995,216.

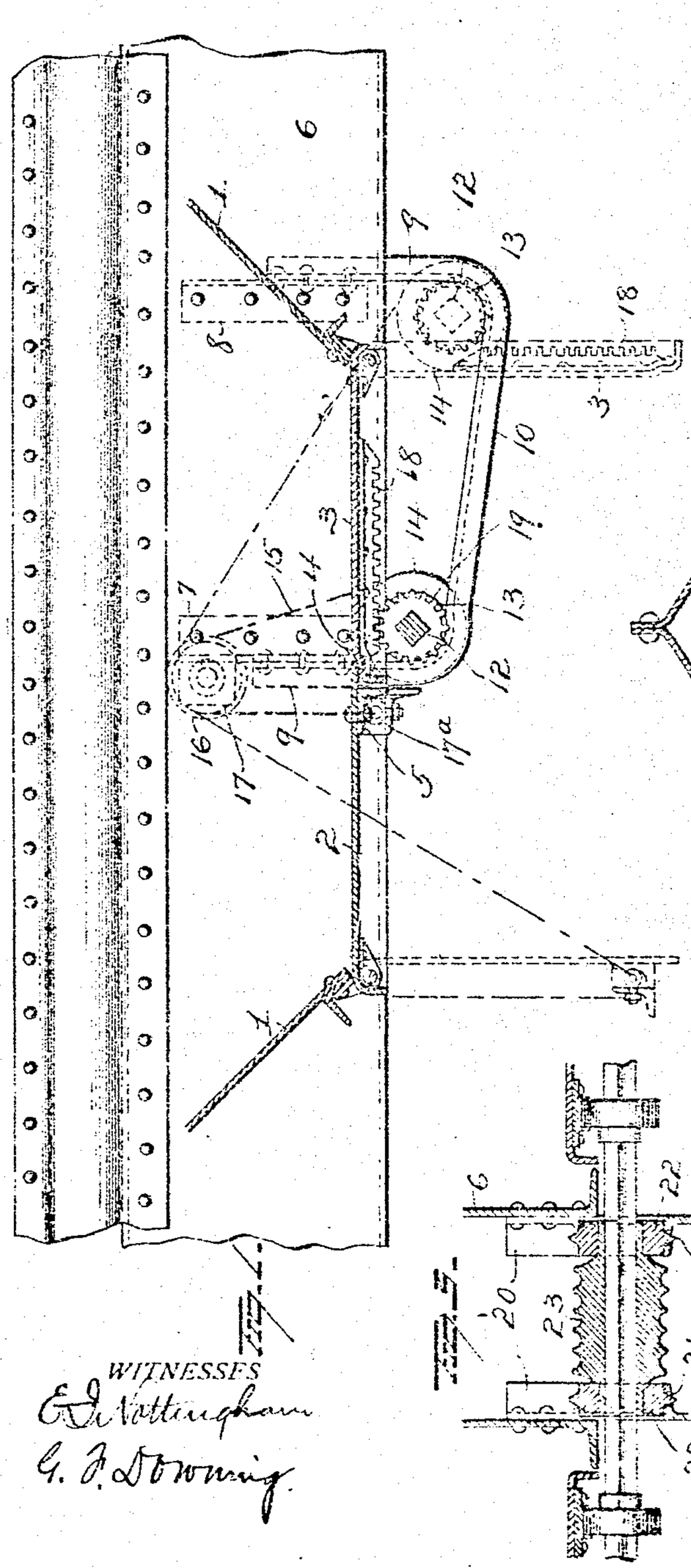
A. BECKER.

DUMPING CAR.

APPLICATION FILED NOV. 30, 1908.

Patented June 13, 1911.

