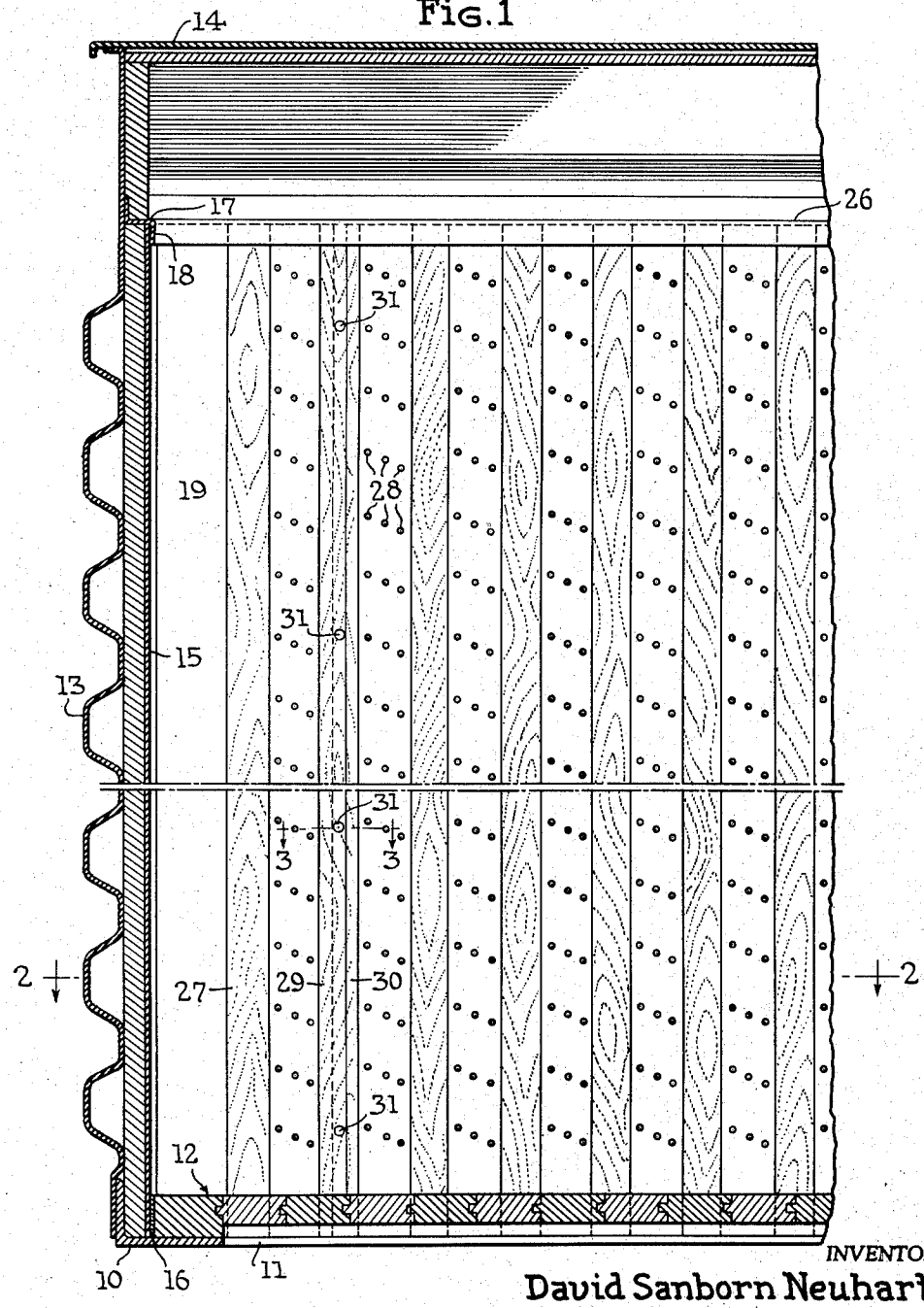
Aug. 25, 1959 D. S. NEUHART 2,900,926

LINER FOR CARGO SPACER

Filed Nov. 10, 1955 2 Sheets-Sheet 1

FIG. 1



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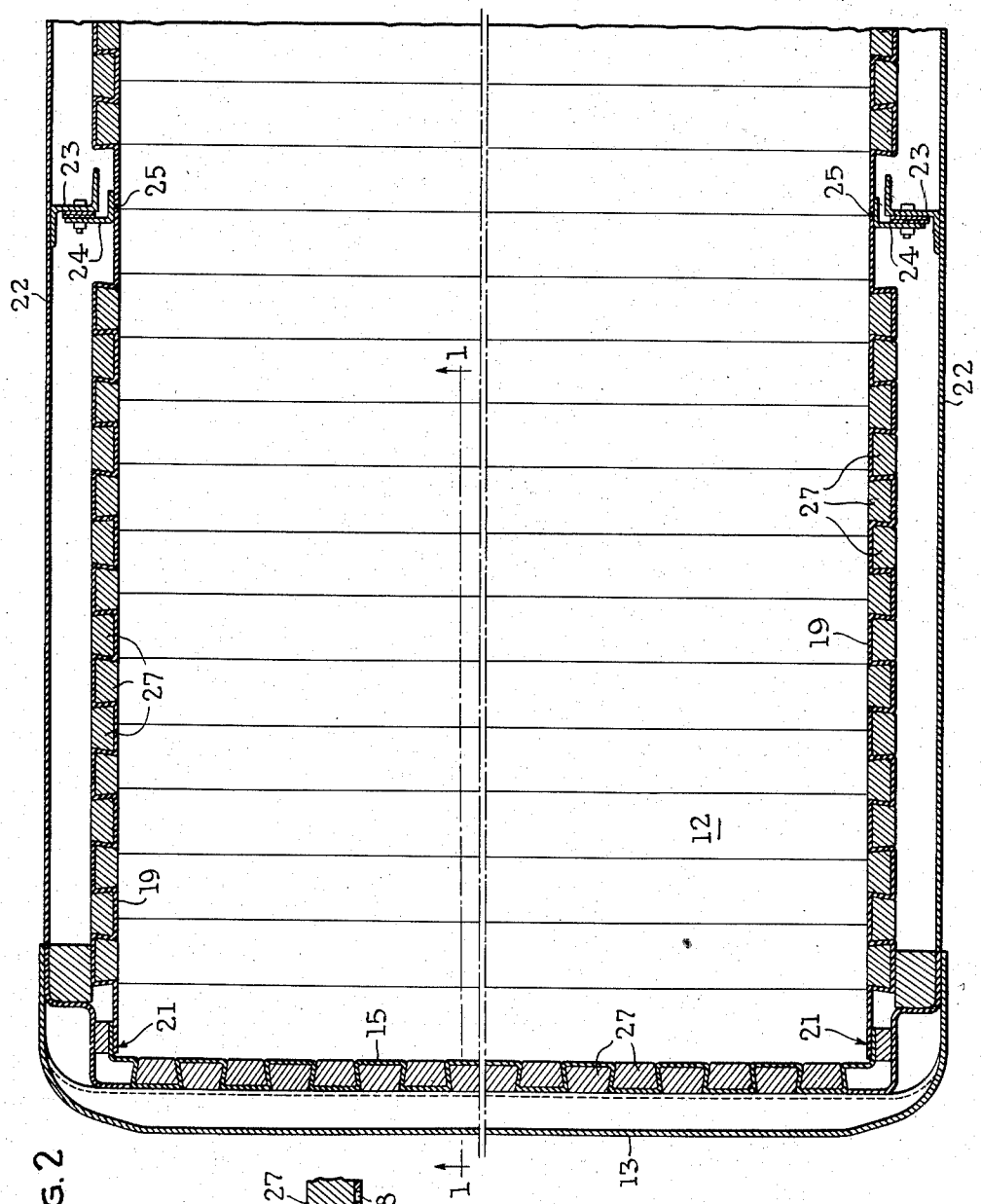


Fig. 2

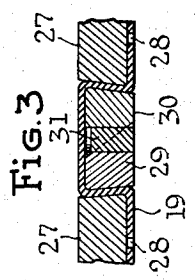


Fig. 3

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LINER FOR CARGO SPACER

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Application November 10, 1955, Serial No. 546,049

1 Claim. (Cl. 105—423)

This invention relates to liners for use in transport vehicles, e.g. trucks, shipholds, and more particularly railway freight cars.

