

March 8, 1949.

H. P. WEST

2,463,929

OIL FILTER AND RENEWABLE CARTRIDGE

Filed Nov. 8, 1945

Fig. 1.

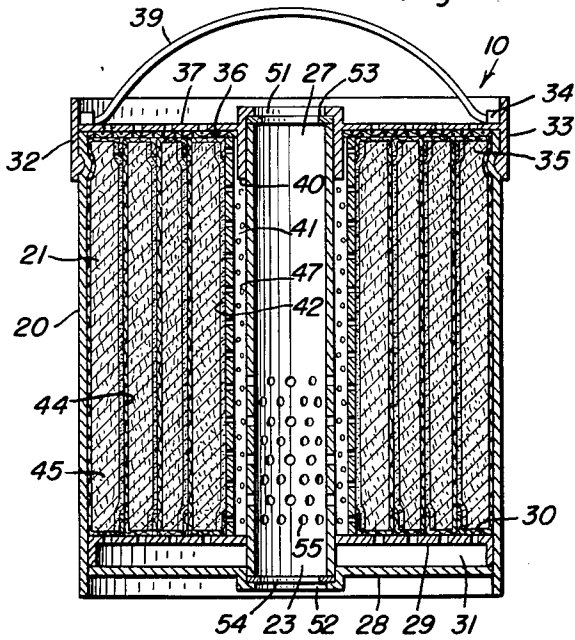


Fig. 4.

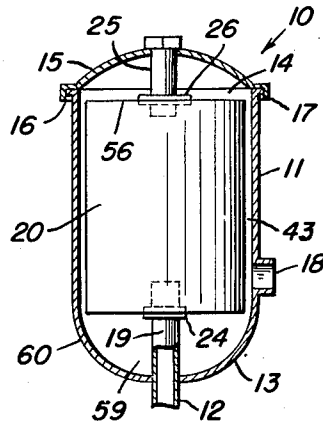


Fig. 3.

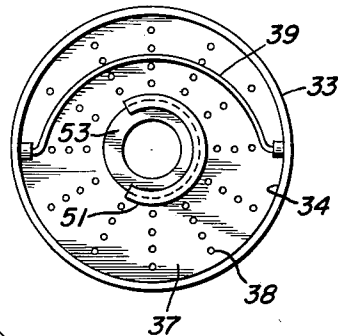
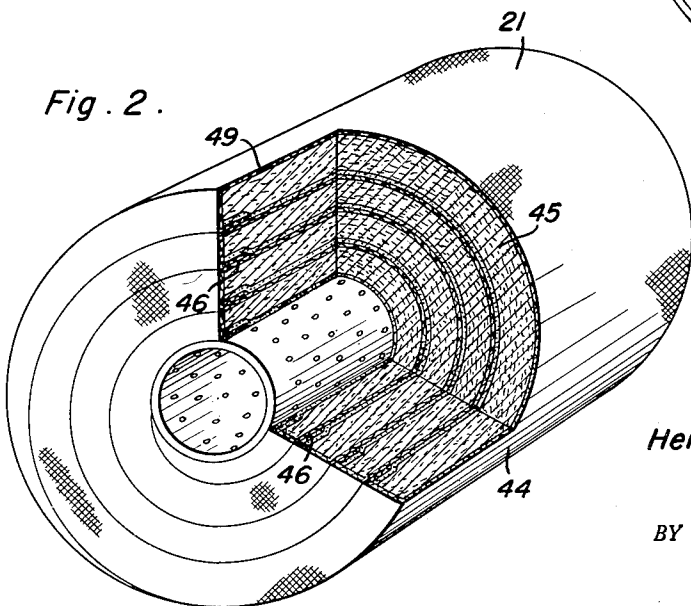


Fig. 2.



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UNITED STATES PATENT OFFICE

2,463,929

OIL FILTER AND RENEWABLE CARTRIDGE

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Application November 8, 1945, Serial No. 627,369

2 Claims. (Cl. 210-165)

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My invention as described herein, and illustrated in the accompanying drawings, consists of an oil filter, an object of which is to provide a filter for internal combustion engines having a removable filter cartridge whereby a new cartridge may be substituted when necessary for one which has become clogged and is further useless.

Another object of my invention is to provide a renewable filter cartridge.

A further object of this invention is to provide a permanent filter casing adapted to receive therein renewal filter cartridges from time to time as required.

Other features and advantages will become more readily apparent from the following description and the accompanying illustrative drawings in which:

Figure 1 is a vertical sectional elevational view of a cartridge and container,

Figure 2 is a perspective view of a refill cartridge.

Figure 3 is a top plan view of Figure 1, and

Figure 4 is a sectional elevational view of my filter.

While one embodiment of my invention is illustrated in the above referred to drawings, it is to be understood that they are merely for the purpose of illustration and that various changes in construction may be resorted to in the course of manufacture in order that the invention may be utilized to the best advantage according to circumstances which may arise, without in any way departing from the spirit and intention of my device. And while I have stated the primary field of utility of my invention it remains obvious that it may be employed in any other capacity wherein it may be found applicable.