2 SHEETS—SHEET 1.



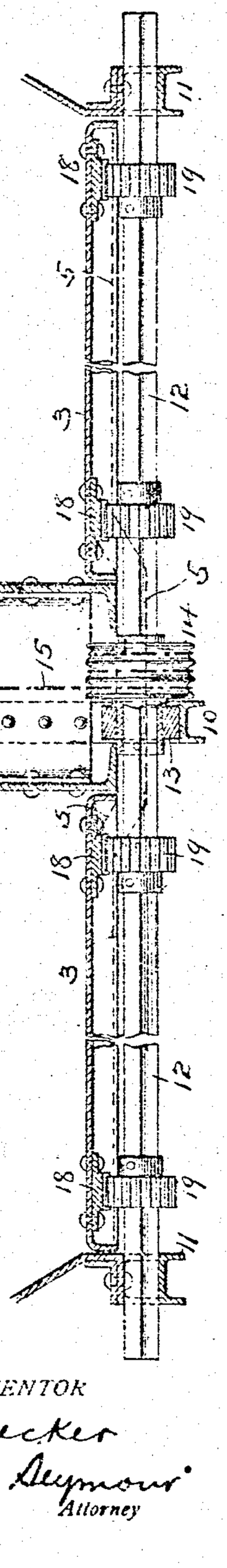


FIG. 2.

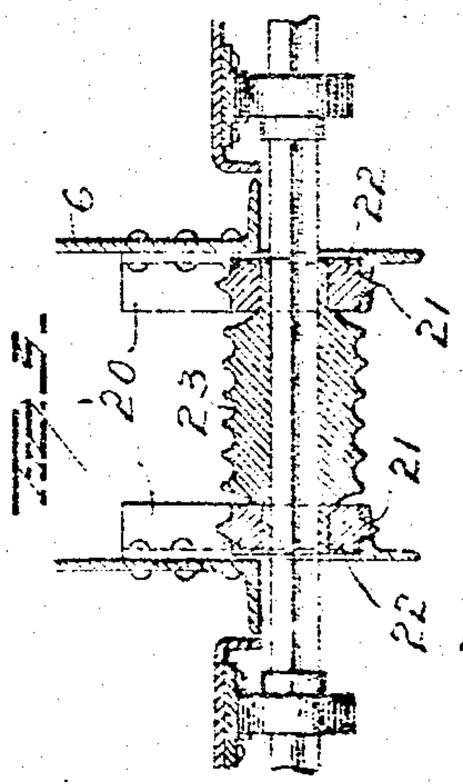


FIG. 3.

WITNESSES

E. L. Nottingham

G. F. Downing

INVENTOR

A. Becker

By H. G. Seymour

Attorney

A. BECKER.

DUMPING CAR.

APPLICATION FILED NOV. 30, 1908.

995,216.

Patented June 13, 1911.

