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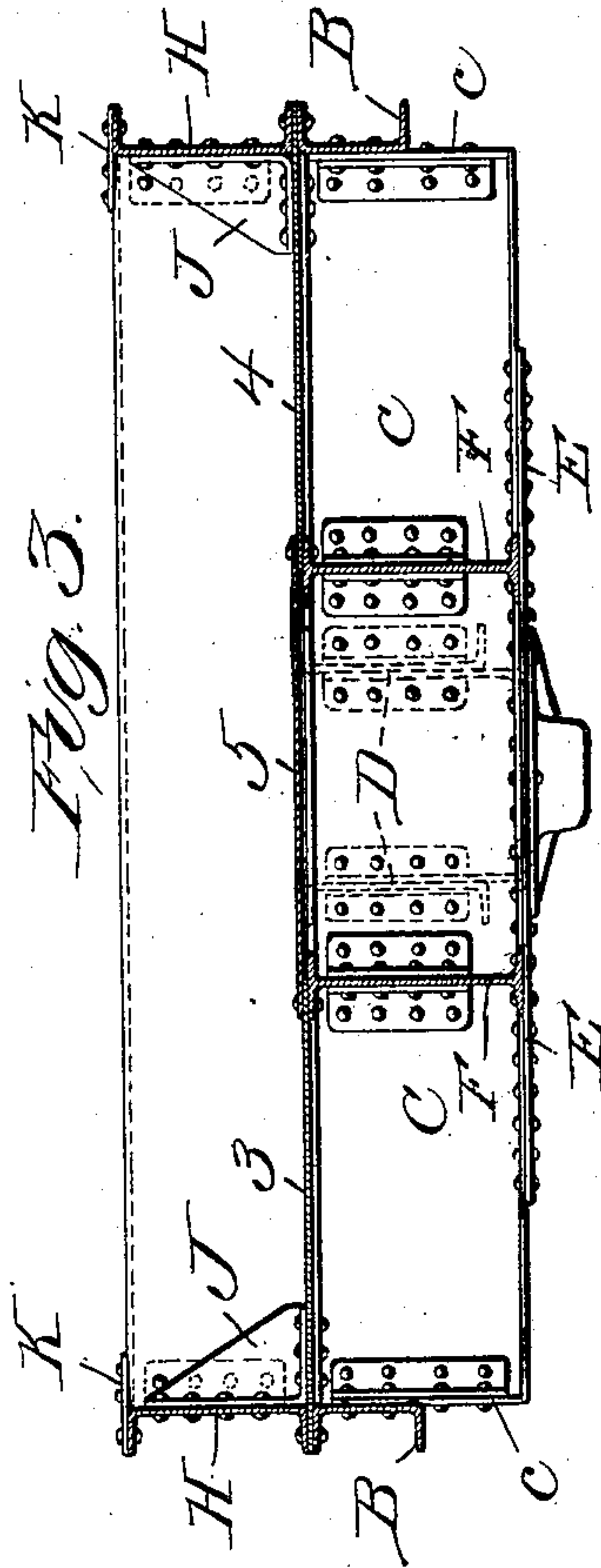
