P. BERTRAND & J. GOUBILLON.

CARBURETER.

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913,456. Patented Feb. 23, 1909.

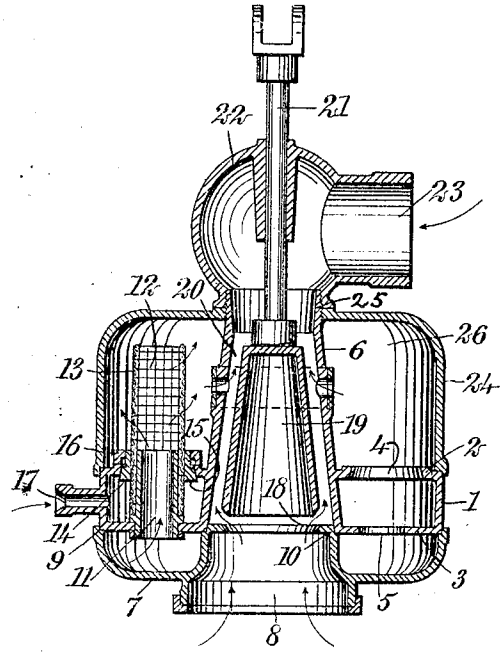


Fig. 1.

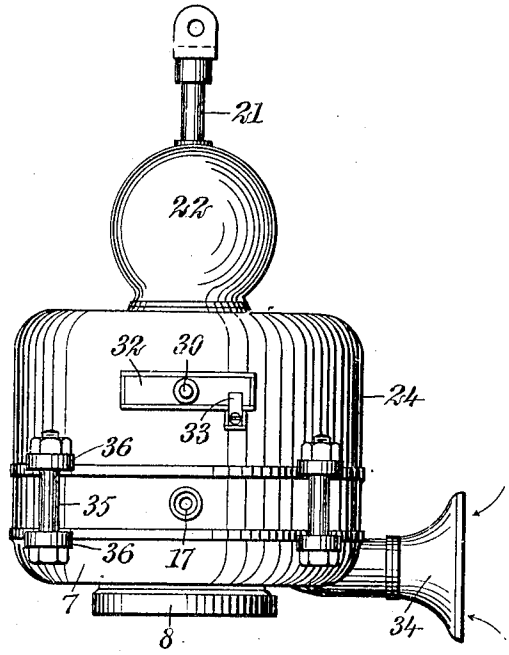


Fig. 2.

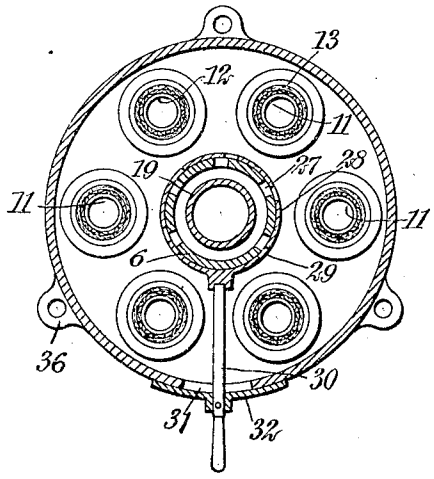


Fig. 3.

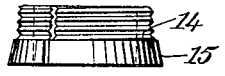


Fig. 4.

WITNESSES

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CARBURETER.

No. 913,456. Specification of Letters Patent. Patented Feb. 23, 1909.

Application filed August 12, 1908. Serial No. 448,127.

To all whom it may concern:

Be it known that we, PIERRE BERTRAND and JEAN GOUBILLON, both citizens of the Republic of France, and residents, respectively, of the city of New York, borough of the Bronx, in the county and State of New York, and of Vaulx en Velin, France, have invented a new and Improved Carbureter, of which the following is a full, clear, and exact description.

This invention relates to carbureters such as used on automobiles for producing an explosive mixture of air and gas.

The object of the invention is to produce a device of this kind which is simple in construction, and which will operate effectively to produce a thorough evaporation of the gasolene or other fuel in large quantities, and which will afford means for nicely regulating the vaporization of the gasolene and the proportion of gas and air which passes from the carbureter to the engine.

More specifically, the invention contemplates the use of a plurality of evaporators or vaporizers, which operate through their capillarity to draw the gasolene from a reservoir so that the same may be evaporated in a current of warm air passing through the carbureter. From the vaporizing chamber in which these vaporizers are placed, the charged air passes into a mixer through a regulator, and through this mixer is drawn a quantity of free air which mixes with the charge before it passes from the carbureter.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical section through a carbureter constructed according to our invention; Fig. 2 is a side elevation of the carbureter; Fig. 3 is a horizontal cross section through the carbureter; and Fig. 4 is a detail view showing a split ring in side elevation, which ring constitutes a feature of the invention.

