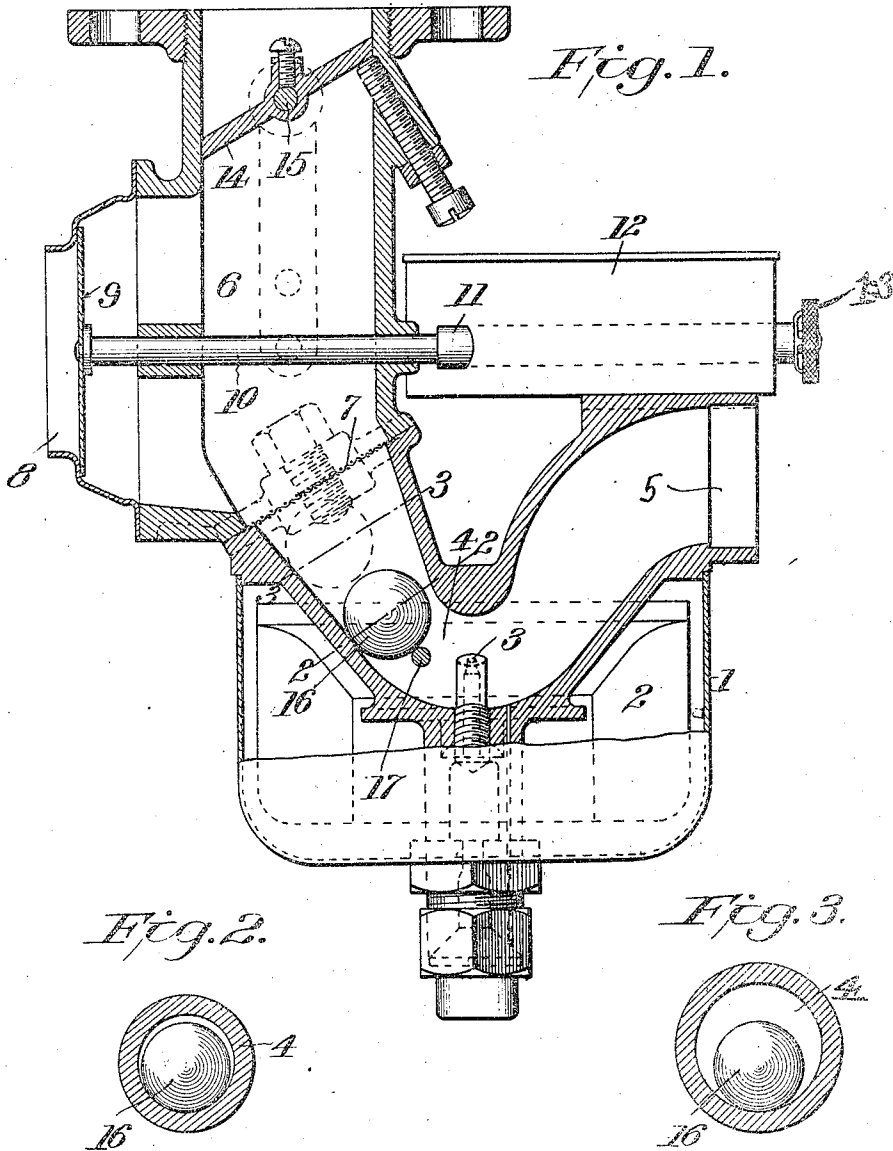


J. M. DAYTON
CARBURETER.

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1,052,897.

Patented Feb. 11, 1913.



Witnesses

C. H. Walker
Grace P. Brexton

Inventor

James M. Dayton
By *Sturtevant Mason*
Attorney

UNITED STATES PATENT OFFICE.

JAMES M. DAYTON, OF TORRINGTON, CONNECTICUT, ASSIGNOR TO EXCELSIOR NEEDLE COMPANY, OF TORRINGTON, CONNECTICUT, A CORPORATION OF CONNECTICUT.

CARBURETER.

1,052,897.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES M. DAYTON, a citizen of the United States, residing at Torrington, in the county of Litchfield, State of Connecticut, have invented certain new and useful Improvements in Carbureters, of which the following is a description, reference being had to the accompanying drawing and to the letters and figures of reference marked thereon.

The invention relates to new and useful improvements in carbureters, and more especially to carbureters which are provided with a main air inlet through which the air is directed over the spray nozzle, and an auxiliary air inlet for supplying further air to the mixture.

