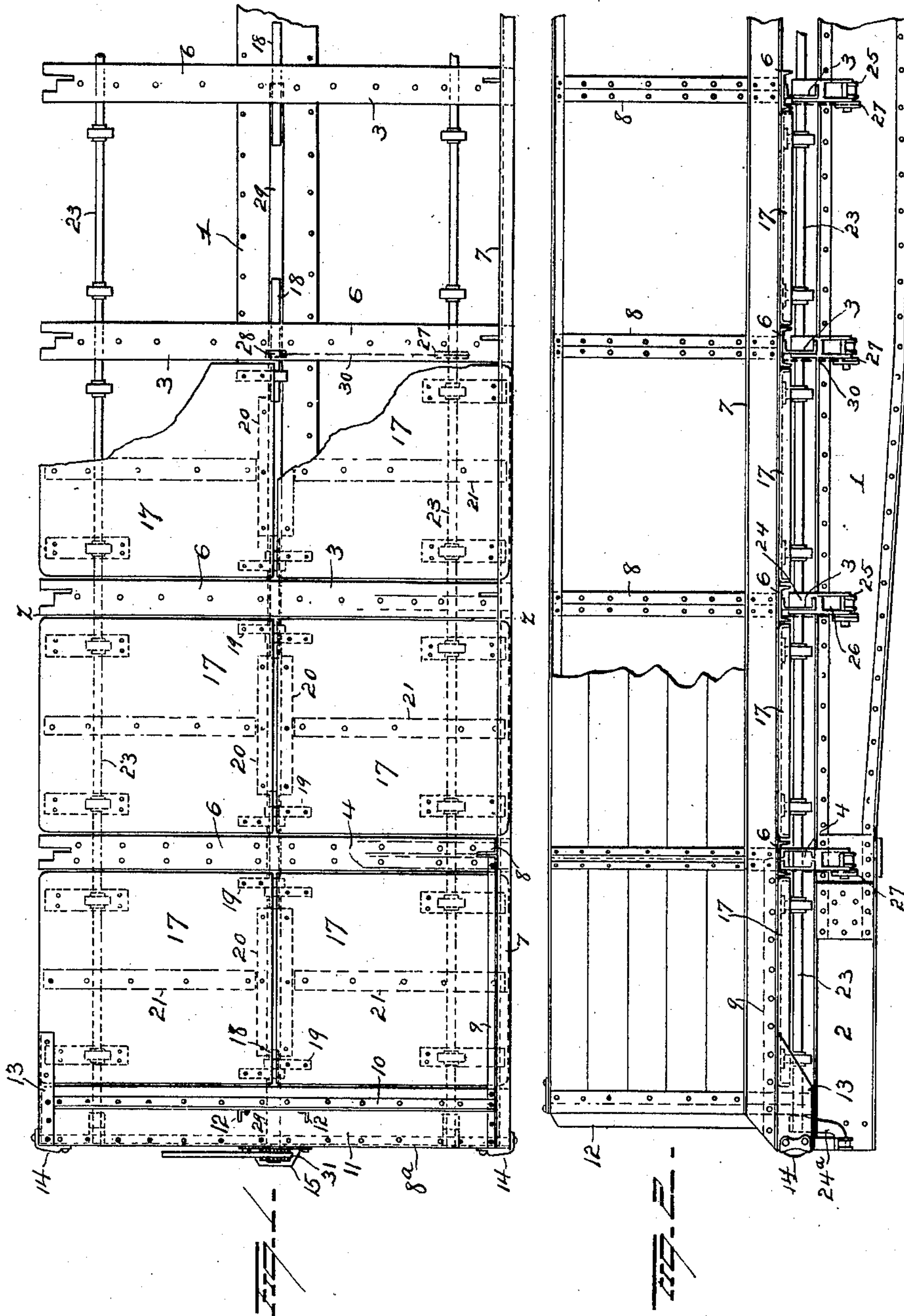


A. BECKER.
 DROP BOTTOM CAR.
 APPLICATION FILED JAN. 25, 1909

976,538.

Patented Nov. 22, 1910.

