

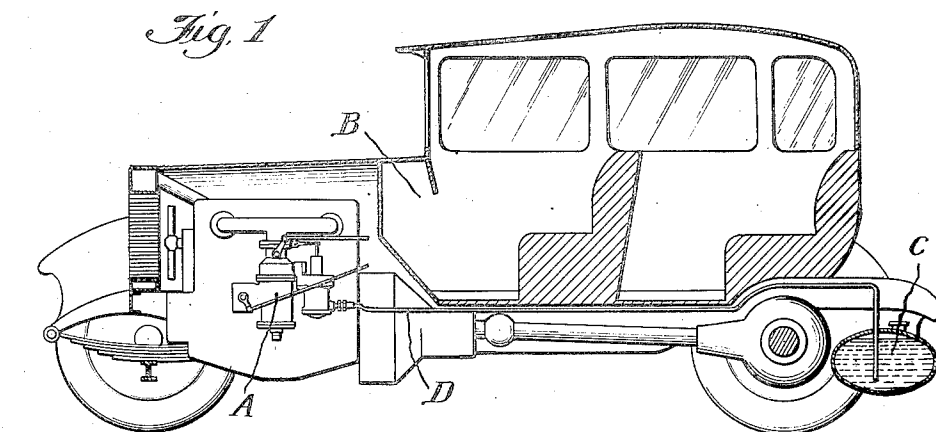
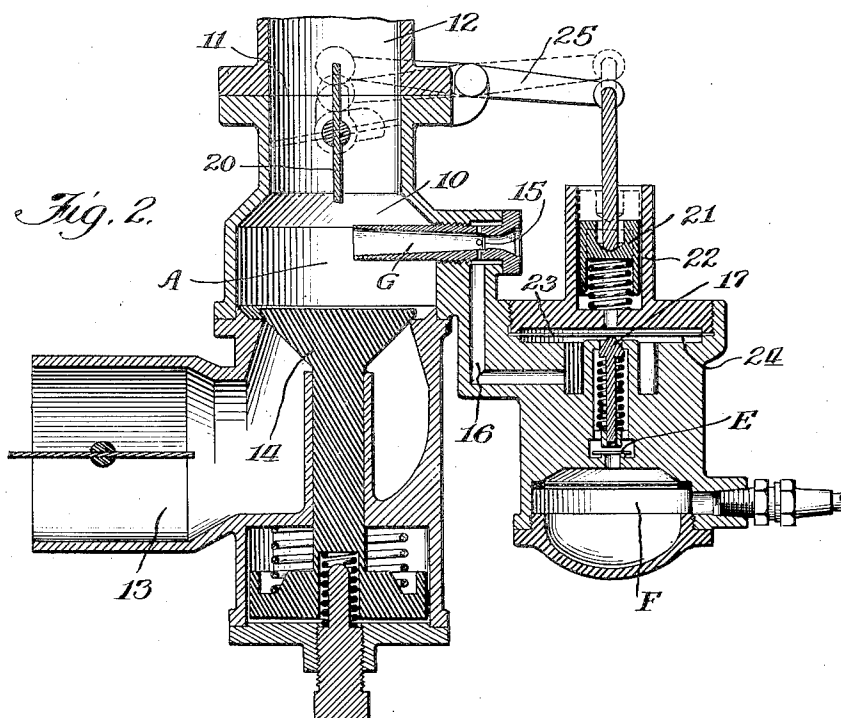
Nov. 1, 1932.

R. F. BRACKE

1,885,408

FUEL FEED SYSTEM FOR MOTOR VEHICLES

Filed April 18, 1928



Inventor

Robert F. Bracke

By Williams, Bushung, McCabe + Noble

Attys.

UNITED STATES PATENT OFFICE

ROBERT F. BRACKE, OF CHICAGO, ILLINOIS, ASSIGNOR TO CURTIS B. CAMP, TRUSTEE,
OF GLENCOE, ILLINOIS

FUEL FEED SYSTEM FOR MOTOR VEHICLES

Application filed April 18, 1928. Serial No. 270,916.