An object of the invention is to provide means for automatically adjusting the choke in a carbureter of the above character.

A further object of the invention is to provide means for controlling the quantity of air that passes by the spray nozzle, due to the suction of the engine at low speed.

These and other objects will in part be obvious, and will in part be hereinafter more fully described.

In the drawings which show by way of illustration, one embodiment of the invention; Figure 1 is a sectional view through a carbureter having my improvements applied thereto. Fig. 2 is a section on the line 2, 2, of Fig. 1. Fig. 3 is a section on the line 3, 3, of Fig. 1, showing the ball in adjusted position, and the increased area of the choke.

My improved carbureter includes the usual float chamber 1, in which is located a float 2, which controls the supply of gasoline to the float chamber. A spray nozzle 3, projects from the float chamber into the throat 4 of the carbureter. Said spray nozzle may be controlled by the usual adjustable needle valve which provides a normally fixed but adjustable delivering orifice. As herein shown, the carbureter is formed with a U-shaped air passage and the spray nozzle 3 is located at the lower portion of said U-shaped passage. One end of the U-shaped passage leads from a main air inlet 5. The other end of the U-shaped passage leads to a final mixing chamber 6. The casing of the carbureter is provided with a gauze screen 7 which is located between the final mixing chamber and the spray nozzle

and serves as a means of breaking up the gasoline spray and thoroughly mixing the same with the air drawn in through the main air inlet 5.

An auxiliary air inlet 8 supplies further air to the final mixing chamber so that the mixture coming through the screen 7 may be properly modified according to the requirements of the engine. The auxiliary air inlet is controlled by a valve 9 mounted on a stem 10 that rests against a plunger 11, extending into a casing 12 and controlled by a spring which normally holds the auxiliary valve 9 closed.

The tension spring is adjusted by a suitable thumb nut 13. This auxiliary air inlet valve and its controlling mechanism form no part of the present invention, but is shown, described and claimed in my co-pending application, Serial No. 525,941, filed November 2nd, 1909.

A throttle valve 14 is pivoted at 15 to the upper end of the carbureter, and serves as a means for controlling the supply of mixture to the engine. Said throttle valve may be operated in the well known manner. It has been found in practice that when the diameter of the choke 4 of the carbureter is made sufficiently large to supply the engine at high speeds, that when the engine is operated at low speeds, the suction is not sufficient to operate the auxiliary air valve and as all the air is supplied through the main air intake which passes over the spray nozzle, too much fuel will be drawn from the nozzle. This is due primarily to the fact that the area of the choke 4 is too great for low engine speeds when the choke is made of sufficient area to accommodate high engine speeds.

In order that the choke of the carbureter may be varied for varying engine speeds, I have provided a valve 16 which as herein shown is in the form of a ball. Said ball normally rests upon a cross pin or other support 17. The passage through the carbureter between the spray nozzle, and the gauze screen 7 is cone shaped with the base of the cone substantially at the screen. At low engine speeds, the suction is not sufficient to lift the ball 16 and said ball will rest against the pin 17. When in this position, the ball is of such diameter relative to the cross sectional area of the passage through the carbureter, that a compara-

tively small area is left around the upper side of the ball for the passage of the mixture from the main air intake over the nozzle to the final mixing chamber.

5 As the engine speed increases, the suction will lift the ball 16 from its seat on the cross pin 17 to the position shown in dotted lines in Fig. 1 and in this position, the open space between the ball and the casing of
10 the carbureter, as shown in Fig. 3, is greatly increased. It will be obvious, that the varying speeds of the engine will cause varying degrees of suction and lift the ball varying distances from the cross pin 17, and conse-
15 quently produce varying areas in the passage way for the mixture of air and fuel or a varying choke for different engine speeds.

When the engine is running at slow speed, the ball 16 rests on its seat as the suction
20 will not be sufficient to lift the ball. The suction, however, will be sufficient to open the auxiliary valve 9 and take in a small amount of air through the auxiliary air inlet, which will be mixed with the air re-
25 ceived from the main air inlet, and fuel in the final mixing chamber, thus modifying the mixture which would be otherwise too rich at slow engine speeds. As the speed of the engine increases as above noted, the ball
30 will be raised, increasing the area of the choke and supplying a greater amount of air from the main air intake and also a greater quantity of fuel for the increased demand of the engine. It will be seen there-
35 fore, that the ball acts as a valve which automatically varies the size of the choke. When the engine speed is increasing, the ball is lifted toward the larger end of the funnel-shaped or cone-shaped passage thus
40 gradually enlarging the opening through which the gas may pass.

