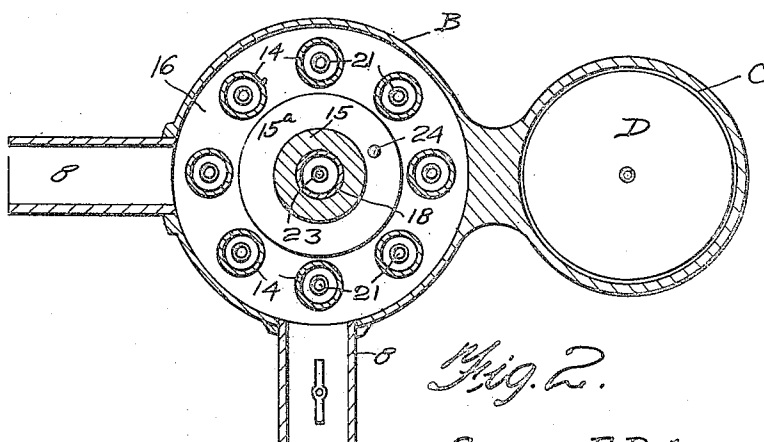
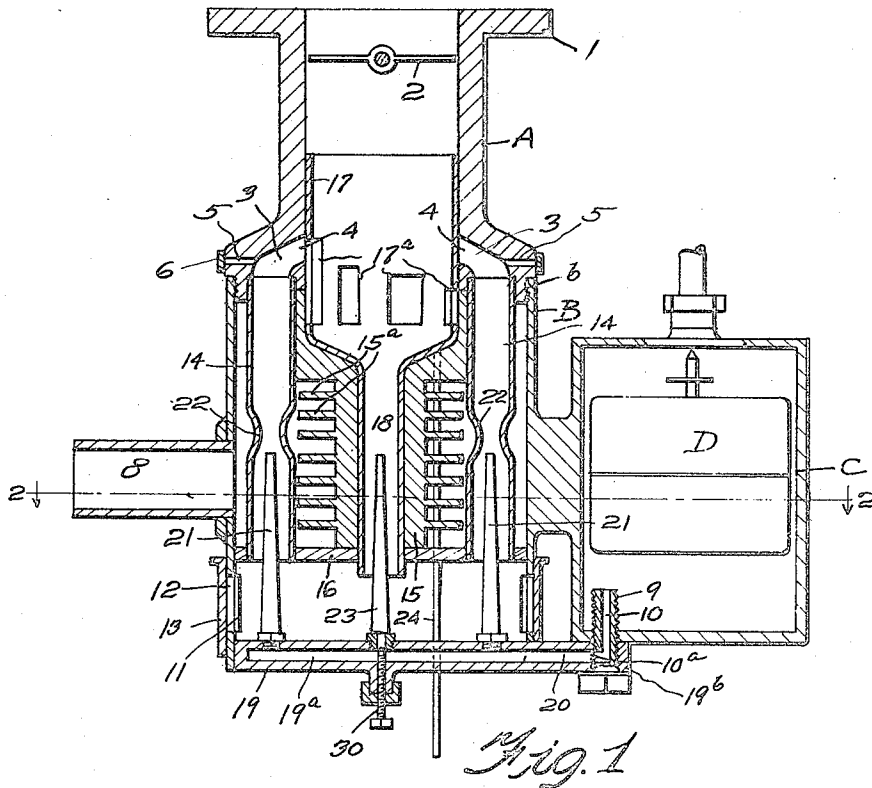


G. F. PETERSON.  
CARBURETOR.  
APPLICATION FILED JULY 31, 1918.

1,432,033.

Patented Oct. 17, 1922.

