June 12, 1928. 1,673,136

A. C. BENNETT

CARBURETOR

Filed May 29, 1920 2 Sheets-Sheet 1

FIG-1

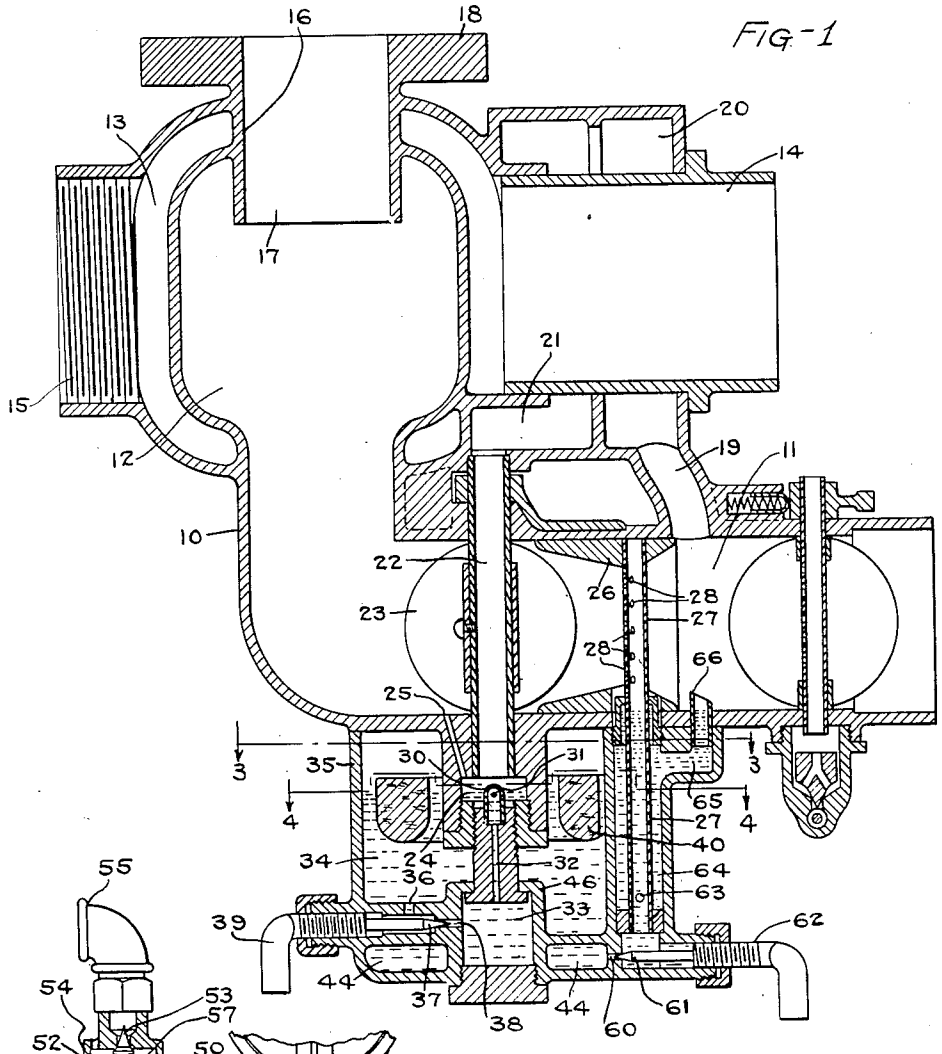



FIG-2.

INVENTOR:
ASHLEY C. BENNETT.
By Whiteley and Ruckman
ATTORNEYS.

June 12, 1928. 1,673,136

A. C. BENNETT

CARBURETOR

Filed May 29, 1920 2 Sheets-Sheet 2

FIG. 3

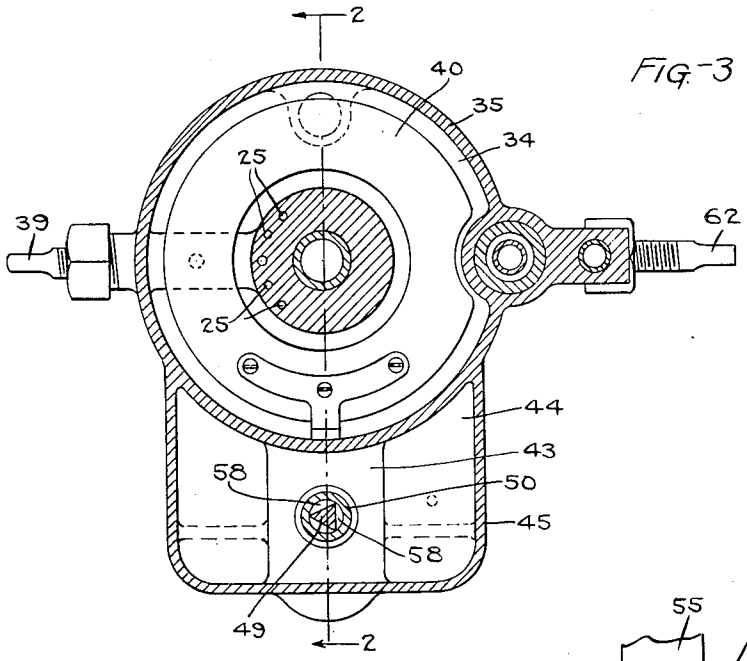



FIG. 5.