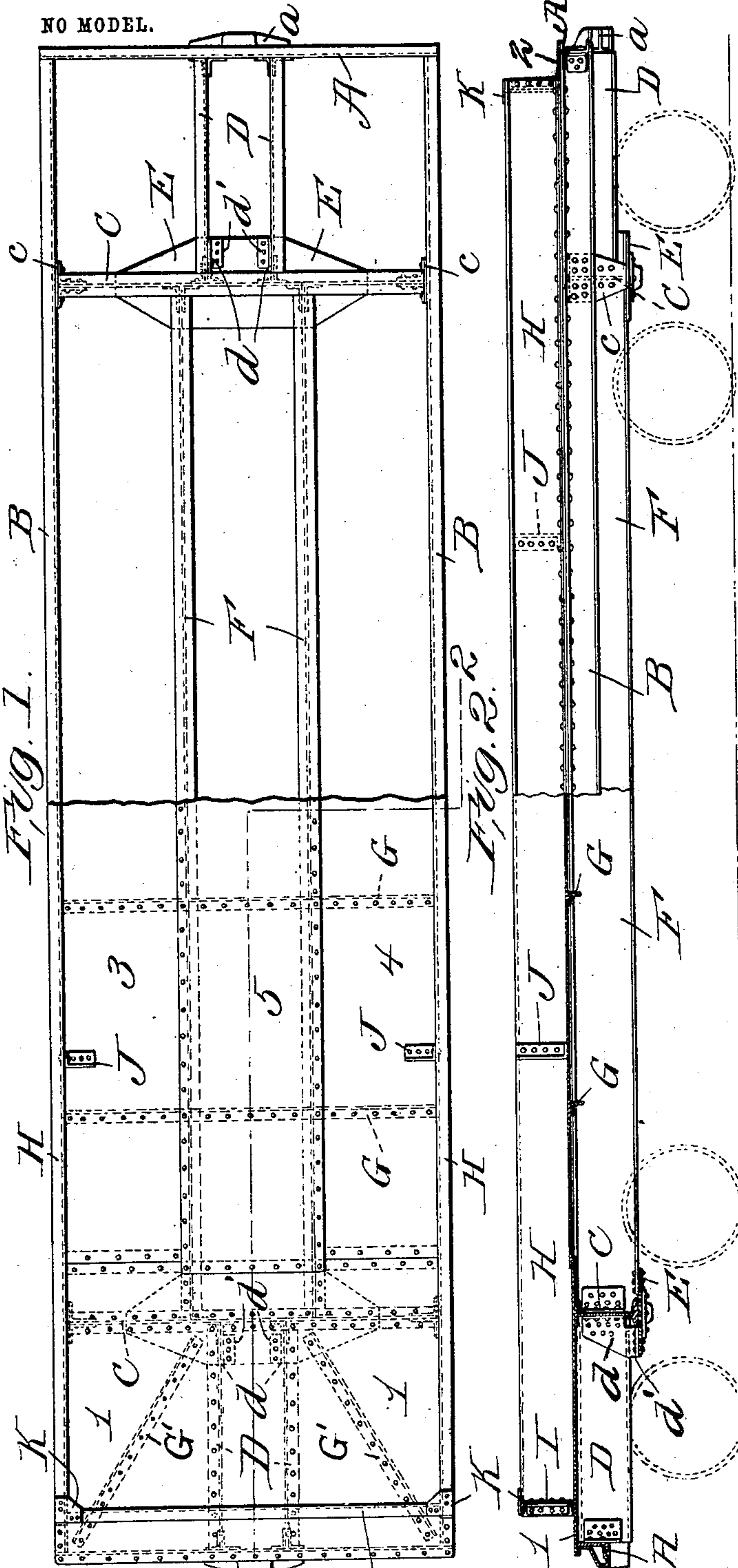
PATENTED MAY 19, 1903.

