Nov. 19, 1940. W. M. ROBISON 2,222,542

OIL SUPPLY INDICATING MECHANISM FOR INTERNAL COMBUSTION ENGINES

Filed May 1, 1939

Fig. 2.

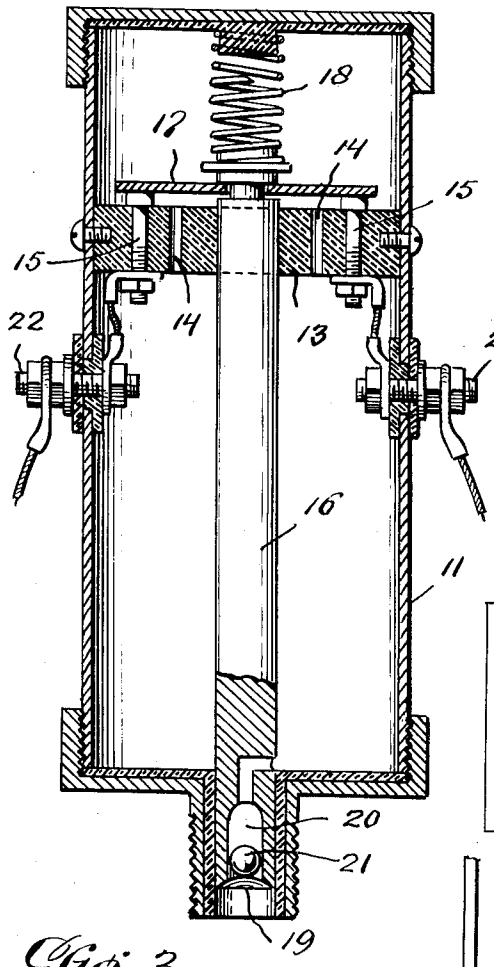
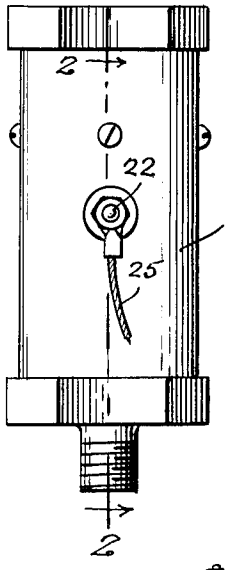
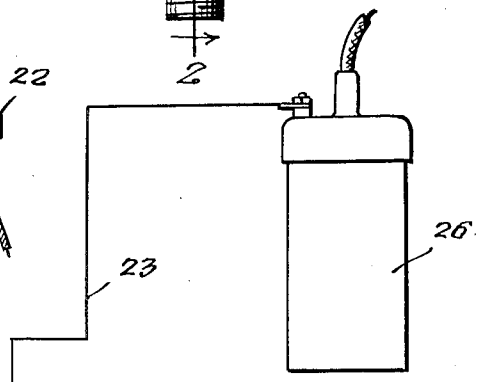



Fig. 1.



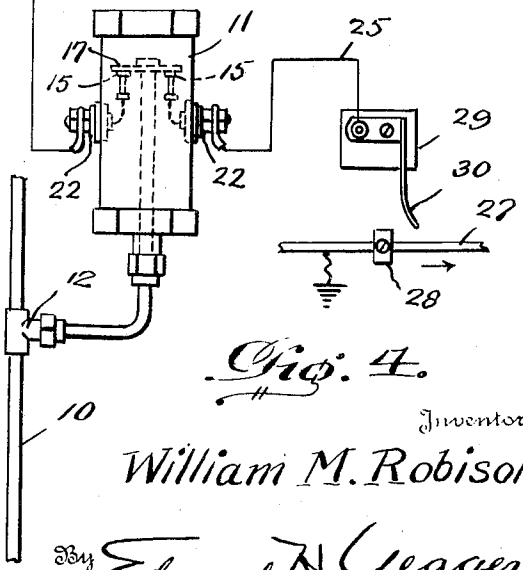




Fig. 3.

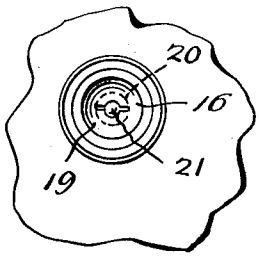



Fig. 4.

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## OIL SUPPLY INDICATING MECHANISM FOR INTERNAL COMBUSTION ENGINES

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8 Claims. (Cl. 123—196)

The present invention comprehends the provision of a mechanism for suspending the operation of the ignition system of an internal combustion engine at a predetermined maximum speed of the engine, when the oil supply therefor has been substantially exhausted, thus indicating the necessity of replenishing the oil before serious and costly damage results to the motor.