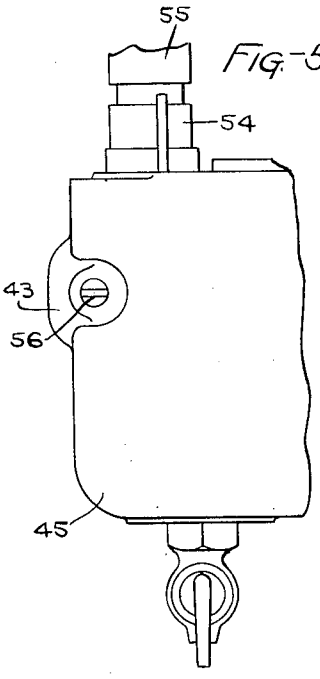
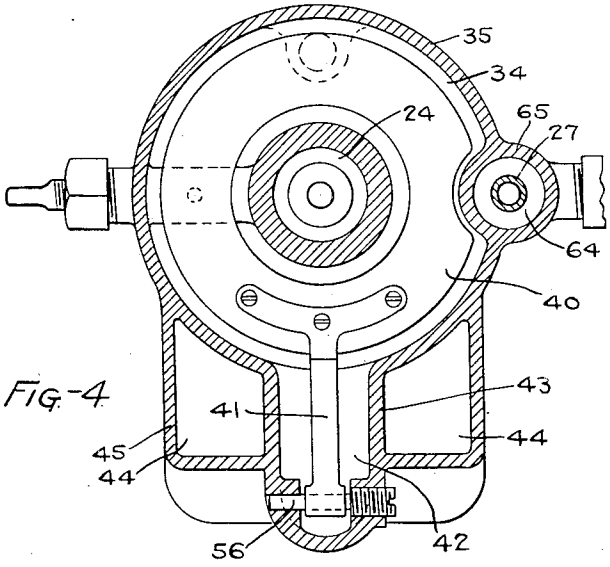



FIG. 4




INVENTOR:
ASHLEY C. BENNETT.
BY Whiteley and Ruckman
ATTORNEYS.

Patented June 12, 1928. 1,673,136

# UNITED STATES PATENT OFFICE.

ASHLEY C. BENNETT, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO IRENE E. BENNETT, OF MINNEAPOLIS, MINNESOTA.

## CARBURETOR.

Application filed May 29, 1920. Serial No. 385,092.

My invention relates to carburetors and has for its object to provide a novel carburetor construction whereby primary air for starting at low speed purposes and full load air, or secondary air as it is sometimes called, will each be individually provided with a special charge of fuel maintained at different levels for the respective air flows with surplus fuel for sudden opening of the throttle. This invention is an improvement upon and adapted to be used in connection with the carburetor described and claimed in my abandoned application filed September 13, 1919, Serial Number 323,452.

It is a particular object of my invention to provide means for admitting fuel to the carburetor controlled in the float chamber such that the fuel admitted must first fill the secondary carburetor feed at a relatively high level before going into the float chamber, where the level of the primary feed is maintained by the float.

The full objects of my invention including those above enumerated will appear more fully and completely in connection with the detailed description thereof and the novel features thereof are particularly pointed out in the claim.

In the drawings illustrating the application of my invention in one form:—

Fig. 1 is a vertical sectional view through the carburetor. Fig. 2 is a vertical part sectional view with some parts broken away of the carburetor bowl only taken at right angles to the view of Fig. 1. Fig. 3 is a sectional plan view on line 3—3 of Fig. 1. Fig. 4 is a sectional plan view on line 4—4 of Fig. 1. Fig. 5 is a side elevation of a part of the portion of the carburetor shown in Fig. 2.

As illustrated, a main casing 10 provides an extended inlet passageway 11, a bowl 12 with a passageway 13 surrounding said bowl and opening through a pipe extension 14 to the exhaust pipe at one side and discharging through a similar extension 15 to the exhaust pipe at the other side. The casing 10 is extended at 16 to provide the inlet opening 17 from the carburetor to the inlet manifold, the usual flanges 18 being connected for attachment to the carburetor.

Primary air passes from passageway 11 through passageways 19, 20, 21 surrounding exhaust pipe 14 and through a passageway 22 forming the stem of valve 23 into mixing chamber 24, from which primary air and fuel go by a multiplicity of apertures 25 into the passageway 11 and expanded chamber 12. Secondary air controlled by valve 23 goes directly through a venturi 26 past a fuel feed pipe 27 extending across said venturi, said feed pipe having in its face toward the expanded chamber 12 a multiplicity of apertures 28.

