

No. 866,674.

PATENTED SEPT. 24, 1907.

W. Q. OLDEN.
CAR CONSTRUCTION.

APPLICATION FILED NOV. 19, 1906.

4 SHEETS—SHEET 1.

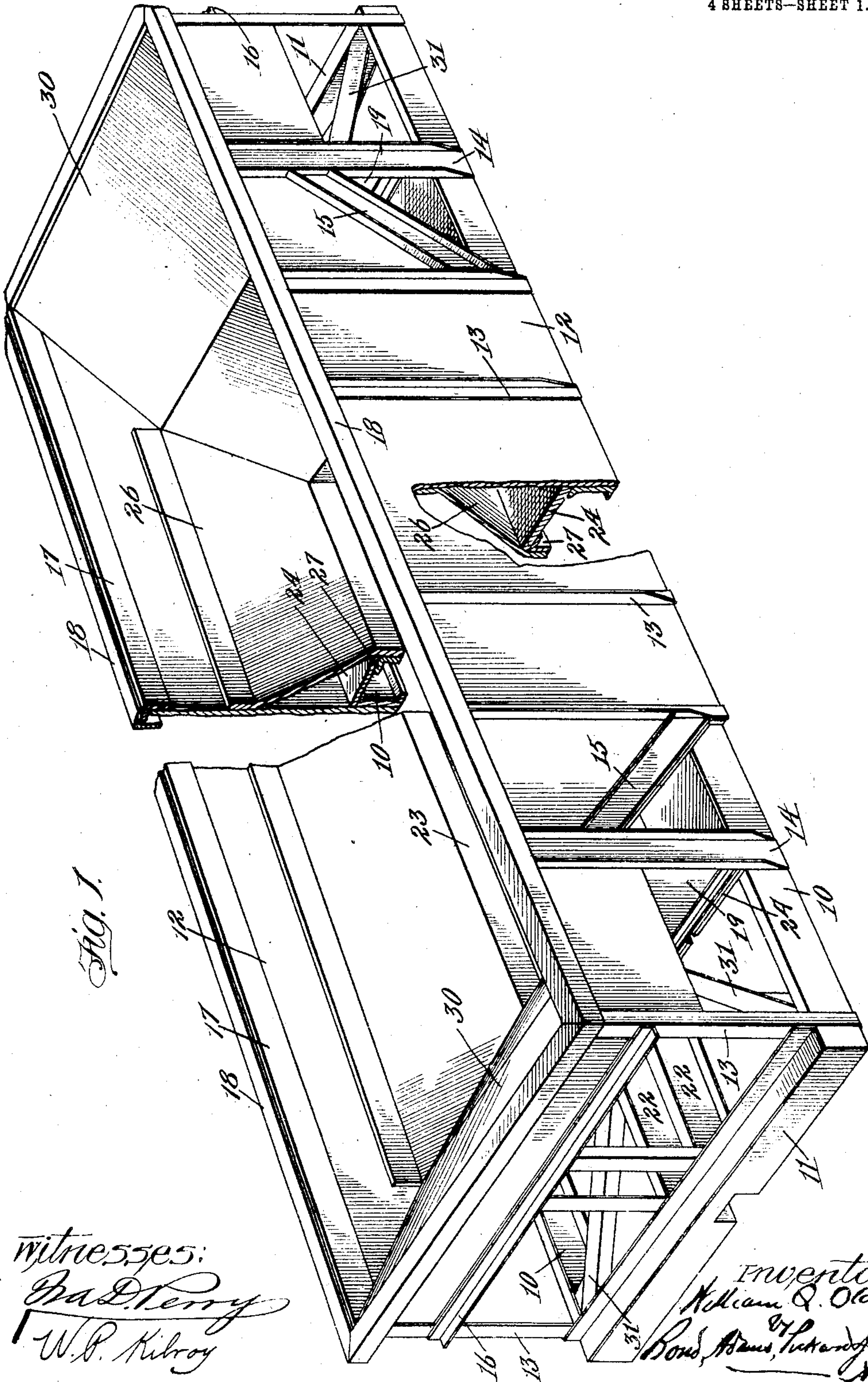


Fig. 1.

