

No. 664,646.

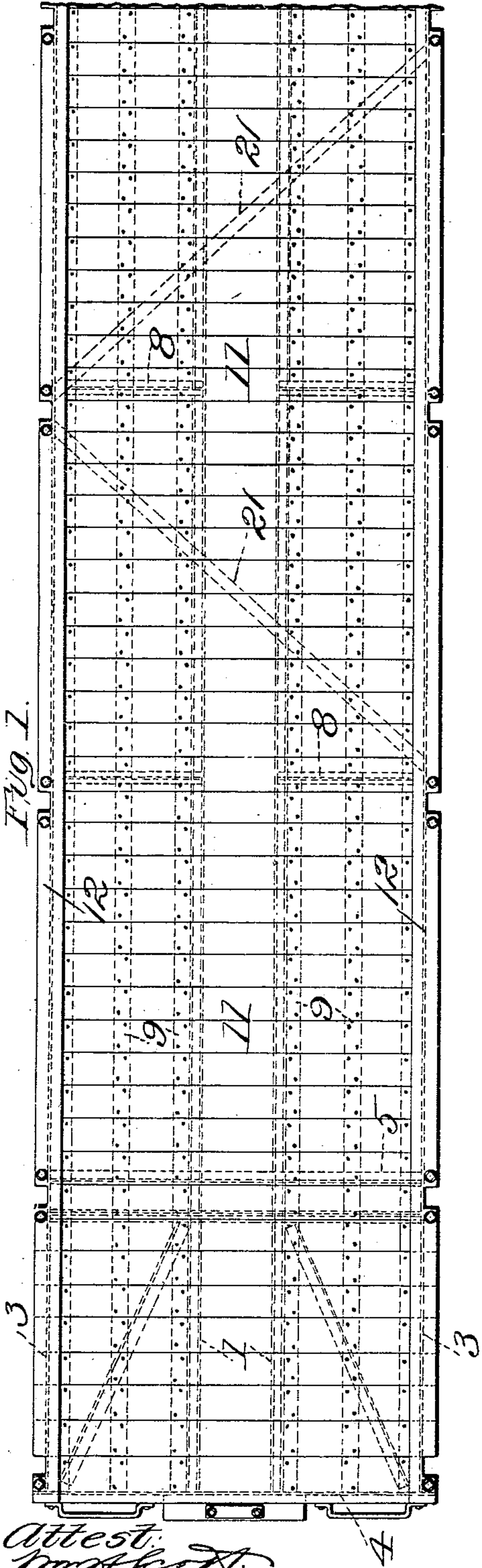
Patented Dec. 25, 1900.

G. I. KING.
FLAT CAR.

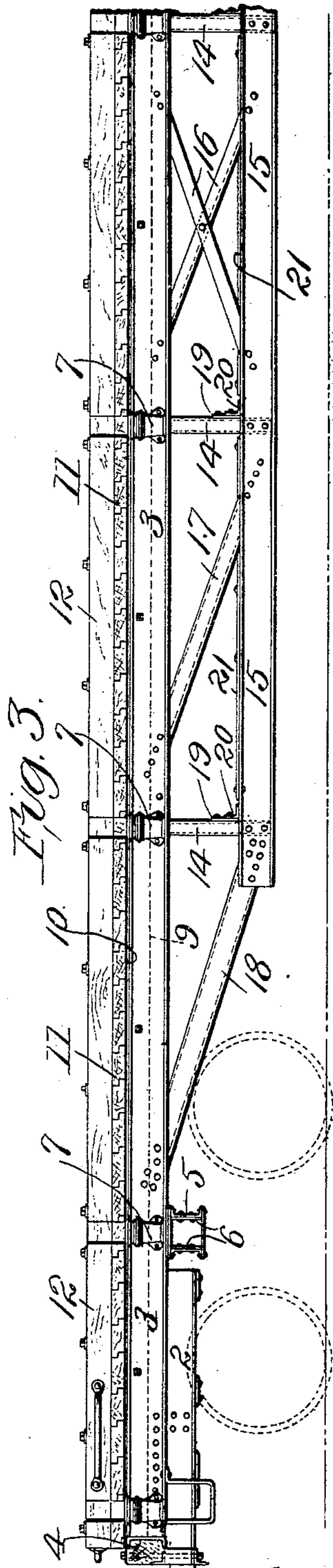
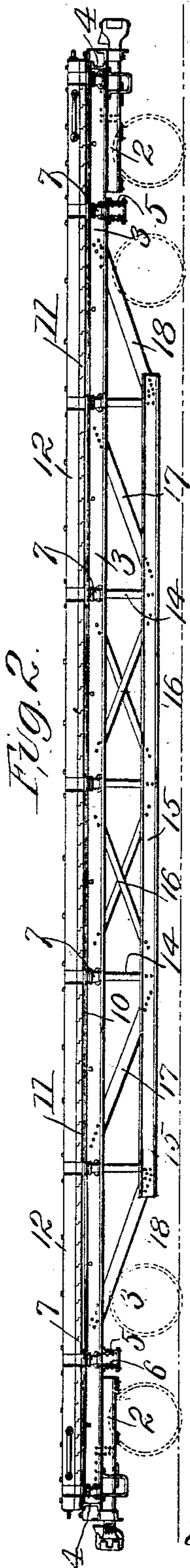
(Application filed Sept. 4, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Attest:
Wm. H. Ford
George Bakewell



