

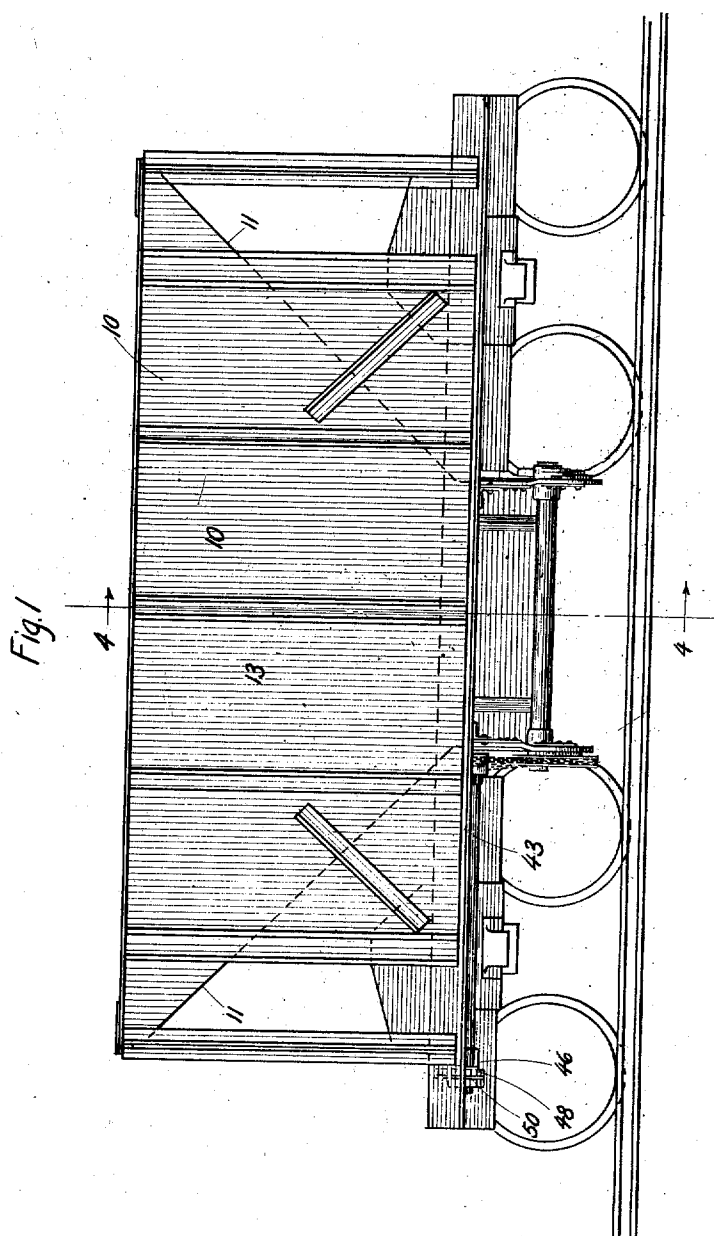
F. SEABERG.
DUMP CAR.

APPLICATION FILED JULY 7, 1909.

1,055,423.

Patented Mar. 11, 1913.

6 SHEETS-SHEET 1.



Witnesses:

C. C. Durnaph
W. L. Walton By

Inventor:

Frederick Seaberg
Meredon, Welkman & Co.
Attys

F. SEABERG.
DUMP CAR.

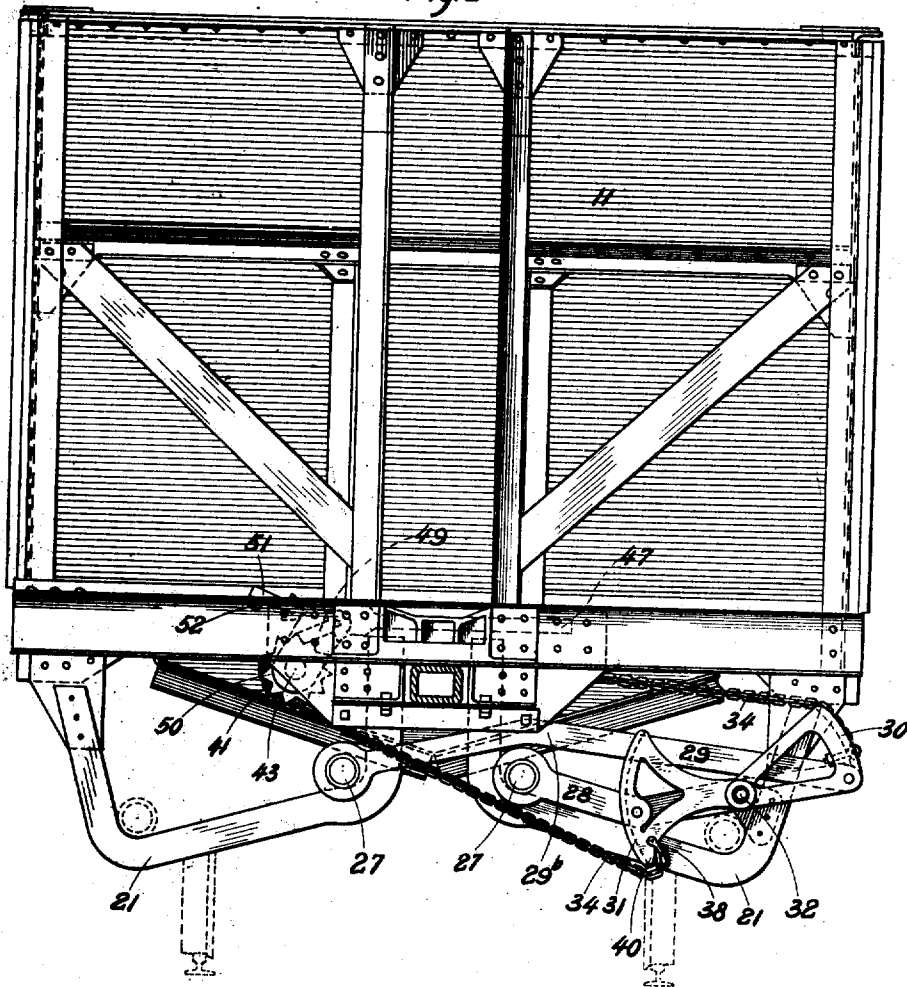
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6 SHEETS-SHEET 2.

Fig. 2



Witnesses:

C. Dunlap
By *A. L. Walton*

Inventor:

Fredrick Seaberg
By *Handan, Williamson & Co.*
Attys

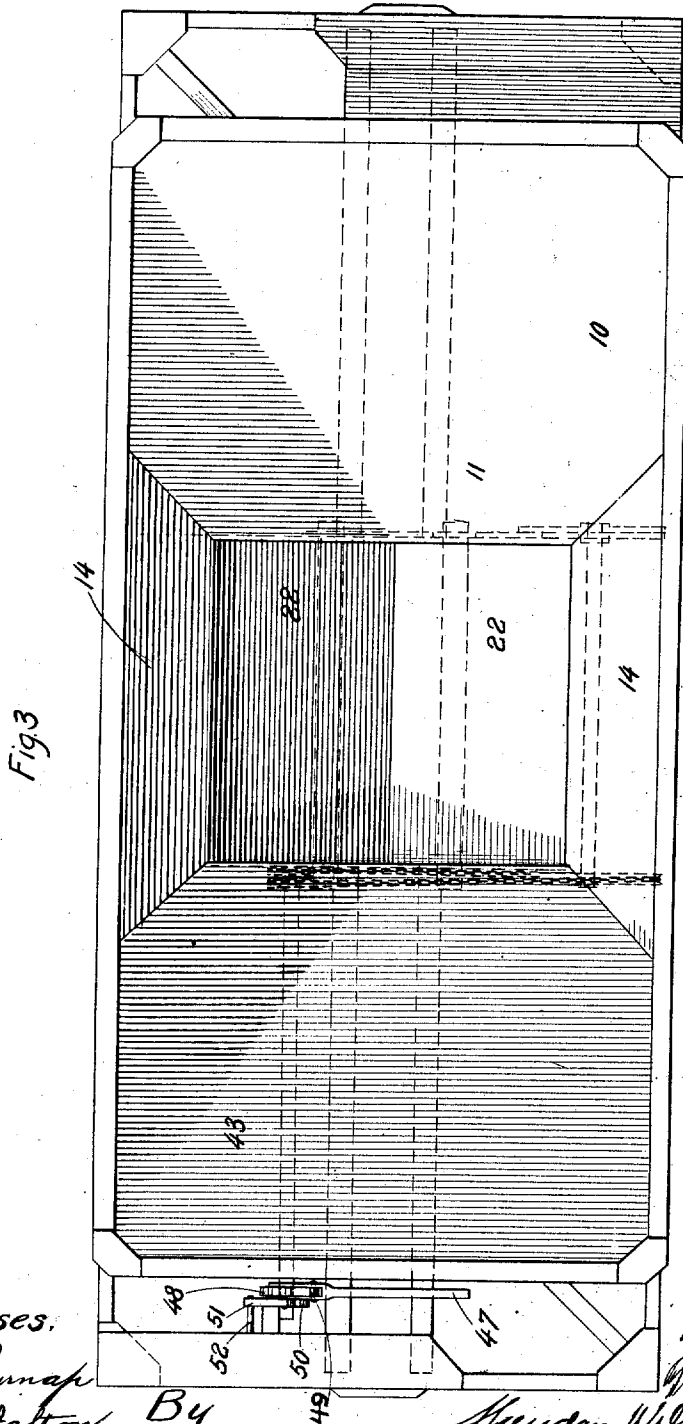
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6 SHEETS-SHEET 3.



