A. BECKER.

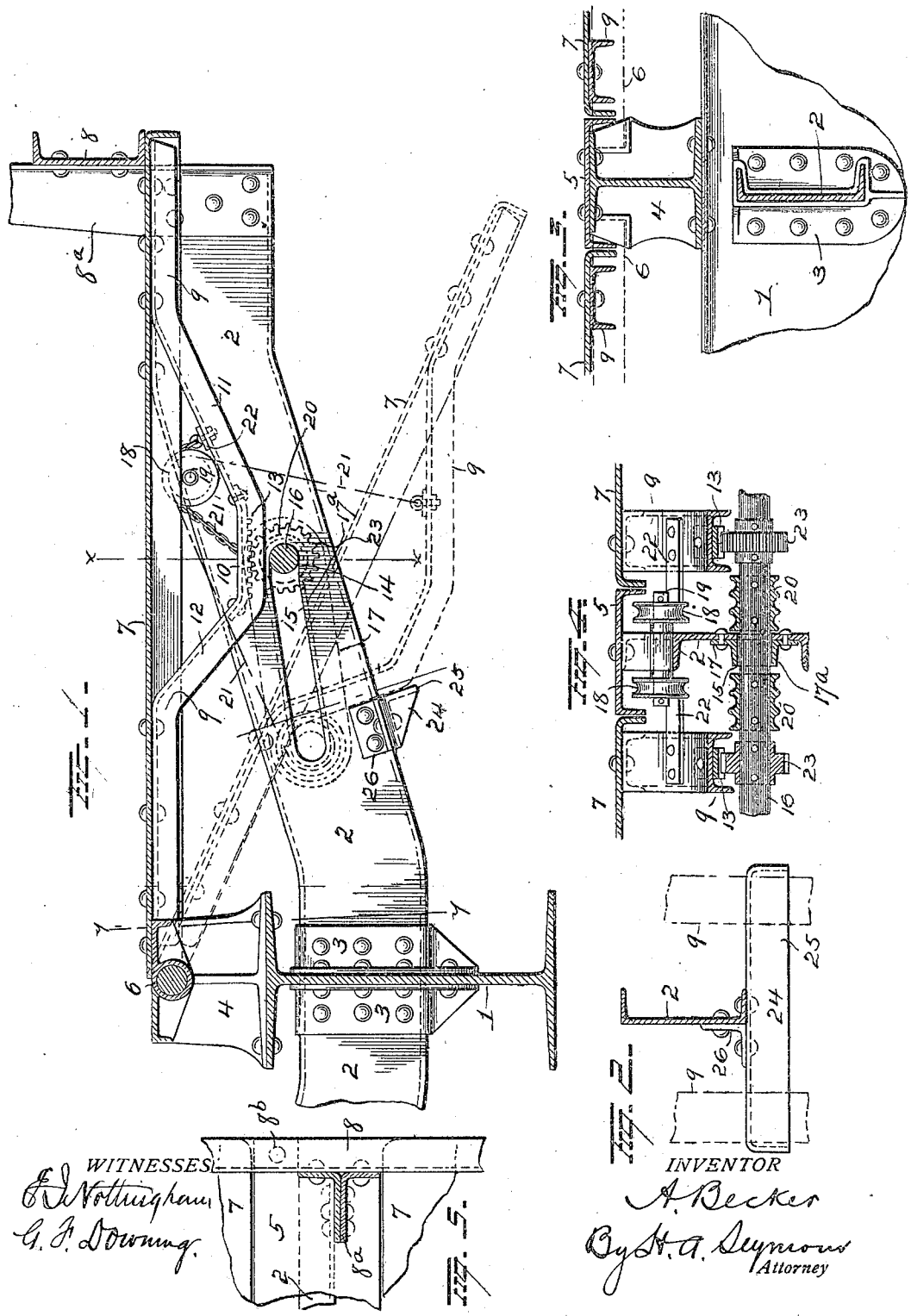
GONDOLA CAR.

APPLICATION FILED JAN. 21, 1909.

952,026.

Patented Mar. 15, 1910.

