July 23, 1940. H. W. FARR 2,208,864

CARBURETOR DEVICE

Filed Dec. 16, 1937

FIG. 1.

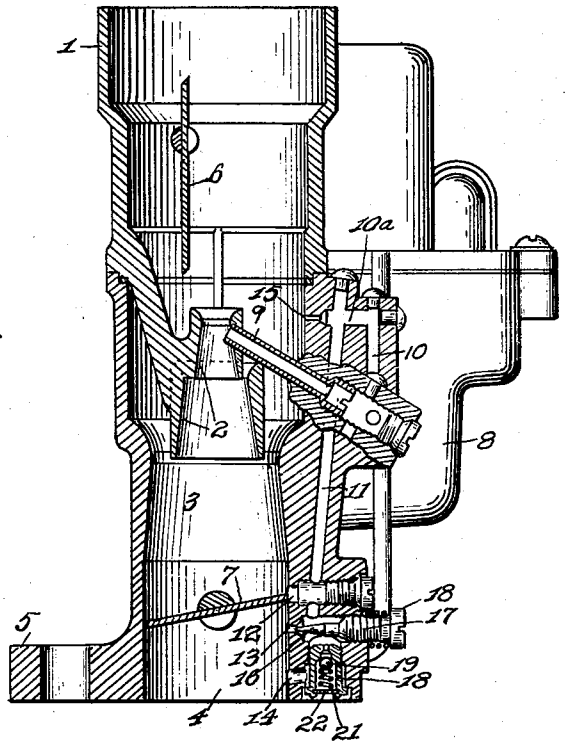
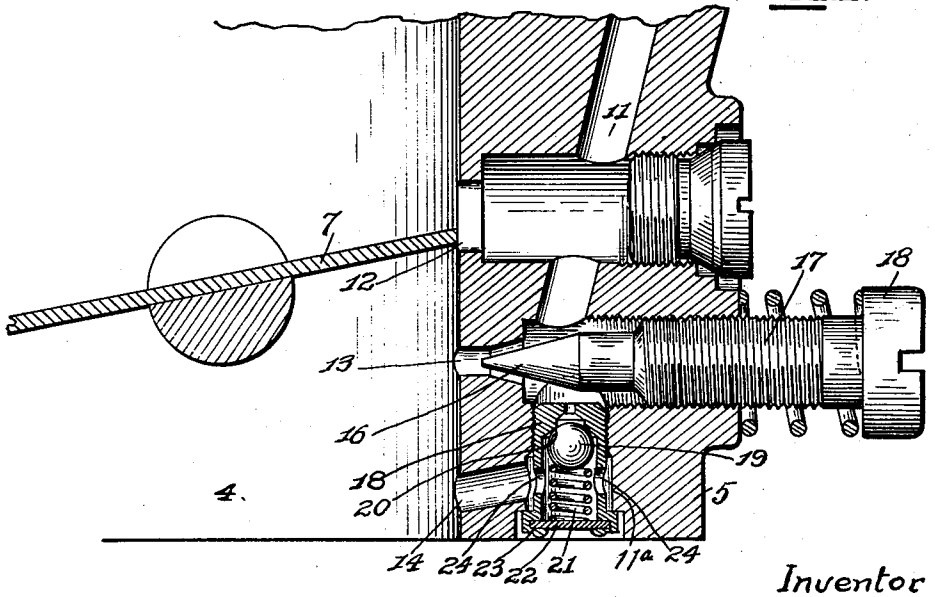


FIG. 2.



Inventor
Henry W. Farr
By Donald U. Rich
Attorney

Patented July 23, 1940 2,208,864

UNITED STATES PATENT OFFICE

2,208,864

CARBURETOR DEVICE

Henry W. Farr, Royal Oak, Mich., assignor to Carter Carburetor Corporation, St. Louis, Mo., a corporation of Delaware

Application December 16, 1937, Serial No. 180,107

3 Claims. (Cl. 261—41)

This invention relates to carburetors for internal combustion engines and consists particularly in novel means for adjusting the fuel mixture supplied by the carburetor, particularly when the associated engine is being used as a brake.

Many automobile drivers frequently coast with the engine in gear and the throttle valve substantially closed so that the engine functions as a brake tending to slow down the vehicle. Under these conditions the carburetor idling and low speed system is exposed to abnormally high suction and, in some cases, the fuel supplied is not adequate to maintain even running of the engine, due to the restrictions in the system, with the result that the engine audibly misses and "pops" or sputters. I have found that by enriching the mixture supplied when the idling ports are exposed to such abnormally high suctions, smooth, quiet running of the engine can be maintained.

