No. 778,384. PATENTED DEC. 27, 1904.

E. W. SUMMERS.

CAR.

APPLICATION FILED NOV. 4, 1903.

4 SHEETS—SHEET 1.

Fig. 1

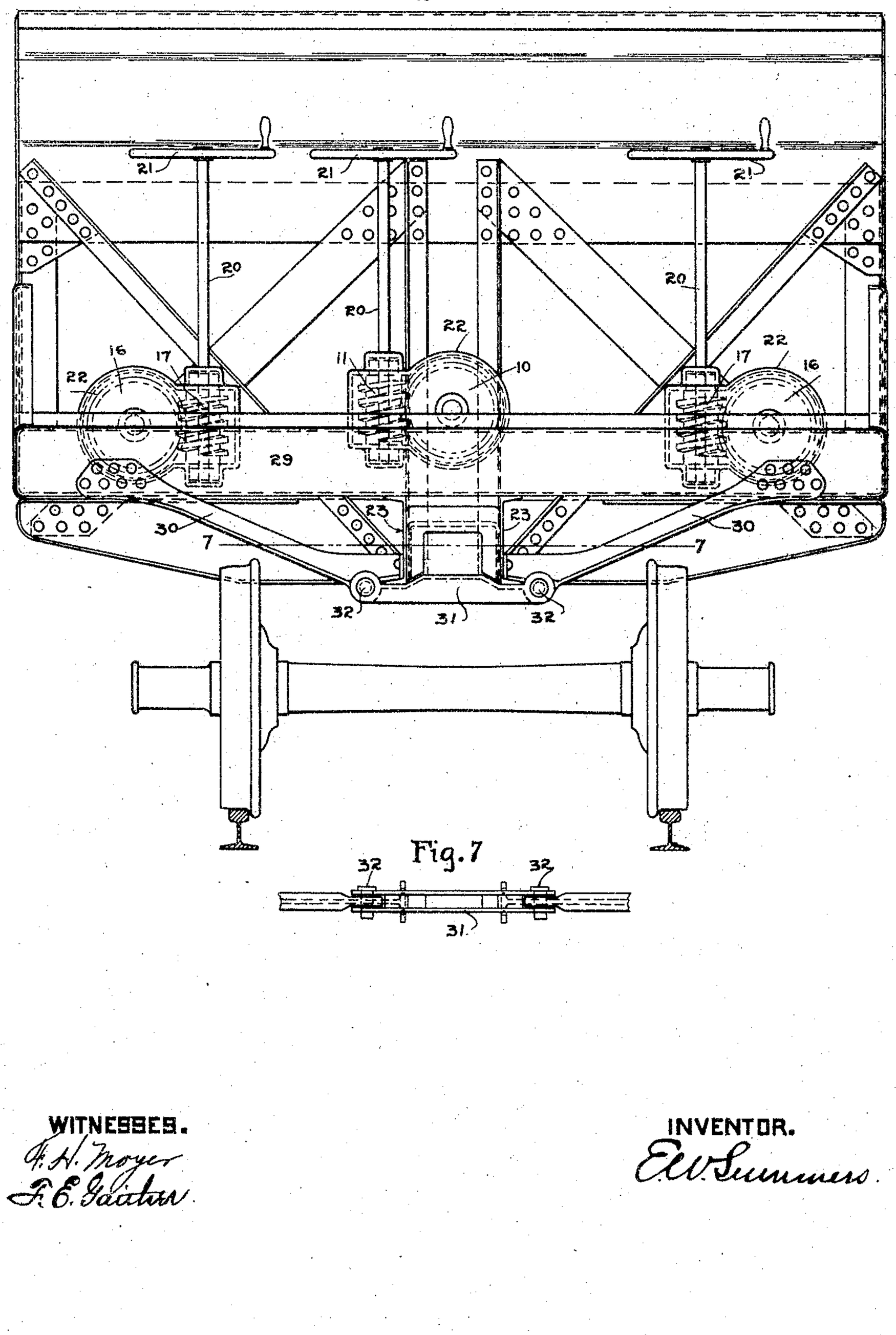

Fig. 7

WITNESSES.

