

June 17, 1941.

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2,246,470

RECEPTACLE CLOSURE

Filed May 26, 1937

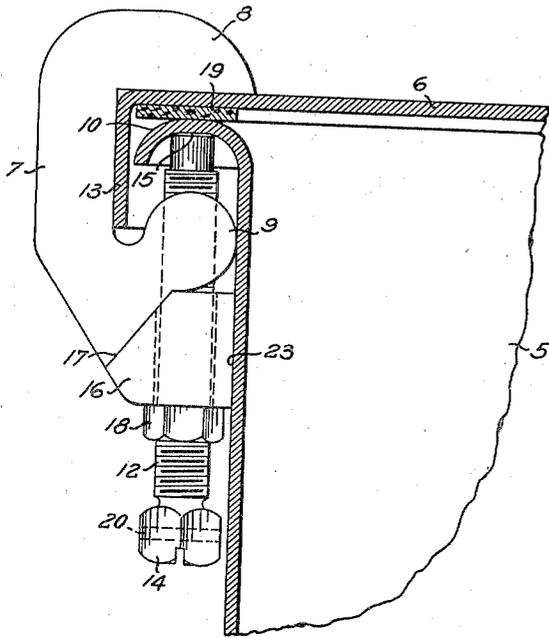


Fig. 1

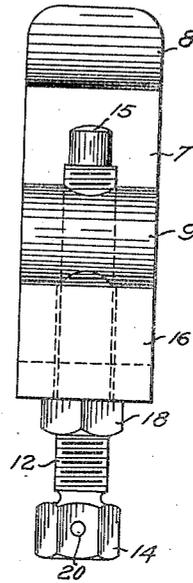


Fig. 2

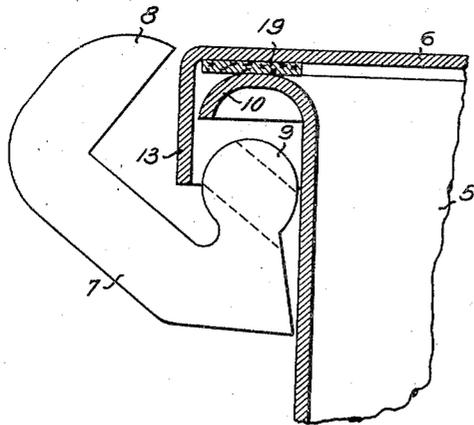


Fig. 3

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UNITED STATES PATENT OFFICE

2,246,470

RECEPTACLE CLOSURE

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Application May 26, 1937, Serial No. 144,770

7 Claims. (Cl. 220-55)

This invention relates in general to receptacle closures and particularly to an improved method of and means for forming a receptacle and closure member therefor and for clamping such closure member to the receptacle.

In the prior art receptacles of the type provided with a closure member or cover having a flange extending over the edge of the opening in the receptacle, the utilization of an ordinary C-shaped member for clamping the cover to the receptacle has distinct disadvantages. If such a clamp provided an opening between the outer end of the C-shaped member sufficient for positioning the clamp over the flange of the cover, it provided neither for supporting the clamping bolt against bending, nor for preventing the clamp from jarring off of the cover due to vibration or accidental blows. Receptacles of the prior art utilizing a clamped cover required lugs or similar members welded to the tank and to the cover.

It is therefore an object of this invention to provide a new and improved method of and means for clamping receptacles of the above type which method and means will avoid any or all of the above disadvantages.

It is also an object of this invention to provide a clamping means having a body section so shaped and proportioned as to provide support against bending for substantially the full length of the clamping bolt.

It is a further object of the present invention to provide a clamping means for a tank or receptacle closure which clamping means avoids the use of members welded or riveted onto the tank or cover.

It is a further object of this invention to provide in a receptacle of the above type a clamping means which cannot be removed due to accidental blows, jarring or vibration of the receptacle.

It is a further object of the present invention to provide a clamp which cannot be removed from the receptacle unless the clamping bolt is wholly removed from the body section of the clamp.

It is a further object of the present invention to provide a clamping means providing for additional locking of the clamping bolt and bracing of the clamp.

It is a further object of the present invention to provide an improved simplified and inexpensive sealing means efficiently closing a receptacle opening.

Objects and advantages other than those above set forth will be apparent from the following description when read in connection with the accompanying drawing, in which:

Fig. 1 is a fragmentary section view of a tank and cover therefor with the clamping means in position embodying the present invention;

Fig. 2 is an end view of the clamp shown in Fig. 1; and

Fig. 3 is a fragmentary section view of the tank and cover shown in Fig. 1 illustrating the manner of positioning or removal of the clamp body section after the clamping bolt has been removed therefrom.

In Fig. 1 is shown a tank or receptacle 5 which may be of any suitable cross section, dimensions or material. The tank 5, shown for the purpose of illustrating an embodiment of this invention, may be an ordinary sheet metal cylindrical tank such as is utilized to encase transformers or similar electrical apparatus in oil. In order to provide an improved and inexpensive manner of forming the top edge of the tank 5, the edge 10 is spun or rolled into the shape shown. This rolled edge 10 provides a smooth, even surface which cooperates efficiently with the gasket 19 to form a seal therebetween. The rolled edge 10 also provides a bearing surface for the clamping end 15 of the clamping bolt 12.

In order to provide protection for the gasketed joint and to provide a bearing face for the body section portion 7 of the clamp, the cover 6 has a flange 13 rolled or spun at an angle thereto. The manufacturing operations necessary to form a tank and cover such as above described are simple and inexpensive, for such operations include only a bending of the material rather than a cutting or machining or welding on of additional members.

