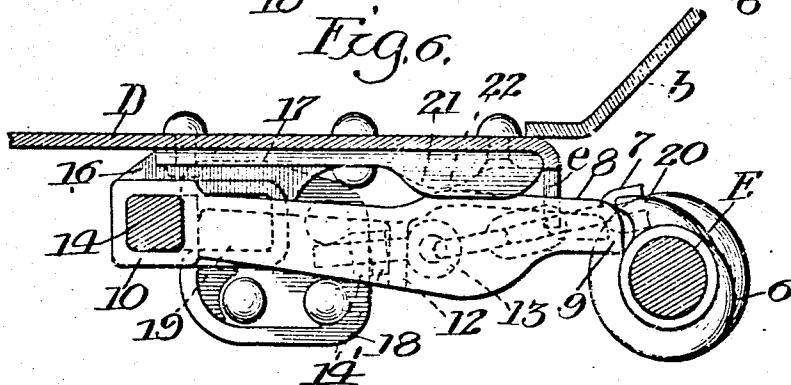
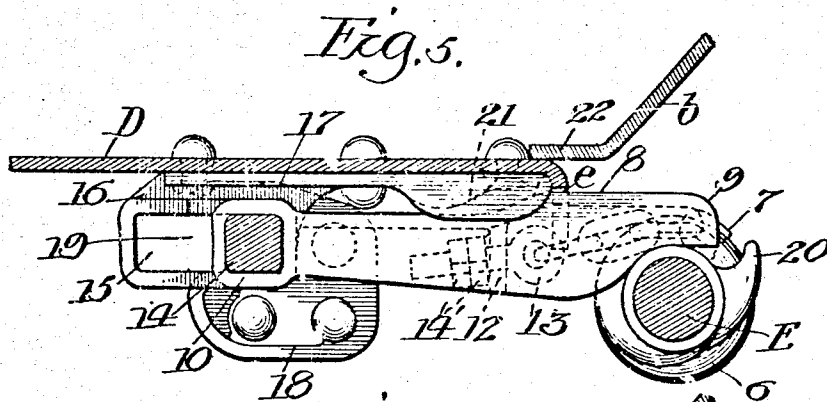
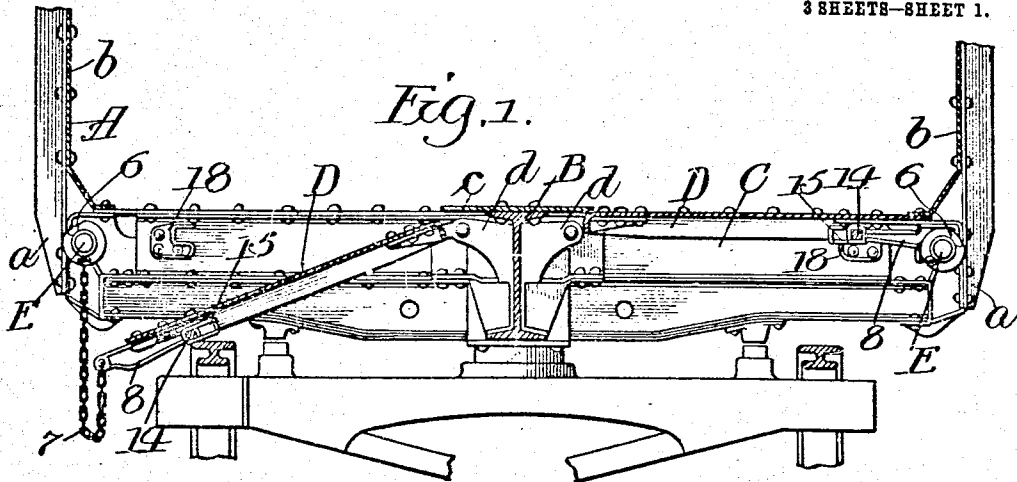


R. G. TAYLOR.
 MEANS FOR LOCKING DROP DOORS OF DUMP CARS.
 APPLICATION FILED NOV. 20, 1908.

955,225.