The invention provides a mechanism for the above mentioned purpose operable under the influence of fluid pressure for electrically cutting out the ignition system of the engine at a predetermined maximum speed, when the oil supply therefor reaches a dangerously low level.

The invention further contemplates the provision of a mechanism of the above mentioned character capable of being set or adjusted to vary the predetermined maximum speed at which the ignition system of the engine will be rendered inoperative.

More specifically stated, I contemplate including the coil of the ignition system in an auxiliary circuit with a device operable under the influence of fluid pressure, but controlled by a manually operated means, whereby the ignition system is rendered inactive at a predetermined maximum speed of the engine, when the supply of oil therefor has become substantially exhausted.

The nature and advantages of the invention will be better understood when the following detail description is read in connection with the accompanying drawing, wherein like numerals of reference indicate similar parts in the several views, and wherein:

Figure 1 is a view in elevation of the fluid pressure influenced device.

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

Figure 3 is a bottom plan view thereof.

Figure 4 is a diagrammatic view showing the mechanism connected for use.

The invention is primarily intended for use as an attachment for motor vehicles, but its general application to internal combustion engines is contemplated by the claims.

Referring to the drawing in detail 10 indicates a fluid pressure line, preferably the oil supply line for the engine, although it may also be the line leading to the oil gauge of a motor vehicle.

The mechanism forming the subject matter of the present invention essentially embodies an air-tight casing 11 which can vary in size and cross sectional contour without departing from the inventive idea. The casing, however, is preferably in the nature of a small cylinder coupled to the fluid pressure line in any suitable manner as at 12. The casing is provided with a threaded nipple for this purpose as clearly shown in the drawing. Secured within the casing is a stationary partition 13 of insulated material having bleed holes or passages 14 for the purpose to be hereinafter set forth. Supported by and projecting above the partition 13 are a pair of electrical contacts 15. The partition is also provided with a central opening through which slides a piston rod 16 upon which is mounted an electric contact plate or disk 17 adapted to engage the contacts 15. It will be noted that the piston rod is provided with a groove to accommodate the contact plate or disk 17 thus affording the latter sufficient freedom of movement to insure effective contact or engagement thereof with the contacts 15 when the piston rod is moved downwardly.

The piston rod 16 is yieldably mounted within the casing, being influenced in a downward direction by a spring 18 interposed between the end wall of the casing and the adjacent end of the piston rod as shown. The piston rod 16 is moved in an upward direction against the tension of the spring 18 by the pressure in the fluid pressure line 10. Consequently as the fluid pressure in the line 10 varies in different makes of cars, a spring 18 of proper tension is employed in the mechanism. The lower end of the piston rod operates in the threaded coupling nipple of the casing and is cupped as at 19 so that the pressure in the line 10 will effectively elevate the piston rod against the tension of the spring 18 when the engine contains a sufficient quantity of oil. The lower end of the piston rod is characterized with a vertical bore or drain passage which establishes communication between the casing 11 and the fluid pressure line 10. The lower portion of this bore or drain passage is enlarged and shaped to form a valve seat adapted to be engaged by a ball valve 21 operating in the bore 20, when the piston rod is elevated under pressure. It will be noted upon inspection of Figure 3 that the opposed walls of the bore 20 are formed with channels to facilitate drainage when the valve is unseated. By virtue of this construction it is manifest that any oil that might find its way into the casing under any circumstances will be returned to its source. Then again, the casing 11 is air-tight and should condensation take place the bleed holes 14 in the partition 13 provide sufficient drainage.

Upon inspection of Figure 2 it will be noted

that the electric contacts 15 are connected with the binding posts 22 carried by the opposite sides of the casing 11 and it is of course understood that the entire pressure influencing device just described is included in an auxiliary circuit with the ignition system for the engine and a manually controlled switch.

Now, referring to the diagrammatic view Figure 4, one of the binding posts 22 of the casing 11 is connected by the wire 23 to the coil 26 of an ignition system, while the other binding post 22 is connected by the wire 25 to the manually operated switch.

The manually controlled switch may be of any suitable construction, but in the specific illustration of the drawing 29 indicates a block of insulating material upon which is secured a contact with which the wire 25 is connected. This contact includes a yieldable contact finger 30 projecting beyond the blocks 29 in the path of movement of the contact 28 carried by a manually operated rod 27. The contact 28 is preferably in the nature of a collar secured to the rod 27 in a manner to permit adjustment of the collar thereon.

As above stated, a general use of the invention in connection with internal combustion engines is contemplated by the claims, but when used in the automobile industry, the block 29 can be attached to a convenient part of the vehicle, while the rod 27 represents the throttle operating rod.

