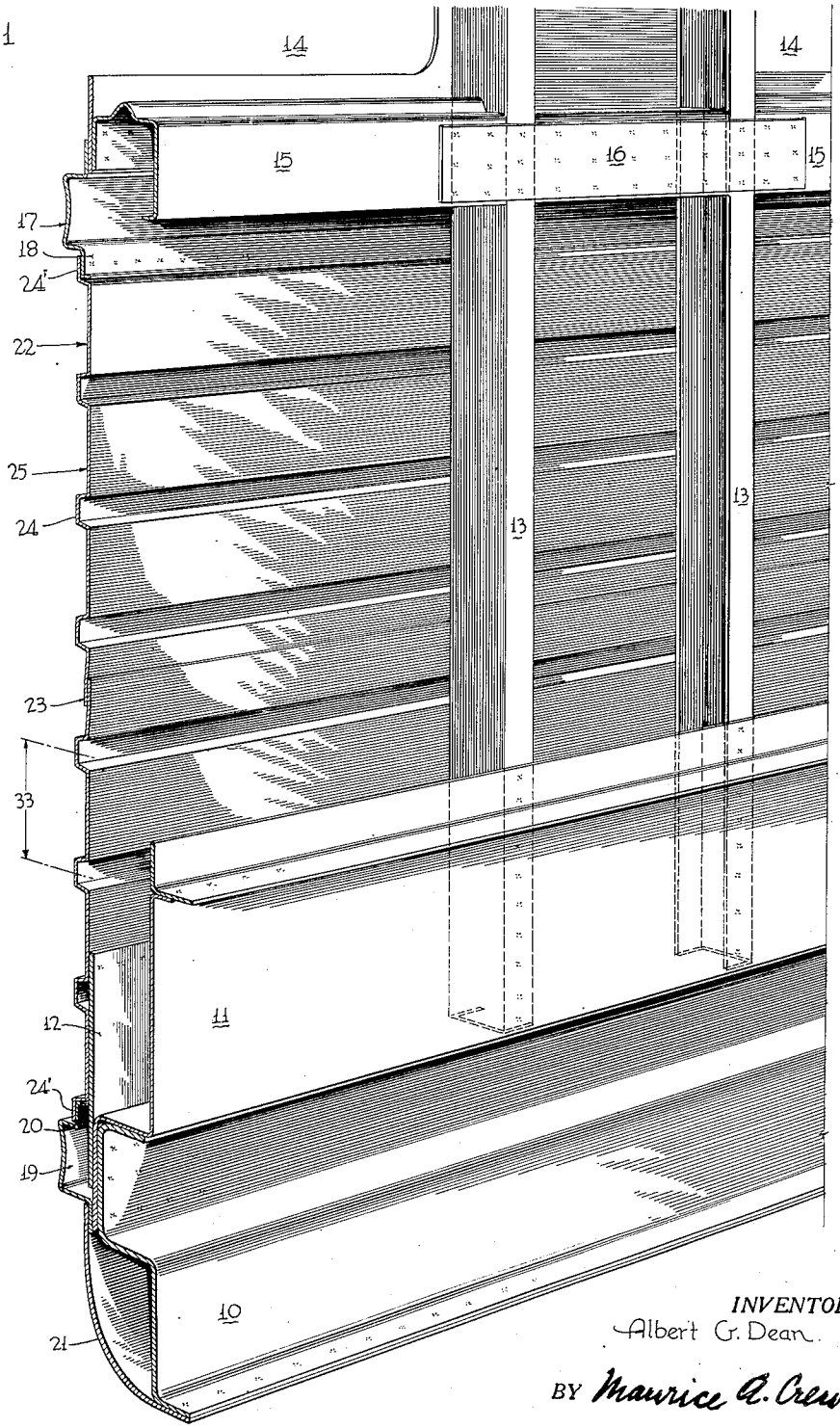
April 15, 1952 A. G. DEAN 2,592,545

COVER PANELS FOR VEHICLES, ESPECIALLY RAILWAY CARS

Filed Oct. 24, 1947 2 SHEETS—SHEET 1

