Feb. 13, 1945. H. E. BARTSCH 2,369,128

RETICULATED METAL STRUCTURE

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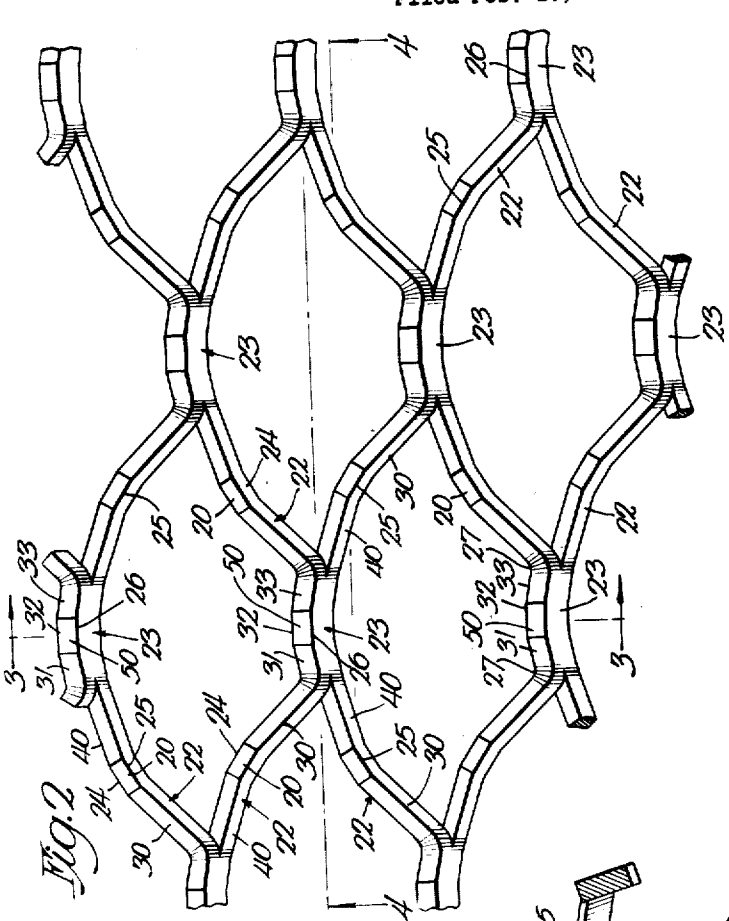