In the accompanying drawings, and in the following specification, the same reference characters are used to designate the same parts and elements throughout. The device includes a filter casing 11 having an inlet pipe 12, through its bottom wall 13, which is preferably dome shaped. The upper end 14, of the casing is provided with a dome-shaped cap 15, engaged with the flange 16 of said end 14, by means of its flange 17. The casing is provided with an outlet port 18 which with pipe 12, is connected with an oiling system of an internal combustion engine or other oil pressure lubricating system.

Seated upon the upper end 19 of the pipe 12 is a container 20, within which is seated a renewable oil filter element 21. Extending completely through the center of the container is a tube 22, the lower end 23 of which is adapted to seat

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upon a flange 24 on said end 19. The cap 15 closes the upper end of the casing 11 and is provided with a centrally disposed inwardly projecting member 25, having a head 26, adapted to seat over and tightly close the upper end 27, of tube 22.

The tube 22 is perforated throughout its length except within about an inch or two of its ends 23 and 27. The bottom wall 28, of the container is solid except for the opening for the tube 22. Spaced above wall 28, and surrounding the tube 22, is a perforated wall 29, which forms a seat for the lower end 30, of the filter element 21, and between said walls 28 and 29, is a trap space 31, for sludge or water which may seep down through the filter.

Connected to the top 32, of container 20, by bayonet joints or otherwise is a cap ring 33, having an upper annular flange 34 and a top wall 37 which seats upon a fine screen 36 which, in turn, seats upon the upper end 35 of the cartridge element 21, the screen 36 and top wall 37 being centrally apertured to receive the upper end 27, of the tube 22. The wall 37 is perforated throughout as indicated at 38. The ring 33, is provided with a bail 39, by means of which the container 20, may be lifted from the casing 11, for the purpose of changing cartridges. This bail is of a diameter to fold down within the flange 34. A spacer ring 40, integral with the top wall 37, is provided around the upper end 27 of tube 22 to provide oil space 41, between the tube and the inner wall 42 of refill cartridge element 21. The diameter of the container 20, is less than that of casing 11, in order to provide sufficient space 43, for oil flow between said members.

The filter cartridge element 21, is formed of an elongated filter cloth 44, laid out flat and filter material such as cotton and cotton waste 45, is laid thereon, then ground mica of fuller's earth or both are sprinkled over the surface of the material, then edges 46, of the cloth are folded over upon said material 45, a perforated tube 47 placed upon one end of the pad so formed and the latter rolled upon said tube 22 until the outer convolution 49, is of a diameter to snugly fill in the interior space of the container. The tube 47 is of a diameter to slip freely over tube 22 of the container. Three quarter offset ring flanges 51 and 52 are provided on the outer surfaces of the upper and lower walls 37 and 28 within which resilient centrally apertured gaskets 53 and 54 may be forced by slightly bending the gaskets when pushing them into the flanges 51 and 52. These gaskets 53 and 54 seal the pipe 12 to the lower end of the tube 22 and seal

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the upper end of the tube 22 to the upper wall 37.

In operation, oil under pressure enters tube 22, from pipe 12, flows up the tube 22 and through perforations 55 therein, into space 41, then through perforated tube 47, filter cartridge element 21, up through screen 36, the perforated wall 37, and thence over the flange 34 of ring 33, into space 43, from where the filtered oil passes out through port 18. In space 41, heavier particles of debris and water will settle to the bottom 57, of that space and finally pass through the lower portion of the filter 21, and through the perforated wall 29, into the sludge trap 31. The clarified oil from the filter passes through the top of the container and any water or fine particles of debris which may have escaped the filter will settle down into the cavity 59, in the lower end 60, of the casing 11, where it will remain until cleaned out when container 20, is removed for a refill filter. As there is no liquid flow or current in said cavity the sludge or water which may settle therein can not again intermingle with oil passing through the filter casing.

It is thought that persons skilled in the art to which the invention relates will be able to obtain a clear understanding of the invention after considering the description in connection with the drawings. Therefore, a more lengthy description is regarded as unnecessary.

Changes in shape, size and rearrangement of details and parts such as come within the purview of the invention claimed may be resorted to, in actual practice, if desired.

Having now described my invention, that which I claim as new and desire to procure by Letters Patent is:

1. An oil filter comprising a casing having an inlet pipe and an outlet and a removable cap having an inwardly projecting member, a filter container removably supported within said casing by and between said inlet tube and said projecting member, gaskets sealing said container to said inlet tube and projecting member, and a filter cartridge element within said filter con-

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tainer, said container being spaced from said casing, said cartridge comprising spirally wound filtering material on a perforated tube, and said container including a perforated tube spaced from and substantially coextensive with said first-mentioned perforated tube.

2. An oil filter comprising a casing having an inlet pipe and an outlet and a removable cap having an inwardly projecting member, a filter container removably supported within said casing by and between said inlet tube and said projecting member, gaskets sealing said container to said inlet tube and projecting member, and a filter cartridge element within said filter container, said container being spaced from said casing, said cartridge comprising spirally wound filtering material on a perforated tube, and said container including a perforated tube spaced from and substantially coextensive with said first-mentioned perforated tube, the upper end of said second mentioned perforated tube being closed by said inwardly projecting member, gaskets to seal the lower wall of the container to the inlet pipe and to seal the upper end of the second mentioned perforated tube on said inwardly projecting member, said upper wall and said lower imperforate wall having offset ring flanges for removably receiving said gaskets.

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