F. SEABERG.

DUMP CAR.

APPLICATION FILED MAR. 12, 1908. RENEWED JULY 15, 1912.

1,184,036.

Patented May 23, 1916.

2 SHEETS—SHEET 1.

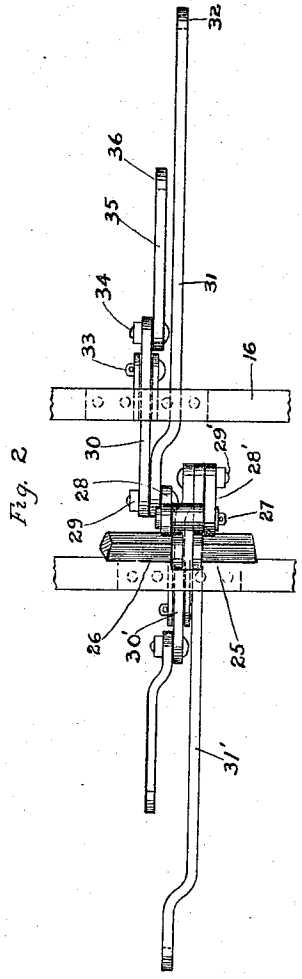


Fig. 2

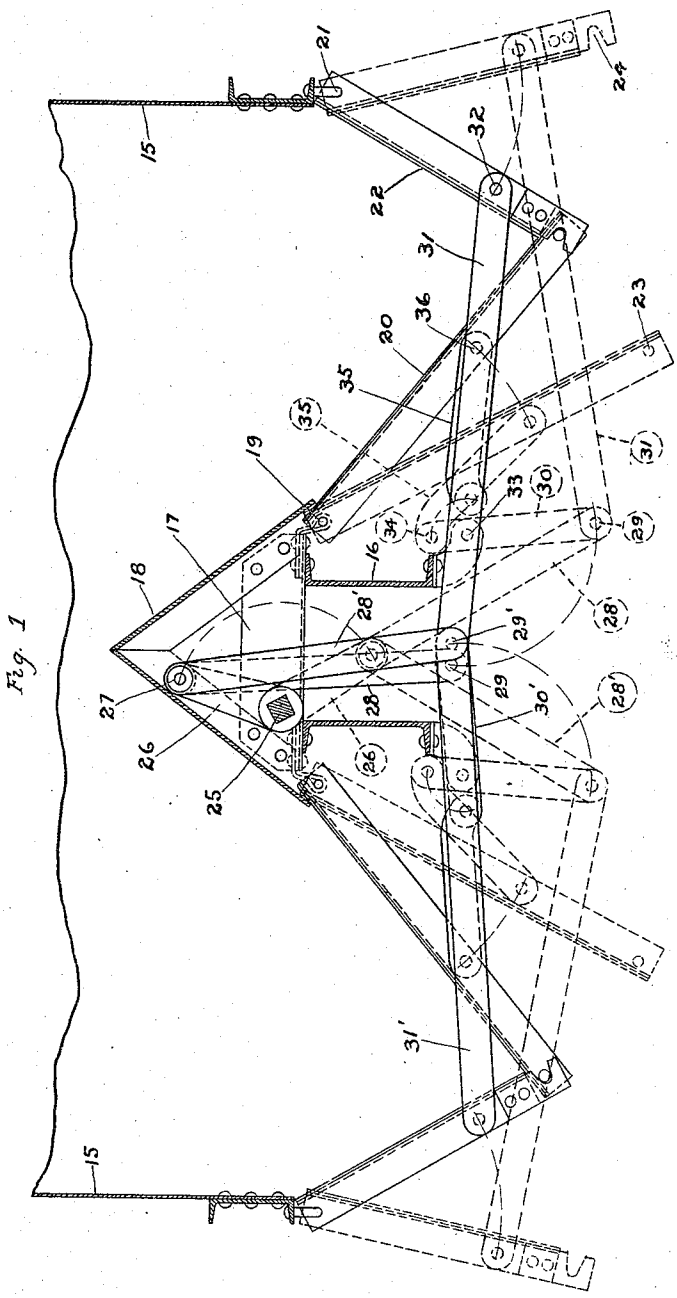


Fig. 1

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Fig. 3

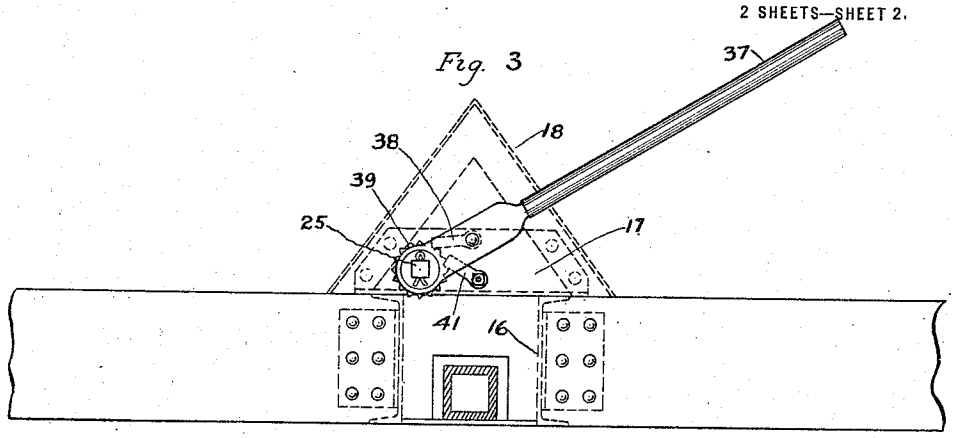
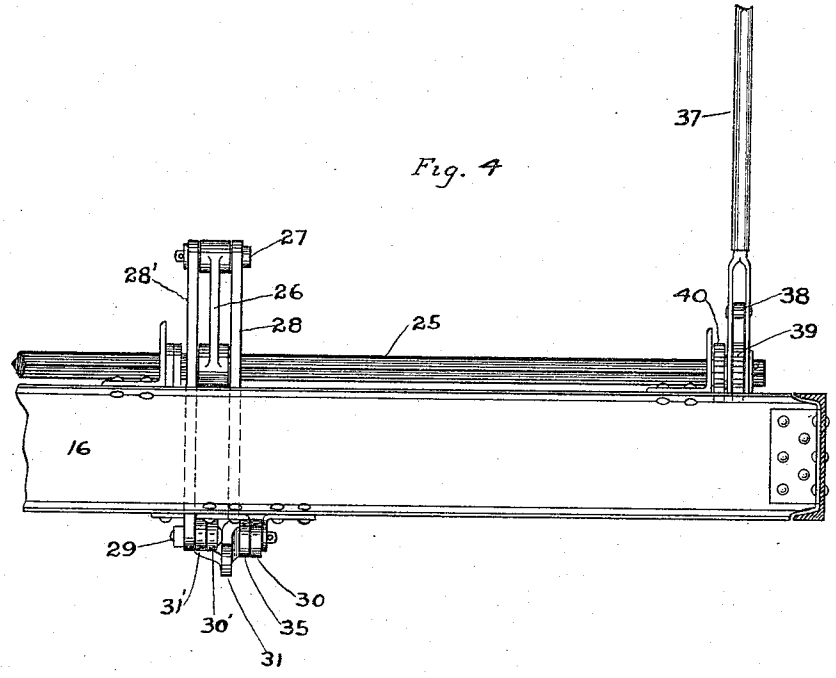


Fig. 4



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

DUMP-CAR.

1,184,036. Specification of Letters Patent. Patented May 23, 1916.

Application filed March 12, 1908, Serial No. 420,652. Renewed July 15, 1912. Serial No. 709,578.

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 a new and improved mechanism for controlling and operating dumping doors of dump cars.

A further object of my invention is to provide opposed dumping doors with operating mechanism adapted to move them together or apart, as desired.

These objects and various others will be made apparent in the following specification and claims, taken in connection with the accompanying drawings, in which—

Figure 1 is an end elevation, partly in section, showing my improvement as applied to a dump car. Fig. 2 is a plan view of the operating mechanism shown in Fig. 1. Fig. 3 is an end elevation, showing the operating handle; and Fig. 4 is a side elevation of the same.

In the drawings I have shown my improvement applied to a hopper bottom dump car which is adapted to discharge the load at the sides between the trucks. The side walls of the car are designated by the reference numeral 15. The center sill comprises two parallel channel beams 16. Short cross members 17 rest upon these channel beams, and, in turn, support the central sloping floor sections 18, to the lower edges of which the doors 20 are hinged at 19. Other doors 22 are hinged at 21 along the lower edge of the side wall 15. The opposed doors 20 and 22 are, respectively, equipped with pins 23 and hooks 24, adapted to engage each other when the doors are closed together.

