

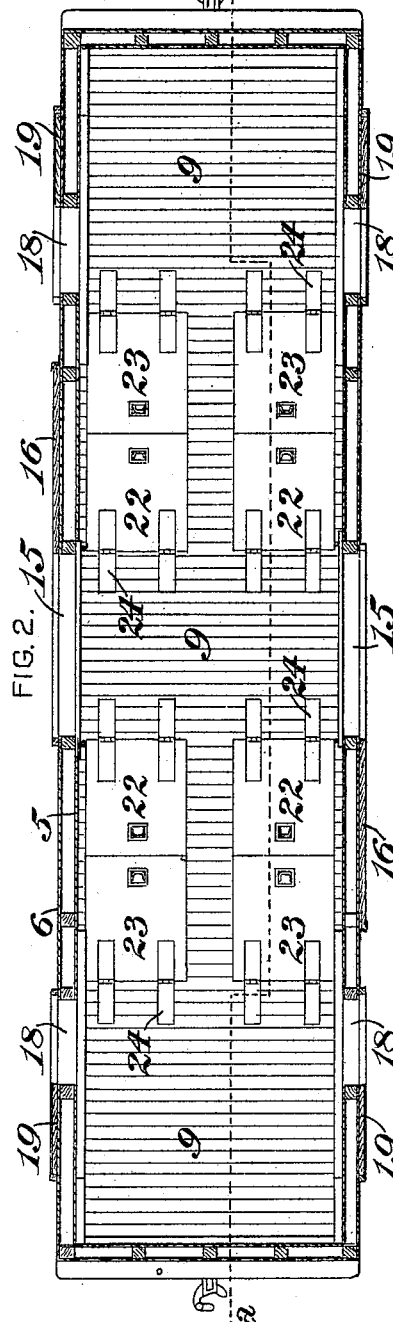
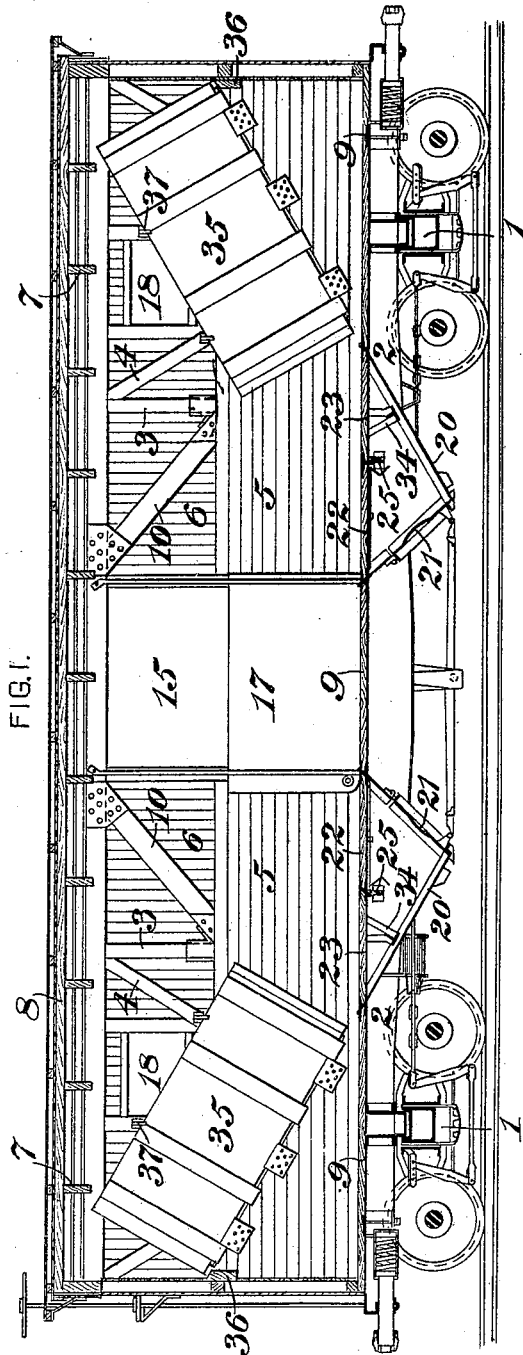
W. T. MANNING.

