A. C. BENNETT.

CARBURETER.

APPLICATION FILED FEB. 1, 1913.

1,123,469.

Patented Jan. 5, 1915.

Fig. 1

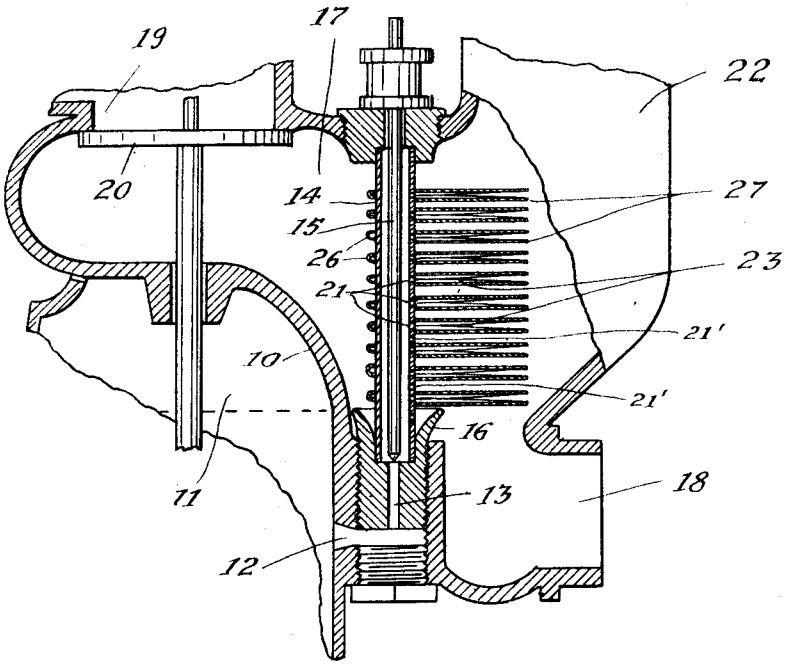


Fig. 3.

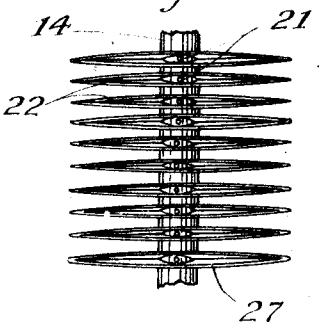
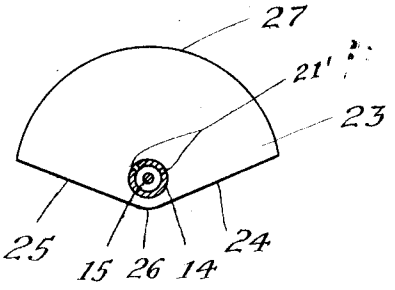


Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

ASHLEY C. BENNETT, OF MINNEAPOLIS, MINNESOTA.

CARBURETER.

1,123,469. Specification of Letters Patent. Patented Jan. 5, 1915.

Application filed February 1, 1913. Serial No. 745,630.

To all whom it may concern:

Be it known that I, ASHLEY C. BENNETT, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

My invention relates to carbureters, and has for its object to provide means for increasing the distributing or vaporizing area of the fuel feed, so that relatively heavy fuel oils may be completely vaporized and a higher degree of vaporizing efficiency be made possible for all forms of fuel oils.

The full objects and advantages of my invention will appear in connection with the detailed description thereof and are particularly pointed out in the claims.

In the drawings, illustrating the application of my invention in one form, Figure 1 is a sectional view of a part of a carbureter having my improvements applied thereto. Fig. 2 is a section of the feed pipe showing one of the spreaders in plan. Fig. 3 is a front elevation of a portion of the feed pipe.

As shown, a casing 10 is formed with a chamber 11 to which the fuel oil is fed from the supply tank in a well-known manner. From the chamber 11 a passageway 12 intercepts transversely a passageway 13 opening into a vertical feed pipe 14, said opening being controlled by a needle valve 15. About the bottom of the feed pipe 14 is a cup 16, and the feed pipe is provided with a series of apertures along one side thereof. The feed pipe is located in a chamber 17 formed by the casing 10 and separated from the fuel reservoir or chamber 11. A primary air inlet port 18 is provided, and also a secondary air inlet port 19 is provided; the port 18 being at all times open to its full extent and operating to admit air under slow speeds, while the port 19 is closed by a valve 20 which may be positioned by means such as described and claimed in my co-pending application No. 706,908, filed July 1st, 1912, so that port 19 is opened varying degrees for the admission of what is known as secondary air in response to increases of speed of the engine.