3 SHEETS—SHEET 1.

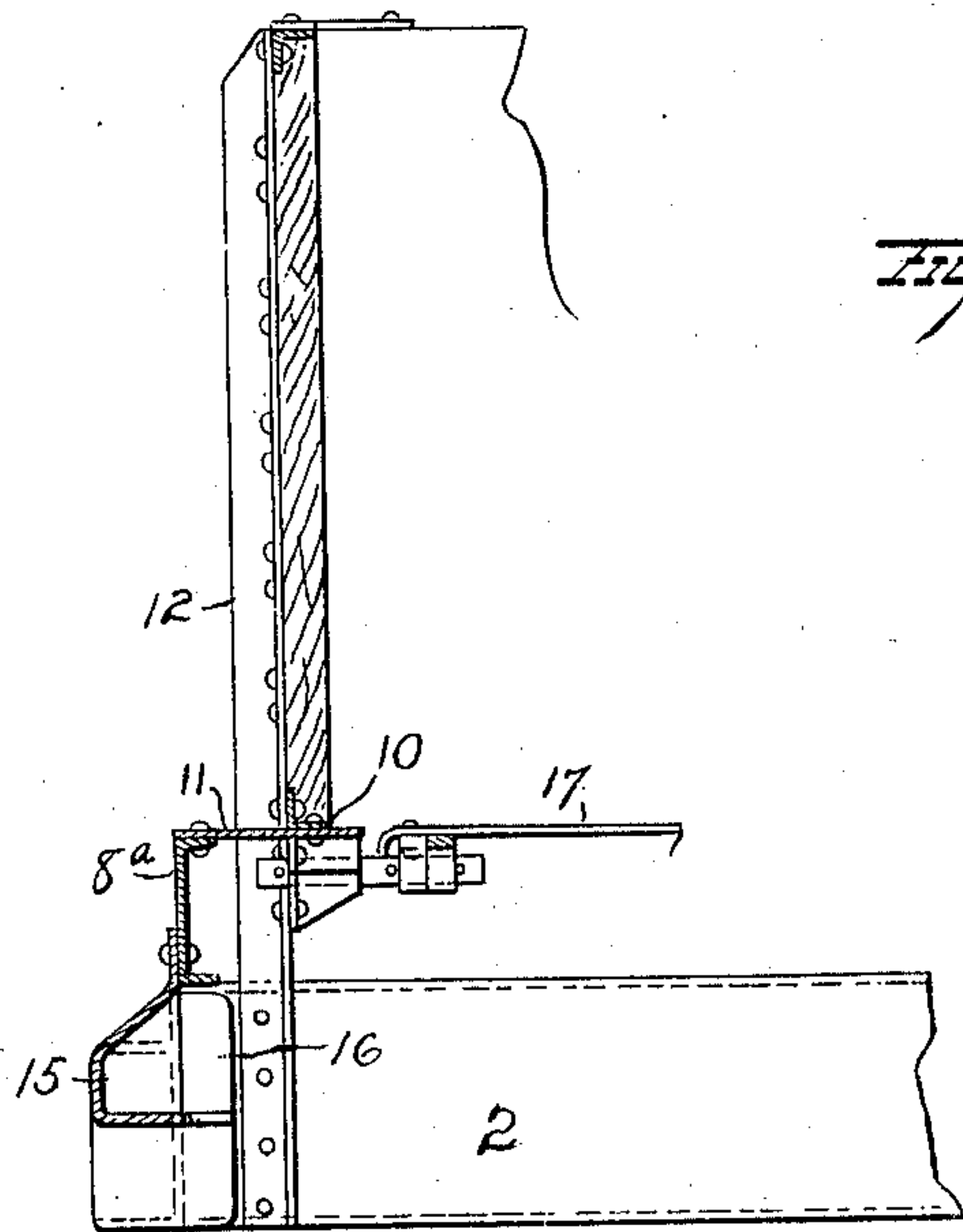


WITNESSES
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G. J. Downing

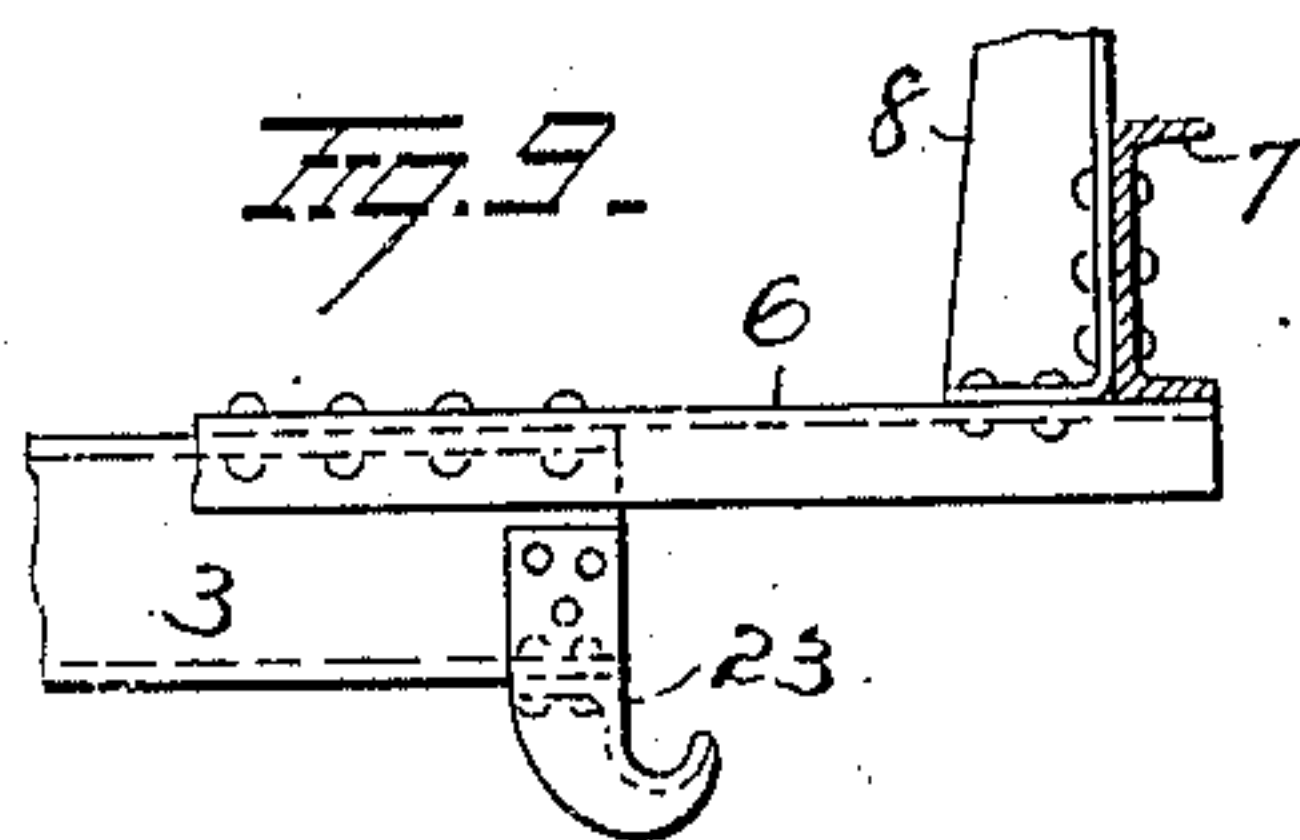
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3 SHEETS—SHEET 2.



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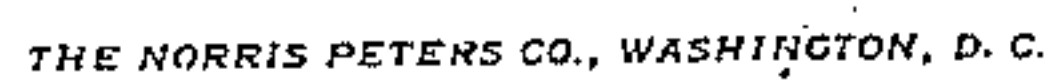
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3 SHEETS—SHEET 3.



UNITED STATES PATENT OFFICE.

ANTON BECKER, OF COLUMBUS, OHIO.

DROP-BOTTOM CAR.

976,538.

Specification of Letters Patent. Patented Nov. 22, 1910.

Application filed January 25, 1909. Serial No. 474,063.

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 Drop-Bottom 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 drop-bottom cars,—an object of the invention being to provide simple means for opening and closing the hinged drop doors and afford substantial support for the same when they are in either open or closed position.

A further object is to provide means which can be operated to open or close one-half the drop doors simultaneously.

A further object is to so construct the door operating mechanism that it can be easily applied, and removed if necessary.

A further object is to provide door operating mechanism for drop bottom cars which can be easily and quickly constructed and in which the use of complicated parts shall be avoided.