When the engine slows down, the ball gradually returns. As the quantity of gaso-
45 line delivered to the final mixing chamber varies with the quantity of air passing the spray nozzle, the automatic control of the flow of the gasolene at the spray nozzle is secured by the action of the ball. The wire gauze screen fitted across the air pas-
50 sage below the final mixing chamber not only breaks up the gasolene spray, but will also limit the movement of the ball. The valve for the auxiliary air inlet is so con-
55 trolled as to furnish the correct amount of air to mix with the air and gasolene supply through the main passage of the carbureter.

It will be obvious that minor changes in the details of construction and the arrange-
60 ment of parts may be made without departing from the spirit of my invention.

Having thus particularly described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A carbureter including in combination,
65 a spray nozzle, an auxiliary air inlet located

in advance of said spray nozzle, a valve for controlling said air inlet, a constant air inlet through which the air is drawn by the suction of the engine over the spray nozzle, the passage through the carbureter adja-
70 cent the nozzle and in advance thereof, being cone-shaped and gradually increasing in diameter, and a valve controlled by gravity and the suction of the engine located in said cone-shaped passage, and in advance of said
75 spray nozzle.

2. A carbureter including in combination, a spray nozzle, an auxiliary air inlet located in advance of said spray nozzle, a valve for controlling said air inlet, a con-
80 stant air inlet through which air is drawn by the suction of the engine over the spray nozzle, the passage through the carbureter adjacent the nozzle and in advance thereof, being cone-shaped and gradually increasing
85 in diameter, a ball located in said cone-shaped passage slightly smaller in diameter than said passage, and means on which said ball may rest.

3. A carbureter including in combination, 90 a spray nozzle, an auxiliary air inlet located in advance of said spray nozzle, a valve for controlling said air inlet, a constant main air inlet through which air is drawn by the suction of the engine over the spray nozzle, 95 the passage through the carbureter adjacent the nozzle, and in advance thereof being cone-shaped and gradually increasing in diameter, a ball located in said cone-shaped passage, slightly smaller in diameter than
100 said passage, a cross pin supported by the casing, and serving as a rest for said ball.

4. A carbureter including in combination, a spray nozzle, an auxiliary air inlet located in advance of said spray nozzle, a valve for
105 controlling said air inlet, a constant main air inlet through which air is drawn by the suction of the engine over the spray nozzle, the passage through the carbureter adjacent the nozzle and in advance thereof, being
110 cone-shaped and gradually increasing in diameter, a ball located in said cone-shaped passage slightly smaller in diameter than said passage, and a gauze screen carried by the casing and extending across the air pas-
115 sage between the ball and the auxiliary air inlet.

5. A carbureter including in combination, a casing having a U-shaped air passage, a spray nozzle located at the lower side of said
120 U-shaped passage, a constant air intake at one end of said U-shaped passage, the other end of said U-shaped passage being tapered outwardly, a ball located in said tapered portion of said passage, and being of a
125 slightly smaller diameter than the smallest diameter of said passage, means against which said ball rests when the engine is running at slow speed.

6. A carbureter including in combination, 130

a casing having a U-shaped air passage, a spray nozzle located at the lower side of said U-shaped passage, a constant air intake at one end of said U-shaped passage, the other
5 end of said U-shaped passage being tapered outwardly, a ball located in said tapered portion of said passage, and being of a slightly smaller diameter than the smallest diameter of said passage, means against
10 which said ball rests when the engine is running at slow speed, a gauze screen carried by the casing and extending across the air passage at the outer end of said tapered portion.

15 7. A carbureter including in combination, a casing having a U-shaped air passage, a spray nozzle located at the lower side of said U-shaped passage, a constant air intake at one end of said U-shaped passage, the other

end of said U-shaped passage being tapered 20 outwardly, a ball located in said tapered portion of said passage and being of a slightly smaller diameter than the smallest diameter of said passage, means against which said ball rests when the engine is run- 25 ning at slow speed, a final mixing chamber at the end of said tapered portion of the U-shaped passage, an auxiliary air inlet leading to said final mixing chamber, and a valve controlled by the suction of the engine 30 for closing said auxiliary air intake.

In testimony whereof I affix my signature, in presence of two witnesses.

JAMES M. DAYTON.

Witnesses:

D. HILDRETH,
M. A. O'MEARA.