

No. 685,452.

Patented Oct. 29, 1901.

G. I. KING.
HIGH SIDE GONDOLA CAR.
(Application filed Aug. 10, 1901.)

(No Model.)

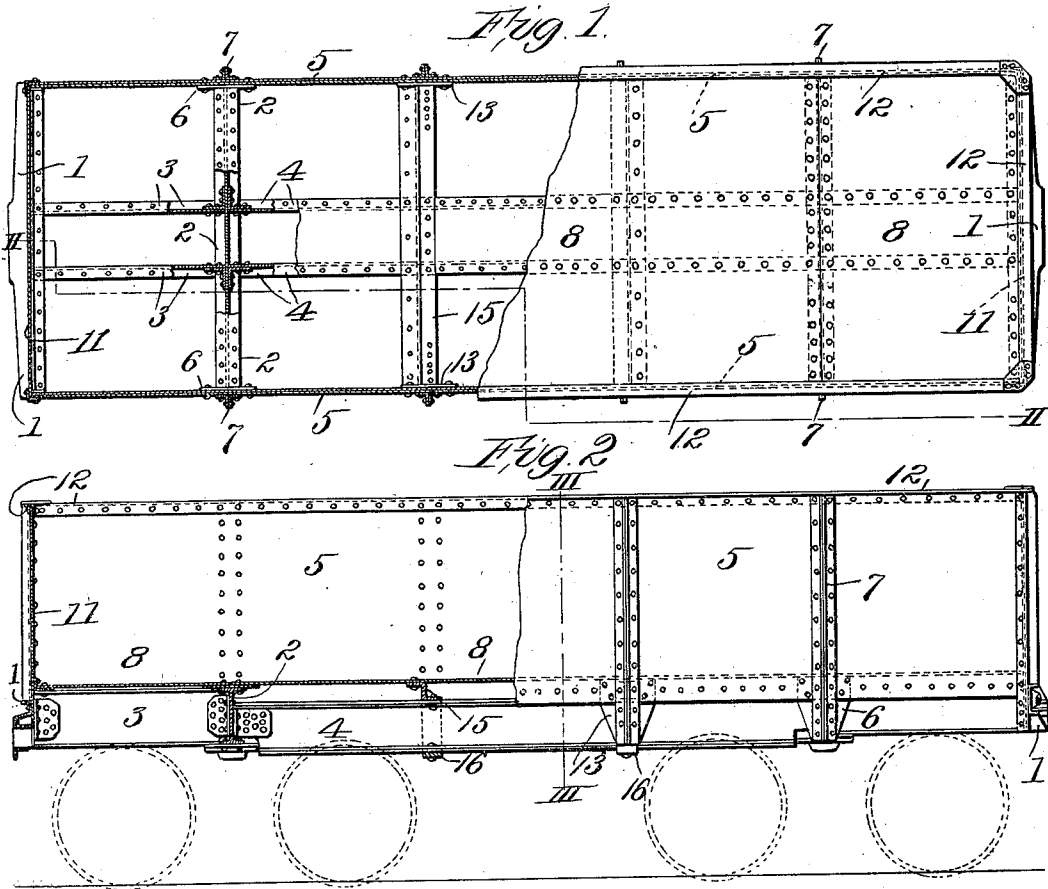


Fig. 3.

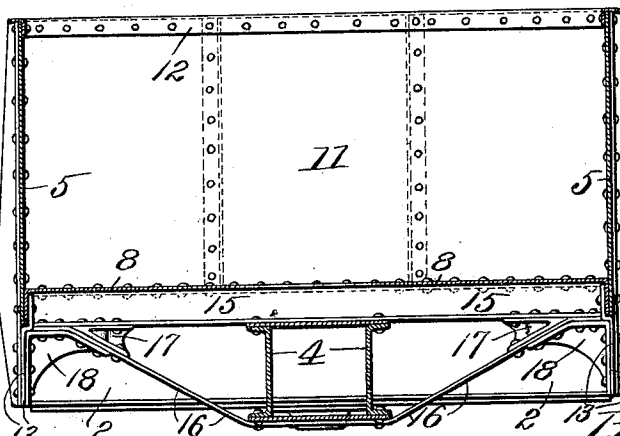


Fig. 4.

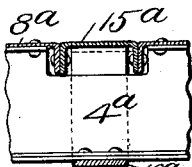
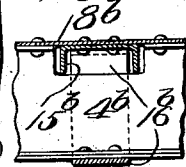


Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE I. KING, OF DETROIT, MICHIGAN, ASSIGNOR TO AMERICAN CAR AND FOUNDRY COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF NEW JERSEY.

HIGH-SIDE GONDOLA CAR.

SPECIFICATION forming part of Letters Patent No. 685,452, dated October 29, 1901.

Application filed August 10, 1901. Serial No. 71,550. (No model.)