2 SHEETS—SHEET 2.

Fig. 4

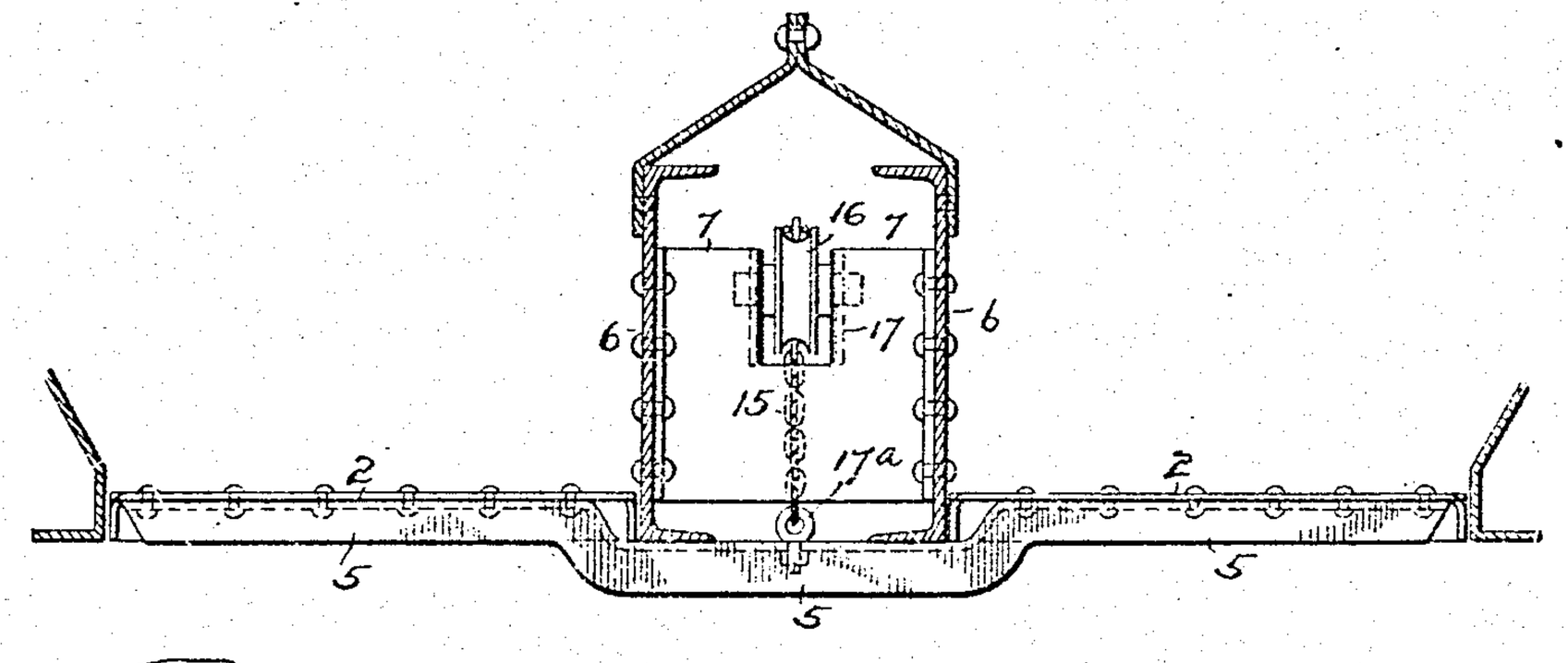


Fig. 5.

WITNESSES

E. L. Nottingham

G. F. Downing

INVENTOR

A. Becker

By H. A. Seymour

Attorney

UNITED STATES PATENT OFFICE.

ANTON BECKER, OF COLUMBUS, OHIO.

DUMPING-CAR.

995,216. Specification of Letters Patent. Patented June 13, 1911.

Application filed November 30, 1908. Serial No. 465,343.

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 Dumping-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 dumping cars,—the improvements being directed particularly to means for operating drop-doors for hopper bottom cars, and the object of my present invention is to provide simple and efficient means located centrally between the sides of the car and having portions thereof supported by means intermediate the members of the central longitudinal girder for effectually closing the doors and permitting them to open.

With this object in view the invention consists in certain novel feature of construction and combinations of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings, Figure 1 is a longitudinal section of a portion of a hopper bottom car showing the application of my improvements thereto. Fig. 2 is a transverse sectional view of the same. Fig. 3 is a fragmentary sectional view illustrating a modification. Fig. 4 is a cross section showing the relation of the doors 2—2 to each other and Fig. 5 is a plan view.

1,—1, represent the inclined sides of the hopper bottom of a car and 2, 3, illustrate drop-doors which are hinged at their outer edges to the lower ends of the said inclined sides of the hopper bottom. The doors 2, 3 are arranged in pairs at respective sides of the center girder and each door 3 is provided at its free edge with a seat 4 which, when the doors are closed, underlies the free edge of the opposite door 2 so that the same means which supports the doors 3 will also be utilized to support the doors 2. The doors 2 are connected by a cross member or angle bar 5 secured to the under faces of said doors and passing under the center girder.

