

Feb. 4, 1947.

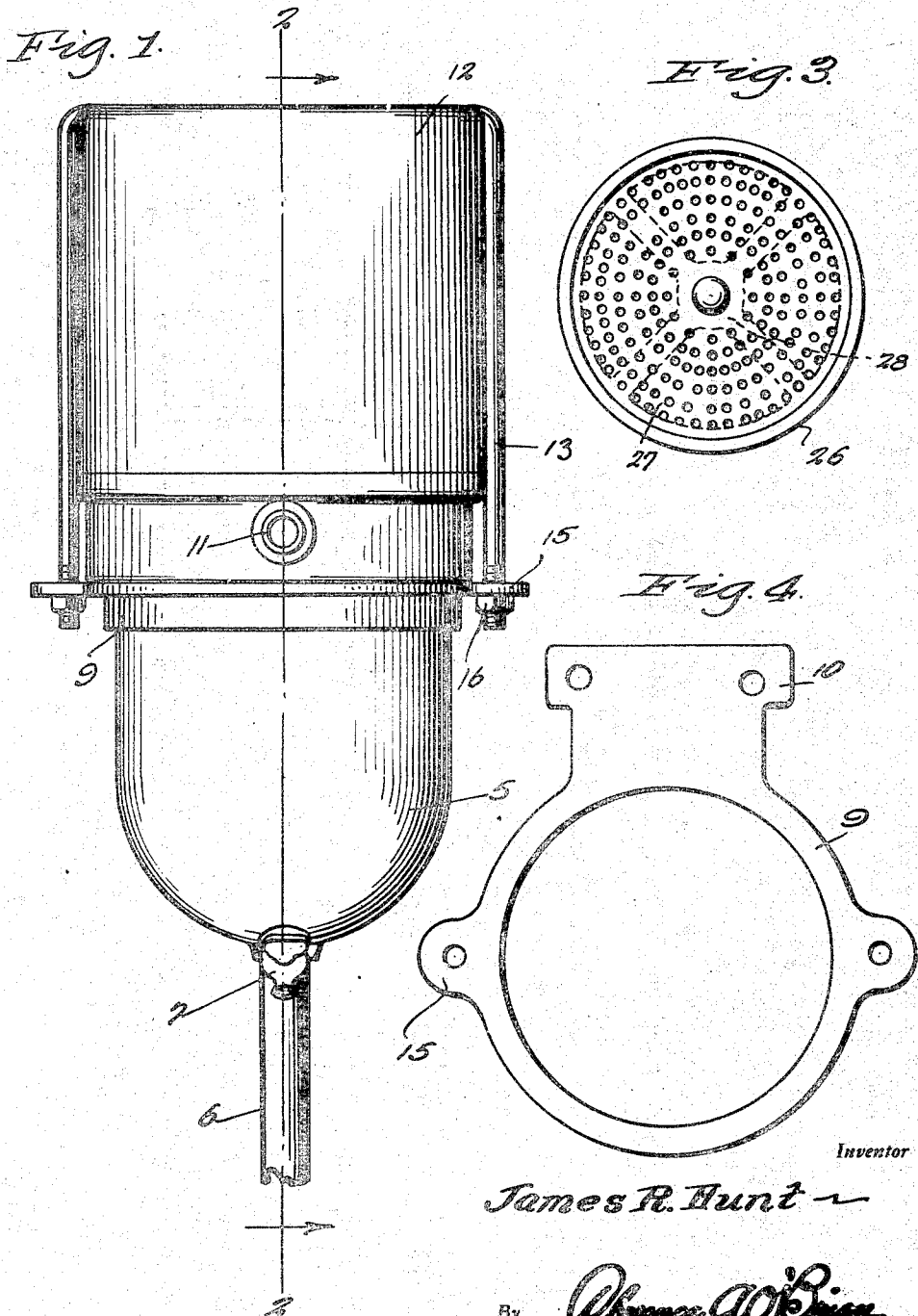
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OIL FILTER

