Oct. 8, 1929. A. CHAMPION 1,731,209

MOUNTING FOR OIL FILTERS

Filed Aug. 17, 1927

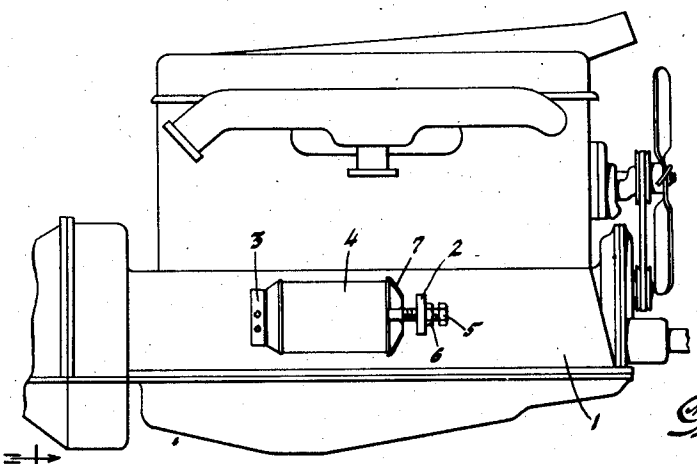


Fig. 1

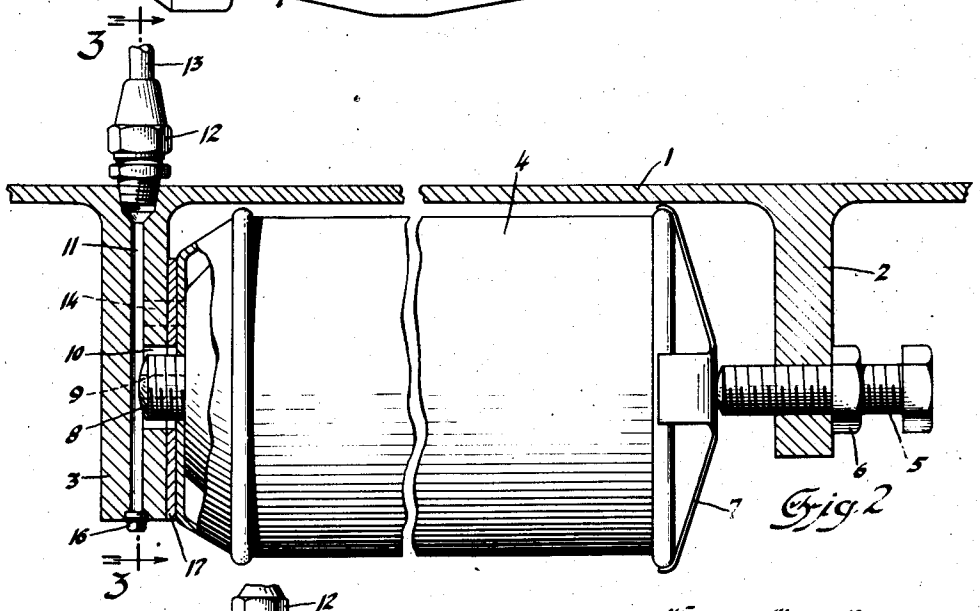


Fig. 2

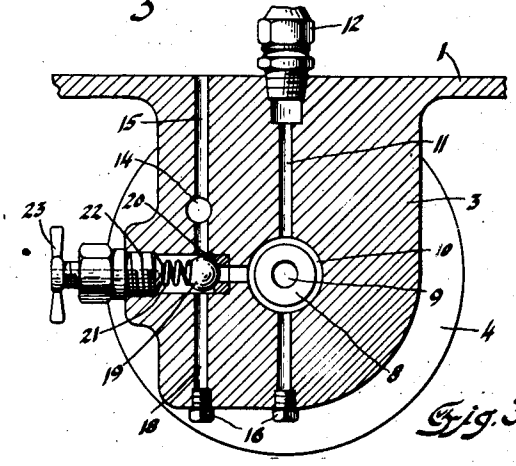


Fig. 3

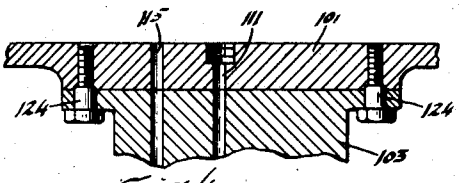


Fig. 4

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UNITED STATES PATENT OFFICE

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MOUNTING FOR OIL FILTERS

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This invention relates to a fluid pressure system and more particularly to a mounting for a replaceable filter unit forming a part of the system.

The invention is especially adapted for use with a pressure lubricating system of an internal combustion engine, and for purposes of disclosure will be so described herein, although obviously it is capable of employment with other types of machines and in various other connections.

As at present constructed, the pressure lubricating system of an internal combustion engine comprises a pump located in the engine crankcase, which forces oil to the several bearings, from whence the oil returns to the crankcase for recirculation. To increase the life or usefulness of the oil, it is customary to divert or by-pass a fractional part of the oil for passage through a filter to remove sediment or other harmful impurities. After a certain interval of use, the filter becomes clogged with dirt, and to insure the efficient cleansing action, the filter element must be renewed.

One of the primary objects of the present invention is to provide an improved mounting by means of which the replacement of a filter unit in the system in proper operative position may be quickly and readily made.