FIG. 1



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FIG. 2

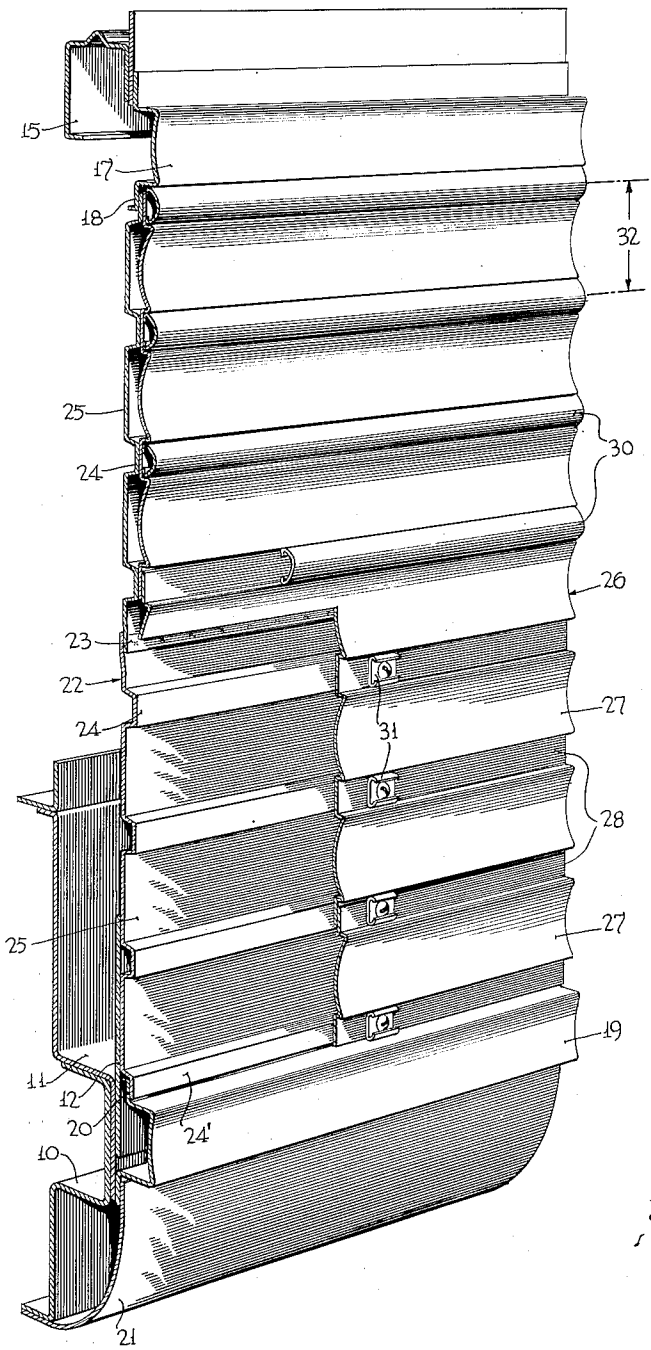
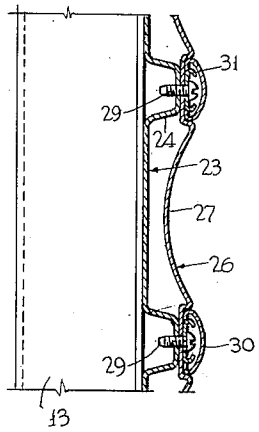