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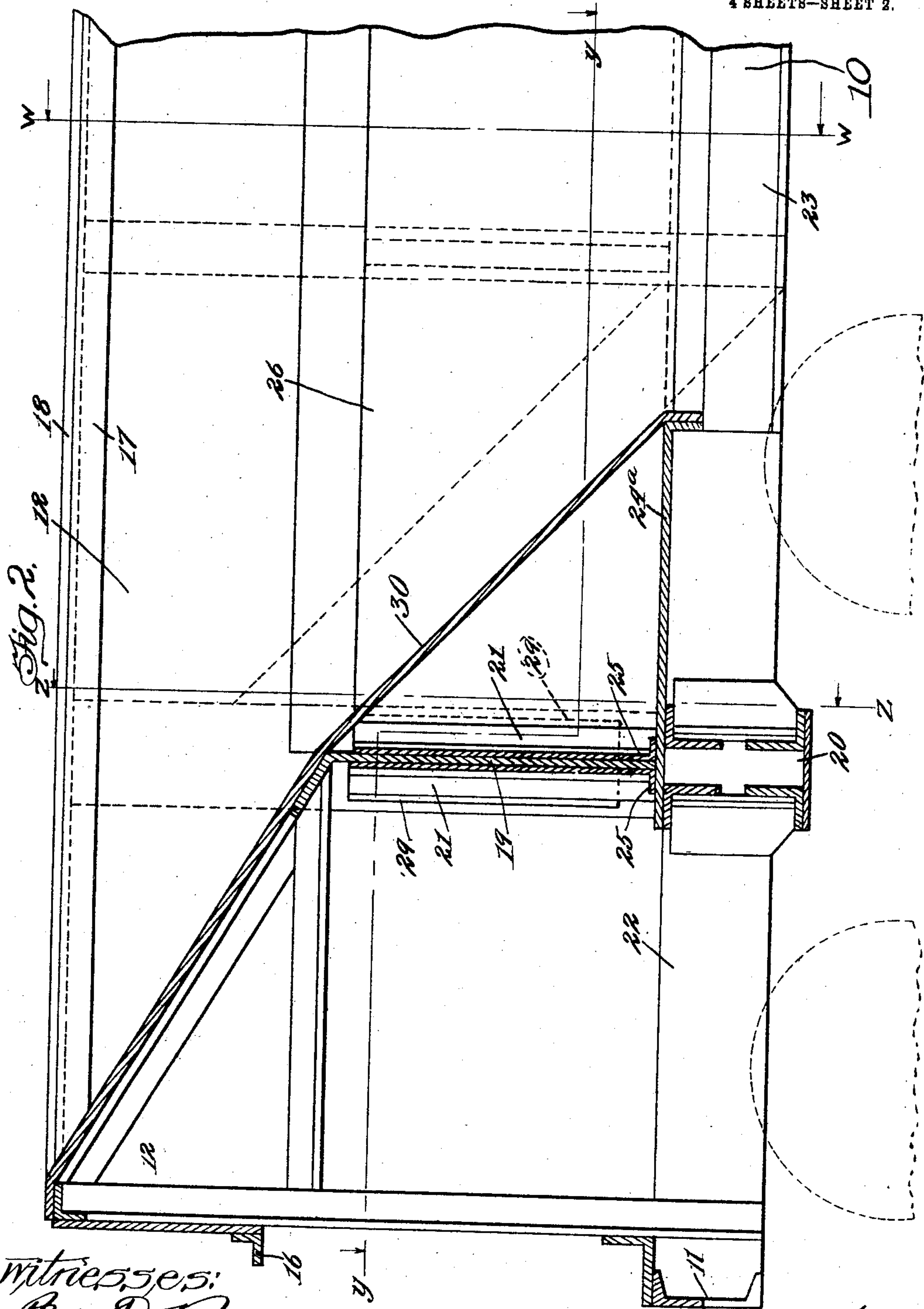
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4 SHEETS—SHEET 2.



