March 1, 1938. D. W. HAWKSWORTH 2,109,920

CAR ROOF

Filed Sept. 21, 1936 2 Sheets-Sheet 1

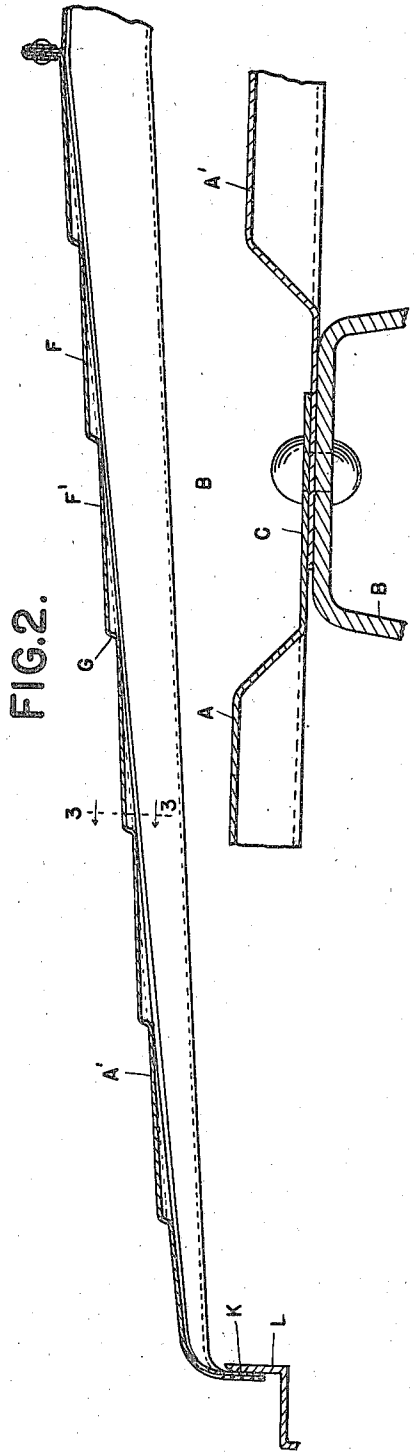


FIG. 2.

FIG. 3.

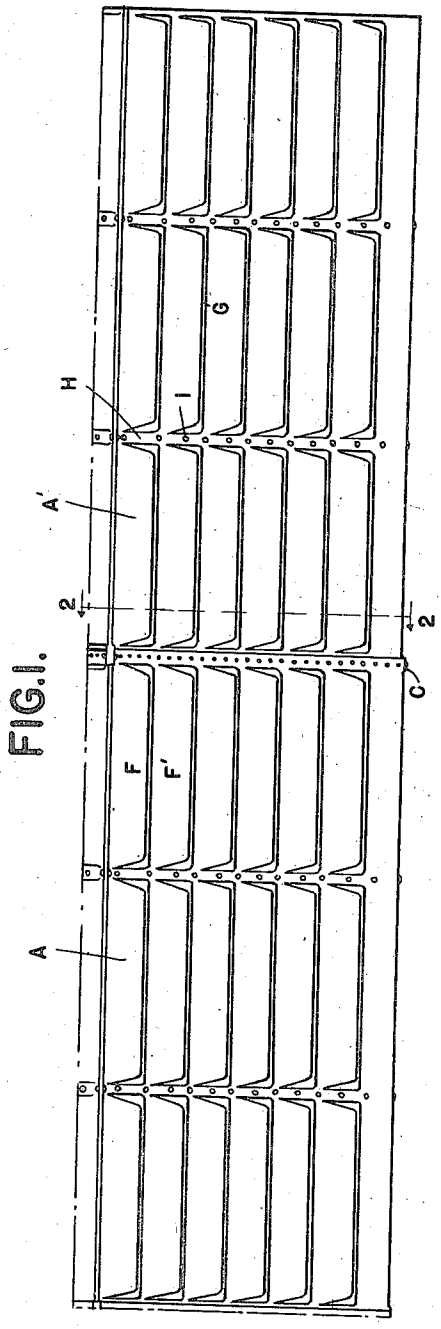


FIG. 1.

INVENTOR
DAVID W. HAWKSWORTH
BY Whittemore Hulbert & Belknap
ATTORNEYS

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FIG. 5.

