ABSTRACT: A plug for engagement within the opening of fuel or water tanks particularly of the type utilized in boats and formed of a body adapted to be engaged in said tank opening, said body having a top opening groove or recess and a sector-shaped disc pivotally mounted within said groove or recess along an axis normal to the plug axis and movable between a fully recessed condition and an outwardly pivoted condition whereat to serve as gripping means for manipulating the plug, the disc including counterweight formations preferably along one straight edge thereof to enable self-return of the disc from its outwardly pivoted condition; the pivot axis of the disc being offset from the center of the plug body.
CLOSURE DEVICE ESPECIALLY FOR FUEL AND WATER TANKS

The present invention relates to a closure device, especially for fuel tanks, water tanks and the like in motor boats and the like. In motor boats the refilling opening for a fuel tank or a fresh water tank usually opens from the deck level. Said opening is usually tightened by a threaded plug of suitable form which seals the opening to the penetration of rain water or sea water. In order to avoid upwardly projecting objects from a smooth deck surface the threaded closure plug is usually lowered into the deck. Otherwise, such projecting objects would easily cause stumbling or other damages. Said closure plug is usually provided with a key socket. A key socket of that kind may have the form of a hexagonal recess or of two or more bores into which a claw-shaped key can be inserted. Therefore, it is necessary to have access to a fitting key when the plug should be tightened or loosened.

The present invention relates to a device with a cover lid of the kind indicated above in which said drawback is eliminated and which also has other advantages in comparison with closure devices hitherto known.

The invention relates to a closure device for a refilling opening especially for a fuel tank or a water tank in a boat or the like, comprising a threaded plug or twisting plug which is located in the refilling opening and which has an upper surface that is plane and formed as provided with a hinged grip device which in an upturned position serves as a grip for the loosening of the plug and removing it from the refilling opening and for tightening the plug in said opening.

The invention is mainly characterized by the fact that said grip is constituted by a sector-shaped disc which is lowered in a groove in the plug and pivoted around an axis which makes a right angle with the disc and which is located in such a manner near the point of the angle between the straight edges of said disc which constitute the radial edges of said sector shape, that in the lowered position of said disc, one of said straight edges is lying in level with the upper side of said plug and substantially fills the opening of the groove in which said disc is located, and in a raised position that edge of the disc which is opposite to said angle point, is turned upward and forms the upper edge of the grip which is formed by said disc.

In the following the invention will be described more in detail with reference to the accompanying drawing in which FIG. 1 is a top view of a closure device according to the invention.

FIG. 2 is an axial section of the same device.

In the drawing, I designates the upper end of a refilling tube for a fuel tank, a water tank or the like, especially intended for a motorboat or the like. At the upper end thereof, the refilling tube is provided with a collar 2 which is soldered or welded to the tube, said collar 2 having three countersunk bores or recesses 3 for fastening screws. The refilling opening 1 is provided with a thread 4 at the inside of the tube in which a threaded plug 5 is fitted. The threaded plug 5 has a collar 6 around its upper portion which, when the plug is inserted in the tube, lies in the same plane as the upper surface of the collar 2. As shown in FIG. 1, the collar 2 of the refilling opening is nearly plane but provided with a slightly conical upper edge portion so that it does not constitute any projecting object on the boat deck in which the closure device is located.

Around the threaded plug 5 and under its collar 6 an annular packing 7 is located, and in operative position said packing is pressed against a flange 8 in the refilling opening. Outside the flange 8 there is a collar 9 which projects upwards outside the packing 7. Outside this cylindrical collar 9 there is an annular groove 10. This groove 10 is located under a narrow slot 11 which is provided between the collar 6 of the threaded plug 5 and the adjacent wall portion of the collar 2 of the refilling opening 1.

