

[54] ACCIDENT PROOF, TAMPER PROOF BOAT DRAIN PLUG

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[22] Filed: Apr. 27, 1973

[21] Appl. No.: 354,951

[52] U.S. Cl. 114/197, 114/227

[51] Int. Cl. B63b 13/00

[58] Field of Search 114/183, 184, 185, 197, 114/198, 227, 228

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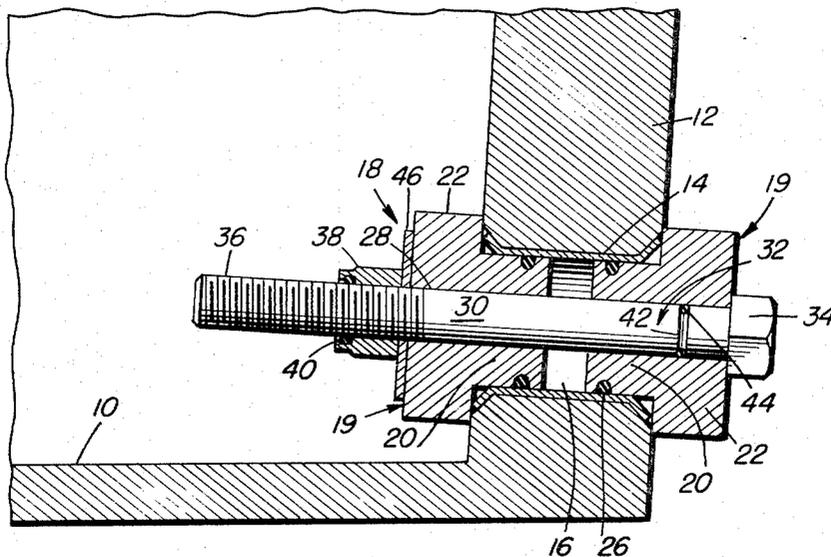
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[57] ABSTRACT

This device is a boat transom drain hole plug that is accident proof and tamper proof, at least against a single individual in that it takes the cooperation of at least two individuals to remove this plug. It comprises a pair of apertured, flanged adapters fitting in opposite sides of the boat transom drain hole and held in position by a threaded bolt therethrough and an elastic stop nut threaded thereon. The cylindrical portions of the adapters fit snugly within the drain hole, or within the metal sleeve lining the drain hole, if one is present. O-rings are set in and at least slightly extend from circumferential recesses in each cylindrical portion to seal against the drain hole wall or the metal sleeve lining the drain hole wall. To prevent any possible leakage through the adapter apertures, the bolt is also provided with a sealing O-ring extending slightly from a cylindrical recess in the bolt stem adjacent the bolt head, and a washer may be used between the elastic stop and the adjacent flange of the adjacent adapter. As thus set up, the drain plug cannot possibly loosen accidentally, and it can not be removed or vandalized by a single individual. It takes two individuals, one inside and one outside the boat to install or remove this boat drain hole plug.

8 Claims, 3 Drawing Figures



ACCIDENT PROOF, TAMPER PROOF BOAT DRAIN PLUG

BACKGROUND OF THIS INVENTION

In many areas small boats are removed from the water for storage either dockside or trailered to other storage areas. With conventional drain plugs, the boat may be easily vandalized by a single individual loosening or removing the drain plug which, if unnoticed by the boat operator, will cause the boat to sink or be damaged next time it is launched.

OBJECTS OF THE INVENTION

It is an object of this invention to provide a drain hole plug that is accident proof, that cannot accidentally loosen.

A further object of this invention is to provide a boat drain hole plug that is tamper proof against a single individual.

A still further object of this invention is to provide a boat drain hole plug that provides a tight, leak-proof seal for a boat transom drain hole.

Yet a further object of this invention is to provide a boat transom drain hole plug that requires at least two persons to install or remove it.

A still further object of this invention is to provide a boat drain hole plug that can be installed or removed only when the boat is out of the water.

Yet a further object of this invention is to provide a boat transom drain hole plug that has two flanged cylindrical portions that are apertured, that are installed from opposite sides of the transom and held in sealing position by a bolt inserted therethrough and locked in position by an elastic stop nut.

A still further object is to provide an improvement over U.S. Pat. Nos. 2,730,062; 2,997,975; 3,188,994; and 3,394,671.

BRIEF DESCRIPTION OF THE FIGURES

With the above and related objects in view, this invention consists in the details of construction and combination of parts, as will be more fully understood from the following description, which read in conjunction with the accompanying drawing, in which:

FIG. 1 is an exploded view of the boat drain plug of this invention.

FIG. 2 is an elevation view of the plug in position looking from the outside of the boat.

FIG. 3 is a sectional view on line 3—3 of the plug in operative position.

DETAILED DESCRIPTION OF THE INVENTION

There is shown at 10 the bottom of a boat having its transom at 12 through which, adjacent the boat bottom 10, as customary, there extends a drain hole 14 which is usually lined with a metal sleeve 16. This invention is a drain hole plug 18.

The drain hole plug 18 consists of a pair of similar adapters 19 each consisting of a cylindrical sealing portion 20 from which extends an enlarged or stepped flange 22. The cylindrical portions 20 are together of an axial length not greater than the axial length of the drain hole 14, and in practice, is somewhat less in length, so that each axial portion 20 is of an axial length somewhat less than one-half the axial length of the drain hole. The diameter of the cylindrical portion 20

is approximately the diameter of the hole 14, or, if the sleeve metal lining 16 is present, then the cylindrical portion 20 diameter is that of the inside wall of the lining 16.

