Sept. 3, 1963 C. R. JOHNSTON 3,102,613

NAILABLE METAL FLOORING

Filed Jan. 30, 1961

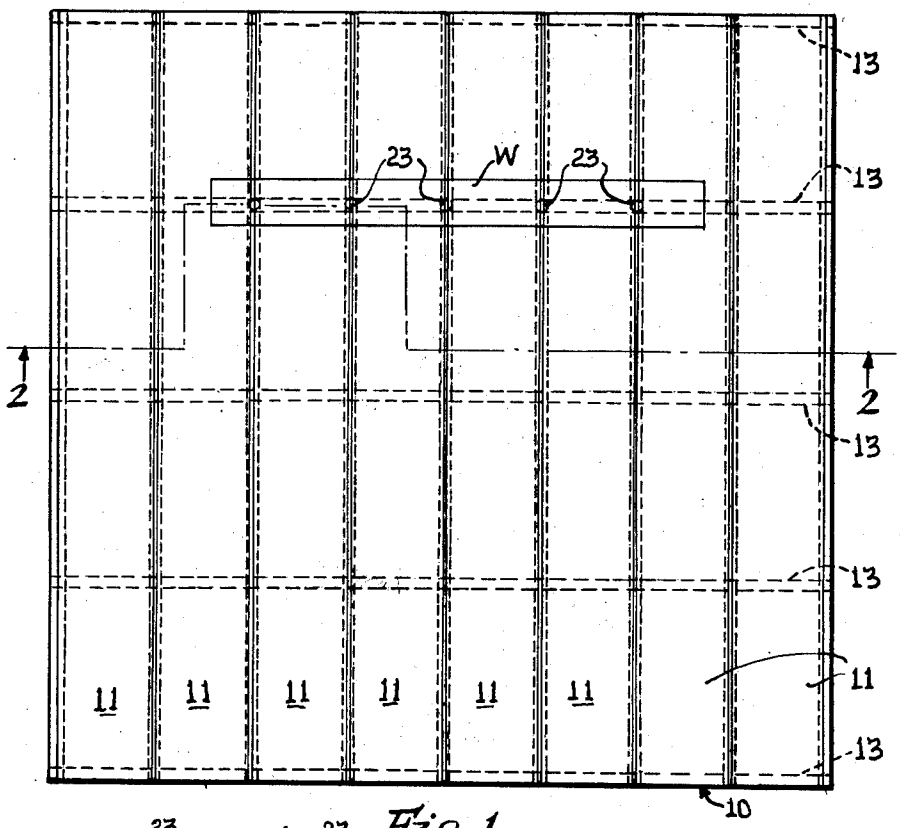


Fig. 1.

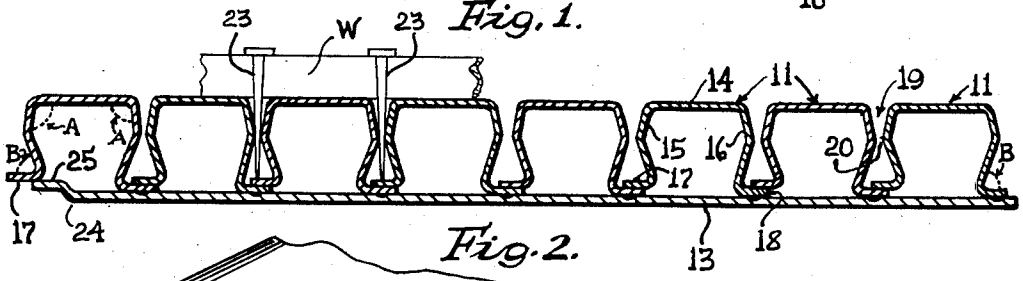


Fig. 2.

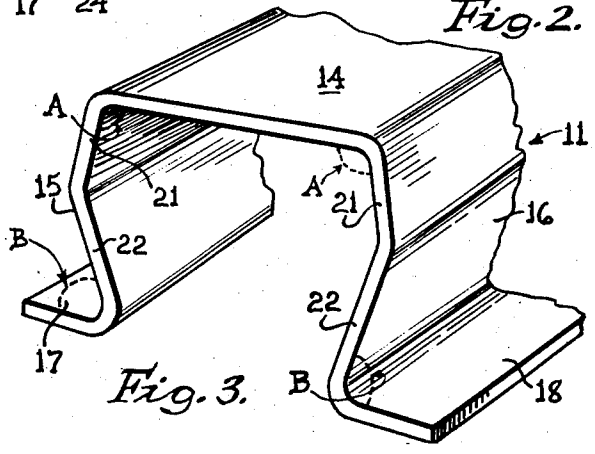


Fig. 3.

