June 3, 1930. R. CLASON 1,761,970

VENTILATOR CONTROL VALVE

Filed May 25, 1928

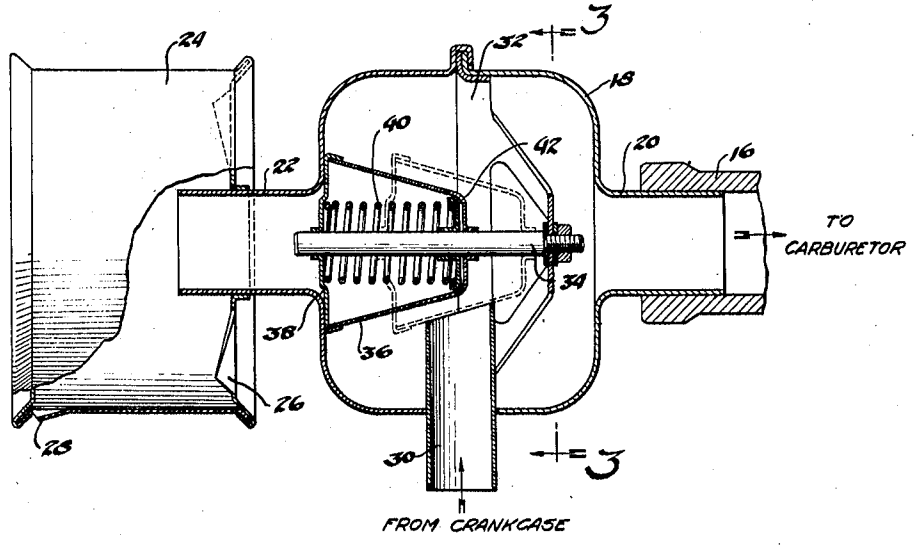


Fig. 2

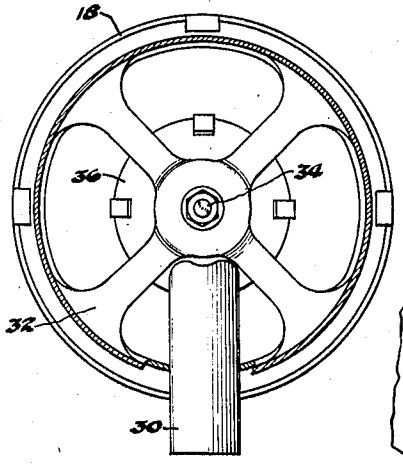


Fig. 3

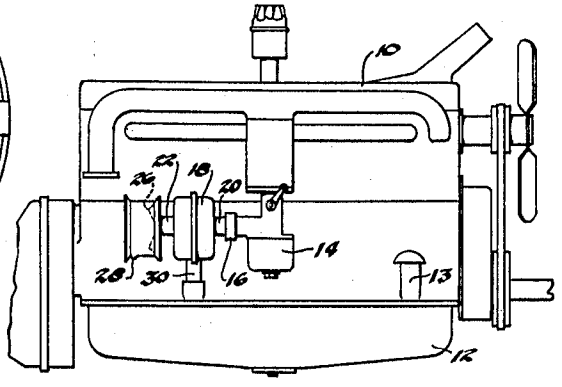


Fig. 1

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UNITED STATES PATENT OFFICE

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VENTILATOR-CONTROL VALVE

Application filed May 25, 1928. Serial No. 280,501.

Present day automobile engines are commonly provided with crankcase ventilation, that is, with means for producing a circulation of air through the crankcase to effect evaporation of diluents from the lubricating oil contained therein. In such arrangements it is essential that there be sufficient circulation when the engine is running slowly to take care of dilution for it is under these conditions that most of the dilution occurs. However, if the circulation through the crankcase were to increase with the engine speed, as would be the case if engine suction were directly applied to the crankcase, it would soon become so great that oil would be drawn out along with the air. To overcome these difficulties it has heretofore been proposed to provide an arrangement whereby at low speeds the engine takes substantially its entire air supply from the crankcase, while at high speeds the crankcase is wholly or partly cut off and the engine is supplied from the atmosphere.

Prior constructions adapted to accomplish the above result have been built into the engine so that it has been difficult to apply the arrangement to existing motors. My arrangement is embodied in a simple fitting which may be conveniently applied to a motor after the manner of an accessory. The fitting includes a special type of valve for controlling the ventilation which is very simple and is noiseless in operation.

In the drawings,

Figure 1 shows my invention applied to a conventional internal combustion engine.

Figure 2 is a longitudinal section through my device, and

Figure 3 is a view taken on line 3—3 of Figure 2.