FREIGHT CAR.

(Application filed Dec. 21, 1899.)

(No Model.)

4 Sheets—Sheet 1.



WITNESSES:

J. P. Custer
S. R. Bell.

INVENTOR,

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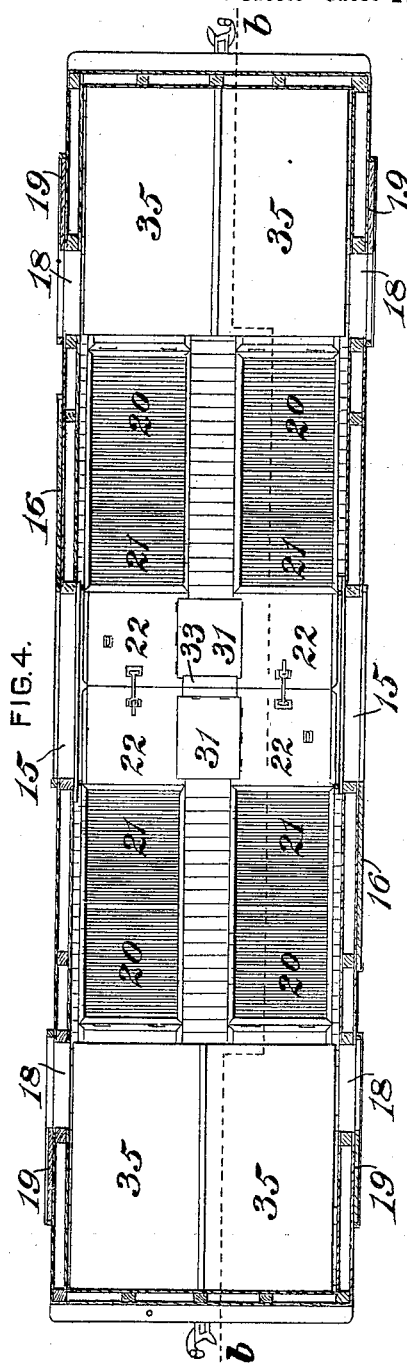
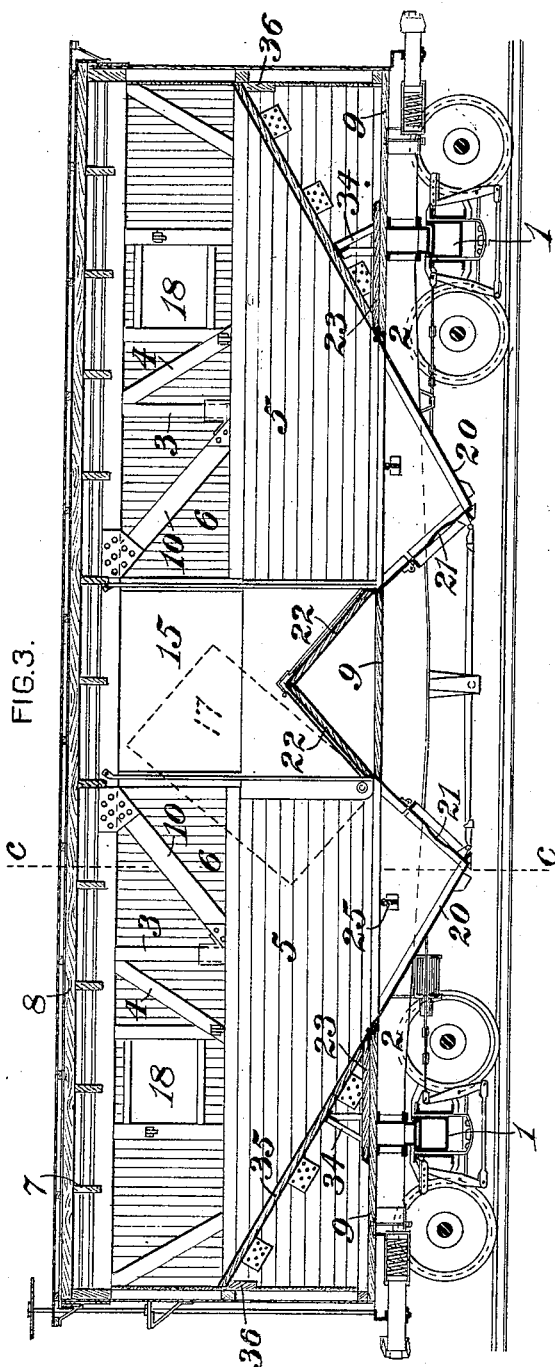
Att'y.

