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FLUID PRESSURE SENSITIVE SWITCH

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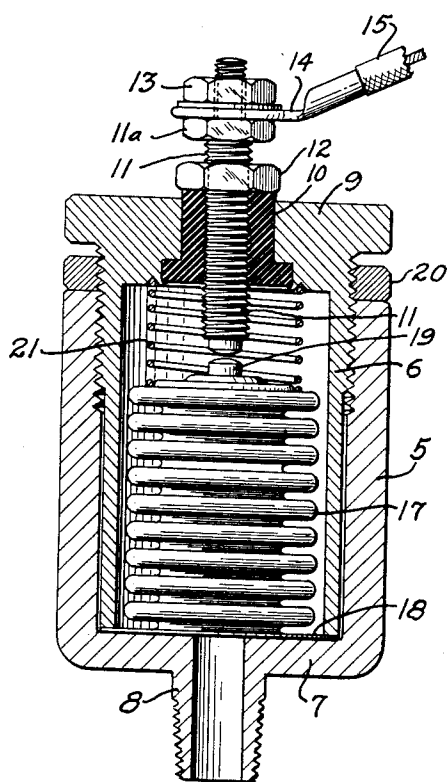


FIG. 1.

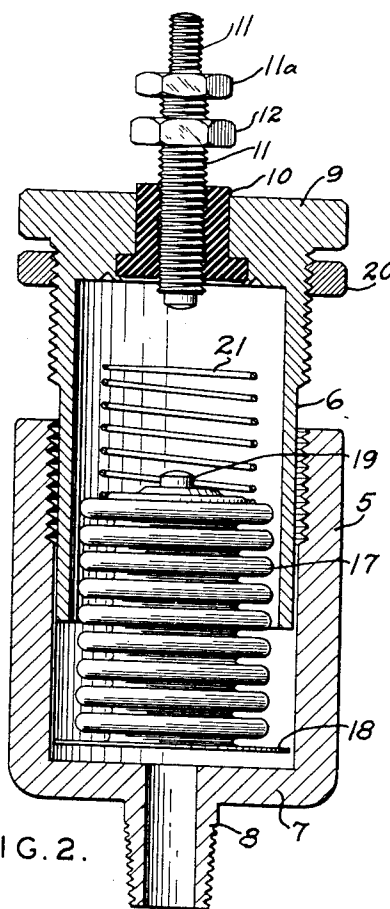


FIG. 2.

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FLUID PRESSURE SENSITIVE SWITCH

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2 Claims. (Cl. 200—83)

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This invention relates to fluid pressure sensitive switch devices and consists particularly of a novel switch device which responds, for instance, to changes in the oil pressure of an internal combustion engine and which is considerably simpler than previous switches of this type. The switch has the further advantage that it may be easily assembled and adjusted.

In the accompanying drawing which illustrates the invention:

Fig. 1 is a vertical, transverse center section through the novel switch.

Fig. 2 is a similar section but showing the parts in the process of assembly.

The switch comprises, generally, a pair of cup-shaped members 5 and 6 with their open ends facing each other and threadedly assembled by means of a female thread on member 5 and a male thread on member 6 to form a casing. The end wall 7 of member 5 is provided with a threaded nipple 8 for attachment to the source of operating fluid pressure as, for instance, the oil pressure system of an internal combustion engine. The end wall 9, of member 6, preferably, is of angular contour for receiving an assembly wrench. Mounted centrally within end wall 9 is a bushing 10 of insulating material having a central, internal thread receiving a terminal screw 11. Screw 11 is provided with a lock nut 12, a hexagonal, wrench receiving portion 11a rigid therewith, and a nut 13 on the reduced upper portion thereof for attachment of a terminal clip 14 on the end of an electrical wire 15 which may constitute a portion of the ignition system of an internal combustion engine.

Within the casing formed by members 5 and 6 is an expansible bellows 17 having a base flange 18 which rests against the inner face of wall 7. The end of the side wall of cup member 6 bears against this flange and secures the same and bellows 17 in position centered within the casing and with the interior of the bellows in communication with pressure fitting 8. The movable inner wall of the bellows is provided with a switch terminal 19 opposing the end of terminal screw 11 which forms the cooperating switch point. The assembly of casing members 5 and 6 is maintained by a lock nut 20 threadedly received on inner member 6. A coiled compression spring 21 is lodged within the casing between the end wall of the bellows and the under surface of upper end wall 9.

The switch device may be rather easily assembled, as illustrated in Fig. 2, simply by first inserting the bellows within outer casing mem-

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ber 5, applying compression spring 21 to the top of the bellows, and then screwing inner casing member 6 into position with the end of its side wall firmly bearing against bellows base flange 18.

In operation of the device when used as an oil pressure safety switch in an internal combustion engine, the oil system is first connected to nipple 8. Wire 15 is then connected in the ignition system and terminal screw 11 adjusted so that upon the application of the proper pressure, switch point 19 will engage terminal screw 11 to close an electrical circuit. When a lesser pressure exists in the oil pressure system, switch point 19 will separate from terminal 11 breaking the circuit.

If desired, the relationship of nipple 8 and terminal 11 may be reversed so that the switch actuating fluid pressure will be applied to the outside of the bellows. Also, another type of expansible chamber element may be substituted, such as a diaphragm with a piston or chamber forming a movable wall thereof. The invention may be modified in these and other respects as will occur to those skilled in the art and the exclusive use of all modifications as come within the scope of the appended claims is contemplated.

I claim:

1. In a fluid pressure sensitive electrical switch device, comprising an outer casing member including a base portion formed with a medial inlet opening and a tubular wall portion, the inner face of said base being substantially flat throughout, said tubular wall portion being of uniform internal diameter and provided with internal threads at its upper end, an expansible chamber element within said casing, said expansible chamber element being of generally tubular corrugated form and having a laterally projecting annular base flange resting upon the inner flat face of the base of the outer casing member adjacent its tubular wall and about the inlet opening, an internal casing member of tubular form having a closed upper end, the upper end of said casing being formed with a laterally projecting annular shoulder normally overlying the upper end face of the outer chamber, the upper portion of said inner casing being formed with an exteriorly threaded area terminating at said outwardly projecting flange and the bottom portion of said internal casing being of reduced diameter for free longitudinal movement within the annular outer casing and between the casing and said expansible chamber, the bottom face of said internal casing being flat and of a diameter to overlie and engage the outer upper marginal surface of

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the flange of the expansible chamber to form a seal between the expansible chamber and the bottom face of the external casing, a coil spring member normally seating about the top marginal portion of the expansible chamber for engagement with the inner face of the internal casing to resist the movement of the expansible chamber when the inner and outer casings are assembled, a contact element threaded through and insulated from the top of the inner chamber for adjustment with respect to the top of said expansible chamber, a contact point arranged medially of the expansible chamber and carried thereby, said contact point being in axial alignment with the adjustable contact element in the top wall of the outer casing, whereby said contacts are positioned for adjustment when the parts are assembled and said expansible chamber expands or contracts, and lock means carried by the threaded portion of the internal casing member for securing the casing members in position.

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2. The structure of claim 1 characterized in that the top of the expansible chamber is provided with a vertical annular projection for centering the coil spring, the upper end of which seats in an annular groove in the inner face of the upper end of the inner casing.

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10 References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,464,307	Bowlus -----	Aug. 7, 1923
1,908,088	Warner -----	May 9, 1933
2,111,168	Chansor -----	Mar. 15, 1938
2,296,411	Wills -----	Sept. 22, 1942

FOREIGN PATENTS

Number	Country	Date
460,738	Great Britain -----	Feb. 3, 1937