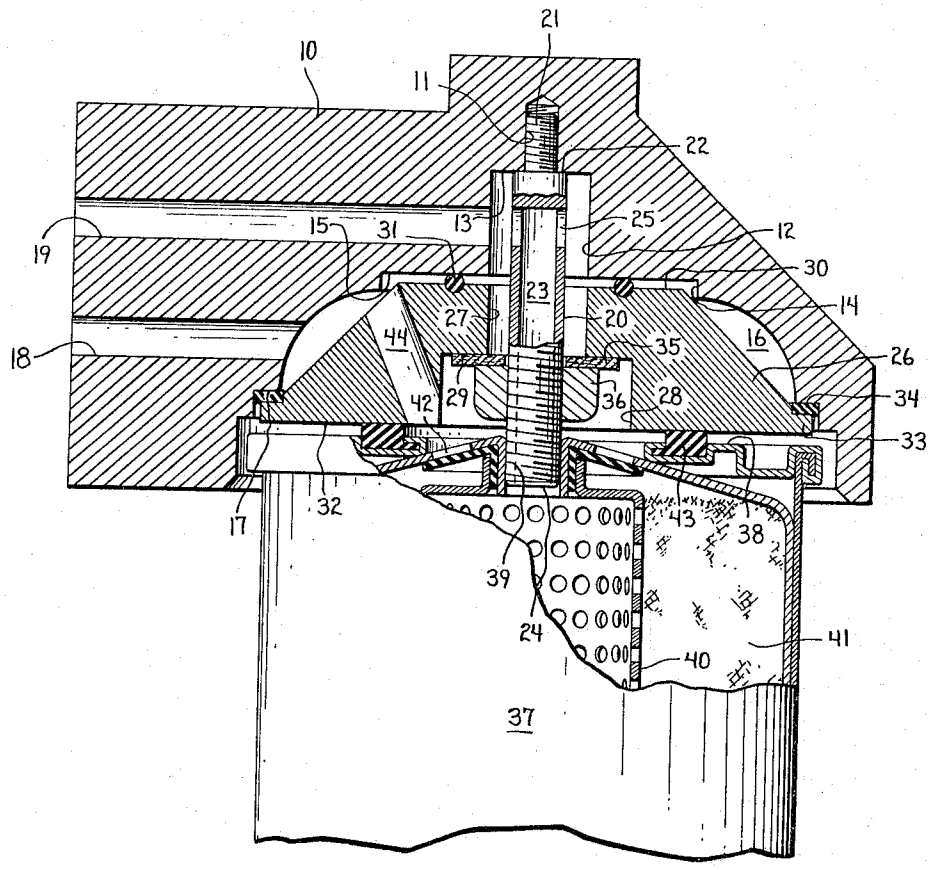
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OIL FILTER ADAPTER KIT

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OIL FILTER ADAPTER KIT

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The present invention relates to an oil filter adapter or replacement kit and the primary object of the invention is to provide a kit through which one form of an oil filter and mounting therefor, conventionally installed in connection with a part of one commercial engine, may readily be replaced by another form of oil filter and mounting means in order to facilitate subsequent servicing and maintenance.

At least one commercial form of engine primarily designed for automobiles includes a part which is provided with inlet and outlet passages for connection in the oil circulating system of the engine, said part further being provided with means for operatively mounting thereon a type of oil filter which comprises a can containing replaceable filtering material, a removable cover for the can and a threaded stud secured to the engine part, axially penetrating the can and its cover and receiving a nut for securing the cover in place. Even in its conventional environment beneath an automobile hood, this installation is rather difficult to service because of inaccessibility; and when that engine is mounted in a boat, filter servicing becomes next to impossible.

There is available on the market a disposable filter unit which is provided in one end wall with an axial, threaded port and with one or more eccentric ports, this whole unit being adapted to be mounted, in a proper environment, by threading its axial port onto a tube, being bodily disposable, by simply removing the entire unit from that tube, when the contained filter medium has become loaded to an objectionable degree.

According to the present invention, I have devised a kit adapted to replace the mounting means for the above mentioned can type filter and to adapt such an engine part to receive, instead, the disposable form of filter unit above described.

Further objects of the invention will appear as the description proceeds.

To the accomplishment of the above and related objects, my invention may be embodied in the form illustrated in the accompanying drawing, attention being called to the fact, however, that the drawing is illustrative only, and that change may be made in the specific construction illustrated and described, so long as the scope of the appended claims is not violated.

The single figure is a central sectional view showing the elements of my kit assembled with a conventional engine part of the type above described and showing a part of a known disposable filter unit operatively associated therewith.

The engine part in question comprises a casting **10** formed with a blind, threaded socket **11** with which coaxially communicates an enlarged pocket **12** having a floor **13**. A counterbore **14** coaxial with the pocket **12** defines the floor **15** of an enlarged cavity **16** whose mouth is circumscribed by an outwardly facing shoulder **17**. The block **10** is further formed with a passage **18** radially communicating with the cavity **16** and said block is formed with another passage **19** radially communicating with the pocket **12**.

When the conventional can type filter and its mounting means have been removed from the block **10**, my kit may be installed to cooperate with the block **10** in the manner illustrated.

A stud **20** is formed at one end with a reduced, threaded extension **21** proportioned and designed for threaded reception in the socket **11** and defining a shoulder **22** adapted to bear against the floor **13** of the pocket **12**. Said stud is formed with axial bore **23** opening through the opposite end **24** of the stud **20** and communicating, near the first-named end of the stud, with one or more lateral ports **25**. As is clearly illustrated, when the stud extension **21** is seated in the socket **11**, the ports **25** will be located within the pocket **12** whose diameter is significantly greater than that of the stud **20**.

