Oct. 13, 1925. 1,557,283

S. HORELICK

TRANSFORMER STRUCTURE

Filed May 4, 1923

Fig. 1.

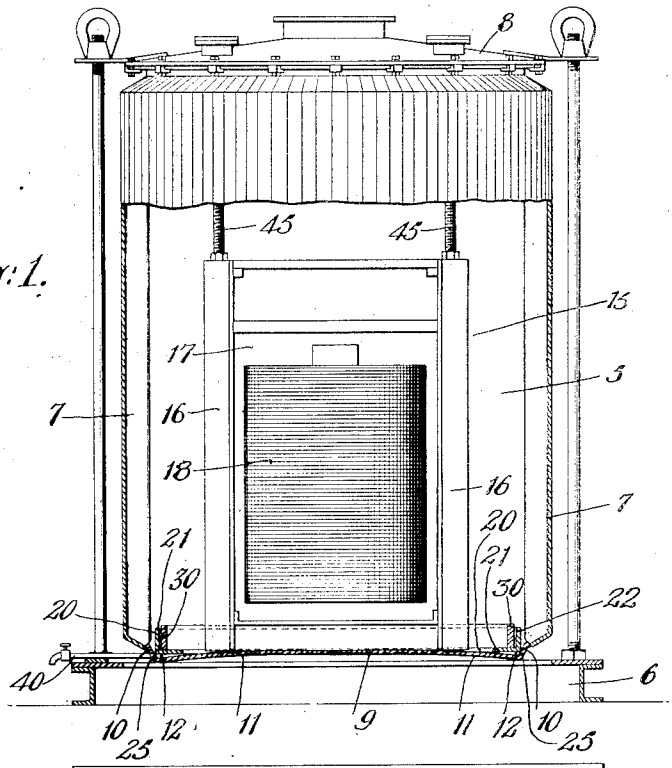
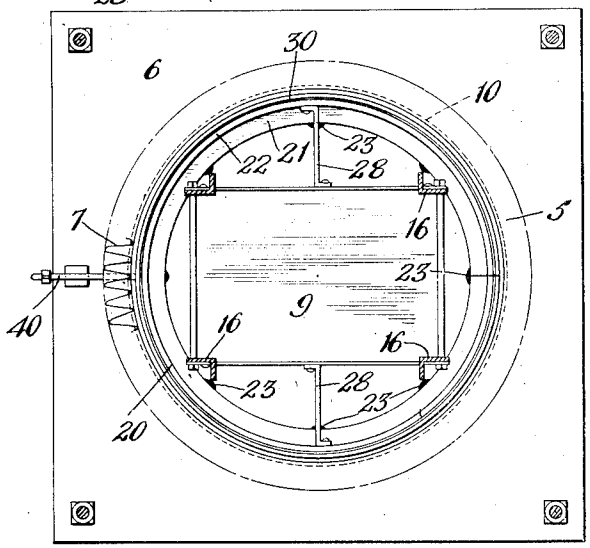


Fig. 2.



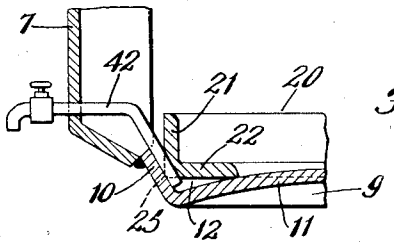


Fig. 3.

INVENTOR

Samuel Horelick

BY

Edwards, Sager & Bower

his ATTORNEYS

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UNITED STATES PATENT OFFICE.

SAMUEL HORELICK, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO PITTSBURGH TRANSFORMER COMPANY, A CORPORATION OF PENNSYLVANIA.

TRANSFORMER STRUCTURE.

Application filed May 4, 1923. Serial No. 636,524.

To all whom it may concern:

Be it known that SAMUEL HORELICK, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Transformer Structures, of which the following is a specification.

This invention relates to transformers and particularly to oil cooled transformers submerged in oil in a tank formed of sheet metal. In such a transformer it is highly desirable to support the transformer in a central position spaced from the sides of the tank and held from shifting against said tank sides, because any strains transmitted to the sheet metal of the tank tend to weaken the tank and cause it to leak. It is also desirable to collect at the bottom of the tank any sediment or sludge and moisture or water gathering in the oil and to permit this to be drained off.

The object of this invention is to provide a simple and inexpensive tank structure comprising means for supporting the transformer on the bottom of the tank and spaced from the side walls thereof. A further object of the invention is to so form and position these parts at the bottom of the tank that heavy oil and sludge, sediment and moisture collecting there may be easily drawn off.

In the accompanying drawing illustrating the invention,

Fig. 1 is a vertical elevational view of a transformer tank with parts broken away to show the construction within.

Fig. 2 is a horizontal sectional view of the same showing the structure at the bottom of the tank, and

Fig. 3 is a vertical sectional view of a modified detail.

