C. F. & A. J. MEYER.

CARBURETER.

APPLICATION FILED DEC. 6, 1909.

997,929.

Patented July 11, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

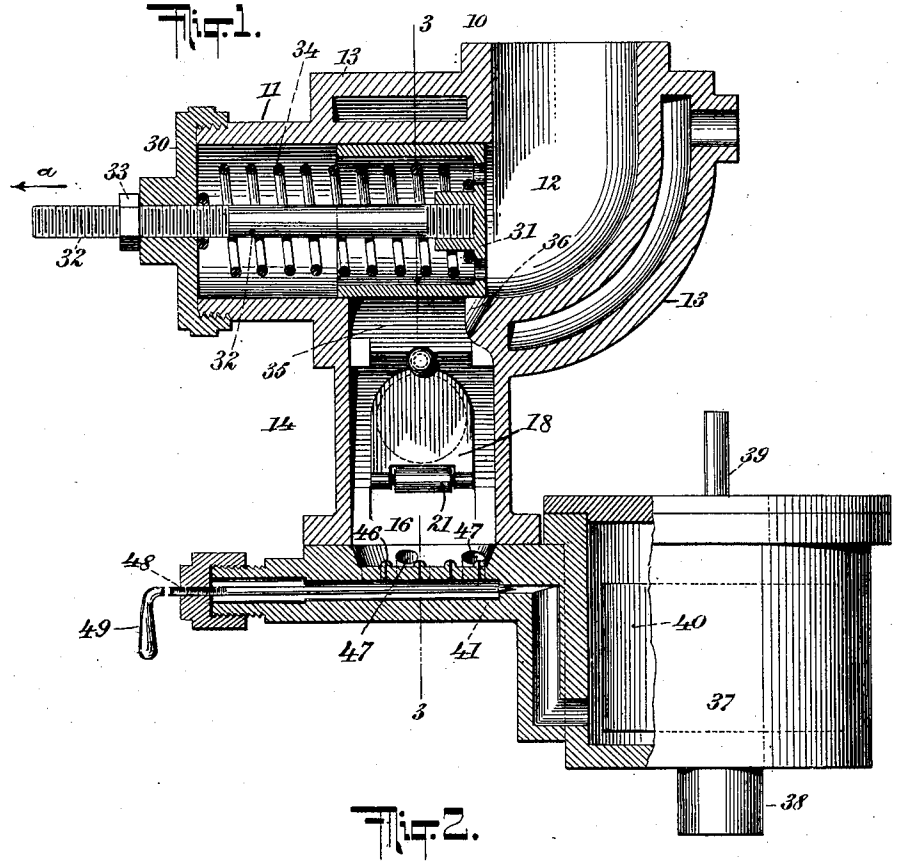
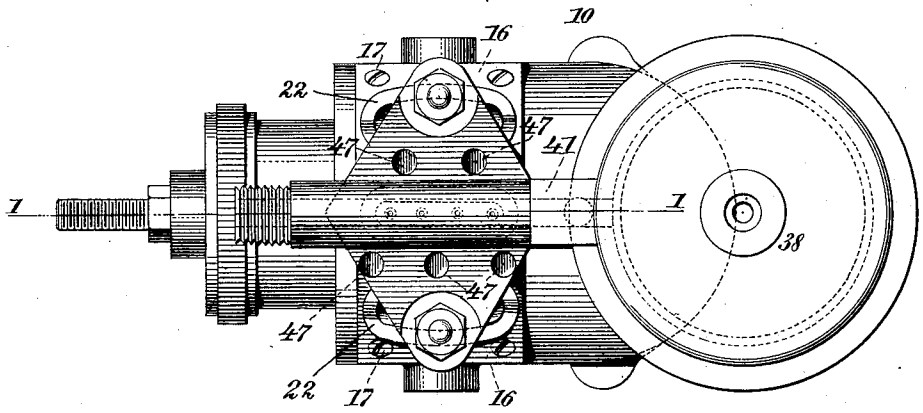


