

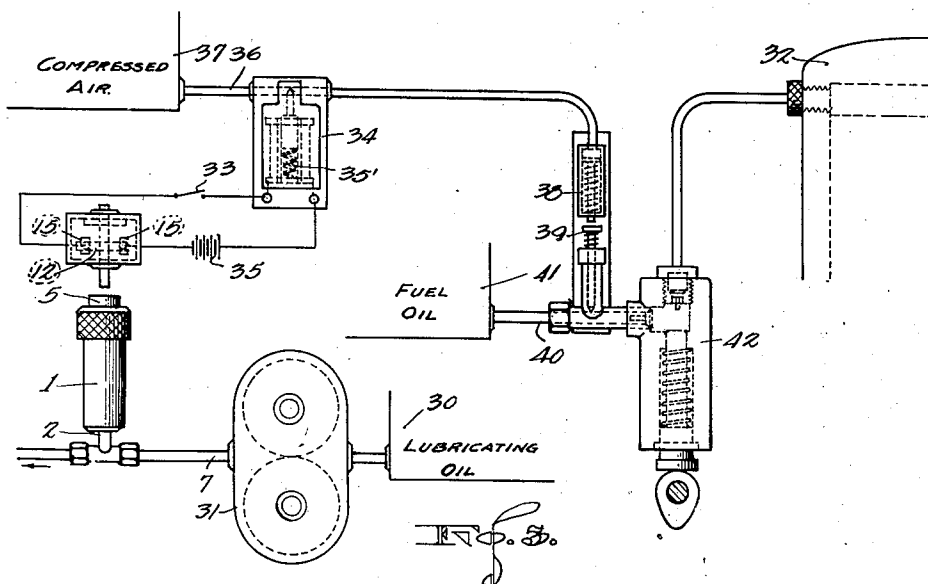
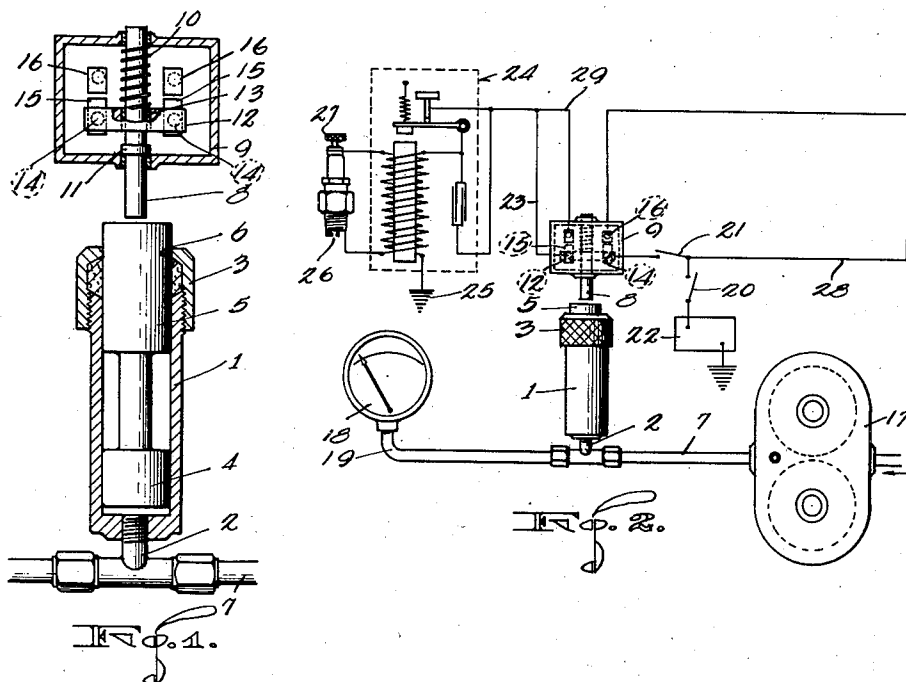
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OIL PRESSURE SAFETY APPLIANCE

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OIL PRESSURE SAFETY APPLIANCE

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My invention relates to improvements in oil pressure safety appliances and it consists of the combinations, constructions and arrangements hereinafter described and claimed.

An object of my invention is to provide an oil pressure safety appliance which is primarily designed for internal combustion engines of the spark plug and Diesel types. In the engine fired by a spark plug the device will automatically open the ignition circuit as soon as the oil pressure drops below a predetermined point. In the Diesel type of engine the dropping of the oil pressure will through a novel mechanism cut off the fuel oil supply to the engine.

The device is simple in construction and provides an automatic and novel means for stopping further functioning of the engines when the lubricating oil pressure drops to a point where it is dangerous for further operation of the engines.

Other objects and advantages will appear in the following specification, and the novel features of the device will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawing forming a part of this application, in which

Figure 1 is a vertical section through the device, portions being shown in elevation;

Figure 2 shows the device operatively connected in an ignition circuit for a spark plug operated engine; and

Figure 3 shows the device in a circuit for a Diesel type of engine.

