Feb. 28, 1939. F. C. DALTON 2,148,929

PUMP FOR FUEL LINE CLEARING AND VAPOR LOCK REMOVING DEVICE

Original Filed Oct. 20, 1936 2 Sheets-Sheet 1

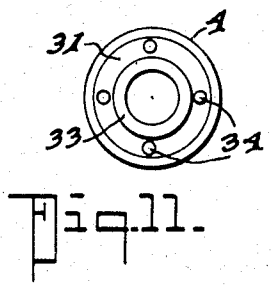


Fig. 11.

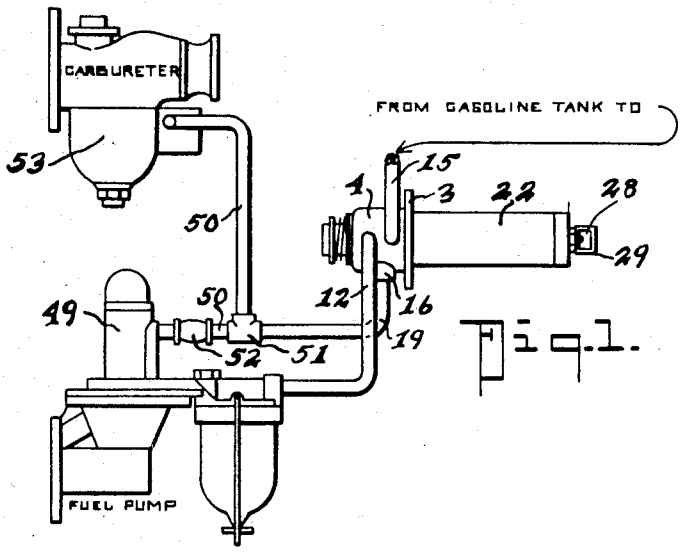


Fig. 1.

Fig. 5.

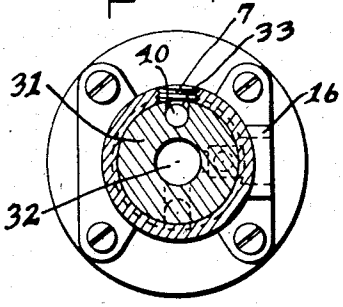


Fig. 6.

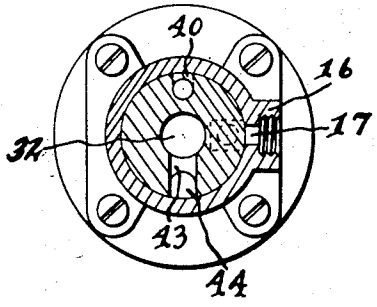
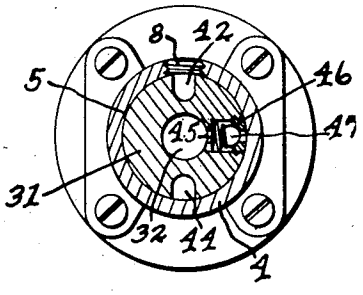


Fig. 7.



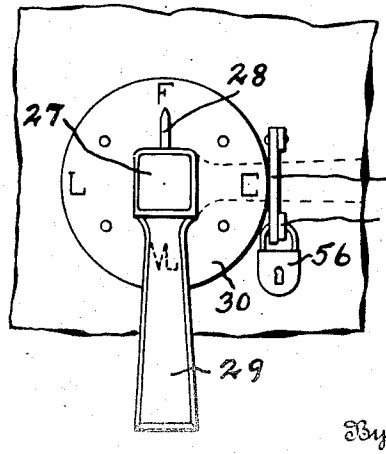


Fig. 10.

Inventor

F. C. DALTON

Albert E. Dieterich

and

By Theodore W. Rutley

Attorneys

Feb. 28, 1939. F. C. DALTON 2,148,929

PUMP FOR FUEL LINE CLEARING AND VAPOR LOCK REMOVING DEVICE

Original Filed Oct. 20, 1936 2 Sheets-Sheet 2

Fig. 2.

