

C. A. LINDSTRÖM & J. F. STREIB.
DUMP CAR.

APPLICATION FILED OCT. 21, 1909.

Patented Mar. 5, 1912.

4 SHEETS—SHEET 1.

1,019,263.

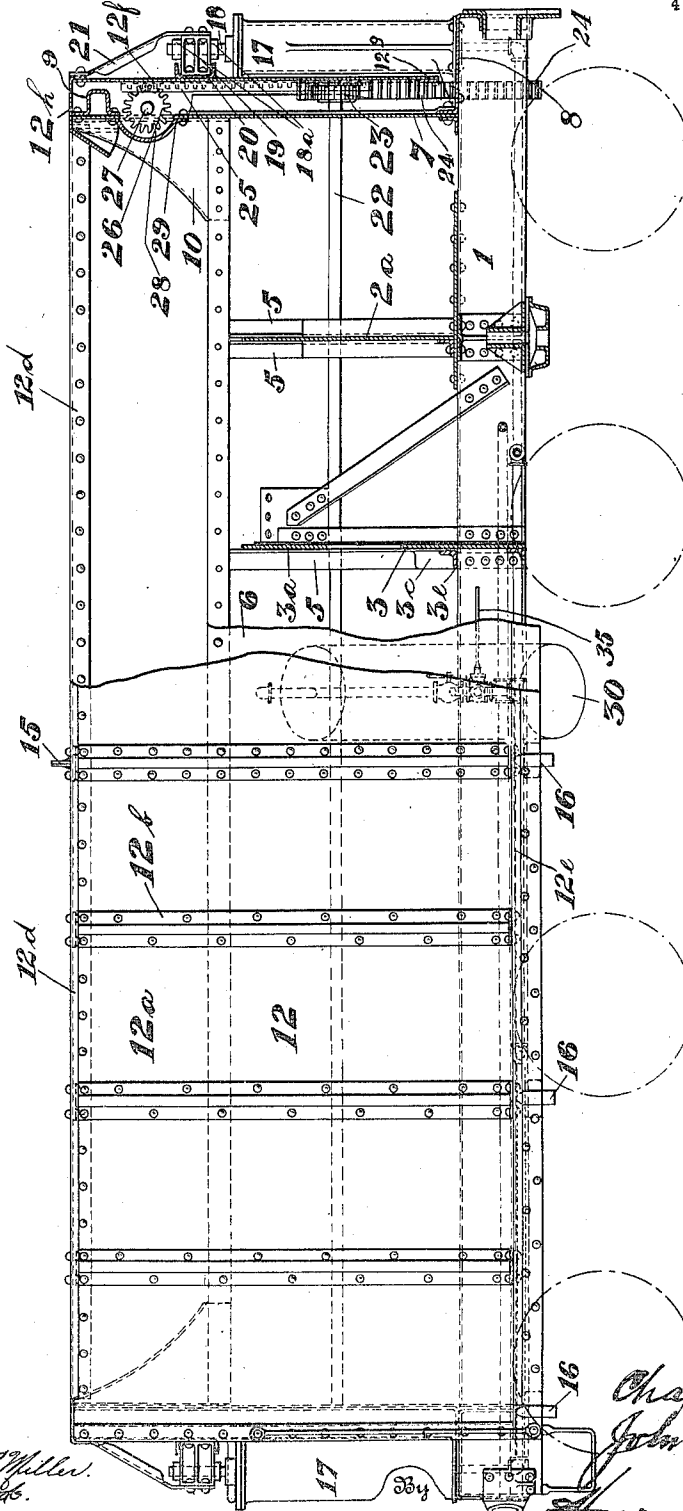


Fig. 1.

Witnesses
Frank C. Miller.
P. D. Woods.