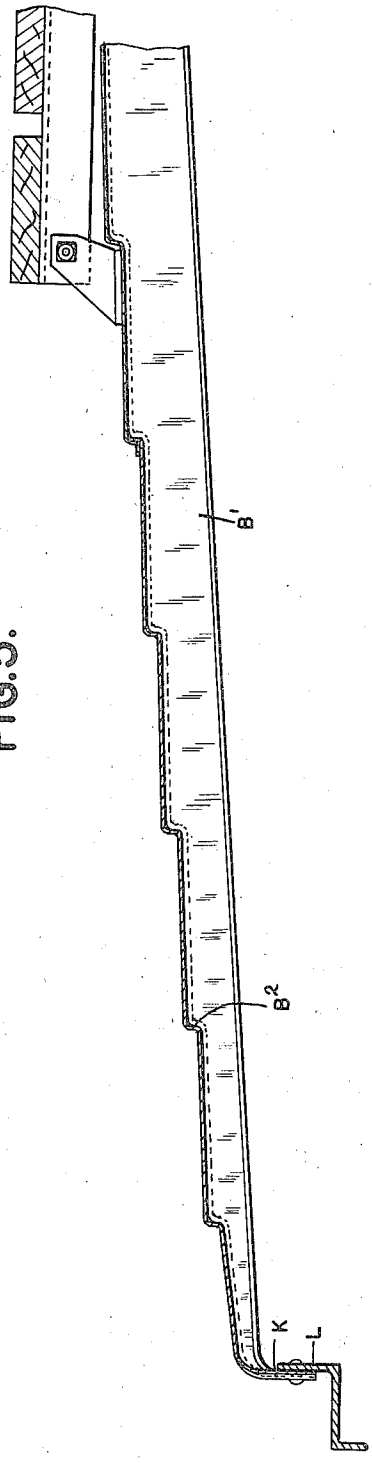
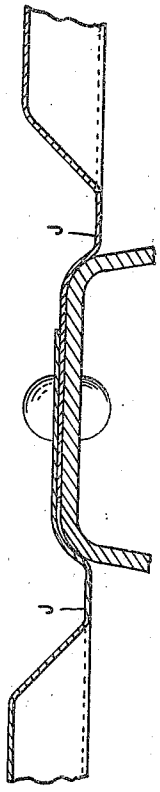


FIG. 4.



INVENTOR
DAVID W. HAWKSWORTH
BY Whittemore Hulbert & Belknap
ATTORNEYS

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UNITED STATES PATENT OFFICE

2,109,920

CAR ROOF

David W. Hawksworth, Birmingham, Mich., assignor to Chicago-Hutchins Corporation, a corporation of Delaware

Application September 21, 1936, Serial No. 101,845

8 Claims. (Cl. 108—5.4)

The invention relates to car roofs of the rigid all-metal type and it is the primary object of the invention to obtain a construction which can be formed from relatively light gauge metal of high tensile strength, thereby reducing the weight of the roof. It is a further object to obtain with such construction a high degree of rigidity in withstanding load stresses. With these objects in view, the invention consists in the construction as hereinafter set forth.

In the drawings:

Figure 1 is a plan view of a portion of a roof of my improved construction;

Figure 2 is an enlarged cross section therethrough on line 2—2 of Figure 1;

Figure 3 is a cross section on line 3—3 of Figure 2;

Figure 4 is a similar view showing a slightly modified construction;

Figure 5 is a view similar to Figure 2 showing another modification.

