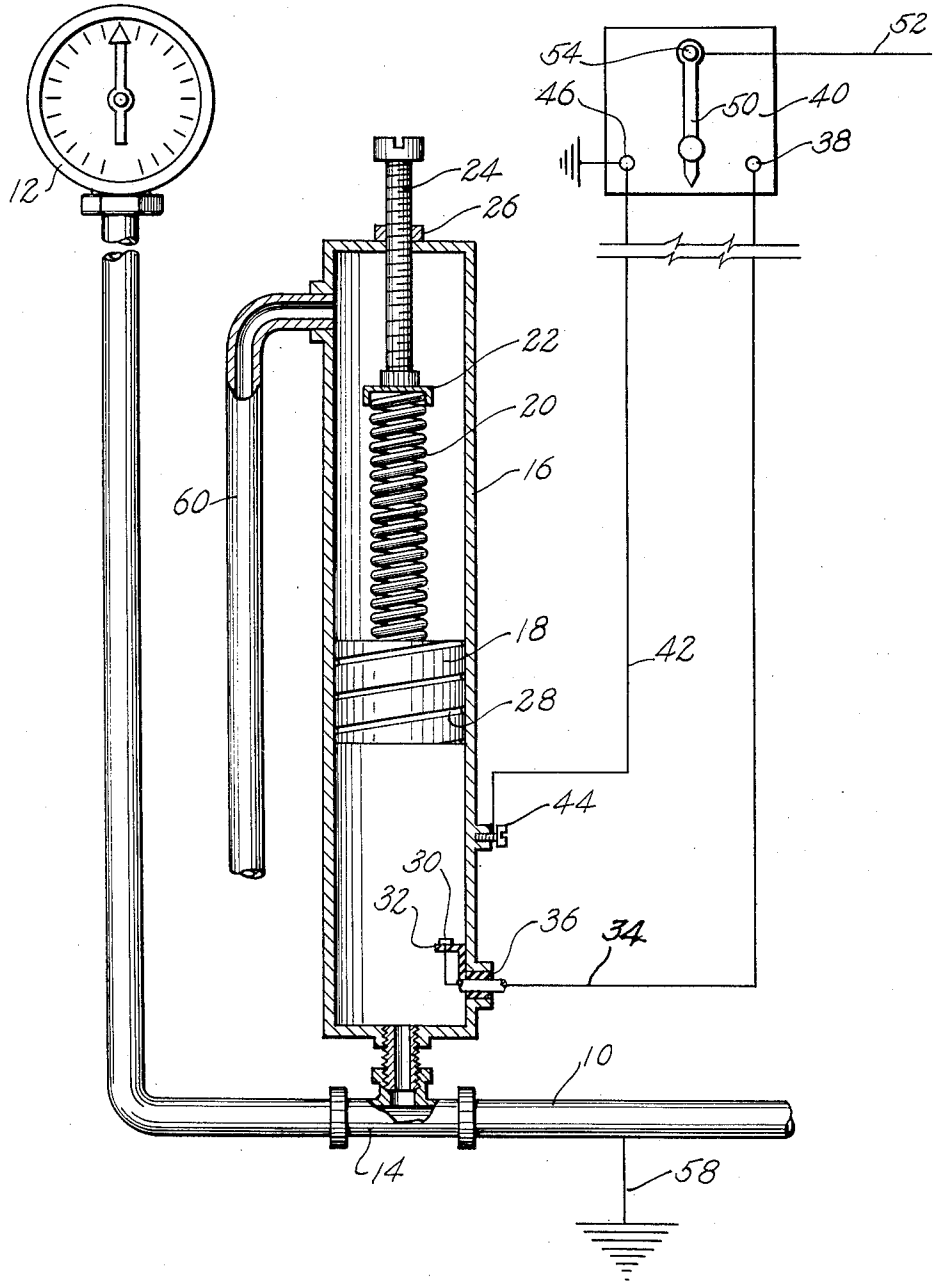
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FLUID PRESSURE SWITCH

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FLUID PRESSURE SWITCH

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2 Claims. (Cl. 200—82)

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This invention relates to switches, and more particularly to a switch especially designed for use in connection with fluid operated devices.

A principal object of the invention is to provide a switch which will automatically stop an engine or other device if for any reason the pressure of fluid falls below a predetermined level.

Thus, in connection with lubricating systems of an internal combustion engine, if the oil supply is exhausted or if the oil pump fails, the present invention will automatically break the electrical connection to the engine to discontinue its operation.

A preferred embodiment of the invention is illustrated in the accompanying drawing, but it is understood that modifications may be made therein without departing from the spirit of the invention as hereinafter claimed.

The accompanying drawing, which illustrates a preferred embodiment, shows a central vertical section of the invention.