With these and other 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 plan view partly broken away of a portion of a car bottom embodying my improvements. Fig. 2 is a side elevation partly broken away. Fig. 3 is an end view. Fig. 4 is a section on the line $x-x$ of Fig. 3. Fig. 5 is an enlarged, partial transverse section showing the door operating mechanism. Fig. 6 is a section on the line $y-y$ of Fig. 5. Fig. 7 is a section on the line $z-z$ of Fig. 1. Fig. 8 is a section on the line $a-a$ of Fig. 5 with the door operating means removed, and Fig. 9 is a view of a modification.

1 represents a center sill of the box type and 2 the draft sills connected with the end thereof. A series of transverse members comprising cross-bearers 3 and bolsters 4 are secured upon the center sill and between these transverse members and the center sill, reinforcing plates 5 are secured to both. The transverse members are preferably made in the form of channel beams and are provided with channel beam cover plates 6 hav-

ing their flanges projecting downwardly. The outer ends of the cover plates 6 have secured upon them, side sills 7 which may also consist of channel beams. Side stakes 8 are secured to the inner faces of the side sills, project downwardly through the cover plates 6 and have their lower portions securely riveted to the outer ends of the transverse members 3—4. The side sills 7 extend from one end sill 8^a to the other. Angle bars 9 are secured to the lower portions of the side sills and extend from the bolster 4 to the end sill and these angle bars are connected a short distance rearwardly of the end sill 8 by a transverse angle-bar 10. A cover plate 11 is secured at one edge to the end sill 8 and at its other edge to the angle-bar 10 and to the ends of this cover plate the forward ends of the angle-bars 9 are secured. This construction gives rigidity to the corners of the car. End stakes 12 are secured to the transverse angle-bar 10 and, projecting downwardly therefrom, are secured at their lower ends to the draft sills 2. Sub-sills 13 are located under the side sills 7 and are secured thereto and to the cover plate 11 to stiffen the corner construction and the latter is further reinforced by the push-pole pockets 14.

Buffing blocks 15 are secured to the end sills and each of said buffing blocks is provided with flanges 16 which project rearwardly and are secured to the forward ends of the draft sills 2. Drop doors 17 are located between the transverse members at respective sides of the center sill and the hinge-pins 18 for these doors have their mountings in the depending flanges of the cover plates 6 on the transverse members. The hinges for the drop doors may comprise straps 19 secured to said doors and connecting the same with the hinge-pins and the hinged edge of each door is reinforced by means of an angle-bar 20. The doors may also be reinforced lengthwise by means of bars 21.

The transverse members are provided near their ends with recesses 22 for the accommodation of a straight shaft 23 having rollers thereon to engage the drop doors. Arms 24 are secured to the shaft 23 and at their lower ends these arms have bearings in hook shaped hangers 25 secured to and depending from the transverse members 3—4. It is apparent that when the shaft 23 is in the position shown in Fig. 5, the arms 24 will be ver-

tically disposed and the drop doors will be supported in their closed position. Shafts 23 will be provided for operating the doors at respective sides of the center sill and two such shafts will be located end to end at each side of the center sill. The shafts 23 are provided at the ends of the car with arms 24^a which may have bearings in the end sills and be adapted for the reception of a suitable lever for turning the same to raise or lower shaft 23 for closing or opening the doors. When the doors are in their closed position, as shown in Fig. 5, a movement of the shaft 23 downwardly through the recesses 22 of the transverse members will permit said doors to open and as the doors approach their opening position, as indicated by dotted lines in Fig. 5, the hook shaped ends of the hangers 25 will enter and pass through openings 26 in the arms 24 and thus the doors will be supported in their open position and disengagement of the arms 24 from the hangers 25 will be prevented. When the shaft 23 is moved upwardly for effecting the closing of the doors, the vertical position of the arms 24 to properly support the doors in their closed position, will be insured by the engagement of the shaft 23 with the vertical walls of the recesses 22 in the transverse members,—said vertical walls of the recesses thus constituting stops.

One or more arms 24 of each shaft 23 has secured thereto a sprocket wheel 27 and smaller sprocket wheels 28 are secured upon a shaft 29 mounted in the transverse members of the underframe. The sprocket wheels 27 and 28 are connected by sprocket chains 30. The shaft 29 is made in two sections and each section may be geared with the door operating means at both sides of the center sill. The outer end of each shaft section 29 projects beyond the end sill of the car and is provided with ratchet lever mechanism 31 for rotating it.