F. H. Moyer

F. E. Gaither.

INVENTOR.

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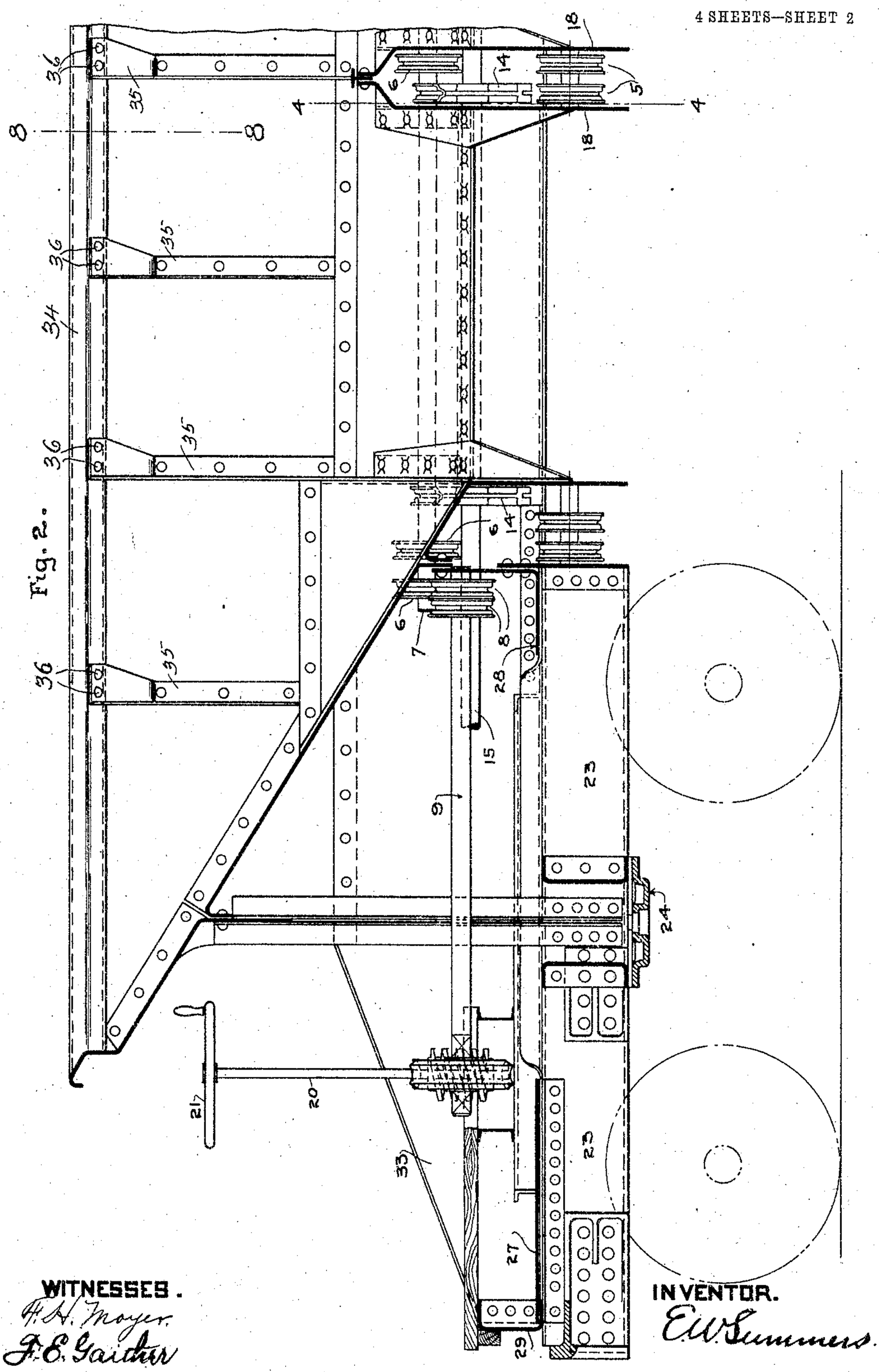
4 SHEETS—SHEET 2

Fig. 2.



