June 30, 1925. 1,543,975

F. BAVEREY

CARBURETOR

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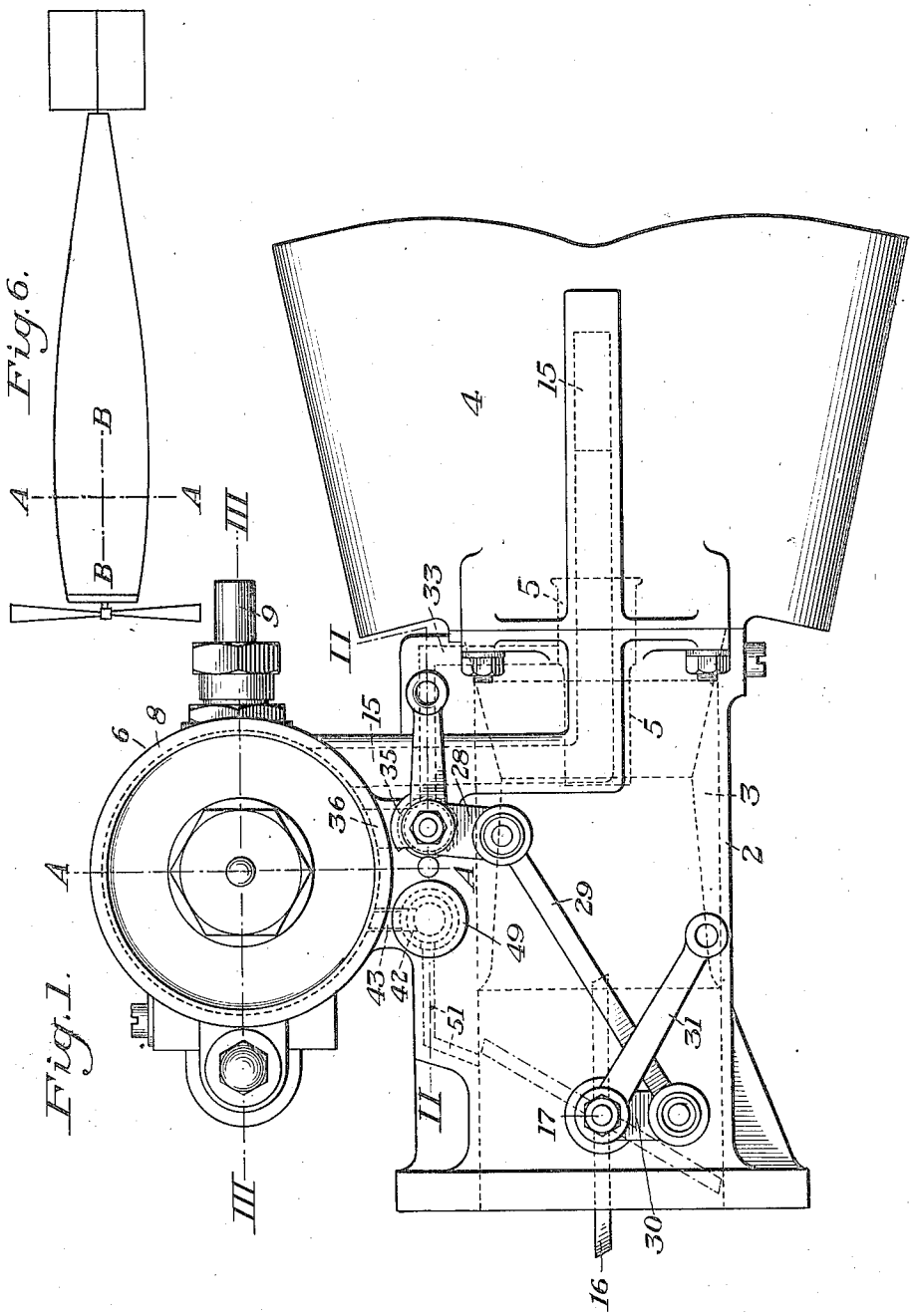


Fig. 1.

WITNESSES

R. A. Baldizson

G. B. Blanning

INVENTOR

François Baverey

by Bakewell Byrnes & Sandler

his attys

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F. BAVEREY

CARBURETOR

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Fig. 3.

