Sept. 28, 1954 F. BOOS 2,690,154

FLUID FLOW INDICATOR

Filed Jan. 14, 1952

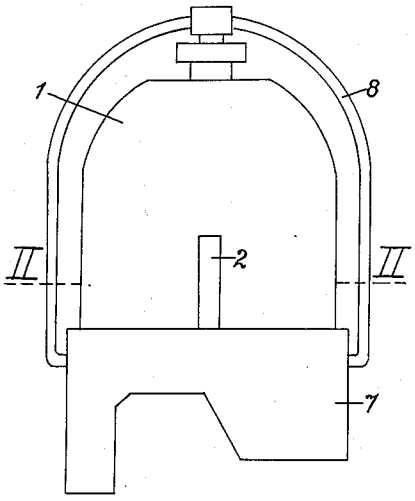


Fig. 1.

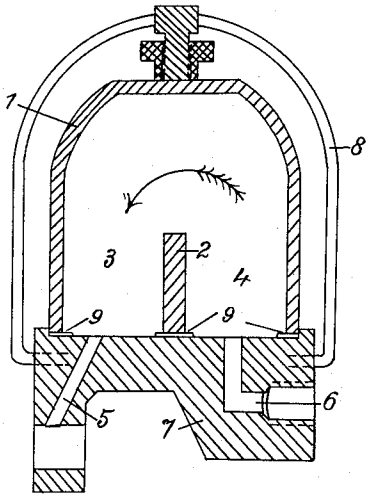


Fig. 3.

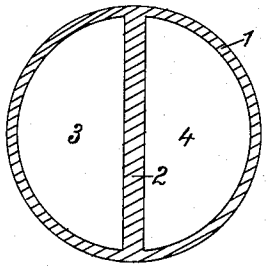


Fig. 2.

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FLUID FLOW INDICATOR

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3 Claims. (Cl. 116—117)

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The present invention relates to a testing and indicating device for the condition of the fuel feeding means especially of motor vehicles.

Engine trouble, particularly when it occurs on the road where no assistance is near at hand, is very unpleasant. What makes the situation then even more disagreeable is that the cause of the trouble is in most cases not easily detectable. Frequently the trouble is due to the carburetor refusing to work, or to defects of the fuel feeding means.

The object of the invention is to provide an apparatus of simple construction which makes it easy for the driver of the vehicle to discover the cause of the trouble. The apparatus of the invention has to be arranged in the vehicle at a place positioned above the horizontal plane in which the carburetor is arranged, provided that petrol or gasoline is being used as a fuel. In case of diesel engines the apparatus has to be positioned above the filter. The place best suited for the arrangement of the device is the instrument board.

According to the invention the apparatus consists of a container of glass or other transparent material which is divided by a partition into two chambers. The apparatus is arranged in the feed path of the fuel on a supporting member, whereby between the glass-container and the supporting member the necessary packing means are interposed. The apparatus is so devised that it informs the driver of the vehicle at any moment about the condition of the fuel feeding means with the inclusion of the carburetor, or of the filter in case of diesel engines.

When the motor is running the apparatus indicates: If the pump is feeding the fuel in an orderly way; if the pump is feeding air; if the pump is feeding both fuel and air; if the pump does not work at all; if the float valve, nozzle, or crude oil filter are clogged; the approximate pressure of the feed pump.

When the motor is at rest the apparatus indicates: If the valves of the feed pump and the carburetor are leaky, and, in case of diesel engines, if the overpressure valve at the filter, or if the conduits to and including the injection pump are out of order.

My invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings, forming a part of this specification, and in which I have illustrated by way of example an embodiment of my invention. However, I wish to say that my invention is not confined to

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any strict conformity with the showing of the drawings, but may be changed or modified, so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings, in which like parts are referred to by the same reference numerals:

Fig. 1 is a front elevation of the apparatus;

Fig. 2 is a central vertical section of the apparatus of Fig. 1;

Fig. 3 is a cross-section on line II—II of Fig. 1.

Referring now to the drawings in detail, the reference numeral 1 denotes a container of any suitable shape and consisting of glass or other transparent material. The interior of the container 1 is divided by means of the partition 2, reaching up to approximately half the height of the interior of the container, into two chambers 3 and 4. The container 1 is fastened on the supporting member 7 by means of a bail 8, whereby between the container 1 and the supporting member 7 the packing means 9 are interposed. The supporting member 7 is provided with the fuel channels 6 and 5 leading into and out of the chambers 4 and 3, respectively.

When arranged in the feed path of the fuel the device works as follows:

When the motor is running the chambers 3 and 4 are filled up with fuel, whereby the fuel level rises above the upper end of the partition 2. When the chamber 3, positioned on the carburetor-side of the device, is empty and air is bubbling up in the chamber 4, it means that there is a leak in the suction pipe or the pump. Or, if there is fuel in both of the chambers 4 and 3, but some air bubbles are rising in the chamber on the pump-side of the device, there should be a small leak in the suction pipe or pump. If the motor refuses to work for lack of fuel although the chambers are filled up with fuel, it means that either the float valve or the injection nozzles are clogged, provided that petrol or gasoline is being used. In case of diesel engines, it means that the filter is dirty. If the air cushion in the upper portion of the container 1 is too small, it indicates that the pump pressure is too high. On the other hand, if the air cushion is too big, it means that the pump pressure is too low. When the motor is at rest, or when the pump is not working, the device indicates as follows: If the fuel runs out of the chamber 4 it means that the valves of the fuel pump are out of order. If the fuel runs out of the chamber 3 it indicates that the carburetor is

out of order. It is hard to start the vehicle then, and there is a constant loss of fuel. If, in case of diesel engines, the chamber 3, positioned on the filter-side of the device, is empty it means that either the pressure valve at the filter or the conduits to and inclusive of the injection pump are leaky.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A testing and fault detecting device, particularly for motor vehicles, comprising in combination a supporting member adapted to be connected up in the fuel feed conduit and having an inlet passage and an outlet passage, the two passages each extending from the fuel conduit to a point in the wall of the supporting member short of the middle of the length thereof, a container of transparent material detachably fitted on said supporting member over said passages, a partition wall dividing the lower portion of said container into two chambers with free intercommunication above the top edge of the partition wall, and means for securing said container in position on said supporting member so that the inlet passage communicates with one chamber and the outlet passage with the other chamber.

2. A testing and fault detecting device as set forth in claim 1, wherein the chambers have approximately the same capacity and the cross-section area of each chamber is considerably greater than that of the passage with which it is in communication.

3. A testing and fault detecting device as set forth in claim 1, wherein the partition wall extends approximately half way up the container leaving a free space at the upper end of the container for the passage of fuel from one chamber to the other.

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