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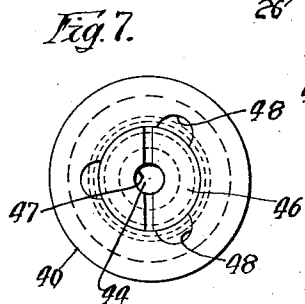
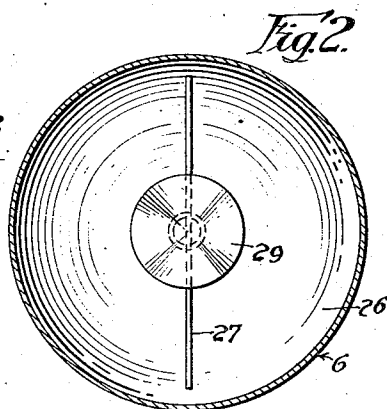
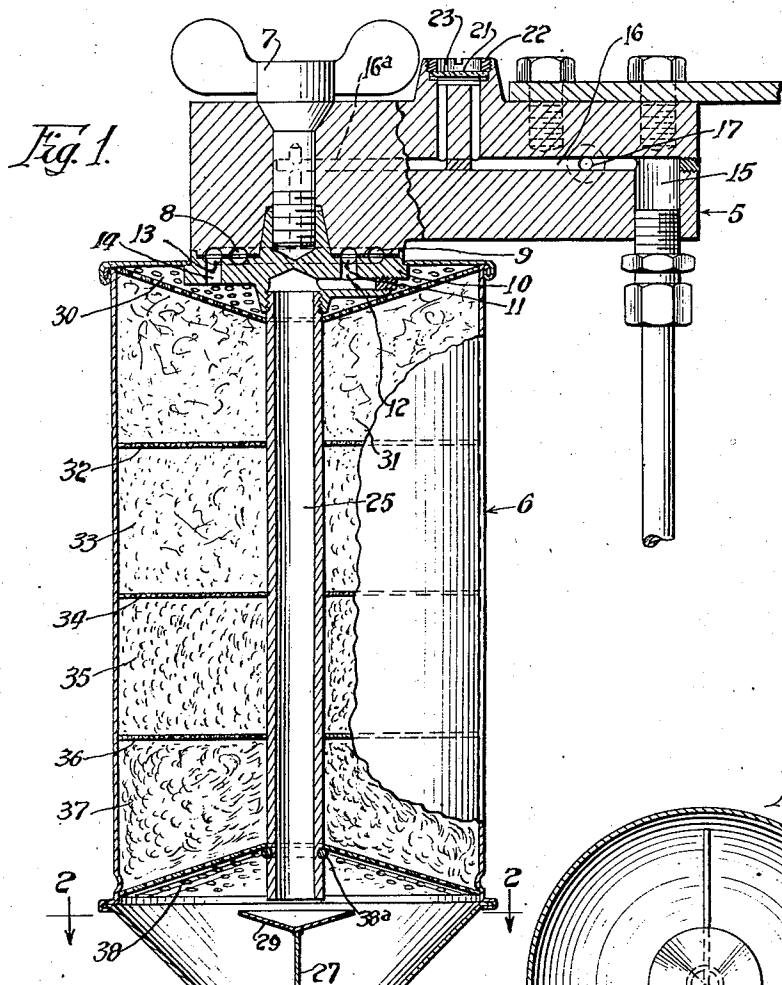
G. OLSON ET AL

