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ELECTRICAL APPARATUS

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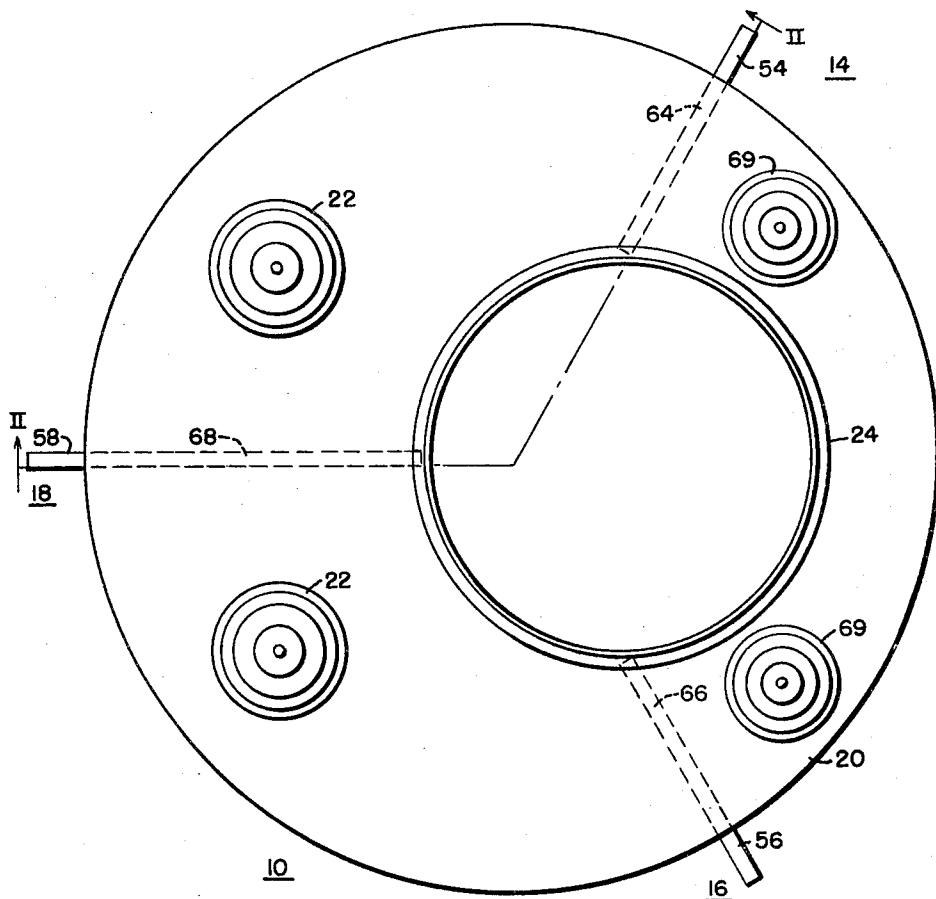


Fig. 1.

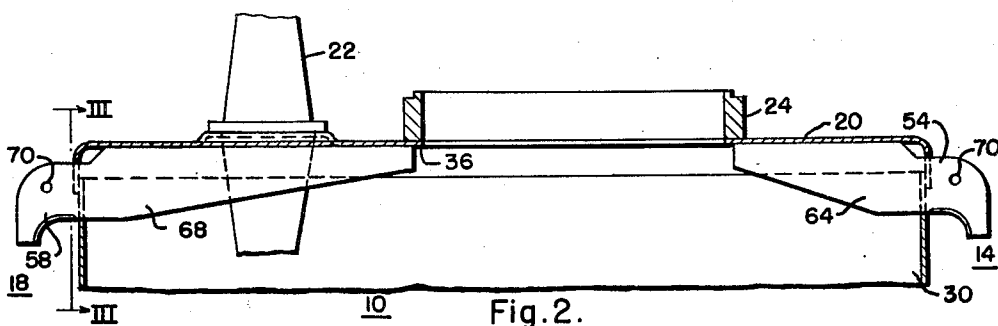


Fig. 2.