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

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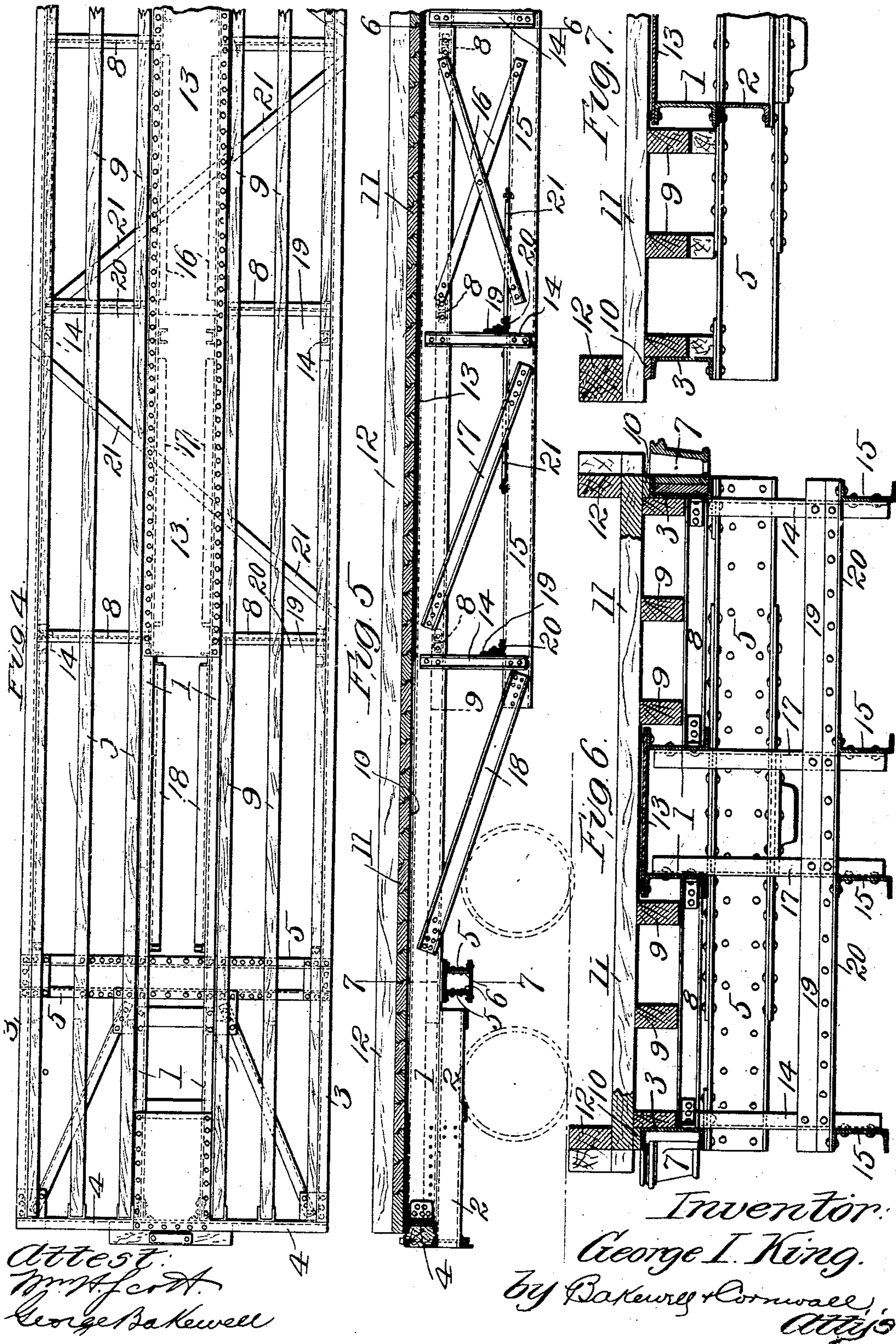
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UNITED STATES PATENT OFFICE.