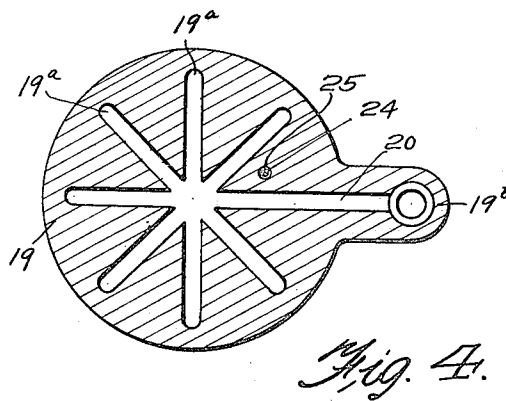
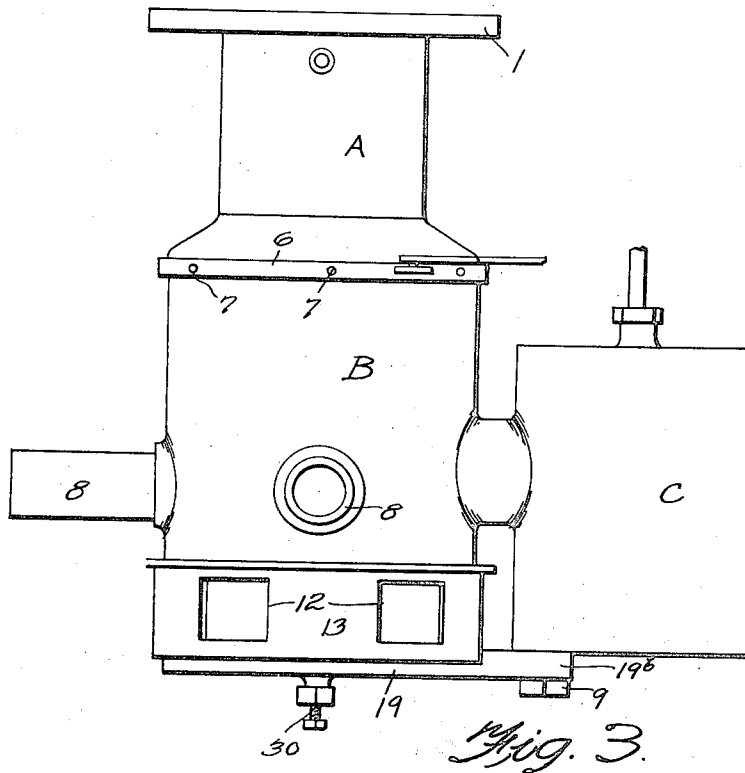
2 SHEETS—SHEET 1.



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1,432,033.

Patented Oct. 17, 1922.  
2 SHEETS—SHEET 2.



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## UNITED STATES PATENT OFFICE.

GEORGE F. PETERSON, OF SALT LAKE CITY, UTAH.

CARBURETOR.

Application filed July 31, 1918. Serial No. 247,575.

*To all whom it may concern:*

Be it known that GEORGE F. PETERSON, a citizen of the United States, residing at Salt Lake City, in the county of Salt Lake and State of Utah, has invented certain new and useful Improvements in Carburetors, of which the following is a specification.

This invention relates to carburetors for internal combustion engines and it has for its object to provide an improved device of this nature whereby volatile fuel oils may be properly mixed with air for use as an explosive mixture in internal combustion engines.

A further object of the invention is to provide a carburetor which will automatically supply a mixture of the proper richness to the engine whether the engine be run at low or high speed.

A further object of the invention is to provide a carburetor which may be easily cleaned and adjusted quickly to suit the nature of the fuel oil being used.

In the accompanying drawings in which like reference characters designate corresponding parts throughout the several views,

Fig. 1 is a vertical section of a carburetor constructed in accordance with the invention;

Fig. 2 is a horizontal section on line 2—2 of Fig. 1.

Fig. 3 is a side elevation of the carburetor; and

Fig. 4 is a horizontal section through a fuel distributing element, hereinafter described.

The carburetor comprises a tubular cap A and a main casing B upon which said cap is mounted. The cap may be screwed on the casing, as indicated at *b* or soldered thereto, as desired. The cap is provided with an outstanding flange 1, to adapt it for attachment to the intake manifold, not shown, of an internal combustion engine. The passage of the carbureted air through the tubular cap A is controlled by an ordinary butterfly valve 2. Passages 3 are formed in the lower portion of the tubular cap A and terminate in angular ports 4, which open into the bore of the tubular cap A. Radial air passages 5 establish communication between the passages 3 and the atmosphere when a band 6 which encircles the cap A is moved to such position as to cause openings

7 formed in said band to register with the passages 5.

That portion of the space within the casing B and above a partition wall 16 which spans said casing constitutes a heating chamber, circulating pipes 8 being provided to conduct the heating medium to and from said chamber. The heating medium may be the exhaust gases from the engine, or otherwise.

Venturi tubes 14 having the restricted portions 22 extend vertically through the heating chamber and communicate at their upper ends with the passages 3. The lower ends of these tubes project through the partition wall 16 terminating at the lower side thereof and are open for the reception of the fuel nozzles 21, which terminate adjacent the restricted portions 22 of said tubes. The several fuel nozzles receive their fuel through radial passages 19<sup>a</sup> formed in a plate 19 which constitutes the bottom of the casing B. All of the passages 19<sup>a</sup> are fed through a passage 20 which is in communication with a passage 10 in a tap bolt 9 through a passage 10<sup>a</sup>. The bolt 9 is disposed vertically in a lateral extension 19<sup>b</sup> of the plate 19 and secures this extension to a fuel supply chamber C in which the level of the fuel may be maintained at any desired point, in any well known manner, such, for example, as by a float B, commonly used in carburetors. The bolt 9 not only secures the extension 19<sup>b</sup> to the fuel supply chamber C, as stated, but serves to establish communication between the passage 20 and the float chamber and thus feeds all of the fuel supply nozzles from the said float chamber C.