Fig. 2

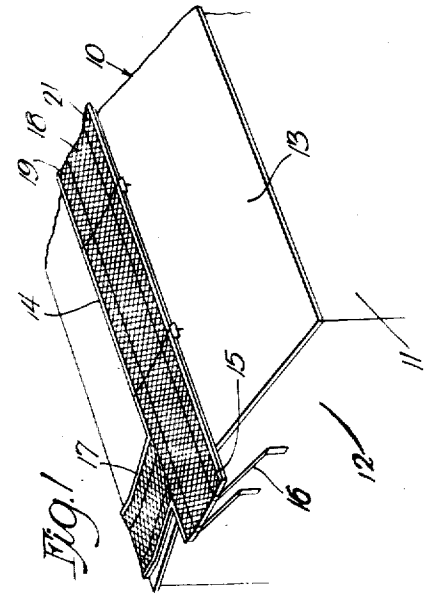

Fig. 1

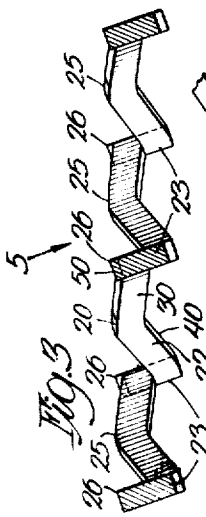

Fig. 3

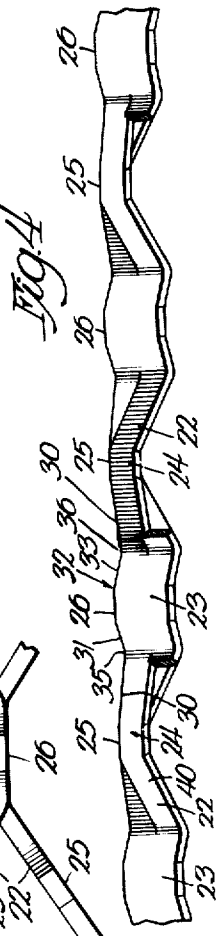

Fig. 4

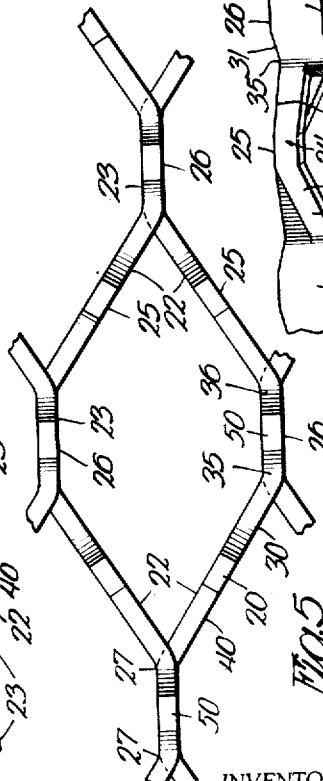

Fig. 5

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## RETICULATED METAL STRUCTURE

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Application February 13, 1942, Serial No. 430,795

4 Claims. (Cl. 189—83)

This invention relates to reticulated material especially adapted for use as running boards on motor vehicles, along the tops of railway cars, stair treads, and the like.

One of the objects of the invention is the provision of a new and improved metallic walk having novel anti-slipping means thereon.

Another object of the invention is the provision of a new and improved expanded sheet metal anti-slipping tread that is so constructed as to prevent accumulation of snow on the tread surface during use of said device.

A further object of the invention is the provision of a new and improved walk made from an expanded sheet metal structure so constructed and arranged as to present a tread having upwardly facing knife-like edges at angles to each other for biting into the soles of shoes treading the surface for preventing slipping of said soles over such surface.

Another object of the invention is the provision of a reticulated sheet of metal adapted to be used for a tread surface that is inexpensive to manufacture, easily assembled, efficient in use, that is not likely to become clogged with snow, and that is provided with anti-slipping projections.

Other and further objects and advantages of the invention will appear from the following description, taken in connection with the accompanying drawing in which

Fig. 1 is a perspective view of a portion of a railway car showing the invention in position thereon;

Fig. 2 is a plan view of a portion of the reticulated structure, with parts broken away;

Fig. 3 is a section on the line 3—3 of Fig. 2;

Fig. 4 is a section on the line 4—4 of Fig. 2; and

Fig. 5 is a view of the tread looking in the direction of the arrow in Fig. 3.

At this time, when material that can be used in any way in aggressive or defensive warfare, is of prime importance, it is highly desirable that all structures be so manufactured that a minimum of material is required. In the present invention reticulated material or expanded sheet metal is utilized for the fabrication of running boards for railway cars and for the manufacture of treads for various uses, thereby not only conserving material but reducing the amount of time and labor.

It is highly desirable that the tread portions of running boards for railway cars be provided with effective anti-slipping devices, especially in the northern sections of the country or in countries where snow is not unusual. Since the safety of running boards depends, to a very large extent, on the tread surface, it is very material that the running board be so constructed that snow, especially, cannot collect on the tread surface of the board.

The present construction seeks to provide a running board having a tread surface so constructed that snow falling on the same will, for the most part, pass through the openings in the reticulated surface and will not collect on the walk to such an extent as to present a slipping surface. Furthermore, the running board is so constructed that the tread surface has projections that will bite into the soles of the shoes of brakemen or other persons walking along the board.

Referring now to Fig. 1 of the drawing, the reference character 10 designates a railway car having side walls 11, end walls 12, and a roof 13. A running board 14 extends longitudinally of the car along the central portion of the roof, as is usual in such constructions.

The running board 14 has the usual extension 15 extending beyond the roof section at each end of the car. The extension 15 is supported at its outer end by braces 16 attached to the end wall 12 of the car, in the usual manner. A lateral running board 17 extends from the main running board 14 to the lower edge of the roof at each end of the car, as indicated in Fig. 1.