2 SHEETS—SHEET 1.



WITNESSES

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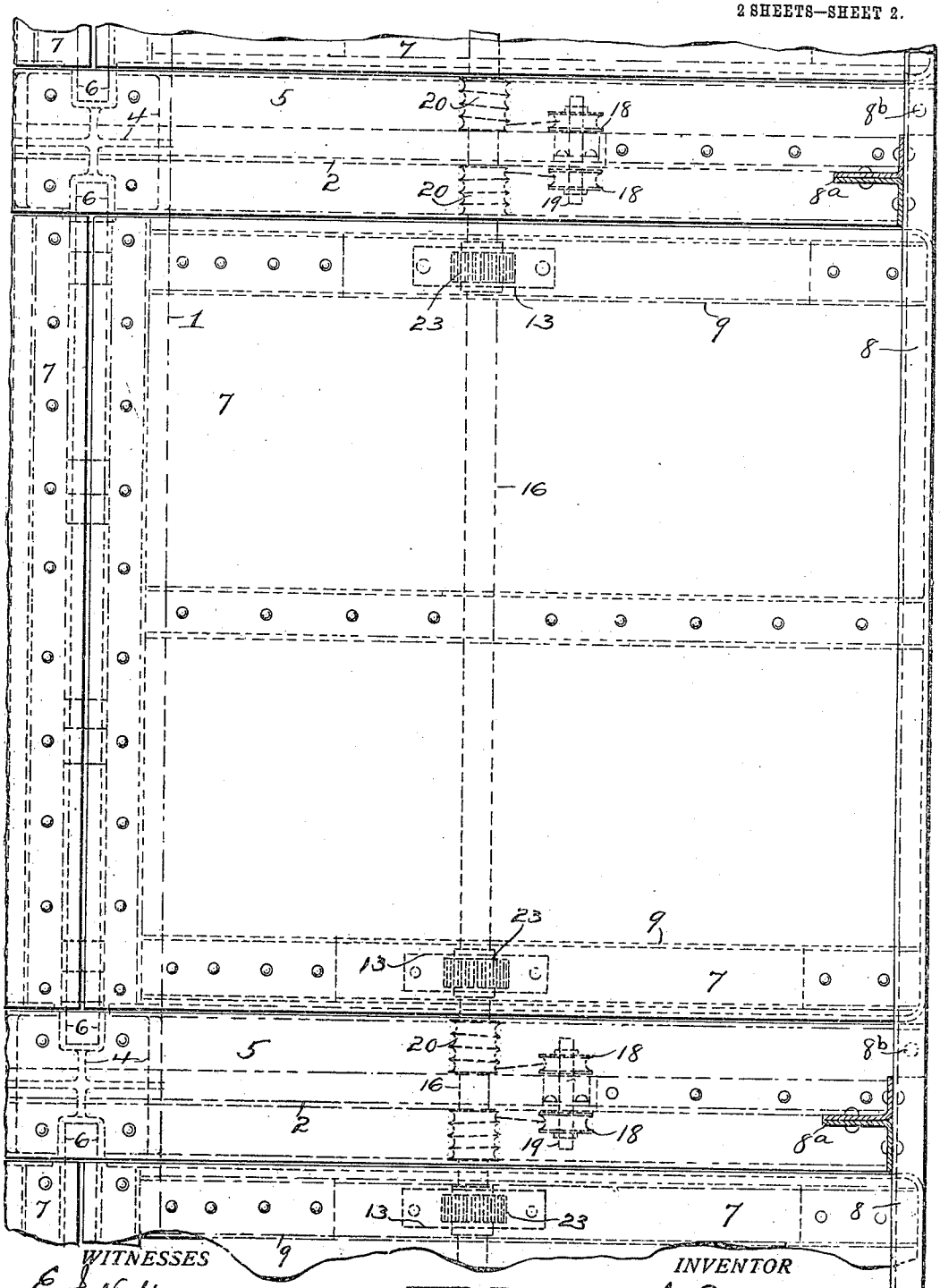

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FIG. 2.

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UNITED STATES PATENT OFFICE.

ANTON BECKER, OF COLUMBUS, OHIO, ASSIGNOR TO THE RALSTON STEEL CAR COMPANY, OF COLUMBUS, OHIO.

GONDOLA CAR.

952,026. Specification of Letters Patent. Patented Mar. 15, 1910.