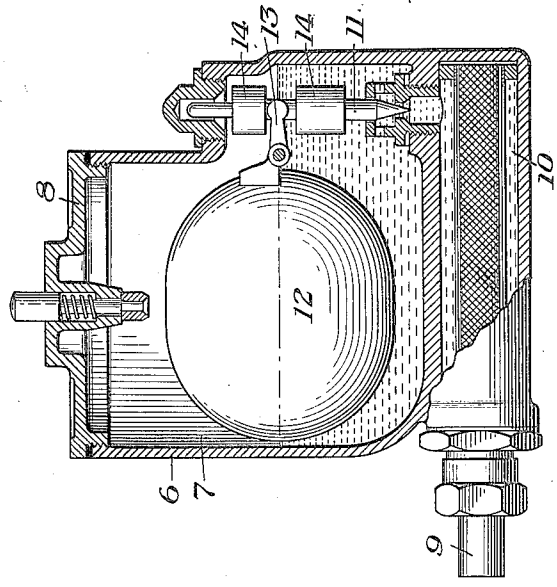
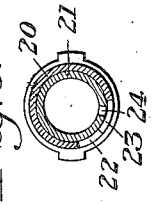


Fig. 5.



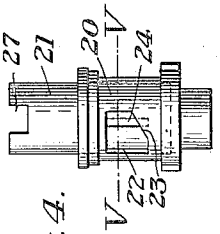
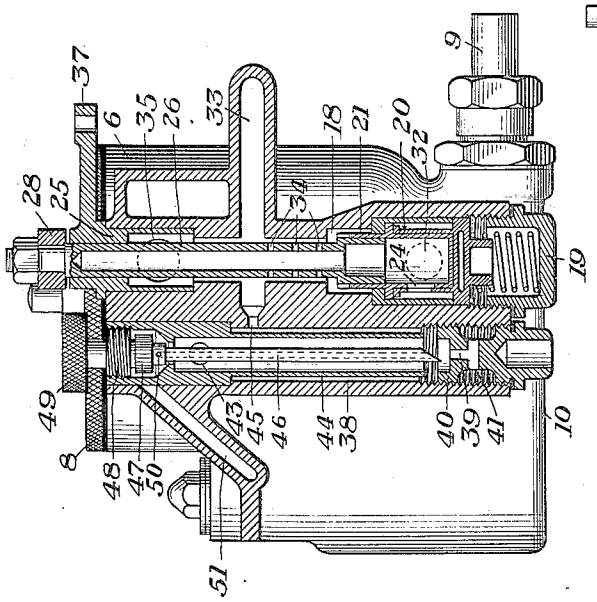


Fig. 4.

Fig. 2.



WITNESSES

R. A. Baldwin

D. B. Bleming

INVENTOR

François Baverey

by Bakewell Byron & Baldwin

his attys

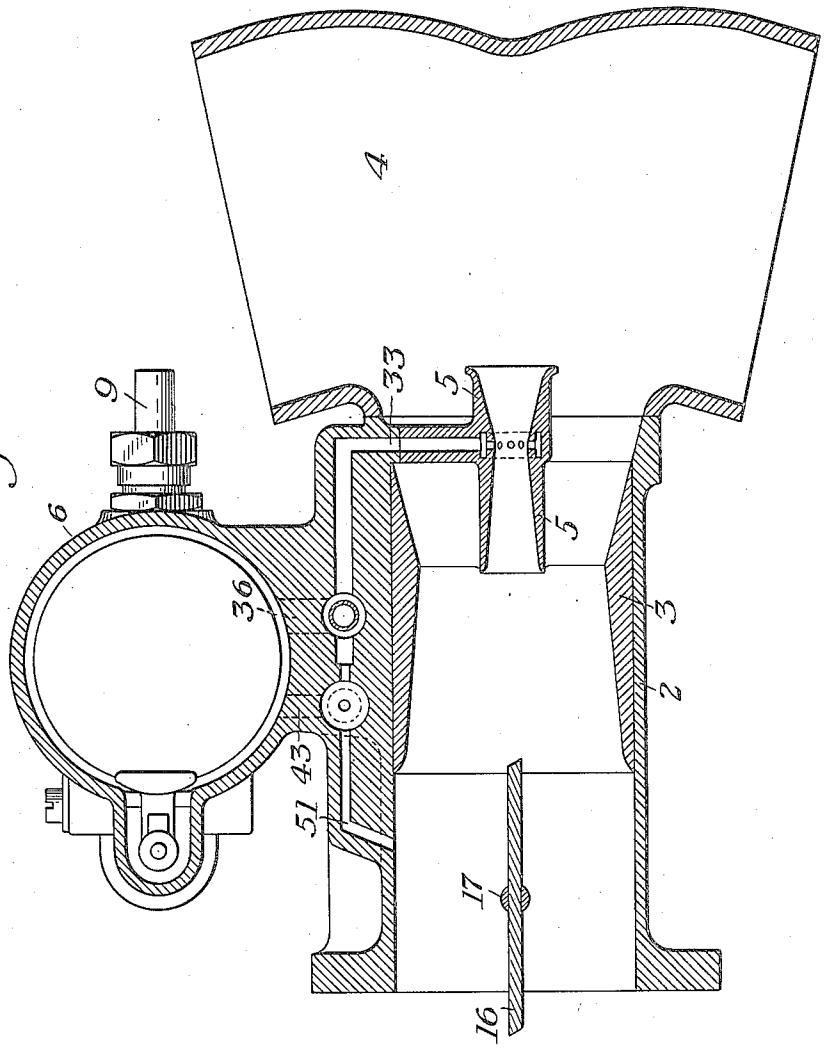
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F. BAVEREY