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

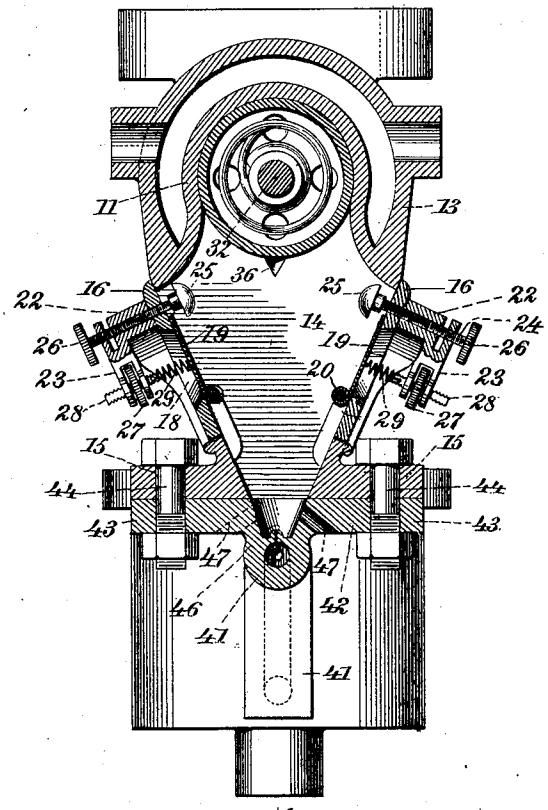


Fig. 7.

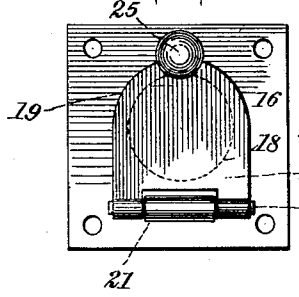


Fig. 4.

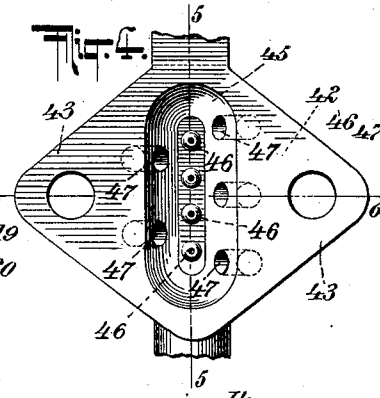


Fig. 5.

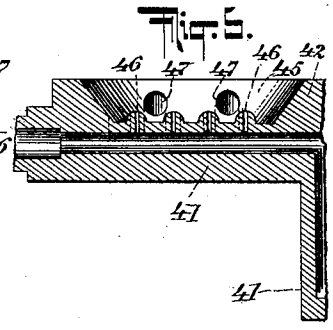
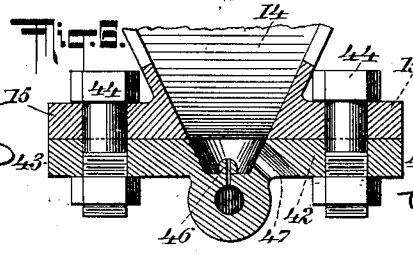


Fig. 6.



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UNITED STATES PATENT OFFICE.

CHARLES F. MEYER, OF NEW YORK, N. Y., AND ADOLPH J. MEYER, OF WEST HOBOKEN, NEW JERSEY.

CARBURETER.

997,929. Specification of Letters Patent. **Patented July 11, 1911.**

Application filed December 6, 1909. Serial No. 531,633.

To all whom it may concern:

Be it known that we, CHARLES F. MEYER and ADOLPH J. MEYER, residing, respectively, at the city of New York, borough of Manhattan, in the county and State of New York, and at West Hoboken, Hudson county, in the State of New Jersey, have invented certain new and useful Improvements in Carbureters, of which the following is a full, clear, and exact specification.

Our invention relates to improvements in means for controlling the supply of explosive mixture for use as a motive power in explosion engines, and the same has for its object, more particularly, to provide a simple, efficient and reliable apparatus which may be readily connected intermediate the source of fuel supply and the intake side of the engine.

Further, said invention has for its object to provide a carbureter whereof the float casing is so constructed that the same may be readily reversed and attached to the vaporizing portion of the carbureter in order to adapt the carbureter to the varying conditions or arrangements of parts intermediate the source of gasolene supply and the engine.

Further, said invention has for its object to provide a carbureter which will automatically adjust itself to the varying operating conditions of the motor, and at all times provide a duly proportioned explosive mixture.