The above features of my invention are or may be in all particulars similar to the construction described and claimed in my aforesaid copending application, which provide to the carburetor chambers a double feed of gasoline and two sets of air movements, to wit, primary and secondary air each entering the main carbureting chambers from a different point. The primary distinctions of the present invention relate to means for feeding gasoline to the respective feed devices which results in maintaining the gasoline in each of these feed devices at different levels. Extending into the primary mixing chamber 24 is a nozzle 30 formed with apertures 31 and communicating through an aperture 32 with a chamber 33 below the float chamber bowl 34 which is formed by casing 35. Gasoline or other fuel is fed into chamber 33 from float chamber 34 through an aperture 36 in the bottom of chamber 34 past a controlling needle valve 37 and through an aperture 38 directly into the chamber 33, the needle valve 37 being adapted to be set by a hand-controlled member 39 as may be desired. Within float chamber 34 is the usual float 40, which has secured thereto an arm 41 extending into a chamber 42 formed by an extension 43 of casting 35, the chamber 42 being in direct communication with the chamber 34. A second chamber 44 is formed by an extension 45 of casting 35, the chamber 44, as clearly shown in Figs. 2, 3 and 4, surrounds the casting 43 and the chamber extension 42 therein and extends underneath the float chamber 34 surrounding the boss 46 forming the chamber 33. A drain plug 47 is adapted to drain the chamber 34 and a similar plug 48 to drain the chamber 44. The arm 41 of float 40 is pivoted upon a screw member 56 removable from the side of casting extension 43; and said arm engages the lower end of a triangular stem 49 shown in cross-section in Fig. 3, which stem extends through a tubular member 50 screwed into an open-

ing 51 in the top of the casting extension 43. The stem 49 has fast thereon a cap 52 which overlies the top of the tube 50 and above the cap is a needle 53 entering an aperture in the top of a closure plug 54 which communicates with the gasoline feed line 55.

From the foregoing it will be apparent that the normal level of fuel in primary mixing chamber 24 will be the level of the fuel in the float chamber 34 maintained by the float 40. However, as float 40 descends fuel passing needle 53 will flow over cap 52 and enter the chamber 44, which must be filled until the fuel enters cap 52 and reaches the lip 57 of tubular member 50, after which it can flow through passages 58 along the triangular stem 49 into the float chamber 42, 34. From the chamber 44, as shown in Fig. 1, the fuel passes through an aperture 60 by needle valve 61, which is controlled by a hand-setting device 62, and passes into the interior of the feed tube 27. Also the fuel passes through an aperture 63 in the fuel feed pipe 27 into a chamber or well 64 surrounding fuel feed pipe 27 and formed by an extension and modification 65 of casing 35, as best shown in Fig. 4. The chamber 64 is in communication with a passageway or extension communicating with a pipe 66 which in turn enters the passageway 11 as shown in Fig. 1. It will be apparent that at the normal level of fuel in the fuel feed pipe 27 the chamber 64 and tube 66 will be maintained at the level of the lip 57 of the tube 50, which is a materially higher level than that of the float chamber and the primary mixing chamber 24.

When the engine is first started fuel is fed only from the primary mixing chamber 24. Thereafter when operating at high speed or running speed fuel is being fed into the primary mixing chamber 24 and also from fuel feed pipe 27 into the main current of secondary air. It follows that the float will accurately control the feed from both sources, since no fuel can enter the float chamber until and except as the chamber 44 is filled and maintained filled for overflow of fuel over the lip 57, the maximum flow of fuel to both feeds being of course regulated by the hand-controlled valves 39 and 62. In this way a regular and efficient supply of fuel is provided for both primary and secondary feeds at their respectively different levels, and a reserve supply of fuel for secondary feed to be used for high speeds is always available.

I claim:

A carburetor comprising a float chamber having a lateral extension, a reservoir extending around said lateral extension and under said float chamber, said lateral extension having an opening in its upper side, a tube extending from said opening toward the upper end of said reservoir, a stem extending through said tube, said stem being of smaller cross sectional area than the inside of said tube, a fuel supply pipe connected with the upper side of said reservoir, a float in said chamber for lifting said stem, means on the upper end of said stem for shutting off said supply pipe when said stem is lifted, a chamber at the side of said float chamber connected with the bottom of said reservoir whereby the level of fuel in said chamber is maintained substantially the same as in said reservoir, a fuel supply nozzle extending into the forward portion of the air passage of the carburetor from said last mentioned chamber, and a second fuel supply nozzle connected with said float chamber and extending into the rear portion of the air passage of the carburetor.

In testimony whereof I hereunto affix my signature.

ASHLEY C. BENNETT.