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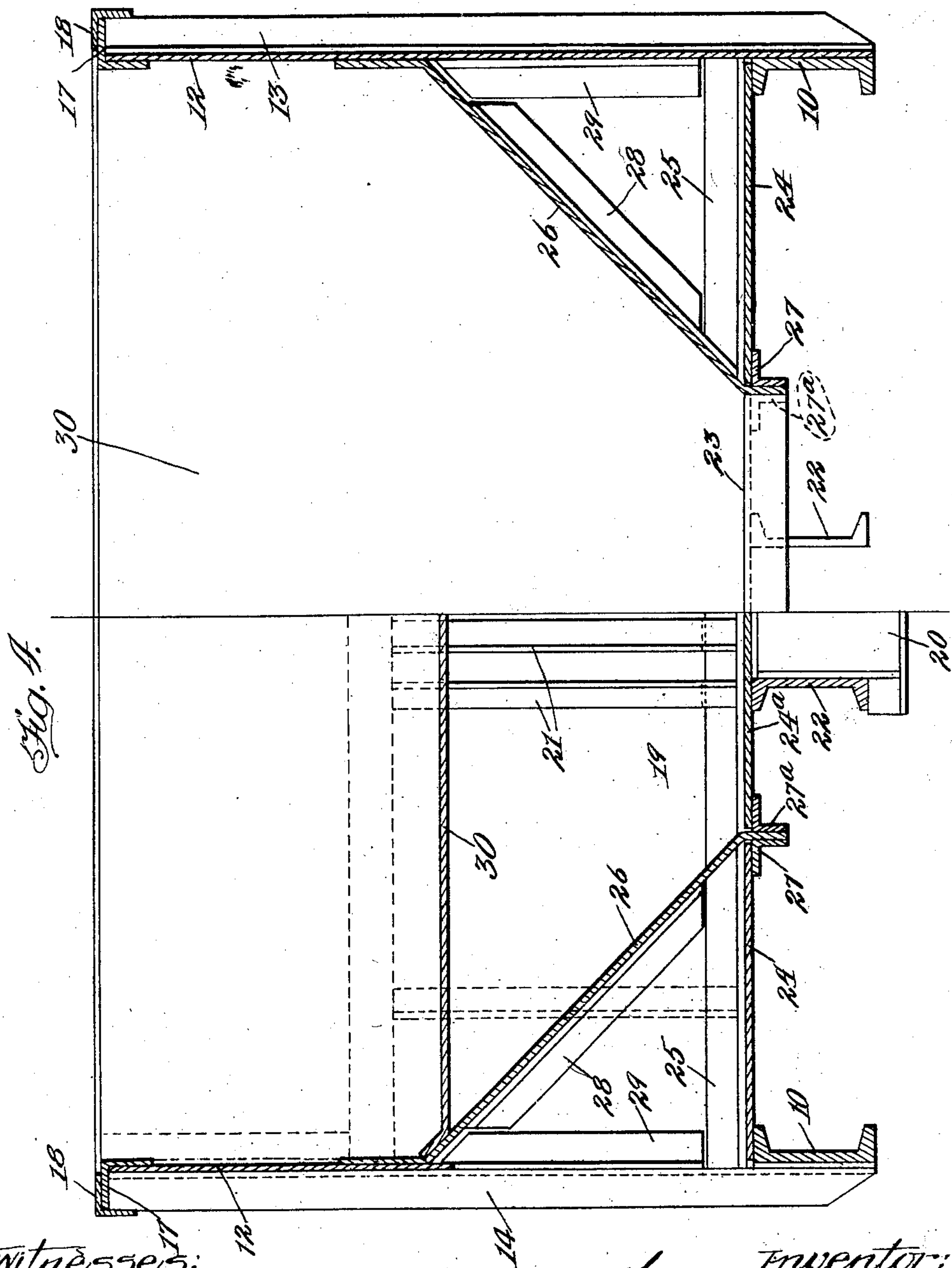
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

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CAR CONSTRUCTION.

No. 866,674.

Specification of Letters Patent.

Patented Sept. 24, 1907.

Application filed November 19, 1906. Serial No. 344,080.

To all whom it may concern:

Be it known that I, WILLIAM Q. OLDEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain
5 new and useful Improvements in Car Construction, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in car construction and particularly to the bodies of cars.

10 It is the object of the invention to provide a construction of great strength with the minimum amount of material, whereby the weight of the car is very materially reduced over ordinary constructions, which, of course, is of very considerable importance in the
15 transporting of cars, and at the same time by reason of the lessening of the amount of material employed in the construction of the car, a very marked lessening of the cost of construction is secured.

My invention, in the form of embodiment represented in the accompanying drawings, is employed in connection with the body of a dump-car in which is a central opening, normally to be kept closed by suitable doors, through which the material contained in the car is to be discharged. In such cars it is highly desirable that this central opening be a large one and
25 that there should be no bridging of it by cross-sills, beams, girders or the like that would tend to in any manner interfere with or check the free and rapid discharge of the load when the doors are opened. The
30 omission of such tying or uniting members between the opposite side-sills of the cars would in the ordinary constructions of car-bodies, and particularly where the car is of considerable length, tend to greatly lessen the strength of the car as a whole, rendering it more
35 susceptible to the shocks and strains incident to the use to which such cars are put, and hence lessens the period of usefulness of the car.