FIG. 3



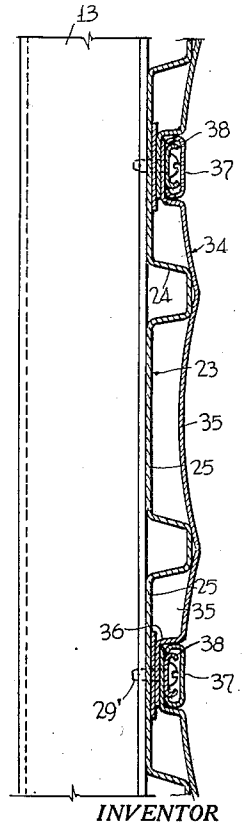


FIG. 4

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COVER PANELS FOR VEHICLES, ESPECIALLY RAILWAY CARS

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7 Claims. (Cl. 105—401)

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The invention relates to bodies of vehicles, especially of railway cars, and more specifically to outer shear panels and cover paneling for the side walls of such bodies.

An object of the invention is to provide a vehicle body having a simple, light-weight construction.

Another object of the invention is to provide an outer shear panel for vehicle body side walls which affords a pleasant appearance even when used without decorative cover paneling.

A still further object of the invention is to provide a shear panel for vehicle body side walls which lends itself to the easy attachment of fluted or other decorative cover paneling and which, when used without cover paneling, gives an appearance very similar to vehicles used with the fluted cover paneling, so that cars with and without the fluted paneling may be run in one train side by side without objectionable differences between their appearances.

With the above objects in view, the invention provides a shear resisting panel or web in the side walls of a railway car or similar vehicle which is structurally connected to vehicle posts and longitudinal chord members. This eliminates the necessity for diagonal struts. The shear panel is provided with outwardly projecting stiffening nodes, for instance in the form of corrugations, the nodes being widely spaced apart leaving substantially flat panel portions between them for the attachment to the posts. The invention also provides fluted paneling as cover for the shear panel, the distance between or the pitch of successive nodes and flutes being equal or a whole multiple the one of the other.

In the system of manufacture envisaged by the invention, there are provided a plurality of railway cars of which each is equipped with the described shear panel and some are provided in addition with the fluted cover paneling, the nodes of the shear panel and the flutes of the cover paneling being arranged so that their outwardly projecting portions line up with each other giving the cars with and without the fluted cover paneling such close similarity of appearance that only a careful observer at close range will note the difference.

The above outlined and other features, objects and advantages of the invention will become more easily understood from the embodiments illustrated in the attached drawing and described hereinafter.

In the drawing:

Figure 1 is a fragmentary perspective, partly

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sectional, inside view of the lower portion of a railway car body;

Figure 2 is a fragmentary perspective outside view, partly in section, showing a shear panel and fluted paneling attached thereto;

Figure 3 is a fragmentary vertical section through the shear panel and the fluted paneling attached thereto on a larger scale than Figures 1 and 2; and

Figure 4 is a fragmentary section similar to Figure 3, showing a second embodiment.

The profiles 10 represent the longitudinal side sills of a railway car underframe. Secured to the sills 10 are the lower marginal sills of the body side walls, which latter sills consist each of a Z-section member 11 and an outer plane sheet metal strip 12. Held between the members 11 and 12 are the lower ends of posts or vertical frame members 13 which are spaced from each other in longitudinal direction. Two of such posts may be arranged between successive window openings 14. Along the lower margins of the window openings the posts of each side wall are interconnected by a chord structure consisting mainly of members 15 and 16 and of an outer molding 17, the latter having a downwardly extending flange 18. A similar molding 19 connected with each of the lower side sills 11, 12 has an upwardly directed flange 20 and the outside of each underframe sill 10 is covered by a convex strip 21.

A shear panel 22 bridges the space between the moldings 17 and 19 and is arranged on the outside of the posts 13 and the sill member 12 of each side wall. This panel may consist of two or more separate sheets overlappingly secured to each other throughout their meeting margins at 23. The shear panels 22 have corrugations or nodes 24 which are relatively narrow and leave wide plane portions 25 between them. It is by these wide plane portions or flats 25 that the shear panels 22 are structurally secured to the outsides of the posts 13 and to the sill members 12.

