No. 685,451. Patented Oct. 29, 1901.

G. I. KING.

HIGH SIDE GONDOLA CAR.

(Application filed Aug. 10, 1901.)

(No Model.)

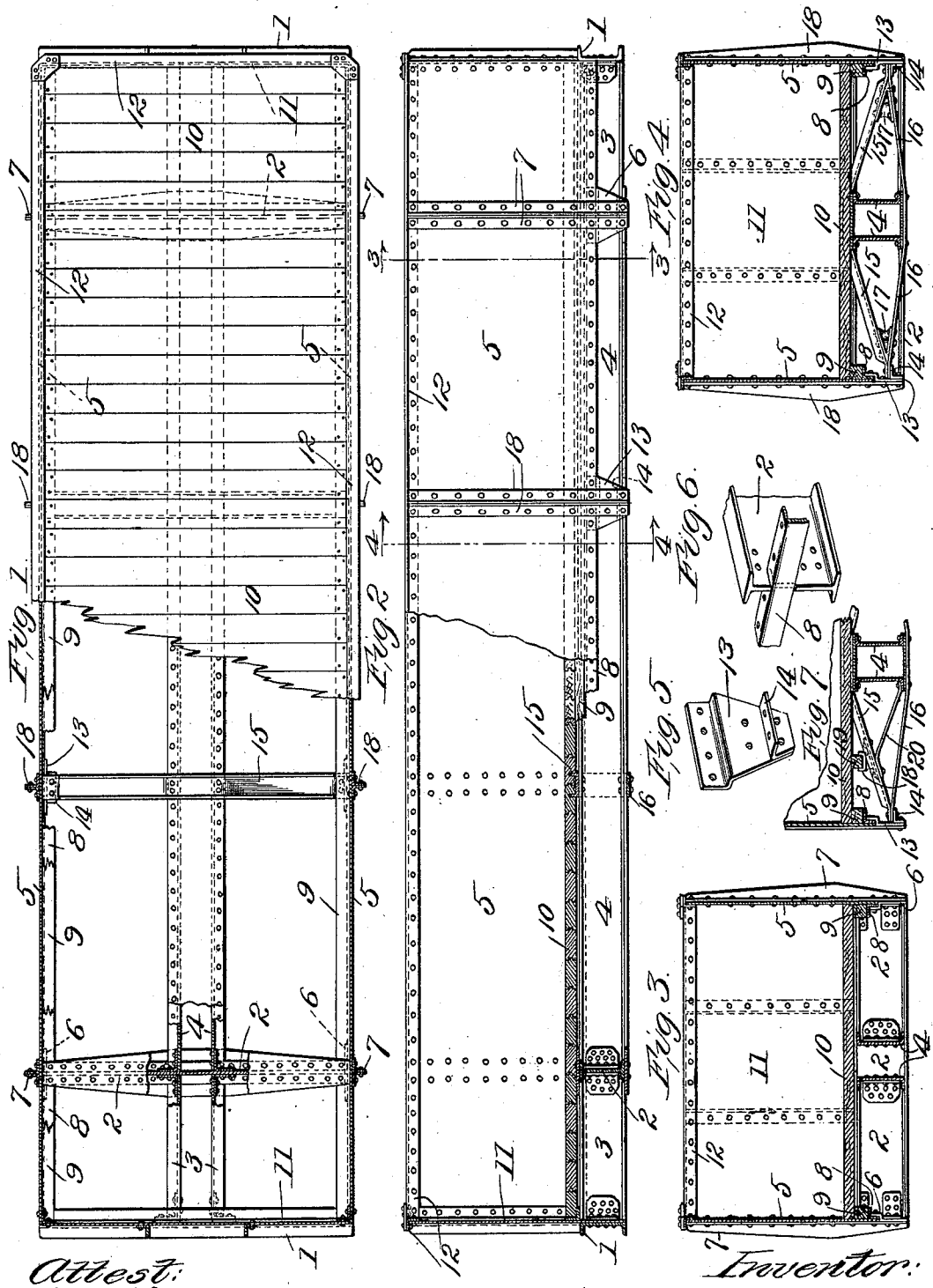


Fig. 1.

Fig. 2.

Fig. 4.

Fig. 6.

Fig. 5.

Fig. 7.

Fig. 3.

Attest:
Jno. H. Holt
Ralph Kalish

Inventor:
George I. King,
by Bakewell & Cornwall
Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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. 685,451, dated October 29, 1901.

Application filed August 10, 1901. Serial No. 71,549. (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.

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 a sectional view on line 3 3, Fig. 2. Fig. 4 is a sectional view on line 4 4, Fig. 2. Fig. 5 is a detail view of one of the depending side connection-plates. Fig. 6 is a detail view showing one end of the bolster-beam. Fig. 7 is a detail view of a modified form of truss-frame for supporting the intermediate sills.

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 thereupon. My present construction contemplates the utilization of the side walls and their associate flanges as plate-girders, said plate-girder 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 angles 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 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 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 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, 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 an angle whose vertical leg is riveted to the lower inner edge of the side wall, and where a wooden floor is used, as shown in the accompanying drawings, the inwardly-extending horizontal leg of this angle is below the plane of the top flanges of the bolsters, and the angle may be interrupted at the bolsters, or said angle may be continuous, the web of the bolster being cut away to receive the horizontal leg thereof, as shown in Fig. 6. A wooden nailing-strip 9 is suitably secured in position above this angle, the top of this nailing-strip being preferably flush with the top flanges of the bolsters, so as to provide an appropriate support for the floor-boards 10.

