

April 26, 1938.

F. A. KOMMER

2,115,077

CARBURETOR

Filed July 30, 1932

2 Sheets-Sheet 1

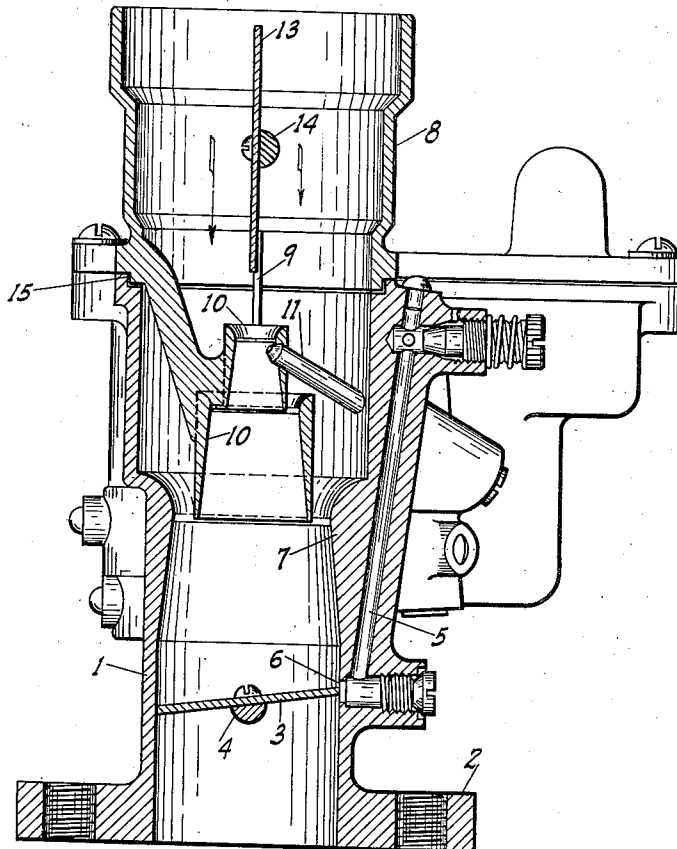


Fig. 1

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2 Sheets-Sheet 2

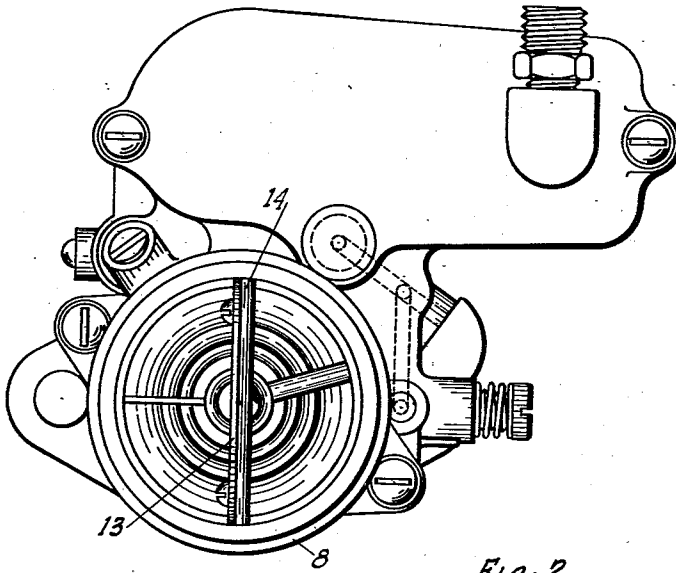


Fig. 2

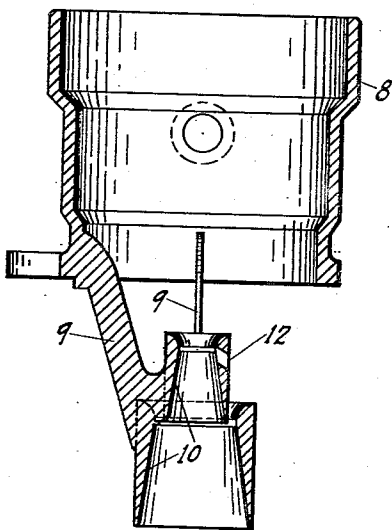


Fig. 4

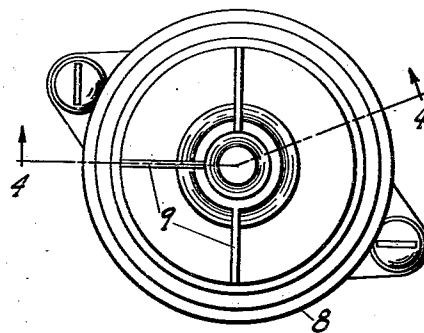


Fig. 3

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2,115,077

CARBURETOR

Fred A. Kommer, St. Louis, Mo., assignor to
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a corporation of Delaware

Application July 30, 1932, Serial No. 626,804

8 Claims. (Cl. 261—75)

This invention relates to carburetors, and more particularly, to a new and improved construction of mixing passages and venturis thereof.

5 This invention may be considered as an improvement over the construction shown in Patent #1,858,615, granted to George M. Bicknell, May 17, 1932. In constructions of that type it has been necessary to provide supports for the
10 primary and secondary venturis and these supports have the effect of somewhat restricting the main venturi. In constructions of that type it is also necessary to machine the inside of the mixing conduit at the point where the main
15 venturi is to be located and then to insert a separate die cast venturi.

It is the object of this invention to provide a carburetor of the general type shown in the Bicknell patent above referred to, with a novel
20 mixing conduit construction of generally improved design both from the standpoint of convenience in manufacture and efficiency in operation.

Other objects will appear from the following description and accompanying drawings, referring to which:

Figure 1 is a vertical sectional view of the carburetor according to my invention.

Figure 2 is a plan view of the carburetor shown in Figure 1.

Figure 3 is a detail plan view of the air horn and upper venturi stack.

Figure 4 is a detail sectional view taken along line 4—4 of Figure 3.

25 The reference numeral 1 indicates the main body member of the carburetor, which is ordinarily formed of cast iron or other suitable material. The usual flange 2 is provided for attaching the carburetor to the intake manifold of the engine and the throttle valve 3 rotatably
