

L. H. BRINKMAN.
REFRIGERATING APPARATUS.
APPLICATION FILED NOV. 13, 1906.

958,852.

Patented May 24, 1910.

Fig. 1.

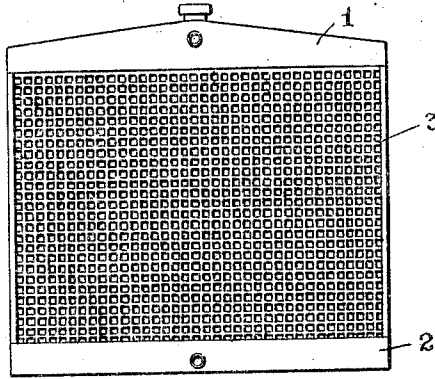


Fig. 2.

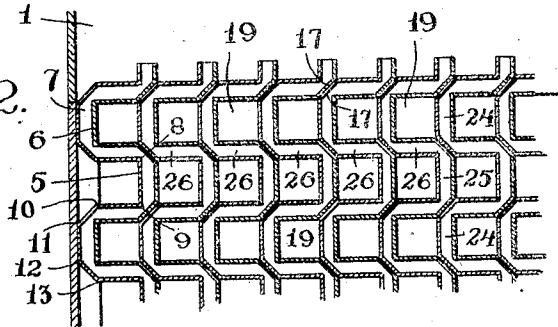


Fig. 3.

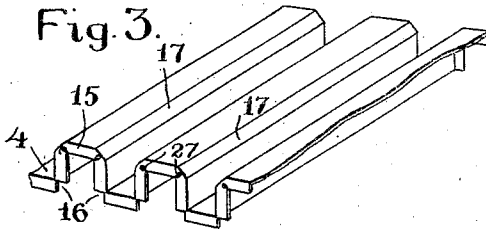


Fig. 6

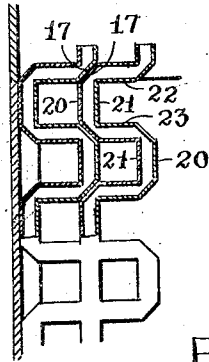


Fig. 4.

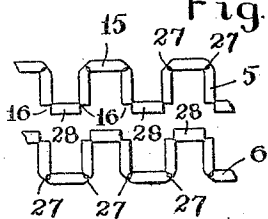
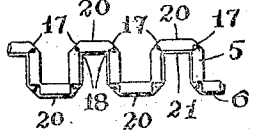


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

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REFRIGERATING APPARATUS.

953,852.

Specification of Letters Patent.

Patented May 24, 1910.

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To all whom it may concern:

Be it known that I, LOUIS H. BRINKMAN, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Improvement in Refrigerating Apparatus, of which the following is a specification, accompanied by drawings forming a part of the same, in which—

Figure 1 represents a front view of an automobile cooler showing my refrigerating apparatus applied thereto. Fig. 2 is a front view on a larger scale of a portion of the refrigerating section of the automobile cooler, and embodying my present improvement shown in vertical sectional view. Fig. 3 is a perspective view of a portion of one of the corrugated metal sheets inclosing the water passages or conduits. Fig. 4 represents in end view portions of two corrugated sheets slightly separated to better show the construction of the flanges at the edges of the sheets. Fig. 5 represents the two corrugated sheets shown in Fig. 4 as having been brought together, with their flanges overlapping; and Fig. 6 represents in front view a portion of two adjacent water passages partly in section.

Similar reference figures refer to similar parts in the different views.

My present invention relates to a refrigerating apparatus especially adapted to be used in the cooler of an automobile, and it has for its object to construct the refrigerating section of an automobile cooler from a series of parallel corrugated sheet metal strips inclosing water passages which communicate with the upper and lower water chambers of the cooler, and at the same time secure the appearance in front elevation of a series of rectangular air tubes passing transversely through the refrigerating section in a series of parallel vertical and horizontal rows, said tubes or transverse openings being in absolute alinement with each other both vertically and horizontally, with spaces of uniform width between the rectangular openings, and my invention consists in the construction and arrangement of parts as hereinafter described and pointed out in the annexed claims.

Referring to the accompanying drawings 1 denotes the upper, and 2 the lower water chambers of an automobile cooler, between which is placed a refrigerating section 3