Further, said invention has for its object to provide a carbureter in which the gasolene is caused to issue in a number of fine jets or sprays in the presence of a plurality of air jets, which are conducted into the vaporizing chamber to either side of, and at an angle to said gasolene jets, whereby said gasolene jets are swirled around and broken up in order to completely atomize the same.

Further, said invention has for its object to provide a carbureter in which the gasolene which is not vaporized in course of operation of the apparatus will be conducted to a suitable receptacle or pan, adjacent to the gasolene nozzles, and commingled with the incoming air.

To the attainment of the aforesaid objects and ends, our invention consists in the novel details of construction, and in the combination, connection and arrangement of parts hereinafter more fully described and then pointed out in the claims.

In the accompanying drawings forming a part of this specification wherein like numerals of reference indicate like parts, Figure 1 is a central vertical section taken substantially on the line 1—1 of Fig. 2, showing one form of carbureter constructed according to and embodying our said invention; Fig. 2 is a bottom view thereof; Fig. 3 is a transverse section taken on the line 3—3 of Fig. 1; Fig. 4 is a detail plan view showing the arrangement of the gasolene nozzles and air inlets; Fig. 5 is a detailed sectional view taken on the line 5—5 of Fig. 4; Fig. 6 is an enlarged detail transverse section taken essentially on the line 6—6 of Fig. 4; and Fig. 7 is an enlarged detail back view showing one of the auxiliary air valves.

In said drawings, 10 designates the carbureter as a whole, comprising a tubular casing portion 11 having one end constructed in the form of an elbow 12, surrounded by a water jacket 13. The bottom of said casing terminates in a V-shaped lower portion 14 which communicates at its upper end with the tubular portion 12, and is provided at its lower end with flanges 15, 15. The opposite inclined sides of the lower portion 14 are cut away to accommodate cover plates 16, 16 which are secured thereto by means of screws 17, 17. Each of said cover plates is provided with a central opening 18, and upon the inner side of each of said plates is secured a hinged cover or valve 19 mounted upon a pin 20 supported in a bearing 21.

22, 22 denote hoods arranged upon the outer surfaces of these cover plates 16, 16, and partially surrounding the upper portions of said openings 18, 18. Each of said cover plates 16 is provided with a bearing 23 which is made integral at its upper end with the hood 22, and 24 denotes an adjusting screw extending through said hood and provided at its inner end with a head 25 adapted to engage the free end of the hinged cover or valve 19. A head 26 is provided at the outer end of said adjusting screw 24 for actuating the same.

The lower end of each depending bearing 23 is bifurcated, and adapted to receive an adjusting nut 27 in threaded engagement with a screw 28 which is freely supported

in the bifurcated lower ends of the bearing 23, and 29 denotes a coil spring having its outer end secured to the inner end of the adjusting screw 28, and its inner end secured to the outer side of the cover or valve 19.

The horizontal portion of the tubular casing 10 is provided at its outer end with screw threads and adapted to receive a cap 30 having a central opening therein, and within said horizontal portion is disposed a hollow cylindrical piston or throttle valve 31 having a rod 32 secured at one end thereto, and its other end extending loosely through said screw cap 30 and adapted to be connected at its outer end to any usual or convenient means for operating said throttle valve 31.

33 denotes an adjusting nut arranged upon said rod 32 whereby to limit the movement of said throttle valve 31, and 34 denotes a coil spring disposed about the rod 32, having one end bearing against the inner end of the throttle valve 31 and its outer end contacting with the inner side of the cap 30.

The tubular portion 12 is provided with an opening 35 communicating with the interior of the V-shaped lower portion 14, and at the junction of the horizontal portion with the vertical portion of said tubular casing 11 is provided a V-shaped recess or notch 36 for permitting the passage of a small quantity of explosive mixture to the engine when the vehicle is at rest.

37 denotes a float casing having an inlet 38 controlled by a valve 39 and float 40, and 41 denotes a tubular section connected to, and communicating with said float chamber 30 adjacent to the base thereof. Said tubular section 41 is provided adjacent to its outer end with a base 42 having flanges 43, 43 registering with the flanges 15, 15 of the tubular casing 11 to permit of said float casing 37 being secured by bolts 44, 44 to said tubular casing, as shown at Figs. 1, 2 and 3, or in a reversed position when the conditions of application make that desirable.