Filed Jan. 9, 1945

2 Sheets-Sheet 1



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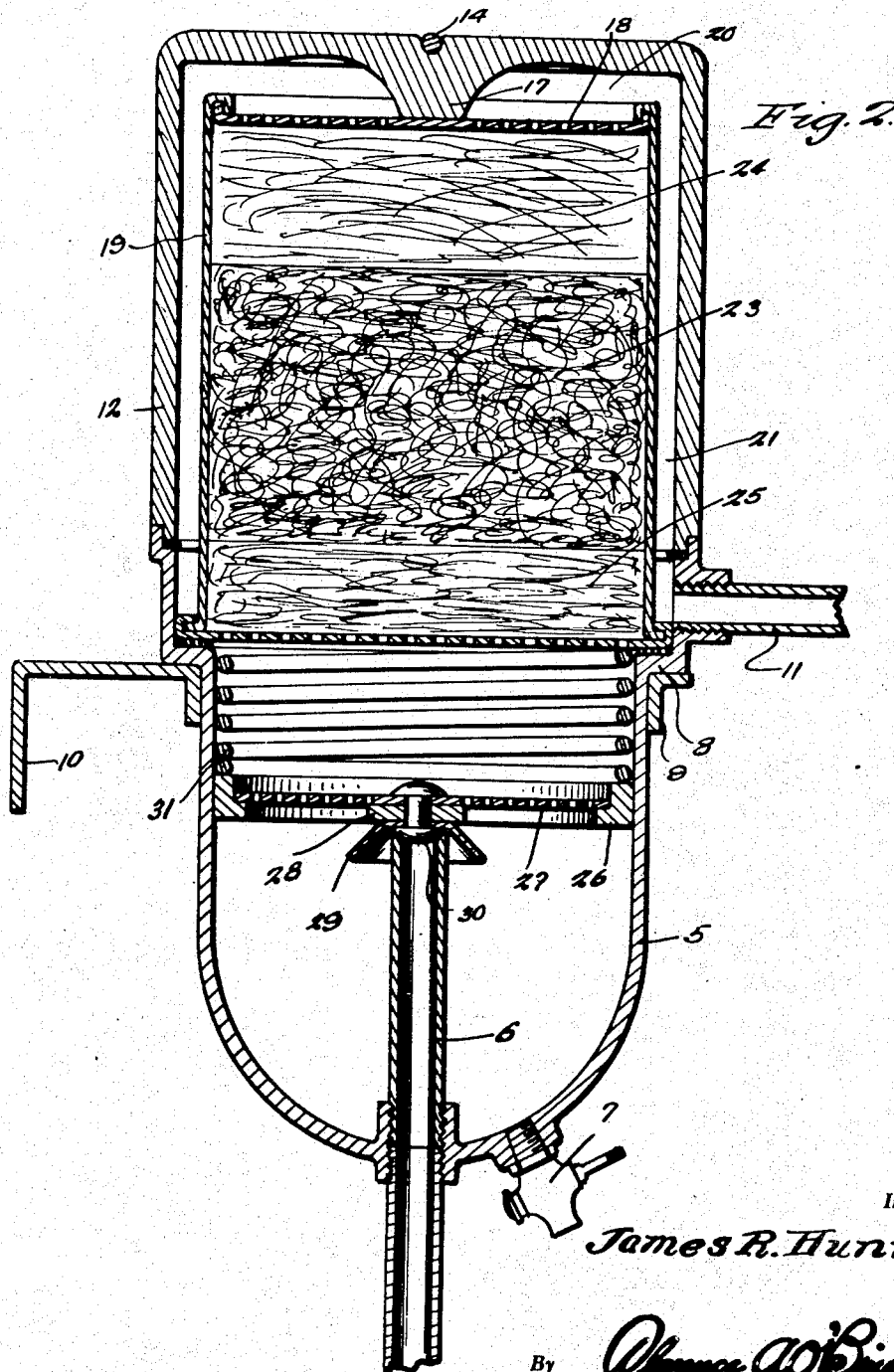
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OIL FILTER

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1 Claim. (Cl. 210-140)

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The present invention relates to new and useful improvements in oil filters, and more particularly to oil filters adapted for use in connection with internal combustion engines of automobiles, trucks and the like.

An important object of the invention is to provide an oil filter connected in the lubricating system of the engine and in which oil is circulated therethrough by pressure during the operation of the engine, the filter including a sump chamber in which the oil is initially received and providing a pressure-operated valve and screen normally closed by spring means when the engine is idle, the valve being opened by pressure during the running of the engine to move the screen against the tension of the spring, such movement of the screen tending to automatically clean the screen.

A further important object of the invention is to provide a removable filtering cartridge through which the oil is forced upwardly and a transparent cover for the cartridge under which the filtered oil is arranged to flow so that the condition of the filtered oil may be observed.

A still further object is to provide a device of this character of simple and practical construction, which is efficient and reliable in operation, relatively inexpensive to manufacture and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevational view.

