June 15, 1937. W. F. BRENNER 2,083,983

DUST SEAL FOR AUTOMOTIVE ENGINES

Filed Jan. 27, 1936

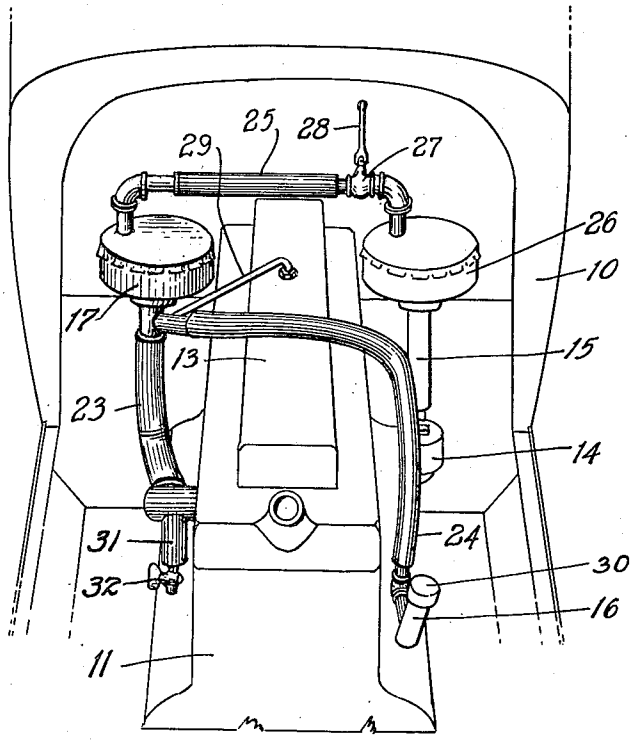


Fig. 1.

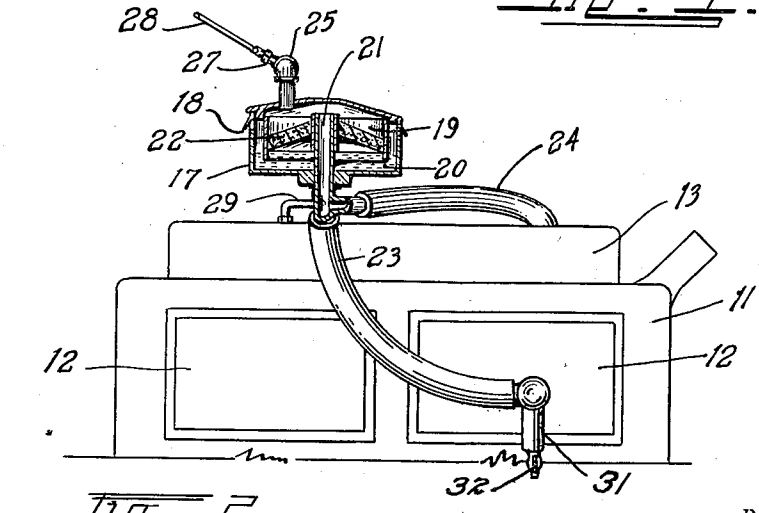


Fig. 2.

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Patented June 15, 1937 2,083,983

UNITED STATES PATENT OFFICE

2,083,983

DUST SEAL FOR AUTOMOTIVE ENGINES

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Application January 27, 1936, Serial No. 61,009

1 Claim. (Cl. 123—119)

During the recent dust storms in the Middle West and South, the present oil filters and carburetor air filters were found to be inadequate. Even though an automotive engine had its air intake protected from dust and sand and was also provided with a filter for filtering the oil, it was still possible for dust laden air to be sucked into the engine through the crank case breather or filler pipe and through the breathers on the valve and spark plug housings. In a severe dust storm, the amount of dust intaken at these points was sufficient to entirely ruin an automotive engine.

This invention relates to means for completely sealing an automotive engine against the entrance of dust laden air at any point.

Another object of the invention is to prevent the escape of gas laden and lubricant laden air from the engine so as to economize on fuel and lubricant.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

In the following detailed description of the invention reference is had to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

In the drawing:

Fig. 1 is a perspective view looking toward the forward end of an automotive engine illustrating the invention in place thereon.

Fig. 2 is a fragmentary side elevation of a typical engine illustrating a portion of the device in section thereon.