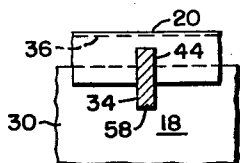


Fig. 3.

WITNESSES:

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2,982,439

## ELECTRICAL APPARATUS

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3 Claims. (Cl. 220-66)

This invention relates to electrical apparatus and more particularly to casings for electrical apparatus.

In a conventional casing or tank for electrical apparatus having a relatively thin cover, it is often necessary to provide means secured to said cover for stiffening or strengthening the cover. It is also necessary to provide means conventionally secured to the sidewall of the casing for receiving lifting means. For a more compact design of the casing and for other reasons which will be explained hereinafter, it is desirable to provide a unitary means for strengthening the cover of a casing and for receiving means for lifting the complete apparatus.

An object of this invention is to provide a new and improved means for stiffening the cover of a casing which also serves to receive lifting means.

Another object of this invention is to provide a new and improved unitary cover brace and lifting hook for a casing.

Other objects of the invention will, in part, be obvious and will, in part, appear hereinafter.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description, taken in connection with the accompanying drawing, in which:

Figure 1 is a top plan view illustrating an assembly in which the casing embodies the features of this invention;

Fig. 2 is a fragmentary view in section taken along the lines II-II of Fig. 1 of a casing embodying the teachings of this invention; and

Fig. 3 is a fragmentary view taken along the line III-III of Fig. 2 illustrating the relative positions of the different parts of the casing when assembled.

Referring to the drawing and particularly to Figs. 1 and 2 thereof, there is illustrated a casing 10 embodying the teachings of this invention, the casing 10 being disposed to cover electrical apparatus such as a transformer core and coil assembly (not shown). The casing 10 shown in the drawing has a cover 20 fitting over the upper edge of the sidewall 30 of the casing. As shown in the drawing, a pair of bushings 22 extends through the cover 20 to insulate the high voltage leads from any electrical apparatus protected by the casing 10. A pair of bushings 69 may also extend through the cover 20 to insulate the low voltage leads. The cover 20 is secured to the sidewall 30 of the casing 10 by any suitable means, such as welding. In order to allow for entry into the casing 10 without removing the cover 20, a manhole opening 24 is provided in the cover 20.

Since the cover 20 is relatively thin, it is necessary to provide means for strengthening or stiffening the cover 20, specifically the members 14, 16 and 18. The members 14, 16 and 18 include the inner portions 64, 66 and 68, respectively, and the outer or extended portions 54, 56 and 58 respectively. The inner portions 64, 66 and 68 of the members 14, 16 and 18 are each secured to the underside 36 of the cover 20 by suitable means, such as welding. The outer or extended portions 54, 56 and 58 of the members 14, 16 and 18 are curved or adapted to receive lifting means. The outer portions 54, 56 and 58 are provided

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with the holes 70 to receive special rods (not shown) for holding the casing 10 stationary during shipping. As illustrated for a circular casing, the members 14, 16 and 18 are spaced at substantially equal angles around the circumference of the cover 20. It is to be understood that the teachings of this invention may be embodied in a casing or tank for electrical apparatus which is not circular.

Referring to Figs. 2 and 3, there is illustrated the method by which the outer or extended portions 54, 56 and 58 of the members 14, 16 and 18, respectively, are brought through the cover 20 and the sidewall 30 of the casing 10. The cover 20 is provided with a recess or opening 44 which matches the shape of and allows the outer or extended portion 58 of the member 18 to pass through the cover 20. The sidewall 30 is provided with a recess or opening 34 which matches the shape of and allows the outer portion 58 of the member 18 to pass through the sidewall 30 of the casing 10. The outer portions 54, 56 and 58 of the members 14, 16 and 18, respectively, are secured to the sidewall 30 and the cover 20 where the outer portions 54, 56 and 58 pass through the sidewall 30 and the cover 20 by any suitable means, such as welding, which also helps to insure that the casing 10 is completely gas-tight and liquid-tight.