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4 SHEETS—SHEET 3.

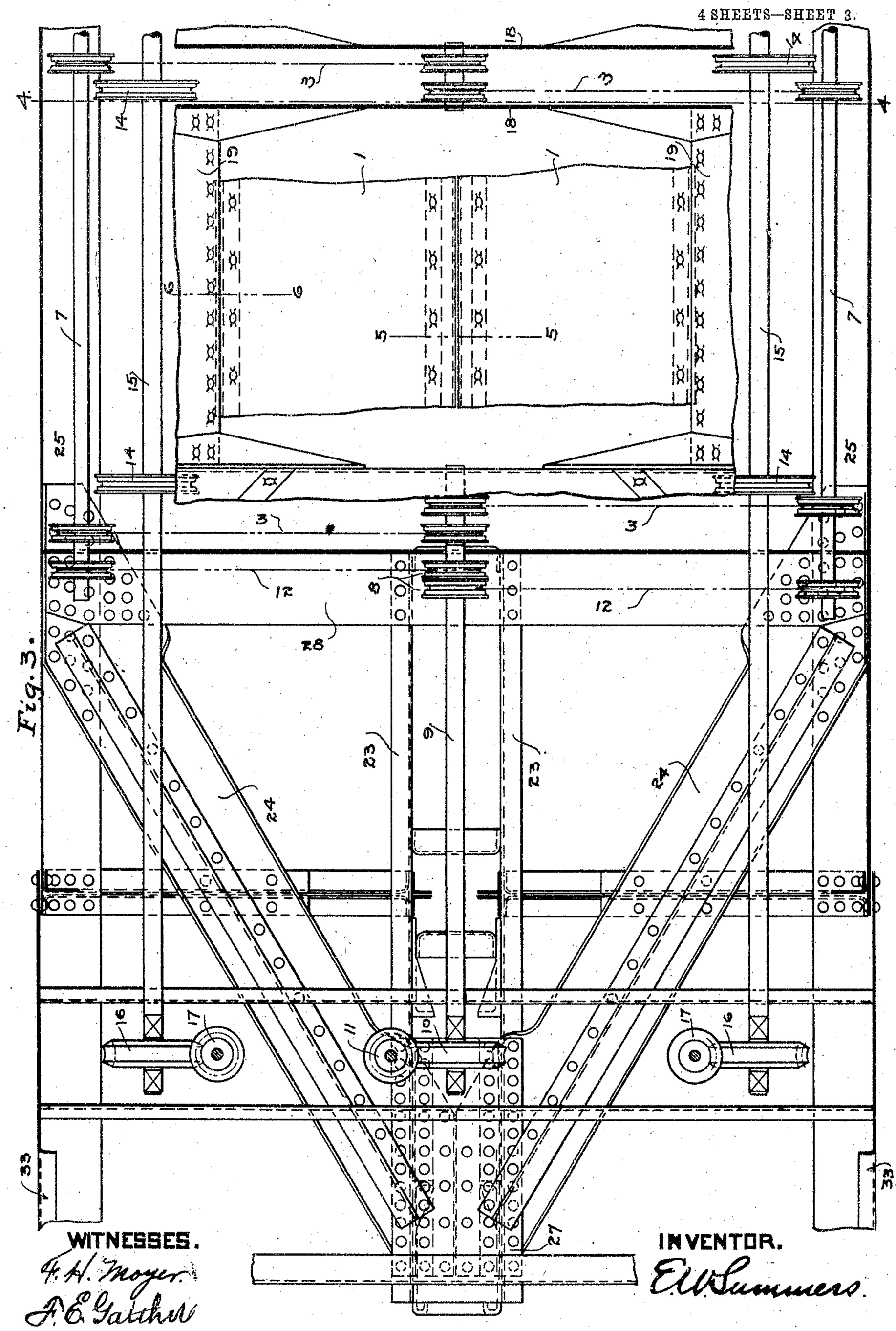

Fig. 3.

