June 2, 1953 R. K. CHASE 2,640,475

CYLINDER TOP OILER

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Fig. 1

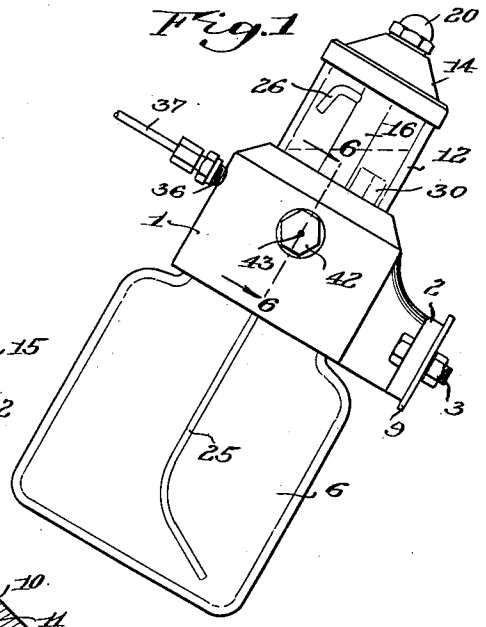


Fig. 2

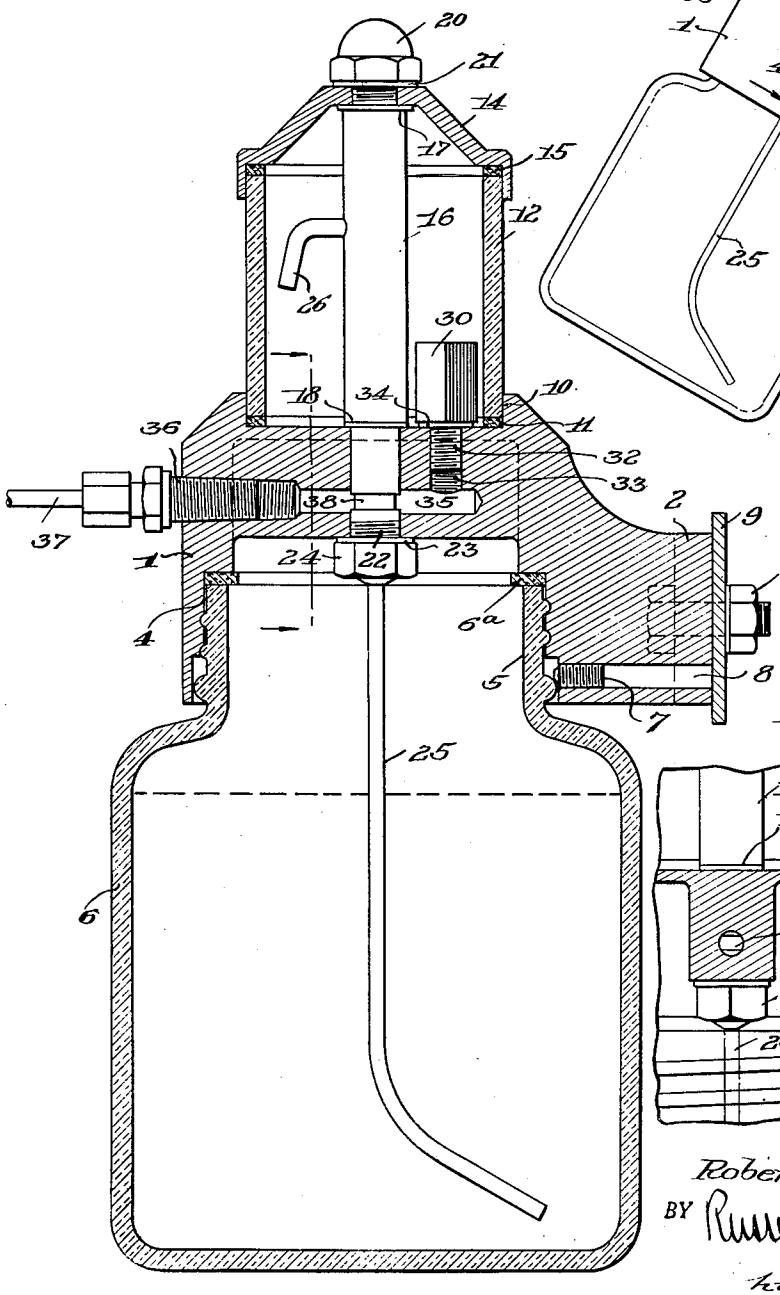
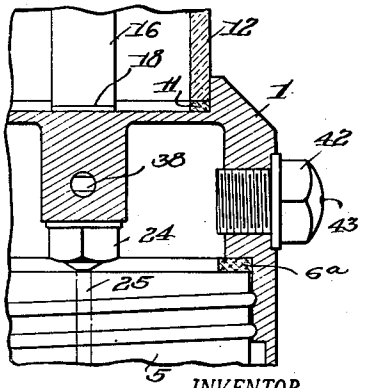