W. T. MANNING.
FREIGHT CAR.

(Application filed Dec. 21, 1899.)

(No Model.)

4 Sheets—Sheet 2.



WITNESSES:

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No. 646,444.

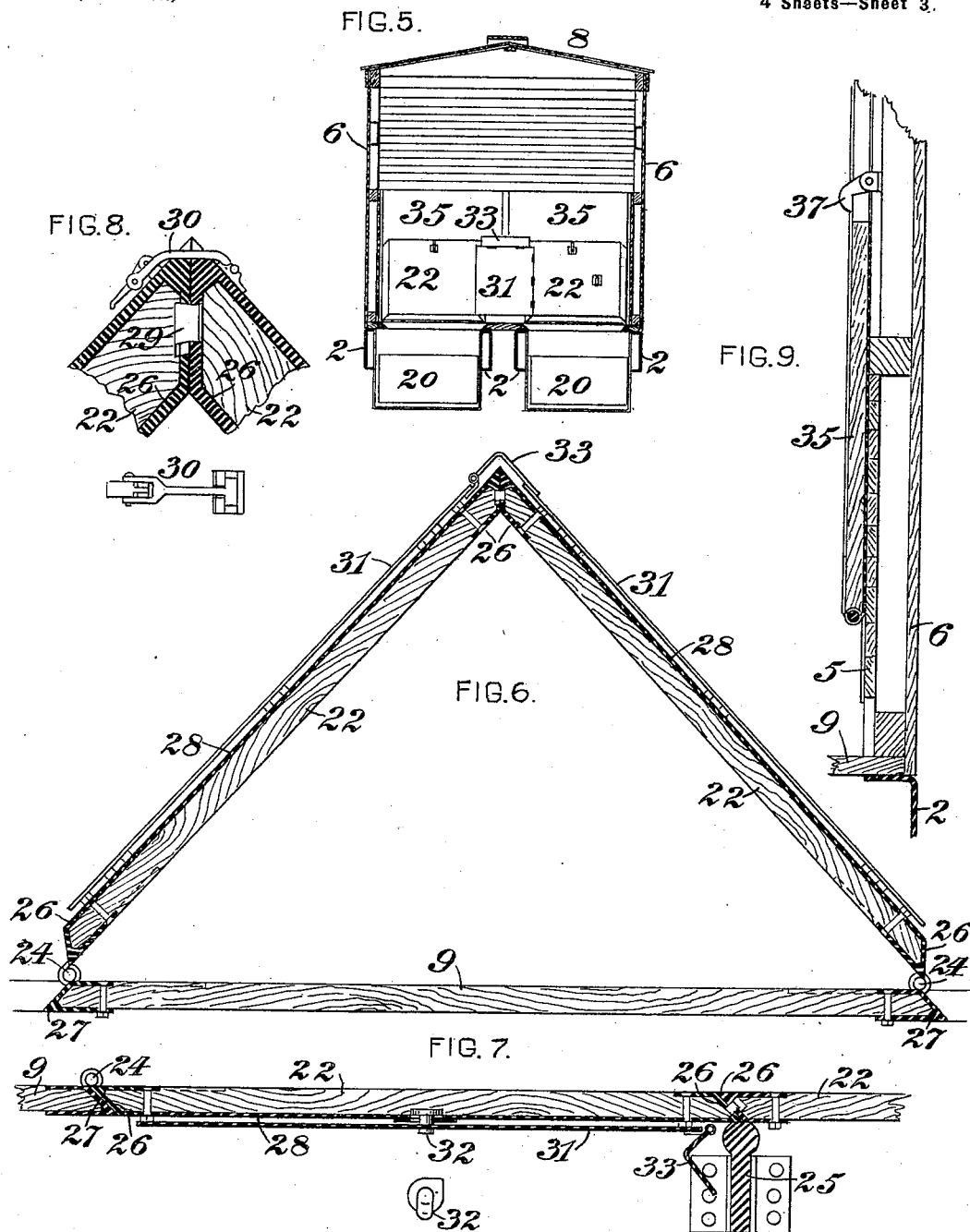
Patented Apr. 3, 1900.

