Oct. 6, 1931. L. V. CRAM 1,826,390

CRANK CASE VENTILATION

Filed April 30, 1928

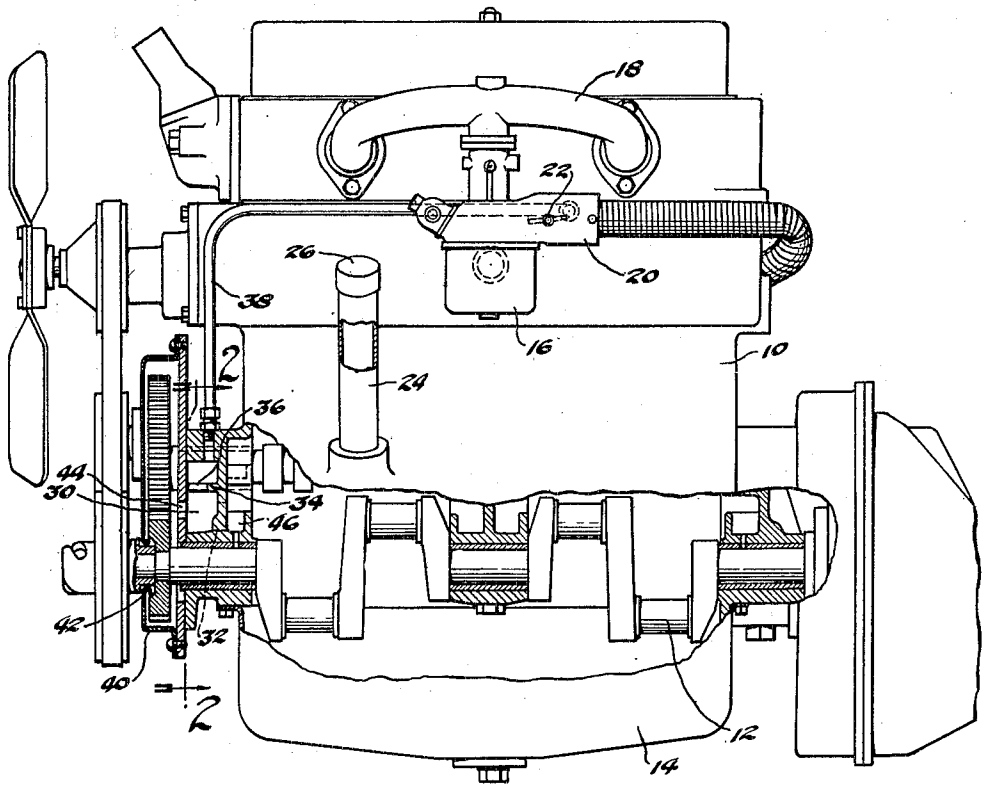


Fig. 1

Fig. 2

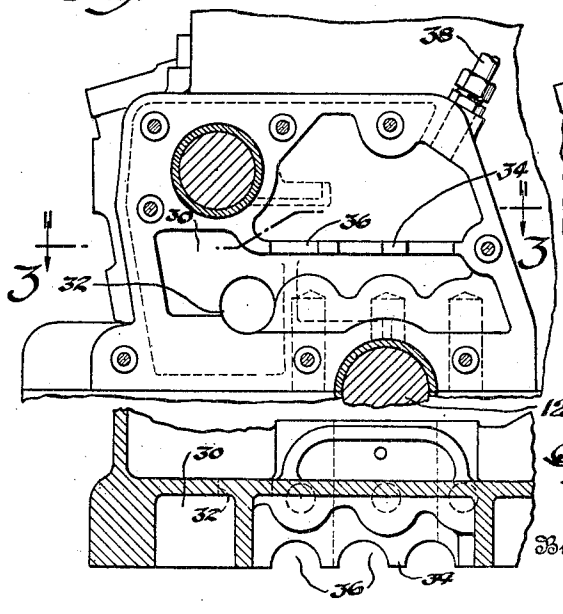
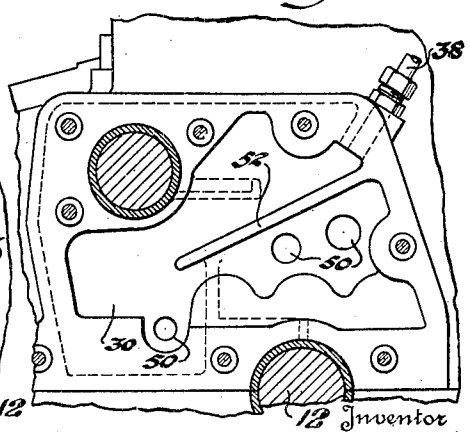


