Oct. 6, 1925. 1,556,526

C. G. KREBS

DUPLEX CARBURETOR

Filed May 21, 1924 2 Sheets-Sheet 1

Fig. 1.

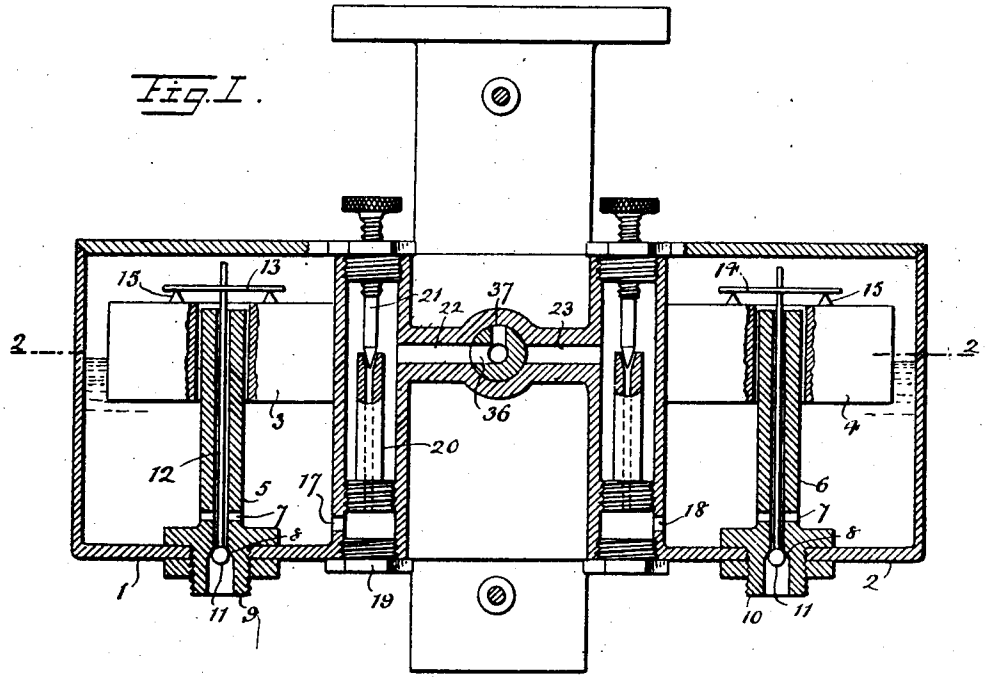
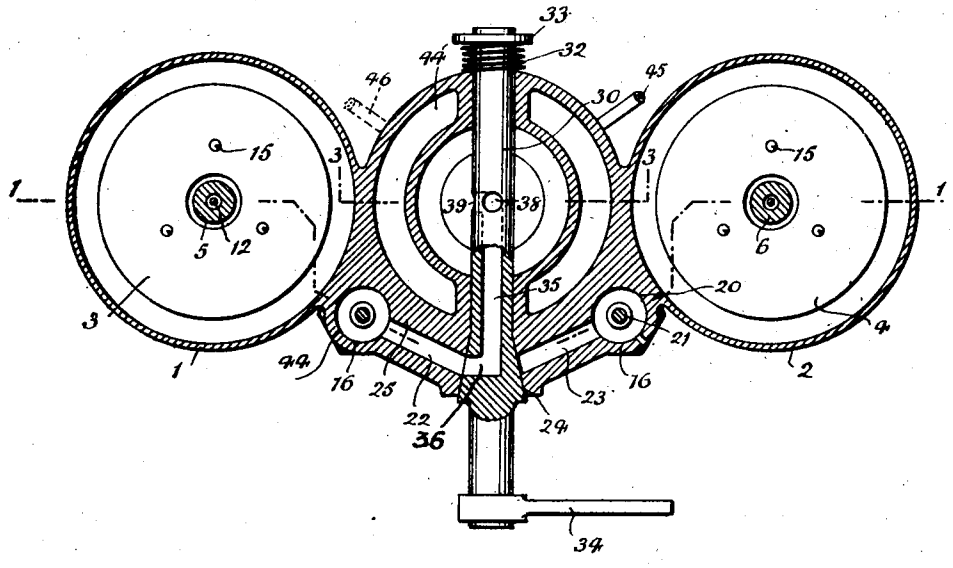


Fig. 2.



WITNESSES

H. T. Walker

A. L. Kitchin

INVENTOR

CAREL G. KREBS

BY Marshall & Co

ATTORNEYS

Oct. 6, 1925.

1,556,526

C. G. KREBS

DUPLEX CARBURETOR

Filed May 21, 1924

2 Sheets-Sheet 2

Fig. 3.