In carrying out my invention I provide a control device comprising a cylinder 1, see Figure 1, having an oil inlet 2 at its bottom and a packing gland 3 at the top of the cylinder. A piston 4 is mounted in the cylinder 1 and carries a plunger 5 that projects through an opening 6 in the packing gland.

The inlet pipe 2 communicates with an oil pressure pipe 7. The plunger 5 is mounted beneath a rod 8 constituting a switch arm and this arm is slidable in a box 9. A spring 10 urges the rod 8 downwardly and a collar 11 on the rod limits the downward movement.

A transverse switch arm 12 is secured to the rod 8 and is insulated therefrom by an insulating ring 13. The switch arm 12 carries contacts 14 that normally engage with terminals 15. When oil under pressure is forced through the pipe 7 a portion of the oil will enter the cylinder 1 and will raise the piston 4 so that the plunger 5 will move the rod 8 and with it the contacts 14 so that these contacts will engage with terminals 16. As soon as the oil pressure drops the spring 10 will return the contacts 14 to the position shown in Figure 1.

I have shown the control device in Figure 2 where it is operatively connected in an ignition circuit for a spark plug and in a pump for forcing lubricating oil to an engine. The pipe 7 leads from the pump 17 and communicates with the cylinder 1 by means of the pipe 2 and with a oil gauge 18 by means of a branch pipe 19.

When the engine not shown is started the ignition switch 20 and an auxiliary switch 21 are closed and this will cause current to flow from the battery 22 through the switches 20 and 21 past the terminals 15 through wire 23 to an ignition coil indicated generally at 24 and then to ground 25. A spark will be caused to pass between the terminals 26 of a spark plug 27 in the usual manner. After the engine has started running and the oil pressure in the pipe 7 has built up sufficient to close the terminals 16 the current will pass through switch 20, wire 28, terminals 16, wire 29 and then to the ignition coil 24. The driver now opens the auxiliary switch 21 and the engine will continue to function so long as the oil pressure is maintained at a predetermined point. As soon, however, as the oil pressure drops for any cause the switch arm 12 will move away from the terminals 16 and this will break the ignition circuit and cause the engine to stop. In this way a simple mechanism is used for stopping the engine when the oil pressure fails and this prevents burning out bearings and the like.

In Figure 3 I show the same device used in connection with a Diesel engine and in this form of the device the fuel oil is cut off

when the lubricating oil drops below a predetermined pressure. I have shown a lubricating oil storage tank 30 and a pump 31 for forcing oil through the pipe 7. A part of this oil is received in a cylinder 1 in the manner already described. The switch arm 12 normally closes the terminals 15 and in this form of the device the terminals 16 are dispensed with. After the Diesel engine indicated generally at 32 is started and after the switch arm 12 has been moved away from the terminals 15 the operator closes a switch 33. A magnetic valve shown at 34 is placed in series with a switch 33, the switch formed by the arm 12 and the terminals 15, and a battery 35. So long as the oil pressure in the pipe 7 remains at a predetermined point the switch arm 12 remains out of contact with the terminals 15 and a spring 35' keeps the magnetic valve 34 from closing a compressed air pipe 36.

As soon, however, as there is a falling away of oil pressure the arm 12 will close the circuit to the magnetic valve 34 and open it, thus permitting compressed air to flow from a tank 37 through the conduit 36 to a cut-off valve 38. This valve actuates a spring-pressed plunger 39 that closes off the fuel oil supply pipe 40 leading from the supply tank 41. The closing of the pipe 40 prevents fuel oil entering the injection pump 42 and therefore no oil will be forced into the cylinders of the Diesel engine 32. The engine will quickly come to a stop. In this way the falling away of the pressure in the lubricating oil in the pipe 7 will stop further operation of the engine 32.

Although I have shown and described two embodiments of my invention it is to be understood that the same is susceptible of various changes and I reserve the right to employ such changes as may come within the scope of the claims hereto annexed.

I claim:

1. In combination, a fluid controlled switch actuated by fluid under pressure, a magnetic valve opened when a circuit is closed thereto, said valve being in electrical connection with the fluid controlled switch, a manual switch and a source of current, a pipe carrying compressed air controlled by the magnetic valve, a fuel oil conveying conduit, and a cut-off valve for the fuel oil actuated by the compressed air when the switches are closed.
2. In combination with an engine having a fuel feeding system and a lubricating system, a valve for the fuel feeding system, pressure means for closing the valve and electrical means controlled by the lubricating system for rendering the pressure means active when the lubricating system fails.
3. In combination with an engine having a fuel feeding system and a lubricating system, a valve for the fuel feeding system having means for normally holding the same

open, a compressed air line including a source of compressed air and means operated by compressed air for closing the valve, a second valve in the compressed air line having spring means for normally closing the same and electro-magnetic means for opening the same, and means responsive to pressures in the lubricating system for rendering the electro-magnetic means active when the lubricating system fails.

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