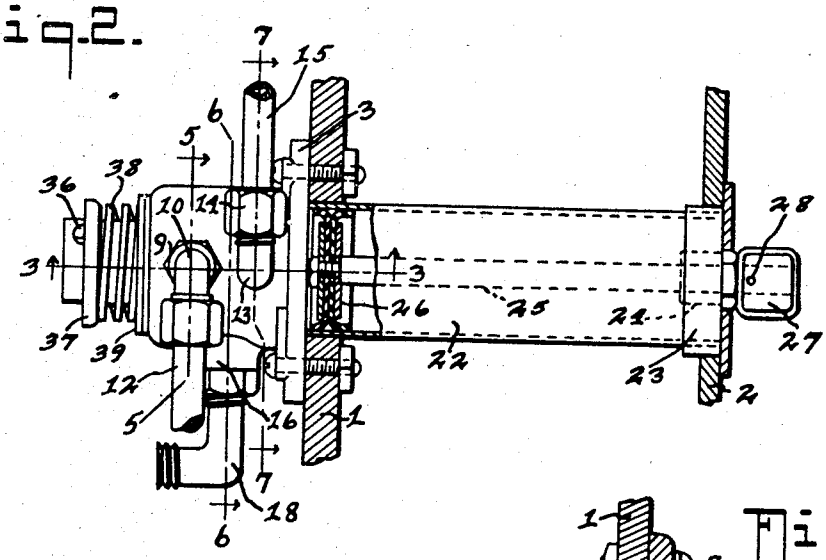


Fig. 3.

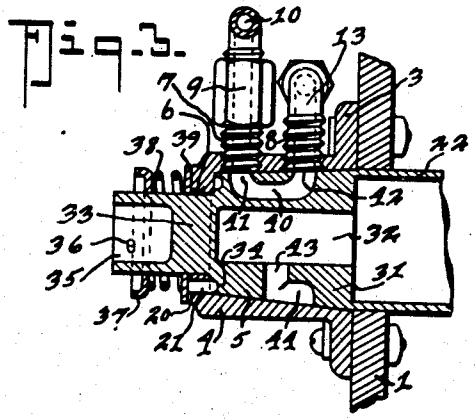


Fig. 4.

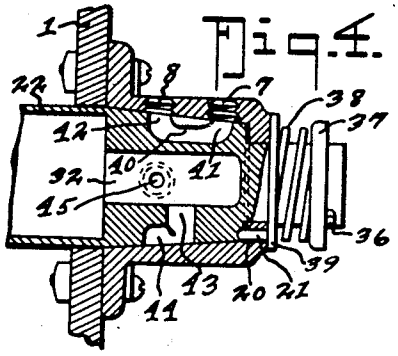


Fig. 8.

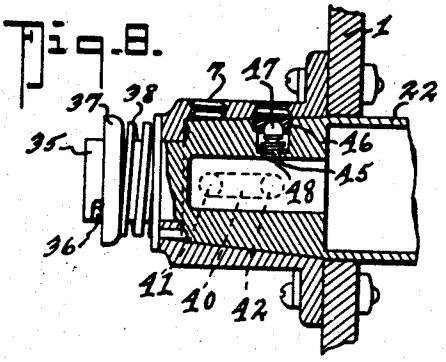
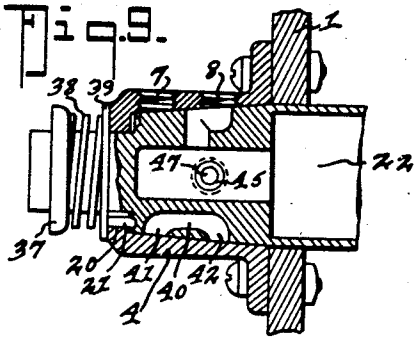


Fig. 9.



Inventor

F. C. DALTON

By Albert E. Dieterich and Theodore H. Rutley

Attorneys

Patented Feb. 28, 1939 2,148,929

UNITED STATES PATENT OFFICE

2,148,929

PUMP FOR FUEL LINE CLEARING AND VAPOR LOCK REMOVING DEVICE

Frederick C. Dalton, Portland, Oreg.

Original application October 20, 1936, Serial No. 106,703. Divided and this application September 8, 1937, Serial No. 162,945

2 Claims. (Cl. 103—10)

My invention relates to internal combustion engine fuel feeding apparatus and it more specifically relates to motor vehicles using hydrocarbon fuel motors. These motors are usually provided with carburetors, of one type or another, to which fuel is delivered either by means of a fuel pump or vacuum tank from a reservoir or supply tank located at a remote place.