In summary, the members 14, 16 and 18 provide a unitary means for stiffening the cover 20 and receiving lifting means. In other words, the members 14, 16 and 18 combine the functions of a cover brace and a lifting hook on a conventional casing for electrical apparatus and therefore provide a unitary cover brace and lifting hook. The members 14, 16 and 18 allow a lifting force to be applied at the extreme top of the casing 10 and provide means for uniformly applying the lifting force to the casing 10. This avoids distortion or deformation of the cover 20 or the sidewall 30 of the casing 10 when lifting means are applied to the members 14, 16 and 18.

Although the invention is illustrated in a casing including the three members 14, 16 and 18, it is to be understood that a casing incorporating any plurality of members similar to the members 14, 16 and 18 may be provided. It is also to be understood that the members 14, 16 and 18 may be secured to the cover 20 by means other than welding. For example, the members 14, 16 and 18 may be secured to the cover 20 by bolts.

The apparatus embodying the teachings of this invention has several advantages. For example, a casing incorporating the teachings of this invention allows a uniform lifting force to be applied around the top of the casing. In addition, a more compact casing is provided in which separate means for strengthening the cover and receiving lifting means are eliminated and a unitary means for accomplishing these purposes is provided.

Since numerous changes may be made in the above described apparatus and different embodiments of the invention may be made without departing from the spirit thereof, it is intended that all the matter contained in the foregoing description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

We claim as our invention:

1. In a casing for electrical apparatus, the combination comprising, a substantially circular cover irremovably secured to said casing substantially around the upper periphery of said casing, and a plurality of bracing members secured to the underside of said cover, each of said bracing members extending outwardly from a point located centrally of said cover to a point outside the periphery of said cover member, the outer end of each of said bracing members being adapted to receive means for lifting said casing, said bracing members being disposed

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radially of said cover at substantially equal angles around said cover in order that lifting force applied to said bracing members is transmitted through said bracing members and said cover to said casing along the upper periphery of said casing in a substantially uniform manner.

2. In a casing for electrical apparatus, the combination comprising, a cover irremovably secured to said casing substantially around the upper periphery thereof, and a plurality of bracing members secured to the underside of said cover, each of said bracing members extending outwardly from a point located centrally of said cover to a point outside the periphery of said cover, the outer end of each of said bracing members being adapted to receive means for lifting said casing, said bracing members being disposed substantially symmetrically with respect to said cover in order that lifting force applied to said bracing members is transmitted to the upper periphery of said casing in a substantially uniform manner.

3. In a casing for electrical apparatus having a sidewall portion, the combination comprising a cover irremovably secured to said casing substantially around the upper periphery of said casing, and a plurality of bracing members secured to the underside of said cover, each of said bracing members extending outwardly from a point located

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centrally of said cover to a point outside the periphery of said cover through said sidewall portion and said cover, the outer end of each of said bracing members being adapted to receive external means for lifting said casing, said bracing members being disposed substantially symmetrically with respect to said cover in order that lifting force applied to said bracing members is transmitted substantially uniformly along the upper periphery of said casing through said bracing members and said cover.

#### References Cited in the file of this patent

##### UNITED STATES PATENTS

567,764	Dixon	Sept. 15, 1896
1,475,533	Bingay	Nov. 27, 1923
1,594,674	Krumm	Aug. 3, 1926
1,639,786	Steinmetz	Aug. 23, 1927
1,695,889	Finnen	Dec. 18, 1928
1,868,633	Fildes	July 26, 1932
2,544,789	Horelick	Mar. 13, 1951

##### FOREIGN PATENTS

202,473	Great Britain	Aug. 23, 1923
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