Figure 2 is a vertical sectional view taken substantially on a line 2-2 of Figure 1.

Figure 3 is a top plan view of the self-cleaning screen.

Figure 4 is a plan view of the supporting ring for the filter.

Referring now to the drawings in detail, wherein for the purpose of illustration I have disclosed a preferred embodiment of the invention, the numeral 5 designates a filtering bowl forming a sump chamber in the bottom thereof and having an intake pipe 6 inserted through its bottom and terminating at its upper end substantially at the center of the bowl. A drain cock 7 is attached to the bottom portion of the bowl.

The upper portion of the bowl is formed with a shoulder 8 adapted to rest on a supporting ring 9 having an attaching bracket 10 at one edge thereof by means of which the ring may be

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secured to a suitable supporting structure adjacent an internal combustion engine to the lubricating system of which the pipe 6 is connected. A return pipe 11 is connected to the upper portion of the bowl 5 above the shoulder 8.

A transparent dome 12 is inverted on the bowl 5 with the lower edges of the cover resting on the upper edges of the bowl and an inverted U-shaped bail 13 extends transversely across the top of the dome 12 in a groove 14 therein and with the lower end of the bail inserted through apertured ears 15 on diametrically opposite sides of the ring 9 and secured thereto by nuts 16.

The underside of the top of the cover 12 is provided with a lug 17 bearing against the top perforated plate 18 of a filtering cartridge 19 positioned in the dome and with its lower edge seated on the shoulder 8 of the bowl, the cartridge being spaced from the walls of the upper portion of the bowl as well as from the wall of the dome to provide an oil chamber 20 above the cartridge and an oil chamber 21 at the sides of the cartridge communicating with the return pipe 11.

The cartridge 19 also includes a lower perforated plate 22 and between the plates 18 and 22 is placed a filtering element 23 formed of fine cellulose fibers and coarse charcoal material retained between upper and lower felt pads 24 and 25.

A ring member 26 is slidably mounted in the bowl 5 in working engagement with the walls of the bowl and to which is secured a perforated filtering disc or screen 27. The ring 26 is formed with a spider 28 to the central portion of which is secured a deflector 29 by means of a rivet 30, the deflector having downwardly flared edges and adapted to seat on the top of the intake pipe 6 to function as a valve for the pipe. The ring 26 is yieldably urged downwardly with the valve 29 in closed position, the upper end of the spring 31 bearing against the bottom plate 22 of the filtering cartridge.

In the operation of the device, the intake pipe 6 is normally closed by the deflector valve 29 when the engine is not in operation. When the engine is running, oil pressure entering the intake pipe 6 will force the deflector valve 29 upwardly against the tension of the spring 31 and the oil admitted into the bowl 5 will be deflected downwardly to facilitate settling of sediment in the bottom of the bowl. As the bowl is filled, the oil will flow upwardly through the screen 27 and upwardly through the filter 19 into the chamber 7 under the top of the cover 12 and overflow downwardly between the walls of the filter cartridge

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19 into the chamber 21 under the top of the cover 12 and overflow downwardly between the walls of the filter cartridge 19 and the walls of the cover 12 back to the engine through the return pipe 11.

Each time the engine starts and stops, the deflector valve 29 and the screen 27 will be raised and lowered and this raising and lowering movement of the screen will cause the oil above and below said screen to perform a washing action against the same tending to dislodge impurities which have adhered in the interstices of said screen, thus keeping the interstices open.

The condition of the oil flowing through the chambers 20 and 21 may be observed through the transparent cover 12 to indicate when it is necessary to replace the cartridge 19.

It is believed that the details of construction and manner of use of the device will be readily understood from the foregoing without further detailed explanation.

Having thus described the invention, what is claimed is:

An oil filter comprising a bowl having an intake pipe projecting upwardly in the bottom of the bowl, a shoulder in the upper portion of the bowl defining an upper portion of increased diameter, an outlet pipe connected to the bowl above the shoulder, a filter cartridge having perforated top and bottom plates and imperforate walls seated

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on said shoulder, a cover secured on the upper edge of the bowl and spaced from the top and sides of the cartridge to form together with said top and sides an overflow chamber in said cover communicating with the outlet pipe, an annular member mounted for vertical movement in the bowl and including a spider, a screen attached to said member, a deflector attached to said spider and forming a valve closing the inlet pipe, said valve being responsive to oil pressure in the inlet pipe to raise the valve and screen, and spring means engaging the member to lower the valve and screen.

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