

No. 789,392.

PATENTED MAY 9, 1905.

E. W. SUMMERS.  
CAR.

APPLICATION FILED FEB. 16, 1905.

4 SHEETS—SHEET 1.

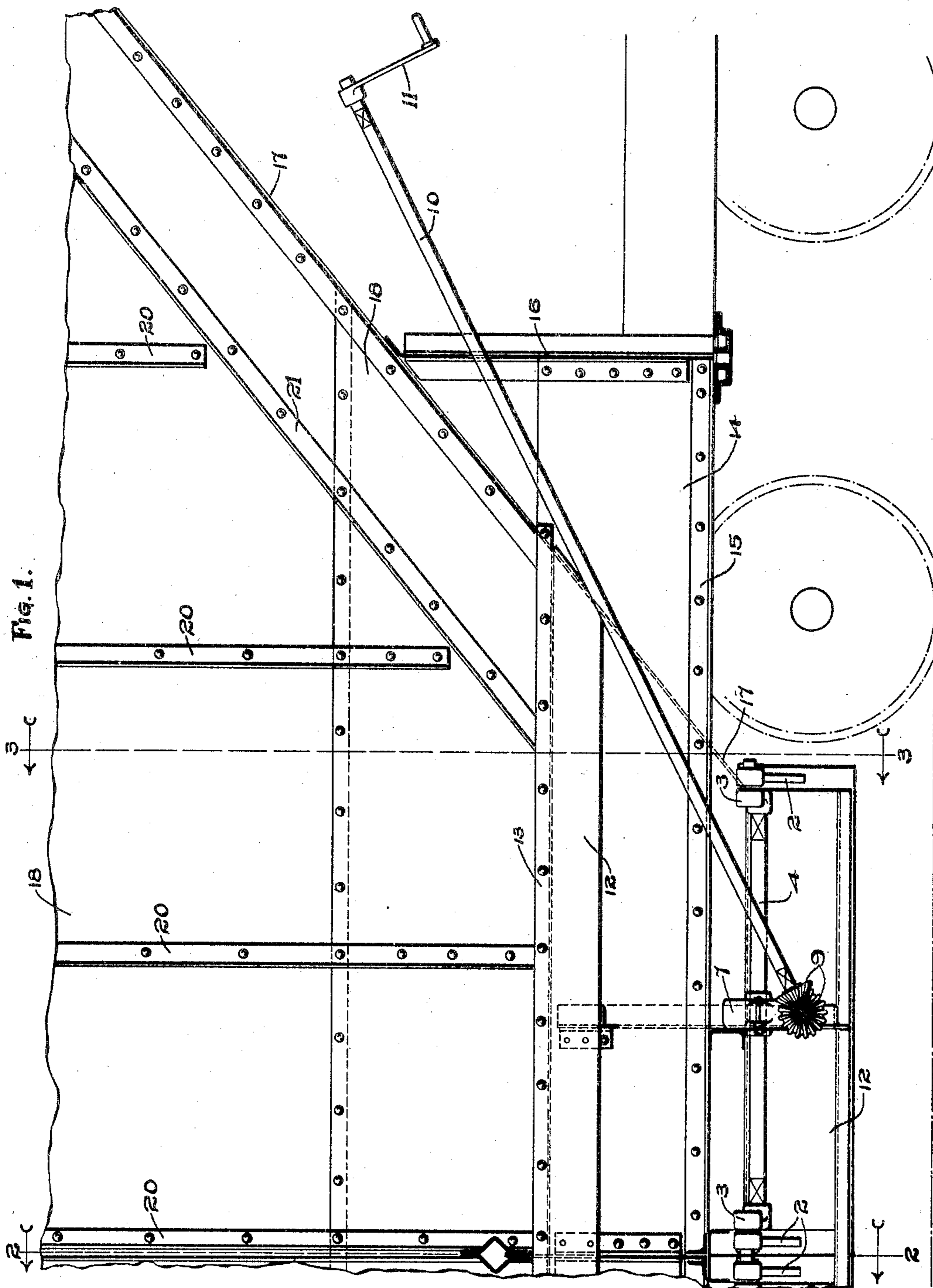


Fig. 1.