The main air supply of the carburetor is through ports 12 formed in a movable band 13 which encircles the lower part of the casing B and through ports 11 in casing B with which the ports 12 are adapted to be brought into registration.

A tubular heater 15 is disposed centrally within the casing B and extends from the division wall 16 to the under side of the cap A. This heater, which is preferably a separate unit, is provided with a plurality of radial webs 15<sup>a</sup> and it serves to take up and store the heat from the heating medium and to, in turn, heat the Venturi tubes 14 and the carbureted air passing through them and also to heat a suction operated

tubular valve 17 that is mounted for vertical movement partly in the bore of the cap A and partly in the bore of heater 15. The suction operated valve is provided with a guide rod 24 which passes through webs 15<sup>a</sup> of the heater and through a guide opening 25 formed in the bottom or plate 19, whereby the suction operated valve is held against turning. The valve 17 is provided with a depending tubular extension 18 and a fuel supply nozzle 23 projects into this tubular extension. The passage of the fuel there-through is controllable by means of needle valve 30 cooperating with such nozzle. This needle valve is adjustable vertically in the plate 19 at the juncture of the several ports 19<sup>a</sup>, and its adjustment controls the nozzle 23. The suction operated valve 17 is provided with a plurality of ports of varying heights in its walls, said ports being designated 17<sup>a</sup>. These ports are successively brought into registry with the ports 4 as the suction in the manifold increases and causes the lifting of the suction operated valve 17.

When the engine is running at low speed the valve 17 is held at the bottom of its travel by gravity and in that position none of the ports 17<sup>a</sup> is in registry with any of the ports 4, and no air or fuel may enter the manifold through tubular cap A except through the extension 18 of the suction operated valve. The area around the nozzle 23 is so restricted as to cause the air to pass the end of this nozzle at a high velocity, even if the engine is running at low speed, and this causes the fuel to pass out of nozzle 23 in the form of a spray.

As the engine is speeded up by the opening of the throttle valve 2 the suction becomes greater in the casing A and the valve 17 rises within such casing and brings one or more of the ports 17<sup>a</sup> into alinement with one or more of the ports 4, the position the valve assumes depending on the suction in casing A. In order to secure a richer mixture, when the motor speed is increased suddenly; what is, in effect, a dash-pot, is provided by making the valve 17 fit somewhat snugly against its seat. This insures that the opening of additional ports by the lifting of the valve 17 will be accompanied by such increased suction as will give the proper velocity of air past the nozzles 21. In other words by making the valve 17 fit

somewhat snugly only an appreciable increase in the suction in the intake manifold will result in moving said valve and thus when the valve opens, or lifts, this increased suction is available to create the proper velocity of air past the several nozzles 21. To provide for additional air or the curtailment of air through the tubes 14, the ring 6 is provided as stated and this in turn serves to dilute the mixture, at will. It is to be noted that this diluting of the mixture occurs only with respect to those tubes 14 which have been brought into communication with the interior of the cap A by the operation of the valve 17, for if the ports of the valve 17 have not registered with the port 4 of any tube 14 there can be no passage of air through said port 4.

Having described my invention, what I desire to secure by Letters Patent is.

A carburetor comprising in combination a casing, a fuel distributing element closing the bottom of said casing which carries a plurality of upstanding nozzles, means for supplying a hydrocarbon fuel to said nozzles through said element, a cap piece mounted upon the top of said casing having a central bore and a plurality of ports leading from said central bore to the lower face of said cap piece, a horizontal wall dividing the space between the cap piece and the fuel distributing element into lower and upper chambers, means for supplying a heating medium to the upper chamber, a plurality of Venturi tubes supported between the horizontal wall and the cap piece and leading from the lower chamber to the several ports aforesaid and into which the several nozzles project, a central tubular element extending through the upper chamber into which one of said nozzles project and a floating tubular valve mounted for sliding movement in said central tubular element and in the bore of the cap piece and having ports of varying dimensions which successively and cumulatively come into communication with the first named port of the cap piece and means for admitting air to the lower chamber.

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

GEORGE F. PETERSON.

Witnesses:

E. C. ASHTON,

E. M. BAGLEY, Jr.