40 mounted on the shaft 4 is provided to control the flow of mixture from the carburetor. An idle passage 5 is provided for supplying the low speed fuel outlet 6. The means for supplying
45 fuel to the passage 5 is not shown as this forms no part of the invention, but it may be stated that the general construction and operation of the carburetor is the same as that shown in the above-mentioned Bicknell Patent
50 #1,858,615 except for the construction herein-after described.

The main venturi 7 is formed integral with the main body member. The air horn 8 is formed as a die casting and has a plurality of
55 inwardly and downwardly extending vanes or

supports 9 which may, if desired, be stream lined with respect to the direction of flow of air. One or more venturis 10 are formed integral with the vanes and extend downwardly and into the throat of the main venturi as indicated
5 in Figure 1.

The main or high speed nozzle 11 extends into the upper venturi which is provided with a hole 12 to receive it. The flow from the main nozzle is controlled for normal operation by the throttle 10 3 and for starting by the choke valve 13, which is suitably mounted on a rotatable shaft 14. A machined recess is formed by a turning or boring operation, and the venturi 7, or at least the throat and inlet end of it, are formed
15 at the same operation, without removing the member 1 from the chuck in which it is held for the purpose of forming the recess. This insures exact alignment of the venturi 10 with respect to the venturi 7. It will be understood, of
20 course, that the upper venturi 10 will be omitted if desired, and in that case the main nozzle 11 will be introduced into the remaining venturi 10, and have its outlet adjacent the throat
25 thereof.

In operation, the air enters the upper end of the air horn through an air cleaner or silencer, and passes through the venturis in a manner well understood in the art, aspirating fuel from
30 the main nozzle 11 and low speed nozzle 6 according to the position of the throttle 3 and the operating conditions of the engine to which the carburetor is applied.

