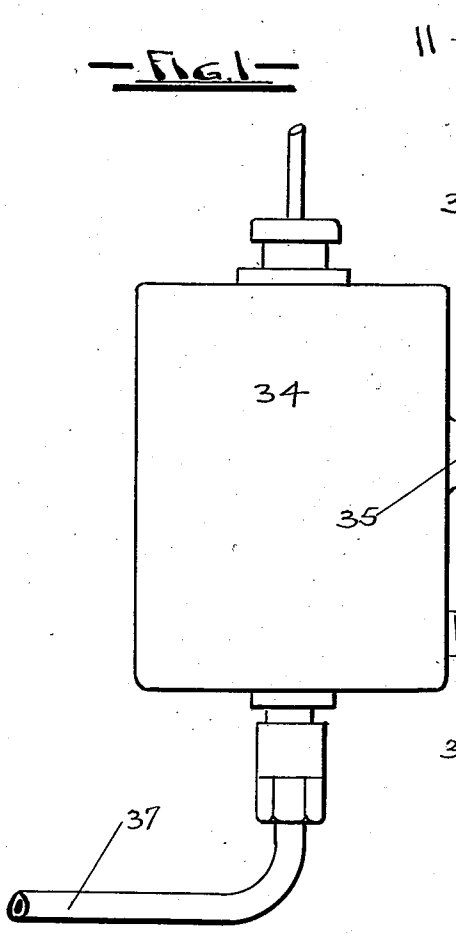


FIG. 1

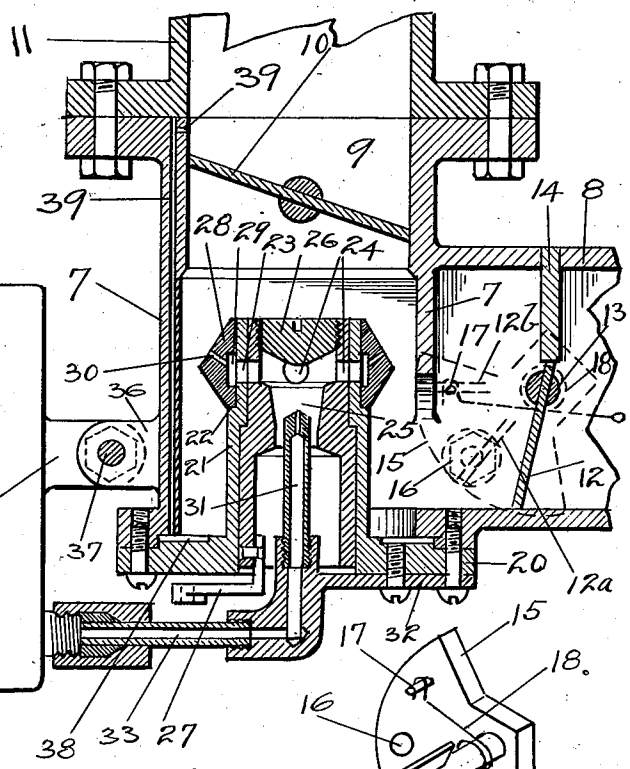


FIG. 6

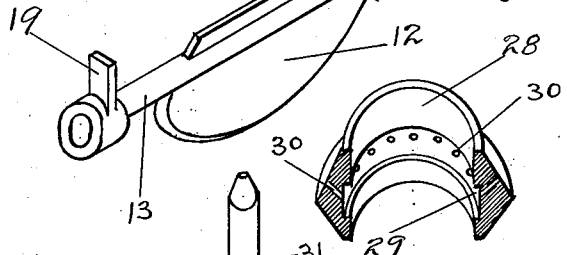


FIG. 4

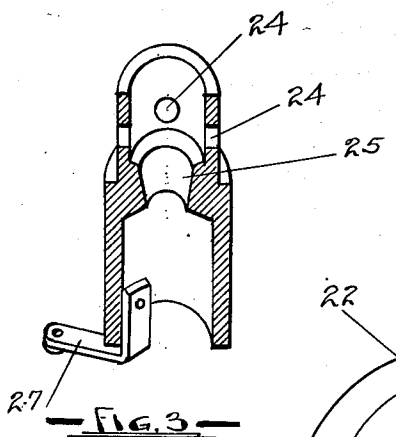


FIG. 3

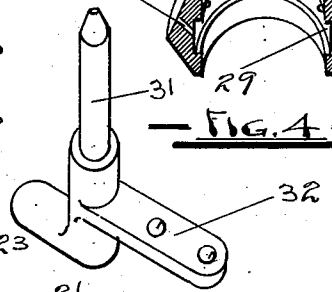


FIG. 5

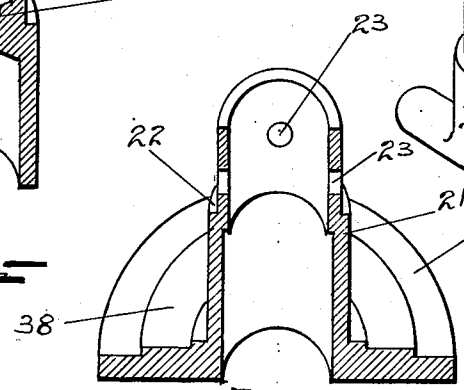


FIG. 2

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UNITED STATES PATENT OFFICE

ALBERT D. AUSTIN, OF PORTLAND, OREGON

CARBURETOR

Application filed August 26, 1926. Serial No. 131,788.

My invention relates to carburetors in general, and particularly to such devices as used with internal combustion motors, the object being to provide a carburetor of great economy, simplicity of construction and convenient renewal of parts. I accomplish this object by means of the construction illustrated in the accompanying drawing, which is a part of this application for Letters Patent, like characters of reference indicating like parts throughout the several views thereof, and in which:

Fig. 1 is a sectional elevation of my device.

Fig. 2 is a sectional perspective view of the head.

Fig. 3 is a sectional perspective view of the valve.

Fig. 4 is a sectional perspective view of the cap.

Fig. 5 is a perspective view of the nozzle.

Fig. 6 is a perspective view of the air inlet valve.

In general my device consists of a casing having air inlet and mixture outlet ports, an unbalanced weighted valve controlling said air inlet port, a removable head within said casing and open to the atmosphere, a rotatable valve within said head, a mixture distribution cap upon said head, and a float chamber pivotally mounted upon said casing.

The casing consists of a body portion 7 with an air intake port 8 and a mixture discharge port 9, the latter being controlled by the usual butterfly valve 10, and connected to the intake manifold of the motor 11.

The air intake port is controlled by a novel valve arrangement illustrated in detail in Fig. 6. The valve 12 is mounted upon a shaft 13 in an unbalanced manner, that is much the greater portion of said valve lies upon one side of the shaft. Said shaft is journaled in the air intake port, and said port is slotted to receive a diaphragm 14 which closes the upper portion of the air intake port as shown in Fig. 1, and which terminates adjacent the smaller portion