Witnesses:

C. D. Dunlap
A. L. Walton

By

Inventor:

Fredrick Seaberg
Meridian, Wilkinson Scott
Attys

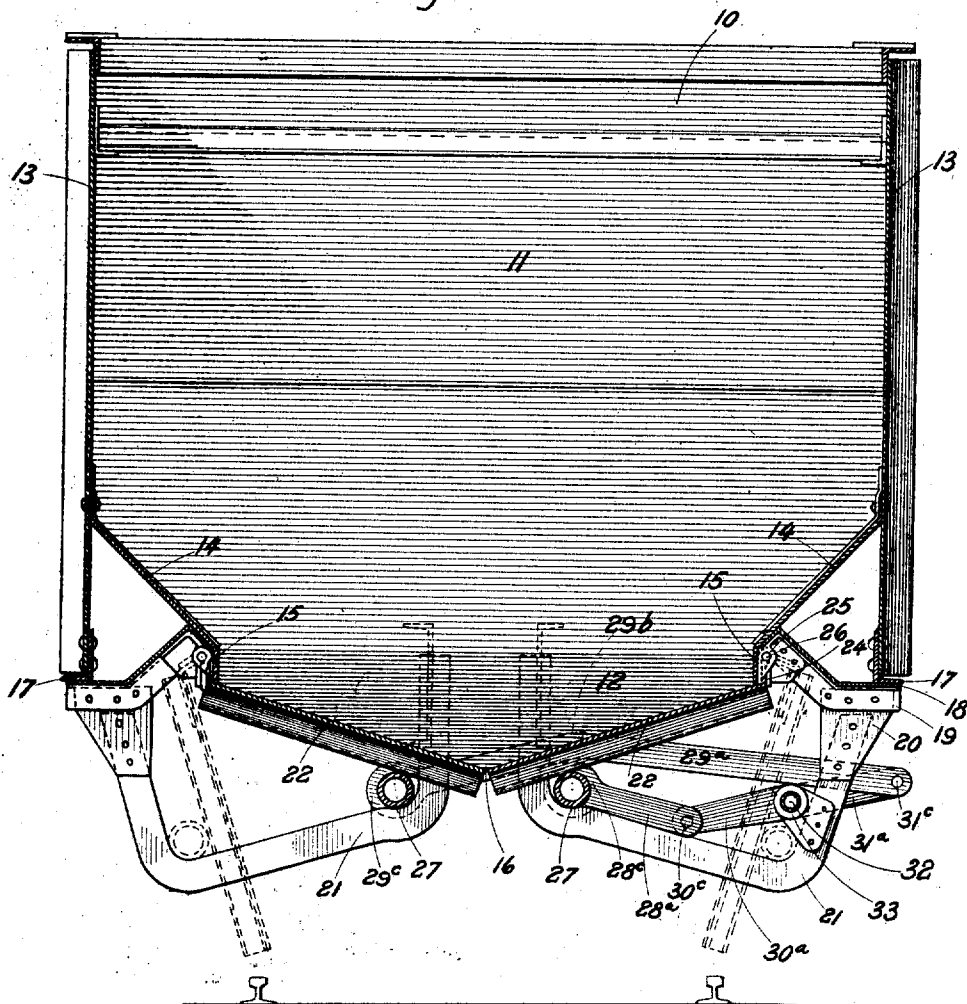
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6 SHEETS—SHEET 4.

Fig 4



Witnesses:

C. D. Dumas
A. L. Walton By

Inventor:

Frederick Seaberg
Heudon, Wilkerson & Smith
Attys

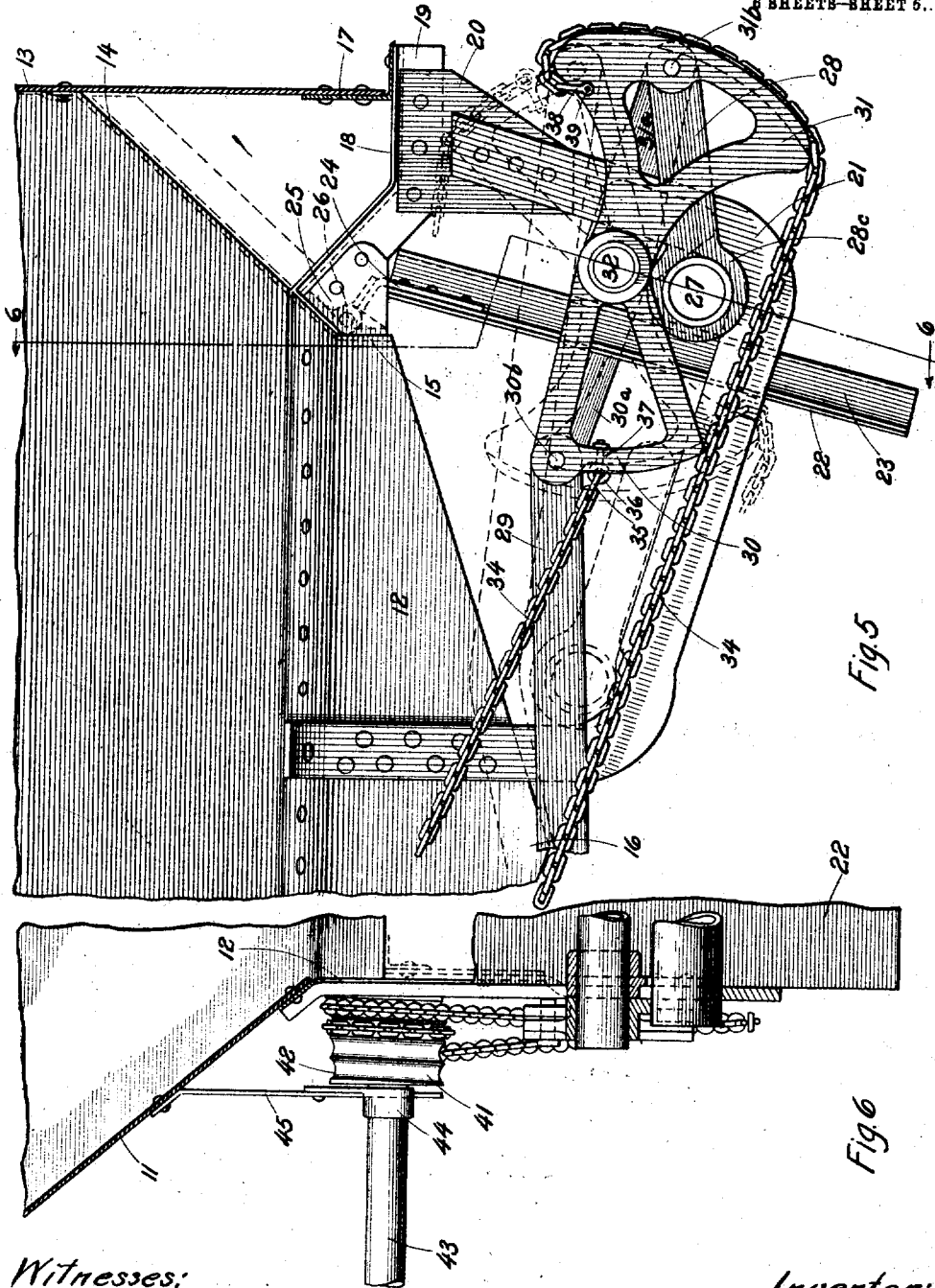
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SHEETS-SHEET 5.



Witnesses:
C. D. Durnap
A. L. Walton By

Inventor:
Frederick Seaberg
Henderson, Wilkinson & Co.
Attys

F. SEABERG.
DUMP CAR.

APPLICATION FILED JULY 7, 1909.

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6 SHEETS—SHEET 6.

1,055,423.