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United States Patent Office 3,102,613 Patented Sept. 3, 1963

3,102,613

NAILABLE METAL FLOORING

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Filed Jan. 30, 1961, Ser. No. 85,695
8 Claims. (Cl. 189—34)

My invention relates to a new and useful improvement in a nailable metal flooring and more particularly to a metallic floor for freight carrying conveyances which flooring contains nail receiving and retaining channels.

The principal object of my invention is in the provision in a device of this character of a means of constructing a metallic flooring or the like which by reason of its configuration will receive and retain nailable freight retaining blocks without impairing the construction, strength and durability of the flooring.

Another object of my invention is in the provision in a device of this character of an arrangement of structural supporting members which by reasons of their specific configuration provides interconnecting elements which form a nailable floor section.

Yet, another object of my invention is in the provision in a device of this character of improved structural members having corresponding structural elements cooperating with each other when the members are assembled into a flooring unit which will provide a relatively lightweight floor that will support heavy loads and present a nail receiving channel extending longitudinally thereof.

Still another object of my invention is in the provision in a device of this character of a nail receiving channel which is so constructed that upon supporting a load placed thereon the channel will yieldably deform in such a manner that it will increase its retaining pressure on securing elements inserted therein.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings showing the preferred form of construction, and in which:

FIG. 1 is a top plan view of a nailable floor section including my improved nail receiving channels formed therein;

FIG. 2 is a detailed sectional view taken on line 2—2 of FIG. 1; and

FIG. 3 is a fragmentary perspective view of one of the structural members.

It is the object of this invention to provide in freight carrying conveyances such as a railroad freight car a nailable metallic flooring. A nailable floor is one that will receive and support freight thereon and at the same time be capable of receiving and retaining nails or the like used for the purpose of attaching to the floor freight retaining blocks or other removable members that may be used for preventing the shift of the freight during transit. The nailable flooring must be of such a construction that the repeated operation of receiving and retaining nails and their forceable removal therefrom will not impair in any manner the condition and structural strength of such flooring.

To achieve a complete nailable flooring I prefabricate metal floor sections, one of which is shown as at 10 in FIG. 1. This floor section 10 comprises a plurality of parallelly extending elongated strips 11. These strips 11 are of identical construction and configuration and are adapted to be supported on connecting bars 13 extending transversely beneath the strips 11 in spaced parallel relation. These connecting bars are in turn adapted to be supported and connected to any suitable structural frame members of the vehicle. The structural frame

members of the vehicle may be a part of a side wall or ceiling, and therefore in this specification and claims the term "floor" may be taken to include side walls and ceilings where such use is not inconsistent with the context of such specification and claims.

As each strip 11 is of identical construction and configuration I will but describe one. The strip 11 is substantially U-shaped in cross-section as seen in FIG. 3. Such strip 11 presents a horizontally disposed longitudinally extending deck portion 14. The strip 11 provides flanges 15 and 16 depending from opposite longitudinal edges of the deck portion 14, and each of these depending flanges 15 and 16 of each strip 11 terminate into oppositely extending feet 17 and 18 as seen in FIGS. 2 and 3.

As will be seen in FIGS. 2 and 3, the foot 17 of each flange 15 of the strips 11 extends through a longitudinal plane which is offset with respect to the longitudinal plane of the foot 18 of the flange 16. By reason of this novel construction when the strips 11 are mounted in spaced parallel relation to make up the floor section 10 the foot 17 of each flange 15 of each strip 11 will sit upon the upper surface of each foot 18 of each of the adjacent flanges 16. Thus, the strips 11 are provided with supports in the form of laminated feet that are of a double thickness and as such will withstand a greater degree of stress and strain.

When the strips 11 are disposed in parallel relation with respect to each other the confronting flanges 15 and 16 of each adjacent strip 11 will provide a nail receiving channel 19 therebetween. These channels 19 include a restricted throat 20 which is the result of the configuration of the flanges 15 and 16.

For the opposing flanges 15 and 16 of adjacently disposed strips 11 to provide the channels 19 and restricted throat 20, each flange must be formed in a manner so as to provide converging and diverging leg segments 21 and 22 respectively. The converging leg segments 21 of each of the opposing flanges 15 and 16 are angled (angle A) obtusely with respect to the deck portion 14 of each of their respective strips 11. The diverging leg segments 22 of the opposing flanges 15 and 16 are angled (angle B) acutely with respect to their respective feet 17 and 18.