Patented Apr. 19, 1910.

3 SHEETS—SHEET 1.



Witnesses
 Chas. W. Kinnel
 E. P. Lundy.

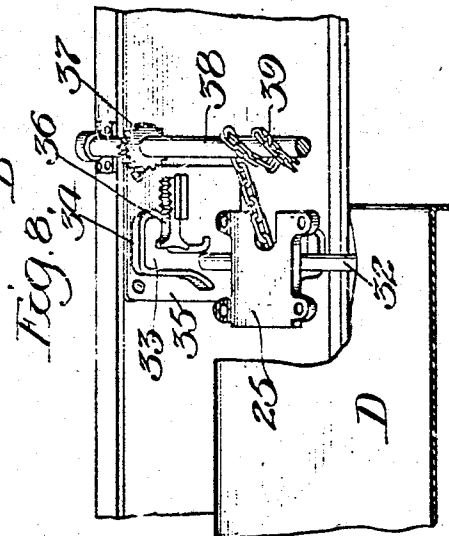
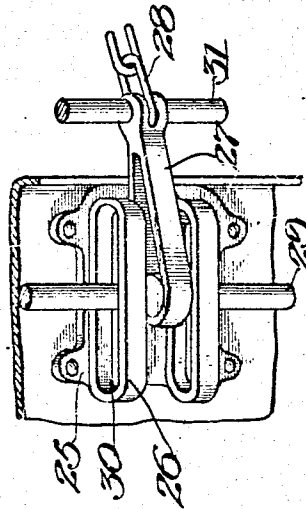
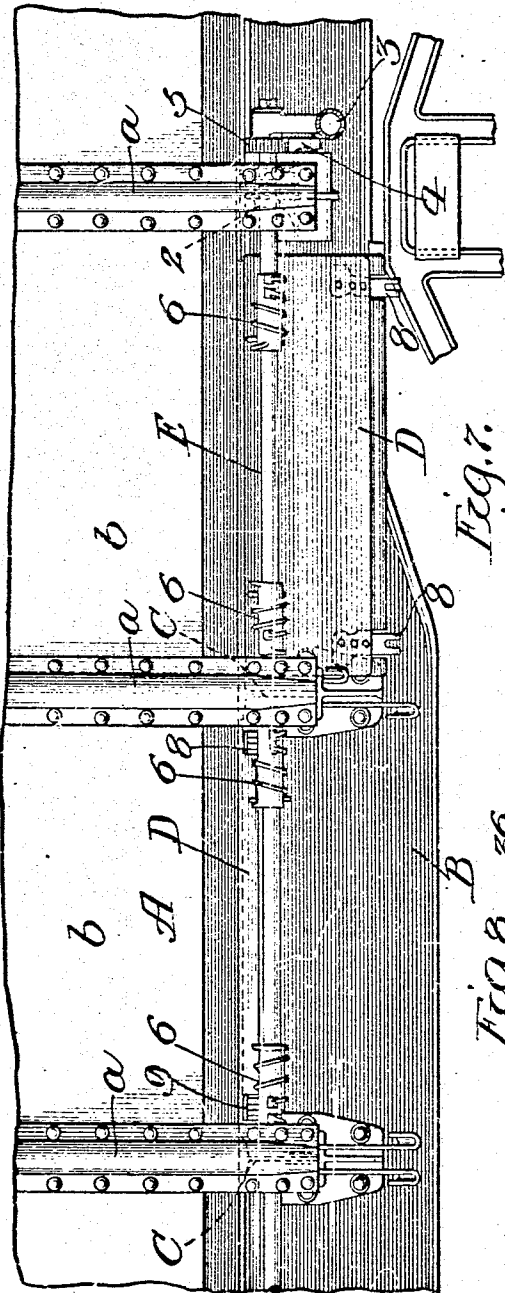
Inventor
 Ralph G. Taylor
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 MEANS FOR LOCKING DROP DOORS OF DUMP CARS.
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955,225.

