

Nov. 30, 1926.

1,608,780

G. M. EATON

TRANSFORMER RADIATOR

Filed Jan. 8, 1921

2 Sheets-Sheet 1

Fig. 1.

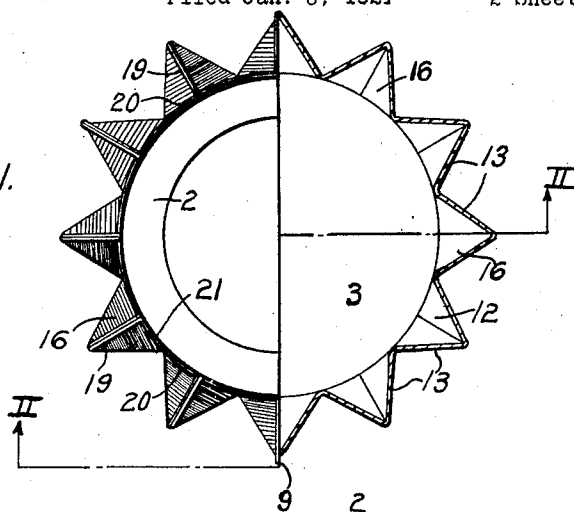
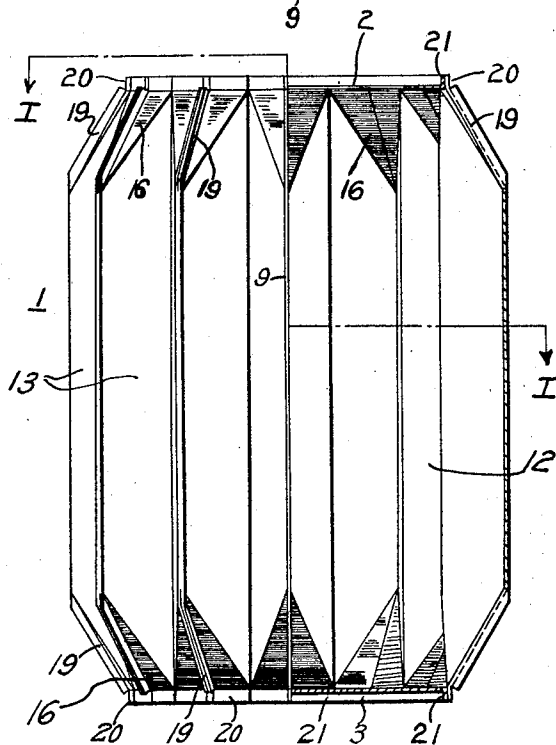


Fig. 2.