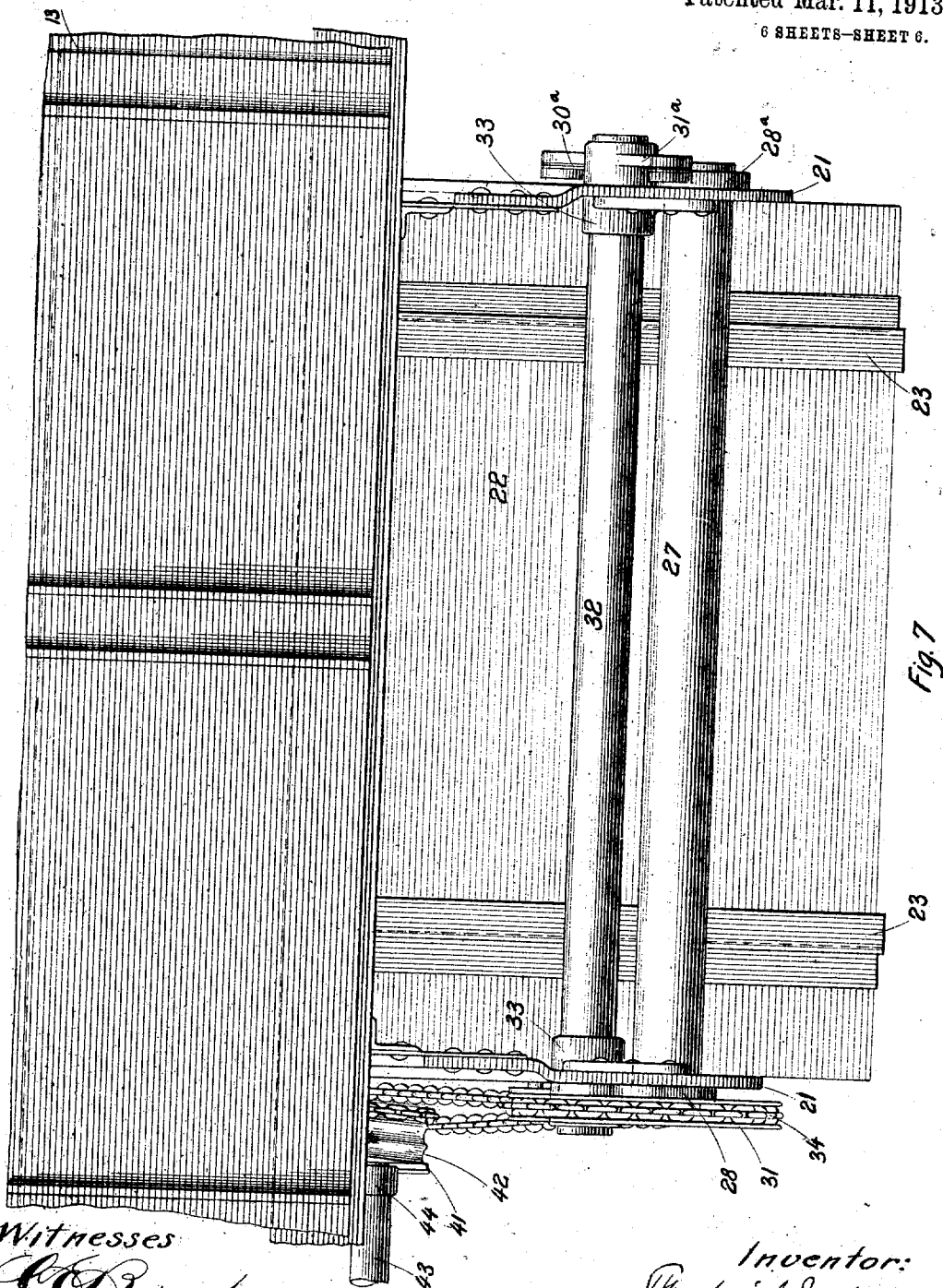


Fig 7

Witnesses

C. Durnap
A. L. Walton By

Inventor:

Fredrick Seaberg
Menden, Wilkinson & Swift
Attys

UNITED STATES PATENT OFFICE.

FREDERICK SEABERG, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
NATIONAL DUMP CAR COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF MAINE.

DUMP-CAR.

1,055,423.

Specification of Letters Patent.

Patented Mar. 11, 1913.

Application filed July 7, 1909. Serial No. 506,335.

To all whom it may concern:

Be it known that I, FREDERICK SEABERG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful improvements in Dump-Cars, of which the following is a specification.

The object of my invention is to provide an improved operating mechanism for the doors of dump cars.

It is more especially designed for use in the type of cars known as ore cars, in which the end walls of the car slope downwardly toward the middle of the car's length where the dump doors are situated.

My improvements relate particularly to ore cars which discharge their load centrally between the rails, and in which there are two doors hinged near the outer edges of the discharge opening and which meet at the middle of said opening. My invention is applicable, however, to other forms of cars.

In my improved mechanism, door closing and supporting members are given their movements by mechanism operated by a single chain and winding drum which are under the control of the operator. When the doors are closed and are supporting a load, no strain occurs in the chain and operating mechanism.

Other objects will be made apparent in the following description and claims, taken in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of an ore car with my improvements applied thereto. Fig. 2 is an end elevation of the same. Fig. 3 is a plan view of the same. Fig. 4 is a cross section on the line 4—4 of Fig. 1. Fig. 5 is an end elevation in detail of the door operating mechanism. Fig. 6 is a cross section at one end of same, on line 6—6 of Fig. 5. Fig. 7 is a side elevation of the door operating mechanism.

In the drawings, the car body 10 has the usual sloping end walls 11 which terminate at the bottom of the car near its center in the vertical walls 12. The side walls 13 are provided with an inwardly sloping sheet 14 which serves as a strengthening member for the car frame and also as a means for producing a converging effect in the lower interior part of the car body. The sloping sheets 14 terminate in a vertical portion 15

forming the lateral walls of the central discharge opening. The vertical walls 12 have their lower edges cut to a form which produces two portions sloping downwardly to a common central point 16 which forms their lowermost extremity.