45 denotes a longitudinal recessed portion arranged in the base 42 intermediate the flanges 43, 43 forming a shallow receptacle or pan in which are arranged a series of gasolene nozzles 46, 46 communicating with the tubular section 41, and 47, 47 denote two series of inclined air ports arranged in the base 42 at either side of the tubular section 41, and extending inwardly at an angle toward the gasolene nozzles 46, 46 arranged in said recessed portion 45 of the base 42.

The air inlet ports 47, 47 are staggered relative to the gasolene nozzles 46, 46 in order that the incoming jets of air will be conducted partly across the path of said nozzles and strike or impinge upon the gasolene jets, in opposite directions, upon two sides thereof as the same issue from said nozzles, and thereby cause the same to be swirled or broken up, and intimately mixed with the incoming air.

48 denotes a needle valve extending into the tubular section 41, the stem of which is adapted to extend outwardly through the bonnet of the motor, and is provided at its outer end with an operating handle 49 whereby the supply of gasolene to the carbureter may be controlled.

The operation of the carbureter is as follows: The needle valve 48 is first opened to the required extent in order to permit of the gasolene passing from the float casing 37 into the tubular section 41, and to the gasolene nozzles 47, 47. Hereupon, and as soon as the valve stem 32 is drawn outwardly in the direction of the arrow *a* (Fig. 1) the action of the engine will cause a quantity of gasolene, together with a duly proportioned quantity of air, to be drawn through the opening 35, and into the portion 12 of the carbureter, and thence pass to the intake port of the engine. As the suction produced by the operation of the engine is maintained the jets of gasolene issuing from the inlets 47, 47 will be met by a plurality of jets of air which will strike each of said jets at an angle upon two sides and serve to swirl the same around, and break said jets of gasolene up, and in atomizing intimately mix said atomized sprays of gasolene with the inrushing air. The quantity of air admitted into the carbureter above the gasolene nozzles 47, 47 may be controlled by the opening of the valves or covers 19, 19 which are arranged at an angle to the vertical axis of the casing in the inclined or V-shaped base of the vaporizing chamber. The amount of opening of said valves or covers 19, 19 may be positively controlled by the heads 25, 25 on the adjusting screws 24, 24, and the tension of the springs 29, 29, which hold the valves or covers 19, 19 against the inner sides of the cover plates 16, 16 may be adjusted or varied by means of the adjusting nuts 27, 27 working on the screws 28, 28. As the throttle valve is permitted to move inwardly again under the influence of the coil spring 34 the supply of explosive mixture will be diminished, but in being so diminished will nevertheless be duly proportioned so far as the mixture of air and gas is concerned to form a proper explosive charge, and when the throttle valve 31 has reached the inner limit of its movement, a small percentage of explosive mixture will still be admitted to the intake side of the motor through the V-shaped recess 36 arranged at the junction of the horizontal and vertical portion of the casing 11, which will be sufficient to maintain the engine in operation when the vehicle is at rest.

It will be noted that by means of our apparatus the supply of explosive mixture will be automatically regulated to meet the varying conditions of the motor; that by making the vaporizing portion of the apparatus reversible, the carbureter may be readily adapted to varying conditions or arrangements of the engine and its connected parts, and that by having the stem of the valve controlling the supply of gasolene extending through the bonnet of the motor, the same may be readily and conveniently adjusted to simultaneously control the supply of gasolene to all of the several nozzles 46, 46.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. A carbureter comprising a casing, liquid outlets arranged in the base thereof, a plurality of separated air inlets arranged in the base of said carbureter adjacent to said liquid outlets, for conducting air thereto from opposite sides of said casing and partly across the path of said liquid outlets, a valve for controlling the passage of explosive mixture, and auxiliary air inlets arranged in said casing intermediate said air inlets first-named and said valve, substantially as specified.

2. A carbureter comprising a casing, liquid outlets arranged in the base thereof, a plurality of separated air inlets arranged in the base of said carbureter adjacent to said liquid outlets, for conducting air thereto from opposite sides of said casing and partly across the path of said liquid outlets, a throttle valve for controlling the passage of explosive mixture, and automatically-opening auxiliary air valves arranged in said casing intermediate said air inlets first-named and said throttle valve, substantially as specified.