In the drawing, an oil line 10 leads from the oil pump to an oil gauge 12. A T 14 is connected in the line 10 and communicates with a cylinder 16. Within the cylinder 16 is a plunger 18, and a spring 20 is disposed between the upper surface of the plunger 18 and a seat 22. An adjusting screw 24 passes through the top of the cylinder 16 and bears against the seat 22. It is obvious, therefore, that rotation of the adjusting screw 24 will advance or retract the spring 20 and the plunger 18. A lock nut 26 holds the adjusting screw 24 in adjusted position with respect to the cylinder 16. The periphery of the plunger 18 contains a spiral or helical groove 28, for purposes to be described more particularly hereinafter.

A contact 30 is mounted within the cylinder 16 on an insulating flange 32 which is attached to the wall of the cylinder 16. A wire 34 is joined to the contact 30, and passes through an insulating sleeve 36 in the wall of the cylinder 16 to a terminal 38 on a switchboard 40. A ground wire 42 is connected directly to the wall of the cylinder 16 by means of a set screw 44 and to another terminal 46 on the switchboard 40. This terminal 46 is grounded, and it is obvious that the wire 42 may be grounded before it reaches the switchboard 40.

A switch 50 is mounted on the switchboard 40 so as to be in connection with a line 52 going to the magneto of the engine. The switch 50 is movable about a pivot 54.

In the operation of the device, the switch 50 is held in the position indicated in the drawing, away from the contacts 38 and 46. At the time

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of starting the engine, there is no oil pressure in the cylinder 16 underneath the plunger 18, and the plunger 18 will be in contact with the metallic contact 30. As soon as the engine starts, the oil pressure will force the plunger 18 upwardly away from the contact 30. The switch 50 may then be turned on its pivot 54 to make contact with the contact point 38 on the switchboard 40. The switch 50 is left in this position as long as the engine is operating.

If at any time the oil pressure falls below a predetermined degree, the plunger 18 will move downwardly under the force of the spring 20, and will abut the contact 30. The plunger 18, as well as the cylinder 16, is made of metal, and as soon as the plunger 18 touches the contact 30, the magneto will be grounded by way of the wire 52, the switch 50, the terminal 38, the wire 34, the metallic contact 30, the plunger 18, and the ground wire 42. Since the magneto is essential to the operation of the engine, grounding thereof will immediately discontinue the function of the engine and avert damage to the engine due to the failure of the lubrication system.

If at any time it is desired to stop the engine, without reference to the oil pressure, it is merely necessary to shift the switch 50 to the terminal 46, and this will again ground the magneto and stop the engine. Consequently, the engine may be stopped manually by means of the switch 50.

The oil line 10 may have another ground connection 58, similar to the ground line connection 42.

Due to the fact that a small amount of oil may work its way upwardly from the oil line 10 past the plunger 18, the groove 28 in the plunger 18 will act as a bypass. In addition, an outlet 60 from the upper portion of the cylinder 16 will return excess amount of oil to the crank case.

As hereinbefore indicated, the adjusting screw 24 will regulate the pressure of the plunger 18, and consequently the critical oil pressure at which the magneto will be grounded can be determined in advance.

What is claimed is:

1. A fluid pressure actuated switch comprising a vertically disposed closed hollow cylinder fabricated of an electrically conductive material, a first electrical contact mounted within said cylinder adjacent the lower end of the latter, said first contact being electrically insulated from said cylinder and adapted to be connected to a terminal of an electrical circuit, a second electrical contact positioned intermediate the ends of said cylinder and electrically connected to the latter,

said second contact being adapted to be connected to another terminal of said electrical circuit, a plunger positioned within said cylinder and mounted for vertical movement upwardly and downwardly in the latter, inlet means positioned adjacent the lower end of said cylinder below said first contact for introducing fluid under pressure into said cylinder to exert a force on said plunger to thereby cause upward movement of the latter, resilient means operatively connected to said plunger for normally maintaining the latter in touching relation with said first named contact, and means externally of said cylinder and operatively connected to said resilient means for adjusting the tension of the latter in accordance with the prevailing pressure of the fluid.

2. A fluid pressure-actuated switch comprising a vertically disposed closed hollow cylinder fabricated of an electrically conductive material, a first electrical contact mounted within said cylinder adjacent the lower end of the latter, said first contact being electrically insulated from said cylinder and adapted to be connected to a terminal of an electrical circuit, a second electrical contact positioned intermediate the ends of said cylinder and electrically connected to the latter, said second contact being adapted to be connected to another terminal of said electrical circuit, a plunger positioned within said cylinder and mounted for vertical movement upwardly and downwardly in the latter, said plunger having a

helical groove in its peripheral surface, inlet means positioned adjacent the lower end of said cylinder below said first contact for introducing fluid under pressure into said cylinder to exert a force on said plunger to thereby cause upward movement of the latter, outlet means positioned adjacent the upper end of said cylinder and fixedly secured to the walls of the latter for withdrawing the fluid by-passed by said helical groove in the peripheral surface of said plunger, resilient means operatively connected to said plunger for normally maintaining the latter in touching relation with said first named contact, and means externally of said cylinder and operatively connected to said resilient means for adjusting the tension of the latter in accordance with the prevailing pressure of the fluid.

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