WITNESSES:

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*Charles Bernier*

INVENTOR:

*E. W. Summers*

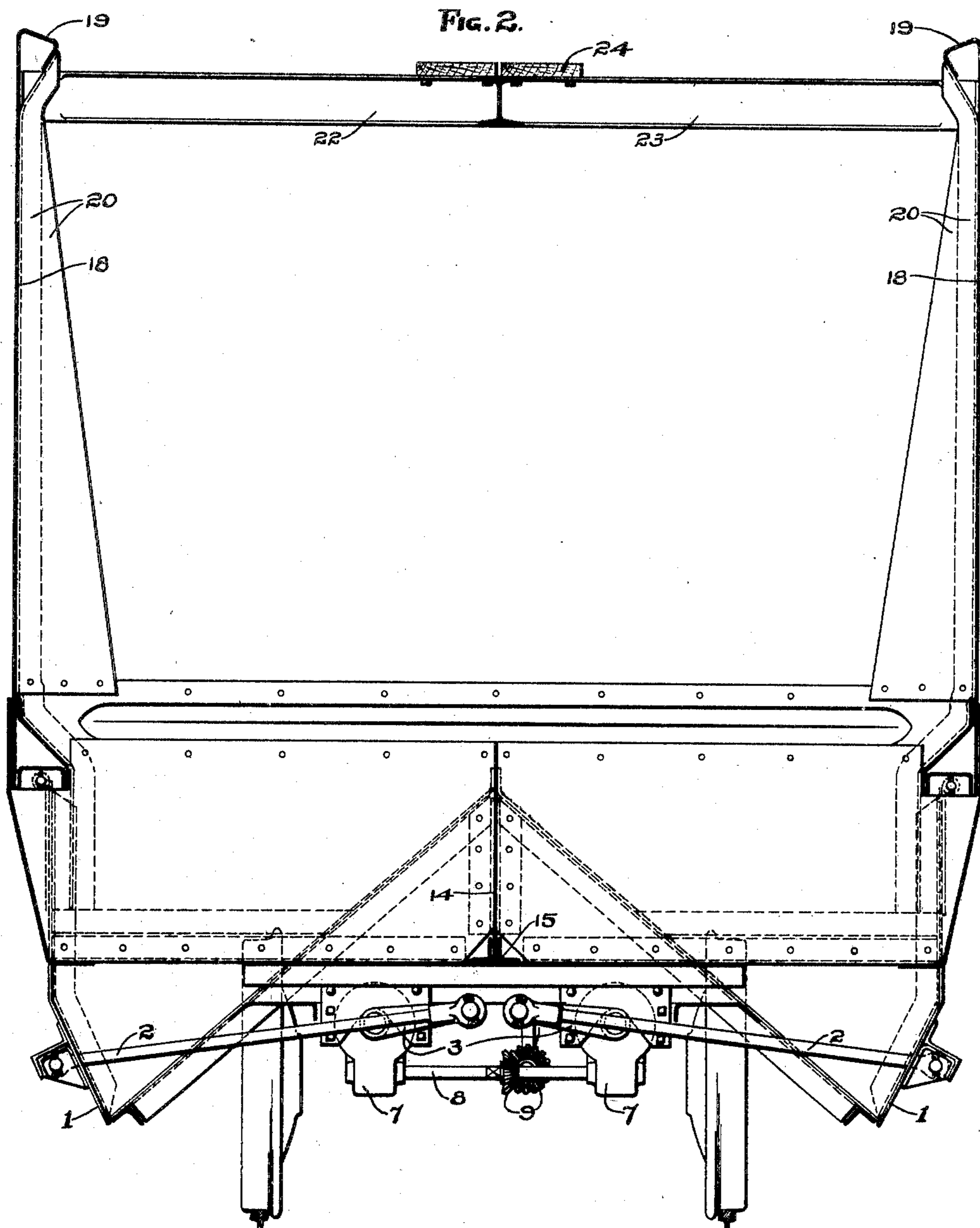
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4 SHEETS—SHEET 2.