G. I. KING.
CAR CONSTRUCTION.

APPLICATION FILED APR. 8, 1901.

NO MODEL.

2 SHEETS—SHEET 1.



Attest
Wm. H. Ford.
H. L. Amer.

Inventor:
George I. King,
by Batewell Cornwall
Attys

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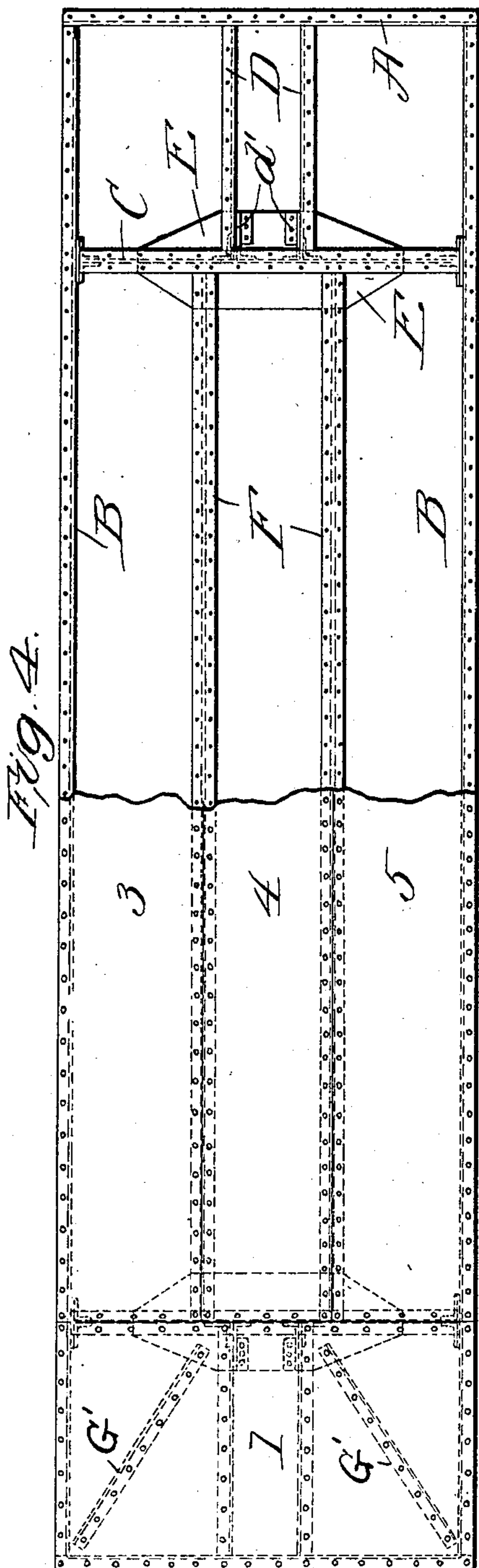
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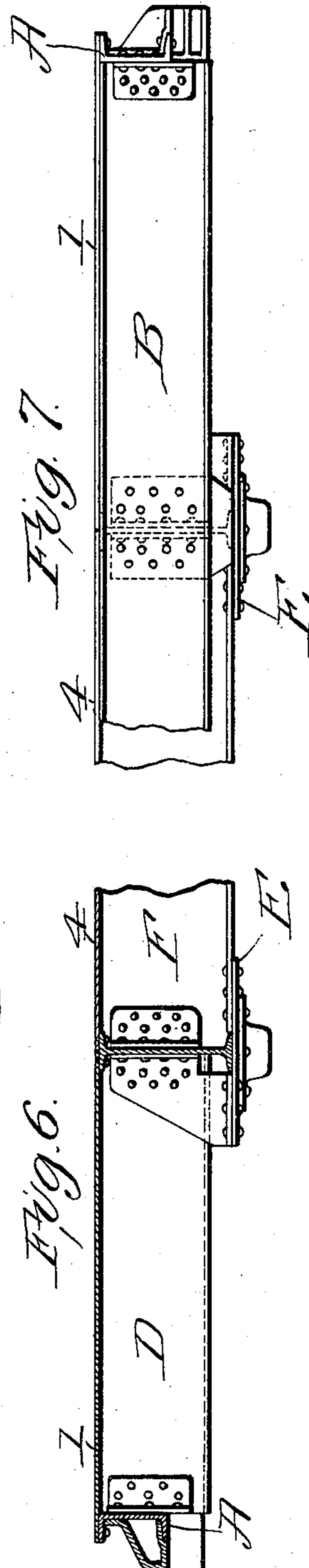
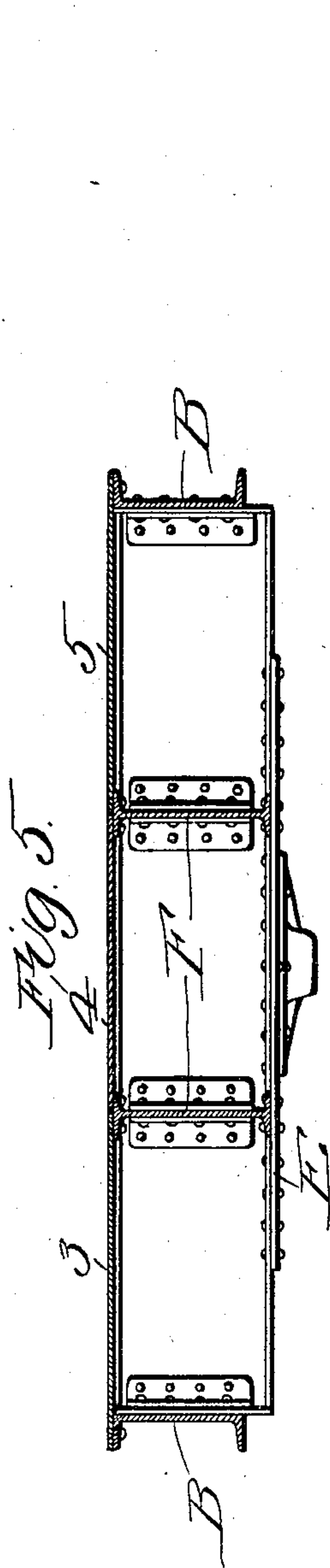
APPLICATION FILED APR. 8, 1901.