Fig. 3



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Fig. 4

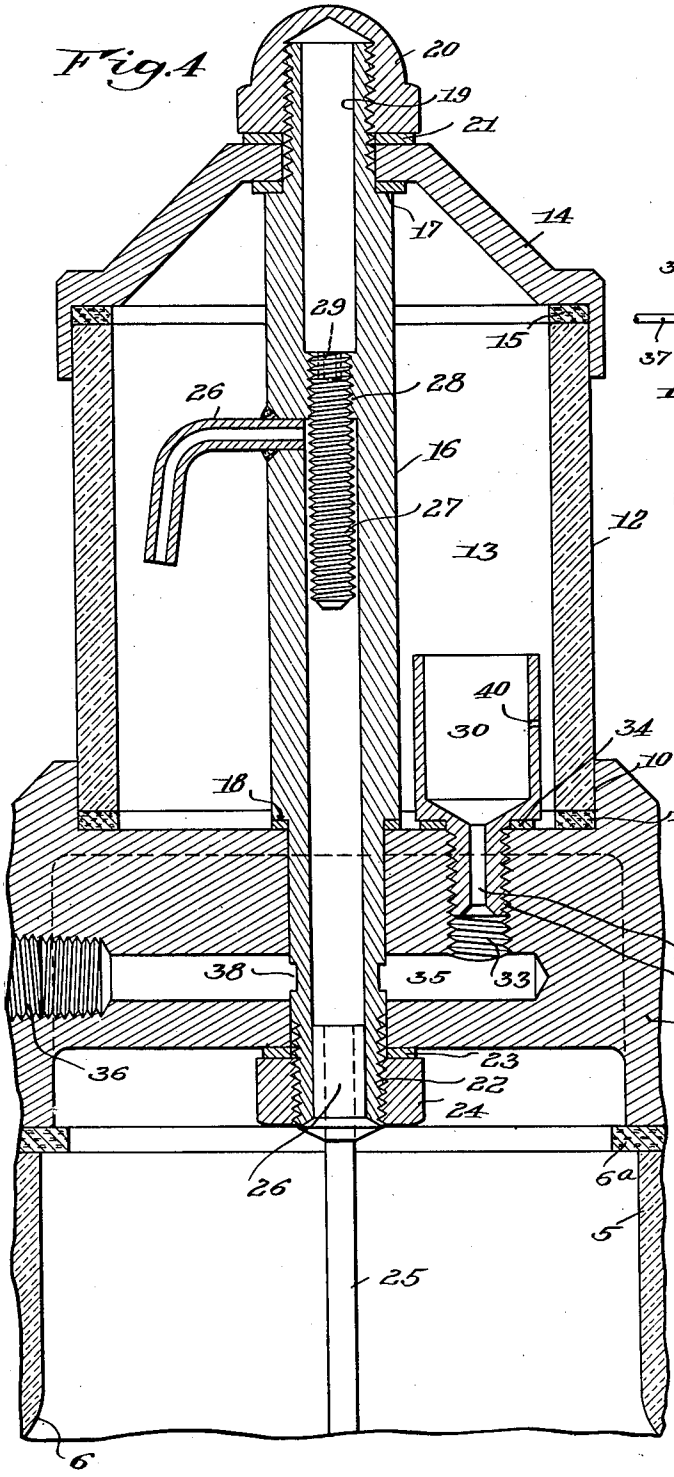


Fig. 5

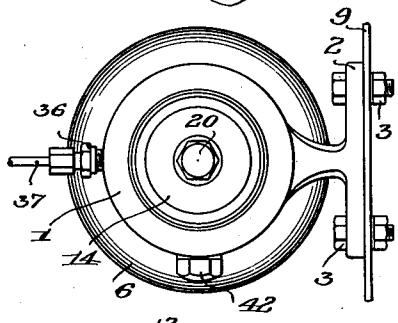
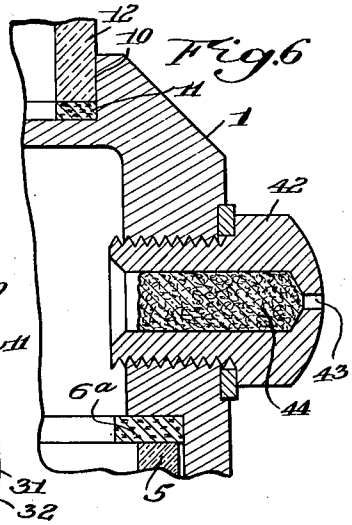


Fig. 6



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CYLINDER TOP OILER

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4 Claims. (Cl. 123—196)

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My present invention relates to lubricating devices and more particularly to auxiliary oilers for internal combustion engines the purpose of which is to supply lubricant directly to the pistons and cylinder walls in and immediately adjacent to the explosion chambers in the engine head and the invention has for its broad object to provide a neat, compact, efficient and serviceable device of this nature particularly applicable to automobile engines.

A further object of the invention is to provide an oiler of this character that will insure immediate response to lubricating requirements when the engine needs it most, namely, when it is started after a period of rest.

Other objects are to provide a simple and sensitive means for adjusting the feed of the oiler and for insuring an ample feed when an automobile engine to which the oiler is fitted is climbing a hill and the vacuum it produces to draw the oil is at a low ebb or not present at all.

To these and other ends the invention resides in certain improvements and combinations of parts all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of this specification.

In the drawings:

Figure 1 is a side elevation of an oiler of the character outlined constructed in accordance with and illustrating one embodiment of my invention, the same being shown in the position it assumes when the automobile to which it is attached is climbing a hill;

Figure 2 is an enlarged, vertical central section thereof taken in a plane running front to rear but showing some enclosed parts in elevation;

Figure 3 is a further enlarged fragmentary detail section taken on the line 3—3 of Fig. 2;