Referring more particularly to the parts, 1 represents the fuel chamber, which is of cylindrical form, presenting an upper head 2 and a lower head 3. The upper head 2 is formed with a plurality of circular openings 4, which are bored conically, with the large side of the opening disposed downwardly. Similar openings 5 are provided in alinement with the openings 4, in the lower head 3, and these are of smaller diameter, as shown most clearly at the right in Fig. 1. The fuel receptacle or receiver 1 is formed centrally into a conical thimble 6, which constitutes a mixer for the charged air and free air.

Upon the head 3 there is seated a dished head or bonnet 7, which is formed with a centrally disposed inlet neck 8, and is bored on its upper side so as to form seats 9 and 10 for the rim of the receiver and the lower edge of the thimble 6, respectively, as shown. In each of the openings 5 there is mounted a tube or air duct 11, and these tubes are held in place by any suitable means such as that shown. The upper ends of these tubes extend up through the openings 4, as indicated at the left in Fig. 1. On the exterior of each tube, and telescoped over it as shown, there is provided a vaporizer 12, which is of tubular form and composed of wire mesh or similar material. On the exterior of this vaporizer 12 there is placed a vaporizing sleeve 13, of cotton or a fabric formed of a similar highly capillary fiber. These sleeves 13 are clamped at the openings 4 by means of split rings 14, which are formed below with conical heads 15 seating in the conical bore of the openings 4, as indicated. The upper ends of these split rings 15 are threaded so as to be engaged by clamping nuts or nut rings 16 which seat upon the upper side of the head 2, as shown. By screwing up on these nuts 16, the split rings 15 will clamp the sleeves 13 securely against the tubes 11, and the degree of pressure exerted at this point will regulate the capillary action of the vaporizers in a manner which will be described more fully hereinafter. The gasolene or similar liquid fuel is supplied to the receiver 1 through the tubular inlet 17 arranged on the side wall thereof, as shown.

The middle portion of the bonnet or dished head 7 is formed into a conical seat 18 for a conical valve 19 which comes upon the seat by a downward movement, the lower end of the cone 19 being turned conically so as to fit the conical seat 18. This valve 19 is disposed within the thimble 6, as indicated, the side walls of the valve and thimble being arranged so that an annular

mixing space 20 is formed between them. The valve 19 is attached to the lower end of a vertical stem 21 which passes upwardly through a globe elbow 22, said elbow having a horizontal delivery neck 23 which leads to the engine cylinder.

The vaporizers are all incased in a cylindrical hood 24 which seats on the upper side of the receiver 1. The lower portion of the elbow 22 is formed into a threaded opening which screws upon a threaded neck 25 formed on the upper end of the thimble 6. This neck projects through the hood and affords means for attaching the globe elbow 22, as shown. In the upper portion of the thimble and within the vaporizing chamber 26, which is formed within the hood 24, there is provided a plurality of openings 27 disposed circumferentially in the wall of the mixer or thimble 6. Through these openings communication is had between the interior of the mixer and the interior of the hood 24, and the degree of opening is regulated by means of a regulator ring or register 28, which consists simply of a ring having openings 29 which may all aline simultaneously with the openings 27 if the ring is placed in the proper position. The position of the ring is controlled by means of a handle 30 which passes radially through a slot 31 in the wall of the hood, as indicated in Fig. 2. The slot 31 is kept closed by a sliding cover or plate 32, which fits closely upon the curved face of the case. In order to insure that the handle 30 will remain in any position in which it is left, we provide a spring clip or friction clip 33, which is attached to the side of the case as indicated in Fig. 3. This clip exerts pressure upon the plate or slide 32, and holds it frictionally against displacement.

The bonnet 7 is provided at one side, as indicated in Fig. 2, with an inlet mouth 34 through which warm air is drawn into the carbureter below the head 3 when the device is in operation. With this end in view, the intake 34 may be disposed near a heated point of the engine, so that the air drawn inwardly will be warmed before it passes into the carbureter. As indicated in Fig. 2, the bonnet 7 and the hood 24 are firmly held in position by bolts 35 which pass through lugs 36 formed in alinement on the hood and bonnet.

There may be as many of the vaporizers as desired. The gasolene enters the fuel chamber or receptacle 1 by the tube 17. On account of their capillarity, the sleeves 13 absorb the fuel, and elevate or feed it into the vaporizing chamber 26. If the nuts 16 are tightly screwed up, they will compress or clamp the split rings 15 upon the sleeves in such a way as to reduce or "choke" their capillary action. The warm air entering the bonnet 7 passes up the tubes 11 and effectively evaporates the fuel in the vaporizers; the gas thus formed in the vaporizing chamber is then entrained through the openings 27 by the free air which is drawn up through the mixer. The proportion of the gas to the air to form the charge is nicely regulated by the ring 28 and the valve 19. A thorough mixture of the gas and air takes place in the mixer. The ring 29 may be regulated after the engine is running so as to reduce gradually the proportion of gasolene; the reduction being continued just to the point beyond which the charge fails to explode. This is the most economical operating point.