In the threaded plug 5 there is also a rather broad groove 12. In this groove 12 a grip in the form of a sector-shaped disc 13 is provided. The disc can be rotated around an axis 14 which is perpendicular to the disc and which is inserted from one side of the collar 2 of the refilling opening as indicated in FIG. 1. The disc 13 can be raised from the position shown in full lines in FIG. 2, in which one straight edge 15 of the disc is lying in level with the upper surface of the threaded plug 5 to a position shown in dotted lines in FIG. 2, in which the disc projects upwards and forms a grip by means of which the threaded plug 5 can be loosened and removed from and inserted into and tightened in the refilling opening.

The disc 13 is relatively thin but has flanges 16 and 17 at its straight edges, said flanges being of substantially equal width as the groove 12.

The flange 17 has a weight which is so proportioned in relation to the weight of the flange 16, that the disc, from the position shown in dotted lines in FIG. 2, under the action of its own weight falls down back to the position shown in full lines in FIG. 2, as soon as it is released by the hand. This is a great advantage because otherwise the disc may be left in the upright position and in that case it would constitute such a projecting object which could give rise to damages of the kind indicated in the foregoing.

The disc 13 can easily be brought to the position shown in dotted lines in FIG. 2, from the position shown in full lines in FIG. 2, by giving a light pressure by a finger to its portion 18, and thereafter lifting the disc.

From the cylindrical groove 10 which collects water which flows down through the narrow groove 11 when the plug is inserted, flow channels 19 lead out to the countersunk bores 3 for the fastening screws. By this arrangement it is avoided that water remains in the groove 11 and runs down into the fuel tank or the fresh water tank as soon as the threaded plug is loosened.

A closure device according to the invention is very convenient to handle. There is no need to take care of a special key for opening of a threaded plug. The device according to the invention is always ready for use.

What I claim is:

1. A closure device for a refilling opening especially for a fuel tank or a water tank in a boat or the like, comprising a threaded plug or twisting plug which is located in the refilling opening and which has an upper surface that is substantially plane and formed as provided with a hinged grip device (13) which in an upturned position serves as a grip for the loosening of the plug (5) and removing it from the refilling opening and for tightening the plug in the position of said disc (13) which is lowered in a groove (12) in the plug (5) and pivoted around an axis (14) which makes a right angle with the disc and which is located in such a manner near the point of the angle between the straight edges of said disc (13) which constitutes the radial edges of said sector shape, that in the lowered position of said disc one of said straight edges is lying in level with the upper side of said plug (5) and substantially fills the opening of the groove (12) in which said disc is located, and in a raised position that edge of the disc (13) which is opposite to said angle point, is turned upward and forms the upper edge of the grip which is formed by said disc.

2. A closure device according to claim 1 characterized by the fact that the pivot point for the axis (14) is displaced a distance from the angle point along the straight edge of the grip (13) which in the lowered position constitutes its upper surface, so that there will be a portion (18) accessible for applying a finger pressure thereon between the axis (14) and said angle point, and by actuating of which the other portion of said straight edges rise from the groove (11) so that the grip (13) easily can be lifted up to operative position.

3. A closure device according to claim 2 characterized by the fact that the groove (12) in the threaded plug (5) has such a width that said pressing down can easily be carried out and that the disc (13) is provided with a flange (16) at least along that edge thereof which, when in the position shown, is lying in level with the upper surface of the plug (5) and that the flange (16) has such a width that it substantially fills the groove (12).
4. A closure device according to claim 1 characterized by the fact that the disc (13) can be raised to cooperation with a stop device and its weight center is so positioned in relation to the axis (14) around which the disc is pivoted that the disc from the raised position falls down to its lowered position under the action of its own weight.

5. A closure device according to claim 2 characterized by the fact that the disc (13) can be raised to cooperation with a stop device and its weight center is so positioned in relation to the axis (14) around which the disc is pivoted that the disc from the raised position falls down to its lowered position under the action of its own weight.

6. A closure device according to claim 3 characterized by the fact that the disc (13) can be raised to cooperation with a stop device and its weight center is so positioned in relation to the axis (14) around which the disc is pivoted that the disc from the raised position falls down to its lowered position under the action of its own weight.