Nov. 29, 1938. E. K. HOLMES 2,138,098

PROTECTIVE DEVICE FOR CRANKCASE VENTILATORS

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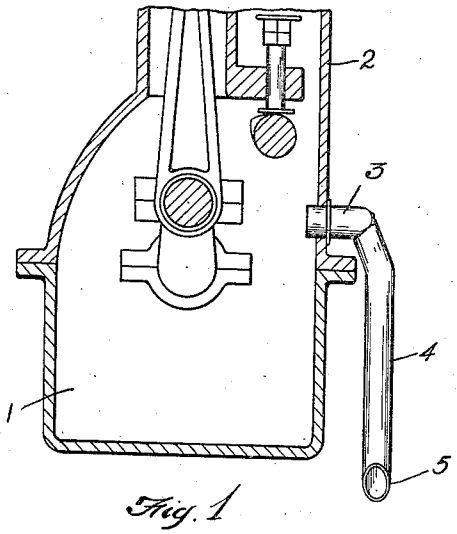


Fig. 1

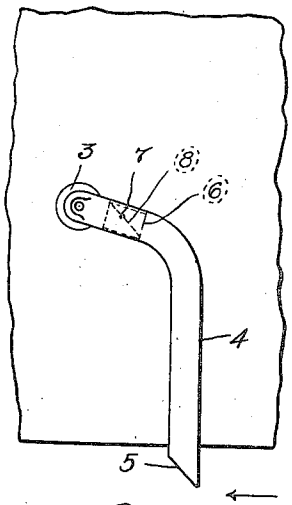


Fig. 2

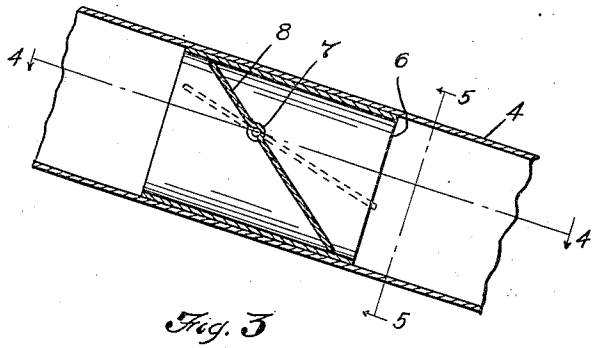


Fig. 3

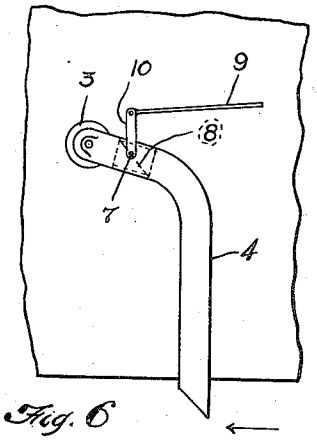


Fig. 6

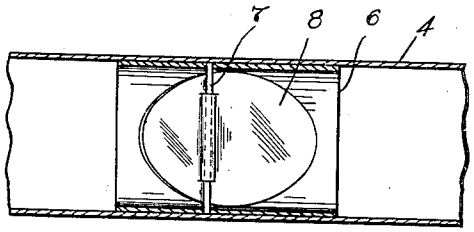


Fig. 4

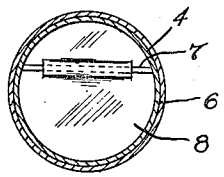


Fig. 5

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PROTECTIVE DEVICE FOR CRANKCASE VENTILATORS

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Application September 11, 1936, Serial No. 100,371

1 Claim. (Cl. 121—194)

This invention relates, as indicated, to crankcase ventilation, but has reference more particularly to devices of a protective character for use in connection with crankcase ventilators.

It has heretofore been proposed to remove fumes and vapors resulting from combustion of fuels in internal combustion engines by means of devices commonly known as crankcase ventilators, and consisting generally of a pipe or tube, one end of which is connected to the crankcase and the other end of which is open to the atmosphere. When the automobile on which the engine is mounted is in motion, the air rushing past the open end of the tube creates a suction in the tube, with the result that the fumes and vapors resulting from combustion of the fuels are drawn out of the crankcase, which is thus ventilated.