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Charles A. Lindström
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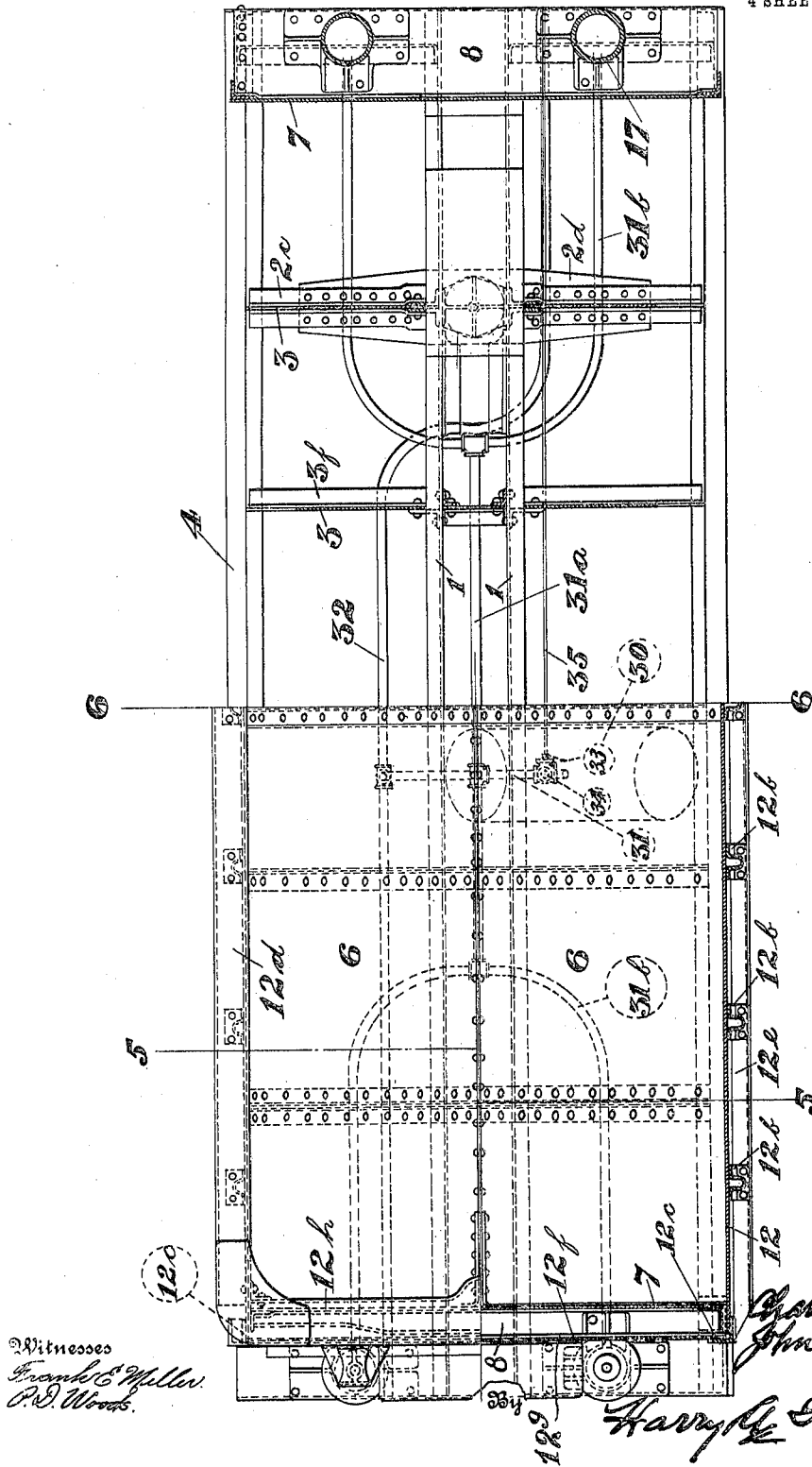


Fig. 2.

Witnesses
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4 SHEETS—SHEET 3.

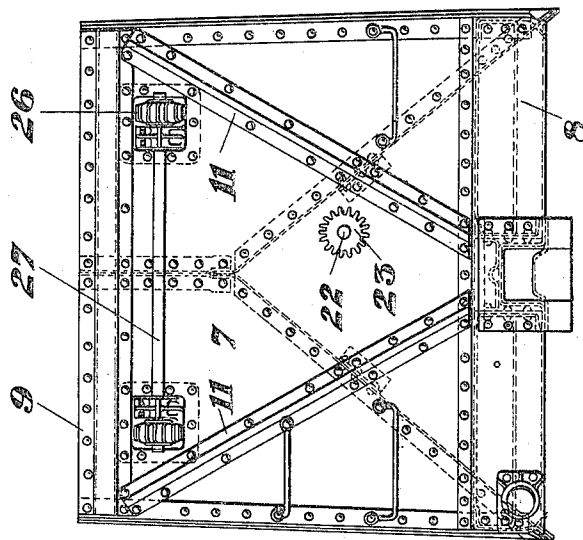


Fig. 4.