2,223,701

OIL FILTER

Filed Oct. 30, 1937

2 Sheets-Sheet 1



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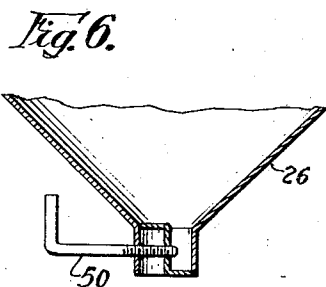
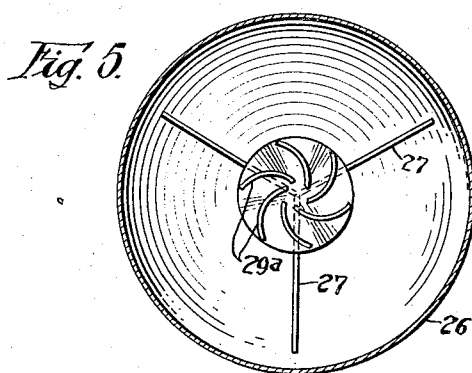
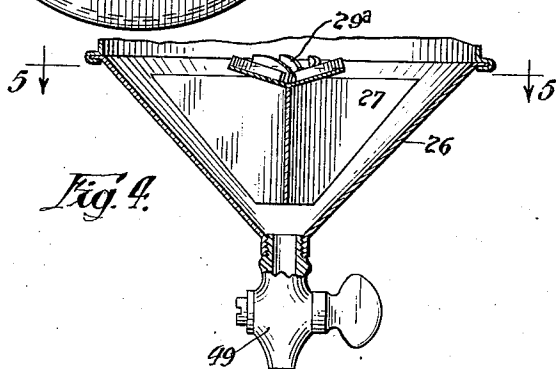
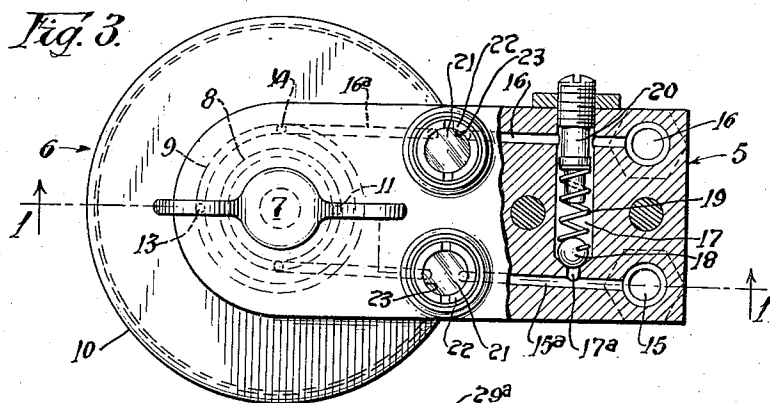
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,223,701

OIL FILTER

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3 Claims. (Cl. 210—140)

Our invention is a device for the purifying of oil, and specifically the purifying of lubricating and fuel oils in servicing internal combustion engines.

Some of our main objects are a simple, economical, efficient, universally adaptable and changeable device of the character herein set forth.

Another object is a filter which first removes from the impregnated oil the heavier foreign ingredients prior to the treatment of the freed oil by a filtering medium.

A major object is a filter which can be mounted or demounted instantly for cleansing or renewal by the most unskilled, without tools or separate equipment.

Another major object is a filter which automatically discharges ingredients therefrom which have been separated out of the oil in process of purification.

Allied objects will appear.

The attached drawings show an embodiment of our invention, in which

Fig. 1 is a sectional elevation of the invention taken along the line 1—1 of Fig. 3.

Fig. 2 is a plan view of the sump portion of the filter taken along the line of the arrows 2—2 in Fig. 1.

Fig. 3 is a plan elevation of Fig. 1 with a portion of the headblock cut away showing inlet and outlet channels and a pressure control therebetween.

Fig. 4 is a sectional elevation of a modified form of the sump taken along the lines 2—2 of Fig. 1.

Fig. 5 is a plan view of the sump taken along the arrows 5—5 of Fig. 4.

Fig. 6 is a further modified form of a broken away portion of the sump 26. Fig. 7 is an enlarged cross section of an automatic sludge discharge.

As illustrated the device consists basically of three self-contained members, 5 being a headblock, 6 being a filtering member, and 7 a locking bolt, making a unit assembly. On a face portion of the headblock 5 there are two concentric channels coaxially positioned with the locking bolt 7 and the axial tube 25 in the container 6. The channel 8 being a semi-circular incision directly associated with the inlet 15 and the channel incision 9 directly connected with the outlet 16. 10 is a head member fixedly positioned in the top of the container 6, the face of which has a pair of concentric channel incisions adapted to co-act with the incisions in the face

plate of the headblock 5 completing a pair of circular channels. 11 is an inlet channel in the headpiece 10 co-acting with the channel 8 in headblock 5; 12 is a transverse constricted bore through 10 connecting 11 with tube 25. 13 is a channel incision in block 10 complementary to and co-acting with channel 9 in block 5, 14 being a transverse bore through 10 co-acting with the channel formed of 9 and 13 and forming an outlet from the container 6 into channel 16; 16a being an oil outlet through the headblock 5 back to the engine. A pressure control 17 is projected between the inlet channel 15 and the outlet channel 16, 17a being the entry-port and ball seat for a ball 18, tensioned by spring 19; with an adjustable valve member 20; this pressure control being a means of determining the pressures desired to be maintained within the filter. 21 is a glass member, one being seated over each channel 15 and 16 respectively adapted to view the condition of the oil passing into and out of the filter, the said glass being held in position by a nut 22, having an aperture 23 therethrough for a vision. 14 is a passage in the container head 10 communicating with the filtered oil space in the container 6. 25 is a large central chamber in the container 6 provided as a quiescent settling chamber extending from the top of the container whereinto flows the fine stream of oil from the constricted inlet 12; this tube 25 is adapted to cause the settling out or extraction by gravity of heavier impurities prior to the passing of the lighter portions of the oil upward through the filtering element 31—37 (inclusive). 26 is a sump for the depositing therein from tube 25 of heavier ingredients carried by the oil and which are intended to be deposited in the sump by gravity. 27 is a baffle seated in the sump 26 and is adapted to quiet the heavier portions of the oil against agitation. 28 is a clearance below the baffle 27 providing an outlet passage for that which is deposited in the sump. 29 is a disc divider projected adjacent the lower end of the oil tube 25 and adapted to direct the oil flow outwardly; 29a is a modified form of the disc divider 29. 30 is a perforated screen located in the top of the container 6 and adapted to provide a purified oil space, and is associated with the outlet 14 in the block 10 of the container; 31 is a more or less amorphous mass of filtering material which may be of such predetermined density as desired, there may be a separating medium through a divider 32 from a further mass 33 of a predetermined density, there being divisions 34 and 36 permitting predeter-