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3 SHEETS—SHEET 2.



Witnesses
 Orr. Venniel
 E. Lundy

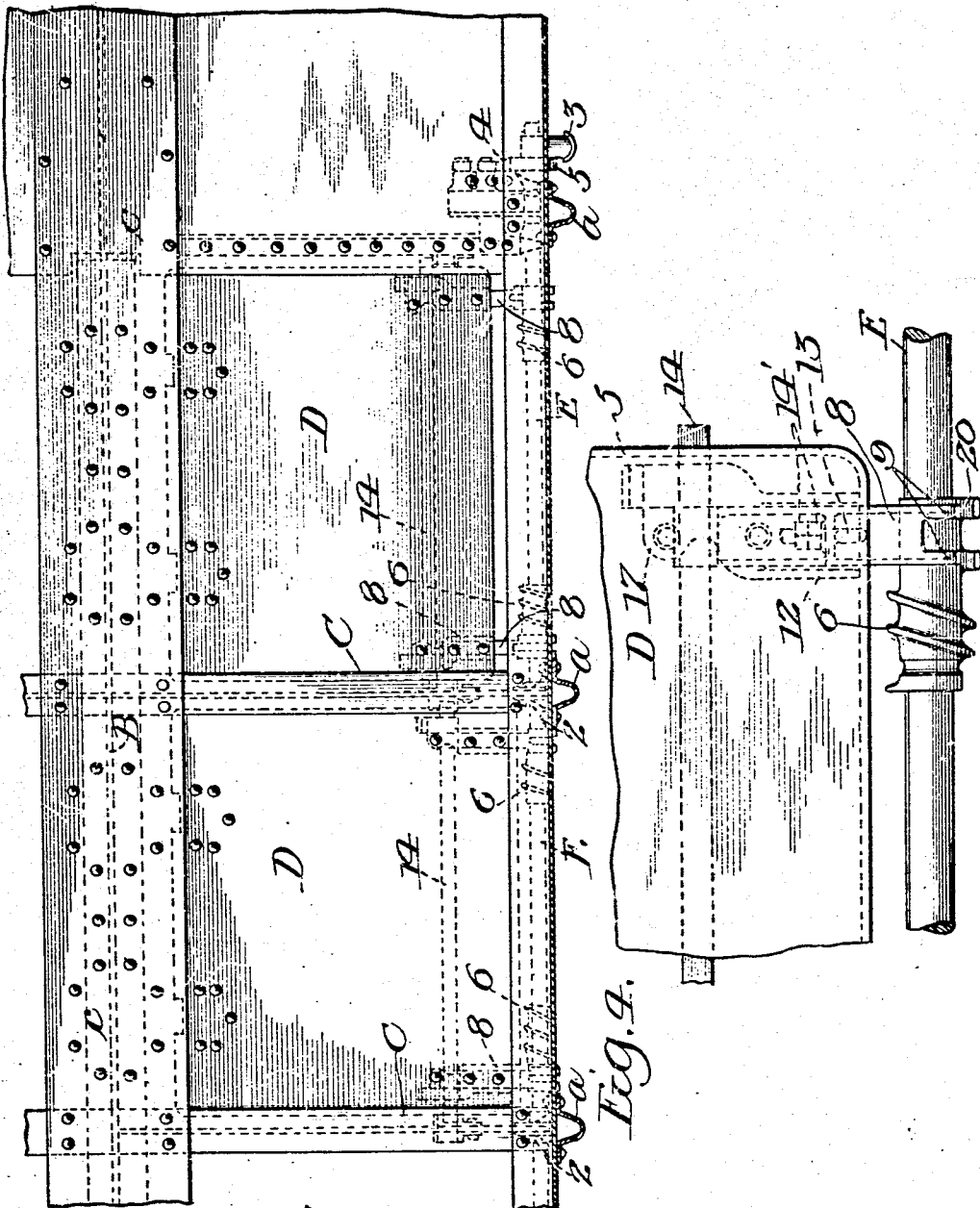
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R. G. TAYLOR.
 MEANS FOR LOCKING DROP DOORS OF DUMP CARS.
 APPLICATION FILED NOV. 29, 1908.