Accordingly, an object of the present invention, is to provide means for enriching the fuel mixture supplied by the idling system when the suction applied thereto exceeds normal idling suction.

This object and other more detailed objects hereafter appearing are attained by the structure illustrated in the accompanying drawing in which:

Fig. 1 is a vertical sectional view of a carburetor embodying the invention, and

Fig. 2 is an enlarged view of a portion of the structure in Fig. 1.

The carburetor shown in Fig. 1 comprises a downdraft mixture conduit including air horn 1, venturis 2, mixing chamber 3, and outlet portion 4, flanged as at 5 for attachment to the intake manifold (not shown) of an associated internal combustion engine. The usual choke valve 6 and throttle valve 7 are pivotally mounted within the mixture conduit and provided with any suitable operating mechanism. Adjacent the mixture conduit is a constant level chamber 8 from which fuel is supplied by suction to the mixture conduit through main fuel nozzle 9 and an idling system including passages 10, 10a and 11, the latter discharging through a port 12 adjacent the edge of throttle valve 7 when closed, and additional passage ports 13 and 14. An air bleed is provided at 15 so that a rich emulsion of air and vaporized fuel is supplied through the idling ports, this being added to air which passes around the throttle valve through upper port 12 when the throttle is closed to provide the proper idling mixture.

Port 18 is also disposed to discharge idling mixture into the mixing conduit beneath the throttle and is controlled by a needle valve 16 forming the inner end of a screw 17 having a kerfed head 18 accessible from outside the carburetor body for adjusting the idling mixture. A vertical passage 11a extends downwardly from passage 11 through flange 5 and connects passage 11 with the lowest idling port 14. Passage 11a threadedly mounts a threaded, hollow valve housing 18, enclosing a ball valve 19 yieldingly urged against valve seating shoulder 20 near the upper end of housing 18 by a coiled spring 21. Spring 21 seats, at its lower end, on a plate 22 carried in groove 23 at the bottom of valve housing 18. The valve housing has central openings 24 in the wall thereof providing communication between port passage 14 and the interior of the housing. Thus ball valve 19 controls communication between idling passage 11 and port 14 and is exposed through port 14 and opening 24 to the suction in the mixture conduit posterior to the throttle valve.

Spring 21 is sufficiently strong to maintain ball valve 19 against its seat at all times during normal operation of the carburetor, that is, when the suction applied to the ball valve is not in excess of the normal idling suction which ordinarily, corresponds with a manometer reading of 17 or 18 inches of mercury. When the associated engine is being operated by a force other than the explosion in its firing chamber, that is, when the engine is being used as a brake, the suction posterior to the throttle valve substantially exceeds normal idling suction and may reach as much as 24 inches of mercury. Under such conditions, ball 19 will be unseated, permitting the discharge into the mixture conduit of additional rich mixture supplied through passage 11. This has the effect of substantially enriching the total idling mixture, including air supplied through air bleed 15 and port 12 around the edge of the throttle valve and fuel supplied through passages 10, 10a and 11.

The fuel discharge means, including the idling system as shown in the drawing, is in general well known in the art and these features may be modified as desired. The structure illustrated may be modified in other respects, as will occur to those skilled in the art, and the exclusive use of all such modifications as come within the scope of the appended claims is contemplated.

I claim:

1. In a carburetor for an internal combustion engine, a mixture conduit, a throttle valve therein, an idling passage having a plurality of branches for discharging fuel posterior to said valve when closed, and a yielding suction operated valve normally closing one of said branches and adapted to open when exposed to greater than normal idling suction so as to enrich the mixture supplied by said passage.

2. In a carburetor for an internal combustion engine, a mixture conduit, a throttle valve therein, an idling passage including port means for discharging fuel into said conduit during idling and part throttle operation of the carburetor, a suction-operated valve in said passage, and means for maintaining said valve closed during normal idling operation, said means being adapted to yield when said valve is exposed to greater than idling suction to increase the fuel discharged by said passage.

3. In a carburetor for an internal combustion engine, a mixture conduit, a throttle valve therein, an idling system for supplying fuel to said conduit when said valve is closed, said system communicating with said conduit through port means, and a suction operated valve in said system adjacent said port means and constructed and arranged to open only when greater than normal idling suction is applied to said port means to increase the fuel supplied by said system.

HENRY W. FARR.