

Oct. 14, 1941.

A. J. SCOTT, JR

2,259,047

AUTOMATIC FUEL CUTOFF

Filed June 6, 1939

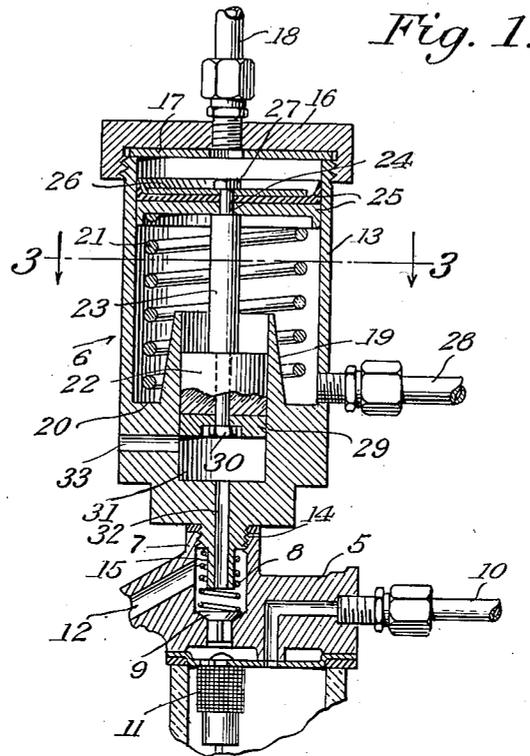


Fig. 2.

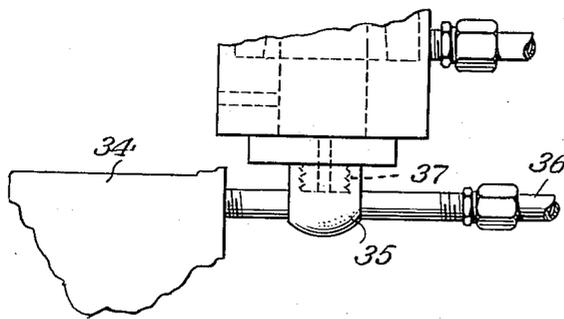
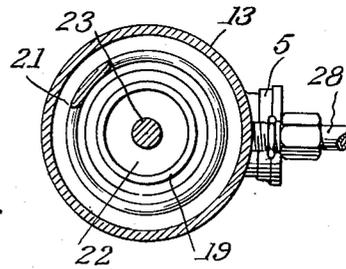


Fig. 3.



Archibald J. Scott Jr.
INVENTOR

By Victor J. Emanuel, Jr.
ATTORNEYS

ATTORNEYS

UNITED STATES PATENT OFFICE

2,259,047

AUTOMATIC FUEL CUTOFF

Archibald J. Scott, Jr., West Warwick, R. I., assignor of one-half to Fred D. Briggs, East Greenwich, R. I.

Application June 6, 1939, Serial No. 277,740

4 Claims. (Cl. 123—196)

The present invention relates to an automatic fuel cut-off for internal combustion engines and the like.

An important object of the present invention resides in the provision of a device adapted to be interposed between the oil pressure line and fuel pump of an internal combustion engine or the like whereby a reduction of pressure in the oil line will cause the device to operate to cut off the supply of fuel to the engine thereby arresting motion of the same.

Another object of the invention resides in the provision of a device having the above characteristics actuated by the pressure of the lubricating system whereby if the oil pressure becomes dangerously low, air will be drawn into the fuel pump in the place of fuel thereby stopping motion of the engine to prevent injury to the moving parts of the same due to improper lubrication.

The invention will be fully and comprehensively understood from a consideration of the following detailed description when read in connection with the accompanying drawing which forms a part of the application.

In the drawing:

Figure 1 is a vertical sectional view of the device being shown attached to a fuel pump.

Figure 2 is a fragmentary detail view of the device attached to a modified form of fuel pump, and

Figure 3 is a transverse sectional view taken substantially on line 3—3 of Figure 1.

Referring to the drawing for a more detailed description thereof, there is disclosed a fragmentary sectional view of a conventional fuel pump 5 to which the cut-off device generally designated by the numeral 6 is attached. As is well known, the portion 7 of the fuel pump is generally provided with a plug or cap having a stem portion extending within the same for supporting a coil spring 8 for normally retaining the inlet valve 9 to the pump in closed position. Fuel from the tank is drawn into the pump through the line 10 where it passes through the strainer 11 before being fed to the remainder of the pump structure, not shown, through the inlet 12. The action of the pumped fuel raises the valve 9 against the tension of the spring 8 permitting its passage to the pump. This action of the fuel pump is conventional and forms no part of the present invention, the description being given in order to set forth the manner in which air will be fed to the carburetor by the fuel pump instead of fuel from the supply tank.

The device 6 is attached to the portion 7 of the

fuel pump being substituted for the conventional plug as shown in Figure 1 of the drawing. The device 6 comprises a substantially cylindrical-shaped housing 13 the interior of which is substantially hollow. The lower end of the housing 13 is reduced and threaded as indicated at 14 for attachment with the interiorly threaded portion 7 of the fuel pump 5. The end 14 is further reduced and projects within the fuel pump as indicated at 15 for supporting thereon the tension spring 8.

The upper end of the housing 13 is exteriorly threaded for receiving an interiorly threaded cap 16, a washer or the like 17 effecting an air-tight seal. A conduit 18 extending from the oil pressure line is attached to the cap 16 and has communication with the interior of the housing 13 for a purpose to be hereinafter described.