955,225.

Patented Apr. 19, 1910.

3 SHEETS—SHEET 3.



Witnesses
 O. M. Thumel
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 Fig. 3.

Inventor
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UNITED STATES PATENT OFFICE.

RALPH G. TAYLOR, OF DAVENPORT, IOWA, ASSIGNOR TO BETTENDORF AXLE COMPANY,
OF DAVENPORT, IOWA, A CORPORATION OF IOWA.

MEANS FOR LOCKING DROP-DOORS OF DUMP-CARS.

955,225.

Specification of Letters Patent.

Patented Apr. 19, 1910.

Application filed November 20, 1908. Serial No. 463,708.

To all whom it may concern:

Be it known that I, RALPH G. TAYLOR, a citizen of the United States, and a resident of Davenport, in the county of Scott and State of Iowa, have invented certain new and useful Improvements in Means for Locking Drop-Doors of Dump-Cars, of which the following is a full, clear, and exact description.

My invention relates to means for locking the doors of flat or flush bottomed dump-cars, and its object is to provide a simple and effective means for this purpose, which relieves the chains, or other means employed to raise or lower the doors, from the weight of the latter and the load carried thereby and transfers it, when the doors are closed, to the needle-beams through the medium of lock-bars which latter do not operate to lock said doors until they are closed, and which will not voluntarily unlock said doors until the winding shaft is manually manipulated. This I accomplish by the means hereinafter fully described and as particularly pointed out in the claims.

In the drawings:—Figure 1 is a transverse vertical section of a dump-car having my improvements applied thereto. Fig. 2 is a side elevation of a fragmentary part of the same. Fig. 3 is a plan view thereof. Fig. 4 is a plan view of my improved locking device and spiral drum separate from the car, drawn to a larger scale. Figs. 5 and 6 are similar side views of the same, showing the parts thereof in antipodal positions. Figs. 7 and 8 are perspective views of modifications of my invention.

In the drawings A represents the body of a gondola shaped dump-car, comprising, preferably, a continuous single I-beam center-sill B; I-beam cross-bars or needle-beams, C, that pass through the web of said center-sill, and suitable posts *a* secured to their ends, to which latter the sheet metal side-walls *b* of the body are secured. A longitudinal central floor-plate *c* is secured to the upper flange of the center-sill, and at suitable points between the needle-beams, the longitudinal edges of said floor-plate overhang brackets or braces *d, d*, the upper ends of which, adjacent to the said floor-plate, are provided with knuckles for the hinges of the drop-doors D of the car. The width of doors D correspond substantially to the distance between the needle beams C under the

flanges of which latter, the side edges bear upward when the door is closed. The length of said doors slightly exceeds the distance between the longitudinal side edges of the floor-plate and the side walls, and their hinged edges are adapted to close under the said edges of the floor-plate, and the lower horizontal flanged edge of the inwardly inclined lower portion of the side-walls of the body of the car.

The ends of the needle-beams, between the vertical plane of the side-walls of the car and the adjacent parallel edge of the doors, are provided with suitable bearings 2 for a longitudinal winding shaft E. This shaft may extend to and through the end sill (not shown) of the car if desired, or one end of it may be extended through one of its bearings 2 in the needle-beam, and have loosely mounted thereon a lever 3, or rather, a socket for a removable handle, said socket near its fulcrumal boss being provided with a pawl 4, that is adapted to engage a ratchet 5 securely fastened to shaft E.