The side sheets 13 are attached at their lower edges to the side sills 17. A strengthening sheet 18 is interposed between the sheet 14 and the side sill 17. The angle bar 19 is fixed to the sheet 18. A small sheet 20 of irregular outline is attached to the angle bar 19 and serves as a means of attachment for the guide bar 21. The opposite end of the guide bar 21 is attached to the vertical wall 12 near the center of the car. This completes a brief description of the car frame to which my improvements are attached.

The dump doors 22 are made of rectangular form, preferably of steel, with strengthening ribs 23 fixed to their under surfaces. The doors are provided with hinges 24 by which they are pivoted to a fixed hinge piece 25 on the car body. A pin 26 joins the two hinged parts. The two doors 22 swing outwardly to dump the load and their lower and inner edges come together at the center when closed.

The doors 22 are operated in their closing movements by movable members 27, which are preferably hollow shafts, and may be made of heavy iron pipe. They bear upon the under surfaces of the ribs 23 and slide inwardly and outwardly under said ribs. They are supported by the sloping guide bars 21 and slide upon said bars in their door operating movements. They are placed in a position at right angles to the ribs 23 and bars 21. The weight of the doors 22 and of the contents of the car which rest upon them is transmitted through said ribs 23 to said members or shafts 27, and by them the load is transferred to the guide bars 21.

The relative positions and slopes of the doors 22 and of the bars 21 enable the members or shafts 27 to close the doors when the said shafts 27 are pushed inwardly or toward the center of the car. The inward movement of the shafts 27 is effected by links 28, 29, 28^a and 29^a which are connected to segmental sheaves 30 and 31, and arms 30^a and 31^a on the shaft 32. One of the shafts 27 is connected at one end by the link 28 to

the segmental sheave 31 having a pivotal pin connection at each end of said link. The other shaft 27 is connected at one end to another sheave segment 30 by the link 29 having a pivotal connection at each end. The segmental sheaves 30 and 31 are fixed to the shaft 32 at one end thereof and are oppositely disposed thereon. The pin connections 30^b and 31^b are placed in opposite diametral relations relative to the axis of the shaft 32. One of the shafts 27 is also connected at the end opposite to that described above, by a link 28^a to an arm 30^a with a pivotal pin connection at each end of said link. The other shaft 27 is also connected at the opposite end to that described above to another arm 31^a with a pivotal pin connection at each end of link 29^a. The arms 30^a and 31^a are fixed to the shaft 32 and are oppositely disposed thereon. They are fixed on the end of said shaft 32 opposite to that on which the segmental sheaves 30 and 31 are fixed. The pin connections 30^c and 31^c are placed in opposite diametral relation relative to the axis of the shaft 32.

One of the shafts 27 is connected to the segment 30 and the arm 30^a both of which lie on the same side of the shaft 32. Any movement of said shaft 32 will therefore affect both ends of the shaft 27 similarly and simultaneously, and a parallel movement of said shaft 27 will be produced. The other shaft 27 is similarly connected to the shaft 32, by means of the segmental sheave 31 and arm 31^a which lie on the same side of shaft 32 but opposite to segmental sheave 30 and arm 30^a. Any rotative movement of the shaft 32 will be seen to cause movements of both shafts 27, and said movements will be either toward or away from the center of the car.

At the inner extremities of the movements of the members or shafts 27, when they slide upon the upper surfaces of the guide bars 21, are parts of said surfaces which have a different slope. This different slope is such as to prevent a tendency of the shafts 27 to slide back down the inclined bars and thus allow the doors to open. When a shaft 27 is resting upon this part of the guide bar, the strain caused by the load is removed from all of the door operating mechanism, except the shaft 27.

The links 29 and 29^a are given an upward bend at 29^b to permit them to clear the ends of the links 28 and 28^a. The links 28 and 28^a and 29 and 29^a lie outside of the guide bars 21, and the ends or eyes 28^c, 29^c, &c., serve to prevent the shafts 27 becoming displaced from their proper positions on the guide bars 21.

The shaft 32 is supported in bearings 33 fixed to the guide bars 21. The shaft 32 projects a considerable distance beyond the bearings 33, and the segmental sheaves 30

and 31 are mounted on said shaft at its extreme end, and in a position outside the links 29, 28, &c., and the other parts of the mechanism. The arms 30^a and 31^a are also placed at the extremity of the shaft 32 at its other end and lie outside the other parts of the mechanism. This arrangement prevents interference of the parts and permits a very advantageous disposal of them for the purpose desired.