Figure 4 is a fragmentary enlargement of a portion of the showing of Fig. 2 but with the interior parts also in section;

Figure 5 is a top plan view on a scale intermediate those of the other views and

Figure 6 is an enlarged fragmentary detail view on the scale of Fig. 4 and taken on the line 6—6 of Fig. 1.

Similar reference numerals throughout the views indicate the same parts.

To first give a general idea of the major parts and functions involved, my device is fitted to be attached to the dash or partition at the rear of the engine compartment of an automobile. It embodies a general casing including a body casting from which depends below an oil reservoir and which supports a vacuum dome on top. A pipe

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line to the intake manifold of the engine adjacent to the carbureter is connected to exhaust pressure from the vacuum dome and draw oil therefrom along with the fuel charge and thereby also induce a replenishing flow of oil through another pipe line from the reservoir to the dome. There is a regulator for this latter pipe line accessible from the exterior for very fine adjustment as the amount of flow required is not great. A special type of oil, prepared for this particular purpose, and also to combat carbon and gummy deposits in the manifold and in the head and valves is available.

Referring more particularly to the drawings, 1 indicates the central body casting of the casing structure and 2 a bracket extension thereof whereby the device is secured by bolts 3 in an upright position in rear of the engine. A threaded cavity 4 in the underside of the element 1 receives and supports the threaded neck 5 of a jar-like main oil reservoir 6, preferably of glass so that its contents may be viewed. The neck seats against a gasket 6a as it must be air tight. The reservoir is readily removeable for filling but is normally locked against loosening by a dog point set screw 7 in a bore 8 in bracket extension 2, the said bore being covered by washer plate 9 for bolts 3.