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4 SHEETS—SHEET 4.

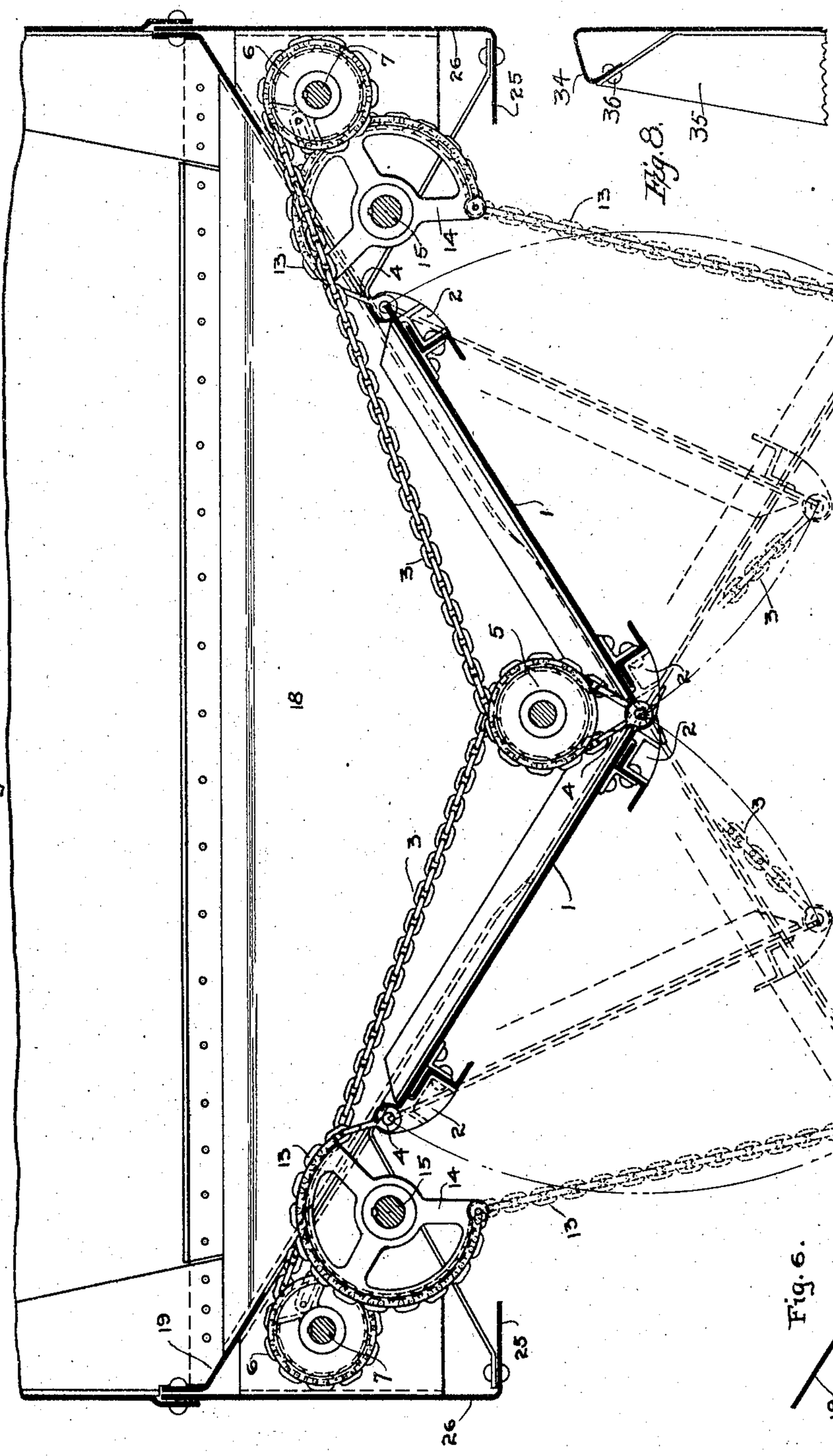

Fig. 4.

