

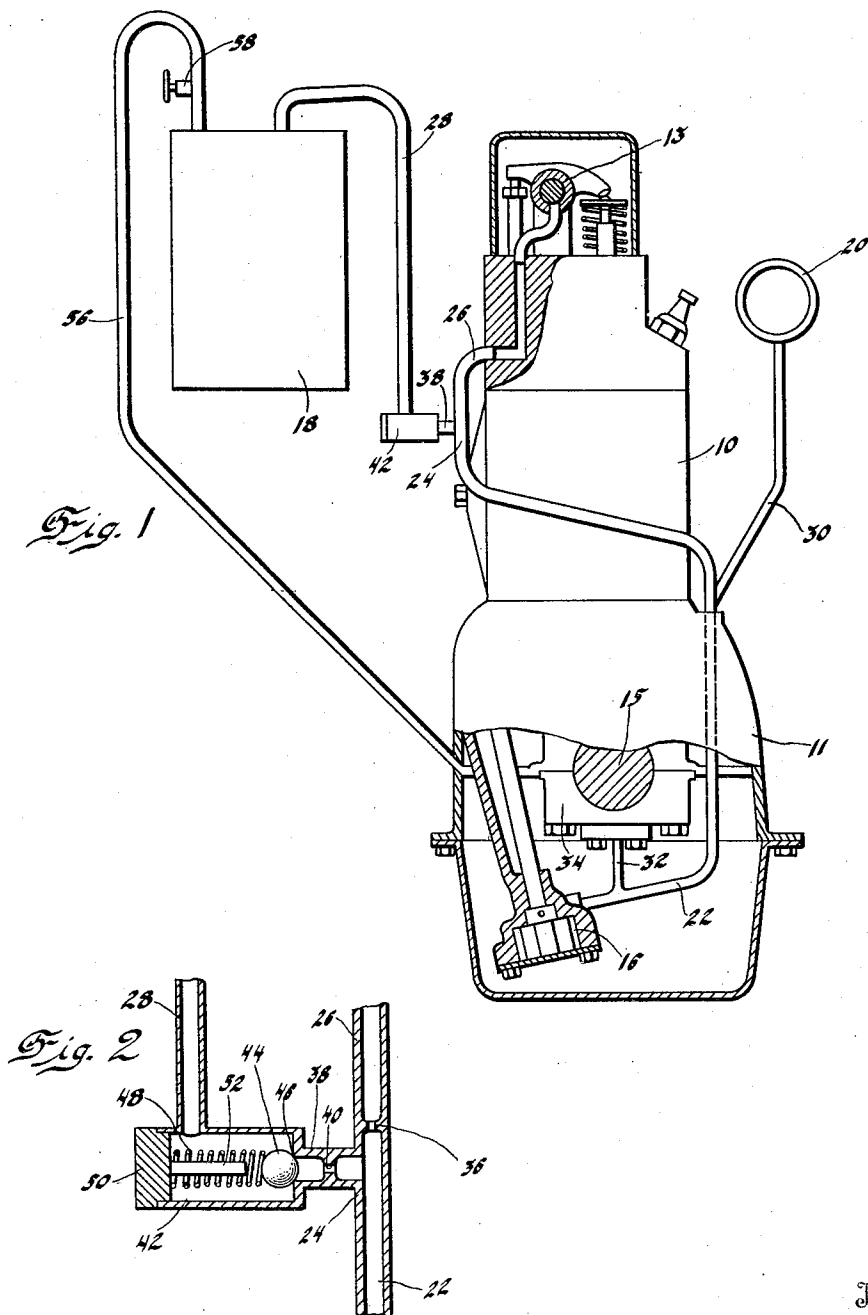
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OIL FILTER INSTALLATION

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OIL FILTER INSTALLATION

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This invention relates to an oiling system and particularly to a system of lubrication as applied to an internal combustion engine used on automotive vehicles.

The object of the invention is to provide an oiling system in which the oil is filtered only when the pressure in the system becomes high. At low pressures, no oil is passed to the filter, but is forced to travel directly to the working parts of the engine assuring adequate lubrication at all times.

Prior lubricating systems have forced all or a portion of the oil to the oil filter at all times. However, with my improved construction no oil will be passed to the filter until the pressure in the system is built up to a definite amount, which will be sufficient to operate a by-pass valve placed within a branch conduit leading to the filter.