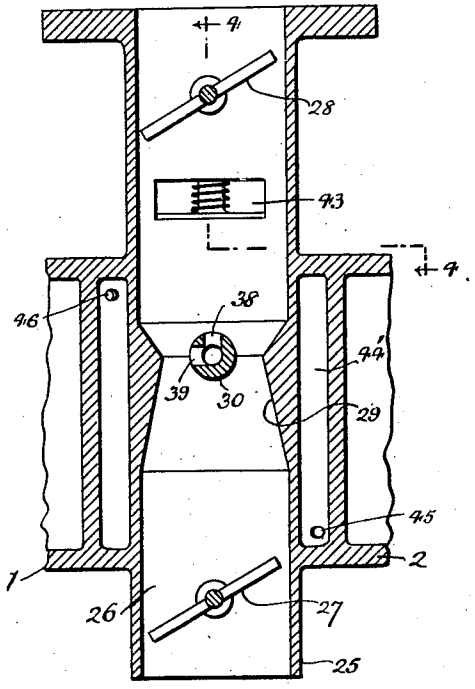
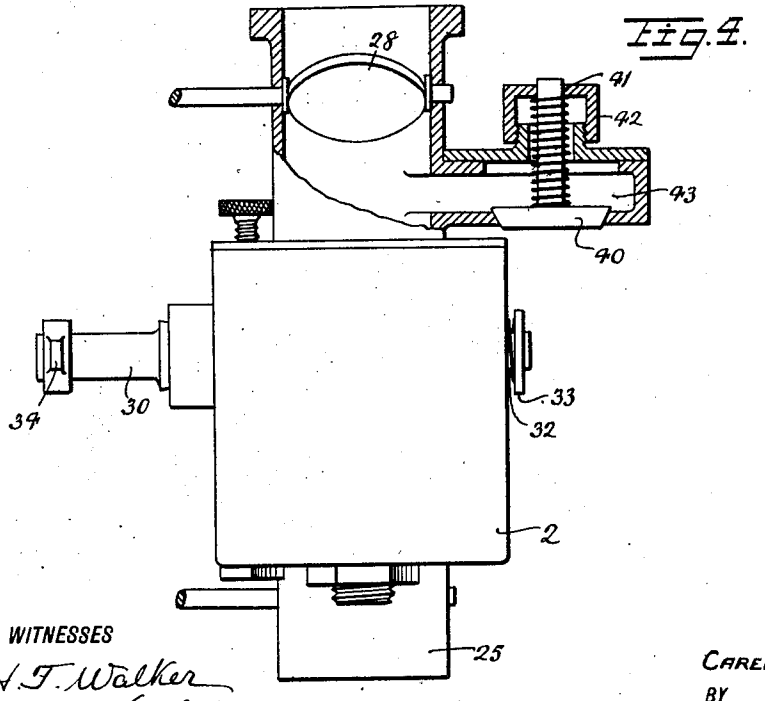


Fig. 4.



WITNESSES

H. T. Walker

A. L. Kitchin.

INVENTOR

CAREL G. KREBS

BY Mitson & Co.

ATTORNEYS

Patented Oct. 6, 1925. 1,556,526

UNITED STATES PATENT OFFICE.

CAREL GOVERT KREBS, OF BROOKLYN, NEW YORK.

DUPLEX CARBURETOR.

Application filed May 21, 1924. Serial No. 714,853.

To all whom it may concern:

Be it known that I, CAREL GOVERT KREBS, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Duplex Carburetor, of which the following is a full, clear, and exact description.

This invention relates to carburetors and has for an object to provide an improved construction wherein two different kinds of fuel may be used without intermixing.

Another object of the invention is to provide a carburetor wherein means are provided for feeding two different kinds of fuel, the same being associated with means for quickly shifting at any time certain parts so that either fuel may be supplied from the carburetor.

A further object, more specifically, is to provide a double lead-in for fuel in the carburetor with a valve structure for automatically shutting off one lead-in when the other is turned on so that only one kind of fuel can be utilized at any given time.

In the accompanying drawings—

Figure 1 is a longitudinal vertical sectional view through a double carburetor, disclosing an embodiment of the invention, the same being taken approximately on line 1—1 of Figure 2.

Figure 2 is a transverse sectional view on the line 2—2 of Figure 1.

Figure 3 is a fragmentary sectional view through Figure 2, approximately on line 3—3.

Figure 4 is an edge view of the structure shown in Figure 1, certain parts being broken away for better illustrating the structure.