NO MODEL.

2 SHEETS—SHEET 2.



Attest:
George Bakewell
George Bakewell



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

UNITED STATES PATENT OFFICE.

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

CAR CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 728,800, dated May 19, 1903.

Application filed April 8, 1901. Serial No. 54,856. (No model.)

To all whom it may concern:

Be it known that I, GEORGE I. KING, a citizen of the United States, residing at the city of Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Car Construction, of which the following is a full, clear, and exact description, 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, forming part of this specification, in which—

Figure 1 is a top plan view of my improved car, part of the floor being removed to show the underframing. Fig. 2 is a side elevational view, partly in section, the plane of the section being on line 2 2, Fig. 1. Fig. 3 is an enlarged cross-sectional view. Fig. 4 is a top plan view of a modified form, part of the flooring being removed to show the underframing. Fig. 5 is a cross-sectional view through the same. Fig. 6 is a longitudinal sectional view through one end of the car, and Fig. 7 is a side elevational view of one end of the car.

This invention relates to a new and useful improvement in car construction, designed particularly for use in connection with the type of car known as "low-side gondola," though it is obvious that features of the invention may be used in connection with other types of cars.

The object of the present invention is to simplify the construction of railway rolling-stock, the material entering into the device being, preferably, structural steel, the car as an entirety being comparatively light and extremely rigid, capable of carrying heavy loads and withstanding shocks and jars, to which devices of this character are subject.

With this object 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, A indicates the end sills, which are preferably channels with their flanges presented outwardly.

B indicates the side sills, which extend from end sill to end sill and are attached

thereto by suitable angle connection-plates. These side sills are preferably in the form of channels and have their flanges presented outwardly. The side and end sills are preferably of the same depth.

c indicates connection-plates riveted to the inner faces of the side sills and projecting below the said side sills.

C indicates the bolster-beams, which are preferably I-shaped in section, said beams being continuous from side sill to side sill and attached to the side sills and the connection-plates c by the use of angle connection-plates and appropriate rivets.

D indicates draft-sills which extend between the bolster-beams and the end sills. These draft-sills are deeper than the end sills, but not as deep as the bolster-beams. The end sills carry castings a, which extend therebelow and to which the draft-sills are connected by the employment of angle connection-plates and rivets, the upper faces of the end, side, and draft sills and the bolster-beams being substantially on the same horizontal plane. The draft-sills are arranged a sufficient distance apart to accommodate the draft-rigging, the coupler-shank passing through an opening in the depending portion of the casting a. Connection-plates d are employed to attach the inner ends of the draft-sills to the bolster-beams, as shown in Fig. 2, said connection-plates extending below the draft-sills, so as to be flush with the bottom flanges of the bolsters. Of course these connection-plates are notched to accommodate the bottom flanges of the bolsters and, as shown in Fig. 2, have their lower edges flanged, as at d', to receive rivets by which said connection-plates are attached to the bottom cover-plates of the bolsters.