Application filed January 21, 1909. Serial No. 473,417.

To all whom it may concern:

Be it known that I, ANTON BECKER, of Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Gondola Cars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in gondola cars and more particularly to such as employ a bottom composed of drop-doors arranged in series extending the entire length of the car at each side of the longitudinal center,—the object of the invention being to provide operating mechanism for the drop doors, which can be supported by the cross-bearers and which will operate to support the doors in closed position in such manner that the supporting means shall be located transversely of the doors and centrally between the hinged connection thereof with the center girder and the sides of the car.

A further object is to provide means to open and close the doors in the shortest possible time and yet provide substantial support for the drop doors located at about the longitudinal center of the doors and thus reduce to a minimum the travel of the operating shaft.

A further object is to provide drop-door operating mechanism supported by the cross-bearers of a car and which can be employed for raising, lowering and supporting the doors in their closed position.

With these objects in view the invention consists in certain novel features of construction and combinations of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings, Figure 1 is a transverse sectional view of a portion of a gondola car showing the application of my improvements thereto. Fig. 2 is a detail view showing the manner of securing the door stops in place. Fig. 3 is a sectional view on the line *x*—*x* of Fig. 1. Fig. 4 is a sectional view on the line *y*—*y* of Fig. 1; Fig. 5 is a plan view partly in section showing the cross bearer cover plate and stake application, and Fig. 6 is a plan view.

1 represents the center girder of the car and in the present instance is made in the form of an I-beam, the web of which is provided at intervals with vertical elongated slots for the passage of continuous cross-bearers 2. The intermediate portion of each cross-bearer which passes through the web of the center girder is horizontal and its connection with the center girder is strengthened by means of brace plates 3 secured to the cross bearer and to the web of the center girder. From its intermediate horizontal portion, each cross-bearer projects upwardly and outwardly in an inclined direction and its outer portions are disposed horizontally with their upper edges in a plane above that of the top of the center girder. Brackets 4 are located upon the center girder and their upper faces are in the same horizontal plane with the upper edges of the outer portions of the cross-bearers.

A channel cover plate 5 is secured to the top of each bracket 4 and extends to the side of the car, the ends of said cover plate being secured to the bottom flanges of side sills 8 as shown at 8^b Fig. 5, so as to strengthen the frame transversely. At the sides of the car, the channel side sills 8 are supported by stakes 8^a to which they are riveted and said stakes are, in turn, secured to the vertical web of the cross bearer.

The brackets 4 are made with bearings for the reception of the hinge rods 6 of drop doors 7,—each of said drop doors being adapted to close the space between two cross-bearers and between the center girder 1 and the side sills 8 of the car.

Two channel brackets 9 are secured to each drop door in proximity to the side edges thereof and each of these brackets is made with a comparatively short horizontal portion 10 disposed some distance below the under face of the door and connected with the horizontal end portions which are secured to the door, by means of diagonal members 11, 12. The depressed horizontal portion 10 of each bracket 9 is disposed centrally between the hinged support of the door over the center girder and the free edge of the door and has secured to its bottom face a rack bar 13.

The diagonal portion of each cross-bearer (at both sides of the center girder) is pro-

vided with an elongated slot 15 through which the operating shaft 16 passes. The slotted portion of each cross-bearer is preferably braced by means of a face plate 17 and the latter is provided at its inner edges with a flange 17ª. Each slot or guideway 15 terminates at one end directly beneath the horizontal portion 10 of the bracket 9 carried by the drop door and the operating shaft 16 passes through the guide slots of all the cross bearers and extends to one or both ends of the car where it is provided with suitable means for manually operating it. Each slot 15 is diagonally disposed, except at its upper end, which is made horizontal for a short distance, as shown at 14, Fig. 1, to prevent the shaft from rolling down the slot. It will be seen that when the doors are closed, the shaft 16 will be disposed at the end of the guide slots of the cross-bearers under the horizontal portions 10 of the brackets 9 and that therefore the supporting means for the doors in their closed positions will extend transversely across said doors midway between the hinged connection with the center girder and their free ends.