GEORGE I. KING, OF DETROIT, MICHIGAN, ASSIGNOR TO THE AMERICAN CAR AND FOUNDRY COMPANY, OF ST. LOUIS, MISSOURI.

FLAT-CAR.

SPECIFICATION forming part of Letters Patent No. 664,646, dated December 25, 1900.

Application filed September 4, 1900. Serial No. 28,903. (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, in the State of Michigan, have invented a certain new and useful Improvement in Flat-Cars, 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 one end of my improved flat-car. Fig. 2 is a side elevational view of the car in its entirety. Fig. 3 is an enlarged side elevational view of one end of the car. Fig. 4 is a top plan view of one end of the car, the flooring being removed to more clearly show the under framing. Fig. 5 is a vertical longitudinal section through one end of the car. Fig. 6 is an enlarged vertical cross-sectional view on line 6 6, Fig. 5; and Fig. 7 is a similar view on line 7 7, Fig. 5.

This invention relates to a new and useful improvement in that type of cars designated as "flat-cars"—that is, cars wherein the load rests upon the floor and there are practically no side walls for containing the load.

The object of my present invention is to construct a car of the character described for the purpose of carrying tanks, the car shown in the accompanying drawings being designed to have a total length of about sixty-three feet, the distance between the centers of the trucks being about fifty feet. A car of this size having a capacity of about sixty thousand to eighty thousand pounds it is desirable that the structure be amply strong to carry the loads intended, as well as being sufficiently light, so that the dead-weight or the weight of the parts entering into the construction of the car will be about one-third the weight of the load designed to be carried by the car.

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

In the drawings, 1 indicates the center sills, which are preferably in the form of channels with their flanges presented outwardly.

2 indicates the draft-sills, which are secured

to the under sides of the center sill-channels at their ends.

3 indicates the side sills, which are preferably in the form of channels with their flanges presented outwardly, and 4 indicates end-sills of usual or well-known construction, to which the center and side sills are connected. The end sill shown in the accompanying drawings is of particular construction for use in this particular car; but I do not claim the details of the same in this application, and therefore deem it unnecessary to describe said details.

5 indicates the body-bolsters, which preferably consist of top and bottom cover-plates with interposed members in the form of oppositely-arranged channels, the webs of said channels being reinforced by plates 6. These body-bolsters carry the usual center and side bearings and extend throughout the width of the car.

7 indicates stake-pockets which may be carried by the side sills for well-understood purposes.

8 indicates transversely-disposed floor-beams which are preferably I-shaped in cross-section and are secured to the center and side sills by suitable connection angles, as is well understood. These floor-beams are so arranged as to divide the framing of the car into a series of panels, there being preferably six of such panels between the body-bolsters of the car, each of said panels being about the same length. These floor-beams, in addition to tying the side and end sills, support intermediate sills 9, preferably made of wood, the height of said sills extending above the plane of the tops of the side and center sills, as shown in Fig. 6.

A nailing-strip 10 is arranged above the side sills, to which and to the wooden sills 9 floor-boards 11 are secured. If desired, a rail 12 may be arranged along each side of the floor.