W. T. MANNING.
FREIGHT CAR.

(Application filed Dec. 21, 1899.)

(No Model.)

4 Sheets—Sheet 3.



WITNESSES:

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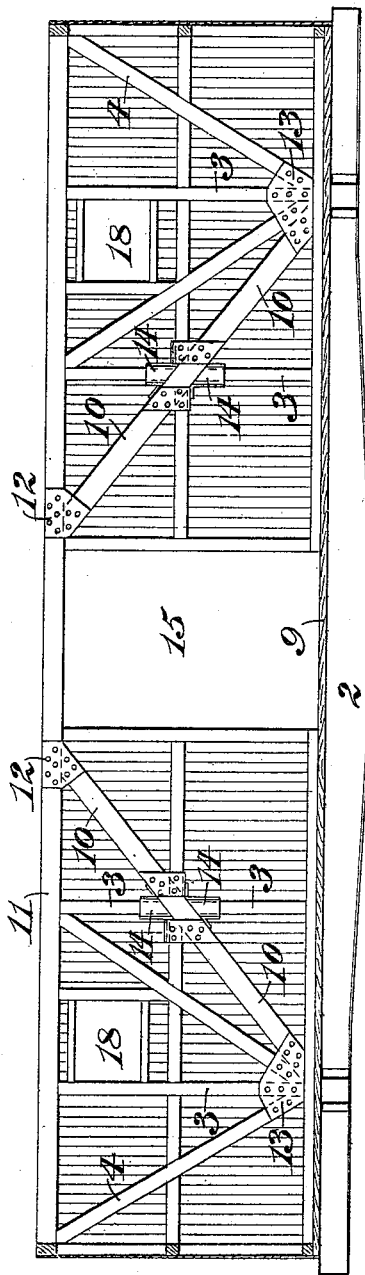
W. T. MANNING.
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(Application filed Dec. 21, 1899.)

(No Model.)

4 Sheets—Sheet 4.

FIG. 10.



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UNITED STATES PATENT OFFICE.

WILLIAM T. MANNING, OF BALTIMORE, MARYLAND.

FREIGHT-CAR.

SPECIFICATION forming part of Letters Patent No. 646,444, dated April 3, 1900.

Application filed December 21, 1899. Serial No. 741,094. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. MANNING, of Baltimore, Maryland, have invented a certain new and useful Improvement in Freight-Cars, of which the following is a specification.

The object of my invention is to provide a car which may be readily and expeditiously converted from a flat-floored to a hopper-bottomed car, and vice versa, so as to be adaptable, by easy manipulation and without necessitating the employment of skilled labor, to the transportation in one direction of grain, package-freight, lumber, or other freight which is usually unloaded from the sides or ends of a car and to the transportation in the opposite direction of coal, coke, ore, or other material which can be most desirably unloaded by being discharged through the bottom of the car.

The improvement claimed is hereinafter fully set forth.

The present standard freight equipment of American railroads may be generally divided into two classes: (a) flat-bottomed cars, which may be either so-called "box," "flat," or "gondola" cars and which are unloaded from their sides or ends, or both, and (b) drop or hopper bottom cars, which are unloaded through openings in their floors or in hopper-located below their floors. The pressed-steel hopper-bottom cars which have recently been largely introduced and which are generally approved as giving entirely satisfactory results in practice are specially designed for the transportation of coal, coke, and ore, for which purpose they are well suited, but are not adapted for use with grain or other classes of freight. In some instances, which are so few as to be properly considered as exceptional, these cars may be and are used to carry coal or coke in one direction and ore in the other; but in the large majority of cases they are loaded with coal or coke in one direction and are hauled back empty. Flat-floored box-cars are best adapted for the transportation of grain, the movement of which on trunk-lines is from west to east almost exclusively, and are not well suited for carrying coal or coke, the movement of which on the same lines is correspondingly in the opposite direction. As a result many of these cars are hauled empty from east to west in-

stead of being loaded with coal or coke which may be in readiness for transportation westward, being unremunerative in one direction, just as the hopper-bottomed cars used for coal or coke are in the opposite direction.

