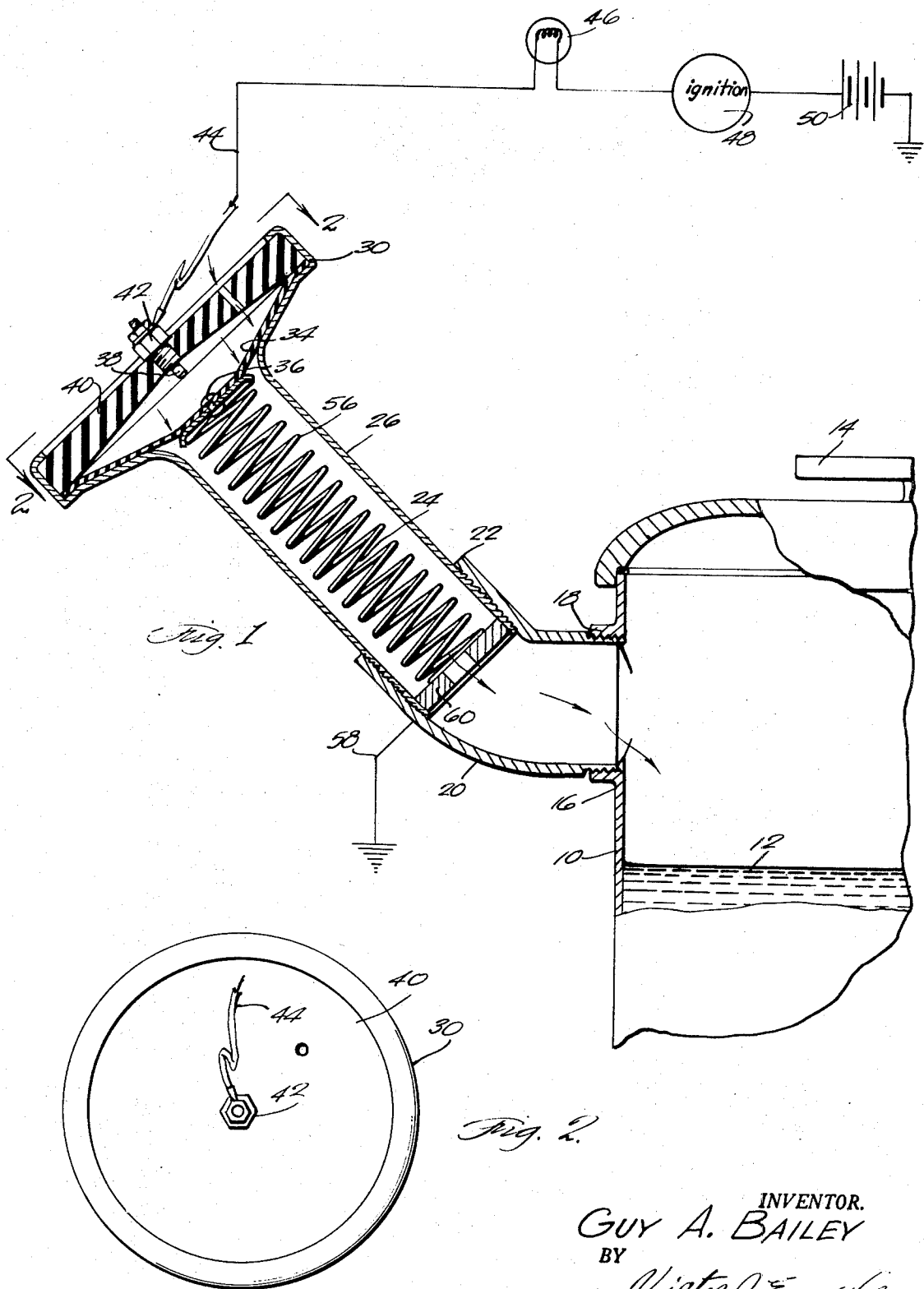


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OIL SAFETY RESERVE TANK

SPECIFICATION

The present invention relates to an oil safety reserve tank having an electrical vacuum switch consisting of a diaphragm which makes an electric circuit when the vacuum is released by the oil depletion in the safety reserve tank into the oil pan. More particularly, the invention provides that the oil reserve tank is under approximately 1 pound vacuum pressure when the oil reserve tank is full of oil for filling the oil pan of an internal combustion engine to its desired oil level, and to actuate the vacuum diaphragm switch connected to the top of the reserve tank when oil is drained from the reserve tank to the oil pan. When the oil is drained from the reserve tank there is caused a half pound vacuum pressure acting on the diaphragm and biasing spring, causing the vacuum switch to close and effecting an electrical circuit so that an indicator light on the dash panel is illuminated.

