March 15, 1927. 1,620,983

L. C. NICHOLS

TRANSFORMER CASING

Filed April 13, 1922

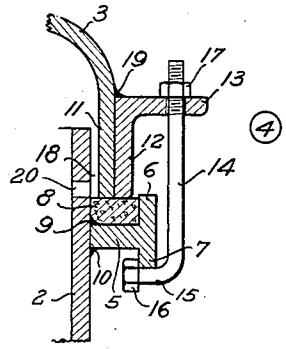


Fig. 2

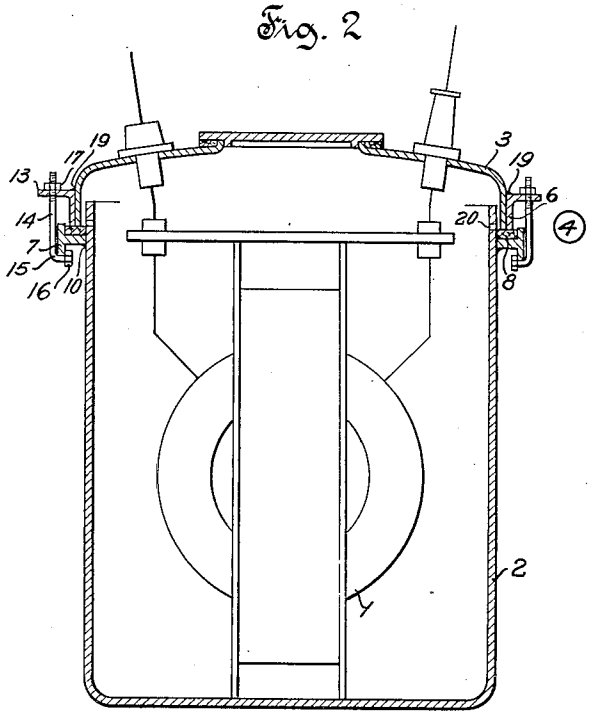


Fig. 1

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TRANSFORMER CASING

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This invention relates to transformer casings and is particularly adapted for use in transformers in which it is desired to have an oil or gas tight joint between the cover and the tank portions of the casing. It has been found that very high pressures are sometimes formed within transformer casings which may be enough to lift the cover off of the gasket on which it rests. In casings as ordinarily constructed this results in the gasket being blown out, with the consequent trouble and expense of replacing the gasket. It is one of the objects of this invention to obviate these disadvantages.

Another object is the provision of a simple and efficient joint construction which is at the same time easily and cheaply manufactured. Other objects will appear hereinafter as the description of the invention proceeds.

The novel features of the invention will appear from this specification and the accompanying drawings forming a part thereof and showing one embodiment of said invention, and all these novel features are intended to be pointed out in the claims.

In the drawings Fig. 1 is a more or less diagrammatic vertical sectional view of a transformer in which the invention has been applied;

Fig. 2 is an enlarged detail view of a portion of Fig. 1, showing the relation of the cover with respect to the tank and the construction thereof.

In the drawings a transformer proper 1, more or less diagrammatically shown, is disposed in a casing comprising a tank 2, and a cover 3. The joint 4 between the cover and tank is shown in detail in Fig. 2. The tank 2 is provided with a transversely outwardly extending flange 5, which is preferably located some distance below the top of the tank. The flange 5 is provided with an upwardly extending bead 6 and a downward extending bead 7.

The beads 6, 7, together with the flange 5 provide a member having a T-shaped cross-section. The flange 5 is of annular form and completely surrounds the tank and is preferably fastened to said tank by welds 9, 10. The bead 6, the flange 5 and the outer wall of tank 2 provide an annular recess in which a gasket 8 may be disposed. The gasket may be of any suitable material.

The cover 3 is here shown as provided with an axially downwardly extending flange 11. Surrounding the flange 11 is an angle iron 12 providing an outwardly extending flange 13. The angle iron 12 is preferably fastened to the cover 3 by a weld 19. Both the flange 11 and angle iron 12 may be machined flush with each other and are adapted to rest on the gasket 8. The flange 13 is provided with any desired number of holes through which U-bolts 14 may be passed, and the lower end 15 of the bolts 14 may be provided with a nut 16 which is preferably fastened to the bolt as by upsetting the latter. A means is thus provided whereby the bolt 14 may pass around underneath and inside of the bead 7. The bolts 14 may be drawn tight by nuts 17. It is of course to be understood that any other suitable form of bolts may be utilized.

The relative size of the cover and tank are here shown as such that a space 18 is provided therebetween. Pressure within the transformer casing will be transmitted, through the medium under pressure in the tank, into the space 18 and will thus tend to force the gasket into the recess in which it is located and spread the same. The construction is moreover such that even if the pressure is sufficiently high to slightly lift the cover 3, the gas or other medium under pressure within the casing will not, in blowing out of the tank, carry the gasket with it.

When the casing is completely oil-filled, for example, and it is desired to remove the cover 3, the casing is drained. In order to avoid the space 18 remaining filled with oil, one or more holes, 20, through tank 2 into this space may be provided. If desired these holes may be made of the proper size so that they may be used for lifting the tank.

It should be understood that it is not desired to limit the invention to the exact details of construction shown and described, for obvious modifications may occur to persons skilled in the art.

It is claimed and desired to secure by Letters Patent:

1. A casing in which high fluid pressures are apt to develop comprising a tank, a cover therefor, a gasket between said cover and tank, and means for preventing said gasket from being blown out by high pressure within said casing including the pro-

vision on the outer periphery of said tank of an annular recess in which said gasket is disposed, the top of said gasket being below the upper edge of said tank, the portion of the cover in contact with said gasket having an inside diameter greater than the adjacent outside diameter of said tank and greater than the inside diameter of said gasket whereby pressure originating within said casing will force said gasket into said recess.

2. A casing comprising a tank, an annular member surrounding and fastened to said tank near its open end, said annular member being of T section with the cross bar of the T vertical and forming the periphery of said annular member, a cover adapted to cooperate with the recess formed by said annular member, and detachable hook-shaped bolts engaging said cover and the underside of said cross bar.

3. A casing comprising a tank, an annular member surrounding said tank near its open end said annular member being of T section with the cross bar of the T vertical and forming the outer periphery of said annular member, a weld for holding said annular member to said tank, a cover adapted to cooperate with the recess formed by said annular means, an angle iron bent to annular form around the outer edge of said cover, a weld for holding said angle iron to said cover, and hook-shaped bolts passing through said angle iron and under said annular member.

4. A casing comprising a tank completely filled with a liquid, means providing an annular recess around said tank in which a gasket may be disposed, the top of the gasket being below the upper edge of said tank, a cover having an axially extending flange resting on said gasket, the inner diameter of said flange being greater than the outer diameter of said tank, said tank being provided with a hole whereby liquid may be drained out of the space between the cover-flange and tank.

5. In combination, a casing comprising an oil-containing tank, electrical apparatus adapted to be immersed in said oil and apt to develop high pressure within said casing due to electrical effects, a cover for said tank, a gasket between said cover and tank, and means for preventing said gasket from being blown out by high pressure within said casing including the provision on the outer periphery of said tank of an annular recess in which said gasket is disposed, the top of said gasket being below the upper edge of said tank, the portion of the cover in contact with said gasket having an inside diameter greater than the adjacent outside diameter of said tank and greater than the inside diameter of said gasket whereby pressure originating within said casing will force said gasket into said recess.

In testimony whereof, the signature of the inventor is affixed hereto.

LOUIS C. NICHOLS.