

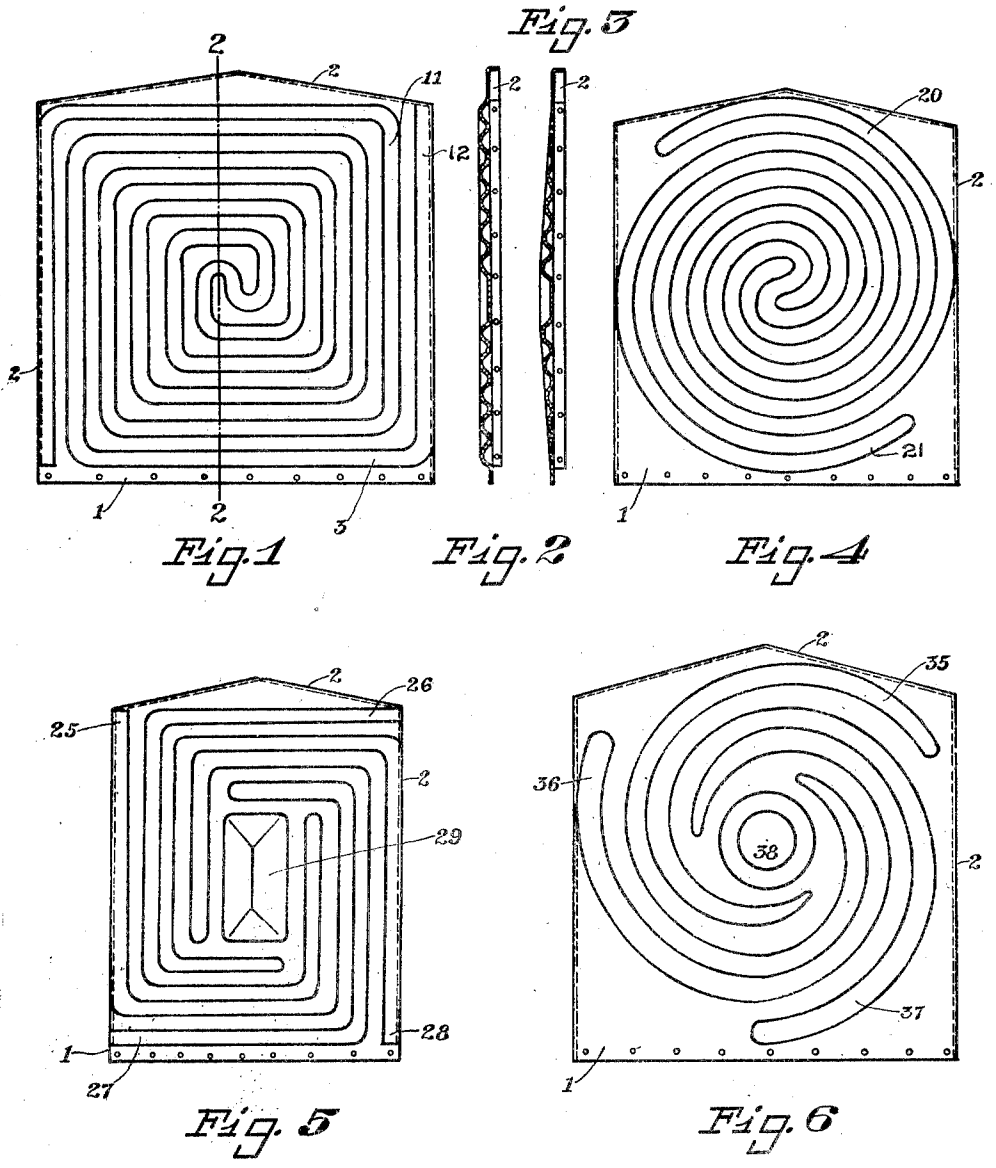
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SHEET STRUCTURE

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SHEET STRUCTURE.

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Reference is had to the accompanying drawings, which illustrate the preferred form of the invention, though it is to be understood that the invention is not limited to the exact details of construction shown and described, as it is obvious that various modifications thereof within the scope of the claims will occur to persons skilled in the art.

This invention relates to improvements in sheet structures and has particular reference to such as may be employed in car construction,—one object of the invention being to provide a sheet metal structure suitable for use as ends, side sheets, floor sheets, door sheets, roof sheets, or other car parts, which shall be so corrugated as to insure adequate strength and stability.

A further object is to corrugate a sheet for the purpose stated, (whether the sheet be of metal or other material) in such manner that bulging of the sheet shall be avoided and so that the sheet, as a whole, will retain its generally flat form.

A further object is to provide a sheet metal or other sheet structure, which shall be so corrugated that it will adequately withstand strains to which it may be subjected, and so that warping of the sheet will be obviated.

A further object is to provide a metal sheet which shall be so corrugated that the metal of the sheet will not be materially strained or caused to exceed its elastic limit during the operation of corrugating the sheet.

With these and other objects in view, the invention consists in certain novel features as hereinafter set forth and pointed out in the claims.

In the accompanying drawings:

Fig. 1 shows a sheet embodying my invention.

Fig. 2 is a section on line 2—2 of Fig. 1.

Fig. 3 is the same as Fig. 2 and shows the corrugation deepest adjacent the center of the sheet.

Figs. 4, 5 and 6 show modified forms of the invention.

In the drawings, I have shown my improvements as applied to a sheet metal car end, but they may be applied to car side, floor, roof or door structures and may be

utilized in the construction of other car parts.