Various designs of "convertible" cars have been heretofore proposed with a view to enable the car to be utilized for one class of freight in one direction and for another class in the opposite direction; but so far as my knowledge and information extend none of these has been found to possess sufficient advantages to warrant its adoption to any appreciable extent in practical railroad service, this being probably due to the fact that they have usually involved complication of construction and resultant expense of maintenance and liability to derangement in operation to such an extent that they have failed to meet the general approval of railroad officers.

My invention provides a car which has the capabilities of either an ordinary box-car or of a hopper-bottomed car, accordingly as it may be adjusted, and which may be changed from one form to another quickly and by ordinary laborers without requiring complicated mechanism for the purpose or presenting features which are liable to breakage or derangement in regular service.

In the accompanying drawings, Figure 1 is a vertical longitudinal section through a freight-car, illustrating an embodiment of my invention, at the line *aa* of Fig. 2, the car being in condition for use as a flat-bottomed box-car; Fig. 2, a horizontal section through the same, taken on a plane slightly above the top of the floor; Fig. 3, a vertical longitudinal section through the same car at the line *bb* of Fig. 4, the car being in condition for use as a hopper-bottomed car; Fig. 4, a horizontal section taken on a plane slightly above the top of the floor; Fig. 5, a transverse section at the line *cc* of Fig. 3; Fig. 6, a horizontal section, on an enlarged scale, through the central portion of the floor and two adjacent hopper-covers when the latter are in the positions shown in Figs. 3 and 4; Fig. 7, a similar section through one of the inner hopper-covers when in the position shown in Figs. 1 and 2; Fig. 8, a section, on a further-enlarged scale, through the abutting faces of the inner

hopper-covers when in the positions shown in Figs. 1 and 6; Fig. 9, a vertical transverse section through one side of the car and through an adjoining hinged end incline; and Fig. 10, a longitudinal central section through the car with the inner planking or casing removed, showing the frame-trussing employed.

My invention is herein exemplified as applied in an eight-wheeled freight-car having the general form and proportions of a box or house car of the ordinary type employed on the railroads of the United States. The car-body is supported upon two four-wheeled trucks 1 1 in the usual manner and is composed of two center and two side sills 2, posts 3, diagonal braces 4, inner planking or casing 5, outer planking 6, roof-carlines 7, a roof 8, and a floor 9, which are relatively proportioned, disposed, and connected as in present standard practice. The sills 2 are shown as in the form of pressed-steel channels, but may be of wood, if preferred. In order to strengthen the frame of the car, particularly when wooden sills are used, so that it may be adapted to the transportation of comparatively-heavy loads when used as a hopper-bottomed car, diagonal truss-bars 10, which are preferably in the form of pressed-metal channels, are interposed between the side sills and the top beams 11 of the sides of the car, said truss-bars being connected to top and bottom plates 12 13 and being provided with shoes or sockets 14 for the reception of the upper and lower sections of the posts 3, which intersect the truss-bars. Openings 15, closed by outer sliding doors 16, are formed in the central portions of the sides of the car, and an inner grain-door 17 is pivoted at one of its lower corners to a post at one side of each of the center openings 15, so as to swing upwardly upon its pivot when not in use, as indicated in dotted lines in Fig. 3. Loading-ports 18 are formed in the sides of the car intermediate of its center openings and its ends and are closed by outer sliding doors 19. The floor 9 is cut away between the center and side sills and between the vertical planes of the sides of the center openings 15 and the inner axles of the trucks 1 1, and two pairs of hopper-bottoms 20, which are downwardly inclined toward the central transverse plane of the car and are closed by doors 21 in the usual manner, are secured to the sills 2, below the openings in the floor, a pair of hopper-bottoms being located between each side sill and the adjacent center sill. The opening in the floor above each hopper-bottom may be either covered or uncovered, as the conditions of use require, respectively, by means of hopper-covers 22 23, the covers 22 nearer the middle of the car being termed for distinction "inner" hopper-covers and those, 23, nearer the ends of the car being termed "outer" hopper-covers. The hopper-covers are connected by hinges 24 to the floor and when turned down into position to cover the floor-openings above the hopper-