Fig. 8.

Fig. 5.

Fig. 6.

WITNESSES.

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No. 778,384. Patented December 27, 1904.

UNITED STATES PATENT OFFICE.

EDGAR W. SUMMERS, OF WILKINSBURG, PENNSYLVANIA.

CAR.

SPECIFICATION forming part of Letters Patent No. 778,384, dated December 27, 1904.

Application filed November 4, 1903. Serial No. 179,789.

To all whom it may concern:

Be it known that I, EDGAR W. SUMMERS, of Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have invented a certain new and useful Improvement in Cars, of which improvement the following is a specification, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an end view of the car. Fig. 2 is a vertical longitudinal section taken in the center line of the car and extending from the end a part of the car's length. Fig. 3 is a partial sectional plan of a portion of the car, taken with the majority of the floor removed and extending from the end of the car part way toward the other end. Fig. 4 is a vertical transverse section taken through the floor of the car in the line 4 4 in Figs. 2 and 3. Fig. 5 is a partial transverse vertical section taken in the line 5 5 in Fig. 3. Fig. 6 is a partial transverse vertical section taken in line 6 6 in Fig. 3. Fig. 7 is a plan view of a portion of the end sill, taken in the line 7 7 in Fig. 1. Fig. 8 is the continuation of the car side from the broken-off portion in Fig. 4 up to the top, showing a cross-section through the top flange, taken in line 8 8 in Fig. 2 and also showing the stiffener connection to the top flange.

My invention relates to the class of cars having drop-bottoms for discharging the load, and is designed to provide a simple and efficient means of discharging the load all on either side of the track outside of the rail or between the rails, as desired.

The arrangement of the car and of the doors and door mechanism is designed along the lines brought out in my Patents Nos. 646,195 and 646,196, both issued March 27, 1900, and my copending application, Serial No. 176,416, filed October 9, 1903, some of the changes being, first, the doors for discharging the load in this case hinge and rotate about two opposite edges and are supported on both edges during rotation—that is, if one edge of the door is let down that edge of the door is supported during the time it is being lowered. This is also true of the other edge. The object of this is to prevent the shock due to dropping one edge of the door and arresting its downward motion suddenly and also to furnish means of opening the door part way only and holding it at any intermediate position between its full-closed and full-open positions. This has a great advantage in the distribution of material from the car, as in the process of distributing ballast, wherein it is desired to gage the quantity let out while the car is in motion.

In the drawings I show in Fig. 4 the doors 1 in solid black lines in their closed position and in broken lines in their several open positions, also in Fig. 3 in plan, end portions broken away. The hinge-lugs 2, to which are attached the chains 3 by means of clevises 4, which clevises are pivotally connected to the lugs 2, the idler-sheaves 5 for guiding the door-chains 3 at the abutting ends of the doors, the winding-drums 6 on winding-shaft 7, the winding-drums 8 on winding-shaft 9, the worm-wheel 10, and worm 11, the winding-chains 12, which are shown in broken lines (a dash and two dots) in Fig. 3, extending from shaft 9 to shaft 7, this whole actuating the doors at their inner or abutting edges; the chains 13, the winding-drums 14, the winding-shafts 15, the worm-wheels 16, and worms 17 for actuating the outer edges of the doors. The lugs 2 are the same on either edge of the door.