The marginal nodes 24' serve for the structural connection throughout with the flanges 18 and 20 of the moldings 17 and 19, respectively. This feature now forms the subject matter of the inventor's application Serial No. 57,796, marginal rail for cover strip retaining panels, especially for railway car, filed November 1, 1948, which is a continuation-in-part of the present application.

While the flat portions 25 of the shear panels permit their attachment to the posts 13 and sill members 12 over relatively large areas, the nodes

24 stiffen the shear panels longitudinally, thereby avoiding the necessity of separate reinforcements on the inside of the panels to prevent shear buckling. Besides, the nodes on the outside give the shear panels a pleasing appearance.

Where moderate increase in cost and weight is permissible, the appearance of the vehicle is further enhanced by the attachment of fluted or other decorative panelings 26 to the outside of the shear panels. As shown in Figures 2 and 3, adjacent flutes 27 have between them narrow flat-bottomed grooves 28 which rest against the top of the anodes 24 of the shear panel and are secured to them, for instance by screws 29. The grooves 28 and the screws 29 are covered by molding strips 30 resiliently engaging with their inturned margins clips 31 permanently secured in the grooves 28. The clips 31 are preferably of short length and are distributed over the length of the grooves or channels 28.

Each fluted paneling may consist of a number of separate sheet metal strips which overlap each other in one of the grooves 28 where they are held together and to the shear panel by the aforesaid screws 29.

The pitch 32 of the flutes of the paneling and the distance 33 between successive nodes of the shear panel are equal, and the nodes and flutes are arranged so that the ridges between adjacent flutes register with the nodes. Instead of making the pitch 32 and the spacing 33 equal, either one might be made an integral multiple of the other.

The outer decorative paneling further stiffens the corrugations of the shear web or panel to resist shear. Its attachment at the tops of the nodes provides a cushion support as the nodes may deflect transversely without affecting the function as part of a shear panel. This prevents a concentration of shear deflection from buckling the decorative panel.

Especially from Figure 2 it will be apparent that with the new formation of shear panels and fluted panelings, cars with and without the fluted panelings may be run in one train without giving an objectionable difference in appearance. Indeed, cars with and without the fluted paneling will look practically alike from a relatively short distance, and many observers will not discover any difference at all. On the other hand, at close range, for instance in a station, the difference will be somewhat visible inasmuch as the cars without the fluted paneling have their connections with the underlying structure, which may consist in spot welds, exposed in view, and inasmuch as the shear panel will in most cases have a somewhat coarser finish than the fluted panels, which may be brought to a high polish. Consequently, where the increase in cost and weight is acceptable, the cars will be provided with the fluted panelings. If, however, such increase in weight and cost is objectionable, the fluted panelings may be omitted, and nevertheless such cars may be run together with the cars having fluted panelings without giving such difference in appearance, such as is nowadays often encountered when streamlined stainless steel or aluminum cars are run together with old painted cars.

The embodiment illustrated in Figure 4 differs from the embodiments of Figures 1 to 3 outstandingly in the arrangement of the attachment zones of the fluted paneling 34 to the underlying shear panel. In this case the attachment zones are arranged at the bottom of certain of the flutes

35. In these zones the fluted paneling is again provided with recessed portions or grooves 36 which have their bottoms screwed to the flat portions 25 between successive nodes 24 of the shear panel. The screws 39' are covered by molding strips 37 held in place by clips 38 of similar construction and arrangement to the clips 31 of the first embodiment. It will be noted that in the second embodiment each second fluting only is secured to the underlying shear panel.

It may be found preferable not to make the member 19 structural but to fasten it only by occasional rivets through its lower flange and hold its upper flange through engagement behind panel 23. The reason for this is that the molding 19 frequently gets damaged.