The doors D are, preferably, only placed between those needle-beams situated between the body-bolsters (not shown). Between said body-bolsters and the ends of the car the floor is usually made solid. In front of the outer edge of each of the doors shaft E is provided with drums 6, 6, that are provided with spiral flanges and are adapted to wind or unwind chains 7, 7, thereon for lifting or lowering said doors. Chains 7 are secured at one end to said drums in any suitable manner, and the opposite end of each is secured to the outer end of an arm or clevis 8, each of which consists of a bar of cast, forged, or pressed metal, preferably, steel, and either solid or hollow. I prefer to make the body of these clevises inverted channel shaped; to bifurcate their outer ends adjacent to shaft E so as to form and extend extensions 9, 9, and to provide their rear ends opposite said extensions with a boss 10 the axis of the bore of which is transverse. At a point, preferably, near its bifurcated end I connect the vertical flanges of this channel shaped clevis with a transverse vertical web or partition 12, and I extend through this web, mediate and parallel with the sides of the clevis an I-bolt 13, that is secured in place, with its head toward the extensions 9, by suitable nuts 14', 14'. The lower end of the chain 7 is secured in the

head of this bolt 13 and extends longitudinally with and between the extensions 9, 9. These clevises constitute links that connect the chains to the transverse lock-bar 14, which latter extends through the bores of the bosses 10 of said clevises, transversely through elongated openings 15 in the hangers 16 depending from the supporting-plates 17, that are riveted or otherwise secured to the underside of the doors D. These supporting-plates are riveted or otherwise secured to the undersides of the doors, and extend, preferably, longitudinally to the edges thereof adjacent to shaft E. These edges are, preferably, flanged downward a short distance, and recessed at *e* to permit of the passage of the clevis therethrough. The major axis of the elongated guideway opening 15 is parallel to the under surface of the door D, and is of such length that the locking bars 14 can move transversely a distance corresponding to, say, about two and one-half or three times their diameter. These locking-bars 14 are of such length that their ends extend beyond the side edges of the doors an inch or more, and each end is adapted, when the door is about to be closed, to engage the lower flanged edge of a keeper-plate 18 which is curved upward farthest from the shaft E, and to slide up said rear curved edge and into the forwardly elongated recess or seat 19 of said plate. Plates 18 are secured, by riveting or otherwise, to the webs of the needle-beams immediately under the upper flanges thereof, and the edges of the recess or seat 19 of each plate are provided with flanges which are a continuation of its lower and rear edges, and afford the end of the bar 14 a wider bearing surface. Both ends of the bar 14 simultaneously engage keeper-plates, and simultaneously enter the seats thereof, and when they do so relieve the clevises and the chains from the weight of the door and its load.

It is better to have the chains 7 of such length that they will be loose when the doors are opened as far as they will go.

When the doors are being closed and the chains wound upon the drums, the clevises will be drawn outward beyond the outer edges of the doors as far as they will go, but, when the doors are nearly closed the outer end of the clevis will come up under the drum and contact therewith and travel on the perimeter of said drum until above the horizontal plane of the axis of the same. This engagement pushes the clevises to the rear limit of their movement, thus moving the locking bar 14 laterally toward the hinged edge of the door, and so that the ends thereof will move upward, as said door is being closed, back of the rear edge of the keeper-plates, until opposite the mouths of the seats therein. When the ends of said bar

have reached this position, the bifurcated end of the clevises will have passed to a point above the horizontal plane of the axis of shaft E, and, as the chain continues to be wound upon the drum, will be drawn forward thereby, and thus cause the ends of the bar 14 to be shot into the seats made to receive the same in the keeper-plates. When the clevises are thus drawn forward, the forward ends, thereof rest upon the drum, and, the bar 14 rests on the keeper-plates, which removes the weight of the door and its load entirely from the chains and places it upon the needle-beams (to which said keeper-plates are secured) and said shaft. When the chains are unwound from the drums the horns 20 on the latter will engage the ends of the clevises and push them inwardly thus forcing the bar 14 out of engagement with the keeper-plates, as shown in Fig. 6.