WITNESSES:

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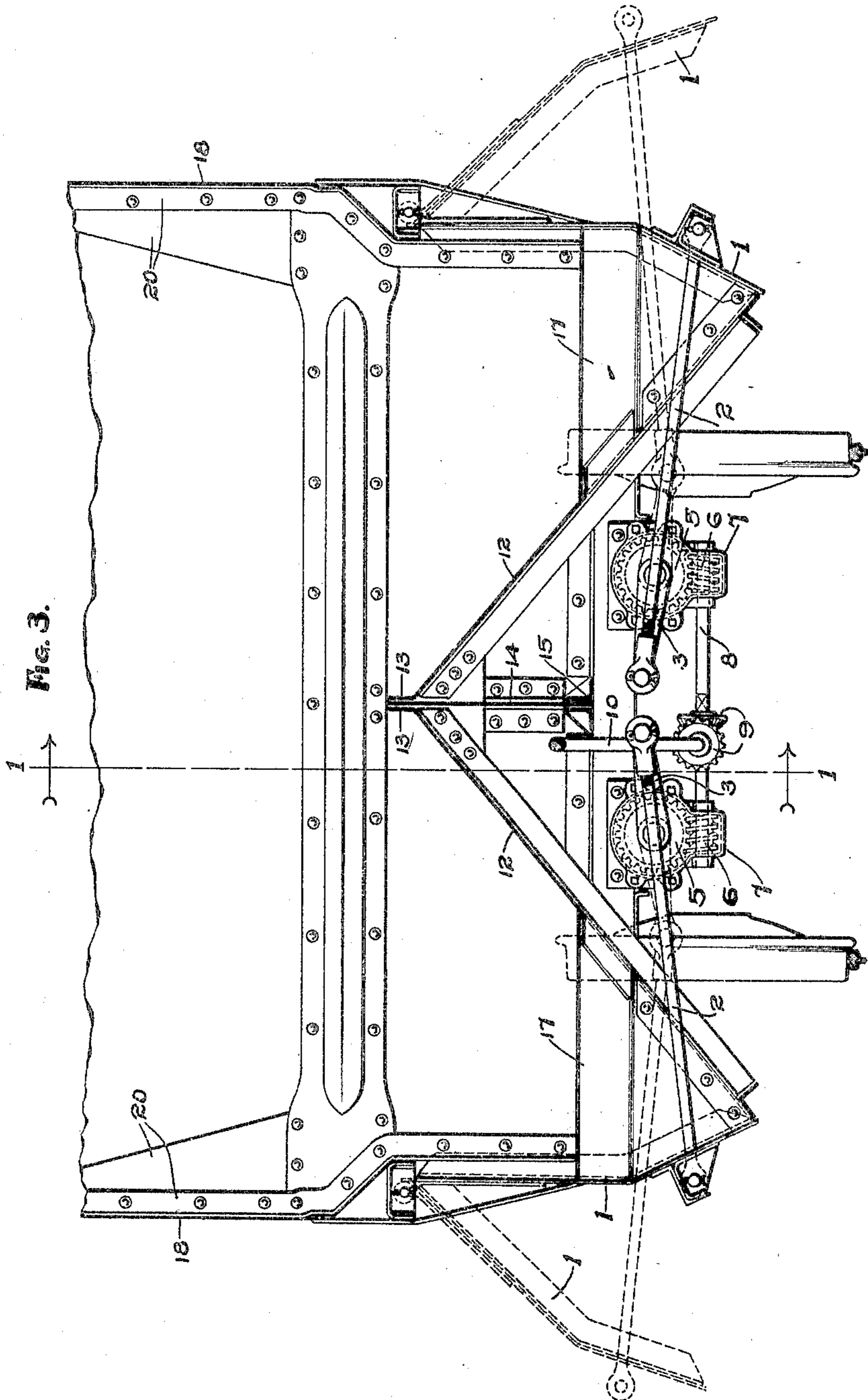
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4 SHEETS—SHEET 3.