My kit includes, as well, a frusto-conical block **26** formed with an axial bore. That portion **27** of the block bore which is nearer the smaller end **30** of the block preferably has a diameter substantially equal to that of the pocket **12**, while the outer portion **28** of said block bore has a significantly larger diameter whereby there is defined, within said bore, an outwardly facing seat **29**.

The block **26** is received in the cavity **16** with its smaller end **30** in facing relation to the cavity floor **15**; and an O-ring **31**, preferably seated in an annular groove in the block end **30**, is confined between said block end and said floor **15** in circumscribing relation to the bore portion **27** and the pocket **12**.

At its larger end **32**, the block **16** is preferably provided with a peripheral flange **33** proportioned and designed to overlie the shoulder **17**; and a gasket **34** is received between said flange and said shoulder.

Another gasket **35** is sleeved on the outer end portion of the stud **20**, and a nut **36** is threadedly mounted on said stud portion to press the gasket **35** sealingly against the seat **29**. At the same time, of course, the nut **36** acts to retain the block **26** in position in the cavity **16**, and said nut may be tightened to compress the O-ring **31** between the surfaces **30** and **15** and to clamp the gasket **34** between the flange **33** and the shoulder **17**.

It will be apparent that the O-ring **31** and the gasket **35** cooperate to establish a seal between the chamber defined by the pocket **12** and the block bore portion **27**, and the cavity **16**.

The disposable filter unit **37** includes an end wall **38** provided with an axial, threaded port **39** communicating with the interior of a foraminous cylinder **40** which is surrounded by filtering material **41**; and said end wall **38** is further formed with one or more eccentric ports **42**. A compressible gasket **43** is carried on said end wall **38** in circumscribing relation to the ports **39** and **42**; and when the unit **37** is mounted by threading the port **39** onto that threaded portion of the stud **20** which extends beyond the larger end **32** of the block **26**, the gasket **43** will be pressed sealingly against said block end. The block **26** is formed with a passage **44** which opens through the frusto-conical surface of said block into communication with the cavity **16** and opens through the end **32** of the block into communication with the region circumscribed by the gasket **43**.

It will be seen that, thus simply, a mounting for the disposable unit **37** upon the engine part **10** is provided of such character that, when the filter medium **41** has become objectionably loaded with solids, the whole unit **37** may be simply unscrewed from the stud end **24** and a new unit may be assembled with engine part by simply threading its port **39** onto the stud end **24**. Merely so installing the new unit, with its gasket **43**, establishes a filtering flow path from the passage **18** through the cavity **16** and the passage **44** and thence through the port or ports **42**, through the filter medium **41** into the interior of the cylinder **40**, through the bore **23** and ports **25** of the stud **20**, into the chamber defined by the pocket **12** and the block bore portion **27** and so to the passage **19**.

I claim as my invention:

1. An oil filter replacement kit comprising a stud provided at one end with a reduced, threaded extension defining a shoulder, said stud being formed with an axial bore opening through the other end thereof and with a radial port near said one end, a frusto-conical block formed with a central bore having one diameter near the smaller end of said block and a larger diameter near the larger end of said block to define an internal seat facing toward the larger end of said block, gasket means sleeved on said stud, a nut threadedly mounted on said stud and engaging said gasket means to press the same sealingly against said seat, said other end of said stud extending, when said gasket means is so seated, beyond the larger end of said block for threaded reception of a replaceable filter unit provided with an annular seal engageable with the larger end of said block to circumscribe said block bore, said block being formed with a passage opening at one end through the frusto-conical wall of said block and at its other end through the larger end of said block within the region circumscribed by said annular seal, and annular seal means carried by the smaller end of said block and circumscribing said block bore.

2. In combination with an engine part formed to provide a threaded socket, a pocket coaxially communicating with said socket and having a diameter larger than that of said socket, a counterbore coaxially communicating with that end of said pocket remote from said socket to define a floor for a radially enlarged cavity opening away from said pocket, and an outwardly facing shoulder circumscribing the mouth of said cavity, said engine part further being formed with a first passage communicating with said pocket and with a second passage communicating with said cavity; a filter kit comprising a stud having a body whose diameter is less than that of said pocket and having a reduced, threaded extension at one end threadedly seated in said socket, said stud being

formed with an axial bore opening through the other end of said stud and further being formed with a lateral port communicating with said pocket, a frusto-conical block having an axial bore therethrough, said block being positioned in said cavity with its smaller end facing said cavity floor, gasket means disposed between said floor and said smaller end of said block and circumscribing said pocket and said block bore, said block bore being internally provided with a shoulder facing the larger end of said block, said stud extending through said block bore and beyond the larger end of said block and being threaded, a gasket sleeved on said stud, a nut threadedly mounted on said stud and pressing said gasket sealingly against said internal shoulder, further sealing means gripped between the larger end of said block and said outwardly facing shoulder, a disposable filter unit having an end wall provided with an axial, threaded port and with an eccentric port, said threaded port receiving the extending end of said stud to mount said filter unit with said end wall in facing relation to the larger end of said block, and a further gasket means sealingly disposed between said larger end of said block and said filter unit end wall and circumscribing said filter unit end wall ports, said block further being formed with a passage opening through the frusto-conical wall of said block into communication with said cavity and through the larger end of said block into communication with said filter unit end wall eccentric port within the region circumscribed by said further gasket means.

References Cited by the Examiner

UNITED STATES PATENTS

2,995,253	8/1961	Belgarde et al.	210—443 X
3,184,062	5/1965	Humbert.	

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