E indicates the bottom cover-plates of the bolsters, which are riveted to the lower flanges of the connection-plates d and to the bottom flanges of the bolster-beams and also to the bottom flanges of the center sills. These bottom cover-plates are preferably polygonal in shape, as shown in Fig. 1.

F indicates the center sills, which are preferably I-shaped in section, said center sills preferably being of a depth coincident with

the depth of the body-bolsters, to which they are attached by suitable corner connection-plates, as shown in Fig. 3. These center sills extend from bolster to bolster and are spaced more widely apart than are the draft-sills, the object of said wide spacing being to divide the floor-space between the bolsters into panels of approximately equal area. By so widely spacing the center sills the necessity for intermediate longitudinal sills is dispensed with, the load between the bolsters being carried by the side and center sills. The bolsters are equipped with the usual center and side bearings, the latter not being shown in the drawings.

The floor of my improved car is preferably composed of sheets of steel, though it is obvious that the underframing above described can be used in connection with a wooden floor. The floor shown in the accompanying drawings consists of end sheets 1 and 2, which are riveted to the top flanges of the end, side, and draft sills and the top flanges of the body-bolsters, said sheets terminating a short distance within the body-bolsters, and side floor-sheets 3 and 4, which are riveted at their outer edges to the top flanges of the side sills and at their inner edges to the top flanges of the center sills. The ends of these side floor-sheets, as well as a portion of the inner edges of the end sheets, are riveted to cover-strips preferably arranged under the floor-sheets, said strips being indicated by dotted lines in Fig. 1, a butt-joint being thus formed, and 5 indicates the center floor-sheet, which is riveted to the inner edges of the side floor-sheets and the top flanges of the center sills, the ends of said center floor-sheet being riveted to the middle portions of the end floor-sheets. Angles G may be employed at intervals to support the side and center floor-sheets, as shown in Figs. 1 and 2.

G' indicates diagonally-arranged braces, preferably in the form of angles, which are riveted to the under side of the end floor-sheet 1, said braces extending from the junction of the side and end sills inward toward the junction of the draft-sills and bolster.

H indicates channels arranged above the side sills, said channels forming the side walls of the car. These channels have their bottom flanges riveted to the top flanges of the side sills, the side and end floor-sheets being interposed therebetween, as shown in Fig. 3. I prefer to cut the channels H short at the end of the car, so as to leave a foot-space, as shown in Figs. 1 and 2.

The end walls of the car are in the form of channels, (indicated at I,) which are secured to the side-wall channels by suitable corner connection-plates. Gusset-plates J may be used to brace the side channels, as shown. Corner connection-plates K may be riveted to the top flanges of the end and side walls.

From the above it will be seen that the structure is simple, the floor-frame having ample strength to sustain the weight of the

car and its contained load. Repairs may be readily and easily made, and in the event of damage to the draft-sills these can be quickly replaced, as they extend only from end sill to bolster. The channel side walls, in connection with the side sills, serve substantially as plate-girders, the side floor-sheets assisting to increase the available section thereof. The manner in which these parts are assembled permits the general use of a machine-riveter, which materially reduces the cost of construction. The continuous body-bolster in the form of a commercially-rolled I-beam is extremely simple and efficient. Being in one piece, it is strong, the cover-plates being used more as connection-plates to tie the floor-frame together than as bolster cover-plates in the sense that such cover-plates are most usually employed. It will also be observed that the sheet-steel floor being supported between the bolsters by two evenly-spaced center sills no additional main-floor supports are required. The cost of construction is thus cheapened and the dead-weight reduced. Moreover, the continuous attachment of the side and center floor-sheets to the top flanges of the side and center sills obviates the necessity for using diagonal members between the bolsters. The end sheets of the floor serve as the top cover-plates for the bolsters, tying the underframing, and in order to strengthen this plate against buckling, as when a push-pole is used, diagonally-arranged angles L may be riveted to the under face of this end floor-sheet, as shown in Fig. 1.