bottoms, as in Figs. 1, 2, and 7, they lie flush with the floor and their adjacent free ends abut closely and are supported on bearing-bars 25, secured to the sills 2. The abutting edges of the hopper-covers and of the sections of the floor 9, against which they fit, are provided with metal facings 26 and 27, respectively, and are beveled or inclined, so as to make grain-tight joints, and the lower sides of the inner hopper-covers are preferably covered and protected by metal surface plates 28 for the purpose of preventing wear or damage by the action of the load thereon.

When the car is to be loaded as a hopper-bottomed car, the hopper-covers are turned into the positions shown in Figs. 3, 4, 5, 6, and 8, so as to entirely uncover the floor-openings above the hopper-bottoms 20 and to form a ridge or double-inclined wall above the floor between the inner ends of the floor-openings, the sides of which ridge are inclined at substantially the same angle as the doors 21 of the hopper-bottoms. The inner hopper-covers 22 are held in this position by a catch 29, projecting from the abutting edge of one of them and entering a recess in the corresponding edge of the other and by a swinging lock 30 of any suitable and preferred construction, as shown in Fig. 8. The continuity of the ridge or double-inclined wall between the floor-openings is maintained by metal flaps 31, which are hinged to the lower sides of the inner hopper-covers and held in position by catches 32 and which swing over and cover the space at the middle of the car between the inner hopper-covers, as shown in Figs. 4 and 5. The joint between the inner hopper-covers is covered and protected by a metal ridge-piece 33, hinged to one of the flaps 31. Rests 34, which may be of angle or T iron, are secured to the lower sides of the outer hopper-covers 23 for a purpose to be presently described.

End inclines 35, which are preferably stoutly-framed rectangular wooden structures faced on one side with metal, are hinged to the sides of the car at each end thereof, extending from the outer ends of the floor-openings above the hopper-bottoms to the ends of the car. The hinge-pivots of the end inclines are set at substantially the same angle to the floor of the car as the hopper-bottoms, so that when the end inclines are swung downwardly into the positions shown in Figs. 3, 4, and 5 they lie substantially in line with the hopper-bottoms 20 and form continuations thereof extending to the ends of the car. When in this position, they are supported on rests 36, secured to the ends of the car, and on the rests 34 of the outer hopper-covers 23, which are then turned into position to receive them. Coal, coke, ore, or other loading may thus be supported on inclined floors extending from the ends of the car to the lower ends of the hoppers and be discharged therefrom by gravity, as in the ordinary hopper-bottomed cars.

When the car is to be loaded as a flat-bot-

5 tommed car, the end inclines are turned up against the sides of the car and are held in such position by gravity-locks 37 of any suitable and preferred form, as shown in Figs. 1 and 9. The inner and outer hopper-covers are turned down on their bearing-bars 25, thereby covering the floor-openings above the hopper-bottoms and presenting a substantially-unbroken flat floor throughout the car, upon which package or other freight may be loaded in the usual manner. The grain-doors 17, being pivoted, as shown, can be swung up out of the way when load is carried on the end inclines and hopper-bottoms and readily turned into the position shown in Fig. 1 when the car is adjusted as a flat-bottomed car and is to be used for the transportation of grain.

20 The adjustable end inclines 35 are not in and of themselves claimed as of my invention, and, on the other hand, my invention is not limited to a construction embodying the specific form and disposition of said inclines herein described and shown. Thus, for example, the inclines may, if preferred, be hinged to the ends instead of to the sides of the car and may be counterbalanced, so as to facilitate their movement from one to the other position of adjustment for service. In such case a single incline at each end of the car may be employed in lieu of a pair of opposite inclines, as in the instance shown. Modifications of structural detail will readily suggest themselves to and be within the province of the skilled car-builder, and such 35 may be made without departure from the operative principle and essential features of my invention.

