March 1, 1927. 1,619,333

W. M. DANN

RADIATOR

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Fig. 2

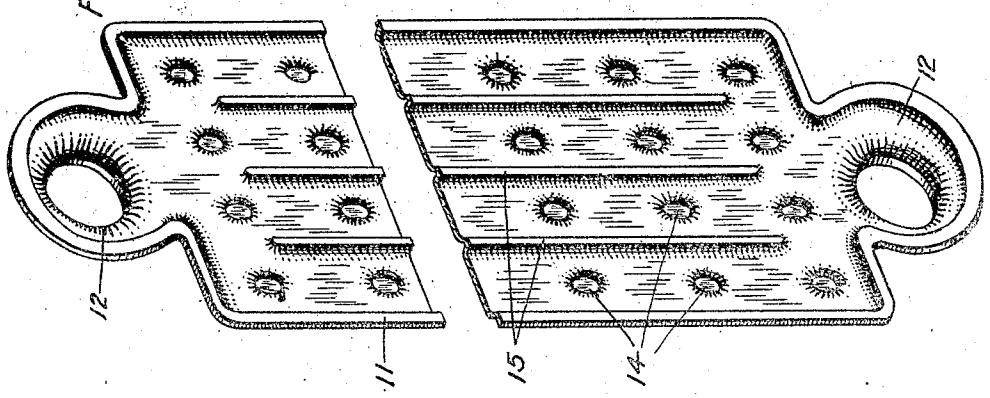
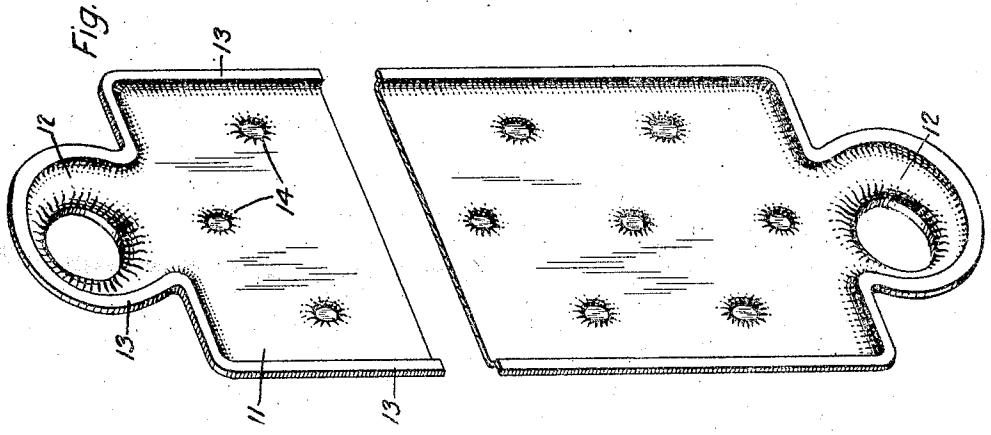