From the foregoing description it is apparent that when a load of freight or the like is supported upon the deck portions 14 of the strips 11 of the floor sections 10 the direct line of strain is perpendicular to the deck 14 and will result in a slight depression of the deck portions 14 in the direction of the feet of the flanges 15 and 16 with the result effect of increasing the angle A between the deck portions 14 and the converging leg segments 21, and decreasing the angle B between the diverging leg segments 22 and their respective feet 17 and 18, to cause an outward movement of the longitudinal line of junction between the leg segments of each of the flanges to further close or restrict the throat 20 upon a nail 23 or the like disposed therein.

It should be noted that when the foot 17 of the flange 15 is seated upon the foot 18 of the flange 16 of the adjacent strip 11, they cooperate together to provide a longitudinally extending sealed connection between the strips 11.

In the application of my invention I propose to spot weld the foot portions of each of the flanges together and by such a construction the strips 11 are prevented from becoming laterally displaced with respect to each other.

In FIGS. 1 and 2, I show a wood freight retaining block W attached to the floor section 10 by nails 23 driven into the channels 19 between the strips 11. The opposing converging leg segments upon each of the opposing flanges 15 and 16 form an entranceway for receiving and guiding

the nails 23 driven into the channels 19. As readily understood from the foregoing description and as shown in FIG. 2 the restricted throat 20 frictionally engages and retains the nails 23 in place between the strips 11.

Any further closing or restricting of such throat 20 by the yieldable deformation of the leg segments 21 and 22 will result in increasing the frictional engagement of the throat 20 upon the nails 23.

As seen in FIG. 2 the connecting bars 13 are so formed that one end 24 thereof is offset with respect to its longitudinal plane so as to provide a base 25 for the foot 17 of the exposed flange 15 of the end strip 11. The opposite end 25 of the connecting bar 13 may extend beyond the longitudinal edge of the foot 18 of the end flange 16 so that it may underlie the foot 17 of the strip 11 of a confronting floor section 10.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to protect by Letters Patent is:

1. In a nailable steel floor comprised of juxtaposed metal strips each having a horizontal deck portion with laterally extending flanges depending from opposite longitudinal edges thereof, said depending flanges being disposed in opposed spaced relation to provide a nailing groove therebetween, said flanges terminating into oppositely extending laterally directed foot portions with said foot portions cooperating to provide a sealed longitudinally extending connection between said juxtaposed strips and for preventing lateral displacement of said strips with respect to each other, each of said flanges having an intermediate portion bent out of its normal longitudinal plane in the direction of an opposing flange of a juxtaposed strip so as to provide therebetween a yieldable nail engaging retaining means between said deck portions and said longitudinally extending sealed connection.

2. In a nailable steel floor comprised of juxtaposed metal strips having horizontal deck portions with laterally extending flanges depending from opposite longitudinal edges thereof, said depending flanges being disposed in opposed spaced relation to provide a nailing groove therebetween, said flanges terminating into oppositely extending laterally directed foot portions with said foot portions cooperating to provide a sealed longitudinally extending connection between said juxtaposed strips and for preventing lateral displacement of said strips with respect to each other, said flanges providing therebetween a yieldable nail engaging retaining means between said deck portions and said longitudinally extending sealed connection, with said means yieldable laterally through a longitudinal plane substantially parallel to said deck of each strip under a weight supported thereon so as to increase the retaining engagement of said means upon a nail or the like.

3. In a nailable steel floor comprised of juxtaposed metal strips each having a horizontal deck portion with laterally extending flanges depending from opposite longitudinal edges thereof, said depending flanges being disposed in opposed spaced relation to provide a nailing groove therebetween, said flanges terminating into oppositely extending laterally directed foot portions with said foot portions cooperating to provide a sealed longitudinally extending connection between said juxtaposed strips and for preventing lateral displacement of said strips with respect to each other, each of said flanges having an intermediate portion bent out of its normal longitudinal plane in the direction of an opposing flange of a juxtaposed strip so as to provide therebetween a nail engaging retaining means between said deck portions and said longitudinal extending sealed connection, said opposing intermediate portions of said juxtaposed flanges providing therebetween a yieldable restrictive throat adapted to have frictional engagement with the nail or the like so as to retain the same between said strips.

4. In a nailable steel floor comprised of juxtaposed metal strips having horizontal deck portions with laterally extending flanges depending from opposite longitudinal edges thereof, said depending flanges being disposed in opposed spaced relation to provide a nailing groove therebetween, said flanges terminating into oppositely extending laterally directed foot portions with said foot portions cooperating to provide a sealed longitudinally extending connection between said juxtaposed strips and for preventing lateral displacement of said strips with respect to each other, said flanges including yieldable converging and diverging segments so related as to provide a restricted throat between the opposing flanges of juxtaposed strips, said restricted throat adapted to frictionally engage and retain a nail or the like disposed therebetween, said segments yieldable under a weight supported on said strips so as to further restrict said throat and to increase the frictional engagement thereof upon a nail or the like.