When the automobile is stationary, and particularly on windy days, or in dusty regions, sand, dust, dirt and other foreign matter enter the ventilator pipe and find their way into the crankcase, causing damage and wear to the moving parts of the engine and occasionally interfering with or preventing operation of the automobile.

It is a primary object of the present invention to provide means for avoiding the entrance of sand, dust, dirt and other foreign matter into the crankcase when the automobile has stopped.

A further object of the invention is to provide means of the above described character which will not in any way interfere with or disturb the normal crankcase ventilating action or function when the automobile is in motion.

A still further object of the invention is to provide means of the above described character which will operate automatically or which can be manually operated.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claim.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various structural forms in which the principle of the invention may be used.

In said annexed drawing:

Fig. 1 is a view, partly in cross-section and partly in elevation, showing the application of a crankcase ventilator tube embodying the invention to automobile engine;

Fig. 2 is side elevation of the engine, as viewed from the right side of Fig. 1;

Fig. 3 is a cross-sectional view, on an enlarged scale, of that portion of the crankcase ventilator tube containing the novel protective device;

Fig. 4 is a longitudinal cross-sectional view, taken on the line 4—4 of Fig. 3;

Fig. 5 is a transverse cross-sectional view taken on the line 5—5 of Fig. 3; and

Fig. 6 is a view similar to Fig. 2, but showing a modified form of the invention.

Referring more particularly to that form of the invention shown in Figs. 1 to 5 inclusive, there is shown the crankcase 1 of an automobile engine 2, from which fumes and vapors resulting from combustion of fuel in the engine are to be exhausted or otherwise removed.

For the purpose of thus exhausting such fumes or vapors, a tube is provided having a short portion 3 whereby the tube is secured to the engine and which extends at substantially a right angle to the side of the engine and a portion 4 which lies in a plane generally normal to the axis of the portion 3 and parallel with the direction of movement of the automobile on which the engine is mounted. The lower mitered end 5 of the tube is open, and when the automobile is in motion, air rushing past this open end of the tube in the direction indicated by the arrow in Fig. 2, creates a suction in the tube, causing the fumes and vapors in the crankcase to be withdrawn therefrom and exhausted through the tube.

Disposed within the upper sloping part of the portion 4 of the tube is a short sleeve 6 which is brazed, welded or otherwise secured to the inner wall of the tube. This sleeve has mounted in the walls and above the axis thereof a transversely extending pin or shaft 7, which forms a pivotal mounting for a valve or gate 8 of oval contour. By thus mounting the valve or gate 8, the lower portion thereof overbalances the upper portion, so that the valve, when the automobile is motionless and the engine thereof stopped, is in the position shown in solid lines in Fig. 3. In this position of the valve, the tube is entirely closed, and entrance of sand, dust, dirt and other foreign matter into the crankcase by way of the open end 5 of the tube is precluded.

When the automobile is in motion, however, the air rushing past the open end 5 of the tube, in the direction indicated by the arrow in Fig. 2, creates a suction within the tube, which is sufficient to cause the valve 8 to turn on its pivot to the position approximated by the dotted lines in Fig. 3, the valve remaining in this position as long as the car is in motion. With the valve in this position, the fumes and vapors are exhausted from the crankcase without difficulty. The

sleeve 6 is made of metal of light gauge, as is the valve 8. Consequently, neither the sleeve nor valve offer any appreciable obstruction to the normal crankcase ventilating action or function of the tube.

The device, as thus described, functions entirely automatically, that is, without intervention on the part of the operator or other person within the automobile.

The valve 8 may be manually controlled, as by levers operated by a foot pedal, dash pull, or electromagnet.

In Fig. 6, one end of the pin 7 extends outside the tube and the valve 8 is rigidly secured to such pin. The valve, in this case, may be operated by a dash pull (not shown), through the intermediary of a lever or wire 9 and a lever or link 10.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the structure herein disclosed, provided the means stated by the following claim or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

In combination, an internal combustion engine, a tube connected to the crankcase thereof for exhausting vapors from such crankcase, said tube having an end open to the atmospheric air, and a valve pivotally mounted in said tube and adapted to close the tube to said air when the engine is in the power-off condition and to be automatically opened by the suction created by the rush of said air past the open end of the tube during forward movement of the engine along the ground.

EARL K. HOLMES.