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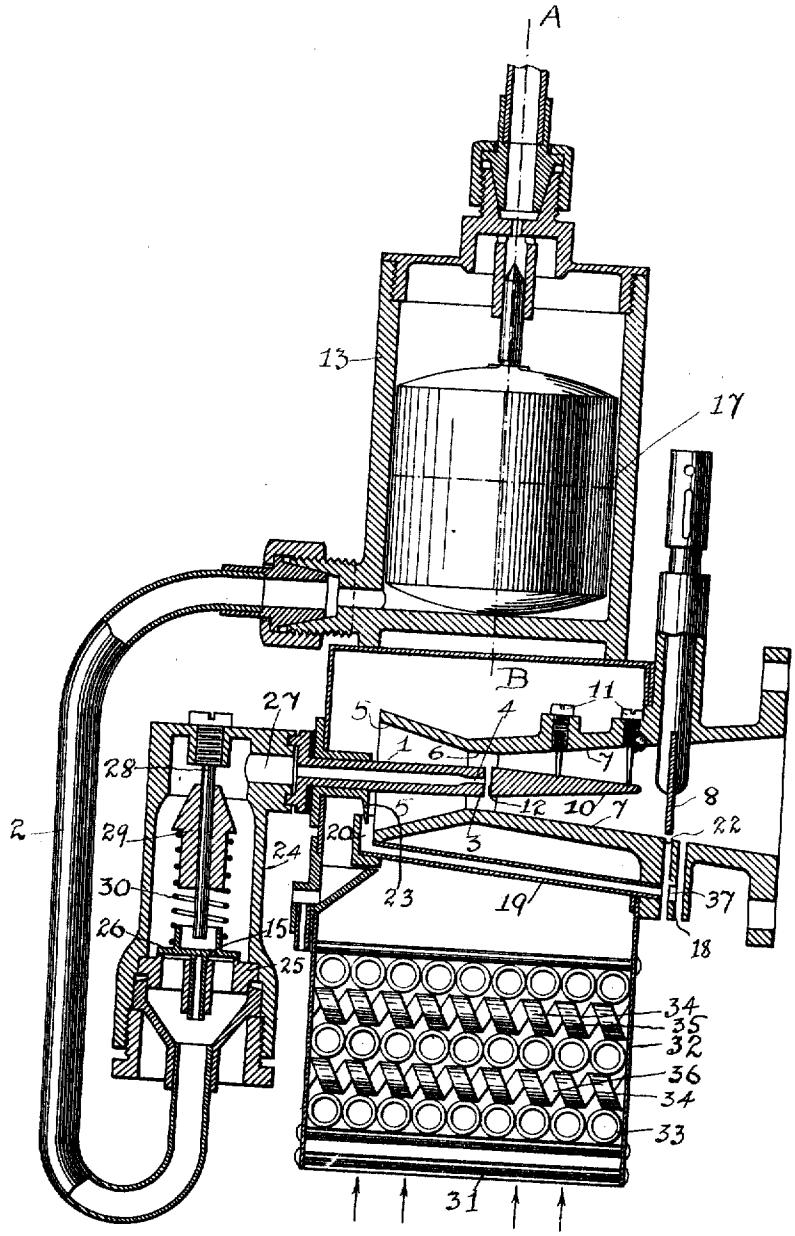
CARBURETER.

APPLICATION FILED APR. 11, 1914. RENEWED AUG. 4, 1916.

1,209,457.

Patented Dec. 19, 1916.



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UNITED STATES PATENT OFFICE.

HENRI ALFRED ARMAND JOSEPH LELARGE, OF PARIS, FRANCE; BLANCHE ALPHONSINE LELARGE, NÉE TAPIN, OF SÈVRES, FRANCE, EXECUTRIX OF SAID HENRI ALFRED ARMAND JOSEPH LELARGE, DECEASED.

CARBURETER.

1,209,457. Specification of Letters Patent. Patented Dec. 19, 1916.

Original application filed July 1, 1913, Serial No. 776,785. Divided and this application filed April 11, 1914, Serial No. 831,116. Renewed August 4, 1916. Serial No. 113,206.

To all whom it may concern:

Be it known that I, HENRI ALFRED ARMAND JOSEPH LELARGE, a citizen of the Republic of France, residing at Paris, France, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

My invention relates to carbureters for hydrocarbon fuel, particularly adapted for use in connection with motor vehicles.