The tread portion of the running board is made of expanded sheet metal or reticulated material, the mesh of which is smaller than the heel of a man's shoe so there is no possibility of a brakeman's shoe heel getting caught in the openings. This material is adapted to be used for the tread portion of various structures, as, for instance, running boards on cars and other vehicles, or for steps for stairs, and the like; but for the purpose of disclosure the invention will be described as a running board for railway cars, and the like. When used as the tread portion for running boards it is preferably, though not necessarily, so bent that its central portion 18 is horizontal and its side portions 19 and 21 are inclined upwardly and laterally outwardly from the central portion 18, as shown more clearly in Fig. 1 of the drawing.

This tread portion of the running board will be described as a flat surface, as it appears before it is bent to form the running board. The reticulated material will be referred to as an expanded or reticulated sheet of metal, that is, a

plate or sheet of metal that has been expanded or constructed from a single flat plate.

When the sheet is sheared and expanded the structure comprises what, for convenience, will be termed strands 22 and connecting web portions 23 that connect the strands together. The web portions may be considered as being arranged in zig-zag rows, and each of the strands extends from the lower part of one web portion to the top part of an adjacent web portion. The reticulated material is so constructed that there are a plurality of anti-slipping members for each mesh, as shown by way of example. These members are provided for each mesh by notching the webs and strands. As shown, each web and each strand is provided with one anti-slipping member, but it is apparent that this number may be further multiplied by additional notching of these parts.

The central portion of each strand may be considered as extending upwardly above the end portions of the strand, or the attached ends of the strands may be considered as being depressed to form anti-slipping tread members or projections, as shown at 24 in Fig. 2. In other words, the strands may each be considered as extending from the lower part of one web upwardly and in a direction that, for convenience of description, will be termed forwardly, as at 40, Figs. 3 and 4, to a point between the web portions to which it is connected; then forwardly to form the flat face 20, Fig. 3; and finally forwardly and slightly downwardly, as at 30, Fig. 3, to the top portion of an adjacent web portion 23. The web portions 23 are also provided with upwardly extending anti-slipping projections 32, Figs. 2 and 4. The top portion of each web may be considered as extending rearwardly and slightly upwardly, as at 31; then laterally to form the face 50, Fig. 2, and forwardly and slightly downwardly, as at 33, Fig. 2, to the adjacent strand.

The uppermost faces 20 and 50 of both the strands and webs are in planes at an angle to the horizontal, whereby the uppermost edges 25 and 26 of the faces 20 and 50 of the strands and webs 22 and 23, respectively, constitute the tread surface and are sharp to prevent slipping, as will presently appear.

This arrangement insures a biting action on the soles of the shoes of the brakeman, thereby adding to the safety of the tread. These edges 25, 26, are turned upwardly incident to the manufacturing operation. In the manufacture of the reticulated material a plane sheet of metal is conducted through a machine that has an angular knife cooperating with a suitable bed for simultaneously shearing and stretching the metal to form the desired mesh. The blade operates in a plane at an angle, usually a right angle, to the plane of the sheet. At each alternate stroke of the knife the sheet or knife is shifted laterally the distance between two meshes in order to form the webs and strands.

Referring to Figs. 3 and 4, it will be observed that the webs and strands are notched or recessed between the tread surfaces 25 and 26. In other words, the tread surfaces 25, 26, are all in the same plane, and there are recesses in the surface of the walk at opposite sides of each of these tread surfaces 25, 26. Referring to Fig. 4, it will be observed that between the tread surfaces 25, 26, for instance, there is a recess or depression 35 formed by the inclined surfaces 30, 31, at one side of the tread surface 26, and a like recess 36 formed by the inclined surfaces 33 and 30 at the other side of this tread surface 26. These contact members, having short knife-like edges extending in different directions, constitute anti-slipping means for the brakeman and other persons using the running board. This is considered an important feature of the invention, for the reason that snow will not cling to these edges and will not tend to collect on the surface of the board, and therefore the projections will bite into the soles of the shoes more efficiently.

It will be noted from an inspection of Figs. 2 and 5 that in the expanding of the metal all of the bending occurs at the junctures 27 between each strand and the webs at opposite ends of the strand. From an inspection of these two figures it will be seen that the meshes or openings in the present constructions are polygonal, and that the strands are bowed, as viewed in Fig. 2, but are straight when viewed in a plane parallel with the side faces of the strands, that is, when viewed in the direction of the arrow in Fig. 3.