mined densities in 35 and 37, and also permitting the use of different types of material comprising as an entirety filtering elements within the container 6; these dividers being of such material as will help to support the filtering material against collapse and being further designed to overcome channeling for the fluid in the operation of the filter. 38 is a perforated conical screen adapted to support the filtering material and provide a clear protective area for separating the denser portions of the fluid from its lighter portions, and this screen is centrally supported against the tube 25 by a ring 38a. 39 is a threaded outlet from the sump 26; 40 is an automatic release having a channel 41 to a ball seat 42 in a channel 43, there being a ball 44 tensionally held against the ball seat 42 by a spring 45; said spring 45 being tensioned by a nut 46 which nut has an aperture 47 therethrough adapted to permit the passage of material being forced out by pressure and weight of the sludge from the sump 26; 48 is a plurality of channels around the channel 43 and tributary thereto adapted to provide additional passage for material being forced out of sump 26.

In a modified form we show a pet-cock 49 manually manipulatable, seated in the outlet 39 of the sump 26; and in a further modified form I show a simple needle valve 50 manually operable.

It will be seen that the device can be readily installed at any desired position on an engine, dash or other area best adapted to the service of the engine's oil treatment. And it will be further observed that the supporting head is universal, any size of filtering element to accommodate any filtering demand can be installed on the universal headblock in a moment by simply turning a locking bolt. The oil feeding in the headblock practically subsides when the engine is not in operation, leaving practically no oil in the headblock between the oil-sights and the filter element, hence no loss of oil by changes and no filth nor uncleanness.

It will be further observed that on dismantling the filter unit it can be immediately cleansed of its undesirable ingredients precipitated out of the oil into the sump whereupon the filter element can be replaced for new service ad infinitum. In this connection, it will be observed this device overcomes all expense of service, all necessity for changing oil, or sacrificing of the oil from the crankcase, maintaining its purity at all times. The impregnated oil from the crankcase

is projected downward, precipitating by gravity into the sump ingredients heavier than oil, thereby passing the lighter freed oil up into and through the filtering material.

It is to be noted that neither skill nor ingenuity is involved in mounting or dismantling the filtering element; for it is practically impossible to err as the truncated cone on the filtering element head immediately enters the conical axis in the headblock, and this conical axis is the axis of the concentric circles, containing the oil flow connection.

We claim:

1. An oil purifier comprising a headblock containing two channels for transmission of oil from and to an engine, said headblock having upon one surface thereof two concentric channels, each of said concentric channels communicating with one of said first mentioned channels, a cartridge member having upon its upper surface two concentric channels which are adapted to register with the concentric channels of said headblock, and having an inlet channel of relatively small diameter communicating at one end with one of said concentric channels, and at the other end with a tube forming a vertical chamber within said cartridge member of relatively large diameter, a sump in the bottom portion of said cartridge member into which said vertical chamber discharges, a horizontal baffle member in said sump located beneath the end of said vertical chamber, filter material disposed above said sump within said cartridge member, said cartridge member being provided with an outlet channel above said filter material communicating at its outer end with the other of said concentric channels of said cartridge member, and means engaging said headblock and said cartridge member axially of the concentric channels of both elements for securing the cartridge member to the headblock.

2. A device in accordance with claim 1 wherein the sump of the cartridge member is provided with a drain outlet, an outwardly facing seat in said drain outlet, a valve seated upon said seat, and a spring holding said valve in engagement with said seat against the internal pressure within said sump.

3. A device in accordance with claim 1 wherein the sump is provided with a plurality of vertical baffles, said baffles being radially positioned about a point beneath the end of said vertical chamber.

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