40 It will be observed that the adjustment of the hopper-covers and end inclines by which the car is changed from a flat-bottomed to a hopper-bottomed car, and vice versa, can be made in a very short time without involving the use of special tools or skilled labor. No hoisting mechanism of any kind is necessary, and the construction and disposition of the movable members are such that in either adjustment of the car they are not liable to injury or derangement and present no substantial interference with loading or unloading nor any objectionable curtailment of space within the car.

I claim as my invention and desire to secure by Letters Patent—

55 1. In a freight-car, the combination of frame-sills, two oppositely-inclined hopper-bottoms connected thereto, a flat floor having openings above the hopper-bottoms, and hopper-covers hinged to the floor above said openings and adapted to be swung upwardly into position to abut and form a ridge or double-inclined wall above the floor between the inner ends of said openings.

60 2. In a freight-car, the combination of center and side frame-sills, two pair of oppositely-inclined hopper-bottoms connected thereto and separated longitudinally by the

center-sills, a flat floor having openings above the hopper-bottoms, hopper-covers hinged to the floor above said openings and adapted to be swung upwardly in pairs into position to abut and form ridges or double-inclined walls above the floor between the inner ends of said openings, and flaps hinged to the hopper-covers and movable into position to cover the central space between the ridges or inclined walls.

3. In a freight-car, the combination of frame-sills, two oppositely-inclined hopper-bottoms connected thereto, a flat floor having openings above the hopper-bottoms, hopper-covers hinged to the floor above said openings and adapted to be swung upwardly into position to abut and form a ridge or double-inclined wall above the floor between the inner ends of said openings, and end inclines hinged to the car-body and adapted to be swung downwardly into positions to form inclined floors extending, substantially in line with the hopper-bottoms, from the outer ends of the floor-openings to the ends of the car.

4. In a freight-car, the combination of frame-sills, two oppositely-inclined hopper-bottoms connected thereto, a flat floor having openings above the hopper-bottoms, and hopper-covers hinged to the floor above said openings, and abutting against the floor and against each other by inclined or beveled faces.

5. In a freight-car, the combination of frame-sills, two oppositely-inclined hopper-bottoms connected thereto, a flat floor having openings above the hopper-bottoms, inner and outer hopper-covers, each hinged at one end to the floor above one of said openings, and bearing-bars supporting the outer or free ends of said hopper-covers.

6. In a freight-car, the combination of frame-sills, two oppositely-inclined hopper-bottoms connected thereto, a flat floor having openings above the hopper-bottoms, inner and outer hopper-covers hinged to the floor at opposite ends of said openings, the inner hopper-covers being adapted to be swung into position to abut and form a ridge or double-inclined wall above the floor between said openings, and the outer hopper-covers to be swung flat upon the floor, rests fixed to the lower sides of the outer hopper-covers, rests fixed to the ends of the car, and end inclines hinged to the car-body and adapted to be swung downwardly into positions to form inclined floors, extending, substantially in line with the hopper-bottoms, from the outer ends of the floor-openings to the ends of the car, and to be supported, in said positions, by the rests on the outer hopper-covers and on the ends of the car.

7. In a freight-car, the combination of frame-sills, two oppositely-inclined hopper-bottoms connected thereto, a flat floor having openings above the hopper-bottoms and being otherwise substantially continuous from end to end of the car, means for covering and

uncovering said openings and coincidently forming a ridge or double-inclined wall above the floor between their inner ends, and movable end inclines adapted to be adjusted in
5 position to form inclined floors extending, substantially in line with the hopper-bottoms, from the outer ends of the floor-openings to the ends of the car.

8. In a freight-car, the combination of
10 frame-sills, two oppositely-inclined hopper-bottoms connected thereto, a flat floor having openings above the hopper-bottoms, hopper-

covers hinged to the floor above said hopper-bottoms, a post-and-beam frame supporting sheathing or planking and a roof, diagonal
15 metal truss-bars interposed between the floor and the upper beams of the frame, shoes or sockets secured to the truss-bars, and post-sections fitting in said shoes and abutting against the upper and lower frame members. 20

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Witnesses:

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