Fig. 1



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RADIATOR

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Fig. 5

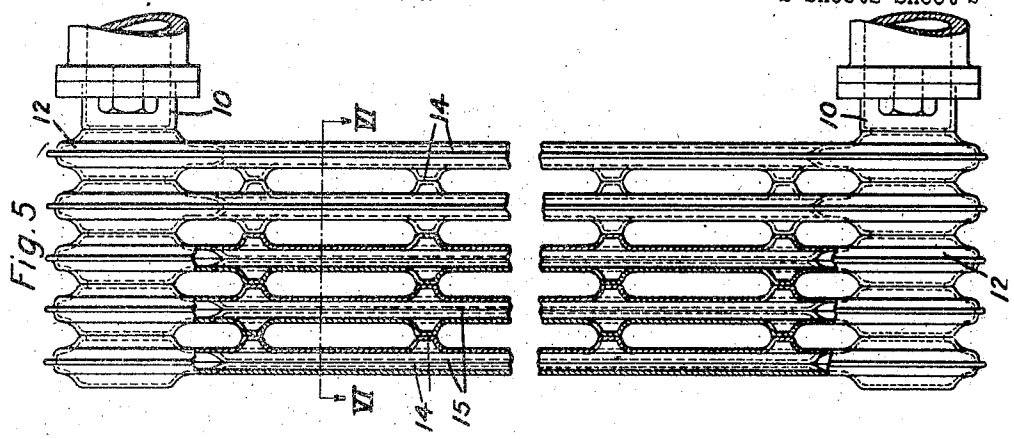


Fig. 4

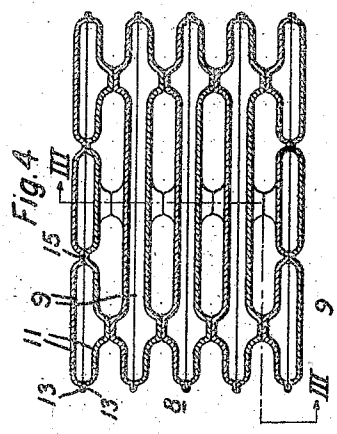


Fig. 6

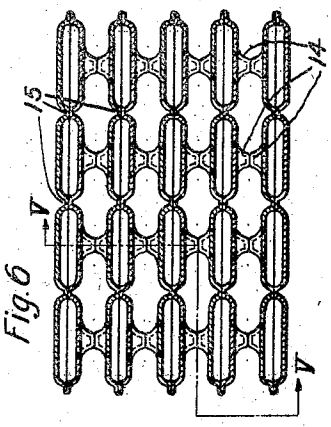
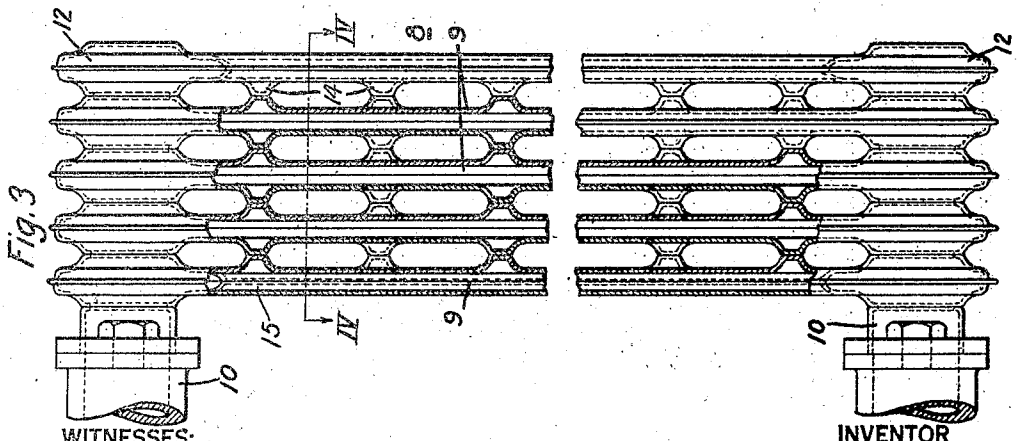


Fig. 3



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UNITED STATES PATENT OFFICE.

WALTER M. DANN, OF WILKINSBURG, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

RADIATOR.

Application filed November 30, 1920, Serial No. 427,300. Renewed August 5, 1926.

My invention relates to heat dissipating devices and it has particular relation to apparatus of the character designated that is adapted for use with electrical or other apparatus which is normally enclosed within a tank and immersed in a cooling fluid.

The object of my invention is to provide a new type of radiator unit in which each individual unit, while spaced from the next adjacent unit, will serve to prevent distortion thereof that may be caused by abnormal pressure of the fluid contained therein.

More specifically, my invention relates to the particular construction of the individual units, which, when arranged in side-by-side relation constitute a radiator section.

Heretofore, it has been customary to construct radiators by fastening a plurality of pipes disposed in spaced side-by-side relation between two common end connections or headers. These pipes, being constructed of relatively heavy material, do not require any support therebetween. In my copending application, Serial No. 427,189, filed of even date herewith, I have disclosed a radiator comprising a plurality of envelope-like structures disposed in side-by-side relation. My present invention is a modification of a structure disclosed in my copending application, and provides a means for reinforcing each of the units of a radiator section from the next adjacent unit.

According to my invention, each unit is provided with extruded portions which engage similar extruded portions of the next adjacent units. Thus each unit prevents distortion of one side of the next adjacent unit. Also, if desired the units may be provided with indented portions, the inner surfaces of which are attached together. These indented portions may be of such form as to direct the flow of the cooling liquid throughout said units.

