

Feb. 23, 1937.

G. L. MATHESON

2,071,550

OIL FILTER AND METHOD OF ASSEMBLING THE SAME

Filed June 15, 1933

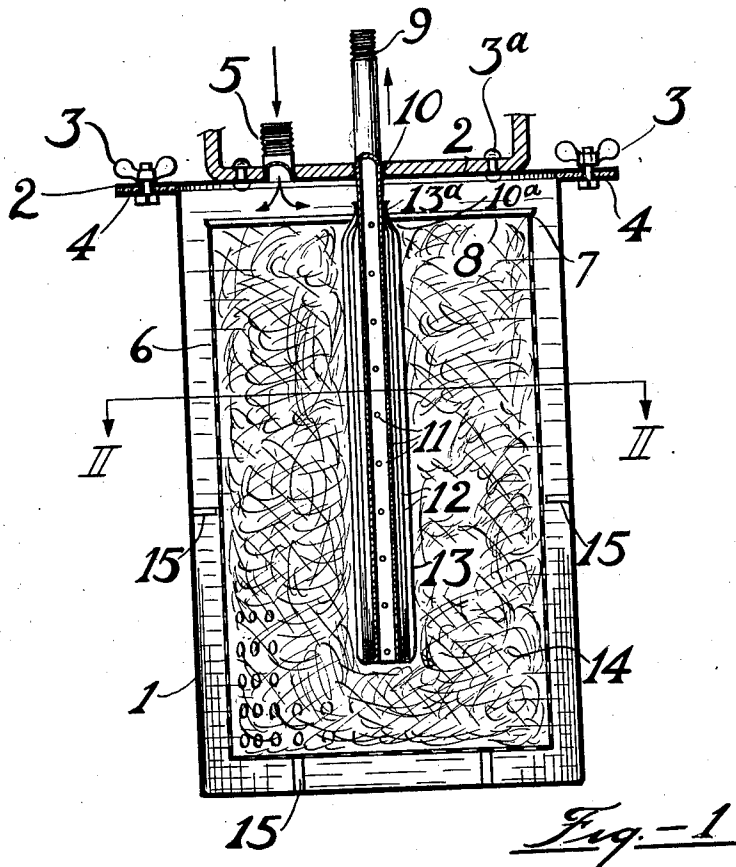


Fig. -1

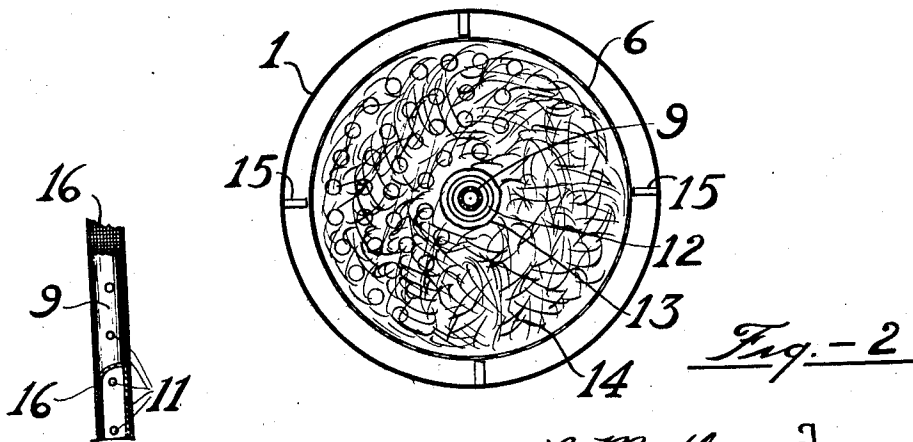


Fig. -2

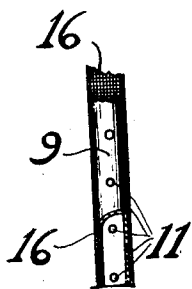


Fig. -3

George L. Matheson Inventor
W. E. Currie Attorney

UNITED STATES PATENT OFFICE

2,071,550

OIL FILTER AND METHOD OF ASSEMBLING
THE SAMEGeorge L. Matheson, Elizabeth, N. J., assignor to
Standard Oil Development Company, a corporation of Delaware

Application June 15, 1933, Serial No. 675,923

1 Claim. (Cl. 210—131)

This invention relates to improvements in filters of the type adapted for continuous purification of lubricants circulating through a lubricating system. A principal object of the invention is to provide an efficient small filter of low cost especially adapted for purifying the crank case oil of automobiles. However, the invention is not limited to this particular use, as it finds application in connection with all types of internal combustion engines, turbines, and other machines using a continuous oil circulation.