I am enabled by my construction to provide a car with a long central dumping opening entirely un-
40 bridged by cross-pieces of any description and at the same time am enabled to give to the car-body the requisite strength. The qualities of strength, durability, lightness and cheapness possessed by a car in which my invention is embodied are, briefly stated, secured
45 by taking advantage of the well-recognized principle that a triangle is the only unbraced figure which cannot be distorted without changing the length of its sides. In embodying this principle I cause to be formed at each side of the car a triangular column-like
50 structure, one member of which constitutes the girder-like side of the car, a second member of which is a horizontally-disposed plate, and the third member being an inclined floor-plate, the several members being suitably connected with each other, and the ends
55 of each triangular column-like structure being secured

to heavy bolsters arranged transversely of the car at opposite ends.

In the accompanying drawings,—Figure 1 is a perspective view of a car-body embodying my improvements, the structure being broken away at its central
60 portion to more clearly illustrate the arrangement of the parts forming the longitudinal triangular column-like structures at the sides; Fig. 2 is a vertical central section through one end of the car body, the section being taken at line $x-x$ of Fig. 3; Fig. 3 is a horizontal section
65 taken at line $y-y$ of Fig. 2; and Fig. 4 is a vertical cross-section, the left-hand side of the figure being taken at line $z-z$ of Fig. 2, and the right-hand side being taken at line $w-w$ of said Fig. 2.

In the several figures of the drawings, in which corresponding parts are indicated by like reference numerals,—10 indicates two side-sills of the frame of the car, and 11 the end-sills,—such parts being, in the form of construction shown, of channel-irons. These parts are to be suitably united together, preferably
75 by riveting. In this connection I should state that in the construction shown all of the parts of the car-body are intended to be of metal and suitably joined together. I have simply shown the parts in their proper relative positions but have not indicated the large num-
80 bers of rivets that will be employed to fasten them together as I do not deem it necessary, but such riveting together, where the parts are referred to as being united, will be understood.

12 indicates the sides of the car, each constructed, as
85 shown, in the form of a girder, and each provided on its outer face with suitable vertical re-inforcing strips, such as the angleirons 13 or the channel-irons 14, or both. Each girder may be additionally strengthened by diagonal channel-irons 15 near each end of the car,
90 as indicated in Fig. 1. As shown, each side girder 12 is cut away at the lower part of each end so that from each body-bolster, hereinafter referred to, to the end of the car there is an open space left between the side-sills and the projecting ends of the side girders. These sides
95 12 may, of course, be of diagonal bracing construction, or in fact of any suitable girder construction, instead of the solid form made up of plates riveted together.

16 indicates angle-irons at each end of the car extending transversely of the car between the corner vertical
100 angles 13.

17—18 indicate two angles placed upon the upper edge of the car-body and secured thereto to form a suitable stiffening for such edge so as to prevent the same from wear and distortion.
105

19 indicates a body-bolster built up in the form of a girder and extending transversely of the car,—each of such body-bolsters being located directly over the usual pedestal, indicated by 20, which has a swiveling connection with an ordinary car truck (not shown). Each
110

bolster, and the load carried thereby, is supported by one of the pedestals 20, and each bolster is to be stiffened by suitable vertically-disposed angle-bars 21, as may be required.

22 indicates center-sills,—two of such sills being provided at each end of the car. The sills at each end are spaced a distance apart so that provision is made between them for the usual draft-rigging. Each pair of center-sills extends from the end of the car inward some little distance beyond the body-bolster 19 at that end, terminating at their inner ends at the end of a long central opening 23 which is normally guarded by swinging doors of any suitable construction, through which opening the material carried by the car is discharged.

24 indicates two plates, one at each side of the car, each plate being substantially equal in length to the distance between the two body-bolsters 19. In the construction shown each plate 24 rests at its outer edge upon and is to be suitably riveted to the upper face of one of the side-sills 10. At each of its ends it is connected with one of the bolsters 19,—the bolster 19 resting upon it, as clearly shown in Fig. 2, the bolster and plate being secured together in any suitable manner. As shown in Figs. 2 and 3, angle-irons 25 are provided which rest against both the bolster 19 and plate 24, and through these angleirons rivets are passed to secure the parts properly together. As stated, these longitudinally-extending plates 24 are to be riveted along their outer edges to the upper faces of the channel-irons 10 that form the side-sills of the car, and to the outer faces of such channel-irons 10 the said sides 12 are to be riveted, thus through these channel-irons firmly connecting together the plate and girder or side at each side of the car.

