

Oct. 28, 1952

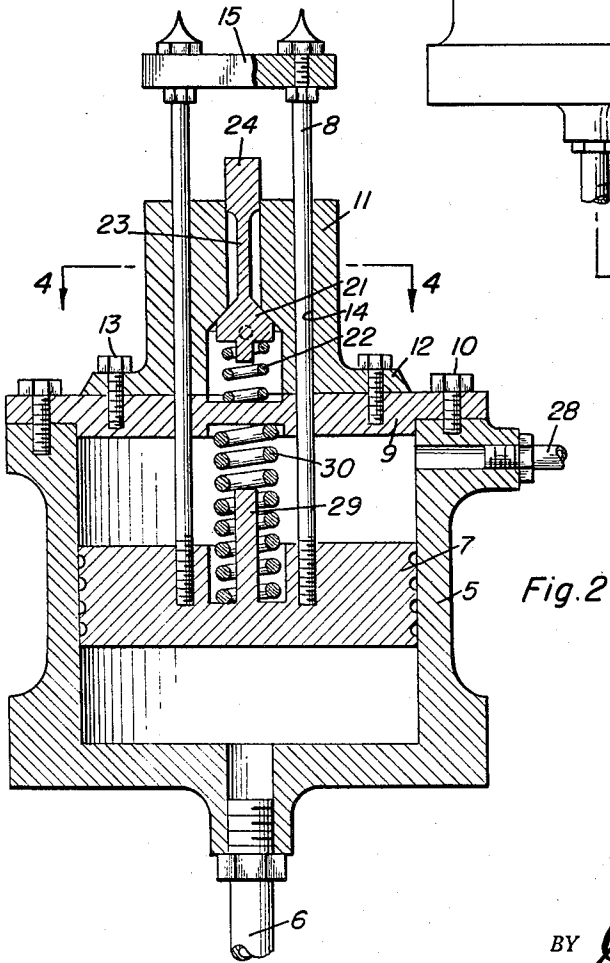
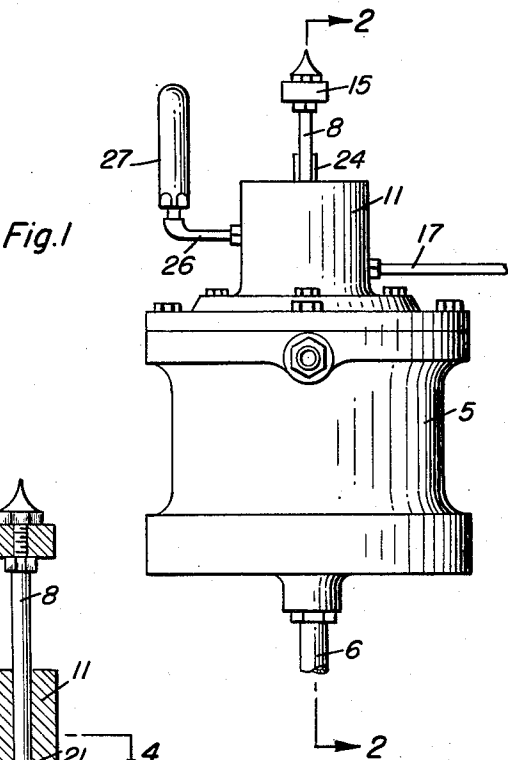
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2,615,419