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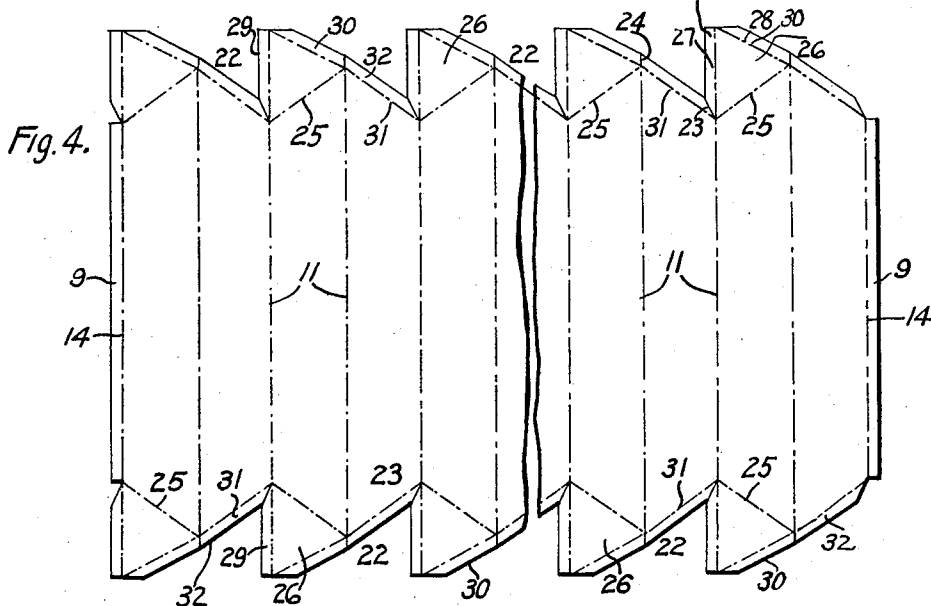
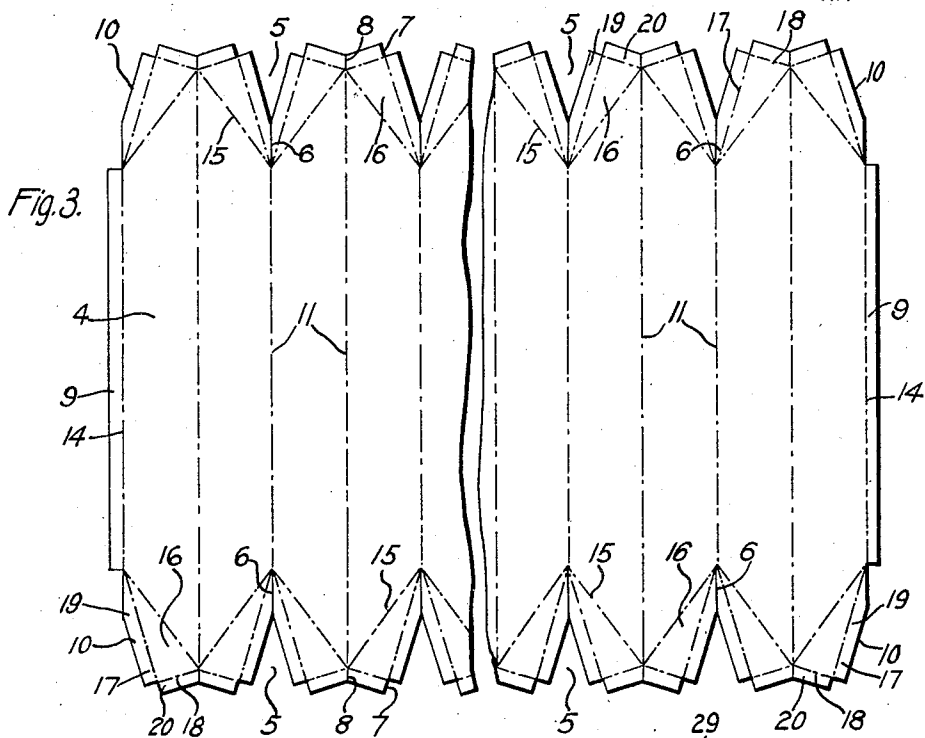
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WITNESSES:

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UNITED STATES PATENT OFFICE.

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TRANSFORMER RADIATOR.

Application filed January 8, 1921. Serial No. 435,956.

My invention relates to containers and it has particular relation to devices of the above designated character in which the sides thereof are so formed as to present a relatively large area to a cooling medium.

More specifically, my invention relates to unitary tank structures adapted for utilization in connection with transformers or other apparatus normally immersed within a cooling fluid, the side walls of which are formed with corrugations or of other suitable heat dissipating and reinforcing configuration.

One of the objects of my invention is to provide a container, the walls of which are constructed from a single sheet-metal blank and formed with a plurality of outwardly extending extruded portions or corrugations into which the contents of the container may flow and be cooled or heated by a medium coming into contact with the outer surfaces thereof.

Another object is to provide a container of the class described, the various portions of which are so bent and secured together as to form a strong and rigid structure.

A further object is to provide a device of the character described in which the seams shall be relatively few in number and of minimum length and to which access may readily be had from the exterior of the tank in assembling or repairing the same.

Heretofore, it has been customary to provide temperature-regulating containers of the type specified with radiator elements formed separately or otherwise secured together. In such structures, there were a large number of relatively long seams, the majority of which extended the entire length of the tank and which had to be accurately welded together.

Considerable difficulty has been encountered and a large amount of time and labor has, necessarily, been expended in the manufacture of tanks of this type. Leaks sometimes developed at the seams, notwithstanding the extreme care exerted in assembling and welding together the various parts.

In the accompanying drawings,
Fig. 1 is a view, partially in plan and partially in horizontal section, on line I—I of Fig. 2, of a transformer tank constructed in accordance with my invention.

Fig. 2 is a view, partially in elevation and partially in vertical longitudinal section, on

line II—II of Fig. 1, of the transformer tank.

Fig. 3 is a plan view of a sheet-metal blank cut to the desired shape before the same is bent or subjected to the action of suitable forming dies.

Fig. 4 is a view, similar to Fig. 3, illustrating a modified form of my invention.