The floor-beam 18 (shown in longitudinal sectional elevation in Fig. 4 and in vertical transverse section in Fig. 2) has a double web, with the top portion coming together and forming a hood to cover up and protect the chains and chain-wheels from the lading, the lower edge of the beam following the general transverse slope of the floor and doors, the doors when in their closed position resting in close proximity to the lower edge of beam 18 and to the inner edge of the side sloping floor-plate 19, which position of side sloping floor-plate 19 and the upper edge of the door 1 is shown clearly in the cross-sectional view of these parts in Fig. 6. The abutting edges of the doors, showing their positions with regard to each other, is shown

in the cross-sectional view through this part of the doors in Fig. 5. The doors when rotating about these inner or abutting edges, as when the outer edge of either door is lowered, are pivotally supported on the chains 3. The chains 3 coming in from the side of the car support the inner edge of the door which is on that side of the center line of the car, and the chains 3 coming from the other side of the car support the door which is on that side of the center line, the pivoting-axes in the clevises 4 lying in a line at the intersection of the upper surfaces of the two doors, the chains and chain-sheaves not lying in the same vertical transverse plane through the car, but arranged longitudinally of the car, so as to permit of the hinge-clevises 4 and lugs 2 to pass by each other, each door being notched out far enough to permit the other's hinge to come into it to the common axial line. For the sake of clearness the doors are purposely omitted in Fig. 2 and only partially shown in plan view in Fig. 3. The arrangement of the chains for operating the central part of the doors is shown in Fig. 3 by two dots and a dash-line instead of drawing them out in full.

The worm-gears 10 11 and 16 17 are preferably actuated by vertical shafts 20 and hand-wheels 21. The worm-gears are incased in bearings 22, which are made hollow, so as to retain a bath of oil, in which the gear operates. The gear-case is not shown on the drawings except Fig. 1.

The draft-sill 23 extends from the end of the car in passing the center plate 24 and ending near the door-opening, thereby leaving a clear space in the central part of the car usually occupied by a center sill and making it possible to use doors of the character above described. In order to transmit the buffing and tugging stresses through to the opposite end of the car, the diagonal struts 24 are attached near the outer end of draft-sill 23 by rivets in the upper flange of the draft-sill channels and are also riveted to the lower flanges 25 of the car sides 26, the transverse components of the buffing or tugging stresses being taken in the cover-plate 27 at the outer end of 24 and in the horizontal tie-plate 28, which is at the inner end of 24.

The end sill 29 is preferably made of channel shape and extends over the top of draft-sill 23, the diagonal members 30 extending from 29 down to and abutting against the vertical web of draft-sill channels 23 and is pin-connected to carry iron 31 by pins 32. A portion of 30 and of 31 is shown in plan in Fig. 7 with pins 32 in position. 31 is omitted in the sectional view of the car in Fig. 2. The ends of end sill 29 are fixed to side plates 33, preferably by rivets, which side plates 33, acting as cantaliver-beams, assist in supporting the draft-sill against vertical movement through their connections with the end sill.

In Figs. 2 and 8 the top flange 34 of the side sheet of the car-body is shown bent inward and then downward, which downward portion is supported by rivet connections 36 to inner stiffeners or stakes 35, similar to that shown and claimed in my Patent No. 728,044, issued May 12, 1903, but differing in that in this present application the side sheets are not bent laterally and set outward near the top, but extend in a straight line from the top downward, giving the maximum inside capacity for the car with a given outside clearance. The inward-bent top flange on the side sheet slopes downward, which forms a better support for lumps of coal or other lading when trimmed high and piled out to the extreme width of the car.

Many changes may be made in the form, arrangement, and general framing of the car and in the arrangement and means of supporting and operating the doors without departing from my invention.

I claim—

1. The combination with a car-bottom, of a door, having a plurality of hinge-axes, the hinge connections supporting the door at a plurality of hinge-axes during rotation about any hinge-axis; substantially as described.

2. The combination with a car-bottom, of a door having a plurality of hinge-axes, the said hinge-axes being supported on chains, which chains may be let out at any hinge-axis, rotating the door about another hinge-axis; substantially as described.

3. The combination with a car-bottom, of a door which is hinged at two opposite edges, the hinge connections supporting the door at both of the hinged edges during rotation about either hinged edge; substantially as described.

