Oct. 26, 1948. J. S. SWANN 2,452,163

DROP END GATE FOR RAILWAY CARS

Filed Nov. 1, 1944

Fig. 1.

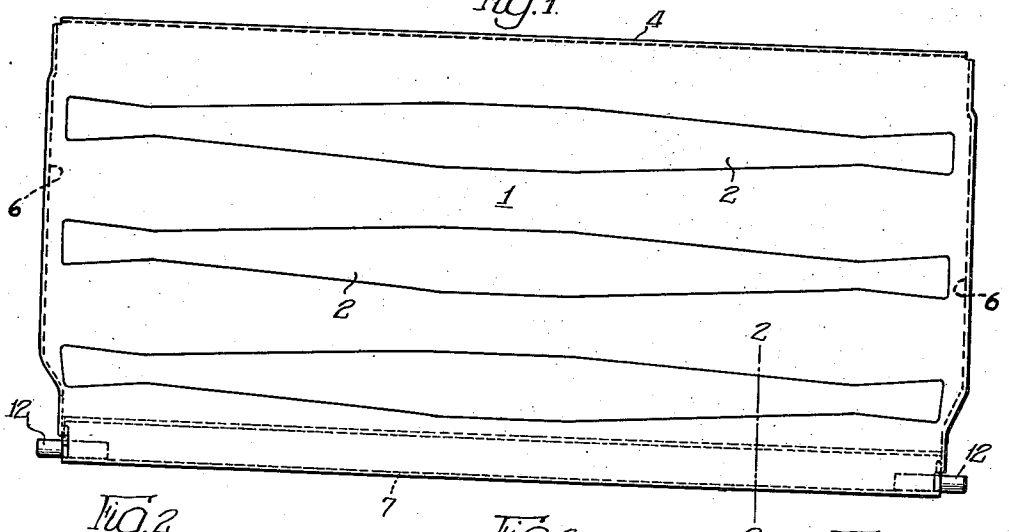


Fig. 2

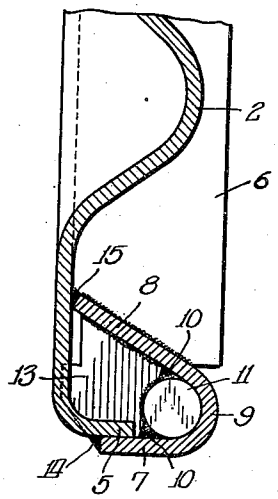


Fig. 3

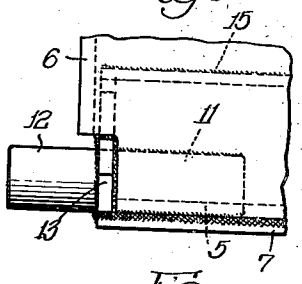


Fig. 4

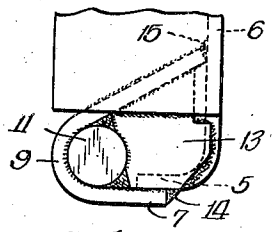


Fig. 5

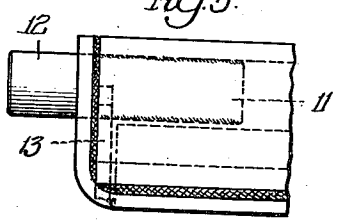


Fig. 6

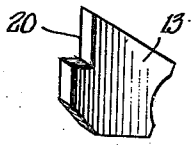
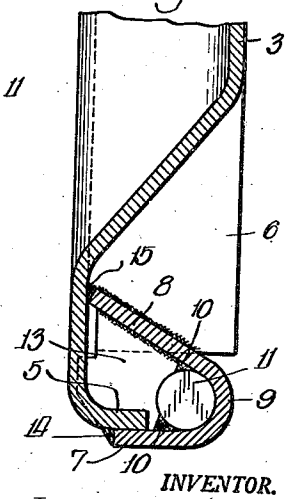


Fig. 7



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DROP ENDGATE FOR RAILWAY CARS

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11 Claims. (Cl. 105—258)

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My invention relates to end gates for railway cars and more particularly to drop end gates for gondola cars or the like, which, when closed, form the end wall of the car, and which may be lowered to a horizontal position to facilitate loading.