From the construction and arrangement of parts above described, it will be seen that when one of the shaft sections 29 is operated, motion will be transmitted to door operating shafts at both sides of the car and thus one half of all the drop doors of the car can be opened or closed simultaneously. To operate the other half of all the doors, it is simply necessary to rotate the other shaft section 29 by means of lever mechanism at the opposite end of the car.

With my improvements the door operating devices can be readily placed in position on the open hangers 25 or removed therefrom if necessary for repairs and when the mechanism is in use, it cannot accidentally escape from the hangers.

If desired, the transverse members may be shortened and the recessing of said members obviated as shown in Fig. 9. With this construction, the cover plate 6 is made to ex-

tend to the side channels 7 with the side stakes 8 connected to the top of the cover plate.

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 sill, transverse members and cover plates for the latter, of drop doors having hinge connection over the center sill with the cover plates on the transverse members, and operating mechanism for said doors.

2. In a drop bottom car, the combination with a center sill and transverse members, of cover plates provided with depending flanges, secured to said transverse members, drop doors having hinge connection with the depending flanges of said cover plates at points over the center sill, and operating mechanism for said drop doors.

3. In a drop bottom car, the combination with a center sill and transverse members having recesses near their outer ends, of drop doors hinged at their inner edges, a straight operating shaft movable through the recesses of the transverse members, arms projecting from said straight shaft, means for supporting said arms, and means for turning said arms to move the straight shaft to open or close the drop doors.

4. In a drop bottom car, the combination with a center sill, transverse members having recesses near their outer ends, and drop doors hinged at their inner edges, of hangers secured to the transverse members, arms having mountings in said hangers, and a shaft carried by said arms and movable through the recesses in the transverse members to effect the opening and closing of the drop doors.

5. In a drop bottom car, the combination with a center sill and drop doors, of transverse members having recesses near their outer ends, one wall of each recess constituting a stop for a door operating shaft, hangers secured to the transverse members, arms mounted in said hangers, and a door operating shaft carried by said arms.

6. The combination with a center sill, transverse members extending over the same and brace plates extending across the center sill between the transverse members and said center sill and projecting laterally beyond the latter, of drop doors having hinge supports over the center sill, and means supported by the transverse members for operating the doors.

7. In a drop bottom car, the combination with a center sill and transverse members, of hinged doors at both sides of the center sill, door operating shafts for the doors at respective sides of the center sill, arms secured to each shaft, hangers in which said arms are mounted, a centrally located shaft, and

gearing between said centrally located shaft and said arms for turning the latter to raise or lower the door-operating shafts at both sides of the center girder.

5 8. In a drop bottom car, the combination with a center girder and transverse members, of hinged doors, hangers secured to the transverse members, arms mounted in said hangers, a door operating shaft secured to
10 said arms, a sprocket wheel secured to one of said arms, a sprocket chain passing over said sprocket wheel, and means for transmitting motion to said sprocket chain to turn the arms and raise or lower the door
15 operating shaft.

9. In a drop bottom car, the combination with a center sill and transverse members thereon, of drop doors having hinge connection with said transverse members over the
20 center sill, door operating mechanism supported by the transverse members, a shaft mounted in the transverse members between the hinge-support of the doors and the center girder and provided at its end with operating means, and gearing between said
25 shaft and the door operating mechanism.

10. In a drop bottom car, the combination with a center sill and transverse members, of

drop doors hinged at their inner edges between the transverse members, and a straight 30 shaft supported by the transverse members and cooperating with a plurality of said doors for controlling the simultaneous opening and closing of the same, arms on said shaft, mountings for said arms, and means 35 for turning said arms to raise or lower said shaft.

11. In a drop bottom car, the combination with a center sill, transverse members, and hinged drop doors, of a straight shaft extending past the transverse members and 40 movable to a position approximating the plane of the tops of the transverse members, arms projecting from said straight shaft, bearings for said arms sustained by the 45 transverse members, and means for turning said arms to raise or lower said straight shaft.

In testimony whereof, I have signed this specification in the presence of two subscribing 50 witnesses.

ANTON BECKER.

Witnesses:

E. S. CULVER,

T. H. LIVINGSTON.