Journaled in the cross members 17 is a longitudinal shaft 25 which extends throughout the length of the car. At points opposite the ends of the doors, linkage systems are provided for controlling and operating the doors. A pair of such linkage systems is illustrated in the drawings, especially in Fig. 1 thereof. The parts on the right and left are practically duplicates, and therefore it will only be necessary to describe those parts to the right of Fig. 1. The corresponding parts on the left have been designated with corresponding numerals with primes attached thereto. It is further to be observed that Fig. 1 shows the parts in full lines as they would be if the doors were closed, and in dotted lines as they would appear if the doors were open. The reference numerals for the dotted positions have been inclosed with dotted lines in the drawings, and thus each part may be located in both open and closed position.

Extending from the longitudinal shaft 25 is a crank 26, from the end 27 of which depend two long links 28 and 28′. To the lower end 29 of the link 28, a short lever 30 and a long link 31 are attached, and extend thence toward the right-hand side of the car. The extremity of the long link 31 is pivoted to the outer door 22 at the point 32. The short lever 30 has its fulcrum 33 supported from the center sill member 16 and has its opposite extremity 34 attached to the link 35, which in turn is connected to the inside door 20 at the point 36. At the end of the car, on the end of the shaft 25, the lever 37 is loosely mounted. It carries a reversible pawl 38, which is adapted to engage the ratchet wheel 39, the latter being fixed upon the shaft 25. Another ratchet wheel is also fixed on said shaft and is adapted to be engaged by a pawl 41, pivoted on a fixed part of the car framework.

The pawl 41 serves to lock the doors in closed position or to lock them in partially closed position, which may be desirable when the doors are being closed by means of the handle 37 and when said handle is being returned in order to take a fresh stroke. Assuming that the doors are in closed position and that it is desired to open them, the pawl 41 should be released and the pawl 38 reversed from the position shown in Fig. 3. As will appear from the subsequent description, the linkage systems are such that they involve dead centers when the doors are closed, and therefore the doors will not open by the weight of the load upon them until the shaft 25 is given a positive rotation in a clockwise direction, as viewed in Fig. 3. When such a start has been given, however, the doors will open by their own weight, assisted by the load, and then the moving parts will take the position shown in dotted lines in Fig. 1. When it is desired to close the doors, the shaft 25 is rotated in a counter clockwise direction by means of the lever 37. As viewed in Fig.

1, this causes the crank 26 to rise, pulling up the links 28 and 28'. This causes the short lever 30 to rotate on its fixed fulcrum 33 in a clockwise direction. Thus the link 31, attached to the lower end of the lever 30, is drawn to the left, and the link 35, attached to the upper end of the short lever 30, is pushed to the right. It is at once apparent that the respective doors 22 and 20 will be pulled together. When in closed position, the hook 24 on the door 22, by its engagement with the pin 23 on the door 20, causes the door 22 to assist in sustaining the door 20 and the load thereon. It is to be observed that when the doors are closed the short end of the lever 30 and its attached link 35 are in a straight line, thus putting their junction point 34 on a dead center. Moreover, at the same time the long end of the lever 30, and the link 31, extend in the same straight line, and therefore their junction point 29 is on a dead center. Thus, both inside and outside doors 20 and 22 are locked in close relation against each other,—any differential thrust on the respective links 35 and 31 being sustained by the pivot 33, which is attached to the center sill member 16. It follows that when the doors are in closed position none of the load is transmitted through the linkages to the link 28, the crank 26, shaft 25, or locking pawl 41.

It will be observed that I have invented a dump car of the hopper bottom type in which a great width of opening of the doors is secured. The doors are positively controlled with great ease, and when in closed position the load is sustained by the parts immediately connected thereto and is not transmitted throughout the operating connections. The linkage systems employed are in certain respects superior to chain connections, or mere catches which leave the doors free at certain stages of their operation, for said linkage systems afford means for positively controlling the doors in either direction of movement at any time.

I claim:—

1. In a dump car, two opposed doors, a lever having an intermediate fulcrum, links from the ends of the lever to the respective doors, a crank, a link from the end of the crank to the said lever, and means to rotate the crank.

2. In a dump car, a center sill, a longitudinal shaft above the center sill, a crank on said shaft, a link depending from the end of said crank through the center sill, two opposed doors at one side of the center sill, and connections from the lower end of said depending link to said doors, said connections being adapted to produce opposite motion of the doors.