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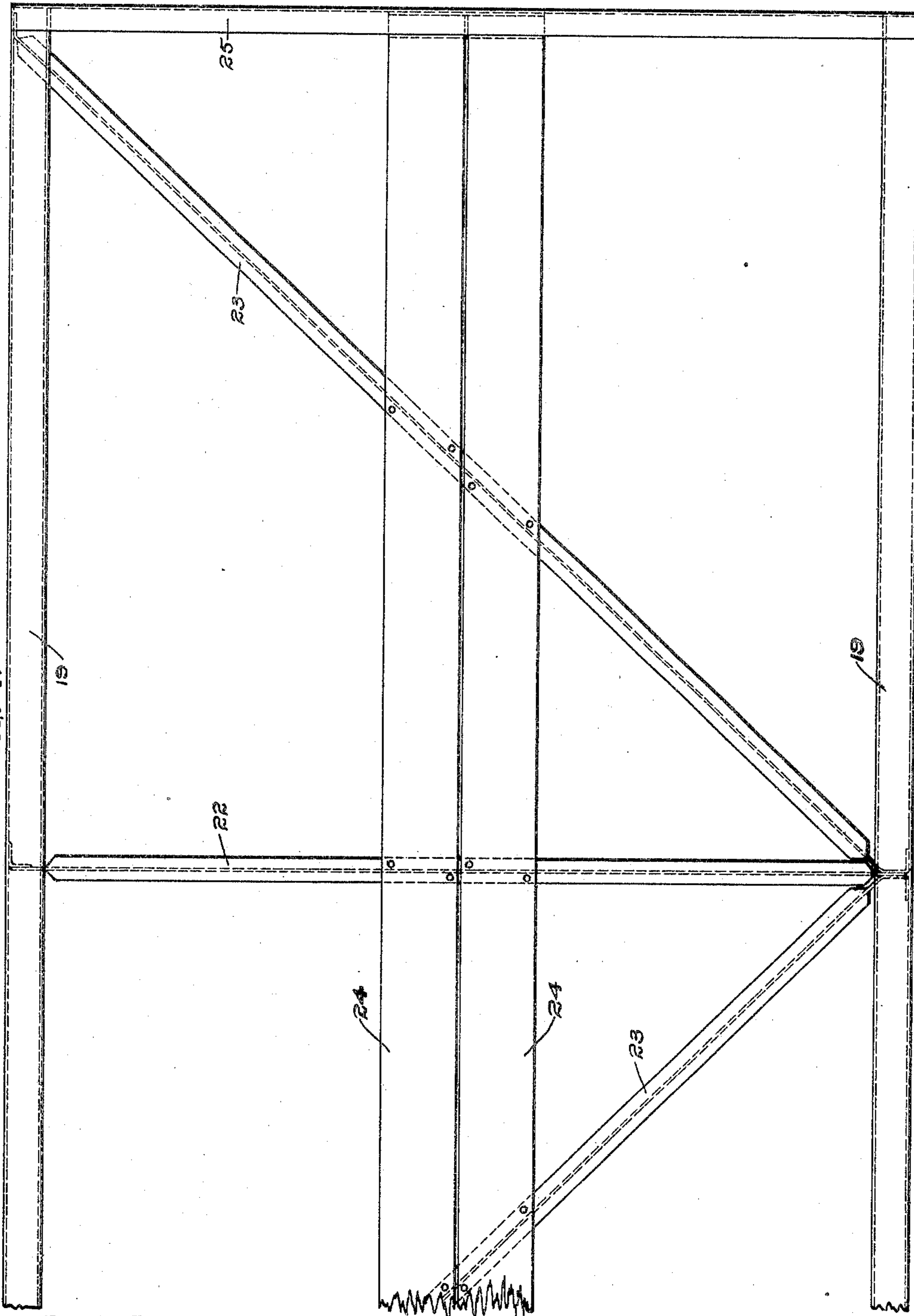
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4 SHEETS—SHEET 4.

Fig. 4.



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# UNITED STATES PATENT OFFICE.

EDGAR WEBSTER SUMMERS, OF WILKINSBURG, PENNSYLVANIA.

## CAR.

SPECIFICATION forming part of Letters Patent No. 789,392, dated May 9, 1905.

Application filed February 16, 1905. Serial No. 245,951.

*To all whom it may concern:*

Be it known that I, EDGAR WEBSTER 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 a vertical longitudinal section taken in line 1 1 in Fig. 3, showing a portion of the car from the transverse center line out nearly to the right end of the car, the top and end portions being broken away. Fig. 2 is a vertical transverse section taken in line 2 2 in Fig. 1 and showing the car from top to bottom. Fig. 3 is a partial vertical transverse section taken in line 3 3 in Fig. 1, showing the doors with full lines in their closed position and with broken lines in their open position. Fig. 4 is a plan view of the top of the car-body, showing a portion from the center line out to the end of the car.

My invention relates to the class of cars having side discharge-doors at the lower edge of the car sides, and is designed to provide a simple and efficient means of opening and closing said doors and of holding them in any position, either open or closed or intermediate, and also to provide an arrangement of the car-body framing that will make a more rigid construction than is now in use in the large-capacity steel coke-cars.