An object of the invention is to provide an end gate for a railway car which is constructed of metallic plate having formed therein horizontal corrugations which extend from side to side, or top to bottom, of the gate, and are so formed as to carry any stresses imposed upon the gate to the side framing or flanges thereof.

Another object is to form such a gate with a reinforcing flange about the periphery thereof, and to install within opposite lower corners of said gate a pair of pintles, each having a journal portion extending laterally from the sides of said gate for rotatable mounting within bearings upon the gate frame on the car.

Other objects and advantages of the invention, including those derived from simplicity and economy of manufacture, will be apparent from the following description of one embodiment of the invention.

Referring now to the accompanying drawings forming part of this application and wherein like reference characters indicate like parts:

Fig. 1 is a front elevation of a panel incorporating my invention.

Fig. 2 is an enlarged vertical sectional view on line 2—2 of Fig. 1.

Fig. 3 is a front view of Fig. 2 at one lower outer corner of the panel.

Fig. 4 is a side elevation of Fig. 3.

Fig. 5 is a top plan view of Fig. 3.

Fig. 6 is a perspective view of the filler piece at each end of the stiffener.

Fig. 7 is a view, similar to Fig. 2, but showing the corrugations extending vertically.

The end gate of my invention is illustrated as being applicable to a gondola car, the gate itself comprising a metallic plate 1 having preferably formed therein a plurality of horizontal 2 or vertical 3 corrugations which extend from substantially one side of said sheet to the other and terminate within the plate adjacent said sides.

At the top side of the gate there is formed a flange 4 extending at right angles to the plane of the plate, and the bottom side of the plate is likewise formed with a flange 5, similar to the flange 4. At the vertical ends of the plate are also formed flanges 6, which flanges do not extend to the top flange 4 or bottom flange 5. All flanges extend inwardly of the plane of the sheet and the valleys of said corrugations terminate substantially in the plane of the inner edges of the flanges 6. The flanges about the four sides of the plate form substantial integral frame members therefor, and any loads imposed upon the body of said plate in a direction normal thereto are carried by the corrugations to said frame members. As a consequence of the above described formation of the plate a very strong relatively light-weight end gate structure is provided. It will be noted that the bottom side flange 5 is but about half the width of the vertical end and top flanges and that if left open dirt, water, cinders, or other foreign matter could collect thereon and hasten corrosion. Therefore, I have provided a somewhat channel-shaped bottom reinforcing member which consists of spaced angularly disposed arms or, flanges 7—8 and semi-cylindrical or arcuate web 9. Within the semi-cylindrical or arcuate portion 9 of this reinforcing member I have positioned a relatively short round bar 11 which is welded (10–10) to the arms 7—8, respectively. The bar 11 projects beyond the end flanges 6, forming a pintle or a journal portion 12 for pivotally attaching the gate to a railway car. A filler or closure piece, such as indicated at 13 in Fig. 6, is fitted between the arms or flanges 7 and 8 of the reinforcing member and partially about the bar 11 and to which arms or flanges and bar said filler piece is welded so that the lower outer corners of the gate are closed to the entrance of the elements. The filler member 13 is notched, as at 20 in Figure 6, to clear the radial portion of the end flange 6. The lower arm or flange 7 of said reinforcing member is welded, as at 14, to the bottom flange 5, and the upper arm or flange 8 of the reinforcing member, which slopes upwardly and diverges outwardly from arm or flange 7, is welded, as at 15, to the plate 1 and also welded along its outer edge to the vertical flanges 6. Thus formed the arm or flange 8 presents a downwardly inclined surface to direct moisture and dirt therefrom. It will be noted, too, that the arm 8 extends to the adjacent corrugation and is secured to said plate between the flange 5 and corrugation so that the adjacent side of the bottom corrugation and said arm 8 cooperate to form, in effect, another corrugation and thereby materially strengthens the bottom of the gate. Furthermore, the semi-cylindrical or arcuate web 9 of the stiffening member forms an ideal corner surface upon which the gate may roll when same is lowered; as, for example, when the car is to be loaded. Also by securing the arm 8 of the stiffener to the plate 1 adjacent the bottom corrugation it is apparent that said stiffener and said corrugation

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cooperate to form a connection between the side and end flanges and thereby also reinforce the panel or gate.