In practice, when the engine contains a sufficient quantity of oil, the pressure in the line 10 influences the piston rod 16, elevating the latter against the tension of the spring 18, separating the contact disk 17 from the contacts 15. Under these conditions, the ball valve 21 is moved upwardly in its bore against its seat, thus cutting off communication between the pressure line 10 and the casing 11.

Now, through oversight, or for any other reason, should the oil in the engine become substantially exhausted, the mechanism immediately functions to indicate this fact to the driver, so that the oil can be replenished before serious and costly damage occurs to the engine. In other words, when the pressure in the line 10 becomes insufficient to hold the piston rod elevated against the tension of the spring 18, the latter forces the piston downwardly, thereby causing the contact disk 17 to engage the contacts 15. The fluid pressure actuated device is thus included in circuit with the coil 26 of the ignition system. However, this circuit is not completed until the manually operated switch is closed. Obviously, when the contact collar 28 is brought into engagement with the contact finger 30 the circuit is completed, with the result that the ignition system is rendered inactive causing the vehicle to stop. Thus the driver is acquainted with the fact that oil for the engine is needed. The contact collar 28 of the switch is susceptible of adjustment on the rod 27 so that it can be set to regulate or vary the predetermined maximum speed at which the ignition system is rendered inoperative due to an insufficient quantity of oil in the engine, and at the same time permit normal operation of the ignition system at an engine speed which will not do serious damage to the engine until an opportunity is afforded within a reasonable time to replenish the oil.

While it is believed that the nature and advantages of the invention will be readily understood, I desire to have it known that what is herein shown and described is merely illustrative of one embodiment of the invention, and that such changes in construction and arrangement may be resorted to as fall within the scope of the appended claims.

What is claimed is:

1. The combination with an internal combustion engine having a fluid pressure line, and an ignition system, of a mechanism operable under the influence of the pressure in said line, and including a manually operable switch for electrically cutting out the ignition system at a predetermined maximum speed of the engine.

2. The combination with an internal combustion engine having a fluid pressure line and an ignition system, of a device operable under the influence of the pressure in said line, and electrically connected with said ignition system, a manually operable switch controlling said device whereby said ignition system is rendered inactive at a predetermined speed of the engine, and means for adjusting said switch for varying the predetermined maximum speed at which the operation of the ignition system is suspended.

3. The combination with an internal combustion engine having a fluid pressure line, and an ignition system, of a device including an air tight casing, and a yieldably supported piston rod operating in said casing to provide an electrical connection between the casing and said ignition system, and influenced by the pressure in said line, and a manually operated switch for completing said electrical connection and thereby suspend the operation of the ignition system at a predetermined maximum speed of the engine.

4. The combination with an internal combustion engine having a fluid pressure line, and an ignition system, of a device including a casing, and a yieldably supported piston rod operating in said casing to provide an electrical connection between the casing and said ignition system, and influenced by the pressure in said line, a manually operated switch for completing said electrical connection and thereby render said ignition system inoperative at a predetermined maximum speed of the engine, said piston having a drain passage establishing communication between said casing and fluid pressure line, and a valve controlling said communication.

5. The combination with an internal combustion engine having a fluid pressure line, and an ignition system, of a device including a casing, contacts supported therein, a yieldably supported piston rod operating in said casing and influenced by the pressure in said line, a contact carried by the piston rod adapted to engage the aforementioned contacts for an electrical connection between the casing and said ignition system, and a manually operated adjustable switch for completing said electrical connection, and thereby suspend the operation of the ignition system at a predetermined maximum speed of the engine.

6. The combination with an internal combustion engine having a fluid pressure line, and an ignition system, of an auxiliary circuit including a device adapted to be electrically connected with the ignition system and operable under the influence of the pressure in said line, and a manually operated adjustable switch included in said circuit for electrically cutting out the ignition system at a predetermined maximum speed of the engine.

7. The combination with an internal combustion engine having a throttle operating rod, a fluid pressure line, and an ignition system, of a nor-

mally open auxiliary circuit electrically connected with said ignition system, and a mechanism comprising a fluid operated device included in said auxiliary circuit, and a switch controlled by the movement of said throttle operating rod for closing said auxiliary circuit and simultaneously cutting out the ignition system electrically at a predetermined speed of the engine.

8. The combination with an internal combustion engine having a throttle operating rod, a fluid pressure line, and an ignition system, of a normally open auxiliary circuit electrically connected with said ignition system, a fluid operated device included in said auxiliary circuit for partially closing the latter when the oil supply for the engine has been substantially exhausted, a switch controlled by the movement of said throttle operating rod for completing said auxiliary circuit and simultaneously cutting out the ignition system electrically at a predetermined speed of the engine, and means for adjusting the switch for varying the predetermined maximum speed of the engine at which the operation of the ignition system is suspended.

WILLIAM M. ROBISON.