The fuel line from supply tank to carburetor sometimes becomes stopped up by foreign matter or a vapor lock may occur; in either event the proper operation of the engine is interfered with or the engine stopped. My invention has for its primary object to provide a simple, inexpensive, easily operable device by the use of which the fuel line may be quickly and easily cleared out, vapor locks broken, and in the event that the fuel pump (or vacuum tank if such be used in lieu of a fuel pump) should become broken or fail to operate, fuel may nevertheless be supplied to the carburetor for such length of time as may be required to reach a repair station.

Another object is to provide a device which can be used to lock the fuel line, shutting off the supply to the carburetor, thus preventing theft of the car.

Other objects will in part be obvious and in part pointed out hereinafter.

To the attainment of the aforesaid objects and ends the invention further resides in those novel combinations, constructions and arrangement of parts which will be described in detail hereinafter and then be specifically pointed out in the appended claims, reference being had to the accompanying drawings in which:

Fig. 1 is a view, somewhat diagrammatic, illustrating the invention.

Fig. 2 is a top plan view of the mechanism constituting the essential part of the invention, parts being broken away.

Fig. 3 is a detail vertical section on the line 3—3 of Fig. 2, the valve being shown in the normal position.

Fig. 4 is a view like Fig. 3 but looking in a direction 180° therefrom.

Fig. 5 is a cross section on the line 5—5 of Fig. 2.

Fig. 6 is a cross-section on the line 6—6 of Fig. 2.

Fig. 7 is a cross-section on the line 7—7 of Fig. 2.

Fig. 8 is a view similar to Fig. 3 with the valve set to connect the fuel supply line to the carburetor and cut out the connection to the fuel pump.

Fig. 9 is a view similar to Fig. 3, with the valve set to connect the hand pump with the fuel supply line and to shut-off the connections to the fuel pump and carburetor.

Fig. 10 is a face view of the dial plate and the handle with pointer cooperating therewith, also showing a locking device.

Fig. 11 is a detail end view of the valve.

In the drawings in which like numerals of reference indicate like parts in all the figures, 1 and 2 represent suitable supports, which, for example, may be the dash and instrument boards respectively of a motor vehicle.

Referring now more particularly to Figs. 2 and 10 inclusive it will be seen that the valve case 4 has a flange 3 by means of which it may be rigidly mounted on the support 1. The case 4 has a tapering bore 5 constituting a valve seat, and a cylindrical bore 6 through which the stub shaft 33, of the valve 31, passes. It also has three ports, two of which, 7 and 8 are adjacent one another while the third 17 is at right angles to the other two. A pipe fitting 9 is screwed into port 7 and connects by an elbow 10 and nut 11 with the pipe 12 that runs to the inlet side of the fuel pump 49, driven by the engine in the usual manner (not shown).

An elbow 13 is screwed into port 8 and connects through nut 14 to the fuel supply line 15, from the fuel tank (not shown).

The valve case 4 has a boss 16, at the port 17, into which is screwed an elbow 18 to which the pipe 19 is connected.

The pipe 19 is joined through a suitable fitting 51 to the pipe 50 which connects the outlet of the fuel pump 49 to the fuel inlet of the carburetor 53.

Some fuel pumps 49 have a back check valve where pipe 50 connects, but when a pump is used which has no back check valve (or when a vacuum tank is employed in lieu of a fuel pump) I prefer to insert a back check valve 52 in the line 50 between the fuel pump and fitting 51.

The valve casing 4 has a pin hole 20 in which a latch pin 21 is located, the pin being designed to engage in the recesses 34 in the shouldered end of the valve 31.

The hand pump barrel 22 is rigidly secured to the valve 31 (or formed integral therewith) and at its dash end it has a cap 23 having a bearing bushing 24 for the piston rod 25 that carries a suitable piston 26 and is of an angular cross-section, so that by turning the shaft 25 the barrel 22 and valve 31 may be turned as one. In order that the barrel 22 and the valve 31 may be turned and the piston 26 worked back and forth in the barrel, a suitable handle 27—28 is secured

on the outer end of the rod 25. The head 27 of the handle carries a pointer 28 which cooperates with the dial 30; the position on the dial being respectively indicated as F, C, VL and L.

The valve 31 has a master bore 32 communicating with the interior of the barrel 22. It also has a duct 40 with ports 41—42 for effecting communication between ports 7 and 8; a port 43 with branch 44 to effect communication between the master bore 32 and ports 8 and 17, respectively, at times, and a port 45 containing a check valve 47, valve spring 48 and a valve seat 46, for effecting communication between the master bore 32 and port 8 at times.