3. A carbureter comprising a casing, liquid outlets arranged in the base thereof, a plurality of separated air inlets arranged in the base of said casing adjacent to said liquid outlets, for conducting air thereto from opposite sides of said casing and impinge upon the jets of fuel issuing from said liquid outlets, a throttle valve for controlling the passage of explosive mixture, auxiliary air inlets arranged in said casing intermediate said air inlets first-named and said throttle valve, and spring-pressed valves for said auxiliary air inlets, substantially as specified.

4. A carbureter comprising a casing, liquid outlets arranged in the base thereof, a plurality of separated air inlets, arranged in the base of said casing adjacent to said liquid outlets, for conducting air thereto from the opposite sides of said casing and partly across the path of said liquid outlets, and impinge upon opposite sides of the jets of fuel issuing from said liquid outlets, a throttle valve for controlling the passage of explosive mixture, auxiliary air inlets arranged in said casing intermediate said air inlets first-named and said throttle valve, valves for said auxiliary air inlets, spring means for maintaining said auxiliary air inlet valves normally closed, and means for regulating the tension of said springs, substantially as specified.

5. A carbureter comprising a casing, liquid outlets arranged in the base thereof, a plurality of separated air inlets arranged in the base of said casing adjacent to said liquid outlets, for conducting air thereto from the opposite sides of said casing and partly across the path of the jets issuing from said liquid outlets, a throttle valve for controlling the passage of explosive mixture, auxiliary air inlets arranged in said casing intermediate said air inlets first-named and said throttle valve, valves for said auxiliary air inlets, and spring means for maintaining said auxiliary air inlet valves normally closed, and means for independently regulating the tension of said springs, substantially as specified.

6. A carbureter comprising a casing, liquid outlets arranged in the base thereof, a plurality of separated air inlets arranged in the base of said casing, adjacent to said liquid outlets, for conducting air thereto from opposite sides of said casing and partly across the path of said liquid outlets, and impinge upon the jets of fuel issuing from said outlets, a throttle valve for controlling the passage of explosive mixture, auxiliary air inlets arranged in said casing intermediate the air inlets first-named and said throttle valve, valves for said auxiliary air inlets, and means for limiting the inward movement of said valves, substantially as specified.

7. A carbureter comprising a casing, a row of liquid nozzles arranged in the base thereof, a row of inclined air inlets arranged at each side of said row of liquid nozzles, and disposed intermediate the same for conducting air into said casing from opposite sides thereof and partly across the path of said liquid nozzles, a throttle valve for controlling the passage of explosive mixture, auxiliary air inlets arranged in said casing intermediate the air inlets first-named and said throttle valve, valves for said auxiliary air inlets, spring means for maintaining said valves normally closed, means for limiting the inward movement of said valves, and means for regulating the tension of said springs, substantially as specified.

8. A carbureter comprising a casing, having a tapering base provided with an opening, a pan secured to said base below said opening, a row of liquid nozzles arranged in said base communicating with a source of liquid supply, a row of inclined air inlets

arranged in said pan at each side of said row of liquid nozzles for conducting air thereto, a throttle valve for controlling the passage of explosive mixture, auxiliary air inlets arranged in the inclined sides of said casing intermediate the air inlets first-named and said valve, pivoted valves for said auxiliary air inlets, spring means for maintaining said valves normally closed, means for limiting the inward movement of said valves, and means for regulating the tension of the spring means for said auxiliary valves, substantially as specified.

9. A carbureter comprising a casing, having a tapering base provided with an opening, a pan secured to said base below said opening, a row of liquid nozzles arranged in said base communicating with a source of liquid supply, a row of inclined air inlets arranged in said pan at each side of said row of liquid nozzles, for conducting air thereto, a throttle valve for controlling the passage of explosive mixture, auxiliary air inlets arranged in the opposite inclined sides of the base of said casing intermediate the air inlets first-named and said throttle valve, pivoted valves for said auxiliary air inlets, bearings arranged upon the outer sides of said casing, adjusting screws loosely mounted in said bearings, coil springs, each having an end secured to one of said adjusting screws, and its other end to one of said valves, and a nut disposed in said bearing for actuating said adjusting screw and holding the same to its adjusted position, substantially as specified.

Signed at the city of New York, borough of Manhattan, in the county and State of New York, this 1st day of November, nineteen hundred and nine.

CHARLES F. MEYER.
ADOLPH J. MEYER.

Witnesses:
CONRAD A. DIETERICH,
LESTER C. TAYLOR.