The metallic sheet 1 is reinforced by having a plurality of corrugations or embossments formed therein so interwoven and positioned relative to the center and edges or sides of the sheet structure as to materially increase the strength of the sheet to resist buckling, warping and load stresses. The corrugations are of a general spiral form and are made circular or with straight connected portions as desired and to suit the shape of the structure or device to be reinforced. The inner ends of the corrugations are located near the center of the sheet and are connected to form a continuous corrugation. The outer ends are located near different sides or edges of the sheet and preferably adjacent the opposite corners (or perhaps all corners of the sheet) because such devices are usually attached to something at their corners. The sides or edges of the sheet may be provided with flanges 2 or reinforced in any other convenient manner.

Fig. 4 shows two interwoven spiral corrugations 20—21 connected at their inner ends to form a continuous corrugation as used to reinforce the end wall of a railway box car. Figs. 1 and 2 show two corrugations of general spiral form 11 and 12 connected at their inner ends to form continuous corrugation having straight connected portions which are substantially parallel to the sides of the sheet. Various combinations of the structures shown in Figs. 1 and 4 could be devised and still come within the scope of this invention. The corrugations may be of uniform depth from end to end or they may be made of diminishing depths from the central portion of the sheet to the side edges thereof, as shown in Fig. 3, or the deeper portions of the corrugations may be located at the edge portion instead of at the central portion of the sheet.

Fig. 3 shows the single corrugation deepest adjacent the center of the sheet and diminishing in depth toward the edges of the sheet.

Figs. 5 and 6 show modified forms wherein the several corrugations merge into an elevated portion of the plate which forms the connection therebetween.

This is a division of my co-pending ap-

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plication Serial No. 758,664, filed December 29, 1924.

I claim:

1. In a railway car structure, a metallic sheet having a single corrugation formed therein having interwoven parts of general spiral form, the inner ends of said parts being located near the center of the sheet and the outer ends of said parts being located near the edges of the sheet, said parts being connected at their inner ends to form a continuous corrugation. 65
2. In a railway car structure, a metallic sheet having a single corrugation formed therein having interwoven parts of general spiral form, the inner ends of said parts being located near the center of the sheet and the outer ends of said parts being located near the edges of the sheet, and adjacent opposite corners thereof, said parts being connected at their inner ends to form a continuous corrugation. 75
3. In a railway car structure, a metallic sheet having a single corrugation formed therein having interwoven parts of general spiral form, the inner ends of said parts being located near the center of the sheet and the outer ends of said parts being located near the edges of the sheet, said parts being connected at their inner ends to form a continuous corrugation, said corrugation being deepest adjacent the center of the sheet. 80
4. In a railway car structure a metallic sheet having a single corrugation formed therein having interwoven parts of general spiral form, the inner ends of said parts being located near the center of the sheet and the outer ends of said parts being located near the edges of the sheet, said parts being connected at their inner ends to form a continuous corrugation, said corrugation being deepest adjacent the center of the sheet and decreasing in depth toward the edges thereof. 85
5. In a railway car structure, a metallic sheet having a single corrugation formed therein having interwoven parts of general spiral form, the inner ends of said parts being located near the center of the sheet and the outer ends of said parts being located near the edges of the sheet, and adjacent opposite corners thereof, said parts being connected at their inner ends to form a continuous corrugation, said corrugation being deepest adjacent the center of the sheet and decreasing in depth toward the edges thereof. 90
6. In a railway car structure, a metallic sheet having a single corrugation formed therein having interwoven parts of general spiral form including straight portions substantially parallel to the edges of the sheet, the inner ends of said parts being located near the center of the sheet and the outer ends of said parts being located near the edges of the sheet, said parts being connected at their inner ends to form a continuous corrugation, said corrugation being deepest adjacent the center of the sheet and decreasing in depth toward the edges thereof. 95
7. In a railway car structure, a metallic sheet having a single corrugation formed therein having interwoven parts of general spiral form including straight portions substantially parallel to the edges of the sheet, the inner ends of said parts being located near the center of the sheet and the outer ends of said parts being located near the edges of the sheet, and adjacent opposite corners thereof, said parts being connected at their inner ends to form a continuous corrugation, said corrugation being deepest adjacent the center of the sheet and decreasing in depth toward the edges thereof. 100
8. In a railway car structure, a metallic sheet having a single corrugation formed therein having interwoven parts of general spiral form including straight portions substantially parallel to the edges of the sheet, the inner ends of said parts being located near the center of the sheet and the outer ends of said parts being located near the edges of the sheet, said parts being connected at their inner ends to form a continuous corrugation, said corrugation being deepest adjacent the center of the sheet and decreasing in depth toward the edges thereof. 105
9. In a railway car structure, a metallic sheet having a single corrugation formed therein having interwoven parts of general spiral form including straight portions substantially parallel to the edges of the sheet, the inner ends of said parts being located near the center of the sheet and the outer ends of said parts being located near the edges of the sheet, and adjacent opposite corners thereof, said parts being connected at their inner ends to form a continuous corrugation, said corrugation being deepest adjacent the center of the sheet and decreasing in depth toward the edges thereof. 110
10. In a railway car structure, a metallic sheet having a single corrugation formed therein having interwoven parts of general spiral form including straight portions substantially parallel to the edges of the sheet, the inner ends of said parts being located near the center of the sheet and the outer ends of said parts being located near the edges of the sheet, and adjacent opposite corners thereof, said parts being connected at their inner ends to form a continuous corrugation, said corrugation being deepest adjacent the center of the sheet and decreasing in depth toward the edges thereof. 115

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