24^a indicates two other plates located near opposite ends of the car, each plate lying transversely of the car and arranged to extend across so much of the center-sills 22—22 as projects inward beyond the adjacent bolster 19 (see Figs. 2 and 3). Each plate 24^a is to be riveted to or otherwise firmly united to the ends of one set of said center-sills and is also to be secured to the inner face of the adjacent bolster 19—being adapted to be secured to such bolster by rivets passing through one of the said angleirons 25—each of said angleirons extending, as shown in Fig. 3, across the car, and serving as a means for uniting both of the longitudinally-extending plates to one of the bolsters 19, as before stated, and also serving to connect a plate 24^a with said bolster. The plates 24^a are thus connected, through these transverse angleirons 25, with the longitudinally-extending plates 24, and are further connected with them as hereinafter mentioned.

26 indicates the main floor-sections of the car, one at each side thereof, the upper portion of each floor-section 26 being parallel with and against the inner face of one of the sides of the car to which it is to be suitably riveted. Each floor-section 26 slopes sharply downward toward the center of the car to the inner edge of the longitudinally-extending plate 24 at that side of the car, and upon being brought to such edge it is turned down over it so as to project into and form one of the side walls of the large opening 23.

27 indicates an angle iron, the vertical portion of which is placed against the vertical lip at the lower

edge of the floor-section 26, and the horizontal portion of which is placed against the adjacent longitudinally-extending portion of the plate 24. Through this angle-iron the floor-section and the said plate are firmly united by rivets. At each of its ends each longitudinally-extending inclined floor-section 26 is connected with one of the body-bolsters 19,—means for uniting the two being, in the construction shown, an angleiron 28 (see Fig. 4), which rests against the under face of the floor-section and also against the inner face of the bolster 19, through both flanges of which angleiron and the said floor-section and bolster a series of rivets is to be passed. In said Fig. 4 is also shown another angleiron 29, which rests against the inner face of the side 12 of the car and also against the bolster, and by means of this angleiron the said side and bolster are to be riveted together. 27^a indicates another angleiron arranged parallel with the angleiron 27 and located at the opposite side of the turned-down edge of the floor-section 26, and through this angleiron 27^a the floor-section 26 and the plate 24^a are to be riveted together. Thus it will be seen that through the angleirons 25, 27 and 27^a the plate 24^a will be rigidly united to each of the triangular structures made up of the member 13, 24 and 26. Each angleiron 27 extends from bolster to bolster but each angleiron 27^a extends inward from the bolster only to the inner edge of the plate 24^a. The same arrangement of parts is present at each end and at opposite sides of the car, whereby each floor-section 26, each longitudinally-extending plate 24, and each side 12 are united in the same manner to the bolsters 19.

30 indicates inclined floor-sections at the opposite ends of the car, each formed preferably of a series of sheets suitably riveted together. Each inclined section 30 extends from the upper edge of the car downward to the large central opening,—the lower end of each of said sections being turned vertically, as indicated, so as to extend a short distance into said opening and lying against the downwardly-turned edges of the plate 24^a, as best shown in Fig. 2. These downwardly-turned ends lying snugly against the downwardly-turned edges of the plate 24 are adapted to be secured thereto and will in practice preferably be riveted to such downwardly-turned edges. It will be noted that these end floor-sections 30 are supported at substantially their central portion by the upper ends of the bolsters 19, to which bolsters they are to be riveted in practice.

31 indicates diagonal braces at the ends of the car extending from near the ends of the end-sills inward to the center-sills 22,—the connection of these braces 31 to the end-sills and center-sills being through the intervention of any suitable connecting parts.

It will be noted that by the construction shown in the drawings and hereinabove described there are no transverse connections between the side-sills at any place in the central portion of the car and that therefore there will be no obstruction of any nature whatsoever offered to the free discharge of material from the car through the long opening 23, and consequently the discharge of the entire contents of the car can be effected with the utmost rapidity when the doors that normally close such opening are swung open. I have not shown any doors to close this opening, nor any door-operating mechanism, as I do not deem it necessary to do so in

order to properly disclose my invention, as it is evident that doors of various kinds may be employed and any one of the numerous door-operating mechanisms can be used in connection therewith.