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Fig. 7.



INVENTOR

François Baverey,

by Gwinn, Fawkins, Burgess & Carmalt,

his attys.

Patented June 30, 1925. 1,543,975

UNITED STATES PATENT OFFICE.

FRANÇOIS BAVEREY, OF LYON, FRANCE, ASSIGNOR TO SOCIETE DU CARBURATEUR ZENITH, OF LYON, FRANCE.

CARBURETOR.

Application filed October 29, 1918. Serial No. 260,100.

To all whom it may concern:

Be it known that I, FRANÇOIS BAVEREY, a citizen of the French Republic, residing at Lyon, in France, have invented a new and useful Improvement in Carburetors, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of one form of device made in accordance with my invention.

Figure 2 is a sectional view on the line II—II of Figure 1.

Figure 3 is a similar view on the line III—III of Figure 1.

Figure 4 is a detail side elevation of the valve for feeding the main stream of gasoline.

Figure 5 is a sectional view on the line V—V of Figure 4.

Figure 6 is a diagram illustrating the axis of the aeroplane, and the center of the float chamber and

Figure 7 is a horizontal sectional view through the carburetor shown in Figure 1.

This invention relates to an improvement in carburetors, and more specifically to carburetors for aeroplane motors.

The object of my invention is to provide an efficient and compact carburetor of this type having a plurality of novel controlling devices for the main gasoline stream which can be readily manipulated by the pilot. Another object of my invention is to so position the gasoline feeds with relation to a vertical plane passing through the center of the constant level chamber and at right angles to a vertical plane parallel to the axis of the air intake that the effective gravity head of these gasoline orifices or feeds will not be materially affected regardless of the inclination of the aeroplane, other than transverse tilting when ascending or diving. A further object of my invention is to provide a float for the constant level chamber which will properly control the feed thereto, even though the carburetor assumes various angular positions. A still further object of my invention is to provide a device which is simple of construction, and can be readily manufactured, and which also can be readily assembled or taken apart for inspection and repairs.

The precise nature of my invention will be best understood by reference to the accompanying drawing which will now be described, it being premised, however, that various changes may be made in the details of construction and arrangement of the various parts without departing from the spirit and scope of my invention, as defined in the appended claims.

In the device shown in the drawings, the reference character 2 designates a casing in which is formed the usual mixing chamber, and secured therein is a primary venturi 3. 4 designates a casing having an air chamber therein, which is in communication with one end of the mixing chamber. Suitably connected to either the casing 2 or the casing 4 is a secondary venturi 5, one end thereof being open to the air chamber in the casing 4 while the other end thereof opens into the primary venturi at a point adjacent to the greatest restriction therein. Formed integral with the casing 2 is a bowl 6 constituting part of a constant level chamber 7, having a cover 8 which is secured in such a manner as to form an air-tight joint between the upper edge of the bowl and the cover. 9 is a gasoline inlet which is in communication with a chamber 10 below the constant level chamber 7. 11 is a weighted needle valve which controls the flow of gasoline from the chamber 10 to the constant level chamber 7. This needle valve is in turn controlled by means of a float 12 which is of general spherical form, and connected to the float 12 is a lever 13, one end thereof being arranged to engage faces of bosses 14 on the needle valve 11.

By making the float of general spherical form, the proper level of the fluid in the constant level chamber can more readily be maintained under the various angular positions of the device than can be if the float is of the usual cylindrical type. 15 is an air opening, extending through the casing 2 and a portion of the casing 4, into the air chamber

in the last mentioned casing, for admitting air to the constant level chamber, so that the pressure in the constant level chamber will be approximately equal to that in the air chamber.