It is common practice to provide steel freight cars with a replaceable wooden lining. These liners are commonly nailed to filler pieces or stringers which are fastened securely to the walls of the car. These liners are used as a means for protecting the lading from damage and as a surface to which lading straps and other forms of load anchors may be fastened by means of nails or screws. Because of the severe use to which they are subjected, the useful life of such liners is relatively short, and replacement is a source of considerable expense.

It is the purpose of the present invention to provide a more economical liner. This lining is more economical for two principal reasons. First, its useful life is longer than the conventional wooden lining, and secondly, it is easily replaced. There are other advantages in its use apart from economy. One stems from the fact that there are no fastenings which protrude from or pass through the liner itself. Also, there is less possibility of contaminating lading such as grain, because there is little or no accumulation of grain behind the liner.

The liner comprises a retainer made of corrugated sheet metal. The corrugations in the sheet metal retainer are of trapezoidal form. These corrugations are filled with filler strips which have a cross section which is congruent with the shape of the corrugations in the retainer. It will be obvious that such filler strips could be withdrawn by sliding them longitudinally of the corrugations. It will be apparent that in installations in which the corrugations are vertical and there is present a ceiling, that longitudinal withdrawal imposes limitations on the height of the sheet metal retainer. One of the principal advantages afforded by a retainer built in accordance with the present invention is the ability to remove the fillers by forming a single longitudinal cut therein, whereby the filler piece may be laterally removed as two separate pieces. It will be obvious that the length of the short base of the trapezoidal corrugations must be at least as long as the major dimension of the two pieces which remain after the filler strip has been longitudinally cut. The short base of the corrugations in the sheet metal retainer, therefore, must be at least one-half as long as the long bases of those corrugations. It is preferred that the channels formed on the opposite faces of the retainer be identical with one another and the simplest form is an isosceles trapezoid. The retainer may be secured in place in a steel freight car by welding it to the frame of the car. The corrugations are disposed to run vertically. The retainer is commonly made equal in height to the height of the side walls of the car.

It will commonly be necessary to provide more nailing surface in the interior than is available from the exposed face of the fillers. This additional nailing surface may be provided by perforating the faces of the corrugated retainer which are exposed to the interior of the car. It will be understood that these perforations may take a

variety of forms. They may be circular holes, elongated slots, or square holes.

Fig. 1 is a fragmentary sectional view taken on line 1—1 of Fig. 2 and shows a freight car to which the liner of the present invention has been applied.

Fig. 2 is a fragmentary section taken approximately on line 2—2 of Fig. 1.

Fig. 3 is a sectional view on line 3—3 of Fig. 1 but on an enlarged scale.

Referring first to Fig. 1, it will be seen that only a portion of the freight car has been illustrated since the construction of the car itself is conventional.

Reference numeral 10 indicates the end sill of the car which is sustained by a center sill not shown. The end sill 10 is connected at its outer ends with side sills 11 which in conjunction with suitable framing support a conventional wood flooring, generally indicated at 12. A conventional corrugated steel end wall 13 is fastened to the end sill 10 and extends upward and is connected at its upper edge with a roof 14.

A corrugated sheet metal retainer 15 extends transversely of the car and is disposed with its lower edge resting on the end sill 10. This lower edge of the retainer 15 is preferably welded to the end sill 10 as indicated at 16. Disposed adjacent to the upper edge of the retainer 15 is a Z-iron 17 which has one leg which is fastened to the end wall 13, for example by spot welding. The horizontal web of the Z-iron 17 extends outward from the end wall 13 over the upper edge of the retainer 15 and is provided with a depending flange 18, as best shown in Fig. 1.

A similar retainer 19 is provided on the side walls of the car and is connected with the retainer 15 adjacent the corners of the car as is generally indicated at 21 in Fig. 2. The lower edge of the retainer 19 is fastened to the side sill 11. As shown in Fig. 2, the side wall of the car includes an outer facing 22 which is connected with intermediate posts, one of which is illustrated at 23. Bolted to the post 23 is a bracket 24. The retainer 19 is made up of a plurality of sections which extend from the corner of the car to the intermediate post 23 and from the intermediate post 23 to the next intermediate post and so on until the door post is reached at approximately the center of the car.

The number of sections which is used to make up the retainer 19 is determined by the number of intermediate posts which are present in the construction of the car. It is preferable that the edges of the retainer 19 be welded to the bracket 24 as is indicated at 25. A Z-iron 26 is arranged along the upper edge of the retainer 19 in much the same way as the Z-iron 17 is arranged across the retainer 15.