Pulleys 18 are mounted on suitable journals 19 secured to the cross-bearer 2 and to the shaft 16, worm-drums 20 are secured. One end of a chain 21 is secured to an arm 22 projecting from the door bracket 9 of each door and after passing over a pulley 19 each chain is wound on one of the worm-drums 20. It will be observed that the worm-drums 20 are arranged in pairs adjacent to each cross-bearer and that the chain from one drum of the pair is connected with the bracket 9 of one door while the chain from the other drum of the pair is connected with the bracket 9 of the door at the other side of the cross-bearer. The shaft 16 is provided with a series of pinions 23 to mesh with the rack-bars 13 on the brackets 9 of the several doors and as each door is provided with two brackets 9 disposed in proximity to the edges thereof adjacent to the cross-bearers, two pinions 23 are provided on the shaft 16 for each door and therefore when the shaft 16 is moved laterally through the guide slots of the cross-bearers, two pinions thereon will engage the door brackets at both edges of each door.

When the doors are in their open positions, as indicated by dotted lines Fig. 1, the shaft 16 will be located at the left hand end (see Fig. 1) of the guide slot 15 and will be disposed approximately coincident with the angle formed by the inclined portion 12 of the door bracket 9 and the inner horizontal portion of said door brackets. The doors will be supported in their open position by means of stops 24. These stops are formed by a flanged or dish shaped bar 25, secured to the lower edge of the cross bearer and braced by angle iron 26,—said bar projecting laterally from the cross bearer and thus constituting stops against which the brackets 9 of two doors abut.

When the doors are in their closed position and the operator desires to drop the same to open position, he will rotate the shaft 16 and pinion 23 to the right, thus releasing the chain 21 and disengaging the pinions from the racks 13. The operating shaft will now move to the lower ends of the guide slots 15 in the several cross bearers and the doors will drop to their open positions with the brackets 9 resting against the stops 24. To close the doors, the operator will rotate the shaft 16 to the left, thereby tightening the chains 21 and raising the doors. A continued rotation of the shaft will cause the latter to move to the upper ends of the guide slots 15, with the pinions in engagement with the bottoms of the brackets 9 to which the rack bars 13 are secured.

Having fully described my invention what I claim as new and desire to secure by Letters-Patent, is:—

1. In a drop bottom car, the combination with a center girder, a cross-bearer having an elongated guideway, and a drop door having hinged connection with the center girder, of a bracket secured to the drop door and depending therefrom, the lower end of said bracket being disposed intermediate the ends of the door a shaft movable in the guideway in the cross-bearer and adapted to become disposed under the lower end of said bracket for supporting the door in closed position, a drum on said shaft, a pulley supported by the cross-bearer, and a chain connected at one end with the bracket, passing over said pulley and wound at its other end on the drum carried by said shaft.

2. In a drop bottom car, the combination with a center girder, a cross-bearer having an elongated guideway, and a drop door having hinge connection with the center girder, of a bracket secured to the drop door and depending from the intermediate portion thereof, a shaft movable laterally in the elongated guideway of the cross-bearer, a drum on said shaft, a pulley supported by the cross-bearer, a chain wound on said drum, passing over said pulley and connected with the bracket on the door, a rack-bar on the depending portion of the bracket, and a pinion secured to the laterally movable shaft and adapted to mesh with said rack-bar.

3. In a drop bottom car, the combination with a center girder, and brackets located upon the same, of cross bearers secured to the center girder and projecting therefrom in a lateral and upward direction, the outer ends of said cross bearers disposed in approximately the same horizontal plane as that of the tops of the brackets on the cen-

ter girder, cover plates secured to said brackets and to the outer portions of the cross bearers, drop doors having hinged connection with said brackets, and operating means mounted in the cross bearers.

4. In a drop bottom car, the combination with a center girder, and brackets located over the same, of a cross bearer passing through the web of the center girder, and projecting laterally and upwardly above the plane of the center girder, the outer ends of said cross bearer terminating in the plane of the top of the brackets over the center girder, drop doors having hinge rods mounted in the center girder brackets, and operating mechanism for the doors, said operating mechanism mounted in and supported by the outwardly and upwardly projecting portions of the cross bearer.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

ANTON BECKER.

Witnesses:
E. S. CULVER,
T. A. LIVINGSTON.