LOW-PRESSURE ALARM FOR LUBRICATING SYSTEMS

Filed Nov. 27, 1950

2 SHEETS—SHEET 1



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2 SHEETS—SHEET 2

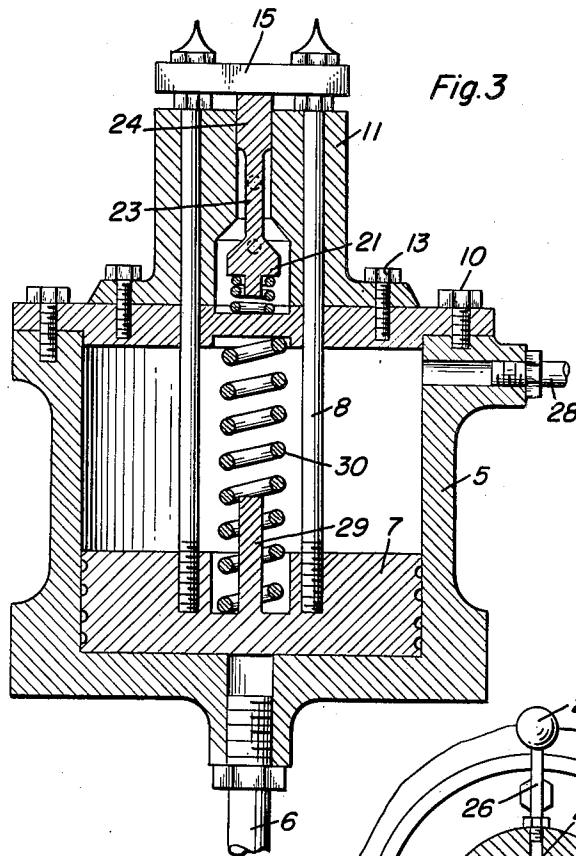


Fig. 3

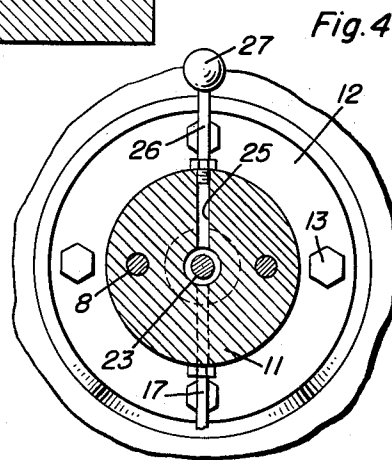


Fig. 4

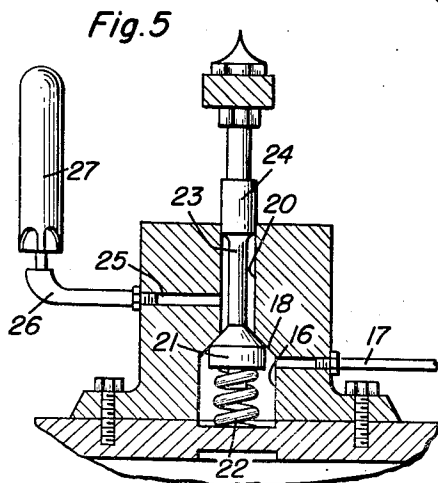


Fig. 5

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LOW-PRESSURE ALARM FOR LUBRICATING SYSTEMS

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5 Claims. (Cl. 116—70)

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The present invention relates to new and useful improvements in alarms or signals to indicate failure in the safe operating pressure of lubrication systems for engines or other machinery.

An important object of the invention is to provide lubricating pressure control means for an air valve to which a whistle or other audible alarm is connected whereby a drop in the pressure of the lubricating system below a predetermined safe operating point will open the air valve to sound the alarm.

Another object of the invention is to provide an air valve and whistle detachably mounted as a unit in compact form on a cylinder for a lubricating pressure operated piston and providing means connected to the piston for operating the air valve.

A still further object is to provide a device of this character of simple and practical construction, which is efficient and reliable in operation, relatively inexpensive to manufacture and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevational view;

Figure 2 is an enlarged vertical sectional view taken on the line 2—2 of Figure 1;

Figure 3 is a similar view showing the air valve in open position;

Figure 4 is a transverse sectional view taken on a line 4—4 of Figure 2; and

Figure 5 is a vertical sectional view of the air valve.

Referring now to the drawings in detail wherein for the purpose of illustration, I have disclosed a preferred embodiment of the invention, the numeral 5 designates a cylinder connected at its bottom to the lubricating system of an engine or other machinery by means of a pipe 6. A piston 7 works in the cylinder and to which the lower ends of a pair of rods 8 are connected and extend upwardly therefrom in spaced parallel relation to each other.

The top of the cylinder 5 is closed by a cap 9 in which the rods 8 are slidable, the cap or cover plate 9 being secured to the cylinder by screws or the like 10.

A valve body 11 is formed with a flange 12 at its lower portion and is detachably secured to cap or cover plate 9 by means of screws or the

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like 13, and the valve body 11 is formed with a pair of vertical bores 14 in which the rods 8 are slidable. The rods project upwardly above the top of valve body 11 and are connected at their upper ends by a cross bar or yoke 15.

Valve body 11 is formed with a chamber 16 to which a suitable source of air pressure is connected by means of a pipe 17 and the upper portion of the chamber 16 is formed with a valve seat 18 and with a passage 20 leading upwardly from the chamber above the valve seat.

A valve 21 is held against the valve seat by means of a coil spring 22 positioned under the valve and a valve stem 23 extends upwardly from the valve in passage 20 and is formed at its upper end with a piston-type valve 24 closing the upper end of the passage. The valve 24 at the upper end of stem 23 projects upwardly above the valve housing 11 and is positioned under the cross bar or yoke 15 in the path of downward movement of the latter.

A lateral passage 25 is formed in the valve body 11 and extends outwardly from passage 20 at one side of the valve housing and to the outer end of which a pipe 26 is connected for operating a whistle 27 of the conventional type.