which, according to my present invention, is formed of a series of corrugated sheet metal strips arranged in pairs and inclosing between them a continuous serpentine water passage communicating with the upper and lower water chambers 1 and 2. A portion of one of the corrugated sheets is shown in perspective view at 4, Fig. 3, and they are arranged in pairs as shown at 5 and 6, Fig. 2, inclosing between each pair a serpentine water passage 7. Each of the strips is similarly bent but in a peculiar manner, with alternating corrugations of different shapes, for example, strip 5 is bent at right angles at 8 and 9, forming a rectangular corrugation. It is next bent at an angle of 45° at 10, 11, 12 and 13, forming an obtuse angled corrugation, and so on throughout the length of the strip, with the right angled and obtuse angled corrugations alternating. The edges of the strips are then turned over to form a flange 15 at each edge of the strip. Corner pieces are removed from the flange at 16 which is otherwise continuous from one end of the strip to the other. The flange when completed on the edge of the strip is represented in Figs. 3 and 4. The two strips 5 and 6 which are shown as separated in Fig. 4 are then brought together, as represented in Fig. 5, with the flange of one strip overlapping the flange of its companion strip. By soldering the flanges together each pair of strips will inclose between them a serpentine water passage 7 open at both ends and communicating at one end with a water chamber 1, and at the opposite end with a water chamber 2. Each water passage will then consist of a corrugated tube having a series of bends or turns with their outer corners beveled, as shown at 17, Fig. 5, and their inner corners rectangular, as shown at 18, Fig. 5. When these corrugated tubes are assembled side by side, the beveled corners 17 of one tube will exactly fit and contact with the beveled corners 17 of the adjacent tube, and inclose between the tubes equilateral rectangular air spaces 19. The outer sides 20 of each corrugation between the beveled corners 17 is exactly of the same length as the vertical inner sides 21 of the corrugations, and as the sides 21, 22, and 23 of the rectangular bends are equal in length the inclosed air spaces, when the corrugated tubes are assembled, will be rectangular and equilateral. When the beveled corners 17 of

adjacent tubes are brought into contact the vertical water passages of adjacent tubes will be brought into vertical alinement and the horizontal sections of said tubes into alinement with each other and with the corresponding horizontal sections of the remaining water passages, as shown in Fig. 2, in which the vertical sections 24 of one water passage are in vertical alinement with the vertical sections 25 of the adjacent water tube, and the horizontal sections 26 of all the water tubes are in horizontal alinement with each other. By this construction all the flanges which inclose both the vertical and horizontal sections of the water tubes are brought into alinement and cause the refrigerating section to present the appearance in front view of having a series of rectangular openings which are in alinement both vertically and horizontally. The rectangular air spaces or openings are not only in vertical and horizontal alinement but the flanged edges of the water tubes which separate the rectangular air spaces when soldered together, present the appearance of straight vertical and horizontal bars of uniform width dividing the refrigerating section into squares or checkers. The appearance of solidity and regularity of the separating flanges by which the rectangular air spaces are divided, and the uniform horizontal and vertical alinement of the air spaces in the front elevation of the refrigerating apparatus is one of the objects of my present improved construction. In addition to this desirable appearance of the front I render the construction more compact by causing the outer portion of each corrugation in the water tubes to enter within the next tube, thereby bringing the vertical sections of one tube into the same vertical plane as the vertical sections of the adjacent tube.

In forming the flanges on the edges of the corrugated strips I make the flange continuous around the obtuse angled corrugation by crimping the flange at 27, so that when two corrugated strips are brought together to form a continuous water tube, as shown in Fig. 5, the continuous section of the flange extending around the obtuse angled corrugations will pass beneath the flange 28 closing the open corners 16. When the two strips are brought together to form a tube, as shown in Fig. 5, the overlapping flanges of the two strips will com-

pletely inclose the edges of the water tube. When the strips are thus assembled to form a water tube, and the tubes are assembled in a refrigerating section as above described, the flanged edges may be securely soldered at a single operation by dipping the entire refrigerating section in a mass of melted solder. When the excess of solder is wiped off, the flanged edges of the tubes will present a uniformly smooth surface, and the flanges of each pair of strips in the entire section will be securely united at a single operation.

The above described method of flanging and securing the edges of the water tubes is inexpensive, securing a slightly appearance and a water tight joint.

I claim,

1. In an apparatus of the class described, a refrigerating section, comprising sheet metal plates arranged in pairs and inclosing between them a serpentine passage communicating at each end with a water chamber, said sheets bent alternately in right angled and obtuse angled corrugations in opposite directions, with the right angled corrugations of one strip inclosed by the obtuse angled corrugations of the other strip to form said passage, and a flange at the edge of each plate and at right angles thereto, said flange continuous around each obtuse angled corrugation and with the corner pieces removed around each right angled corrugation, with said flanges upon the edges of each pair of plates fastened together.

2. In an apparatus of the class described, a refrigerating section, comprising upper and lower chambers, sheet metal plates arranged in pairs and connecting said chambers bent alternately in right angled and obtuse angled corrugations, with the obtuse angled corrugations of one plate extending in the same direction as the right angled corrugations of the other plate, a continuous strip at the edge of each plate integral therewith and at right angles thereto, but with the corner pieces removed around said right angled corrugations and with the strips upon the edges of each pair of plates fastened together.

Dated this ninth day of November 1906.

LOUIS H. BRINKMAN.

Witnesses:

L. E. STONER,
EDWIN H. TUCKER.