A similar cavity 10 with a gasket 11 similarly receives and seats in an airtight manner the cylindrical tubular body portion 12 of a surmounting dome that forms the vacuum chamber 13. Its top 14 is also sealed with a gasket 15. A central heavy pipe 16 has gasket sealed shoulders 17 and 18 at top and bottom of the chamber, respectively, the latter engaging the central element 1 and the other engaging under the chamber top 14 through which the threaded upper end 19 of the pipe projects to the outside. A cap nut 20 on this threaded end, through a gasket 21, secures the top 14 while the reduced threaded lower end 22 of pipe 16, projecting into underside cavity 4 carries a gasket 23 and nut 24 that holds the whole assembly thus far described tightly together.

A suck pipe 25 having its mouth near the bottom of reservoir 6 has a plug joint 26 at its upper end driven into the lower end 22 of pipe 16. At an upper point in chamber 13 a lateral opening in pipe 16 is provided with a spout 26 arranged to drip into vacuum chamber 13. Near its intersection with the pipe the latter is interiorly threaded to receive a screw plug 27 in such manner that, this threaded portion being above the said opening at 28, the plug loosely occupies the bore of the pipe below.

There is thus established a pipe line between reservoir 6 and vacuum chamber 13. But it is obvious that the lower the position of the plug 27 in the pipe bore the longer the path of the oil is made in following its threads and thus the greater the resistance to its flow and its rate of delivery to the delivery port for the vacuum chamber established by the spout 26. In other words, an adjustable frictional resistance is set up. Three drops a minute, roughly, is an average feed.

The upper end of the plug 27 is formed into a wrench socket at 29 and by removing cap nut 20 a suitable wrench may be inserted in pipe 16 and the plug adjusted up or down past the nozzle or spout opening so that more or less of its threads must be traversed by the oil.

On the floor of vacuum chamber 13 in rear of pipe 16 and near the rear wall 12 of the chamber is a small cup 30 having a small feed port 31 in its bottom. The port is furnished by a threaded tubular extension 32 on the cup secured in a vertical threaded passage 33 in element 1, a gasket 34 being provided under the cup. This port and passage 31—33 communicates with a horizontal front to rear passage 35 in casing body element 1 while at the forward end of the last mentioned passage is a threaded enlargement receiving the plug connection 36 of an oil line feed pipe 37 which delivers the lubricant to the intake manifold of the engine and through which vacuum is communicated to the vacuum chamber 13. The central pipe 16 intersects the passage 35 and is of greater diameter but it is circumferentially grooved at 38 to permit the oil to flow around it (see also Fig. 3).

The operation is as follows:

The main reservoir 6 being comfortably filled with oil and the engine started, suction from the manifold through feed line 37, 36, 35, 33, 31 draws air from chamber 13 and builds up a partial vacuum therein. This induces oil at atmospheric pressure to be forced up the supply line 25, 26, 16, 27 to the delivery port and spout 26 wherefrom it falls, drop by drop, into the vacuum chamber. In a short time the level reaches the rim of cup 30 and spills therein at the same rate that it drips from the spout and is of course sucked from the feed port 31 to the engine manifold and the explosion chambers.

When the engine is stopped, the cup will be full and the oil level in chamber 13 will be at its rim which conditions will remain so for a long period of rest. When the engine is started again, which is the time that it particularly needs cylinder head lubrication, there will therefor be an immediate feed from the cup under suction from the manifold. However, after a long period of idleness during which vacuum in chamber 13 had gradually disappeared, the cup would be emptied before that vacuum was sufficiently restored to raise the column of oil in the supply line 25, 16 and again issue from the delivery spout sufficiently to cause the oil level (still at the rim) to spill over into the cup for sustained feeding. I therefor provide in the side wall of the cup at an intermediate point a minute seepage opening 40 (Fig. 4) which functions only when the cup is empty. In practice I have made this opening only fifteen thousandths of an inch. Gravity plus the adjacent suction at the feed port 31 causes enough oil to seep through this orifice to initiate a flow to the engine until the normal vacuum restores the normal delivery at the spout and the level of oil in the chamber again spills over down the inside walls of the cup. But with the engine idle and an absence of vacuum in passages 35, 33, 31, opening 40 will not function to transmit oil out of the cup and back into chamber 13 proper.