5 It will be noted that by the construction and arrangement shown and described there is formed at each side of the car a horizontally-disposed column of triangular shape, each composed of a car-side 12, a longitudinally-extending plate 24, and an inclined floor-plate 26, and
10 that each end of each column is adapted to be and is rigidly secured to the transverse bolsters 19. Furthermore, it will be noted that each one of the three members of each of these triangular column-like structures is itself rigidly secured at each of its ends to one of the
15 said bolsters, and that the said three members are also rigidly secured to each other. Inasmuch, therefore, as is well known, as a triangular figure is one of the strongest unbraced forms that can be devised, it is evident that by the construction herein set forth I provide
20 a car-body possessing great strength, and which it is unnecessary to weight down with the usual cross-beams or girders, and thereby, of course, producing a substantial saving in the cost of construction. By reason of the rigid connection of the transversely-arranged bolsters 19 with the triangular column-like structures described, and by reason of the further fact that each member of such triangular structure is rigidly connected with the other members and with the said bolsters, said bolsters will be found to transmit perfectly
25 to said triangular structures the buffing stresses imparted from the center-sills 22 through the plate 24^a, which lies in the same plane as the longitudinally-extending plates 24, and is rigidly connected with said plates 24 as before explained. Furthermore, this plate
30 24^a, extending transversely of the car, and being rigidly connected with the triangular column-like structures, also prevents any tendency towards diagonal distortion of the car-body as a whole in a horizontal plane. In short, it will be found that these triangular column-like structures under the most severe conditions of use
35 will be capable of resisting forces from any direction, whether such forces be in the nature of tension, compression bending or torsion strains.

That which I claim as my invention, and desire to
45 secure by Letters Patent, is,—

1. In a car-body, the combination with a body-bolster near each end thereof, of a triangular column-like structure at each side of the car secured at each of its ends to the said bolsters, and a plate extending transversely of the car near each end of the car and connected to each of said column-like structures.

2. In a car-body, the combination with a body-bolster near each end thereof, of a triangular column-like struc-

ture at each side of the car secured at each of its ends to the said bolsters, and a plate extending transversely of the car near each end of the car and connected to each of said column-like structures and also connected to one of said bolsters. 55

3. In a car-body, the combination with a body-bolster near each end thereof, of sides for the car-body, floor-sections connected at their upper ends to the said sides and inclined downwardly toward the center of the car, a plate extending longitudinally of the car between each of said floor-sections and sides, each set of triangular column-like structures thus formed being rigidly secured
60 to said bolsters, and a plate extending transversely of the car near each end of the car and connected to each of said column-like structures. 65

4. In a car-body, the combination with a body-bolster near each end thereof, of sides for the car-body, floor-sections connected at their upper ends to the said sides and inclined downwardly toward the center of the car, a plate extending longitudinally of the car between each of said floor-sections and sides, each set of triangular column-like structures thus formed being rigidly secured
70 to said bolsters, and a plate extending transversely of the car near each end of the car and connected to each of said column-like structures and also connected to one of said bolsters. 75

5. In a car-body, the combination with a body-bolster near each end thereof, of sides for the car-body, floor-sections connected at their upper ends to the said sides and inclined downwardly toward the center of the car, a plate extending longitudinally of the car between each of said floor-sections and sides, each set of column-like structures thus formed being rigidly secured to said bolsters, center-sills at each end of the car, and a plate extending transversely of the car over said center-sills and connected to said center-sills and column-like structures. 80

6. In a car-body having a central opening, the combination with a body-bolster near each end of the car, of sides for the car-body, a plate extending transversely of the car adjacent to each of said bolsters and having its inner edge turned down to form the end walls of said central opening, a downwardly-inclined floor-section at each side
85 of said opening, each floor-section at its lower edge being turned to form the side walls of said central opening, and means for securing said sides, plates and floor-sections to said bolsters. 90

7. In a car-body having a central opening, the combination with a body-bolster near each end of the car, of sides for the car-body, a plate extending transversely of the car adjacent to each of said bolsters and having its inner edge turned down to form the end walls of said central opening, a downwardly-inclined floor-section at each side
95 of said opening, each floor-section at its lower edge being turned to form the side walls of said central opening, a longitudinally-extending plate between each of said floor-sections and sides, a support secured to said turned edge of each floor-section for the inner edges of said longitudinally-extending plates to rest upon, and means for securing said sides, plates and floor-sections to said bolsters. 100

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Witnesses:

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