Rotatably mounted in suitable bearings in the casing 2 is a throttle valve 16 having a stem 17 which extends through the upper portion of the casing 2. The casing 2 is provided with a vertical opening 18, the lower end of which is closed by means of a plug 19. 20 is a shell mounted in the opening 18 and held against rotation in any desired manner. This shell is urged upwardly by a spring 20' in the plug 19, and is adapted to form a bearing for a valve 21 which is rotatably mounted therein. The shell is provided with an opening 22 having an inclined edge 23, while the valve 21 is provided with a vertical slot 24 adapted to register with the opening 22 in the shell, as clearly shown in Figures 2, 4 and 5, the arrangement being such that when the valve is shifted with relation to the shell, the gasoline feed to the main jet will be varied, as more fully hereinafter described. Rotatably mounted within a sleeve 25, which is in turn rotatably mounted in the opening 18, is a hollow valve stem 26, the lower end thereof having projections adapted to seat in recesses 27 in the upper end of the valve 21.. Connected to the upper end of this hollow valve stem 26 is a crank 28. This crank 28 is connected by means of a link 29 to a crank 30 on the throttle valve stem 17. This throttle valve stem 17 is also provided with an operating crank 31.

By reference to Figures 2 and 4, it will readily be seen that there is an annular channel surrounding the shell 20. This is normally filled with gasoline which passes through a feed opening 32 in communication therewith and with the constant level chamber, so that gasoline will be fed from the constant level chamber to the interior of the hollow valve stem 26 through the vertical slot 24, the amount of feed being controlled by the position of the slot with relation to the inclined edge 23 of the opening 22. There is a space between the periphery of the hollow valve stem 26 and the opening 18, which opens into a channel 33 in communication with the secondary venturi 5, as clearly shown in Figure 1, for feeding the gasoline thereto under the action of the engine. The hollow stem 26 is provided with a plurality of ports 34 for permitting the gasoline to pass from the interior of the hollow stem to the channel 33.

The sleeve 25 is provided with a port 35 which is arranged to register with a port 36 extending through the wall of the casing 2 into the constant lever chamber 7, the arrangement being such that when the sleeve 25 is rotated by a crank 37 connected thereto, the size of the opening can be regulated to vary the admission of air from the constant lever chamber to the upper portion of the opening 18 or the main gasoline feed.

The carburetor is provided with a second gasoline feed, comprising an atmospheric well 38 which is supplied with gasoline fed through a calibrated opening 39 in a plug 40 having a screw-threaded engagement with the wall of the well. The plug 40 is provided with an annular recess 41 which is in communication with the opening 39 by means of transverse passages extending through the plug. Gasoline is fed to the calibrated opening 39 from the float chamber 7 through an opening 42 (see Figure 1). 43 is an air opening communicating with the air space of the constant level chamber and the top of the well 38. Mounted in the top of the well 38 is a sleeve 44, the upper portion thereof fitting close within the wall of the well, while the lower portion thereof is reduced in diameter and extends to a point slightly above the plug 40. 45 is an opening communicating with the well 38 and the channel 33 to feed the gasoline from the well to the secondary venturi, the gasoline from both feeds being delivered to the channel 33.

The carburetor is also provided with a slow-speed jet, which comprises a tube 46 extending into the well 38 within the sleeve 44. This tube 46 is connected to a valve 47 on the upper end thereof, having a screw-threaded portion 48 and an adjusting head 49. 50 is an opening extending through the valve to the interior of the tube 46, through which gasoline is fed for the slow-feed jet to a chamber within the upper portion of the sleeve 44. The valve 47 is located above a valve seat formed in the sleeve 44 and by raising and lowering this valve, the amount of air passing to the chamber in the upper portion of the sleeve 44 from the upper portion of the well to the slow-speed jet 51 can readily be adjusted. This slow-speed jet 51 communicates with the mixing chamber at a point adjacent to the edge of the throttle valve when the throttle valve is in its closed position, as shown in Figure 1.

By reference to Figure 1 it will be clearly apparent that the gasoline feeds, namely the auxiliary atmospheric well and the main atmospheric well having its feed controlled by the valve 21, are adjacent to and on opposite sides of a vertical plane indicated by the line A—A passing through the center of the float chamber and at right angles to a vertical plane parallel to the intake passage 2 of the carburetor. The carburetor is mounted on its support in such manner that a vertical plane parallel to the intake passage 2 of the carburetor is also parallel to the axis BB when in position on an airplane as indicated in Figure 6. This arrangement,

in combination with the means for maintaining a constant level within the float chamber irrespective of different inclinations thereof, produces a highly efficient fuel feed. This is due to the tendency of the increased level in one of the atmospheric wells to compensate for the decreased level in the other of the atmospheric wells.

