

March 1, 1932.

W. M. FRAME

1,847,176

RADIATOR

Filed Dec. 7, 1928

Fig. 1.

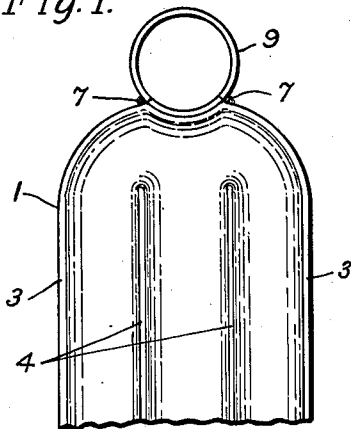


Fig. 2.

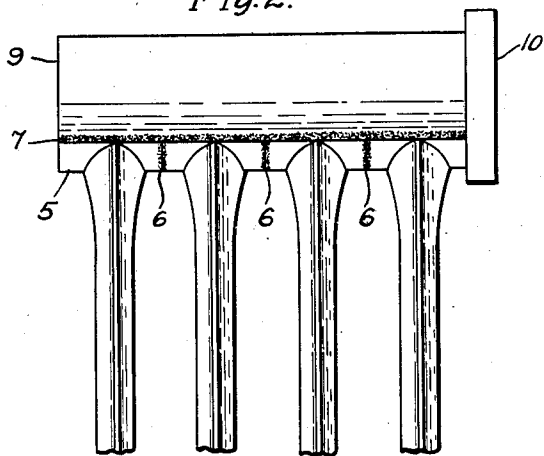


Fig. 3.

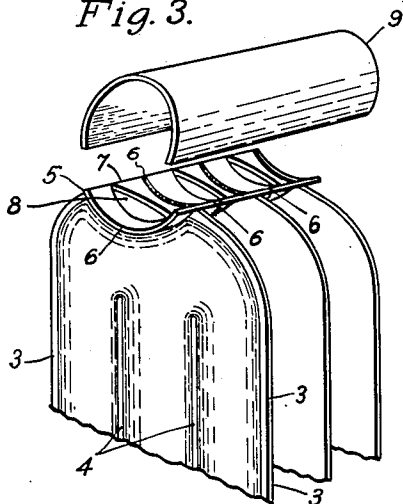


Fig. 4.

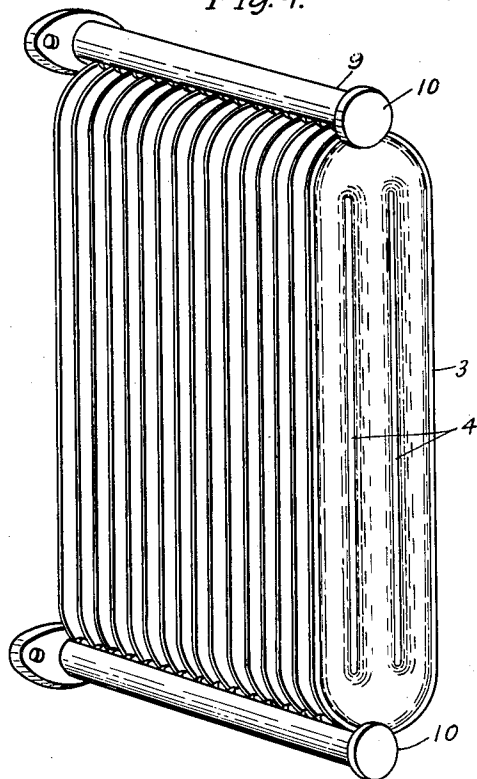


Fig. 5.

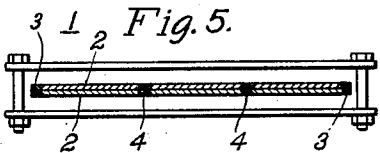
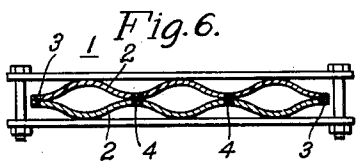


Fig. 6.



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RADIATOR

Application filed December 7, 1928. Serial No. 324,431.

My invention relates to heat radiators and more particularly to heat radiators adapted for use with electrical apparatus such as transformers.

In the operation of electrical apparatus such as transformers, induction regulators, or the like, the apparatus is placed within a tank and immersed in a bath of insulating and cooling oil, which insulates various parts of the apparatus from one another, and, by circulation and conduction, transfers the heat generated in the apparatus to the walls of the tank. From the walls of the transformer tank, the heat may be transferred to the outside atmosphere, thus protecting the apparatus from injury.