The apertures 21 are located in one or more vertical rows along the side of feed pipe 14, turned toward the entrance to the delivery pipe 22 which carries the fuel mixture to the engine cylinders. In my present construction, I arrange upon the feed pipe 14 a series of double fins 23 having an outline view similar to that shown in Fig. 2, the parts of said fins being secured together at the edges 24 and 25 and flaring toward the center, as clearly shown in Figs. 1 and 3. Each of these double fin members 23 is strung upon the feed pipe 14, so that the parts thereof fall on opposite sides of the apertures in a given horizontal plane formed in feed pipe 14, the said double fin members being soldered, or otherwise secured, at their back portions 26 to the feed pipe.

In operation the incoming air passing through the carbureter travels across the outer edges of the fin members 23, the vacuum created within chamber 17 draws fuel oil through apertures 21, beginning first to draw through the bottom aperture, and, as the speed of the engine increases so as to correspondingly increase the vacuum formed, the fuel oil will rise in the feed pipe 14, and feed through apertures 21 successively higher up the feed pipe until, if the speed of the engine becomes sufficiently high, it may cause oil to be drawn through all of said apertures. When the fuel oil passes out of said apertures, it does not immediately spray into the current of air but flows along the inner walls of the fin members 23, spreading radially until it reaches the outer edges 27 of said fin members or spreaders, where it contacts with the current of air passing through chamber 17. The same amount of fuel oil, therefore, which would be brought into contact with the current of air at a single point corresponding in area to the area of an aperture 21, is now spread out so that contact with the air takes place throughout an extent equal to double the peripheral extent of an edge 27 of said spreaders, by which time the fuel oil, no matter how heavy the same may be, will have been spread in an extremely thin film, from which the breaking up into vapor particles can be most effectively accomplished.

In the practice of my invention it is not essential that the fin members 27 shall comprise a pair of plates secured together at one set of edges, as single plates with the fuel discharge upon the surface thereof will answer the purpose almost as well. Even where the double plates are used apertures such as 21′ may be provided in the feed pipe

14 between the adjacent plates of different members 27 so that fuel distribution will take place from the outside as well as from the inside of said plates. The distribution from the outside of the plates, or where single plates are used, will be of a somewhat different character because the fuel oil upon the plates will be subjected to the draft of air throughout the extent of the plates whereas in the preferred form in which pairs of plates closed at the rear edges are employed, the fuel will come in contact with the current of air only at the edges of the plates.

I have built a number of carbureters employing this invention and made extended experiments therewith, and have proven by actual test that a vaporization of such a heavy fuel oil as kerosene may, with the employment of this improvement, be accomplished as effectively as the vaporization of gasolene with the carbureters now in use.

From the foregoing the high utility of my invention will be apparent.

I claim:

1. A carbureter comprising a feed pipe having a series of apertures therein, means for directing a current of primary air at one side of said feed pipe and for directing a current of secondary air across said feed pipe, means for delivering fuel oil to the feed pipe wherein the same is caused to pass out of said apertures by said currents of air induced by the operation of the engine, and means for receiving the fuel oil from said apertures and permitting the same to be spread in thin films of relatively wide extent, said means exposing the edges only of said films to both the currents of the primary and secondary air.

2. A carbureter comprising a feed pipe having a series of apertures therein, means for directing a current of primary air at one side of said feed pipe and for directing a current of secondary air across said feed pipe, means for delivering fuel oil to the feed pipe wherein the same is caused to pass out of said apertures by said currents of air induced by the operation of the engine, and double walled members of relatively wide extent positioned to receive the fuel oil between said walls and permit it to spread in thin films of relatively wide extent along said walls, and means closing communication between a portion of said walls so that the edges only thereof are exposed to said currents of air.

3. In combination with the feed pipe of the carbureter, having apertures therein, a spreader fin consisting of two plates secured along their back edges and separated along their front edges, said spreader being secured to the feed pipe so that an aperture opens between the plates thereof.

4. A carbureter comprising a vertical feed pipe having apertures along one side thereof, means for delivering fuel oil to the lower end of said feed pipe whereby the same is caused to pass out of said apertures by the operation of the engine, and spreader fins secured to said feed pipe, each of said spreader fins consisting of two plates secured together along their back edges and separated along their front edges, an aperture in said feed pipe opening between the plates of each spreader.

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

ASHLEY C. BENNETT.

Witnesses:
H. A. BOWMAN,
A. M. ROYAL.