5. In a nailable steel floor comprised of juxtaposed metal strips each having a horizontal deck portion with laterally extending flanges depending from opposite longitudinal edges thereof, said flanges of each of said strips being disposed in opposed spaced relation to provide a nailing groove therebetween, said flanges terminating into oppositely extending laterally directed foot portions, with the foot portion of one of the flanges of each strip being offset through its longitudinal plane with respect to the longitudinal plane of the oppositely extending foot portion of the other of said flange of each strip so that the foot portion of said one of said flanges of one strip may sit upon the oppositely extending foot portion of said other of said flanges of another strip when said strips are juxtaposed with respect to each other, said foot portions of said juxtaposed strips cooperating together to provide a sealed longitudinally extending connection between said strips and for preventing lateral displacement of said strips with respect to each other, each of said flanges having an intermediate portion bent out of its normal longitudinal plane in the direction of an opposing flange of a juxtaposed strip so as to provide therebetween nail retaining means between said deck portions and said longitudinally extending sealed connection.

6. In a nailable steel floor comprised of juxtaposed metal strips having horizontal deck portions with laterally extending flanges depending from opposite longitudinal edges thereof, said flanges of each of said strips being disposed in opposed spaced relation to provide a nailing groove therebetween, said flanges terminating into oppositely extending laterally directed foot portions, with the foot portion of one of the flanges of each strip being offset through its longitudinal plane with respect to the longitudinal plane of the oppositely extending foot portion of the other of said flange of each strip so that the foot portion of said one of said flanges of one strip may sit upon the oppositely extending foot portion of said other of said flanges of another strip when said strips are juxtaposed with respect to each other, said foot portions of said juxtaposed strips cooperating together to provide a sealed longitudinally extending connection between said strips and for preventing lateral displacement of said strips with respect to each other, said flanges providing therebetween nail retaining means between said deck portions and said longitudinally extending sealed connection, with said means yieldable laterally through a longitudinal plane substantially parallel to said deck of each strip under a weight supported thereon so as to increase the retaining engagement of said means upon a nail or the like.

7. In a nailable steel floor comprised of juxtaposed

metal strips each having a horizontal deck portion with laterally extending flanges depending from opposite longitudinal edges thereof, said flanges of each of said strips being disposed in opposed spaced relation to provide a nailing groove therebetween, said flanges terminating into oppositely extending laterally directed foot portions, with the foot portion of one of the flanges of each strip being offset through its longitudinal plane with respect to the longitudinal plane of the oppositely extending foot portion of the other of said flange of each strip so that the foot portion of said one of said flanges of one strip may sit upon the oppositely extending foot portion of said other of said flanges of another strip when said strips are juxtaposed with respect to each other, said foot portions of said juxtaposed strips cooperating together to provide a sealed longitudinally extending connection between said strips and for preventing lateral displacement of said strips with respect to each other, each of said flanges having an intermediate portion bent out of its normal longitudinal plane in the direction of an opposing flange of a juxtaposed strip so as to provide therebetween a nail engaging retaining means between said deck portions and said longitudinal extending sealed connection, said opposing intermediate portions of said juxtaposed flanges providing therebetween a yieldable restrictive throat adapted to have frictional engagement with the nail or the like so as to retain the same between said strips.

8. In a nailable steel floor comprised of juxtaposed metal strips having horizontal deck portions with laterally extending flanges depending from opposite longitudinal edges thereof, said flanges of each of said strips being disposed in opposed spaced relation to provide a nailing groove therebetween, said flanges terminating into oppositely extending laterally directed foot portions, with the foot portion of one of the flanges of each strip being offset through its longitudinal plane with respect to the longitudinal plane of the oppositely extending foot portion of the other of said flange of each strip so that the foot portion of said one of said flanges of one strip may sit upon the oppositely extending foot portion of said other of said flanges of another strip when said strips are juxtaposed with respect to each other, said foot portions of said juxtaposed strips cooperating together to provide a sealed longitudinally extending connection between said strips and for preventing lateral displacement of said strips with respect to each other, said flanges including yieldable converging and diverging segments so related as to provide a restricted throat between the opposing flanges of juxtaposed strips, said restricted throat adapted to frictionally engage and retain a nail or the like disposed therebetween, said segments yieldable under a weight supported on said strips so as to further restrict said throat and to increase the frictional engagement thereof upon a nail or the like.

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