Special attention is called to the relatively large area of the capillary sleeves with the air current passing upwardly through them; and attention is called, also, to the construction of the mixer which presents a constantly reducing cross section beyond the regulator 28. In this way an intimate mixture of the charged gas and the air is produced.

Special attention is called to the conical form of the valve 19. As this valve becomes more and more elevated, its conical face approaches the openings 27 so that the freedom of flow of the current of vapor through these openings is restricted. In this way a very nice regulation between the quantity of fuel and air may be obtained.

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

1. A carbureter having a substantially conical thimble opening upwardly, said thimble having openings in the wall thereof through which the gaseous fuel flows inwardly, said thimble having an air inlet at the large end thereof, and a conical valve adapted to close said air inlet opening disposed within said thimble and regulating the flow of gases through said openings.

2. A carbureter having a vaporizing chamber, a centrally disposed thimble with openings leading the gases from said vaporizing chamber, said thimble having an air inlet opening at one end thereof, and a substantially conical valve adapted to close said air inlet opening and presenting its conical face at said openings to regulate the flow of current through said openings.

3. A carbureter having a receptacle for a liquid fuel, a vaporizing chamber, a plurality of capillary absorbent members adapted to absorb the fuel within said receptacle, and projecting through into said vaporizing chamber, and means for clamping said capillary members on opposite faces to choke the capillary action thereof.

4. A carbureter having a receptacle for a liquid fuel, and a vaporizing chamber adjacent thereto, absorbent capillary sleeves mounted in said carbureter and disposed in said receptacle and in said vaporizing chamber, and means for clamping said sleeves on

opposite faces to choke the capillary action thereof.

5. A carbureter having a receptacle for a liquid fuel, and having a vaporizing chamber separated from said receptacle by a head, a plurality of capillary sleeves passing through said head and adapted to absorb the fuel in said receptacle, and means for passing air upwardly through said sleeves.

6. A carbureter having a receptacle for a liquid fuel, and a vaporizing chamber, a plurality of capillary vaporizers adapted to absorb the fuel and projecting from said receptacle into said vaporizing chamber, tubes passing upwardly through said receptacle and conducting air into said vaporizing chamber, and a bonnet for admitting air to said tubes simultaneously.

7. A carbureter having a receptacle for a liquid fuel, having a lower head and an upper head and alining openings therein, tubes mounted in said lower head and projecting upwardly through said upper head, capillary sleeves disposed over said tubes, adapted to absorb the fuel and projecting through said upper head, a vaporizing chamber receiving said sleeves, and means for clamping said sleeves upon said tubes, said tubes affording means for passing air upwardly through said sleeves into said vaporizing chamber.

8. A carbureter having a receptacle for a liquid fuel, and a vaporizing chamber, a plurality of capillary vaporizers extending from said receptacle into said vaporizing chamber and adapted to conduct air upwardly through said vaporizers to said chamber, means for clamping opposite faces of said vaporizers to choke the capillary action thereof, a centrally disposed mixer in communication with said vaporizing chamber, and a valve disposed in said mixer and controlling the upward flow of air therethrough.

9. A carbureter having a vaporizing chamber with a plurality of vaporizers therein, a centrally disposed thimble having a plurality of circumferentially disposed openings therein communicating with said vaporizing chamber, a regulator ring mounted at said openings and having openings adapted to register with said first openings to regulate the degree of opening thereof, the wall of said vaporizing chamber having a slot therein, a handle attached to said ring and extending through said slot, and a plate carried by said handle disposed upon the outer face of said wall and closing said slot in all the positions of said handle.

10. A carbureter having a vaporizing chamber with a plurality of vaporizers therein, a centrally disposed thimble having a plurality of circumferentially disposed openings therein communicating with said vaporizing chamber, a regulator ring mounted at said openings and having openings adapted to register with said first openings to regulate the degree of opening thereof, the wall of said vaporizing chamber having a slot therein, a handle attached to said ring and extending through said slot, a plate carried by said handle disposed upon the outer face of said wall and closing said slot in all the positions of said handle, and a resilient clip pressing said plate and adapted to hold said handle against displacement.

11. A carbureter having a vaporizing chamber, a plurality of vaporizers disposed circumferentially therein, a conical thimble centrally disposed and having openings therein communicating with said vaporizing chamber, and a conical valve within said thimble and adapted to admit air into the space between said valve and said thimble.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PIERRE BERTRAND.

Witnesses:
LEON J. CHOFFIN,
CARL H. HAUSMANN.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JEAN GOUBILLON.

Witnesses:
PIERRE JOSEPH CHATIONY,
PIERRE ANTOINE PAINSSET.