The invention is not limited in details to the structure shown but may be modified in various
35 respects as will occur to those skilled in the art and the exclusive use of all such modifications that come within the scope of the appended claims is contemplated.

I claim:

1. In a plain tube carburetor, a main body member having a passage way therethrough, a main venturi in said passage way, an air inlet member attached to said main body member, an
45 air inlet passage in said inlet member substantially coaxial with said main venturi, a support member formed integral with said air inlet member and extending into said passage way in the main body member, and a smaller venturi
50 integral with said support member, said smaller venturi having an outlet end of smaller diameter than said main venturi and adjacent the throat thereof, the throat of said main venturi being otherwise open and unobstructed, whereby
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the air flow around the outlet end of the smaller venturi will be evenly distributed.

2. In a downdraft carburetor, a main body member having a substantially vertical and downwardly directed mixing conduit therein, a main venturi in said conduit the upper part of the mixing conduit in said main body member being large and unrestricted as compared with the throat of said main venturi, an air inlet member carried by said main body member and having an air inlet passage substantially coaxial with said main mixing passage, a venturi located in said mixing conduit at a point anterior to said main venturi, a vane carried by said air inlet member and extending inwardly and downwardly with respect to said main mixing conduit to support said second mentioned venturi, and means for discharging fuel into said second mentioned venturi, the surfaces of said second venturi and said vane being so formed as to cause said fuel to be drained down toward the central portion of the throat of said main venturi and to prevent said fuel being brought by draining action into contact with the outer walls of said mixing conduit.

3. As an article of manufacture, a die casting having a tubular portion of comparatively large diameter, said tubular portion comprising an end portion of large diameter, an intermediate portion of slightly larger diameter and a portion at the other end of largest diameter, a plurality of vanes extending from the smallest end of said tubular portion, and a plurality of venturis at the lower ends of said vanes.

4. As an article of manufacture, a die casting comprising a substantially tubular portion having oppositely located openings in the walls thereof adapted to receive a choke shaft, a vane extending from one end of said tubular portion, a venturi formed integral with said vane, said venturi being substantially coaxial with the tubular portion of said member, and being provided with an opening to receive a fuel nozzle, and a second venturi formed integral with and coaxial with said first mentioned venturi.

5. As an article of manufacture, a die casting comprising a substantially tubular portion, said portion being divided into three portions of gradually decreasing diameter, a vane extending from

the smallest diameter end of said tubular portion and a venturi formed integral with said vane, said venturi being substantially coaxial with the tubular portion of said member, said venturi, said vane and said tubular portion being formed integrally.

6. In a downdraft carburetor, a main body member having a substantially vertical passageway therethrough, an air inlet member mounted at the upper end of said passageway, a venturi in said passageway, a recess at the inlet end of said main body member, said inlet member having a portion extending into said recess, a plurality of inwardly and downwardly extending vanes integral with said inlet member, and a plurality of venturis also formed integral with said vanes and said inlet member, said inlet member, said vanes, and said venturis being constructed and arranged to drain liquid fuel to a point in the throat of said first named venturi and out of contact therewith.

7. Air horn structure for use in connection with a downdraft carburetor having a main body member and a venturi therein, said structure comprising an air inlet member adapted to be superposed on the carburetor main body member, a smaller venturi carried by said air inlet member, and a support extending from said air inlet member to said smaller venturi, said support being located at a point substantially anterior to the inlet of said first named venturi whereby the even admission of air thereto will be permitted, and an opening in said smaller venturi at a point substantially opposite said support, said opening being formed at an acute angle and adapted to receive a fuel nozzle.

8. In a carburetor, a cast iron body section having an induction passage formed therein, and a die-cast body section comprising a portion forming a continuation of said induction passage, a venturi formed integral with said portion and projecting within said induction passage, a second venturi positioned to discharge into the first-named venturi, a fin connecting the two venturis and formed integral therewith, and a removable, inclined fuel nozzle projecting through and discharging within the second venturi.

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