The present application, which is a division of my copending application for Letters Patent filed July 1, 1913, Serial Number 776785, has especial reference to the relative arrangement of the fuel supply tank and spraying nozzle, and to means for controlling the flow of fuel from the tank to the nozzle.

The embodiment of the invention as at present preferred by me is illustrated in the accompanying drawing, wherein the figure is a vertical sectional view of an improved carbureter.

Referring by reference characters to the drawing, 1 denotes a spraying nozzle to which fuel flows through the feed tube 2 from the tank 13, which is float controlled in order that the level of fuel may be maintained constant therein at about the line 17. The nozzle 1 preferably terminates in a flat discharge end 3 through which the constricted discharge orifice 4 is bored. Surrounding the nozzle 1 and projecting beyond the same into communication with the engine cylinder (not shown) is a jacket consisting of the oppositely flaring members 5 and 7 connected by the intermediate, constricted, cylindrical member 6. The flat discharge end 3 of the nozzle 1 is flush with a line passing through the central vertical axis of the part 6 of the carbureter jacket. Coaxial with the part 7 of the jacket, and supported centrally therein by screws 11, is a conical spreader 10 the base of which is opposed to the discharge end 3 of the nozzle 1, said base being spaced away from the end 3 a distance approximately equivalent to the diameter of the discharge opening 4 in the nozzle 1.

8 denotes a throttle valve reciprocable in the jacket portion 7, and adapted to regulate the quantity of fuel supplied to the engine cylinder.

To maintain the carbureting action uniform, despite any inclination of the carbureter from the normal position, the tank 13 is placed above the nozzle 1, in such position that the central vertical axis of the tank will pass through the discharge orifice 4. By reason of this arrangement of the constant level tank relatively to the spraying nozzle, any inclinations of the apparatus from normal position, will result in but slight variations in the effect due to the distance of the tank from the nozzle, and the pressure of fuel at the discharge orifice 4 remains substantially constant.

In order that the pressure of the fuel from the tank 13 may not cause excessive feeding of fuel when the engine slows down, I preferably interpose a valve between the tube 2 and the spraying nozzle 1. Any suitable construction of valve may be adapted, but I have found in practice that a valve constructed as about to be described, is thoroughly efficient.

Arranged between the admission end of the nozzle 1 and the discharge end of the feed tube 2 is valve casing 24 having therein a seat 25 for the valve disk 26. Depending axially within the valve casing 24 is a rod 28 on which a weight 29 is slidably carried. Acting against the weight 29 is one end of a coiled spring 30 the opposite end of which engages the valve 26 and tends to hold the same to its seat under substantially constant pressure. Fuel flows from the casing 24, through the bore or passage 27, into the tube 1. The tension of the spring is always substantially uniform, and when the weight 29 is subjected to vibrations the latter are absorbed by the spring, and not transmitted to the valve 26. As the spring is highly elastic, the pressure of the valve 26 against its seat 25 remains substantially constant whatever may be the position of the weight 29 on the rod 28.

Air is drawn into the carbureter through a casing 32, provided with a slotted base 31, and having therein several series of cylinders 33 and spirals 34 and 35, the several series being arranged at right angles to each other, and spaces 36 being left between the whirls of the spirals. The cylinders 33 and spirals 34 and 35 serve the double purpose of freeing the air drawn into the carbureter

of any solid particles carried thereby, and to cool any gas which may back-fire from the motor into the carbureter.

To allow fuel to enter the valve casing when the engine is stopped, I form a small orifice 15 in the valve disk 26, through which orifice fuel, in reduced quantities, may enter the casing 24.

At the rear edge of the jacket portion 5 is a cup 20 into which excess fuel dripping from the nozzle 1 into the jacket portion 5 is directed by a plate 23. The cup communicates with, and feeds such drippings to, a tube 19 which extends forwardly from the cup and terminates in the jacket portion 7 beneath the throttle valve 8. The outlet end of the tube opens into a groove 37 formed in said portion 7. Above the groove 37 and formed in the inner face of the jacket portion 7 is a second groove 22 into which the lower end of valve 8 is adapted to enter when this valve is closed. The groove 22 receives the drippings from the jacket member 7 while the groove 37 receives the drippings from the jacket portion 5 through the tube 19. Bored vertically through the lower part of jacket member 7 is a series (preferably three) of alined air ducts 18 which communicate with the grooves 22 and 37 as well as with the interior of the jacket member 7.