The interior of the housing 13, adjacent the bottom end thereof, is formed with a projecting collar portion 19, the same tapering upwardly and forming a shoulder 20 for supporting a coil spring 21. A piston 22 supported on a rod 23 is vertically movable within the chamber 31 formed by the collar 19, the upper end of the rod 23 having a reduced end 24 to which is attached a pair of leather or the like plunger cups 25, said plunger cups being secured to the rod by means of the metal washer 26 and nut 27. The plunger cups 25 form a seal for the interior of the housing 13 to prevent the entrance of oil from the pressure line 18. It will also be noted that the coil spring 21 is disposed between the shoulder portion 20 and the cups 25, said spring tending to normally urge the rod 23, piston 22 and cups 25 upwardly against the pressure of the oil from the conduit 18. Should any oil escape beyond the cups 25 within the housing it will be returned to the crankcase through the outlet pipe 28 threadedly secured to the housing 13 adjacent the shoulder portion 20.

The lower end of the piston 22 has attached thereto a leather washer 29, the same being countersunk for receiving the nut 30 which retains the piston and washer on the rod 23, it being understood that a shoulder is formed on the lower end of the rod by reducing the diameter thereof against which the piston abuts.

The chamber 31 in which the piston 22 operates, has connection with the fuel pump 5 through the line 32, the chamber 31 being open to the atmosphere through the inlet 33 formed in the lower end of the housing 13. When the pressure of the oil line is normal the piston 22 will cover the inlet 33 thereby preventing the admission of

air to the fuel pump thus allowing the pump to operate normally. However, should the pressure in the oil line drop below normal, the spring 21 will raise the rod 23 and piston 22 thereby uncovering the inlet 33 allowing the fuel pump to draw in air through the chamber 31 and line 32 which will be fed to the carburetor. The air being fed through the fuel pump will retain the valve 9 against its seat thereby preventing the admission of fuel into the carburetor thus stopping the engine and alleviating the possibility of injury to the parts thereof.

In Figure 2 of the drawing, the device is shown attached to a fuel pump 34 such as used with V-type motors in which case it is necessary to employ a T-fitting 35 interposed between the fuel line 36 and pump 34. It will be noted that the reduced end of the housing 13 is threadedly attached at 37 to the fitting 35. The operation of the device when used with this type of fuel pump is precisely the same as previously described.

Also it will be understood, of course, by those skilled in the art that variations in the hereinabove described device involving the substitution of substantial equivalents for the devices described are intended to be comprehended within the spirit of the present invention and that the invention is capable of extended application and is not confined to the exact showing of the drawing nor to the precise construction described and, therefore, such changes and modifications may be made therein as do not affect the spirit of the invention nor exceed the scope thereof as expressed in the appended claims.

What is claimed is:

1. An automatic fuel cut-off of the character described for internal combustion engines having a fuel supply including a fuel pump and a lubricating system having a pipe line through which the lubricant is circulated under pressure, comprising, a housing adapted to be attached to the fuel pump, means for connecting said housing to one end of the pipe line of the lubricating system, one end of said housing being formed with an inwardly projecting annular member defining a chamber, a vertical shaft movable within said chamber and supporting on one end thereof a piston, the other end of said shaft supporting sealing cup-like members having engagement with the walls of said housing, means within said housing surrounding said annular member for urging said cup-like members and shaft against the pressure of the lubricating system, said housing having a conduit formed in one wall thereof communicating with said chamber for admitting atmospheric air therein, said piston normally maintaining said conduit closed, and means for providing communication between said chamber and the fuel pump to admit air to said fuel pump upon an abnormal decrease of pressure in the lubricating system at the time the said means within the housing will raise said piston to

uncover the air admitting conduit of said chamber.

2. An automatic fuel cut-off for internal combustion engines, comprising, in combination, a fuel pump and a lubricating system in which the lubricant is circulated under pressure, a housing having one end attached to said fuel pump and its other end connected in the line of the lubricating system, a cylinder formed in one end of said housing, said housing being formed with a vent for admitting atmospheric air to said cylinder, said cylinder having communication with said fuel pump, and means operable in said cylinder governed by the pressure of the lubricating system for covering and uncovering said vent to control the admission of air through said cylinder into said fuel pump.

3. An automatic fuel cut-off of the character described for internal combustion engines having a fuel supply including a fuel pump and a lubricating system in which the lubricant is circulated under pressure, comprising, a housing having one end attached to the fuel pump and its other end connected to the lubricant pressure line, a cylinder formed within said housing, a rod movable within said housing and supporting on one end thereof a piston operable within said cylinder, said cylinder having communication with said fuel pump, said housing being formed with a vent for admitting atmospheric air into said cylinder, and means within said housing adapted to operate said piston to uncover said vent for admitting air to said fuel pump upon abnormal decrease of pressure in said lubricating system.

4. An automatic fuel cut-off of the character described for internal combustion engines having a fuel supply including a fuel pump and a lubricating system having a pipe line through which the lubricant is circulated under pressure, comprising, a housing having one end attached to the fuel pump, means for connecting the other end of said housing to the pipe line of the lubricating system, the lower end of said housing being formed with an inwardly projecting annular member defining a chamber, a shaft movable within said chamber and supporting on one end thereof a piston, the other end of said shaft extending above said chamber and carrying cup-like members having engagement with the walls of the housing, the pressure within the lubricating system normally urging said piston and cup-like members within said chamber and housing, means within said housing for urging said cup-like members and shaft toward the outer end of said housing against the pressure of the lubricating system, said housing being formed with a vent for admitting atmospheric air to said chamber and said chamber being connected with said fuel pump.

ARCHIBALD J. SCOTT, JR.