In the specific embodiment of the invention, shown in the drawings, a tank 5 on base 6 has corrugated sides 7, a top 8 and bottom 9 resting on the base 6. The bottom 9 is of sheet metal with a peripheral flange 10 turned upward at an angle and welded at its edge to the bottom ridge of the tank sides or body 7. The tank bottom 9 is also arched upward toward its center as shown at 11 and this leaves an annular groove or depression 12 around the tank bottom just within the flange 10.

Within the tank 5 is the transformer 15 comprising frame 16 core 17 and coil 18 and this transformer is supported on the bottom 9 of the tank. In order to space the transformer 15 from the tank sides 7 and prevent it from shifting into engagement with these sides a ring member 20 is provided having a lower flange 21 and a vertical flange 22. This member 20 is an angle bar bent to the general shape of the inside of the tank and welded in place on the bottom of the tank by a series of separated welds 23. The corner 25 of this ring 20 preferably engages against the peripheral flange 10 of the bottom 9, with the vertical flange 22 of the ring spaced from the tank sides 7.

The frame 16 of the transformer 15 carries outwardly extending strips 28 fastened at their outer ends to a spacer or bumper 30 which in the specific example shown in the drawings is a ring fitting easily into the flange 21 of retainer ring 20.

The retainer 20 surrounds a space at the bottom of the transformer wherein sediment or sludge may collect and this space is in communication with the groove or recess 12 of the bottom 9 because the horizontal flange 22 of retainer 20 does not seal against the bottom 9 but only contacts therewith at separated points such as the welds 23. Consequently this bottom compartment within the ring 20 may be drained by draining the annular recess or sump 12. In Fig. 1 the draining means comprises the pipe 40 extending out through the flange 10 of the bottom and in Fig. 3 the draining pipe 42 extends up through the corner of the retainer ring 20 and then passes out through the tank side 7. To drain away the sludge it is only necessary to open the cock controlling pipe 40 or 42 and the weight of the oil above will force out the fluid in the bottom of the tank.

The transformer structure of this invention provides simple and reliable means for preventing lateral shifting of the transformer. Tipping of the transformer is prevented by bolts 45 extending upward from frame 16 and receiving downward pressure from the tank cover 8 so that the tank is held firmly on the bottom 9. The retainer 20 also transmits the side strains directly through the welds 23 to the central portion of the bottom 9 so that sides or body of the tank and the flanges 10 of the bottom 9 are relieved from all strains except the pres-

sure of the contained oil. This retaining means also provides a convenient sludge space or sump at the bottom of the tank and the draining means enables this to be easily emptied.

I claim:—

1. In a transformer structure a sheet metal tank having a sheet metal bottom, a transformer in said tank supported by said bottom, a retainer ring fastened to said bottom and spaced from the side walls of said tank, and means carried by said transformer and engaging said ring to hold said transformer in position on the bottom of said tank and out of engagement with the sides thereof.

2. In a transformer structure, a sheet metal tank having a sheet metal bottom, a transformer in said tank supported by said bottom, a retainer ring formed by an angle bar bent to the peripheral shape of said tank and fastened to said bottom and spaced from the side walls of said tank, and means carried by said transformer and engaging said ring to hold said transformer in position on the bottom of said tank and out of engagement with the sides thereof.

3. In a transformer structure a sheet metal tank having a sheet metal bottom, flanged upward at an angle at its outer edge, a transformer in said tank supported by said bottom, a retainer ring supported by said flange and spaced from the side walls of said tank, and means carried by said transformer and engaging said ring to hold said transformer in position on the bottom of said tank and out of engagement with the sides thereof.

4. In a transformer structure, a transformer and a container therefor comprising a sheet metal tank having a metal bottom supporting said transformer and arched toward the center with its periphery flanged upward at an angle so as to form an annular groove or recess adapted to collect sediment or sludge from the oil in said tank, and means for draining said groove or recess.

5. In a transformer structure, a transformer and a container therefor comprising a sheet metal tank having a metal bottom supporting said transformer and arched toward the center with its periphery flanged upward at an angle so as to form an annular groove or recess adapted to collect sediment or sludge from the oil in said tank, and means for draining said groove or recess, comprising a pipe extending outside of the tank.

6. In a transformer structure a sheet metal tank having a sheet metal bottom supporting the transformer, a retaining member fastened in place on said bottom and having a vertically extending flange extending around the bottom and spaced from the side walls of the tank, and means for draining the space within said ring comprising a pipe extending outside of the tank.

7. In a transformer structure a sheet metal tank having a sheet metal bottom supporting the transformer, a retaining member fastened in place on said bottom and having a vertically extending flange extending around the bottom and spaced from the side walls of the tank, and means for draining the space within said ring, comprising an annular recess in said tank bottom and a pipe connecting said recess outside of said tank.

SAMUEL HORELICK.