In order to remove the weight of the doors and the load carried thereby entirely from the clevises and operating shaft, when the door is closed, I have provided the underside of the forward part of the supporting-plate 17, between its longitudinal flanges, with a downwardly curved hump 21, and have raised the upper surface of the forward end portion of the clevises to provide a curved shoulder 22. The rear movement of the clevises, caused by the engagement of their forward ends with shaft E, brings the shoulder 22 into engagement with hump 21 and operates as a wedge to jam the door D tightly up under the marginal edges of the door-frame just at the moment when the ends of the locking bar 14 are in position to be shot into the runways or seats 19 of the keeper-plates. As the clevises are drawn forward by the continued winding up of the chain and said locking-bar enters the keeper-plates, the shoulder will move from and out of engagement with the hump and there will be a clearance between the two, which will leave the clevises free of the weight of the door and its load, and throw the same entirely on the ends of the locking-bars, and, through the latter on the needle-beams.

In Fig. 7 of the drawings I show a modification of my invention, which comprises a supporting plate 25 secured to the underside of the door and provided with two downwardly projecting parallel longitudinal hangers 26, 26, between which a longitudinally disposed horizontal clevis or coupling-bar 27 is placed, whose forward end is connected to the chains 28, and whose rear end has a comparatively short transverse bar 29 secured about midway its length therein. The ends of this bar extend through longitudinally elongated guide-openings 30 in said hangers 26, and one end extends beyond the adjacent side edge of the door and engages the seat in the keeper-plate, substantially in the same manner hereinbefore ex-

plained:—only instead of having the extensions 9, it has a short cross-bar 31 in its forward end that is engaged by the projections 20 of the drum.

5 In Fig. 8 I show yet another modification of my invention, which comprises substantially the same supporting-plate 25 and hangers depending therefrom as shown in Fig. 7, but the coupling-bar or clevis feature is practically dispensed with, and the chain is connected more directly to the short transverse bar 32, midway between said hangers. When the door is closed the outer end of bar 32 enters the inverted L-shaped channel 33 defined by flanges 34 projecting from the keeper plate 35, and as it enters the horizontal portion or seat thereof it engages the rear end of a longitudinally reciprocal rack-bar 36, and moves it into engagement with a pinion 37, fast on shaft 38 near the bearings thereof. The chains 39, in this modification are wound upon shaft 40 in an undershot direction, and as the said chains are wound thereon, and the end of the locking-bar has pushed the rack-bar into engagement with said pinion, the latter will move said rack-bar away from the advance of the end of the lock-bar into its seat; but when said chain is being unwound the initial movement of the pinion will move the rack-bar to the rear and push the end of the locking-bars out of its seat in the keeper-plate, and permit said doors to drop.

What I claim as new is:—

35 1. A dump-car comprising an under-frame, a drop-door hinged at one edge to the same, a transverse bar carried by said door and adapted to move toward the outer edge of the same in a plane substantially parallel to the plane of the underside of said door and having its ends extended beyond the side edges of said door, and means for moving said bar laterally to bring its ends into suitable seats made to receive the same that are supported by the underframe.

2. A dump-car comprising an under-frame, drop-doors hinged at one edge to the same, transverse bars carried by said doors and adapted to move toward the outer edges of the same in planes substantially parallel to the planes of the undersides of said doors and having their ends extended beyond the side edges of said doors, and means for moving said bars laterally to bring their ends into suitable seats made to receive the same that are supported by the underframe.

3. A dump car comprising an under-frame, a drop-door hinged at one edge to the same, a shaft in front of and parallel with the swinging edge of said door, a chain for raising and lowering the swinging edge of said door, a transverse bar movably secured to the underside of and having its end extending beyond the side edge of said door, and means actuated by said chain for

moving said bar laterally into a suitable seat made to receive the same and supported by said underframe.

4. A dump car comprising an under-frame, drop-doors hinged at one edge to the same, a shaft in front of and parallel with the swinging edge of said doors, chains for raising and lowering the swinging edge of said doors, and means actuated by said chains for moving a bar laterally into a suitable seat made to receive the same and supported by said underframe.