My invention relates to improvements in a fuel feed system for motor vehicles.

One of the objects of my invention is to provide an improved fuel feed system for motor vehicles.

Another object is to provide a fuel feed system for motor vehicles which affords smooth acceleration of the vehicle either from a standstill or as during the sudden increase of speed at which the vehicle is moving.

Another object is to provide a fuel feed system for motor vehicles wherein erratic carburetor performance due to back suction in the fuel feed passage to the carburetor as from the inertia of fuel therein upon sudden acceleration of the vehicle, is entirely precluded.

A further object is to provide a fuel feed system for motor vehicles wherein the mechanism for precluding back suction in the fuel feed passage upon acceleration of the vehicle becomes operative only when the vehicle is accelerated quickly in a forward direction.

Other objects and advantages will be hereinafter described.

I have illustrated an embodiment of my invention in the accompanying drawing forming a part of this application in which Figure 1 is a sectional view through a motor vehicle embodying my improved fuel feed system; and

Figure 2 is an enlarged sectional view of a part of the mechanism shown in Fig. 1.

In general, my improved fuel feed system is intended for use with a carburetor A for the internal combustion engine of the vehicle B wherein a main fuel supply tank C for the carburetor is carried upon the rear portion of vehicle B and the fuel therefrom conveyed by a pipe D extending longitudinally throughout the major length of the vehicle to carburetor A, thereby providing a fuel feed passage through which the entire supply of fuel for the carburetor must pass. With reference to Fig. 2, the principal feature of the fuel feed system consists in the provision of a check valve E disposed in the fuel passage F through which fuel from pipe D is con-

ducted in passing to the fuel feed nozzle G of carburetor A.

The carburetor illustrated in Fig. 2 is of the vacuum feed or fuel lift type which is fully illustrated and described in my co-pending application for patent on vacuum feed carburetor, Serial No. 155,598, which was filed on December 18, 1926. Briefly, this type of carburetor consists of an induction passage 10 which is directly connected at 11 to the intake manifold 12 of the internal combustion engine of the vehicle. A secondary air intake passage 13 is provided to admit air to the induction passage 10 when the depression in the latter passage exceeds a predetermined degree, which depression is determinable by a spring pressed control valve 14 interposed between inlet 13 and induction passage 10.

The fuel nozzle G is of the Venturi type and possesses suction multiplying properties. That is, the suction or depression at its throat 15 is several times greater than the depression of induction passage 10 so that fuel may be lifted and drawn from the main supply tank C through pipe D and passage F and delivered to the nozzle through a passage 16 which interconnects passage F and the apertures 15 of the fuel nozzle.

The valve 17 is interposed between passages F and 16 for the purpose of maintaining the quantity of fuel delivered to the fuel nozzle in proper proportion to the induction passage depression. Hence when in operation there is normally an uninterrupted passage between the main fuel tank C and the fuel nozzle G. In my improved fuel feed system check valve E serves to close this uninterrupted passage upon any back-suction in pipe D provided, of course, that such back-suction is greater than the depression in passage 16. At all other times the check valve E is open and free passage of fuel through passages F and 16 is had.

The carburetor A is further provided with mechanism for momentarily opening valve 17 to a greater than normal degree upon the quick opening of its control throttle valve 20. This mechanism consists in a plunger 21 disposed within a cylinder 22 which is connected

to a confined space 23 having for one wall a diaphragm 24 which, when flexed by movement of piston 21, will engage with and open valve 17. In the normal operation of the carburetor diaphragm 24 serves to operate valve 17 by the application of atmospheric pressure as the depression in passage 16 varies. Piston 21 is connected by rock arm 25 to throttle valve 20.