Of course atmospheric pressure must be maintained in the main reservoir 6 in order to raise the column of oil in the line 25, 16 and avoid any vacuum resulting from the withdrawal of oil. To this end a breather plug 42, Figs. 5 and 6, is threaded through a side wall of cavity 4 above the jar neck 5. An opening 43 therein from the atmosphere leads to the hollow interior stuffed with a suitable air filtering material 44.

The reason for locating the cup 30 rearwardly as shown and described is explained as follows with particular reference to Fig. 1. When an automobile engine is under the load of a hill climb the vacuum in its manifold is reduced and hence, in the present instance, the vacuum in chamber 13 momentarily declines. But the upgrade also tilts the oiler rearwardly as in the figure referred to so that the body of oil in the bottom of chamber 13 shifts to a different level that submerges the feed cup 30 and fills it for the duration of the emergency. The normal level of oil in the vacuum chamber at the rim of the feed cup is indicated so shifted by the broken line in Fig. 1.

I claim as my invention:

1. In a cylinder top oiler for internal combustion engines, the combination with a casing structure embodying an oil reservoir, a vacuum chamber having a feed port, an oil line connecting the reservoir and chamber and provided with a delivery port in the chamber, and a carbureter connection arranged to drain the feed port and directly connected thereto but otherwise sealed from the vacuum chamber, of a cup surrounding the feed port with its rim well above the feed port and the floor of the chamber so that it may maintain an independent oil level above that in the chamber into which cup arranged on the floor of the chamber accumulations of oil on the floor of the vacuum chamber spill when the oil level in the latter reaches a given point, said cup being provided with a minute orifice of less capacity than the feed port in a side wall thereof connecting it with the chamber below the rim of the cup and above the floor of the chamber.

2. In a cylinder top oiler for internal combustion engines, the combination with a casing structure embodying an intermediate casing body suspending a lower oil reservoir, a vacuum chamber dome superposed on the casing body above the oil reservoir and having a feed port, an oil line embodying a pipe extending vertically through the oil chamber and through the casing body and the dome to the exterior, said pipe being provided with a delivery port in the vacuum chamber and with a removable cap on its exterior end that both normally seals the said pipe and secures the dome to the casing body, and a carbureter connection arranged to drain the feed port, of a screw plug in the pipe obstructing the oil line and around the threads of which the oil must travel a greater or less distance and with more or less frictional resistance according to the position of the plug, the latter being accessible for adjustment through the said outer end of the pipe above the dome.

3. In a cylinder top oiler for internal combustion engines, the combination with a vacuum

chamber and an oil feed line connected to deliver thereto, of a cup on the floor of the chamber open at the top to receive overflow therefrom at a point well above the floor of the chamber so that the cup is normally sealed off from a low level of oil in the chamber, there being a feed port at the bottom of the cup, and a carbureter connection arranged to drain the feed port and directly connected therewith but otherwise sealed from the chamber, said cup being provided in its wall with a minute opening above the floor of the chamber and above a low level of oil therein for the purpose described.

4. In a cylinder top oiler for internal combustion engines, the combination with a casing structure embodying an oil reservoir, a vacuum chamber embodying a dome superposed on the oil chamber and having a feed port, an oil line connecting the reservoir and chamber embodying a pipe extending vertically straight through the oil chamber and through the dome to the exterior and provided with a delivery port in

the vacuum chamber, and a carbureter connection arranged to drain the feed port, of a screw plug, threaded from tip to tip, located in and obstructing the oil line around the threads of which plug the feed of oil must travel a greater or less distance and with more or less frictional resistance according to the position of the plug, said plug being accessible for adjustment through the outer end of the pipe.

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