3. In a car of the class described, a pair of dumping doors at each side of the center sill, the doors of each pair being hinged adjacent the center and side of the car and in closed position inclining downward and meeting at their lower edges, an operating shaft journaled longitudinally of the car, a crank secured to said shaft, links pivoted to said crank, levers pivoted to a fixed part of the car, each of said levers being pivoted to one of said links, and operating links connecting the ends of said levers with said doors.

4. In a car of the class described, a pair of dumping doors at each side of the center sill, the doors of each pair being hinged adjacent the center and side of the car and in closed position inclining downward and meeting at their lower edges, a fixed floor section between said pairs of doors, an operating shaft journaled longitudinally of the car beneath said fixed floor section, a crank secured to said shaft, links pivoted to said crank, levers pivoted to a fixed part of the car, each of said levers being pivoted to one of said links, and operating links connecting the ends of said levers with said doors.

5. In a car of the class described, pairs of opposed doors having substantially plane upper faces, each pair being located between the longitudinal center and side of the car, one door of each pair being hinged longitudinally of the car adjacent the center thereof and the other being hinged longitudinally of the car adjacent the side wall thereof, and means comprising a shaft extending longitudinally of the car adjacent the center thereof for moving said doors to closed position, with their free edges meeting and permitting said doors when released to move to open positions, in which latter position both doors incline downwardly away from the center of the car forming an outwardly directed chute.

6. In a car of the class described, pairs of opposed doors, each pair being located between the longitudinal center and side of the car, one door of each pair being hinged longitudinally of the car adjacent the center thereof and the other being hinged longitudinally of the car adjacent the side wall thereof, a shaft extending longitudinally of the car near its center, and connections between said shaft and said doors for moving said doors to closed positions with their free edges meeting and permitting said doors when released to move to open positions, in which latter positions both doors incline downwardly and away from the center of the car forming an outwardly directed chute, said connections being attached directly to both said doors and serving as braces to hold them closed.

7. In a car of the class described, pairs of opposed doors, each pair being located between the longitudinal center and side of the car, one door of each pair being hinged

longitudinally of the car adjacent the center thereof and the other being hinged longitudinally of the car adjacent the side wall thereof, an operating shaft extending longitudinally of the car near its center, crank arms fixed upon said shaft, links pivoted to said crank arms, levers pivoted to the car body and to said links, links extending from the opposite ends of said levers to the inner doors, and links extending directly from said first named links to the outer doors.

8. In a car of the class described, pairs of opposed doors, each pair being located between the longitudinal center and side of the car, one door of each pair being hinged longitudinally of the car adjacent the center thereof and the other being hinged longitudinally of the car adjacent the side wall thereof, an operating shaft extending longitudinally of the car near its center, crank arms fixed upon said shaft, links pivoted to said crank arms, levers pivoted to the car body and to said links, links extending from the opposite ends of said levers to the inner doors, and links extending directly from said first named links to the outer doors, said links connected with said doors having a position in alinement with said levers when the doors are closed to serve as braces for said doors.

9. A dump car having hopper portions along the sides, each being formed by opposed swinging doors, each of said doors when opened being outwardly inclined to serve as the opposite walls of the discharge chute, and means for operating said doors, said means comprising members extending from each of said doors to points adjacent the center of said car, said means also being adapted to serve as braces for said doors when closed.

10. A dump car having hopper portions along the sides, each being formed by opposed swinging doors, said doors when opened being outwardly inclined to serve as the opposite walls of a discharge chute, operating mechanism adjacent the center of the car, and separate operating connections from said operating mechanism to each of the doors.

11. In a dump car, two opposed doors on one side of the center sill, and separate operating connections extending from each of said doors to points adjacent the center sill, said connections serving as braces to hold the door in closed position.

12. A dump car having a hopper portion along its side, said hopper being formed by opposed swinging doors, said doors when opened being downwardly convergent and each outwardly inclined to form opposite walls of a discharge chute, an operating shaft extending longitudinally of the car adjacent the center thereof, and operating connections from said shaft to the doors.

13. In a dump car, two opposed doors on one side of the center sill, operating mechanism located adjacent said center sill, and operating connections separately connecting said operating mechanism with each of the doors.

14. In a dump car, a center sill, a longitudinal shaft, a crank on said shaft, a link depending from the end of said crank, two opposed doors at one side of said center sill, a lever connected to said link, and connections from said lever to each of the doors.

15. In a dump car, two opposed doors, a lever having an intermediate fulcrum, links from the ends of the lever to the respective doors, an operating shaft, and operating connections from said shaft to said lever.

In testimony whereof, I have subscribed my name.

FREDERICK SEABERG.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents Washington, D. C."