11 indicates the end sheets, which are secured at their lower edges in some suitable manner to the end sills.

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

13 indicates a connection-plate depending from the lower edge of the side wall at a point between the bolsters, said connection-plate being preferably provided with an angle 14, arranged upon the lower inner edge thereof. (See Fig. 5.)

15 indicates one member of a truss, which preferably extends from side to side of the car, said member passing over the center sill, while the other member 16 of the truss preferably passes from side to side of the car and under the center sill. In the present instance the member 15 is the compression member in the form of a channel, shown with its flanges presented upwardly, the ends thereof being riveted to the angles 14, while the middle portion is secured to the truss and is preferably in the form of a flat plate riveted to the angles 14 and to the under side of the center sill. In order to make a good end connection between the members of the truss, I arrange castings 17 and rivet members thereto, as shown. Instead of having the compression member in the form of a channel with its flanges presented upwardly it is obvious that said flanges may be presented downwardly and that said compression member may have a different section from that described; also, that said compression member need not be continuous from side to side of the car, but may be secured under the top flanges of the center sills, and that the tension member 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 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 planes of these truss-frames exteriorly the side walls are arranged stiffening braces or posts 18, preferably composed of angles arranged back to back, the outwardly-extending legs of which are tapered toward the upper and lower ends thereof.

While I have shown and described a car having a wooden flooring, it is obvious that metallic floor-sheets may be employed, in which event the side angles which support the nailing-strip will be elevated so as to be flush with the top flanges of the bolsters. It will be noticed that the side walls are provided with compression-flanges along their upper edges and that the angles along the lower edges thereof serve as tension-flanges. These last-mentioned angles also serve as side sills in that they are capable of transmitting a portion of the buffing and pulling stresses.

In Fig. 7 I have shown a modified form of truss-frame in which a saddle 18 is secured in the compression member 15, said saddle affording a seat for an intermediate sill 19. A compression member 20 is riveted to the bottom flange of the center sill and to the compression member 15 under the saddle 18. This construction forms what might be termed a "compound truss," the member 20 being placed in compression when the load is applied through the intermediate sill.

I am aware that many minor changes in the 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 I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a car, the combination with body-bolsters, of center sills, side walls, which serve as plate-girders, and trusses supported by said side walls for carrying the center sill intermediate the bolsters; substantially as described.

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 side walls serving as plate-girders, and transversely-arranged trusses for supporting the center sill from the side walls at points intermediate the bolsters; substantially as described.

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 to the ends of the bolsters and provided with compression-flanges at their upper edges and tension-flanges at the lower edges, whereby said side walls and their associate flanges act as plate-girders, and trusses carried thereby for supporting the center sill between the bolsters; substantially as described.

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 comprising a compression member secured to the lower edges of the plate-girders and to the upper edges of the center sill and a tension member secured to the lower edges of the plate-girders and the lower edges of the center sill; substantially as described.

5. In a car, the combination with body-bolsters, of a center sill, side walls in the form of plate-girders whose tension-flanges serve as side sills, and a truss carried by the plate-girders, the point of attachment between said truss and plate-girders being below the tension-flanges, said truss being connected to the center sill for supporting same at a point between the bolsters; substantially as described.

6. In a car, the combination with body-bolsters, center sill, draft-sills and side walls in the form of plate-girders, the tension-flanges of said plate-girders serving as side sills and also as supports for the flooring of the car, and a plurality of trusses carried by the plate-girders for supporting the center sill at points intermediate the body-bolsters; substantially as described.

7. In a car, the combination with side walls in the form of plate-girders, of body-bolsters, connection-plates depending from the side walls at points intermediate the body-bolsters, arched compression members of trusses, which are secured at their ends to connection-plates in the same transverse plane, tension members, also secured at their ends to connection-plates in the same transverse plane, and a center sill attached to the body-bolsters, for spacing the tension and compression members at their centers; substantially as described.

8. In a car, the combination with side walls in the form of plate-girders, of a center sill, and a transversely-arranged truss for supporting the center sill from the plate-girder side walls, said truss being composed of compression and tension members, and castings arranged between said tension and compression members at or near their ends; substantially as described.

9. 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 plate-girders, and posts arranged exteriorly the plate-girders and in the transverse planes of said truss; substantially as described.

10. In a car, the combination with body-bolsters, of center sill, side walls which serve as plate-girders, and trusses supported by said side walls for carrying the center sill and intermediate sills at points between the bolsters; substantially as described.

11. In a car, the combination with body-bolsters of plate-girder side walls, transversely-arranged trussed frame carried by the side walls, intermediate body-bolsters for supporting the center sill and saddles on said trusses for supporting the intermediate sills; substantially as described.

12. In a car, the combination with body-bolsters, of a center sill, side walls in the form of a plate-girder, intermediate sills, and a compound-trussed frame supported by the plate-girder side walls and lying in a transverse plane, said trussed frame supporting the center and intermediate sills; substantially as described.

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

GEORGE I. KING.

Witnesses:
ALBERT PANCOAST,
F. R. CORNWALL.