of the valve 12. The valve 12 is thus unbalanced and will open automatically in response to pressure of air within the air intake port towards the casing 7. Upon one of the protruding ends of the shaft 13 is secured a weight 15 for the purpose of opposing the opening of the valve 12 with a variable torque upon the shaft 13 thereof, when there is no pressure within the air intake port 8 the valve 12 and weight 15 are in the positions shown in Fig. 1, with the valve closed. As a partial vacuum is formed within the casing 7 said valve opens due to the resultant pressure within the air intake port 8, and in the initial portion of the valve movement the weight imposes increasing resistance because as said weight approaches the horizontal position the lever arm constantly increases. When the valve 12 is in position 12^a in Fig. 1, which is the idling position, the weight 15 is approximately horizontal and therefore exerting its greatest resistance to the movement of the valve. As the motor is speeded up, and the partial vacuum within the casing increases, the valve 12 opens further and the weight 15 moves above the horizontal and thus gives decreasing resistance to the movement of the valve. Thus the air intake valve 12 operates automatically to respond to the demands of the carburetor for air according to the various motor speeds, opening with increasing resistance to the idling position 12^a and thence with decreasing resistance to the full open position 12^b, and between the full closed and full open positions it will automatically accommodate itself to supply just the amount of air called for by the speed of the motor.

A cap screw 16 is provided upon said weight 15 for the purpose of mounting washers thereupon to regulate the weight opposing the valve movements.

For choking purposes I provide the weight 15 with a pin 17 and mount upon the shaft 13 a coil spring 18 one end of which hooks over said pin 17 and the other end of which terminates in a loop for convenient attachment to the regular choker wire as usually used. The spring 18 is very light so that it holds the valve 12 closed for choking purposes but allows it to open immediately the motor starts and the pressure thereupon becomes sufficient to overcome the spring, even

though the choker wire is not immediately released.