When a receptacle such as shown in Fig. 1 is utilized to encase a transformer or other electrical apparatus, usually in oil or similar liquid, such tanks are subject to constant vibration over long periods of time, which vibration tends to loosen the clamped cover. It is important that the seal between cover and tank be maintained in order to prevent moisture or other impurities from entering the tank. In order to prevent accidental knocking off of the clamp from the cover or its removal due to vibration, the clamp is provided with a body section in the shape of a modified C having a back portion 7 and outer ends 8 and 9. The inner face of the portion 7 fits snugly against the depending edge 13 and the lower face of the portion 8 fits snugly against the top of the cover member 6. The outer end 9 is extended upwardly a substantial distance toward the outer end 8 thereby providing support for the bolt 12 which is threaded therein. This support is provided at the point it is most desirable, that is, closely adjacent the clamping end 15 thereby preventing movement thereof due to the bending of the bolt 12. As shown in Fig. 3 the portion 9 is of a width less than the distance between the wall of the tank 5 and the depending flange 13 of the cover, so that when the clamping bolt 12 is removed from the body section of the clamp, it may be rotated in

a counter-clockwise direction as viewed in Figs. 1 and 3 for removal from the tank and cover.

In order to provide against movement of the body section while in the clamping position shown in Fig. 1 to the position shown in Fig. 3, a wedging member 16 is loosely supported on the bolt 12. The wedging member 16 has one face 23 in engagement with the tank wall and has a diagonal face 17 engaging the body section of the clamp and forcing the same in a clockwise direction as viewed in Fig. 1, when 16 is forced upwardly on the bolt 12 by the nut 18.

In order to position the clamp upon the receptacle and cover, the lock nut 18 is screwed onto the bolt 12 well down towards the head end 14 thereof and the wedging member 16 is then placed on the bolt adjacent the lock nut. The body section of the clamp is then positioned on the tank by inserting the portion 9 between the depending flange 13 of the cover and the tank wall 5 as shown in Fig. 3. The body section is then rotated in a clockwise direction into the position shown in Fig. 1, and the assembly of parts 12, 16 and 18 is threaded into the portion 9 until the end 15 of the bolt 12 bears tightly against the underside of the rolled edge 10. The lock nut 18 is then screwed toward the end 15 of the clamping bolt thereby wedging the member 16 tightly against the tank wall 5 and against the body section 9. The action of the loosely carried member 16 between the two threaded sections 9 and 18 provides double locking against accidental loosening of the bolt 12 due to vibration. A wire (not shown) may be threaded through the hole 20 in the bolt 12 and around the body section of the clamp in any convenient manner to provide for a seal against removal of the bolt 12.

When the above invention is utilized for electrical apparatus, in many cases such apparatus is not inspected over long periods of time. If for any reason the bolt 12 should become slightly loosened during service the clamp could not fall off and become lost unless the bolt 12 was wholly removed from the body section 9. By provision of the section 9 and the wedge member 16 as shown, the clamping bolt 12 is supported against clamping movement for substantially its full length.

Although but a few embodiments of the present invention have been illustrated and described, it will be apparent to those skilled in the art that various changes and modifications may be made therein without departing from the spirit of the invention or from the scope of the appended claims.

It is claimed and desired to secure by Letters Patent:

1. In combination, a receptacle provided with an outwardly extending edge, a cover member for said receptacle provided with a flange depending over said receptacle edge, a clamping member having a modified C-shaped body section having a distance between the tips thereof substantially less than the depending length of said cover member flange, a member threaded in one of said tips of said body section and arranged in contact with said edge of said receptacle.

2. In combination, a receptacle provided with an outwardly extending edge, a cover member for said receptacle provided with a flange protecting said receptacle edge, a clamping member

having a modified C-shaped body section having a distance between the tips thereof substantially less than the length of said cover member flange, a member threaded in one of said tips of said body section, and a wedging member carried on said threaded member provided with a face in contact with said receptacle.

3. In combination, a receptacle provided with a flared edge, a cover member for said receptacle provided with a flange protecting said receptacle edge, a clamping member provided with a body section having extensions thereon, a member threaded in one of said extensions of said body section, a wedging member carried on said threaded member provided with a face in contact with said receptacle, and a second face in contact with a portion of said body section.

4. In combination, a receptacle provided with an outwardly extending edge, a cover member for said receptacle provided with a flange depending over said receptacle edge, a clamping member having a modified C-shaped body section having a distance between the tips thereof substantially less than the depending length of said cover member flange, a member threaded in one of said tips of said body section, a wedging member carried on said threaded member provided with a face in contact with said receptacle, and a second face in contact with said body section at an angle to the longitudinal axis of said threaded member.

5. A clamp comprising a modified C-shaped body section, the distance between the outer end portions of said body section being substantially less than the distance between the inner end portions, a member in threaded engagement with one of said outer end portions, a wedging member carried by said threaded member engaging a face of said body section, a locking member carried in threaded relation on said threaded member engaging a face of said wedging member.

6. In combination, a receptacle provided with an outwardly extending edge, a cover member for said receptacle provided with a flange depending over said receptacle edge, a clamping member having a modified C-shaped body section having a distance between the tips thereof substantially less than the depending length of said cover member flange, a member threaded in one of said tips of said body section, and an auxiliary member supported on said threaded member in contact with said last named tip and said receptacle.

7. In combination, a receptacle provided with an outwardly extending edge, a cover provided with a flange depending over said receptacle edge and spaced therefrom, means for clamping said cover to said receptacle comprising a substantially C-shaped body section having one tip thereof in contact with the outer surface of said cover and having the other tip thereof closely adjacent said receptacle and positioned in said space, the distance between said tips being less than the depending length of said flange, a member threaded through said last mentioned tip and depending therefrom, said member arranged closely adjacent said wall of said receptacle and contacting said edge of said receptacle when in clamping position.

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