The segmental sheaves 30 and 31 are adapted to receive the chain 34 in their grooves. One end 35 of the chain 34 is fixed to the segmental sheave 30 by means of an eye bolt 36 which is placed in a hole 37 in the bottom of the groove. A small part of the chain 34 is wound upon the segmental sheave 30 when the doors are closed, as shown in Fig. 2. The relative positions of the chain and the segmental sheave 30 when the doors are open are shown in Fig. 5. The other end of the chain 34 is fixed to the segmental sheave 31 by the U-shaped link or clevis 38 and pin 39. The segmental sheave 31 occupies a larger part of the circle of which it is a segment than is occupied by the segmental sheave 30, for the reason that its angular relation to the chain requires it. The end of the chain is given a turn around the end or corner 40 of the sheave rim, before it is fastened thereto, in order to give greater security to said fastening and also to permit as extensive contact as possible of the chain in the groove.

The chain 34 is wound around the drum 41 at about the middle of the length of said chain. The drum 41 is preferably provided with a helical groove 42 into which the chain is wound. The drum 41 is fixed upon the shaft 43, supported at one end by a bearing 44 carried by a bracket 45 fixed to the car body. At the other end the shaft 43 is suitably supported by the bearing 46 fixed to the car frame. A hand lever 47 is loosely mounted on said shaft 43 at its outer end, and is adapted to actuate the said shaft by means of a ratchet wheel 48 and pawl 49. A detent wheel 50 and detent 51 are provided for preventing a back movement while lever 47 is taking a return stroke. The detent 51 is supported by a pin 52 when not engaged with the detent wheel 50.

In operating my invention to dump the load, the lever 47 is given an oscillatory movement by the operator, the detent 51 having been first turned back upon the pin 52 and out of engagement with wheel 50. The pawl 49 is placed in engagement with the wheel 48 in such manner that a left-hand movement of the lever 47 will move the ratchet wheels and the shaft 43 to the left, as viewed in Fig. 2. This movement will be transmitted by the shaft 43 to the winding drum 41, and the chain 34 will be caused to exert a pull upon the segmental

sheave 30, and a rotary movement of the shaft 32 will be effected. The segmental sheave 31 will also be given a rotary movement because of its attachment to said shaft 32 and the other end of the chain 34 will be wound thereon. The arms 30^a and 31^a will also rotate with said shaft 32. The links 29 and 29^a will be pushed to the left, as viewed in Figs. 2, 4 and 5, and they will cause the shaft 27 to which they are attached to be moved outwardly and upon the sloping portion of the guide bar 21. The links 28 and 28^a will be pulled to the right, and they will cause the other shaft 27 to be moved outwardly and upon the sloping portion of its guide bar 21. Little or no effort is now needed on the part of the operator with the hand lever 47, to cause the shafts 27 to slide down the guide bars 21 and the doors 22 to open widely. To close the doors, the operator first reverses the pawl 49 and swings the detent 51 into engagement with the ratchet wheel 50. The lever 47 is then given an oscillatory movement and the shaft 43 is rotated in the opposite direction, causing the drum 41 to exert a pull upon the lower part of the chain 34. The pull of the chain thus effected is transmitted to the segmental sheave 31. This causes a reversal of the movements above described, and the shafts 27 are moved inwardly and upwardly along the sloping guide bars 21, pushing the doors 22 to a closed position.

I claim:

1. In a car of the class described, a dump door operating mechanism comprising a shaft having oppositely disposed arms movement by the operator, the detent 51 adapted to move a door operating member up an inclined guide member, the arms on the other side being adapted to move another door operating member up another inclined guide member.

2. In a car of the class described, a dump door operating mechanism comprising an operating shaft having segmental chain sheaves attached thereto at one end, one of said segmental sheaves being connected to means for operating a dump door, the other of said segmental sheaves being connected to means for operating another door.

3. In a car of the class described, a dump door operating mechanism comprising a winding drum for a chain, said drum engaging said chain midway between its ends, the ends of the chain being attached to segments of sheaves fixed to a shaft, and links pivotally attached to said sheaves and connected to door supporting and operating members.

4. In a car of the class described, a door operating mechanism comprising a shaft having oppositely disposed segmental sheaves fixed thereon and having an end of chain attached to each, said chain being

actuated by a winding drum, and each sheave being connected to a separate door operating means.

5. In a car of the class described, a dump door operating mechanism comprising an operating shaft having segments of chain sheaves oppositely disposed at one end of said shaft, one of said sheaves being connected to a door supporting operating member by a link, and the other of said sheaves being connected to another door supporting and operating member by another link.

6. In a car of the class described, a dump door operating mechanism comprising door supporting and operating members, a shaft parallel to said members and provided with oppositely disposed arms at one end of said shaft and oppositely disposed arms integral with segmental chain sheaves at the other end of said shaft, the arms on one side of said shaft being connected to one of said door supporting and operating members and the arms on the other side of said shaft being connected to the other door supporting and operating member.