In the drawing, the outline of a typical automotive vehicle is indicated at 10 with its engine at 11. The engine 11 is provided with the usual valve cover plates 12, spark plug cover plate 13, carburetor 14, carburetor intake 15, and oil filler pipe 16.

In the usual modern engine, the carburetor 15 is provided with some type of air filter, such as shown at 26, for filtering the air entering the carburetor. No further attempt has been made however for filtering the air entering the engine through the oil filler pipe 16, the cover plates 12 and 13, etc. In fact, the usual engine is provided with a breather pipe which leads from the filler 16 to the atmosphere probably at a point below the engine pan. In a severe dust storm, dust will readily enter this breather pipe, in fact it will be drawn into the breather pipe. It will also enter under the cap of the filler pipe 16 and sift past the cover plates 12 and 13. It is to prevent unfiltered air from entering these various points that the present invention is designed.

The invention employs an oil container 17 mounted above the engine 11. The container 17 is closed except for air intake louvers 18 around its sides adjacent the top. Within the container 17 is a downwardly depending sleeve 19, the bottom of which projects into a quantity of oil 20 with which the container 17 is partially filled. A central pipe 21 projects through the bottom of the container and terminates under the closed top thereof. An annular filter pad 22 of wool felt or similar filter material closes the space between the pipe 21 and the sleeve 19.

A first conduit 23 communicates from the pipe 21 through one of the valve cover plates 12. A second conduit 24 extends from the pipe 21 to the oil filler pipe 16. A third conduit 25 extends from the top of the container 17 through the top of the air filter 26. A fourth conduit 29 extends from the cover 13 of the engine to the pipe 21 or to one of the other conduits as illustrated.

The flow through the pipe 25 may be controlled by means of a valve 27 having an extension handle 28 extending to a convenient position within reach of the operator. When the engine 11 is in operation and the valve 27 is opened, the suction of the carburetor 14 will act through the conduit 25 to create a partial vacuum within the sleeve 19 of the container 17.

When the device is installed, the filler pipe 16 is hermetically closed by means of a suitable cap 30. The operation of the engine causes a pulsating or breathing action at the filler tube 16. This causes air from the crank case to enter and leave the container 17 through the pipe 24. The air drawn into the crank case from the atmosphere enters the louvers 18, passes into the oil 20, bubbles upwardly through the filter 22 and thence flows to the crank case through the pipe 24. If the valve 27 is open, the air may be drawn through the conductor 25 from the air cleaner 26. This air will also be free of dust.

Any air being drawn to the valves because of leakage around the valve push rods, etc. must be taken through the conduit 23 or the conduit 29, both of which are sealed to the atmosphere by the oil 20 and the air cleaner 26.

A certain amount of waste gas, lubricating spray, etc., will escape from the engine through the conduits 23, 24 and 29. This gas and oil is drawn directly to the top of the container 17,

thence through the conductor **25** to the intake of the carburetor **15**. This returns through the carburetor the gases and lubrication which otherwise would be wasted. If this provides too rich a mixture for the carburetor, the valve **27** may be closed and these fumes will then escape through the filter **22** and the openings **18**. Thus it may be seen that it is impossible for the engine to breathe in or allow the entrance of dust or sand laden air at any point.

There is always a certain amount of water vapor present in the crank case, valve housings and other engine cavities. In cold weather this vapor condenses upon the cold metal surfaces to form water which dilutes and breaks down the lubricating film. With the present invention this vapor condenses in the conduits and is carried to the pipe **21** from whence it drains by gravity down the conduit **23** into a water sump **31** from whence it can be drawn off at intervals by means of a drain cock **32**.

In addition to protecting the engine from sand and dust the invention also serves to protect the driver from fumes, odors, etc., since it is impossible for any fumes to escape from the engine.

While a specific form of the improvement has been described and illustrated herein, it is desired to be understood that the same may be varied, within the scope of the appended claims, without departing from the spirit of the invention.

Having thus described the invention, what is claimed and desired secured by Letters Patent is:—

Means for sealing the valve case, crank case, and cylinders of an automotive engine against the entrance of dust laden air comprising: a first air cleaner; a second air cleaner; a first conduit from said first air cleaner to said cylinders; a second conduit from said second air cleaner to said valve case; and a third conduit from said second air cleaner to said crank case; and a fourth conduit extending between said two air cleaners so that said first conduit may draw from said second air cleaner when desired.

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