When the metal is expanded the uppermost edges 26 of the tread projections 32 of the webs 23, and the uppermost edges 25 of the tread projections 20 of the strands 22 are all in substantially the same plane and constitute an anti-slipping tread surface, as described above. By means of this arrangement the soles of shoes will make line contacts with the surface of the board, and since these edges are not parallel they will provide a very efficient anti-slipping surface. If these edges were all parallel it is evident there would be much less resistance to slippage in the direction of the extension of the lines than transversely thereto, but arranging these edges at angles to one another efficiently prevents slippage in any direction. This is considered a very important feature of this invention.

It will thus be seen that the reticulated structure comprises webs and strands having their side faces slightly inclined to the vertical, so that one edge of each is uppermost to form a knife-like tread surface, and that each strand extends upwardly and forwardly to the plane of the web and then forwardly in the horizontal plane of this web, so that the uppermost portions of the webs and adjoining strand are in the same horizontal plane with notches in the strand and web to break the edge extension into a plurality of tread surfaces.

While in the construction shown only one notch is provided between each strand and web, it is evident that if it is desired to shorten the length of the edges forming the tread other notches may be provided in the webs or in the strands, or both. Furthermore, the strands may be shortened and the webs lengthened, or vice versa, and these lengthened portions may be provided with additional notches. The notches may all be formed in the webs and none in the strands, or all in the strands and none in the webs, as desired, or as occasion may require. If the tread knife edges are all on the webs they will all be parallel, but since they will be comparatively short they will effectively grip the shoe sole and prevent slipping.

It is thought from the foregoing, taken in connection with the accompanying drawing, that the construction and operation of my device will be apparent to those skilled in the art and that changes in size, shape, proportion and details of construction may be made without departing from the spirit and scope of the appended claims.

I claim as my invention—

1. A sheet of reticulated metal comprising a series of integrally connected webs and strands, said webs being staggered, and said strands each connected to the lower portion of an adjacent web and to the top portion of an adjacent web, the intermediate portions of said webs and strands forming elevations with a depression at each side of each elevation, said elevations having their uppermost edges lying in substantially the same plane for forming an anti-slipping tread surface, and the corresponding upper and lower surfaces of said strands being parallel.

2. In a strip of reticulated material for use as a tread surface for running boards for vehicles and the like, comprising webs and strands, said webs being staggered and spaced apart, each strand extending from the bottom portion of one web to the top portion of an adjacent web and provided with parts inclined downwardly toward both of said webs, said webs having portions inclined downwardly toward said strands for forming elevations and depressions on the surface of said tread, one edge of each elevation being turned uppermost to form an anti-slipping knife edge, said knife edges being in a common plane but extending in different directions, and the corresponding upper and lower surfaces of said strands being parallel.

3. A strip of reticulated material for use as a tread surface for running boards and the like, comprising webs and strands, said webs being staggered and spaced apart, each strand extending from the bottom portion of one web to the top portion of an adjoining web, said webs and strands being so constructed and arranged as to cooperate to provide knife-like edges forming elevations in a common plane, said strands and webs having depressions between said elevations, and the corresponding upper and lower surfaces of said strands being parallel.

4. A tread member comprising a sheet of reticulated metal having a series of connected strands and webs each polygonal in cross-section, said webs and strands formed to present an undulating upper surface with high portions on said webs and on the intermediate portions of said strands and with depressions between the elevations, each strand extending from the lower portion of one web to the upper portion of an adjacent web, and the corresponding upper and lower surface of said strands being parallel.

HERBERT E. BARTSCH.

CERTIFICATE OF CORRECTION.

Patent No. 2,369,128. February 13, 1945.

HERBERT E. BARTSCH.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, first column, line 14, claim 2, for the words "In a strip" read --A strip--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 15th day of May, A. D. 1945.

Leslie Frazer

Acting Commissioner of Patents.

(Seal)

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1. A sheet of reticulated metal comprising a series of integrally connected webs and strands, said webs being staggered, and said strands each connected to the lower portion of an adjacent web and to the top portion of an adjacent web, the intermediate portions of said webs and strands forming elevations with a depression at each side of each elevation, said elevations having their uppermost edges lying in substantially the same plane for forming an anti-slipping tread surface, and the corresponding upper and lower surfaces of said strands being parallel.

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