7. In a car of the class described, a dump door operating mechanism comprising an operating shaft having segments of sheaves oppositely disposed at one end of said shaft, and arms oppositely disposed at the other end of said shaft in a parallel relation to said sheaves, one of said segments and one of said arms on the same side of said shaft being each connected by a link to a door operating means, the other of said segments and the other of said arms on the other side of said shaft being each connected by a link to the operating means of another door.

8. In a car of the class described, dump doors hinged at their outer edges and meeting at the center of the car, door supporting and operating members, guide bars for said members sloping upwardly toward the meeting edges of the doors and having a portion disposed at a different angle at the upper end of the sloping portion for holding the doors closed, a shaft having arms connected to said door supporting and operating members by links, segmental sheaves integral with said arms, a chain engaging said sheaves, a winding drum for operating said chain, a shaft for said winding drum, and a hand lever and ratchet mechanism for said shaft.

9. In a car of the class described, a car body having sloping walls leading to a central discharge opening, dump doors hinged at the outer edges of said opening and meeting at the center thereof, door supporting and operating members, guide bars sloping upwardly toward the meeting edges of the doors and having a portion sloping at a different angle at the upper end of the sloping portion for holding said doors in a closed position, connecting links attached

to said operating and supporting members, a shaft provided at each end with arms to which said links are pivotally attached, and segmental sheaves on said shaft integral with the arms at one end of said shaft, a winding chain on said sheaves, and means for operating said chain.

10. In a car of the class described, dump doors, a winding drum, a lever of the first class, chain connections between said drum and the opposite ends of said lever, operating mechanism for each of said doors, and connections extending from the opposite ends of said lever to said operating mechanisms.

11. In a car having a discharge opening, dump doors hinged adjacent the sides of said opening, a shaft mounted at one side of said opening, oppositely disposed arms rigid with said shaft, a supporting and operating member for each of said doors, links having operative engagement with said arms and said members, and means for rotating said shaft and simultaneously operating said doors through forces transmitted through said links by compression and tension respectively.

12. A dump car having a central unobstructed bottom opening, oppositely swinging doors hinged at the sides of the said opening, a bodily movable shaft beneath each door for operating and supporting the same, means for supporting said shafts, and means for simultaneously moving the shafts away from the center of the car to open the doors, and for simultaneously moving them

toward the center of the car to close the doors.

13. A dump car having a central unobstructed bottom opening, oppositely swinging doors hinged at the sides of the said opening, a bodily movable shaft beneath each door for operating and supporting the same, means for supporting said shafts, and means located at one side of said opening for simultaneously moving the shafts away from the center of the car to open the doors, and for simultaneously moving them toward the center of the car to close the doors.

14. A dump car having a central unobstructed bottom opening, oppositely swinging doors hinged at the sides of the said opening, a bodily movable shaft beneath each door for operating and supporting the same, means for supporting said shafts, and means located at one side of said opening and connected to said bodily movable shafts for operating the same.

15. In a dump car, the combination with a pair of doors, of door operating mechanism comprising a lever, a pair of laterally movable shafts upon which the doors rest freely; means operatively connecting the shafts to the lever, means through which the shafts act upon the doors, and means for actuating the said mechanism.

In testimony whereof, I have subscribed my name.

FREDERICK SEABERG.

Witnesses:

WALTER A. SCOTT,
ANNA L. WALTON.

Correction in Letters Patent No. 1,055,423.

It is hereby certified that in Letters Patent No. 1,055,423, granted March 11, 1913, upon the application of Frederick Seaberg, of Chicago, Illinois, for an improvement in "Dump-Cars," an error appears in the printed specification requiring correction as follows: Page 3, strike out line 38, and insert the words *mounted thereon, the arms on one side being*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 15th day of April, A. D., 1913.

[SEAL.]

C. C. BILLINGS,

Acting Commissioner of Patents.

to said operating and supporting members, a shaft provided at each end with arms to which said links are pivotally attached, and segmental sheaves on said shaft integral with the arms at one end of said shaft, a winding chain on said sheaves, and means for operating said chain.

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14. A dump car having a central unobstructed bottom opening, oppositely swinging doors hinged at the sides of the said opening, a bodily movable shaft beneath each door for operating and supporting the same, means for supporting said shafts, and means located at one side of said opening and connected to said bodily movable shafts for operating the same.

15. In a dump car, the combination with a pair of doors, of door operating mechanism comprising a lever, a pair of laterally movable shafts upon which the doors rest freely; means operatively connecting the shafts to the lever, means through which the shafts act upon the doors, and means for actuating the said mechanism.

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