

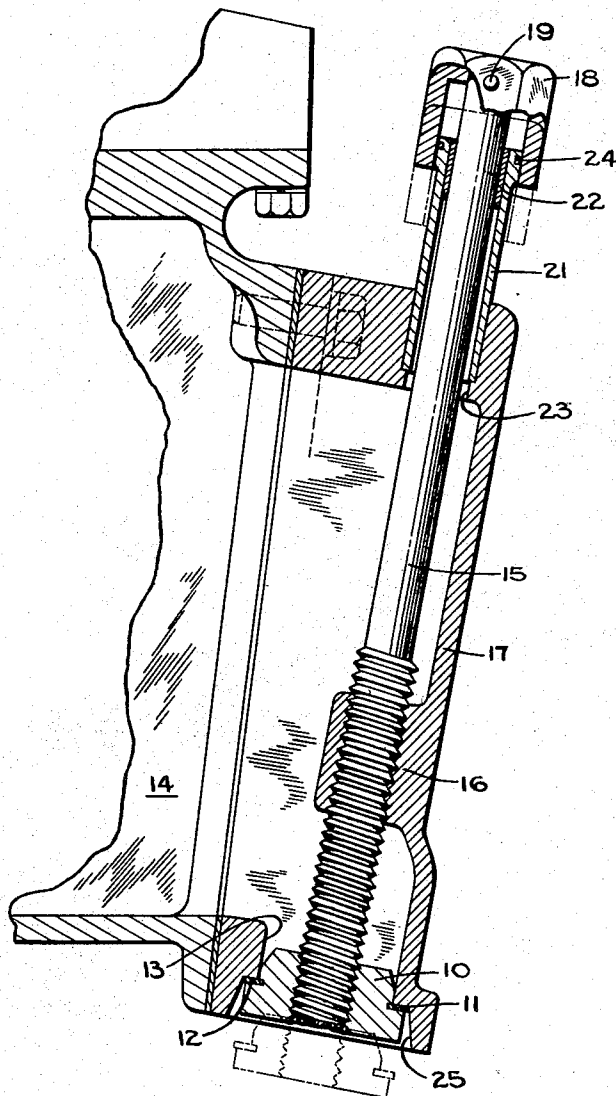
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FLUID COMPARTMENT DRAIN PLUG

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FLUID COMPARTMENT DRAIN PLUG

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1 Claim. (Cl. 184—1.5)

This invention relates to drain plugs for fluid compartments such as the oil reservoirs of internal combustion engines and vehicles, and more particularly to a drain plug located at the bottom of an oil compartment which may be opened or closed from a remote position such as above the compartment.

In draining the oil from many present designs of engines and vehicles, it is necessary for a mechanic to crawl beneath the vehicle and remove a plug located at the lowest point of the compartment. This procedure is sometimes difficult and is always awkward and inconvenient. Also, since the mechanic is below the opening in the oil compartment, he is frequently drenched with oil. This hazardous procedure has been accepted only because of necessity and because no other satisfactory method of draining fluid compartments has been devised.

The object of the present invention, therefore, is to provide a simple drain plug that can be operated remotely from a convenient, upright and safe position without the need of special or extra tools.

The drawing is a central vertical section through a portion of an oil compartment and a drain plug embodying the present invention.

The closure device embodying the invention is shown in the drawing as comprising a vertically movable plug 10 provided with a gasket 11 which seats on a shoulder 12 adjacent the drain opening 13 of an engine oil compartment, or reservoir 14. Plug 10 is non-rotatably secured to the lower end of a threaded rod 15 which extends upwardly through a threaded boss 16 formed inside the compartment 14 or in an extension 17 thereof. An operating cap 18 is secured by a pin or rivet 19 to the opposite end of rod 15, which is not threaded. A sleeve 21 provided with a bearing 22 is pressed into a suitable opening 23 in the top of the member 17, which forms one side of compartment 14, to pilot the rod 15 and to permit axial movement of the operating cap 18. A resilient O-ring 24 in a sealing relationship between the

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sleeve 21 and cap 18 prevents the entry of dust or other contaminating substances into the oil compartment.

To open the drain in the engine oil compartment, it is necessary merely to rotate the cap 18 in the proper direction to screw rod 15 downwardly through the supporting boss 16, which is formed integrally with the member 17 thus moving the plug to the position shown in broken lines. The rod 15 may be provided with left-hand threads to keep the operation consistent with those commonly associated with bolts and nuts. Upon completion of the draining operation, the cap 18 is rotated in the direction opposite to that used in opening the drain, which will move the rod 15 upwardly through boss 16 and cause plug 10 again to be seated as shown.

To minimize the spray usually caused by fluid surging through such a restricted opening, a counterbore 25 having a diverging taper is provided to deflect downwardly the initial discharge of oil flowing through drain opening 13. Initial movement of the plug 10 serves only to break the seal of gasket 11 and to loosen any crust of oil and dirt that might have formed over the drain opening of the oil compartment. Further downward movement of plug 10 allows oil to pass gasket 11 while it is still well within the confining bore 25, which causes the oil to flow along the contour of the plug 10 rather than splash off the periphery of the plug. Opening the drain to the extreme position shown in broken lines will be necessitated only if the crust is quite thick or in a semi-fluid state.

We claim:

A drain device for a fluid compartment with a drain opening in its bottom which comprises, a plug for closing said opening, the opening being countersunk from the exterior of the compartment to provide a seat for the plug and a recess to receive the outer end of the plug, a threaded rod secured to the plug and extending through the top of the compartment, a threaded boss on an inner side wall of the compartment receiving said rod whereby turning of the rod will open the plug by advancing it downwardly, a tubular member secured to the compartment and extending upwardly from the top thereof and surrounding said rod, and a cup shaped actuating member fixed to the upper end of the rod and extending downwardly over and in sealing relationship to the upper end of said tubular member.

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