In the assembling of the end gate structure, the bottom reinforcing member comprising arms 7—8, journal bar 11 and closure piece 13 are welded together, as indicated, and then this structure is welded in place, as at 14 and 15, on the bottom of the end gate, and also the arm 8 is welded to the vertical flanges 6, as shown in Figures 2, 4, 5 and 7.

Throughout the specification and claims, wherever the terms "top," "bottom," "side," "horizontal" or "vertical" are used, they are understood to apply to the invention when the drop end gate is in upright position.

The accompanying drawings illustrate the preferred form of the invention, though it is to be understood that the invention is not limited to the exact details of construction shown and described, as it is obvious that various modifications thereof, within the scope of the claims, will occur to persons skilled in the art.

I claim:

1. A sheet metal panel adapted to form a load retaining means of a railway car comprising a metallic sheet having a main portion provided with an inwardly projecting side flange, a channel-shaped stiffener having one flange thereof secured to said side flange and the other flange thereof secured to the inside of said sheet in spaced relation to said side flange to form a hollow reinforcing member, the web of said stiffener being arcuate, a pintle secured within the arcuate web of said stiffener and extending laterally therebeyond to form a journal to pivotally attach said panel on a railway car, and means for closing the ends of said member around said pintle.

2. A sheet metal panel adapted to form a load retaining means of a railway car comprising a metallic sheet having a main portion provided with a side flange and an end flange, a corrugation spaced inwardly from side flange extending parallel therewith and merging into said main portion adjacent said end flange, and a channel-shaped stiffener having one flange thereof secured to said side flange and the other flange thereof secured to said main portion adjacent said corrugation, the last mentioned flange of said stiffener being also secured to said end flange to form a connection between said side and end flanges, and a pintle secured to said stiffener between the flanges thereof and extending between and beyond the side and end flanges of the panel to form a journal to pivotally attach said panel on a railway car.

3. A sheet metal panel adapted to form a load retaining means of a railway car comprising a metallic plate having a main portion provided with a side flange, end flanges, and a corrugation spaced inwardly from said side flange and parallel thereto, a channel-shaped stiffener having one arm thereof secured to said side flange and the other arm thereof secured to said main portion adjacent said corrugation and said other arm extending to and secured to said end flanges so that the corrugation and the stiffener cooperate to resist forces imposed upon the panel in a direction normal to the panel, and a pintle secured to each end of the stiffener and extending laterally therebeyond to form journals to pivotally attach said panel to a railway car.

4. A drop end gate for a railway gondola car comprising a metallic plate formed with vertical marginal flanges and a corrugation and a bottom reinforcing member having acute angularly disposed arms, one of said arms being horizontally disposed and secured to said plate adjacent the lower part thereof and the other of said arms being upwardly inclined to form a watershed and secured to said plate adjacent said corrugation so that the corrugation and the reinforcing member cooperate to resist forces normal to the general plane of the end gate, said inclined arm extending between and secured to said vertical flanges, and a pintle adjacent each vertical flange and positioned in the vertex of the arms of the reinforcing member and secured to said arms, each pintle extending beyond the adjacent vertical flange for pivotal attachment of the gate to a railway car.