In the drawings I show the doors 1, the connecting-rods 2, the bell-cranks 3, the crank-shaft 4, the worm-wheel 5, the worm 6, the gear-case 7, the worm-shaft 8, the bevel-gears 9, the operating-shaft 10, and the hand-crank 11, all of which constitute the door-operating mechanism. I also show the transverse sloping floor 12, its top flange 13, the single-web center sill 14, the bolster 16, the end-sloping floor 17, the car side sheets 18, its top flange 19, inside vertical stiffening members 20, inside inclined stiffening members 21, top transverse bracing 22, top transverse diagonal bracing 23, top running-boards 24, and end plate 25.

The W-shaped cross-section of the bottom of the car formed by the floor 12 and

doors 1 is known to be old; but the low delivery or discharge position of the doors and floor combined with the worm-gear arrangement for operating the doors is believed to be novel. The action of the worm-gear is such that the bell-crank 3 may stand in any radial position around its axis of rotation, and thus hold the door either open or closed, as in Fig. 3, or at any intermediate point between full open or closed position without any additional latch mechanism. This permits the bell-crank to operate in the under half of its circle of rotation, while the usual method where worm-gears are not used is to rotate in the upper half and allow the connecting-rod 2 to rest on the crank-shaft 4 when the doors are closed, and thereby be held from further rotation by gravity. This, however, requires a greater opening to be hooded over for the connecting-rod 2, and thereby obstruct the flow of the material to be discharged.

The development of the coke industry has brought into use open-top cars (by "open-top" I mean the top is not inclosed, as with a roof) of large cubic capacity, and in order to obtain the maximum capacity in a given length and height of car I place the side sheets in the plane of the greatest outside clearance of the car and use inside stiffeners to stay the plates against buckling. To prevent the top of the side sheets from swaying sidewise, I employ top lateral bracing 22 and 23, which holds the top flange 19 in alignment, thus producing a more rigid and longer-lasting car than by the present practice of depending on the cantaliver effect of the stiffeners holding the sides by their anchorage to the bottom framing of the car. It will be noted that the stiffeners 20 do not extend down to the end-sloping floor 17, thus giving the car contents freedom from this obstruction when the load is being discharged. I use a single-web center sill extending, preferably, continuously from bolster to bolster, the top edge of the center-sill web extending up between the floor-flanges 13, which are firmly riveted thereto, suitable cross-ties extending between floor-plates 12 underneath the center sill. The center sill and floor-plates may be

supported on the car sides at intermediate points between the truck centers by means of cross-beams.

Many changes may be made in the details, proportions, and number of parts in the car without departing from my invention.

I claim—

1. The combination with a car-bottom, of a door, which is hinged at or near its upper edge to the car side, and which door is rotated about its hinged edge by means of a connecting-rod, which is actuated by power transmitted through a worm-gear; substantially as described.

2. The combination with a car-bottom which is inclined, of a door, which is hinged at or near its upper edge to the car side, the hinge-axis being lengthwise of the car, and which door is rotated about its hinged edge by means of a connecting-rod, which is actuated by power transmitted through a worm-gear; substantially as described.

3. The combination with a car-bottom, having a W-shaped cross-section, of a pair of doors which are hinged to the car side, and which doors are actuated and controlled by means of worm-gearing; substantially as described.

4. The combination with a car-bottom, having a W-shaped cross-section, of a pair of doors

which are hinged to the car side, having connecting-rods extending from their lower parts inwardly and attached to bell-cranks, which bell-cranks are actuated and controlled by means of worm-gearing; substantially as described.

5. The combination with a car-bottom, of a pair of worm-wheels, located on shafting, which extend longitudinally of the car, the said worm-wheels being actuated by a pair of worms, which are actuated by a transversely-extending shaft, which shaft is actuated by suitable connection to a hand-crank; substantially as described.

6. In a car having a floor-plate sloping downwardly and outwardly from the longitudinal center line of the car, a single-web metallic center sill extending from bolster to bolster, and having its upper portion fixed between the flanges of the downwardly and outwardly extending floor-plates; substantially as described.

In testimony whereof I have hereunto set my hand.

EDGAR WEBSTER SUMMERS.

Witnesses:

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