In the accompanying drawings, Figure 1 is a perspective view of one of two similar pressed metal members which, united, constitute a unit of a radiator embodying my invention.

Fig. 2 is a view similar to that shown in Fig. 1, of another form of radiator constructed in accordance with my invention.

Fig. 3 is a view, partially in section along the line III—III of Fig. 4 and partially in side elevation, of a radiator consisting of units constructed in accordance with my invention.

Fig. 4 is a cross-sectional view of the structure shown in Fig. 3 taken along the line IV—IV thereof.

Fig. 5 is a view, partially in section along the line V—V of Fig. 6 and partially in side elevation, of another form of radiator also constructed in accordance with my invention.

Fig. 6 is a cross-sectional view of the structure shown in Fig. 5 taken along the line VI—VI thereof.

For a more detailed understanding of my invention, reference may now be had to Figs. 1, 3 and 4, in which a tank, not shown, is provided with a radiator 8 comprising a plurality of individual units 9. The radiator section 8 is attached to the tank by means of connecting pipes 10. Each of the units 9 is composed of two similarly pressed metal members 11, as best shown in Fig. 1. Each of the members 11 consists of a rectangular member of substantially dish-shape having offset portions 12 at each end thereof. A flange 13 extends around the entire outer edge of each of the members 11. The flanges 13 of the two co-operating sections are welded together, thus forming a metallic envelope or unit 9.

The central portion of the outer surface of each member 11 is provided with a plurality of spaced extrusions 14. The extrusions 14 are integral with the main body portion of the member 11, being merely pressed outwardly into an adjacent parallel plane. When the units are assembled, these extrusions engage similar extrusions upon the adjacent unit, thereby causing each unit to be reinforced. The extrusions of adjacent units may, if desired, be welded together at their point of contact.

All of the intermediately disposed units may be supported in this manner, but the outside surfaces of the end units of each section must be reinforced in some other manner. In order to prevent distortion of the outer surfaces of the end units, they are provided with indented portions 15 which engage either the opposite wall of the same unit or, they engage similar indentations of said opposite wall. At the point of contact, these indented portions are welded, or otherwise suitably secured together.

Figs. 2, 5 and 6 illustrate a modified form of my invention in that the individual members 11 are provided with longitudinally extending indented portions 15 as well as with the spaced extrusions 14. Thus each of the units is similar to that described as the endmost unit of the structure shown in Figs. 1, 3 and 4. These indented portions extend substantially the length of the radiator unit and are intended to be welded or otherwise secured to the opposite side of the same radiator unit. Also the extrusions 14 are arranged to engage co-acting extrusions of the next adjacent units. Such an arrangement provides an internally, as well as an externally, reinforced unit. All of the units constituting such radiators may be made exactly similar.

It will be apparent to those skilled in the art that my invention may be successfully practiced by the use of units comprising one entirely flat side and the other side of the types shown in Figs. 1 and 2, if desired.

It will be obvious from the foregoing description, that a radiator constructed in accordance with my invention is so reinforced as to prevent distortion of the walls thereof without the use of auxiliary bracing members.

I claim as my invention:

1. A radiator comprising a plurality of pressed metal envelopes disposed in side-by-side relation, the walls of the intermediately disposed envelopes being provided with integral extruded portions engaging similar portions on the adjacent units, the end units being provided with integral indented portions in the walls thereof, the indented portions of the opposite walls being welded together.

2. A radiator comprising a plurality of pressed metal units disposed in side-by-side relation, each of said units comprising a plurality of outwardly extending projections in engagement with similar projections of the adjacent units, and a plurality of inwardly extending projections welded to the opposite wall of said unit.

3. A radiator comprising a plurality of pressed metal units disposed in side-by-side relation, one of said units being provided with a plurality of spaced extruded portions so disposed as to engage a portion of the adjacent unit, said extruded portion being welded to said adjacent unit.

4. A radiator comprising a plurality of pressed metal units disposed in side-by-side relation, each of said units being provided with a plurality of spaced extruded portions arranged substantially throughout the length thereof, said extruded portions of the next adjacent unit being welded thereto.

In testimony whereof, I have hereunto subscribed my name this 12th day of November, 1920.

WALTER M. DANN.