The advantages of the present invention arise from the provision in a single carburetor of means for maintaing a constant supply of fuel in the constant level chamber irrespective of the inclination thereof, together with an arrangement of fuel feeds supplied from the constant level chamber for maintaining a constant fuel supply at all times.

Further advantages arise from the provision of means for varying the gasoline feed from the main jet in accordance with the variations in the position of the throttle.

I claim:

1. A carburetor for feeding uniformly under various degrees of inclination, comprising a constant level chamber, means for maintaining a constant level of fuel therein irrespective of the inclination of the carburetor, a mixing chamber having its longitudinal axis lying in a plane parallel to the longitudinal axis of the vehicle carrying the carburetor, a plurality of atmospheric wells fed from the constant level chamber and communicating with a single common fuel inlet passage, said wells being on opposite sides of adjacent a vertical plane perpendicular to the longitudinal axis of the mixing chamber and extending substantially through the middle of the constant level chamber, substantially as described.

2. A carburetor for feeding uniformly under various degrees of inclination of the vehicle carrying the same, comprising a constant level chamber, means for maintaining a constant level of fuel therein irrespective of the inclination of said vehicle, a plurality of atmospheric wells fed from the constant level chamber and communicating with a single common fuel inlet passage, said wells being substantially equal distances in front of and behind a vertical plane passing through the center of the float chamber, substantially as described.

3. A carburetor for feeding uniformly under various degrees of inclination of the vehicle carrying the same, comprising a mixing chamber, the longitudinal axis of the mixing chamber lying in a plane parallel with the longitudinal axis of the supporting vehicle, a constant level chamber at one side of the mixing chamber, a nozzle for feeding fuel to the mixing chamber, a plurality of atmospheric wells for feeding fuel to said nozzle, said wells communicating with a single common fuel inlet passage being on opposite sides of a vertical plane perpendicular to the longitudinal axis of the mixing chamber and extending through the middle of the float chamber, substantially as described.

4. A carburetor comprising a mixing chamber, a constant level chamber at one side of the mixing chamber, a nozzle for feeding fuel to the mixing chamber, a plurality of fuel feeds for feeding fuel to said nozzle, said fuel feeds being subjected to atmospheric pressure and located adjacent to and on opposite sides of a vertical plane passing through the center of the constant level chamber perpendicularly to the longitudinal axis of the mixing chamber, and spaced longitudinally from each other in the direction of the length of the vehicle on which the carburetor is mounted, the longitudinal axis of said mixing chamber lying in a plane parallel to the longitudinal axis of the vehicle carrying the carburetor, substantially as described.

5. A carburetor comprising a constant level chamber and a mixing chamber, a throttle valve controlling the outlet from the mixing chamber, said mixing chamber having an air chamber therein, and having its longitudinal axis lying in a plane parallel to the longitudinal axis of the vehicle said carburetor having an air passage between the constant level chamber, and said air chamber, a plurality of wells communicating adjacent their lower ends with said constant level chamber and communicating with a single common fuel inlet passage, means for varying the feed to one of said wells in accordance with the position of the throttle valve, a calibrated feed for the other of said wells, said wells having communication adjacent their upper ends with the air space in the constant level chamber, and a fuel nozzle communicating with said inlet passage and with the mixing chamber, substantially as described.

6. A carburetor comprising a constant level chamber, two fuel wells connected with said chamber to receive their fuel supply therefrom, said wells being located at opposite sides of a vertical plane passing centrally through said chamber, means for maintaining a constant level in said chamber irrespective of the angle of inclination of the carburetor, and a mixing chamber into which both wells are arranged to discharge, the said wells communicating with a single common fuel inlet passage and being spaced longitudinally from each other in the direction of the length of the vehicle on which they are mounted, substantially as described.

7. In a carburetor, a constant level chamber, two atmospheric wells connected with said chamber and receiving their fuel supply therefrom, said wells being located at equal

distances from and on opposite sides of a vertical plane passing centrally through said chamber, means for maintaining a constant level in said chamber irrespective of the angle of inclination of the carburetor, and a mixing chamber into which both wells are arranged to discharge, there being a common channel connecting both of said wells and said mixing chamber, said wells being spaced longitudinally in the direction of the length of the vehicle on which they are mounted, substantially as described.

In testimony whereof, I have hereunto set my hand.

FRANÇOIS BAVEREY.

Witnesses:
L. ERCHER,
MARIN VACHOR.