Referring to the drawings, a sheet-metal container, constructed in accordance with my invention, is shown as comprising a transformer tank having a continuous side wall 1, an annular cover seat 2 and a bottom 3.

The side wall is formed from a sheet-metal blank 4, (Fig. 3) the opposite edges of which are provided with a plurality of oppositely disposed and substantially triangular spaced notches 5 and with inwardly extending slits 6 adjacent to the apices of the notches 5. The edges of the blank 4, adjacent to the notches 5, are so inclined as to be substantially at right angles to the adjacent sides of the notches 5. The outwardly diverging sides of the notches 5 are provided with notches and slits 7 and 8, respectively.

The vertical edges of the blank 4 are cut to form oppositely extending flanges 9 and inclined portions 10 adjacent to the corners of the blank, which portions form notches similar to the notches 5 when the blank is bent around to bring the vertical edges together and thus form the side walls of a container, as will be hereinafter set forth.

The blank thus cut is subjected to the action of suitable dies or forming tools and is bent alternately in opposite directions along the dotted lines 11 to form a series of outwardly extending and spaced channels 12 having outwardly converging side walls 13. The flanges 9 are so bent outwardly along the dotted lines 14 that the sides thereof may abut and be welded along their edges or be otherwise suitably secured together, as illustrated in Fig. 1 of the drawings. The portions of the blank 4 adjacent to the notches 5 are bent inwardly along the dotted lines 15 to form a plurality of tongue portions 16 and are bent outwardly along the dotted lines 17 and 18 to form outwardly extending flanges 19 and 20, respectively.

A blank so cut is bent around, and the flanges 9 secured together, in which position the flanges 19 abut and are secured together

to close each end of each of the channels 12. The flanges 20 are welded or otherwise suitably secured to the annular flanges 21 of the upper and lower head portions 2 and 3, respectively.

It will be observed that, when a blank so formed is assembled to form a completed tank structure, the tongue portions 16 of each channel lie in substantially the same plane which is at an angle to the axis of the tank and completely close the channels 12.

In Fig. 4 of the drawings, I have shown a blank cut in accordance with a modified form of my invention wherein the upper and lower edges of the blank 4 are provided with a plurality of notches 22 arranged at spaced intervals, one side of each of which is substantially vertical and the other side is disposed at an angle thereto. The notches 22 are provided with slits 23 adjacent to the apices thereof and with similar slits 24 located at points substantially in the middle of the inclined sides of the notches. The main portion of the blank 4 is bent longitudinally in a manner similar to that previously described, but the portions thereof adjacent to the notches 22 are bent inwardly along the dotted lines 25 to form a single flap portion 26 adapted to close each end of the channel 12. The edges of the flap portion 26 are bent outwardly along the dotted lines 27 and 28 to form flanges 29 and 30, respectively, and also along the dotted line 31 to form similar flanges 32.

When the blank 4 is bent around and secured together to form a container, the flanges 29 and 32 are adapted to abut and to be secured together to close the ends of the channels 12, and the flanges 30 are adapted to be secured to the annular flanges 21 of the head portions 2 and 3, in a manner similar to that previously described.

By means of my invention, I provide a very strong and rugged structure comprising

relatively few parts and having very few long seams.

While I have shown a container, the side walls of which are formed from a single sheet-metal blank, it will be understood that, for convenience in manufacture, the same may be constructed of a plurality of sections secured together.

I claim as my invention:

1. A container having side walls provided with a plurality of heat-dissipating channels, portions of the side walls of said channels being bent to close the same and the end edges of said portions constituting a continuous band.

2. A container having side walls provided with a plurality of heat-dissipating channels, portions of the side walls of said channels adjacent to the ends thereof being bent to close the same and the edge portions of said side walls constituting a continuous ring.

3. A container comprising upper and lower head members provided with annular flanges, and a side wall formed of a continuous sheet-metal blank provided with a plurality of heat-dissipating channels, portions of the side walls of said channels adjacent to the ends thereof being bent over to close the same, said portions being provided with flanges constituting a continuous ring and secured to the flanges of said head members.

4. A container having side walls provided with a plurality of heat-dissipating channels having notched end portions, portions of the side walls of said channels adjacent to the notched ends thereof being bent to form tongue members having definitely shaped flange portions secured together to close the notches in the ends of said channels.

In testimony whereof, I have hereunto subscribed my name this 31st day of December, 1920.

GEORGE M. EATON.