5. A drop end gate for a railway gondola car comprising a metallic plate formed with a bottom horizontal flange and vertical marginal flanges and a horizontally disposed corrugation merging into said plate adjacent the vertical flanges and a bottom reinforcing member having acute angularly disposed arms, one of said arms being horizontally disposed and secured to said horizontally disposed flange and the other of said arms being upwardly inclined to form a watershed and secured to said plate adjacent said corrugation so that the corrugation and the reinforcing member cooperate to resist forces normal to the general plane of the end gate, said inclined arm extending between and secured to said vertical flanges, and a pintle adjacent each vertical flange and positioned in the vertex of the arms of the reinforcing member and secured to said arms, each pintle extending beyond the adjacent vertical flange for pivotal attachment of the gate to a railway car.

6. A drop end gate for a railway gondola car comprising a metallic plate formed with a bottom horizontal flange and vertical marginal flanges terminating short of the horizontal flange and a horizontally disposed corrugation merging into said plate adjacent the vertical flanges and a bottom reinforcing member having acute angularly disposed arms, one of said arms being horizontally disposed and secured to said horizontally disposed flange and the other of said arms being upwardly inclined to form a watershed and secured to said plate adjacent said corrugation so that the corrugation and the reinforcing member cooperate to resist forces normal to the general plane of the end gate, said inclined arm extending between and secured to said vertical flanges, a closing piece closing the space between the arms of the reinforcing member and between the horizontal flange and each vertical flange, and a pintle adjacent each vertical flange and positioned in the vertex of the arms of the reinforcing member and secured to said arms, each pintle extending beyond the adjacent vertical flange for pivotal attachment of the gate to a railway car, said pintle being secured to said closing piece to hold said pintle as a pivot.

7. A drop end gate for a railway gondola car comprising a metallic plate formed with vertical marginal flanges and a horizontally disposed corrugation merging into said plate adjacent the vertical flanges and a bottom reinforcing member having acute angularly disposed arms which are secured to said plate to form a hollow member, one of said arms being upwardly inclined to form a watershed and secured to said plate adjacent said corrugation so that the corrugation and the reinforcing member cooperate to resist forces

normal to the general plane of the end gate, said hollow member extending between and secured to said vertical flanges, and a pintle adjacent each vertical flange and positioned in the vertex of the arms of the reinforcing member and secured to said arms, each pintle extending beyond the adjacent vertical flange for pivotal attachment of the gate to a railway car.

8. A structure as set forth in claim 2 including a closure piece securing the side flange of the panel to the end flange thereof and also closing the space between the flanges of the stiffener at the end of the stiffener.

9. A sheet metal panel adapted to form a load retaining means of a railway car comprising a metallic plate having a main portion provided with a side flange and a corrugation spaced inwardly from said side flange and parallel thereto, a channel-shaped stiffener having one arm thereof secured to said side flange and the other arm thereof secured to said main portion adjacent said corrugation so that said corrugation and the stiffener cooperate to resist forces imposed upon the panel in a direction normal to the panel, the web of said channel-shaped stiffener having an arcuate portion, and a pintle positioned within said arcuate portion, secured thereto, and extending laterally therebeyond to form a journal to pivotally attach said panel to a railway car.

10. A metallic panel adapted to form a load retaining means of a railway car comprising a metallic plate having a main portion provided with an inwardly projecting side flange, inwardly projecting end flanges, and a corrugation adjacent said side flange and parallel thereto, a channel-shaped stiffener having one arm thereof secured to said side flange and the other arm thereof secured to said plate in spaced relation to said side flange and extending between and secured to said end flanges so that said corrugation and

stiffener cooperate to resist forces imposed upon said panel in a direction normal to said panel, and a pintle secured to each end of the stiffener and extending laterally therebeyond to form journals to pivotally attach said panel to a railway car.

11. A metallic panel adapted to form a load retaining means of a railway car comprising a metallic plate having a main portion provided with an inwardly projecting side flange and inwardly projecting end flanges, a channel-shaped stiffener having one arm thereof secured to said side flange and the other arm thereof secured to said plate in spaced relation to said side flange and extending between and secured to said end flanges to form a hollow reinforcing member to resist forces imposed upon said panel in a direction normal to said panel, and a pintle secured to each end of the stiffener and extending laterally therebeyond to form journals to pivotally attach said panel to a railway car.

JAMES S. SWANN.

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