Other incidental objects and advantages will be apparent from the following detailed specification, having reference to the accompanying drawing, in which Figure 1 is a side elevation of an internal combustion engine with which is associated an oil filter mounted in accordance with the present invention; Figure 2 is a top plan view partly in section, showing the operative relation of the parts; Figure 3 is a section on line 3—3 of Figure 2, and Figure 4 illustrates a slight modification of one of the supporting members.

In the drawing, reference character 1 indicates the crankcase of an internal combustion engine of the type employed for propelling motor vehicles. Preferably cast integral with the side wall of the crankcase 1, are a pair of laterally projecting lugs or supporting members 2 and 3, between which a replaceable filter unit 4 is clamped. The particular filter unit to be employed, not forming any part of the present invention, has not been shown in detail. Briefly, it comprises a sheet metal container having the inlet and outlet in one end, and within which is located the filtering element, the idea being to provide a low cost filter which may be discarded after it has served its period of usefulness.

In order to clamp the filter unit in place, the screw threaded stud 5, carrying a lock nut 6, is adjustably threaded into an aperture or opening in the lug 2, for movement toward and from the lug 3, and which by its adjustment, acts through the spider or pressure distributing element 7, engaging the end of the unit 4, to clamp the unit against the face of the lug 3. The end of the filtering unit engaging the lug 3, is provided with a protruding head 8, having a central bore 9 therein leading into the filter. This head 8 is adapted to extend into an opening 10 in the face of the lug 3, to enable the bore 9 to communicate with a passage 11 drilled through the lug, and which for convenience, may be termed the inlet passage, since the fitting 12 threaded into the end thereof, connects the conduit 13 leading from the pump, to deliver oil under pressure to the filter. The filtered oil returns through the outlet passages 14 and 15 to the sump in the crankcase. The outer ends of the passageways 11 and 15 are closed by screw threaded studs 16, which may be readily removed to facilitate access to the passageways for such inspection, cleaning or repairs as may become necessary during use. To seal the system against leakage, a gasket and washer 17 is preferably inserted between abutting portions of the lug 3 and filter unit 4.

In certain installations, it has been found desirable to provide a by-pass 18 connecting the inlet and outlet passageways 11 and 15, and which is normally closed by a ball valve 19, held against the seat 20 by a spring 21 resting against the plug 22. When such provision is made, clogging of the filter will cause the ball to unseat and permit the oil to flow directly to the passageway 15. The plug 22 in this case, may comprise a well known type of test fitting, which embodies

a screw valve 23. Unthreading of the screw 23 allows oil to drain off, thus indicating the proper functioning or circulation through the system.

In lieu of casting the supporting lugs integral with the crankcase, these lugs may be formed separate and later bolted in the side of the crankcase, as is shown in Figure 4. Here the crankcase wall 101 and the lug 103 are provided with aligned openings, or passageways 111 and 115, and the lug is fastened in place by bolts 124, passing through apertured flanges on the lug and into threaded engagement with the wall of the crankcase.

While the foregoing description has been more or less specific, it is to be understood that the invention is not limited to the exact details, but that such various modifications may be made as come within the scope of the appended claims.

Having described my invention, I claim:

1. In a fluid pressure system, means to removably insert in said system a replaceable filter having inlet and outlet openings in an end wall thereof, including a pair of spaced supporting members, adjustable means associated with one of said members to detachably clamp a filter element between the members, and a pair of passageways associated with the other of said members, and forming a part of said fluid system and adapted for communication respectively with the inlet and outlet openings in the end wall of the filter.

2. In a fluid pressure system, means to removably insert in said system a replaceable filter unit, having inlet and outlet openings in an end wall thereof, including a pair of spaced supporting members, a screw stud having threaded engagement within an aperture in one of said supporting members for adjustment toward and from the other member and adapted by its adjustment to engage with one wall of the filter unit and clamp the wall having the inlet and outlet openings against the other of said members, and a pair of passages formed in the other of said members and adapted for communication with the inlet and outlet openings respectively in the adjacent wall of the filter supported between said members.

3. Means to removably insert a replaceable filter unit, having its inlet and outlet in one end wall thereof, in a fluid pressure system, including a pair of spaced supporting members, between which the filter unit is to be secured, a set screw carried by one of said members and adjustable toward and from the other member, to clamp a filter unit with its inlet and outlet end wall in contact with the other member, and a pair of passageways formed in the other member for communication with the inlet and outlet respectively of the filter unit.

4. The structure set forth in claim 3 and a sealing gasket adapted for interposition between the supporting member and inlet and outlet end of the filter unit and a pressure distributing element interposed between the opposite end of the filter unit and said set screw.

5. In a pressure lubricating system for internal combustion engines and the like, means to removably insert a filter unit therein including a pair of spaced lugs projecting laterally from the side of the engine housing between which a filter unit is to be secured, one of said lugs having a pair of apertures therein through which lubricant in the system is forced, said apertures being adapted for communication with the inlet and outlet respectively in an end wall of the filter unit to be supported, and a screw stud adjustably threaded in the other of said lugs and adapted to engage with and clamp a filter unit against the first mentioned lug.

In testimony whereof I affix my signature.

ALBERT CHAMPION.