5. A dump car comprising a center-sill, needle-beams, doors having the edges thereof parallel with and adjacent to said center-sill hinged, and a transversely arranged locking-bar carried by said door and having one end thereof extend beyond the side edge of the same, and movable laterally to and from the hinged edge thereof to bring said end out of and into a suitable seat supported by said needle-beams.

6. A dump car comprising a center-sill, needle-beams, doors having the edges thereof parallel with and adjacent to the center-sill hinged; and a transverse locking bar carried by said door and having its ends extend beyond the side edges of the same and automatically movable toward the swinging edge of said door when the latter closes to bring its ends into suitable seats supported by the sides of the framework of the door opening.

7. A dump car comprising a center-sill, needle-beams, doors having the edges thereof parallel with and adjacent to the center-sill hinged; and a transverse bar carried by said door and having its ends extend beyond the side edges of the same and automatically movable toward the swinging edge of said door, a shaft in front of and parallel with the swinging edge of the door and chains adapted to be wound upon said shaft and connecting said bar and shaft.

8. A dump car comprising a center-sill, needle-beams, doors having the edges thereof parallel with and adjacent to the center-sill hinged; and a transverse bar carried by said door and having its ends extend beyond the side edges of the same and automatically movable toward the swinging edge of said door, a shaft in front of and parallel with the swinging edge of the door and chains adapted to be wound upon said shaft, and clevises connecting the pendent end of said chains to said bar.

9. A dump car comprising a center-sill, needle-beams, doors having the edges thereof parallel with and adjacent to the center-sill hinged; and a transverse bar carried by said door and having its ends extend beyond the side edges of the same and automatically movable toward the swinging edge of said door, a shaft in front of and parallel with the swinging edge of the door and

chains adapted to be wound upon said shaft, clevises connecting the pendent end of said chains to said bar, and projections on said shaft adapted to engage and move said clevises rearward.

10. A dump car comprising a center-sill, needle-beams, doors having the edges thereof parallel with and adjacent to the center-sill hinged; and a transverse locking-bar carried by each of said doors the ends of which are adapted to engage the needle beams and support said doors only when the latter are closed, supporting-plates secured to the underside of said doors having hangers with elongated openings therein through which said transverse bars extend, and means for moving said bars transversely to their lengths in said openings.

11. A dump car comprising a center-sill, needle-beams, doors having the edges thereof parallel with and adjacent to the center-sill hinged; and a transverse locking bar carried by each of said doors the ends of which are adapted to engage the needle-beams and support said doors only when the latter are closed, supporting-plates secured to the underside of said doors having hangers with elongated openings therein through which said transverse bars extend, and clevises disposed at right angles to said bars in which said bars are secured and chains for moving said clevises and bars transversely to the lengths of the latter in said openings.

12. A dump car comprising a center-sill, needle-beams, doors having the edges thereof parallel with and adjacent to the center-sill hinged; and a transverse locking bar carried by each of said doors the ends of which are adapted to engage the needle-beams and support said doors only when the latter are closed, supporting-plates secured to the underside of said doors having hangers with elongated openings therein through which said transverse bars extend, and clevises disposed at right angles to said bars in which said bars are secured and which move between longitudinal flanges depending from said supporting-plates and chains for moving said clevises and bars transversely to the lengths of the latter in said openings.

13. A dump car comprising a center-sill, needle-beams, doors having the edges thereof parallel with and adjacent to the center-sill hinged, and a transverse locking bar carried by each of said doors the ends of which are adapted to engage the needle-beams and support said doors only when the latter are closed, supporting plates secured to the underside of said door having clevises disposed at right angles to said bar and in which said bars are secured, each clevis having a shoulder near the end thereof adjacent to the outer edges of the doors, chains connected to the outer ends of said clevises and

supporting plates secured to the underside of the doors and having downwardly projecting humps adapted to be engaged by said shoulders.