4. The combination with a car-bottom, of a door which is hinged at two opposite edges, the hinges being supported on chains, which chains may be let out at either edge, rotating the door about the opposite edge; substantially as described.

5. The combination with a car-bottom, of a pair of doors abutting each other, each door being hinge-supported at the abutting edge and at the opposite edge, the hinge connections supporting the door at either edge during rotation about the opposite edge; substantially as described.

6. The combination with a car-bottom, of a pair of doors which abut each other, each door being hinge-supported on chains at the abutting edge and at the opposite edge, the chains supporting the door at either edge during rotation about the opposite edge; substantially as described.

7. The combination with a car-bottom, of a pair of doors which abut each other, the abutting joint lying in the longitudinal center line of the car, the said doors being supported at their abutting edges and at their opposite edges on chains; substantially as described.

8. The combination with a car-bottom, of a door which is hinge-supported on chains at two opposite edges of the door; substantially as described.

9. The combination with a car-bottom, of a pair of doors which abut each other and which are hinge-supported on chains at their abutting edges and also at the edges opposite their abutting edges; substantially as described.

10. The combination with a car-bottom, of a door which is hinge-supported on chains at two opposite edges and of a double-web floor-beam which protects the chain from the car-lading while the door is in its closed position; substantially as described.

11. The combination with a car-bottom, of a door which is hinge-supported on chains at two opposite edges and of a winding-shaft for the chain at each hinge edge, which is actuated by a worm and worm-wheel; substantially as described.

12. The combination with a car-bottom, of a pair of doors which abut each other and which are hinge-supported at their abutting edges and also at the edges opposite their abutting edges, the hinges being supported on chains, which may be wound up and unwound, the chains at the outer edge of each door being actuated and controlled by a separate winding-shaft and worm-gear, while the chains at the abutting edges of the pair of doors are actuated and controlled by a common worm-gear and its connections; substantially as described.

13. The combination with a car-bottom, of a door which is hinge-supported on chains at two opposite edges and of a winding-shaft for the chain at each hinge edge which is actuated by worm-gear, which worm-gear is operated in an oil-holding gear-case; substantially as described.

14. In a car, the combination of a triangular truss, with a draft-sill and the car sides, in which the apex of the triangular truss is attached to the draft-sill near its outer end and the base-corners of the triangle are attached to the car sides for the purpose of transmitting the buffing and tugging stresses through the car; the inner end of the draft-sill terminating at or near the base of the triangle; substantially as described.

15. In a car, the combination with a draft-sill, of an end sill having an upper member which extends over the draft-sill and a lower truss member which extends under the draft-sill, the middle portion of the lower member being pin-connected to permit of removal; substantially as described.

16. In a car, having its sides composed of plates of metal, the said side plates being located substantially on the lines of the maximum width of the car, and having their top parts flanged inward and then downward, the downward flange being supported on inside stiffeners; substantially as described.

17. In a car, having its sides composed of plates of metal, the said side plates being located substantially on the lines of maximum width of the car, and having their top parts flanged inward with a downward slope; substantially as described.

18. In a car, having its sides composed of plates of metal, the said side plates being located substantially on the lines of maximum width of the car, and having their top parts flanged inward with a downward slope, the inward-extending portion being further provided with a downwardly and backwardly bent flange portion which is supported on inside stiffeners; substantially as described.

19. In a dumping-car, a bottom door hinged at two opposite edges, the hinge connections supporting the door at both of the hinged edges during rotation about either hinged edge, substantially as described.

20. In a dumping-car; a bottom door hinged at two opposite edges, the hinges being supported on chains which chains may be let out at either edge, rotating the door about the opposite edge, substantially as described.

21. In a dumping-car; a bottom door which is hinge-supported on chains at two opposite edges of the door, substantially as described.

In testimony whereof I have hereunto set my hand.

EDGAR W. SUMMERS.

Witnesses:

F. H. MOYER,

F. E. GAITHER.