Each cylindrical portion 20 of the adapters 19 is circumferentially recessed at 24 adjacent to its end, and each recess 24 is provided with an O-ring 26 slightly extending therefrom so that when it is inserted into the hole or sleeve lining, it forms a tight seal against the wall of the hole 14 or lining sleeve 16.

Each adapter 19 is provided with an axial aperture 28 of a diameter to snugly receive the stem 30 of a bolt 32 having a bolt head 34, the other end of the bolt stem 30 being threaded at 36 to receive the threads of an elastic stop nut 38. The elastic stop nut 38 has an O-ring 40 extending inwardly therein in a position to grip the bolt stem threads 36 and make it impossible for the nut to unthread accidentally. In addition, the bolt stem 30 is circumferentially recessed at 42 adjacent the bolt head 34, a distance less than the length of the axial aperture 28, and an O-ring 44 extends slightly from this stem recess 42 to provide a tight leak-proof closure plug 18 in the transom hole 14.

OPERATION OF THE INVENTION

The drain plug 18 is made of a pair of adapters 19 selected to have the diameter of the cylindrical portion 20 be the same as that of the transom hole 14, or that of the inner wall of the metal lining sleeve 14 if such be present. The added length of the cylindrical portions should be slightly less than, but in no case greater than, the distance between the inner and outer surfaces of the transom 12. The adapters 19 are inserted from opposite side of the transom 12, this being done by two individuals when the boat is out of the water. The bolt 32 is inserted through the adapter apertures 28. A washer 46 is placed over the bolt stem 30 against the outer wall of the adjacent flange 22. The elastic stop nut 38 is threaded and tightened with a wrench by one individual on the boat bottom 10 while the bolt head 34 is held by a wrench by a second individual outside to tighten the bolt 32 and nut 38 and secure the plug 18 in operative position. Due to the construction and assembly as just described, the plug 18 cannot be removed by one individual alone either inside or outside the boat, for any attempt to turn either the nut 38 or the bolt head 34 alone will at most turn the entire plug 18 without loosening it, thus preventing vandalism by a single individual. For the same reason, it cannot loosen accidentally.

ABSTRACT OF THE DRAWING

In the drawing, like numbers refer to like parts, and for the purpose of explication, set forth below are the numbered parts of the improved accident-proof, tamper-proof boat drain plug of this invention.

- 10 boat bottom
- 12 boat transom
- 14 drain hole
- 16 metal lining sleeve for 14
- 18 drain plug
- 19 drain plug adapters
- 20 cylindrical portion of 19, fitting within 14
- 22 adapter flange
- 24 circumferential recess in 20
- 26 O-ring in 24
- 28 axial aperture in 19, to receive stem 30

- 30 stem of bolt 32
- 32 bolt
- 34 bolt head
- 36 threads on stem 30
- 38 elastic stop nut
- 40 O-ring in nut 38
- 42 circumferential recess in stem 30 near head 34
- 44 O-ring in 42
- 46 washer

Although this invention has been described in detail, 10 such description is intended as being illustrative rather than limiting, since the invention may be variously embodied.

Having thus set forth the nature of this invention, 15 what is claimed is:

1. For use in a boat transom (12) having a drain hole (14); a drain hole plug (18) comprising a pair of apertured (28) adapters (19), one of said adapters (19) fitting partially into each of the opposite sides of said drain hole (14) and also fitting partially against the opposite sides of the boat transom (12), a threaded (36) bolt (32) fitted through the adapters (19) in the drain hole (14), and a nut (38) threaded on said bolt (14) holding said adapters (19) in the drain hole (14), said bolt (32) having its head (34) on one side of the boat transom (12) and said threaded nut (38) being on the other side of the boat transom, whereby simultaneous operation on the bolt head (34) and the threaded nut (38) by one individual inside the boat transom (12) and by another individual outside the boat transom is 30 necessary to remove the plug (18) from the drain hole (14).

2. The plug of claim 1, said adapters (19) having stepped flanges (22) abutting the outer surfaces of the transom (12).

3. The plug of claim 1, each said adapter (19) having 5 a cylindrical portion (20) fitting into the drain hole (14), and a stepped flange portion (22) abutting a surface of the transom (12).

4. The plug of claim 3, the added lengths of said cylindrical portions (22) being not greater than the thickness of the transom (12) at the drain hole (14).

5. The plug of claim 4, each cylindrical portion (20) having a circumferential recess (24) and an O-ring (26) in and extending from said recess (24) providing a substantial seal against the drain hole (14) wall.

6. The plug of claim 5, said nut (38) being threaded 15 on said bolt (32) against one flange portion (22), the bolt head (34) abutting against the other flange portion (22), said nut being an elastic stop nut.

7. The plug of claim 6, said bolt (32) having a circumferential recess (42) adjacent to but slightly spaced from its bolt head (34), and an O-ring (44) in and extending from said bolt circumferential recess (42) 20 against the adapter (19) aperture wall.

8. The plug of claim 7, and a washer (46) between said elastic stop nut (38) and the adjacent flange portion (22) surface, the transom drain hole (14) having a metal sleeve (16) lining it, said O-rings (26) in said cylindrical portions (20) sealing against said metal lining sleeve (16), the bolt threaded portion (36) and elastic stop nut (38) extending into the inner boat side of the transom (12).

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