Instead of separate clips for the removable moldings, continuous strips may be employed.

An advantage of the second embodiment is that it requires less transverse width of the car than the first embodiment.

The construction according to the invention may consist wholly or in part of stainless steel, the different elements being preferably overlappingly secured to each other by electric spot welding, except where a removable connection is specified hereinbefore.

The invention is not restricted to the illustrated and described embodiments, but protection is sought for the invention as covered by the spirit and the language of the attached claims.

What is claimed is:

1. In a vehicle body, a side wall having a plurality of vertical frame members spaced from each other in the longitudinal direction of the vehicle, a longitudinally extending panel on the outside of said members provided on its outside with horizontally arranged nodes, said nodes being spaced from each other in vertical direction a distance greater than their individual widths, said panel being secured by its portions between the nodes to said frame members, fluted cover paneling having the pitch of the flutes equal to the distance between the nodes of the panel, said paneling being secured along lines between adjoining flutes to the tops of nodes of said panel.

2. A cover for the outside of a vehicle comprising an inner panel having longitudinally extending nodes which are vertically spaced from each other leaving between them wide substantially plane panel portions adapted for attachment to a supporting framework, a second fluted panel having widths of the flutes equal to the spacing of said nodes, said second panel being secured to the outside of the first panel so that the flutes have their open sides facing away from the inner panel and that said nodes project into raised portions between adjacent flutes of the second panel.

3. A cover for the outside of a vehicle comprising an inner panel having longitudinally extending nodes which are vertically spaced from each other leaving between them wide substantially plane panel portions adapted for attachment to a supporting framework, trim covering provided with longitudinally extending vertically spaced raised portions and having the pitch of the raised portions equal to the spacing of said nodes, said covering being fitted to the outside of the inner panel so that said nodes horizontally align with said raised portions of the outer covering, and said panel and covering being attached to each other along lines midway between successive nodes and raised portions.

4. A railway car having longitudinally extend-

ing shear panels secured to the outsides of its side wall frameworks, said panels having longitudinally extending narrow nodes which are vertically spaced from each other leaving between them wide substantially plane panel portions, said car having fluted outer paneling with the pitch of the flutes equal to the spacing of said nodes, said paneling being secured to the outsides of said panels of the car with the nodes arranged on the same horizontal level as the raised portions between adjacent flutes, so that the flutes of said car provided with the fluted paneling line up with the nodes of cars provided with identical shear panels but free of such paneling thereby giving a nearly uniform appearance when cars of the last-named type are run together with said first-named car.

5. In a vehicle body, a side wall having a plurality of vertical frame members spaced from each other in the longitudinal direction of the vehicle, a longitudinally extending panel on the outside of said members provided on its outside with horizontally arranged nodes, said nodes being spaced from each other in vertical direction a distance greater than their individual widths, said panel being secured by its portions between the nodes to said frame members, and a decorative cover paneling secured to the tops of nodes of said panel.

6. In a vehicle body, a side wall having a plurality of vertical frame members spaced from each other in the longitudinally direction of the vehicle, a longitudinally extending panel on the outside of said members provided on its outside with horizontally arranged nodes, said nodes being spaced from each other in vertical direction a distance greater than their individual widths, said panel being secured by its portions between

the nodes to said frame members, fluted cover paneling having the pitch of the flutes equal to the distance between the nodes of the panel, said paneling being secured along lines between adjacent flutes to the nodes of said panel.

7. A cover for the outside of a vehicle comprising an inner panel having longitudinally extending nodes which are vertically spaced from each other leaving between them wide substantially plane panel portions adapted for attachment to a supporting framework, trim covering provided with longitudinally extending vertically spaced raised portions and having the pitch of the raised portions equal to the spacing of said nodes, said covering being fitted to the outside of the inner panel so that said nodes horizontally align with said raised portions of the outer covering, and said panel and covering being attached to each other along lines paralleling said nodes and raised portions.

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