As shown in Fig. 2, the retainers 15 and 19 are formed with vertically disposed channels which extend from top to bottom. These channels are formed with a trapezoidal cross section in which the base at the open face is smaller than the base at the closed face of the channel.

A filler strip 27 having the same cross section as the channels formed in the retainers is disposed in each of the channels. These filler strips 27 may be a single piece extending from top to bottom or they may be made in sections. In the preferred embodiment there is a filler strip in each of the channels, although it is obvious that they could be omitted from certain of the channels if desired. The filler strips 27 which have faces exposed to the interior of the car serve as a means to which lading straps and other types of load anchors may be fastened by nails or screws, or other suitable fasteners. In order that additional nailing surfaces may be had, the base portions of the sheet metal channels, exposed to the interior of the car, are provided with perforations as indicated at 28. In the illustrated embodiment the

perforations are circular apertures. It will of course be obvious that the shape of these apertures is a matter of choice and they might comprise elongated slots.

When the liners are initially applied to the car, it is desirable that the filler strips **27** be in place and preferably each filler piece comprises a single piece of wood which would extend the full length of the channel. It is not necessary, however, that these filler pieces be a single piece. When the liner is in service, it will undergo some deterioration due to the removal of screws and nails which are used to fasten the retaining means to the strips. It is contemplated, therefore, that the exposed filler pieces **27** may be replaced.

In Fig. 3 there is shown a replacement filler strip. This replacement strip forms two trapezoidal sections **29** and **30**, in which two of the non-parallel faces are in abutting relation. The pieces **29** and **30** are preferably of the shape shown in Fig. 3. It will be apparent that the acute angle between the long base and the plane of the abutting faces could be greater than the one shown. In the limiting case, this plane would be parallel with the side of the corrugation in the retainer **19**. Also the long base of either section **29** or **30** must not be longer than the short base of the corrugation. Further, the short base of the corrugation must be at least one half as long as the long base of the corrugation. The section **30** is inserted laterally through the open face of the channel in retainer **19** into the position shown. Section **29** is then inserted into the position shown. Aligned holes are formed through each of the sections **29** and **30** and through the abutting faces. A dowel **31** may be driven into the aligned holes and thereby retain the replacement strip in place. The liners could be initially manufactured with two-piece strips of this type, but it is cheaper to make a one-piece filler strip which may be slid lengthwise into place in the retainer before it is fastened in place within the car.

It will be noticed that the filler pieces **27** are devoid of any fastenings to retain them in place in the retainers **15** and **19**. This is an important advantage because it does away with fasteners which are conventionally present and sometimes damage lading in the car. It is desirable that the long and the short bases of the wooden filler pieces be of not greatly different lengths, so that a maximum amount of filler strip is exposed in the interior of the car so that a maximum amount of nailing surface is available.

Another important advantage of a liner constructed in accordance with the present invention is the absence of seams in the lining. Such seams are present in the conventional wood lining and permit leakage of lading, such as grains, behind the lining which may ultimately lead to contamination of the lading. It should be noticed that leakage around the upper edge of the lining is prevented by the Z-irons **17** and **26**. It will also be apparent that the lining constructed in accordance with the present invention need not be placed around the entire interior surface of the car but might be located, for example, only on the end walls or only on the side walls.

The filler pieces may be made of wood as indicated in the drawings, but might equally well be made of a nailable plastic composition. Such plastic compositions are commercially available.

What is claimed is:

In a liner, for attachment to the walls of a transport vehicle, of the type including a corrugated sheet metal retainer, the corrugations being trapezoidal in cross section, the improvement in which the corrugations exposed toward the interior of the vehicle have a short base which is the open face of the corrugation and is of a length at least half that of the long base; a laterally insertable filler filling at least one of said corrugations and comprising two pieces of trapezoidal form, one of the non-parallel sides of each piece abutting a corresponding non-parallel side of the other, the abutting non-parallel sides defining an acute angle with the base of the corrugation in said retainer at least as small as the one defined between said base and one of the sides of said corrugation, said pieces each having a long base of a length less than the length of the short base of the corrugation; and means to hold said pieces in the defined abutting relation.

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