To all whom it may concern:

Be it known that I, GEORGE I. KING, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in High-Side Gondola Cars; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification, in which—

Figure 1 is a top plan view of my improved car, part of the flooring being removed at one end to show the floor-frame underneath. Fig. 2 is a side elevational view, partly in section. Fig. 3 is an enlarged cross-sectional view on the line III III, Fig. 2. Fig. 4 is a modified form wherein the center sill is cut away in order that the web of the compression member of the truss may be flush with the flooring, the floor-sheets being flanged down and riveted to the depending flanges of the compression member; and Fig. 5 is a view of another modification, in which the floor-sheets are riveted to the web of the compression member.

This invention relates to a new and useful improvement in that type of cars known as "gondola," particularly high-side gondola cars, although it is obvious that many of the details shown in the accompanying drawings and hereinafter described may be employed in other types of cars.

The object of my present invention is to construct a car of rolled or pressed metal and to so arrange and combine the parts as to obtain the greatest strength with a comparatively small dead-weight of material used.

Another object is to simplify the construction of cars of the type mentioned, rendering the parts thereof easy of assemblage and repair.

The underlying principle of my present invention is to utilize the side walls with their associate flanges as plate-girders, whereby said side walls carry a portion of the load. Center sills are employed to take the buffing

and pulling stresses; but these center sills are not, as usual, relied upon as the main supports for the car-body. Heretofore gondola cars have been constructed where the side walls and their associate flanges acted as plate-girders to carry a portion of the load. These side girders intermediate the bolsters also carried the cross-beams which supported the floor of the car between the bolsters and also the center sills which rested thereon. My present construction contemplates the utilization of the side walls and their associate flanges as plate-girders, said plate-girder side walls supporting the center sills at points intermediate the bolsters through the medium of transversely-arranged trusses. By this construction I avoid the greater depth necessary in a structure such as above referred to and which contemplated the use of a transversely-arranged beam extending between the walls under the center sills. Thus I obtain a better side clearance—say for a height of from two to three feet above the rails—as the angle arranged on the outer faces of the side walls in the transverse planes of the trusses do not extend so far below the lower edges of the side walls of the car. It will be noted that by reason of the substitution of the trusses for the suspended beams and in addition to the advantages above enumerated a considerable saving in dead-weight of these parts is effected.

With these objects in view the invention consists in the construction, arrangement, and combination of the several parts, all as will hereinafter be described and afterward pointed out in the claims.

In the drawings, 1 indicates end sills, which may be of any ordinary or approved construction, I having shown a channel.

2 indicates the body-bolsters, which are preferably I-shaped, said body-bolsters being continuous from side to side of the car.

3 indicates the draft-sills, which are attached through suitable connection-plates to the end sills and body-bolsters.

4 indicates the center sills, which are preferably in the form of channels with their flanges presented outwardly, said center sills extending from bolster to bolster, to which

bolsters they are attached. These center sills are preferably provided with a top cover-plate and a bottom cover-plate, or lattice-bars may be provided, if required.

5 5 indicates the side walls of the car, which preferably extend throughout the length of the car, said side walls being attached to the ends of the bolsters through the medium of suitable connection-plates. As the side
10 walls do not extend to the bottom flanges of the bolsters, I prefer to employ connection-plates 6.

7 indicates posts arranged exteriorly the side walls in the transverse planes of the bolsters, said posts extending down to the lower
15 edges of the connection-plates 6 and being composed, preferably, of angles arranged back to back. The laterally - extending legs of these angles are preferably sheared, as shown,
20 in order to taper the ends of the posts. Thus the posts are made sufficiently strong to resist lateral bulging tendencies in the side walls of the car where loose loads are carried.

8 indicates the floor-sheets, which are flanged
25 down at their side edges and riveted to the lower edges of the side walls. These flanged floor-sheets serve as tension-flanges for the plate-girder side walls; but it is obvious that an angle may be riveted to the side walls, to
30 which the floor-sheets could be riveted, said angle also serving as a side sill, in which capacity it could help take care of the buffing and pulling stresses.

11 indicates the end sheets, which are se-
35 cured at their lower edges in some suitable manner to the end sills.

12 indicates angles attached to the upper
40 edges of the end and side sheets of the car, the horizontal legs of said angles preferably extending outwardly.

13 indicates connection-plates depending
45 from the lower edges of the side walls at points intermediate the bolsters, there being preferably two of these plates on opposite sides of the car in the transverse planes of the trusses.

15 indicates one member of a truss, which preferably extends from side to side of the car, said member passing over the center sill,
50 while the other member 16 preferably passes from side to side of the car and under the center sill. Member 15 is the compression member, preferably in the form of a Z-bar, whose top flange supports the floor-sheets, which are attached thereto, while the bottom
55 flange is attached to the center sill. Member 16 is the tension member, preferably in the form of a flat plate, bent as an arch-bar. The ends of these members are connected to-
60 gether, the tension member being bent to have a good bearing under the ends of the compression member, while castings 17 are interposed between and secured to the diverging portions of said members near their
65 junction. Castings 18 are also arranged under the junction of the members and for some little distance along the inclined portions of

the tension members for the purpose of making good connections at the ends of the truss. These castings 18 are riveted to the connec-
70 tion-plates 13, as shown.