In Figs. 4, 5, 6, and 7 I have shown my improved floor-frame having deeper side sills than are shown in the sheet of drawings just above described. By making the side sills deeper, as shown in Fig. 5, the strength of the floor-frame is increased, enabling the channels H to be dispensed with, thus producing the type known as the "flat-car." In this construction the floor-sheets are similarly arranged, as heretofore described, with the exception that rivets are preferably countersunk, and instead of using a single row of rivets to secure the plates 3, 4, and 5 to the center sills, the center plate overlapping the inner edges of the side plates, butt-joints are provided, the rivets passing through the flanges at the top of the I-shaped center sills and the I-shaped bolster-beams. My improvement is thus well adapted for use as a flat-car, and by using countersunk rivets in the floor-sheets a smooth floor results.

I am aware that minor changes in the arrangement, construction, and combination of the several parts 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, and desire to secure by Letters Patent, is—

1. The combination with underframing composed of metallic members, of a floor com-

prising end sheets, side sheets, and a center sheet, substantially as described.

2. The combination with an underframing comprising end, side, draft and center sills and bolster members, of end floor-sheets continuous from side sill to side sill, said floor-sheets projecting inwardly beyond the bolster members, side sheets extending from side to center sills, and a center sheet bridging the space between the center sills, all of said floor-sheets being riveted to the underframing, substantially as described.

3. The combination with end, side and draft sills, of body-bolsters, widely-spaced center sills, end floor-sheets projecting inwardly beyond the body-bolsters, said floor-sheets being continuous from side sill to side sill, side floor-sheets extending from side to center sill and abutting against the end floor-sheets, and a center floor-sheet covering the space between the center sills, all of said floor-sheets being riveted to the underframing, substantially as described.

4. The combination with flanged end sills, flanged side sills, flanged draft-sills, flanged body-bolsters, and flanged center sills, of a floor-sheet riveted to the top flanges of all of said parts and serving as a top cover-plate therefor, substantially as described.

5. The combination with flanged end, side, draft and center sills, of a flanged body-bolster continuous from side sill to side sill, an end floor-sheet riveted to the top flanges of said parts, and diagonally-arranged angles G' riveted to the under side of said floor-sheet, substantially as described.

6. The combination with the flanged walls H and I, of the flanged side sill members, and the floor-sheets 1, 2, 3, and 4 arranged between the flanges of said walls and said sill members, substantially as described.

7. The combination with flanged side sill members, of body-bolsters, widely-spaced center sills attached to said body-bolsters, channels H and I, and the floor-sheets 1, 2, 3, 4, and 5, substantially as described.

8. The combination with channel side sills, of I-shaped bolsters continuous from side sill to side sill, I-shaped center sills attached to the bolsters, channel side and end walls, end floor-sheets 1 and 2, side floor-sheets 3 and 4 arranged between the channels H and the side sills and serving as continuous flanges for said channels H, the inner edges of said sheets 3 and 4 terminating over the center sills, a center floor-sheet 5 riveted to the sheets 3 and 4 and to the top flanges of the center sills, and gussets riveted to the channels H and the sheets 3 and 4, substantially as described.

9. The combination with end sills, of side sills attached thereto, continuous body-bolsters in the form of single I-beam members attached to the side sills, draft-sills extending between the end sills and the body-bolsters, and center sills extending from bolster to bolster, said draft and center sills being attached to the end sills and bolsters, respec-

tively, all of said parts being made of commercially-rolled metal; substantially as described.