10 indicates an internal combustion engine provided with a carburetor 14 supplying combustible mixture to the engine and with a crankcase 12 equipped with an air inlet 13. 16 indicates the air intake of the carburetor. My attachment comprises a tubular member 18 having an outlet port 20 adapted to be connected to the carburetor air intake 16 and an inlet port 22 for the admission of air from the atmosphere. This port is preferably equipped with an air cleaner which may be of any preferred type but is illustrated as of the centrifugal variety being equipped with helical blades 26 for whirling the entering air, and with a tangential dust discharge port 28. The details of the cleaner form no part of this invention. The housing 18 is also provided with a port 30 for connection with the engine crankcase 12. The housing 18 is provided with a perforated partition 32 supporting a guide 34 on which is slidably mounted a conical piston valve 36, the end 38 of which is adapted to close the port 22, the valve 36 being normally urged toward closed position by a spring 40 housed within the valve and bearing at one end against a disk or other stop 42 secured to the guide 34. The end of the conduit 30 is shaped to conform to the slope and curvature of the side wall of the valve 36 so that when the valve occupies the position shown in dotted lines in Figure 2, the conduit 30 may be shut off.

The device operates as follows: During operation of the engine suction is applied to the carburetor air intake and this suction increases with engine speed. When the suction is low the valve 36 remains closed and the engine receives its air supply from the crankcase through the conduit 30, the air drawn out being replaced by fresh air entering through the air inlet 13. As the engine speed increases and the suction becomes greater, valve 36 is drawn to the right, in opposition to its spring, unsealing the port 22 and partially shutting off the conduit 30. In this position of the parts the engine receives its main air supply from the atmosphere air inlet 22 and a portion of its supply through the crankcase conduit 30. As the suction increases the valve will move further to the right until at high speeds the crankcase conduit is entirely cut off and the engine receives its entire air supply from the atmosphere.

Obviously the invention is capable of considerable modification. The conduit 18 may be of any desired shape and the various ports may be arranged otherwise than as shown. The valve may take other forms than that

shown, and if desired may be arranged so that it never completely cuts off the crankcase.

In actual tests I have found the above described arrangement to provide the desired ventilation at low speeds and to prevent excessive ventilation at high speeds. I have found the valve to be efficient and silent in operation. The entire arrangement is especially designed so that it may be sold as an accessory for application to various makes of automobiles.

I claim:

1. An engine having a suction operated air intake, and a crankcase provided with an air inlet and an air outlet, a chamber communicating with the engine intake and with the crankcase outlet and provided with an air admission port, and a valve in said chamber normally spring pressed to close said port, but adapted upon increase in engine suction to open said port and effect a shutting off of the crankcase outlet.

2. In the combination as defined in claim 1, said crankcase outlet having its free end tapered for co-operation with a similarly tapered part of the valve so as to serve as a stop for the latter in one of its extreme positions.

3. An engine fitting, comprising a casing having a port for attachment to the engine intake, an air admission port, and a port for connection with the crankcase outlet, and a reciprocating spring pressed valve in said casing adapted to formally close said air admission port and to gradually open the last named port and close said crankcase outlet upon increase in engine suction.

4. In the combination as defined in claim 1, said valve having a tapered portion and said crankcase outlet being provided with a similarly tapered end acting as a stop for said valve in its extreme inward position.

5. An engine fitting comprising a casing having inlet ports and an outlet port, a valve slidably mounted in the casing in alignment with one of said inlet ports, means for yieldingly urging said valve in a position to close said inlet port, said valve being provided with a portion arranged to pass over the other inlet port to effect closing thereof as the first-named port is opened.

6. An engine fitting comprising a casing having angularly related inlet ports and an outlet port, a hollow piston valve slidably mounted in the casing in alignment with one of said inlet ports, means housed within the valve for yieldingly urging said valve in a direction to close said inlet port, said valve being provided with a portion arranged to pass over the other inlet port, to effect gradual closing of the latter as the first-named port is opened.

7. An engine fitting comprising a tubular casing having an outlet port and a plurality of inlet ports, one of said ports extending into the casing at right angles to the other port, a conical valve slidably mounted in said casing and having an end portion adapted to close one of said inlet ports, and a tapering skirt portion adapted to pass over the other inlet port, and resilient means for urging the valve in a direction to close said first named port, said casing having a perforated partition extending across it, a valve guide secured to the partition, said valve being slidably mounted on the guide.

8. An engine fitting comprising a tubular casing having an outlet port and a plurality of inlet ports, one of said ports extending into the casing at right angles to the other port, a conical valve slidably mounted in said casing and having an end portion adapted to close one of said inlet ports, and a tapering skirt portion adapted to pass over the other inlet port, resilient means for urging the valve in a direction to close said first named port, said valve being provided with a guide on which it is slidably mounted, and said resilient means encircling the guide and being housed within the valve.

In testimony whereof I affix my signature.

RAGNAR CLASON.