It is obvious that the compression member of the truss above described serves as a floor-
75 beam and that it need not be continuous. It may be interrupted and so arranged as to have its top flange flush with the top flanges of the center sills, in which event the floor-
sheet would be riveted to said flanges and serve as a cover-plate for the center sill.

In the above construction the center sill
8c would not be cut away. As shown in Fig. 4, however, the center sill 4^a may be cut away in order that the compression member 15^a may be received therein, so that its web will be flush with the floor-sheets, said floor-sheets
85 (indicated at 8^a) being flanged down and riveted to the depending flanges of the compression member. In this construction it will be noticed that the floor-sheets serve as cover-
90 plates for the center sill, and by being flanged across the car and attached to the compression member said compression member is greatly strengthened and a structure in the
95 nature of a reinforced floor-beam or floor-support is produced. 16^a indicates the tension member. In Fig. 5 the center sill 4^b is likewise cut away for the compression member 15^b, the floor-sheet 8^b being riveted to the
100 flanges of the center sill and to the web of the compression member. 16^b indicates the tension member.

In both Figs. 4 and 5 instead of employing
105 a Z-shaped compression member to serve as a floor-beam I use a channel, the legs thereof being presented downwardly.

It will also be obvious that the tension mem-
110 ber need not be continuous, but made in two parts, having their inner ends widened and riveted to each side and at the lower edges of the center sills.

The accompanying drawings illustrate a car
115 where there are two truss-frames, as above described, arranged intermediate the bolsters, these truss-frames serving to support the center sills at these points. In the transverse
120 planes of these truss-frames exteriorly the side walls are arranged stiffening braces or posts 19, preferably composed of angles arranged back to back, the outwardly-extending legs of which are tapered toward the up-
per and lower ends thereof.

I am aware that many minor changes in the
125 construction, arrangement, and combination of the several parts of my improved car can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

Having thus described my invention, what
130 I claim, and desire to secure by Letters Patent, is—

1. In a car, the combination with body-bolsters, of a center sill, side walls which act as plate-girders, and trusses supported by said

side walls for carrying the center sill intermediate the bolsters, the compression members of said trusses acting as floor-beams, substantially as described.

5 2. In a car, the combination with body-bolsters, of a center sill extending between and secured to said bolsters, draft-sills attached to the bolsters, side walls attached to the ends of the bolsters and supported thereby, said
10 side walls acting as plate-girders, and transversely-arranged trusses for supporting the center sill from the side walls at points intermediate the bolsters, the compression members of said trusses acting as floor-beams, substantially as described.

15 3. In a car, the combination with body-bolsters continuous from side to side of the car, of a center sill extending from bolster to bolster and secured thereto, side walls attached
20 to the ends of the bolsters and provided with compression-flanges at their upper edges and tension-flanges at their lower edges, whereby said side walls and their associate flanges act as plate-girders, and trusses carried thereby
25 for supporting the center sill between the bolsters, the compression members of said trusses acting as floor-beams, substantially as described.

30 4. In a car, the combination with body-bolsters, of a center sill, side walls which serve as webs of a plate-girder structure, and a trussed structure carried by the side walls for supporting the center sill at a point intermediate the bolsters, said trussed structure
35 comprising a compression member secured to the lower edges of the plate-girders and to the upper edges of the center sill, said compression member also having the floor-sheet attached thereto throughout its length, and a
40 tension member secured to the lower edges of the plate-girders and the lower edges of the center sill, substantially as described.

45 5. In a car, the combination with the side walls in the form of plate-girders, of floor-sheets flanged at their side edges and attached to the lower edges of the side walls, bolsters, a center sill, and a truss for supporting the

center sill intermediate the bolsters, said truss being composed of a Z-shaped compression member to which the floor-sheet is attached, 50 and an inverted-arch tension member, substantially as described.

6. In a car, the combination with side walls in the form of plate-girders, of a center sill, a truss for supporting the center sill from the
55 plate-girders, the compression member of said truss acting as a floor-beam, and posts arranged exteriorly the plate-girders and in the transverse plane of the truss, substantially as described. 60

7. In a car, the combination with body-bolsters, of a center sill, side walls which act as plate-girders, and trusses supported by said
65 side walls for carrying the center sill intermediate the bolsters, the compression members of said trusses forming part of the floor of the car, substantially as described.

8. In a car, the combination with body-bolsters, of a center sill, side walls which act as
70 plate-girders, and trusses supported by said side walls for carrying the center sill intermediate the bolsters, the compression members of said trusses being in the form of channels and having the floor-sheets riveted to the depending legs thereof, substantially as
75 described.

9. In a car, the combination with body-bolsters, of a center sill, side walls which act as
80 plate-girders, and trusses supported by said side walls for carrying the center sill intermediate the bolsters, the compression members of said trusses being in the form of channels with their legs presented downwardly, said channels being seated in openings or recesses formed in the upper edge of the center
85 sill, the floor of the car being riveted to said channels, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE I. KING.

Witnesses:

A. PANCOAST,
F. R. CORNWALL.