When the valve 8 is open and the engine running, no appreciable quantity of fuel will be drawn from either the groove 22 or the groove 37, and no appreciable quantity of air will be drawn through the ducts 18. If, however, the engine is slowed down and the main fuel supply is throttled by the valve 8, during each suction stroke fuel will be drawn from the grooves 22 and 37 and air will be sucked in through the ducts 18, the air and fuel admixing as they enter the engine cylinders through the jacket member 7. The fuel thus supplied will naturally be materially less than the main fuel supply, but will suffice while the engine is running slowly.

By reason of the pressure of the weight 29 against the spring 30 the strain on the latter is always the same, and if the weight 29 be subjected to vibrations they are not transmitted to the disk 26 but are absorbed by the spring 30. Inasmuch as the spring is highly elastic the closing pressure of the disk 26 remains substantially constant irrespective of the position of the weight 29.

When the throttle valve 8 is open and the engine is running, during each suction stroke of the latter a vacuum will be created above the disk 26 whereby the pressure of the fuel in pipe 2 will be sufficient to raise the disk 26 against the pressure of spring 30 and admit a charge of fuel to the inside of the valve casing, such fuel being sucked through the passage 27 and the spraying nozzle into the engine cylinders. When the engine is not running, or the throttle valve 8 is closed, the spring 30 will force the disk 26 to its seat 25, and but a very small quantity of fuel will pass into the valve 24 through the opening 15 which, as above stated, is very small as compared to the orifice in the spraying nozzle 1. The arrangement is such that while the engine is not running fuel would enter the valve 24 through the opening 15. The quantity of this fuel would be so small as to merely provide a sufficient charge for the first suction stroke when the engine is started.

What I claim is:—

1. A carbureter for explosive engines, embodying therein a constant level fuel tank and a spraying nozzle arranged in superposed relation with their axes at a right angle to each other, a conduit for conducting fuel from said tank to said nozzle, a valve for controlling the discharge of fuel from said conduit, and a weighted spring for normally yieldingly seating said valve under a substantially constant pressure over the discharge end of said conduit.

2. A carbureter for explosive engines, embodying therein a constant level fuel tank and a spraying nozzle arranged in superposed relation with their axes at a right angle to each other, a conduit for conducting fuel from said tank to said nozzle, a fuel control valve interposed between the discharge end of said conduit and the intake end of said nozzle, and a weighted spring for normally yieldingly seating said valve under a substantially constant pressure over the discharge end of said conduit.

3. A carbureter for explosive engines, embodying therein a constant level fuel tank and a spraying nozzle, arranged in superposed relation with their axes at a right angle to each other, a conduit for conducting fuel from said tank to said nozzle, a valve for controlling the discharge of fuel from said conduit, a spring tending to yieldingly force said valve to its seat over the discharge end of said conduit, and a freely movable weight tending to maintain the tension of said spring substantially constant.

4. A carbureter for explosive engines, embodying therein a constant level fuel tank and a spraying nozzle arranged in superposed relation with their axes at a right angle to each other, a conduit for conducting fuel from said tank to said nozzle, a valve controlling the discharge of fuel from said conduit, means whereby said valve is normally yieldingly seated under a substantially constant pressure over the discharge end of said conduit, and means for permitting the discharge of a limited quantity of fuel from said conduit when said valve is seated.

5. A carbureter for explosive engines, em-

bodying therein a constant level fuel tank and a spraying nozzle arranged in superposed relation with their axes at a right angle to each other, a conduit for conducting fuel from said tank to said nozzle, a valve for controlling the discharge of fuel from said conduit, there being an orifice of small capacity in said valve for permitting the discharge of a limited quantity of fuel from said conduit when said valve is seated, and means whereby said valve is normally yieldingly seated under a substantially constant pressure over the discharge end of said conduit.

6. A carbureter for explosive engines, embodying therein a horizontally extending spraying nozzle, a vertically extending constant level fuel tank above said nozzle and having its central vertical axes passing through the discharge end of said nozzle, a conduit extraneous to said tank and said nozzle for conducting fuel from the former to the latter, a fuel control valve having a seat over the discharge end of said conduit, said valve having a passage therethrough of small capacity to permit of the discharge of a limited quantity of fuel from the conduit when said valve is seated, and a weighted spring for normally pressing said valve to its seat under a substantially constant pressure.

In testimony whereof I have affixed my signature in presence of two witnesses.

HENRI ALFRED ARMAND JOSEPH LELARGE.

Witnesses:
LOUIS FAUTRAT,
ELY E. PALMER.