Between the center girder members 6, stiffeners 7—8 are secured and spaced apart a distance somewhat greater than the length of a door. To the stiffeners 7—8 the upper ends of arms 9 of an inclined guide bracket 10 are secured, said guide brackets being thus disposed in a plane below that of the center girder. Similar guide brackets 11 are located in proximity to the sides of the car and the series of guide brackets serve to support an operating shaft 12,—the latter being provided at a point near its center with a roller 13 to run on the guide bracket 10. The shaft 12 is also provided with a drum 14 which, if desired may be made with a spiral groove. A chain 15 is secured at one end to the drum 14 and adapted to wind upon the latter. From the drum 14 the chain 15 passes over a pulley 16 having its journals mounted in lugs 17 projecting from the upper portion of the stiffener 7, and from said pulley 16 the chain 15 passes downwardly and is connected with an eye 17^a on the cross member or angle bar 5 secured to the doors 2 near the free edges of the latter.

Each door 3 is provided on its under side with a rack-bar 18 and with this rack-bar, a pinion 19 secured to the shaft 12 is adapted to mesh as hereinafter described.

When the doors are open the operating shaft 12 will be disposed at the lower part of the guide-ways 10 and 11 and therefore an appreciable distance below the plane of the closed doors,—the pinion 19 on said shaft being located outwardly beyond the vertical plane of the hinge-connection between the doors 3 and the inclined plate or side 1 of the hopper bottom. The shaft 12 and the doors 2—3 may be held in the positions shown in Fig. 1 by any suitable devices located at the side of the car and adapted to engage said shaft.

When the doors shall have been dropped so that they will assume the dotted line positions shown in Fig. 1, and it is desired to close said doors, the operator will proceed as follows: After having released the locking means (not shown) of the shaft 12 he will rotate said shaft so as to wind the chain 15 thereon and thus raise both doors 2 to closed position. When this shall have been accomplished, the continued rotation of this shaft 12 and the further winding of the chain thereon, will cause said shaft to ride upwardly on the inclined guide 10,—during which movement the pinions 19 will engage the racks 18 on the doors 3 and this will insure the positive engagement between the shaft and the doors and as the shaft moves

toward the upper end of the inclined guide 10 the doors will be moved upwardly to their closed position and the seats 4 of said doors 3 will become disposed under the free edges of the doors 2. At this time the shaft 12 will be at the inner end of the guide bracket 10 and the doors will be supported and effectually locked in their closed positions by the action of the operating shaft.

If desired the operating shaft may be provided with more than one pinion and the doors 3 with a corresponding number of rack bars. In Fig. 2 of the drawing I have shown two pinions and two rack-bars for each door 3.

In the construction shown in Fig. 3 the rack-bars and pinions are dispensed with and two guide-brackets 20 are secured respectively to the center girder members and each is provided with a series of perforations 21, with which spur wheels 22 mesh. These spur wheels are secured to the operating shaft 12 and a drum 23 is secured to said shaft between the spur wheels. The drum 23 is preferably grooved and has secured thereto a chain, such as shown in Fig. 1, but with the arrangement shown in Fig. 3, the chain is wound upon the drum in the reverse direction to that shown in Fig. 1.

Other changes might be made in the details of construction of my invention without departing from the spirit thereof or limiting its scope and hence I do not wish to restrict myself to the precise structural details herein set forth.

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

1. The combination with a car having a center girder and provided with drop-doors, of a guide-bracket secured to said center girder, a shaft mounted to move laterally on said guide-bracket and operate one of said doors, and a chain connected with the other door and with said shaft.

2. The combination with a car having a center girder and drop-doors, of a guide-bracket secured to said center girder and having an inclined guide-way, a shaft supported by said guide-bracket and adapted to creep laterally thereon and engage one of said doors for closing the same, a pulley supported by the center girder, and a chain connected with the other door, passing over said pulley and connected at its other end with said shaft.

3. The combination with a hopper bottom car provided with a center girder, and drop-doors hinged to the lower ends of the inclined sides of the hopper-bottom, of a guide-bracket supported by the center girder and depending from the same, said guide-bracket having a guide-way inclined downwardly from its inner to its outer end, a shaft supported by said guide-bracket and movable laterally on said inclined guide-way and adapted to engage one of the drop-doors for closing the same, a drum on said shaft, a chain secured to and adapted to wind upon said drum, a pulley supported above the drop-doors and over which said chain passes, and means connecting the other end of said chain with the other drop-door.

