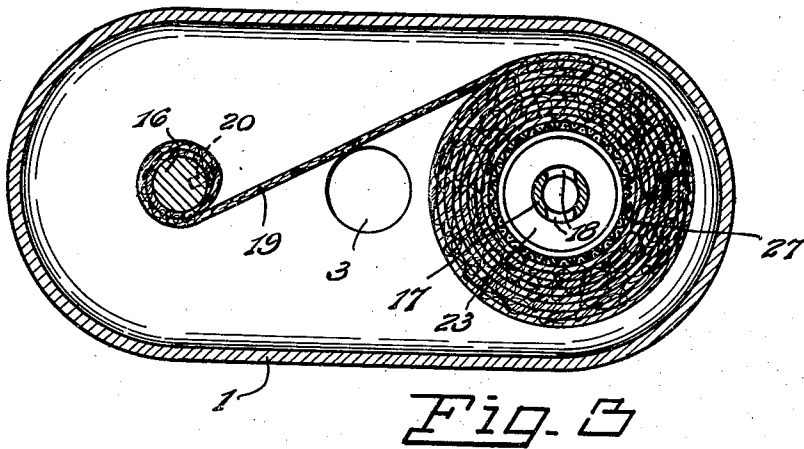
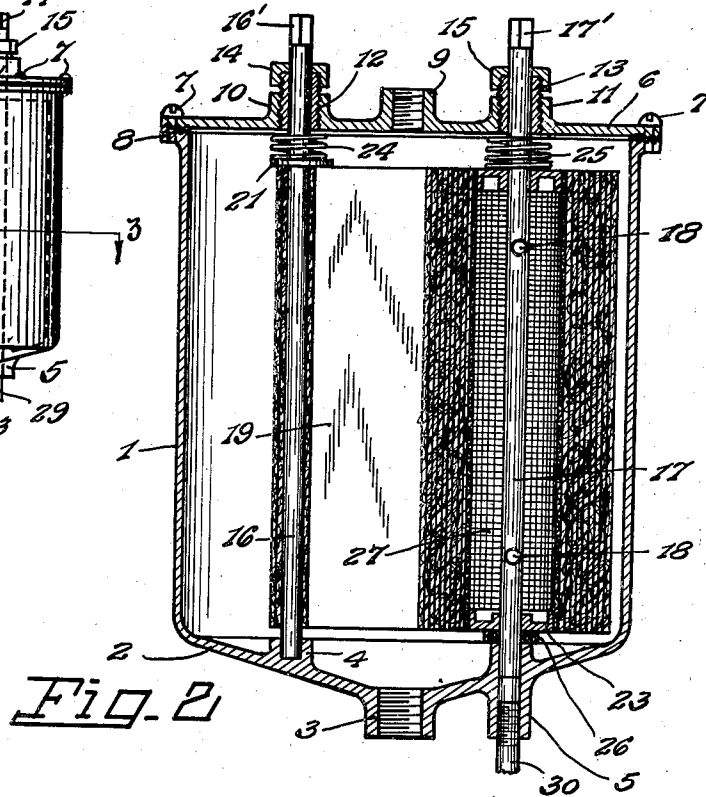
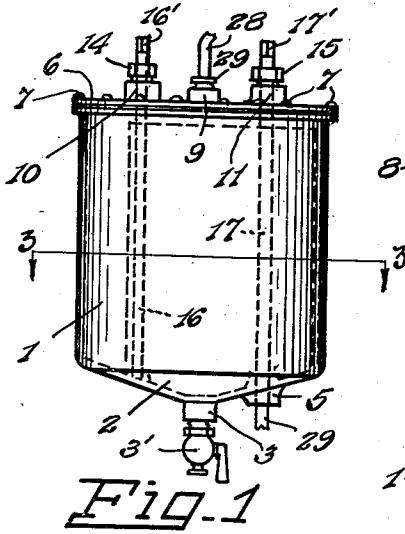


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OIL FILTER

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1 Claim. (Cl. 210—178)

This invention relates to filters and more particularly to a filter adapted to be mounted in a pipe line of the lubricating system of an engine and remove dirt from the lubricating oil. It will thus be seen that the lubricating oil may be kept clear of dirt and in condition for use and recirculation in the lubricating system for an indefinite period of time.

When a filter is installed in a pipe line of a lubricating system, a sufficient quantity of clean oil may be fed to the bearings as long as the filtering material is sufficiently free from dirt to permit passage of oil through it at a predetermined speed, but when the filtering material becomes clogged, flow of oil will be retarded and sufficient oil for proper lubrication will not be fed to the bearings.

It is, therefore, one object of the invention to provide a filter of such construction that after sufficient dirt collects upon the fabric filtering material about an outlet tube to prevent passage of oil through the fabric at a predetermined speed, the clogged fabric may be removed from about the tube.

Another object of the invention is to provide a filter wherein the fabric filtering material consists of a strip of fabric coiled about an outlet tube and having its outer end portion extending to and secured to a winding post or shaft which, when turned in one direction, will unwind the strip from about the outlet tube and thus effect removal of clogged fabric from about the tube and present a clean portion of the strip externally of the filtering pack formed by the fabric.

A further object of the invention is to provide a filter wherein both the outlet tube and the winding shaft project through the cover of the filter casing through packing boxes carried by the cover. It will thus be seen that the tube and shaft may be turned to unwind the fabric from the tube and wind it upon the shaft without removing the cover.

Another object of the invention is to provide a filter of this character wherein the strip of filtering fabric is wound about a cylindrical shield of screening surrounding the outlet tube and spaced therefrom so that the fabric will be held out of direct contact with the tube and perforations formed in the tube prevented from being obstructed by the fabric.