13 indicates a cover-plate which is riveted to the center sills for tying said center sills together in the middle of the car.

Approximately in the transverse planes of the floor-beams 8, which define the panels of the car, I arrange vertical posts 14, which are

riveted to the webs of the side and center
 sills at their upper ends and at their lower
 ends to channels 15. In the two middle ver-
 tical panels are arranged X-shaped frames 16,
 5 forming crossed diagonals, while in the ad-
 jacent panels are arranged diagonals 17, the
 ends of the beams 15 having diagonals 18
 riveted thereto, said diagonals being riveted
 to the center and side sills adjacent the
 10 points of support—to wit, the body-bolsters.
 The construction above described is dupli-
 cated under the side and center sills, so that
 the under framing of the car is supported by
 four trussed structures, which form part of
 15 said under framing. The center and side
 sills form the compression members of the
 trussed structures, while the vertical posts
 14 form the struts and the channels 15 the
 tension members. The diagonals 16, 17, and
 20 18 are so disposed as to be under tension un-
 der load, whereby small cross-sections may be
 employed. The object in arranging crossed
 diagonals in the two middle panels is to avoid
 buckling of the floor where unequal loads are
 25 carried—as, for instance, where one end of
 the car is loaded and the other end empty.

In order to brace the lower portions of the
 trusses, I provide transverse tie plates 19,
 which are riveted to the vertical posts 14, said
 30 tie-plates being reinforced by angles 20, as
 shown in Figs. 3, 5, and 6.

21 indicates diagonals arranged upon the
 channels 15 and riveted to the flanges thereof,
 said diagonals, in addition to assisting in ty-
 35 ing the beams in place, also stiffening the
 trusses when the car is being switched or
 when rounding curves.

It will be noted that the cover-plate 13,
 which is riveted to the center sills, in addi-
 40 tion to tying said sills together, also forms, in
 conjunction with said sills, a trough-girder
 construction which is extremely strong, both
 transversely and longitudinally, and where
 the car carries tanks or similar freight this
 45 center sill takes its part of the load, which
 bears immediately thereover, without being
 distressed, the cover-plate being in compres-
 sion as part of the center-sill beam. As sug-
 gested above, this cover-plate also enables the
 50 center sills to better take care of the buffing
 stresses. The trough-girder construction of
 the center sill, combined with the trussed un-
 der framing, is new, so far as I am aware. I

prefer to arrange this cover-plate on top of
 the center sills, so that access may be had be- 55
 tween said sills from beneath to the rivets
 which secure the floor-beams in position.

I am aware that minor changes in the ar-
 rangement, construction, and combination of
 the several parts of my device can be made 60
 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 Pat- 65
 ent, is—

1. In a car, the combination with the side
 and center sills made up of channels with
 their flanges presented outwardly, of a cover-
 plate riveted to the top flanges of the center 70
 sills, floor-beams secured to the webs of the
 side and center sills and near the plane of the
 bottom flanges thereof, vertical posts riveted
 to the backs of the channels respectively and
 in approximately the transverse planes of the 75
 floor-beams, channels riveted to the lower
 ends of said posts, said channels having their
 flanges presented outwardly and being ar-
 ranged substantially parallel to the side and
 center sills, diagonals secured to the center 80
 and side sills and to their respective parallel
 channels, and transverse tie-bars secured to
 the vertical posts near their lower ends; sub-
 stantially as described.

2. In a car, the combination with the center 85
 sills in the form of channels with their flanges
 presented outwardly, of channel side sills
 having their flanges presented outwardly, a
 cover-plate 13 secured to the top flanges of
 the center sills, floor-beams 8 secured to the 90
 center and side sills near their bottom flanges
 respectively, vertical posts 14 in approxi-
 mately the transverse planes of said floor-
 beams, channels 15 secured to the lower ends
 of said vertical posts and having their flanges 95
 presented outwardly, diagonals 16, 17 and
 18, transverse tie-bars 20, and diagonals 21;
 substantially as described.

In testimony whereof I hereunto affix my
 signature, in the presence of two witnesses, 100
 this 4th day of September, 1900.

GEORGE I. KING.

Witnesses:

F. R. CORNWALL,
 CHAS. W. PARKER.