4. The combination with a hopper-bottom car provided with a center girder, and drop-doors for closing the hopper bottom, of a guide-bracket secured to the center girder and depending therefrom, said bracket having an inclined guide-way, a shaft supported by said guide-bracket, means for positively causing said shaft to creep up the inclined guide-way during the rotation of said shaft and effect the closing of one of the doors, and flexible means between said shaft and the other door for closing the latter.

5. The combination with a hopper-bottom car provided with a center girder, and drop-doors for the hopper bottom, of a guide-bracket secured to and depending from the center girder, a shaft mounted on said bracket, and a flexible connection between one of said doors and said shaft and adapted to wind on the latter, said shaft adapted to move from one end of the guide-bracket to the other and effect the closing of the other door and then act as a support for both doors when the latter are in their closed position.

6. The combination with a hopper-bottom car provided with a center girder, and drop-doors hinged at their outer edges to said hopper bottom and adapted to meet at the side of the center girder, of a rotative and laterally movable operating shaft adapted to support the doors in a closed position, and means coöperating with said shaft and the doors for effecting the closing of the latter.

7. The combination with a hopper bottom car and drop-doors hinged thereto, one of said doors having a part underlying the free edge of the other door, of an operating shaft, and means coöperating with said operating shaft and the drop-doors whereby said drop-doors will be closed successively and supported in their closed position.

8. The combination with a hopper-bottom car provided with a center girder, and drop-doors for the hopper-bottom, of a guide-bracket secured to the center girder and having an inclined guide-way, a shaft passing through said guide-bracket and provided with a roller to run thereon, a drum on said shaft, a pulley supported by the center girder above the meeting edges of the drop-doors, a chain secured to and wound upon said drum, said chain passing over said pulley and attached at its other end to one of said doors, a pinion on the shaft and a rack-bar on the other door to be engaged by said pinion.

9. The combination with a hopper-bottom car provided with a center girder comprising two members, and drop-doors for the hopper-bottom, of stiffeners secured between the members of the center girder, a guide-bracket having upwardly projecting arms secured to said stiffeners and having an inclined guide-way below the center girder, a pulley mounted in the upper portion of one of said stiffeners, an operating shaft passing through the guide-bracket and adapted to move on said inclined guide-way, a drum on the operating shaft, a chain wound on said drum, passing over said pulley and secured at its other end to one of the drop-doors, a pinion secured to the operating shaft and a rack-bar secured to the other drop-door in position to be engaged by said pinion when the operating shaft is moved laterally on the inclined guide-way of the guide-bracket.

10. The combination with a hopper-bottom car provided with a center girder, and drop-doors for the hopper-bottom, of a guide-bracket supported by the center girder and extending from the meeting edges of the doors to a point beyond the hinge-connection of one of the doors with the inclined sides of the hopper-bottom, said bracket having an inclined guide-way, an operating shaft passing through the bracket and adapted when moved laterally to close one of said doors and support the same in its closed position, and means connecting said shaft with the other door whereby the rotation of the shaft will effect the closing of the last mentioned door before the first mentioned door shall have been closed.

11. The combination with a double trap door, of a shaft adapted to bear against one of the door parts and retain both door parts closed.

12. The combination with double trap doors and a rotatable shaft movably supported beneath one door part, and a chain connected at one end to the shaft and at its opposite end to the other door part.

13. The combination with double trap doors of trough form, of a rotatable shaft movably supported beneath one door part, and a chain connected at one end to the shaft and at its opposite end to the other door part.

14. The combination with a flanged trap-door-opening and overlapping troughed double doors, of a pair of door rails beneath one door part and each presenting an inclined portion toward the other door part, a shaft movably supported by such rails, and chains connecting the said shaft to the other door part, the rails and shaft being disposed so that the shaft supports one door part and such door part the other door part when in closed position.

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

ANTON BECKER.

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