And still another object of the invention is to so mount the screening about the tube and so treat the upper and lower edge portions of the strip of fabric that oil containing dirt and other foreign matter will be prevented from working

inwardly between the fabric and the tube and contaminating oil cleaned by seeping through the fabric.

The invention is illustrated in the accompanying drawing, wherein:

Fig. 1 is a side elevation of the improved filter.

Fig. 2 is a sectional view on an enlarged scale, taken vertically through the filter.

Fig. 3 is a sectional view on an enlarged scale, taken transversely through the filter on the line 3—3 of Fig. 1.

The filter of the present invention is to be mounted in a pipe line of the lubricating system of an engine between the pump and bearings of the engine. The casing 1 is formed of strong metal and has a concave bottom 2 from which extends an internally threaded neck 3 constituting a cleanout opening or drain through which muck may pass from within the casing when the drain cock 3' is opened. If necessary, the drain cock may be removed when clearing the casing of accumulated muck which has thickened to such an extent that it will not readily flow through the drain cock. A hollow boss constituting a socket is formed on the inner surface of the bottom in spaced relation to one side of the neck 3 and in spaced relation to the opposite side of the neck there has been provided a neck 5 constituting an outlet for clean oil. For a portion of its length the neck 5 projects upwardly into the casing and for the remainder of its length the neck extends outwardly in depending relation to the bottom of the casing.

The casing is open at its upper end and in order to normally close the upper end of the casing there has been provided a top or cover 6 removably secured by a suitable number of screws 7. A gasket 8 forms a tight seal between the margins of the cover and walls of the casing. An internally threaded inlet neck 9 extends upwardly from the cover centrally thereof and in spaced relation to opposite sides of the neck 9 are provided internally threaded necks 10 and 11 in which are screwed packing bushings 12 and 13 carrying caps 14 and 15.

Within the casing are vertically disposed a shaft or post 16 and an outlet tube 17 which is formed with a suitable number of perforations 18. The shaft and tube have their lower ends engaged in the socket 4, and the inwardly projecting end portion of the neck 5 and upper portions of the post and tube pass outwardly through the bushings and terminate in squared ends 16' and 17' for engagement by a wrench when they

are turned for unwinding the strip of felt or other fabric 19 from about the tube and winding it upon the post. A suitable number of pins 20 are employed to detachably secure the strip of filtering material to the post. By tightening the caps, a close fit will be established between the bushings and the post and the tube, and leakage of oil about the post and tube prevented. A collar 21 is secured about the post above the filtering strip and about the tube are secured discs 22 and 23. Springs 24 and 25, which bear against the collar 21 and the disc 22, urge the post and tube downwardly and maintain their lower ends in the socket 4 and neck 5. A felt washer 26, which surrounds the tube between the disc 23 and the upper end of the neck 5, is compressed by pressure of the spring 26 to provide an oil seal about the tube and prevent oil from working upwardly along the tube and becoming mixed with clean oil which has passed through the filtering material. The portion of the strip of felt which is wound about the tube must be retained in spaced relation to the tube and thus prevent the perforations 18 from being obstructed. To accomplish this there has been provided a tubular sleeve 27 formed of fine wire screening and having its upper and lower ends soldered or otherwise secured about margins of the discs 22 and 23.

When the filter is in use, it is installed in the pipe line of the lubricating system of an engine between the pump and bearings of the engine, the portion 28 of the pipe line being secured in the inlet 9 by a coupling 29 and the portion 30 of the pipe line being secured in the outlet neck 5. The dirty oil which enters the casing through the inlet, passes through the filter pack consisting of the portion of the felt strip wrapped about the screening, and dirt will be deposited upon the outer surface of the filter pack. The clean oil enters the tube through the perforations and flows through the tube and the neck 5 to the portion 30 of the pipe line through which it flows to the bearings of the engine. When the outer surface of the filter pack becomes so thickly coated with dirt that oil will not pass through at the proper speed, it is merely necessary to apply wrenches to the squared upper ends of the post and the tube and turn them so that the strip will be unwound from about the screening and wound about the post. This is continued until the dirty portion of the strip has been unwound from the filter pack and a clean surface pre-

sented. The oil will then again seep through the filter pack at the proper rate of speed to clean the oil and, at the same time, supply oil in adequate quantity to the bearings. After all the filtering strip has been unwound from about the screening and wound upon the post, the cover will be removed from the casing, and, as the post and tube will be carried with it, the dirty filtering strip may be discarded and a new one applied by winding it about the screening and securing its outer end to the post. The cover will then be replaced and the filter will again be ready for use.

Having thus described the invention, what is claimed is:

A filter comprising a casing defining a chamber formed with an inlet and having a bottom formed with an outlet surrounded by an inwardly extending boss and a socket spaced from the outlet, a removable cover for said casing, packing glands rising from said cover, a rotatable post disposed vertically in said casing with its lower end rotatably engaged in said socket and its upper portion projecting outwardly through one packing gland of the cover, a vertically disposed perforated outlet tube in said casing having its lower end rotatably received in the outlet and its upper portion projecting outwardly through the other packing gland of the cover, upper and lower discs fixedly carried by said tube adjacent the top and bottom of the chamber, a collar carried by the upper portion of said post, a sleeve of screening surrounding said tube and secured at its upper and lower ends to said discs, a packing washer surrounding said tube between the lower disc and said boss, springs about the tube and post having their ends abutting the cover and collar and upper disc, said springs urging the post and tube downwardly to retain their lower ends in the socket and the outlet and compress said washer to form a seal about the tube under the lower disc, protruding upper ends of the post and the tube being adapted for engagement by turning means, and a strip of filtering material wrapped about the sleeve of screening and extending therefrom and secured at its end to the post whereby upon turning the tube and post clogged portions of the filtering strip will be unwound from the screening and wound upon the post.

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