An object therefore of the present invention is to provide a simple and complete electrical vacuum switch system to indicate that an oil safety reserve tank has become depleted of reserve oil, and to provide a visual indication that additional oil is needed in the reserve tank.

A further object of the present invention is to construct a vacuum switch in the upper end of a conduit disposed at a 45° angle from the top of a safety reserve tank for oil, to prevent oil from causing a low tension spring in the conduit which biases the diaphragm closed to function more properly.

The above and other objects and advantages of the invention will become apparent upon full consideration of the following detailed description and accompanying drawings in which:

FIG. 1 is a partially schematic and partially cross-sectional view of an oil safety reserve tank and electrical vacuum switch therefor including an electrical circuit attached thereto of an oil safety reserve tank system in accordance with the preferred embodiment of the present invention.

FIG. 2 is an end view taken along line 2-2 of the electrical vacuum switch.

Referring now to the drawing, there is shown an oil safety reserve tank system having a safety reserve tank 10 for containing reserve oil 12 therein, and having a cap 14. At an upper area or portion 16 of the tank 10, there is provided a threaded coupling 18 integral with the wall of the tank 10 to which is threadingly engaged an elbow coupling 20 having its open or free end 22 disposed along a 45° upward incline, along a center line 24.

A hollow pipe 26 is threadedly engaged to the end 22 of elbow 20, the hollow pipe 26 extending also along the center line 24 at about 45°, the hollow pipe terminating in a cupped portion 30 in which there is disposed a disc or diaphragmatic member 34 comprising a diaphragm switch having a contact 36 for engaging an electrical contact 38 mounted centrally in a resilience cap or cover 40 of the cup portion. The contact 38 is connected to a mounting bolt and terminal 42 which is connected to a conductor or wire cable 44 to a lamp 46 mounted by conventional means as an indicator on a display panel of an automobile vehicle, not shown, and which is electrically completed through a circuit through the ignition key switch 48

to an electrical source or battery 50. The diaphragm 34 may similarly be of resilient or elastomeric material.

The contact 36 is mounted in the diaphragm 34 and is electrically isolated from ground, and completes a circuit with contact 38 through a biasing spring 56 to a ground connection 58 through a metal base 60 of the hollow pipe 26 as shown. Centrally of the base 60 is an aperture for providing coupling of vacuum pressure to the diaphragm 34 from the oil safety reserve tank 10, which is coupled itself to the oil pan of an internal combustion engine (not shown) when the oil 12 has been depleted from the tank 10.

Under operating conditions of the internal combustion engine, there is in the oil reserve tank sufficiently vacuum when full of oil to cause the diaphragm 34 to overcome the bias of the spring 56 so that the diaphragm is in its down or open position with respect to contact 38. As oil is drained from the reserve tank 10 there is then approximately one-half pound of vacuum then in the hollow pipe 26 so that the bias of spring 56 causes the diaphragm 34 having contact 36 to engage the contact 38 and thereby close the circuit for the light 46 when the ignition 48 is closed. Thus when the key of the ignition switch 48 is turned on, current travels from the source 50 over electrical line 44 to the light 46. When the vacuum is absent from the oil reserve tank 10 the diaphragm 34 is then displaced upwardly due to the absence of the vacuum differential so that the contacts are closed and energizes light 46 to indicate that additional oil is required in the reserve tank 10.

It is within the purview of the present invention to adjust the threaded disposition of contact 38 with respect to bolt 42 to adjust the point of contact or time of contact and performance of the switch closures of contacts 36, 38.

The hollow pipe 26 is generally disposed along about a 45° angle to prevent the oil 12 from entering the hollow pipe 26 and otherwise preventing it from operating the diaphragm 34 properly.

Additional embodiments of the invention in this specification will occur to others and therefore it is intended that the scope of the invention be limited only by the appended claims and not by the embodiment described hereinabove. Accordingly, reference should be made to the following claims in determining the full scope of the invention.

I claim:

1. An oil safety reserve tank system comprising a safety reserve tank for storage of engine oil, a hollow pipe extending upwardly at about 45° from an upper portion of said tank terminating in a cupped portion, a diaphragm switch and electrical contact disposed in said cupped portion and being spring biased to a normally closed position, the reserve tank operating independently at all times by being subjected to sufficient vacuum pressure to maintain the diaphragm switch open until depletion of the oil from within the reserve tank when the electrical contact and diaphragm switch are then closed to indicate an alarm condition, an ignition circuit, and an electrical battery circuit including a light energized by the closed condition of said ignition circuit and by the closed condition of the electrical contact and diaphragm switch.

2. The invention according to claim 1 wherein the electrical switch being closed is dependent upon the key ignition being also closed.