14. A dump car comprising a center-sill, needle-beams, doors having the edges thereof parallel with and adjacent to the center-sill hinged, and a transverse locking bar carried by each of said doors the ends of which are adapted to engage the needle-beams and support said doors only when the latter are closed, supporting plates secured to the underside of said door having clevises disposed at right angles to said bar and in which said bars are secured, each clevis having a shoulder near the end thereof adjacent to the outer edges of the doors, chains connected to the outer ends of said clevises, a shaft the axis of which is parallel with and adjacent to the outer edges of the doors, drums on said shaft upon which said chains are wound, having projections adapted to engage the outer ends of said clevises.

15. A dump car comprising drop doors suitably hinged to the central structure of the floor of the car body, a transverse bar secured to the underside of each of said doors so as to have a limited movement transverse to its length, clevises disposed at right angles to said bars in which said bars are secured, the outer end of each of which is bifurcated and which has means integral with its underside for the attachment thereto of the adjacent end of a hoisting chain, said hoisting chains extending between the bifurcations of said clevises, and drums the axes of which are parallel with and adjacent to the outer edges of said doors and upon which said chains are wound.

16. A dump car comprising drop doors suitably hinged to the central structure of the floor of the car body, a transverse bar secured to the underside of each of said doors so as to have a limited movement transverse to its length, clevises disposed at right angles to said bars in which said bars are secured, the outer end of each of which is bifurcated and which has means integral with its underside for the attachment thereto of the adjacent end of a hoisting chain, said hoisting chains extending between the bifurcations of said clevises, drums the axes of which are parallel with and adjacent to the outer edges of said doors and upon which said chains are wound and which have projections adapted to engage the bifurcations of said clevises.

17. A dump car comprising drop doors suitably hinged to the central structure of the floor of the car body, a transverse bar secured to the underside of each of said doors so as to have a limited movement transverse to its length, clevises disposed at right angles to said bars in which said bars

are secured, the outer end of each of which is bifurcated and which has means integral with its underside for the attachment thereto of the adjacent end of a hoisting chain. 5 said hoisting chains extending between the bifurcations of said clevises, drums the axes of which are parallel with and adjacent to the outer edges of said doors and upon which said chains are wound and which 10 have projections adapted to engage the bifurcations of said clevises, and supporting plates secured to the underside of said doors having hangers with elongated openings therein through which said bar extends. 15

18. A dump car comprising drop doors suitably hinged to the central structure of the floor of the car body, a transverse bar secured to the underside of each of said doors so as to have a limited movement 20 transverse to its length, clevises disposed at right angles to said bars in which said bars are secured, the outer end of each of which is bifurcated and which has means integral with its underside for the attachment thereto of the adjacent end of a hoisting chain. 25 said hoisting chains extending between the bifurcations of said clevises, drums the axes of which are parallel with and adjacent to the outer edges of said doors and upon which said chains are wound and which 30 have projections adapted to engage the bifurcations of said clevises, supporting plates secured to the underside of said doors having hangers with elongated openings therein through which said bar extends, and having longitudinal flanges depending there-

from between which said clevises have longitudinal movement.

19. A dump car comprising drop-doors suitably hinged to the central structure of the floor of the car body, a transverse bar secured to the underside of each of said doors so as to have a limited movement transverse to its length, bifurcated clevises in which said bars are secured and which 45 extend at right angles thereto, which have means integral with their undersides for attaching the adjacent end of a hoisting chain, and each having a shoulder near its outer end, said hoisting chains extending between 50 the bifurcations of said clevises, drums upon which said chains are wound and whose axes are parallel with and adjacent to the outer edges of said doors and which have projections adapted to engage the bifurcations of said clevises, supporting-plates secured to 55 the underside of said doors having hangers with elongated openings therein through which said bar extends, and which have longitudinal flanges depending therefrom for the guidance of the longitudinal movement of said clevises and each of which has a 60 hump adapted to be engaged by one of said shoulders.

In testimony whereof I have hereunto set my hand and seal this 11th day of November, A. D., 1908.

RALPH G. TAYLOR [L. S.]

Witnesses:

HENRY BELLINGHAUSEN,
JOHN H. FLOEHN.