It is frequently desirable, especially in relatively large transformers, to increase the cooling capacity of the transformer tank by providing heat conducting radiators or coolers. These radiators present relatively large areas of cooling surface to the atmosphere. One type of cooler for use in radiating heat generated in the transformer to the outside atmosphere consists of horizontal top and bottom header members, connected to the transformer tank near the top and bottom thereof, and vertical risers for conducting the oil between the two header members, which in turn receive oil from, and deliver oil to, the transformer tank. A number of such coolers or heat radiators may be attached to a transformer tank.

An object of my invention is the provision of a cheap and efficient form of cooler, which is of light weight, is leak proof, and which, when completed, has no joints between the parts thereof.

Another object of my invention is the provision of a cooler that may be formed of blown up, or inflated, riser sections welded together and to two connecting members attached to their ends.

Referring to the drawings,

Figure 1 is a side elevational view of a radiator section, taken transversely of the header connecting a group of such sections.

Fig. 2 is a side elevational view of a header member with the riser sections attached.

Fig. 3 is a perspective view showing the flanged ends of the radiator sections, and the cap or closing member for completing the header unattached.

Fig. 4 is a perspective view of a finished radiator unit.

Fig. 5 is a horizontal sectional view showing the side plates of a riser section before they are shaped to form a fluid conducting member, and

Fig. 6 is a horizontal sectional view showing the side plates of a riser member after they have been pressed or inflated to the desired shape.

My invention contemplates the formation of a radiator unit entirely from parts welded together. The riser sections, forming the vertical members of the radiator, may be produced in the general way described in the co-pending application of John G. Ritter for receptacles, Serial No. 249,193, filed January 24, 1928. Such a riser section 1 is formed from a pair of plates 2 shown in the drawings as having a general rectangular shape, but which may be rounded toward the ends, the pair of plates being formed of relatively thin material, welded together at their edges, as shown at 3, and spot or line welded along a portion of their intermediate surfaces as shown at 4. These members are welded together while the plates are flat, as shown in Fig. 5, and, after the welding process is completed, are inflated by means of compressed air, to their final configuration, as shown in cross section in Fig. 6 of the drawings. At the ends of each riser section a flange 5 is pressed or formed as shown in Figs. 2 and 3 and trimmed to have a substantially rectangular configuration. Two opposite sides or edges 6 of the rectangle are adapted to engage corresponding flanged portions of adjacent riser sections, which are so arranged that the remaining two sides of the rectangular flanges form straight edges 7 that are adapted to unite with the lower edges of a substantially cylindrical cap or trough-shaped closing member 9 to complete the construction of the header. The flanges 5 are so pressed or formed on the ends of the riser

member as to leave a port 8 for the passage of fluid into or out of the riser member from the header member.

When a plurality of these riser sections are placed side by side in the manner shown in Figs. 2 and 3, the seams along the edges 6 may be welded together thus attaching the flange of one section to the flange of the adjacent section. The flanged portions of the riser sections, thus attached, form a continuous structure comprising one portion of the header member, and, which may be, as in the embodiment of the invention illustrated, in the form of a trough having the configuration of a portion of a cylindrical surface. To the outer edges 7 of the flanges 5, after the several sections have been welded together along the seam lines 6, the cap or closing member 9 may be welded thus completing the construction of the header member. In the embodiment of the invention shown, the cap is substantially cylindrical in shape.

A cap 10 may be attached to one end of the header member by welding or otherwise, and the opposite end of the header member may be connected to the transformer tank from which the oil to be cooled passes to the radiating unit.

The upper and lower header members of the radiating unit are similar in construction. It will be apparent that, by forming the radiator sections with the flanges 5 and welding together the adjacent edges of the adjoining riser sections and thereafter welding to the trough formed by the flanges a cap member, the amount of welding necessary to make a solid radiator unit is relatively small, and it is unnecessary to form the headers of two separate sections one of them receiving each individual riser unit.

Many modifications in the construction illustrating my invention may be made without departing from the spirit thereof and I do not wish to be limited other than by the scope of the appended claims.

I claim as my invention:

1. A heat radiating unit comprising a plurality of fluid conducting sections having their end portions shaped to provide abutting edges with the end portions of adjacent sections, and cap members adapted to abut with the end portions of said plurality of conducting sections, the abutting edges of the adjacent sections and of said cap and fluid conducting sections being sealed to form headers.

2. A heat radiating unit comprising a plurality of fluid conducting section members arranged in substantially parallel relation, each section member having its end portion of a substantially rectangular form opposite edges of the end portions of said sections being attached to corresponding edges of adjacent members, and trough-shaped closing members engaging and sealed to the remain-

ing opposite edges of said rectangular portions.

In testimony whereof, I have hereunto subscribed my name this 23rd day of November, 1928.

WILLIAM M. FRAME.

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