The valve 31 has a stub shaft 33 fitting the cylindrical bore 6 of the case 4 and carrying a disc 39, a spring 38, cup washer 37 and dowel pins 36 in apertures 35. The disc 39 presses against pin 21 and forces it into the recesses 34 in the valve 31. Since the end of the pin 21 which enters recesses 34 is rounded or of spherical form, and as the recesses 21 are of like form and shallow, it will be obvious that when the valve is turned the pins will ride out of the recess, against the tension of spring 38 exerted through plate 39, until the next recess comes into position.

If desired any suitable locking means may be employed to secure the parts in the closed or inoperative position "L" (see Fig. 10). For example such a device may comprise a pivoted bar 54 adapted to overly the handle 29 when in the "L" position (dotted lines in Fig. 10) and be secured to a post 55 by a suitable padlock 56.

Operation

When the parts are positioned as indicated in Fig. 1 and shown in detail in Figs. 2 to 7 inclusive and Fig. 10, they are in their normal positions. Thus fuel is drawn from the supply tank (not shown) via pipe 15, through ports 8, 42, duct 40, ports 41, 7, pipe 12 to the intake of the motor operated fuel pump 49. From the pump 49 the fuel is forced in the usual way via pipe 50 to the carburetor 53 where it is carburetted and from which it is drawn into the engine in the well known way.

Should however a vapor lock occur or the fuel line become clogged, the operator turns the handle 180 degrees from the position in Figs. 1 and 10 thereby turning valve 31 so that it assumes the position shown in Fig. 9. In this position the ports 7 and 17 are closed but port 8 is in communication with master bore 32 via port 43—44. By reciprocating rod 25 back and forth fuel is drawn from the tank into the barrel 22 and expelled therefrom back to the tank thereby clearing pipe line 15, after which the valve is turned back to its normal position and the engine started again.

Should the mechanically actuated fuel pump 49 fail to operate at any time fuel may be pumped to the carburetor by moving valve 31 to the position shown in Fig. 8 (pointer 28 pointing to "C" on dial 30), and reciprocating rod 25 as needed.

By turning handle 28 to the dotted line position of Fig. 10 and locking it, all fuel connections are closed so that it will be impossible for the pump 49 to draw fuel from the tank and deliver it to the carburetor, or for the hand pump 22—25—26, to be used for that purpose.

This application is a division of my application filed October 20, 1936, Serial No. 106,703, patented Nov. 9, 1937, No. 2,098,720.

While I have shown a preferred embodiment of the invention I do not wish to be limited thereto, since changes in the details of construction and arrangement of parts may readily be made without departing from the invention and the scope of the appended claims.

From the foregoing description taken in connection with the accompanying drawings it is thought the construction, combination, and arrangement of parts will be readily understood.

What I claim is:

1. A device of the class described comprising a fixedly mounted valve case having a bore constituting a valve seat and a reduced bore constituting a bearing, a rotary valve mounted in said seat and having a stub shaft projecting through said reduced bore, a spring held on said stub shaft to keep the valve seated, a latch pin carried by said case, said valve having at least one latch pin recess, means continuously tending to force said pin into said recess, said case having a port, and said valve having a port to cooperate with the port of said case, a cylinder secured to said valve co-axially, a piston in said cylinder, a piston rod passing through a bearing in the end of said cylinder and having provisions in virtue of which when said rod is turned it will turn said cylinder and valve, said valve having a connecting duct communicating with the interior of said cylinder and said valve port through which duct the fluid to and from the cylinder may be passed.

2. A device for the purposes stated, comprising a valve case having a mounting flange and being provided with a tapering valve seat and a cylindrical bore, said case having two adjacent ports and a third port at a place remote from the first two ports, a valve fitting in said seat and having a stub shaft to fit said cylindrical bore and project to the outside thereof, a spring and washers on said stub shaft for holding said valve seated, said valve having a master bore, a port for effecting communication between said master bore and said third port of the case at times and having another port with check valve for effecting communication between said master bore and one of said two adjacent ports at the same time, and having a by-pass duct to effect communication between said two ports only at another time and means including a hand pump connected to said valve and communicating with said master bore for turning said valve and causing flow of fluid through said valve's ports which communicate with said master bore.

FREDERICK C. DALTON.