10. The combination with end sills, of side sills attached thereto, bolster-beams in the form of single members I-shaped in section continuous from side sill to side sill, draft-sills attached to the end sills and bolster-beam, and center sills spaced more widely apart than are the draft-sills, said center sills being attached to the bolster-beams, substantially as described.

11. The combination with end sills in the form of channels, of channel side sills attached thereto, I-beam bolsters continuous from side sill to side sill, draft-sills attached to the end sills and bolster-beams, and I-shaped center sills continuous from bolster to bolster; substantially as described.

12. In a metallic car, the combination with a draft-beam extending from the end of the car and ending at the bolster, a horizontal plate contacting with said beam and secured thereto, said plate serving both to communicate the stress to the sides of the car and as a portion of the load-carrying floor of the car, and diagonally-arranged braces riveted to the under face of said floor; substantially as described.

13. In a metallic car, the combination with an end sill, side sills, a continuous bolster-beam and draft-sills, of a floor-sheet attached to said parts, said sheet serving as a cover-plate communicating stresses to the sides of the car, and diagonally-arranged angles riveted to said floor; substantially as described.

14. In a metallic car, the combination with an end sill, a bolster and draft-sills, of floor-sheets riveted to said parts, said floor-sheet serving as a cover-plate in addition to a portion of the floor of the car, and diagonally-arranged angle-braces riveted thereto; substantially as described.

15. In a metallic car, the combination with an end sill, side sills attached thereto, bolsters continuous from side sill to side sill, draft-sills extending from the end sills to the bolster, center sills continuous from bolster to bolster, and floor-sheets riveted to said parts; substantially as described.

16. In a metallic car, the combination with a draft-beam extending from one end of the car and ending at the bolster, a horizontal plate contacting with said beam and secured thereto, said plate serving both to communicate the stress to the sides of the car and as a portion of the load-carrying floor of the car, and diagonally-arranged angle-braces riveted to the under side of said plate; substantially as described.

17. In a metallic car, the combination with a draft-beam extending from one end of the car and ending at the bolster, of a horizontal plate contacting with said beam and secured thereto, said plate serving both to communicate the stress to the sides of the car and as a portion of the load-carrying floor of the car,

and diagonally-arranged angle-braces riveted to the under side of said plate, said braces extending from the end sills to said bolster; substantially as described.

18. In a metallic car, the combination with a draft-beam extending from one end of the car and ending at the bolster, of a horizontal plate contacting with said beam and secured thereto, said plate serving both to communicate the stress to the sides of the car and as a portion of the load-carrying floor, of the car, and diagonally-arranged angle-braces riveted to the under side of said plate, said angles extending from the junction of the end and side sills inwardly toward the junction of said plate with the bolster; substantially as described.

19. In a metallic car, the combination with an end sill, side sills, a continuous bolster-beam and draft-sills, of a floor-sheet attached to said parts, said sheet serving as a cover-plate communicating stresses to the sides of the car, and diagonally-arranged angles riveted to said floor and extending from the junction of the end and side sills to the junction of the draft-sills and bolster; substantially as described.

20. The combination with shallow end and side sills, of connection-plates carried by the

side sills and which extend therebelow, deep bolster-beams riveted to said connection-plates and extending continuously from side sill to side sill, draft-sills extending between the end sills and bolster-beams and attached to said parts, center sills of a depth coincident with the depth of the bolster-beams extending from bolster to bolster and attached thereto, and bottom cover-plates which are riveted to the flanges of the bolster-beams and the flanges of the center sills; substantially as described.

21. The combination with flanged continuous bolster-beams, of flanged center sills extending from bolster to bolster and attached thereto, bottom cover-plates riveted to the bottom flanges of said bolsters and said sills, shallow draft-sills, and connection-plates for attaching said draft-sills to the bolster-beams, said connection-plates extending below the draft-sills and being riveted to the bottom cover-plates; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 27th day of March, 1901.

GEORGE I. KING.

Witnesses:

GEORGE BAKEWELL,
ANNA S. GRAY.