My improved fuel feed system becomes operative for the purpose intended whenever vehicle B is moved forwardly with such speed as to cause the fuel then standing in pipe D by virtue of its inertia to lag behind the moving vehicle and pipe D and thus create back-suction in passage F. Without check valve E this back-suction would deprive nozzle G of an ample and proper supply of fuel at the very time when it is most needed, i. e. during the initial movement or get-away of the vehicle. Check valve E, however, upon initial movement of the vehicle as described instantly closes upon the creation of back-pressure in passage F and fuel then standing in passage 16 and the interconnected parts of the fuel line above check valve E is free to pass to nozzle G and be delivered into the induction chamber 10. At this time the diaphragm 24 is depressed both by the action of the air pressure on its upper surface, created by the sudden downward movement of the piston 21, and by the increased suction on its under surface occurring at this time because of the sudden opening of the throttle 20 and the sluggish action of the valve 14 due to its dash-pot. It is well recognized in the automotive art that for a quick movement or initial get-away the fuel feed nozzle of the carburetor must deliver a uniform and adequate supply of fuel which is usually equivalent to its maximum fuel delivery. This condition must be established for those few seconds required to accelerate the vehicle to its normal required speed.

In the fuel feed system herein described I not only prevent back-suction in the fuel line from impairing the full and adequate supply of fuel to nozzle G for the short time required in accelerating the vehicle but, by virtue of piston 21, cylinder 22 and diaphragm 24 I momentarily increase the supply of fuel to the fuel nozzle at the very time when maximum fuel delivery is most needed.

It is apparent, therefore, that I have not only prevented back-suction in the fuel delivery line but I have actually created slight momentary back-pressure. A vehicle equipped with my improved fuel feed system will, therefore, accelerate quickly with perfect uniformity and smoothness, thus eliminating the serious disadvantage now possessed by such fuel feed system as are in use at present and which will upon the quick initial movement of the vehicle or other acceleration cause the vehicle to lunge with erratic forward

movement and consequent strain to the mechanical speed transmitting and translating elements.

What I claim is new and desire to secure by Letters Patent of the United States is:

1. The combination with a carburetor for a motor vehicle engine including a fuel nozzle and a throttle valve, a main supply tank, a normally uninterrupted passage connecting the main tank with the fuel nozzle of the carburetor and a check valve in the passage at the carburetor end of the passage for preventing back suction at the fuel nozzle as upon the sudden forward movement of the elements and consequent inertia of fluid in the passage and means operable by said throttle for momentarily creating back pressure in that portion of the fuel passage between the check valve and the nozzle when the throttle is quickly opened.

2. In combination, a carburetor for a motor vehicle engine having a throttle valve and a nozzle possessing suction multiplying properties, a main fuel supply tank at the rear of the carburetor and remote therefrom, a normally uninterrupted passage interconnecting the inlet of the fuel nozzle and the main supply tank, means associated with the forward end of the passage for closing the passage upon the building up of back suction in the passage an other means associated with the throttle valve for momentarily creating back pressure in that portion of the passage immediately adjacent to the inlet of the nozzle.

3. The combination with a carburetor for motor vehicle engines including a fuel nozzle and a main fuel supply tank, a normally uninterrupted passage interconnecting the main tank with the fuel nozzle of the carburetor, a normally closed suction operated valve interposed in the passage, means associated with the valve to momentarily open the same to a greater degree than normal and adapted to create a back pressure in the passage adjacent the nozzle, and a check valve in the passage between the first named valve and the tank for preventing back suction at the fuel nozzle as upon sudden acceleration and forward movement of the vehicle and consequent inertia of fuel in the passage.

4. In a fuel feed system for motor vehicles, the combination with a carburetor having a throttle valve and a fuel nozzle, a low level fuel supply tank remote therefrom, a fuel passage between the tank and the nozzle, a diaphragm operated valve interposed in the passage, a cylinder communicating with said valve, a plunger operating in the cylinder and having connection with the throttle valve to move toward the diaphragm operated valve when the throttle valve is opened wide to create a back pressure in the passage adjacent the nozzle, and a check valve in the

passage between the diaphragm operated
valve and the tank to prevent back suction
on the nozzle by the inertia of the fuel in the
fuel passage at the time of acceleration of the
engine and sudden forward movement of the
5 vehicle.

In witness whereof, I hereunto subscribe
my name this 14th day of April, 1928.

ROBERT F. BRACKE.

10

15

20

25

30

35

40

45

50

55

60

65