Referring to the accompanying drawings by numerals, 1 and 2 indicate float chambers provided with suitable floats 3 and 4 which are loosely arranged in these chambers and loosely slidable on the hollow posts 5 and 6. These posts are each provided with one or more apertures 7 at the bottom and a valve seat 8 below the apertures 7. The threaded outer ends 9 and 10 of the posts 5 and 6 are connected to suitable supplies of fuel, as for instance, gasoline and kerosene. A ball valve 11 is arranged to co-act with each of the seats 8, each valve having a rod 12 extending loosely through the respective posts 5 and 6 and rigidly secured at their upper ends to the disks 13 and 14. Each of the floats 3 and 4 is provided with a plurality of pointed members 15 adapted to engage the respective disks 13 and 14 for raising the disks and the respective rods 12 as well as the valves 11 for closing the passage-ways through the posts 5 and 6. By this construction and arrangement, a certain level of fuel is maintained independently in each of the float chambers 1 and 2. Arranged adjacent each of the float chambers is what may be termed a feeding chamber 16, the respective feeding chambers being in communication with the chambers 1 and 2 through the apertures 17 and 18. The lower ends of the respective chambers 16 are closed by suitable plugs 19 while in these chambers there is provided a hollow feeding member or nozzle 20. A needle valve 21 co-acts with the upper ends of the nozzles 20 for regulating the flow of fuel therethrough. The upper parts of the chambers 16 are in free communication with the respective passage-ways 22 and 23. These passage-ways open into a bore 24 in the casing 25 of the carburetor. This casing is provided with a central passage-way 26 having at its lower end a butterfly valve 27 and also at the upper end a butterfly valve 28. A venturi 29 is also preferably provided and positioned so that the mixture flow control valve 30 will extend through the smallest part thereof. The mixture flow control valve 30 is tapered near one end as shown in Figure 2 so as to fit properly in the tapered end of the aperture 24. A spring 32 acting on a suitable stop 33 maintains the pipe 30 in proper position. This pipe is provided with an operating handle 34 which may extend to any desired point so as to be operated at any time. The mixture flow control valve 30 is provided with a longitudinal bore 35 merging at one end into passage-ways 36 and 37 and at the opposite end into passage-ways 38 and 39.

When the parts are in the position shown in the drawings, fuel will be supplied from the float chamber 1 to the aperture or discharge opening 38. It will, of course, be evident that air will pass around the valve 30 and mix with the fuel above the valve 30 so that a proper mixture may pass out of the carburetor past the valve 28. In order to provide some additional auxiliary air, an auxiliary air supply valve 40 is provided which is held seated by a spring 41 and said spring in turn is maintained under tension

by a cup-shaped nut 42 whereby the tension spring may be varied and, consequently, the suction required to open valve 40 determined. It will be noted that the valve 40 normally closes an aperture in the chamber 43 which is in free communication with the interior of the casing 25 indicated in Figures 3 and 4.

In case the float chamber 1 contains gasoline, a proper supply thereof will be fed to the nozzle 20 and hence to the engine to which the carburetor is connected. After the engine has become heated and it should be desired to use kerosene or other fuel in chamber 2, valve 30 could be shifted a quarter of a turn so that the aperture 37 would come into registry with the aperture 23. This would shut off the passage-way 22 and permit the suction from the engine to draw in kerosene from the float chamber 2. It will be noted that the sprayed fuel passing out through the aperture 38 is quickly mixed with air passing in through the venturi and thereby produce a good explosive mixture by reason of the even distribution of the fuel throughout the air supply. In addition, a preliminary mixing of air is provided in the feed chambers 16 by reason of the fact that each of these chambers is provided with a small air inlet 44 so that the fuel supplied to the outlet 38 is in fact, an extremely rich mixture of fuel and air which is again diluted with air passing through the venturi 29. In case the suction is sufficiently great, a further diluting of the mixture is produced by the passage of air through the chamber 43.

In order to cause a proper action, both with the gasoline and kerosene or other fuel, a water jacket 44′ is provided which is shown as cast integral with the other parts of the carburetor, though if preferred, it might be made separate and connected in any suitable manner. This water jacket surrounds the main air inlet and the venturi 29. A circulation of hot water is provided for this water jacket by having the respective pipes 45 and 46 connected to suitable parts of the water jacket of the engine. When the engine is first started, the gasoline side of the carburetor is used until the engine has become heated and the water also heated. After this has occurred, the kerosene or other fuel may be turned on to the other chamber and by reason of the heat, as well as the structure heretofore described, properly vaporized and more or less gasified so as to produce desirable results.

What I claim is:—

1. A duplex carburetor, comprising a casing provided with a mixture flow control valve having a pair of discharge openings midway its length, a pair of inlet openings near one end functioning at different times and a central bore connecting said discharge openings with said inlet openings, a pair of float chambers adapted to receive different fuels, means providing a passage-way from the respective float chambers to said inlet openings, said inlet openings being arranged at an angle to each other whereby the mixture flow control valve may be turned to one position for feeding fuel from one float chamber and turned to a second position for feeding fuel from the other float chamber.

2. A carburetor, comprising a casing having a central air passage-way, a valve arranged near each end of the passage-way, a mixture flow control valve extending through said casing, said mixture flow control valve having a pair of apertures positioned centrally of the air passage-way and extending at right angles to each other, said mixture flow control valve having a longitudinal passage-way merging near one end into right angle inlet openings, a pair of fuel supply chambers having discharge openings extending to said mixture flow control valve so as to be brought into registry with one of said inlet openings thereof according to the position of the mixture flow control valve, a fuel feeding nozzle arranged in each of the fuel supply chambers, and a float chamber for maintaining a supply of fuel in each of the fuel supply chambers.

3. In a carburetor of the character described, a mixture flow control valve for controlling the fuel discharged from the carburetor, said mixture flow control valve comprising a rod having a longitudinal bore for part of its length, said bore at each end merging into apertures arranged at right angles to each other whereby a quarter of a turn of the pipe will bring either aperture of both pairs uppermost.

CAREL GOVERT KREBS.