Upon the opposite end of the shaft 13 from the weight 15, as said end protrudes from the air intake port I provide a stop lever 19 which contacts with a lug on the air intake port, not shown in the drawings, when the valve 12 is fully open.

The lower end of the casing 7 is open, and is closed by the flange 20, arising from which flange is a nozzle sleeve 21 having a shoulder 22 upon the upper end thereof, and four ports 23 above said shoulder.

Rotatably mounted within said sleeve is a valve the upper portion of which is provided with ports 24 corresponding to and coacting with the ports 23 in the head. Below said ports 24 is a Venturi tube portion 25. The upper end of said valve is closed by a plug 26, as shown in Fig. 1. The lower end of the valve is provided with a lever 27 whereby the valve may be rotated within the head for the purpose of opening and closing the ports 23 and 24.

Externally mounting upon the upper end of the stem 21 of the head is a distributing cap 28. This cap is provided with an annular groove 29 which communicates with all the ports 23 in the head. A plurality of very small holes 30 are drilled in said cap communicating with said groove, and inclined upward, for the distribution of fuel.

A fuel nozzle 31, illustrated in detail in Fig. 5, is provided positioned within the valve and terminating within said Venturi tube portion thereof. Said nozzle is mounted upon the flange 20 by means of an arm 32.

Said nozzle is connected by a pipe 33 to a float chamber 34, which is pivotally mounted upon the casing 7 by means of lugs 35 and 36 and a bolt 37. The construction of said float chamber is well known to the art, and since it is not a part of my invention further than its mounting, it is not illustrated in detail in the drawing nor fully described herein. It is fed from the fuel tank by a pipe 37.

To remove the condensation that collects in the bottom of carburetors when trying to start a cold motor, I provide the flanges 20 with a counterbored portion 38 extending beneath the casing end, as shown in Fig. 1, and I provide said casing with a port 39 communicating with said counterbore and terminating above the butterfly valve 10, thereby insuring that any condensed mixture will be drawn through said port into the manifold, and incidentally this will assist in starting the motor, acting as a priming device.

The partial vacuum established within the casing 7 draws fuel through the nozzle 31 and air through the nozzle sleeve 21, which air and fuel are mixed in the Venturi tube 25 and passed through the coacting open ports 23 and 24 into the groove 29 of the cap 28, and thence through the holes 30 into the casing 7. This results in a very homogeneous mixture as the air mixed with the fuel breaks up the latter as it is discharged from the holes 30. Sufficient additional air to render the mixture explosive is admitted through the air intake valve 12, which as explained automatically adjusts itself to the requirements.

To regulate the fuel supply, or to shut it off completely, as when coasting an automobile, the valve within the head is rotated by means of the lever 27, thus adjusting the opening of the coacting ports 23 and 24 or closing them altogether as desired.

My invention may be made of any size, and constructed of any materials deemed convenient and suitable for a device of this character, and while I have illustrated and disclosed a form of construction and arrangement of parts found desirable in materializing my invention, I wish to include in this application all mechanical equivalents and substitutes that may fairly be considered to come within the scope and purview of my invention as defined in the appended claims.

Having disclosed my invention so that others may be enabled to construct and to use the same, what I claim as new, and desire to secure by Letters Patent is:

1. In a carburetor: a casing; a head within said casing open to the atmosphere, and having ports therein; a valve rotatable within said head, and having ports to communicate with said former ports in the head; a distributing cap upon said head in communication with coacting ports in said valve and in said head; a Venturi tube within said head; and a nozzle within said Venturi tube.

2. In a carburetor: an integral unit comprising a Venturi tube and a rotatable valve controlling the mixture supply; in combination with a sleeve within which said valve is rotatably mounted, coacting ports in said sleeve and said valve, and a mixture distributing head mounted upon said sleeve, and having ports in communication with said former ports.

3. In a carburetor: a casing; a sleeve within said casing open at its lower end to the atmosphere, and having ports at its upper end; a cap upon said sleeve with a plurality of mixture distributing holes therein communicating with said ports; a rotatable valve within said head for controlling the mixture distribution; and a fuel supply device within said valve.

In witness whereof I claim the foregoing as my own I hereunto affix my signature at Portland, county of Multnomah, State of Oregon, this 2nd day of Feb., 1926.

ALBERT D. AUSTIN.