A drain or vent pipe 28 is connected to the upper portion of cylinder 5 to return lubricant working above the piston 7 to a sump (not shown) and a stop pin 29 extends upwardly from the center of piston 7 to limit upward movement of the piston and prevent closing of the vent or drain.

The pin 29 also forms a centering pin for a coil spring 30 which is held compressed between the piston 7 and the cap or cover plate 9 to move the piston 7 downwardly.

In the operation of the device the piston 7 is held in its raised position, as shown in Figure 2 of the drawing, by a safe working pressure in the lubricating system of an engine or the like and to which the pipe 6 is connected. With the piston 7 in its raised position cross bar or yoke 15 is held above the valve 24 at the upper end of valve stem 23 and spring 22 thus maintains the air valve 21 closed.

Should pressure in the lubricating system drop below a predetermined safe operating pressure the spring 30 will move piston 7 downwardly and cross bar or yoke 15 will then engage the upwardly projecting valve 24 at the upper end of valve stem 23 to open air valve 21 and sound the alarm.

In view of the foregoing description taken in conjunction with the accompanying drawings it

is believed that a clear understanding of the device will be quite apparent to those skilled in this art. A more detailed description is accordingly deemed unnecessary.

It is to be understood, however, that even though there is herein shown and described a preferred embodiment of the invention the same is susceptible to certain changes fully comprehended by the spirit of the invention as herein described and the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. A low pressure alarm for lubricating systems comprising a cylinder having a piston working therein and held in one position by fluid pressure, spring means moving the piston in an opposite direction upon a predetermined decrease in pressure in the system, a whistle having a fluid pressure line connected thereto, a longitudinally slidable valve closing the fluid pressure line and disposed coaxial with the piston, and operating means for the valve and connected to the piston for opening the valve, said operating means comprising a pair of parallel rods slidably carried by the cylinder alongside of said valve, said rods including inner ends attached to the piston and outer ends projecting from the cylinder, and a crossbar attached to the outer ends of the rods and overlying the valve.

2. A low pressure alarm for lubricating systems comprising a cylinder having a piston working therein and held in one position by fluid pressure, means connected to the piston and slidable inwardly and outwardly at one end of the cylinder, spring means moving the first named means inwardly upon a predetermined decrease in pressure in the system, a fluid pressure operated audible alarm, a valve body supported on the cylinder, a valve slidably received in the body and controlling the alarm, spring means within the body under the valve holding the valve closed, and said valve including a rigid portion projecting from the body and positioned in the path of inward movement of said first named means to open the valve.

3. A low pressure alarm for lubricating systems comprising a cylinder having a piston working therein and held in one position by fluid pressure, means connected to the piston and slidable inwardly and outwardly at one end of the cylinder, spring means moving the first named means inwardly upon a predetermined decrease in pressure in the system, a valve housing connected to said one end of the cylinder and having a passage therein connected to a source of fluid pressure, an audible alarm connected to said passage, and a valve closing the passage and having a valve stem disposed coaxial with said piston and in the path

of inward movement of said first named means to open the valve.

4. A low pressure alarm for lubricating systems comprising a cylinder having a piston working therein and held in one position by fluid pressure, means connected to the piston and slidable inwardly and outwardly at one end of the cylinder, spring means moving the first named means inwardly upon a predetermined decrease in pressure in the system, a valve housing connected to said one end of the cylinder and having a passage therein extending outwardly at one end of the housing and having a lateral inlet port connected to a source of fluid pressure and a lateral outlet port, an audible alarm connected to the outlet port, a spring loaded valve closing the passage at a point between the inlet and outlet ports, a piston-type valve closing the outer end of the passage and projecting outwardly of the housing in the path of inward movement of said first named means, and a stem rigidly connecting said valves to each other to open the first named valve.

5. A low pressure alarm for lubricating systems, comprising a cylinder having a piston working therein and held in one position by fluid pressure, said cylinder including an upper end plate, a valve housing supported on said end plate and including a passage therein extending outwardly at one end of the housing and having a lateral inlet port connected to a source of fluid pressure and a lateral outlet port adapted to be connected to an audible alarm, a spring loaded valve closing the passage at a point between the inlet and outlet ports, a piston type valve connected to the spring loaded valve and closing the outer end of said passage and projecting outwardly of the housing, a plurality of rods slidably carried by said end plate and said housing and having inner ends attached to said piston, said rods being disposed alongside of said valves and including outer ends projecting outwardly from the housing beyond said piston type valve, and a crossbar attached to the outer ends of said rods and overlying the piston type valve for actuating the latter as the piston moves away from said end plate in response to a reduction of pressure in the cylinder.

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The following references are of record in the file of this patent:

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