I accomplish the object of the invention by providing a pump to force the oil into the usual conduit in which there is placed a restriction. Beyond the restriction, the conduit leads to a working part of the engine such as, for example, the rocker arm shaft. Between the restriction and the pump there is placed a branch pipe which leads to the oil filter. In this branch there is placed a second restriction and beyond the restriction a spring pressed, one way valve which controls the delivery of oil to the filter. When the pressure in the oiling system reaches a certain amount, the force of the spring will be overcome and the valve permitted to unseat which will allow a flow of oil to the filter.

The invention is disclosed on the accompanying drawings in which:

Figure 1 is a representation of my improved oiling system as applied to an internal combustion engine.

Figure 2 is an enlarged sectional detail of the restriction and the by-pass in the branch leading to the filter.

Referring to the numbered parts on the drawings, 10 indicates an internal combustion engine as a whole, 11 the crankcase thereof, 13 the rocker arm shaft, 15 the crankshaft, 16 the pump, 18 the filter and 20 the oil gauge, which parts are conventional with internal

combustion engines and which per se form no part of the invention.

From the pump 16 an oil passage or pipe 22 leads to a point 24 where it forks out into the branch 26 leading to the rocker arm shaft 13, and the branch 28 leading to the filter 18. The passage 22 has a further branch 30 leading to the oil gauge 20, and a branch 32 leading to the main bearings 34 of the crankshaft. The passage 26 has a restriction 36 to limit the flow of oil therethrough to the rocker arm shaft 13.

The branch 28 is connected to the pipe or passage 22 just before reaching the restriction 36. A short arm or pipe 38 having a restriction 40 connects the pipe 22 with a by-pass arrangement 42. Within the by-pass there is confined the ball valve 44 held against its seat 46 by means of a coil spring 48. A plug 50 closes the end of the by-pass and a rod 52 secured to the plug aids in the positioning of the spring 48. From the by-pass 42 there leads the branch 28 to the oil filter 18. From the oil filter a pipe 56 leads the filtered oil back to the crankcase 11. A test valve 58 is provided in the passage 56 in order that it may be ascertained whether or not the filter is functioning. If desired, the restriction 40 may be placed in the opposite side of the by-pass or within the pipe 28.

The function of the restriction at 40 and the valve 44 is to prevent the flow of oil to the filter except when the pump 16 builds up a pressure in the conduit 22 in excess of the force exerted by the spring 48 on the ball valve 44. When this excess pressure is reached, the valve will be unseated and the oil caused to flow through the restriction 40, the by-pass 42, and branch 28 to the filter 18. At low speeds or when the pressure in the oiling system is low, no oil will flow into the filter but the entire oil supply will be forced to the working parts through the conduit 26 shown in Figure 1. This arrangement of the restrictions in the by-pass will assure an adequate supply of oil to the working parts at all times and will prevent an excessive flow of oil to the filter.

I claim:

1. In a lubricating system as applied to internal combustion engines, an oil pump and

oil filter in said system, a pipe line leading from the pump to the engine rocker arm shaft, a restriction in said line, a second pipe line leading to the filter and connected to said
5 rocker arm line, a restriction in said filter line, a spring pressed check valve at said filter line restriction, and means for returning the filtered oil to the pump.

2. In a lubricating system as applied to internal combustion engines, an oil pump and
10 oil filter in said system, a pipe line leading from the pump to the engine rocker arm shaft, a restriction in said line, a second pipe line leading to the filter and connected to
15 said rocker arm line, a restriction in said filter line, a spring pressed check valve at said filter line restriction, said restriction and valve in the filter line positioned adjacent each other at the place of connection of the filter
20 line with the rocker arm line, and means for returning the filtered oil to the pump.

3. In a lubricating system as applied to internal combustion engines comprising an oil pump and an oil filter in said system, an
25 oil line leading from the pump to the working parts of the engine, a restriction in said line, a second oil line leading to the filter and connected to said first named line, a restriction in said filter line, means at said filter
30 line restriction to control the flow of oil, and means for returning the filtered oil to the system.

In testimony whereof I affix my signature.
FERDINAND A. BOWER.

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