It is well-known practice to provide a small filter of the so-called "depth type" charged with a fibrous material to purify the crank case oil of automobiles. Ordinarily the arrangement is such that only a portion of the oil passes through the filter, through a by-pass connection. Within a reasonable time all the oil will have gone through the filter.

After a more or less prolonged period of use the clarifying medium in the filter must be replaced. In accordance with the present invention a filter is provided which is very readily recharged. The invention will be fully understood from the following description, read in connection with the accompanying drawing, in which—

Fig. 1 is a vertical section through a preferred type of filter;

Fig. 2 is a transverse section on the line II—II of Fig. 1; and

Fig. 3 is a detail view of an alternative form of filter core.

Referring first to Figs. 1 and 2, reference numeral 1 indicates a container, preferably of cylindrical form, having a cover 2 secured by any suitable means, as bolts and wing nuts 3, to a flange 4 on the container. This has an oil inlet 5 which is connected in any convenient way to the oil circulating system. The cover 2 is rigidly mounted on the car in such manner, as by rivets 3a, that the container may be readily removed by unscrewing the wing nuts.

Within the container 1 there is a filter box 6 preferably made of sheet metal and having numerous perforations in its walls to permit the free entrance of oil. At the top the walls of the foraminous box are extended to form a flanged rim 7 and a plate 8 rests within the rim. An oil outlet pipe 9 extends through an opening 10 in the cover 2 and an opening 10a in plate 8, downwardly toward the bottom of container 1. This pipe has perforations 11 throughout its length. It is connected in any convenient way to the oil circulating system.

Encircling the lower part of pipe 9 are one or

more layers of a mesh material, preferably coarse wire screen 12. Over this there is a textile fabric wrapping, such as canton flannel 13. It is preferable to use a fabric bag or thimble tied at the neck as at 13a. A wrapping or other cover will serve. A fibrous material adapted for filtering oil is packed around the internal structure of perforated pipe, wire mesh and fabric, just described. This material designated 14, is best an alkaline slag wool such as is described in the application of Maverick and Matheson, Ser. No. 598,092 filed March 10, 1932. It will be understood, however, that various other fibrous materials may be used. The packing of this material around the central element holds the latter in place. The filter box 6 is centered in the container 1 by means of lugs 15 secured to the walls of container 1, a spider construction, or any other suitable means which will permit the easy withdrawal and insertion of the box 6.

In Fig. 3 an alternative form of the internal filtering element is shown. In this a fine wire screen 16 surrounds perforated pipe 9. If the mesh of this screen is sufficiently fine, say 50 mesh per inch, it is not necessary to provide a fabric wrapping over the screen.

When it is desired to change the fibrous material in the filter, the wing nuts 3 are unscrewed, which permits the box 6 to be removed from the rigidly mounted cover 2. The outer container 1 is lowered and then the inner box 6 is moved downwardly to clear the perforated pipe 9. Top 8 may be designed to remain suspended on that pipe or may come down with the box and then be removed, as desired. The spent fibrous material is removed and the assembly cleaned. A fresh supply of fibrous material may be then substituted for the spent material. Usually a new fabric bag or wrapping 13 should be supplied. The service station or other supplier will have the fibrous material already mixed with lubricating oil in the form of a "mush" adapted for immediate use. This is better than charging the box with fibrous material free from oil, though that may be done. The mush can be ladled directly into the box 6, suitably compacted around the central filtering element, and the assembly then returned to the container 1. This is then secured in place on the car. The whole operation of changing the fibrous material can be effected without any difficulty. The connections to the lubricating system are not disturbed. The assembly is thus well adapted for the use of individual motorists who wish to change their own oil filters as well as for garage servicing.

I am aware that there have been suggestions made for replaceable automobile filters but these have ordinarily involved considerable difficulty in substituting new filter material for the old.

5 The arrangement described herein is a preferred one but it will be understood that various other similar constructions may be adopted. It is my intention to claim all of these which fall within the scope of the appended claim.

10 I claim:

A strainer for lubricating systems consisting of a casing removably secured to a cover therefor affixed to a supporting head, lugs disposed about the inner surface of the walls and bottom

15 of said casing, a perforate receptacle for a filter mass disposed within the casing in positioned

engagement with said lugs, a cover for the receptacle having a central opening therein, an inlet pipe opening into the casing through the supporting head, an outlet pipe extending through said supporting head and through the opening in the receptacle cover into spaced relation with the bottom wall of the receptacle, said pipe having a perforate portion disposed within the receptacle and a fine mesh metallic screen within a bag of textile covering the perforate portion

10 of said pipe and extending upwardly through the central opening in the receptacle cover in frictional engagement with the edges of said opening, whereby the screen and bag are maintained in operative association with the outlet pipe.

15

GEORGE L. MATHESON.