Car roofs of the type to which my improvement belongs are usually formed of relatively heavy gauge sheet metal, such for instance as 16-gauge, said sheets extending either from ridge to eaves or from eaves to eaves and being supported by and rigidly attached to carlines. Such a construction will have not only the necessary tensile strength in the roofing sheets, but also a considerable degree of rigidity to withstand deflections. With the present invention I considerably decrease the total weight of the roof by employing a light gauge metal, such as 20-gauge, but select a material which is much higher in tensile strength than that usually employed in such type of roofs. However, sheets of such light gauge metal while possessing the necessary tensile strength will be much less rigid in withstanding deflections than the heavier gauge metal. I have, therefore, devised a construction which imparts the desired degree of rigidity with such light gauge material. As shown in Figures 1 and 2, A and A' are roofing sheets each of which extends transversely from ridge to eaves and longitudinally to cover a plurality of carlines B. The transverse edges of adjacent sheets may be overlapped on one of the carlines as indicated at C and at the ridge may be united to each other in any suitable manner, such as by upstanding flanges D covered by a cap E. To impart the desired rigidity to the sheets, the portions intermediate the carlines are pressed to form a series of steps F, F', etc., or a washboard effect having substantially vertically extending portions G between adjacent steps. These will greatly increase the rigidity, while at the same time sufficient slope is retained to provide for proper drainage. The portions H of the sheets which overlie the carlines preferably remain in the original plane and may be secured to the carlines by riveting, as indicated at I. Thus the portions between the carlines are not only stepped, but are also inverted pan-shaped which further increases rigidity. As shown in Figure 3, all portions of the sheets are above the plane of the top face of the carline. In Figure 4, this construction is modified by depressing portions J on opposite sides of the carline which also permits of forming somewhat deeper steps without decreasing outside clearance. In the construction shown in Figure 5, in place of panning the sheets intermediate the carlines, as previously described, they are stepped throughout their entire width and the carline B' has its upper end similarly stepped, as indicated at B^2, to receive the sheets. At the eaves the sheets are provided with a curved and down-turned end portion K which may be secured to a side plate L by riveting.

What I claim as my invention is:

1. In a car roof, the combination with carlines, of a roofing sheet supported thereon having a portion extending between carlines formed in a series of parallel steps, each step being downwardly inclined toward the eaves to provide drainage and being connected to the adjacent lower step by a transverse portion extending substantially from carline to carline and forming a stiffening flange.

2. In a car roof, the combination with carlines, of a roofing sheet supported thereon and rigidly attached thereto, said sheet having a portion extending between carlines formed in a series of parallel steps, each step being downwardly inclined toward the eaves for drainage and being connected to the adjacent lower step by a transverse portion extending substantially from carline to carline and forming a stiffening flange.

3. In a car roof, the combination with carlines, of a roofing sheet supported thereon and rigidly attached thereto, said sheet having intermediate the carlines inverted pan-shaped portions forming a series of parallel steps, each step being inclined downward toward the eaves for drainage and being connected with the adjacent lower step by a transverse portion extending substantially from carline to carline and forming a stiffening flange.

4. In a car roof, the combination with carlines, of a roofing sheet supported on said car-

lines, said sheet having intermediate the carlines inverted pan-shaped portions forming a series of parallel steps, each step being inclined downward toward the eaves for drainage and connected to the adjacent lower step by a transverse portion extending substantially from carline to carline and forming a stiffening flange, the portions of said sheet overlying the carlines conforming to the upper surface thereof and being rigidly attached thereto.

5. In a car roof, the combination with carlines, of a roofing sheet having portions overlying the carlines substantially in the plane of the upper face thereof and attached thereto and a portion intermediate the carlines formed in a series of parallel steps, each step being inclined downward toward the eaves for drainage and being connected to the adjacent lower step by a transverse portion extending substantially from carline to carline and forming a stiffening flange.

6. In a car roof, a roofing sheet extending from ridge to eaves formed in a series of parallel steps, each step inclining downward toward the eaves for drainage and being connected to the adjacent lower step by a transverse portion forming a longitudinally extending stiffening flange, and a carline for supporting said sheet having a similarly stepped upper portion for engaging the steps in the sheet.

7. In a car roof, the combination with carlines, of a roofing sheet supported thereon extending from ridge to eaves and overlying more than two carlines being rigidly secured thereto, the portions intermediate the carlines being formed in a series of steps, each step inclining downward from ridge toward eaves for drainage and being connected to the adjacent lower step by a transverse portion forming a stiffening flange.

8. In a car roof, the combination with carlines, of a roofing sheet overlying said carlines and supported thereon, said sheet having a portion intermediate the carlines formed in a series of parallel steps, each step being inclined downward toward the eaves for drainage and connected to the next lower step by a portion forming a stiffening flange, the transverse portion extending substantially from carline to carline and said sheet overlying each carline being substantially in the plane of the upper face thereof and being turned downward at the side of the carline to merge into said stepped portion.

DAVID W. HAWKSWORTH.