Fig 4



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UNITED STATES PATENT OFFICE

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CRANK CASE VENTILATION

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This invention relates to an arrangement for exhausting the crankcase of an internal combustion engine to remove gases which leak past the pistons and would otherwise condense and dilute the lubricating oil, and to produce a partial vacuum in the crankcase preventing the leakage of oil at the joints. According to my invention, I apply engine suction to the crankcase and to prevent the escape of oil, I employ a tortuous suction passage. This passage preferably includes a chamber located at the front of the engine between the crankcase and the housing for the usual timing gears, the chamber being connected to the carburetor air intake. I arrange a baffle within the chamber to intercept particles of oil. The passage leading from the crankcase to the chamber preferably communicates with the chamber adjacent the bottom so that any oil collected thereon will drain back into the crankcase. If desired, I may also provide for the admission of air to the chamber, preferably by way of the timing gear housing, to produce an evaporative effect on the oil in the chamber.

In the drawings:

Figure 1 is a side elevation of a conventional type of internal combustion engine to which my invention is shown applied.

Figure 2 is a section on line 2—2 of Figure 1.

Figure 3 is a view on line 3—3 of Figure 2, and,

Figure 4 is a view corresponding to Figure 2 but showing a modification.

10 indicates an internal combustion engine provided with crankshaft 12, crankcase 14, and carburetor 16, supplying combustible mixture to the engine through the manifold 18. 20 indicates the air intake of the carburetor while 22 indicates the choke valve which may be closed by the operator when a rich mixture is desired for starting. 24 indicates the oil filler tube, the upper end of which is tightly closed by cap 26.

At the forward end of the engine I have provided a chamber 30 communicating with the crankcase through port 32. As viewed in Figure 1 it will be noted that the opening 32 lies back of the plane of the paper, and, as shown in Figure 2, communicates with the chamber 30 at its bottom. This chamber 30 is provided with a horizontal baffle 34 perforated as at 36 and from the upper portion of the chamber leads a conduit 38 communicating with the carburetor air intake 20 at a point outside of the choke valve 22. Forward of the chamber 30 is the timing gear housing 40. The housing is pierced by the forward extension of the crankshaft, and the edges of the opening about the shaft are inturned as shown at 42. The fit of the shaft in the opening is a loose one so that opportunity is afforded for the admission of air to the interior of the housing. The housing communicates with the chamber 30 through port 44. At 46 I have shown an oil pocket located above one of the main bearings of the crankshaft.

The arrangement operates as follows: When the engine is operating suction is applied to the conduit 38 causing vapors to be drawn from the crankcase through passage 32 into chamber 30 and thence through apertures 36 into the conduit 38. Owing to the tortuous character of the suction passage and the provision of the baffle 34, the oil particles are intercepted from the vapors and collect in the chamber 30, finding their way back into the crankcase through the port 32. Since the crankcase is otherwise closed the suction produces sub-atmospheric pressure in the crankcase which prevents the loss of oil at the joints in the case. The low pressure existing in the chamber 30 causes a flow of air into the chamber through the aperture 42 in the timing gear housing and the port 44. This small flow of air has a slight evaporative effect upon the oil in the chamber 30 and assists in the removal of diluents.

In the form shown in Figure 4 the crankcase vapors enter the chamber 30 through the ports 50 one of which is located at the bottom of the chamber to serve as an oil drain. The baffle 52 in this form is not perforated.

I claim:

1. An engine having a crankcase serving as a lubricant reservoir, a chamber arranged adjacent one end of the crankcase and communicating therewith, a gear housing for-

ward of the chamber, said chamber being in communication with both the crankcase and the housing, an air inlet for the housing and a suction tube leading from the said chamber.

2. A crankcase for internal combustion engines comprising a casting provided at one end with an integral chamber having an open face, a housing secured over the open face of the chamber, a crankshaft in the crankcase extending through the chamber and housing, an air inlet for the housing adjacent the axis of the shaft, and a suction tube communicating with the chamber.

In testimony whereof I affix my signature.

LEROY V. CRAM.