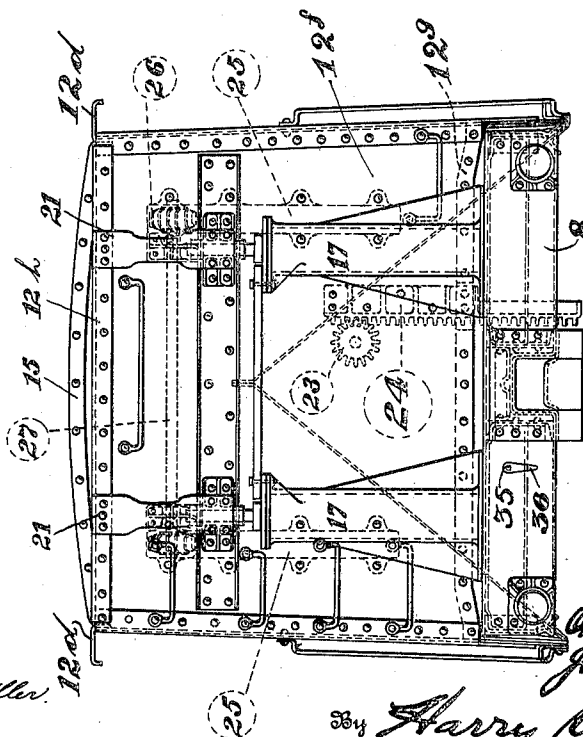


Fig. 3.

Witnesses
Frank C. Miller
P. D. Woods.

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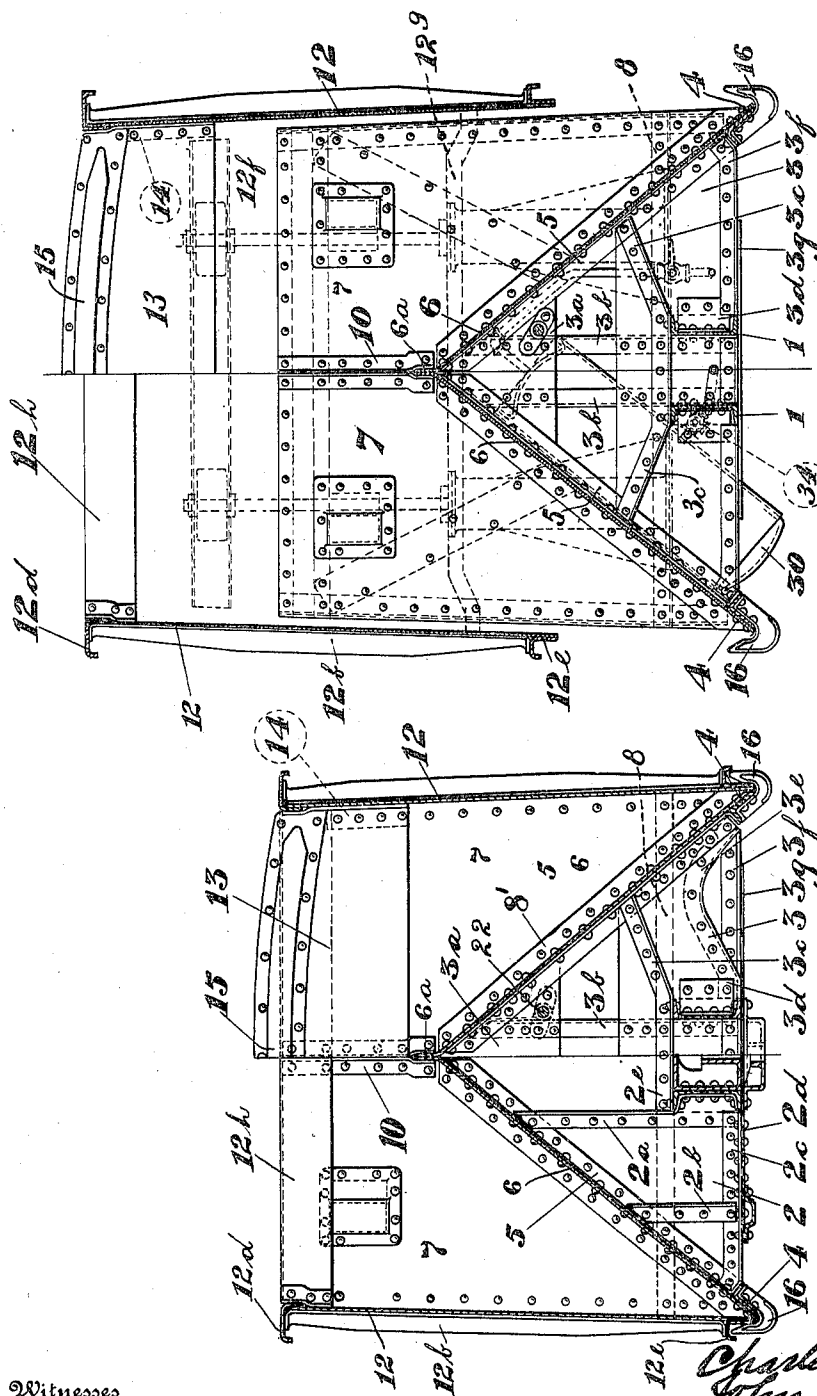


Fig. 6.

Fig. 5.

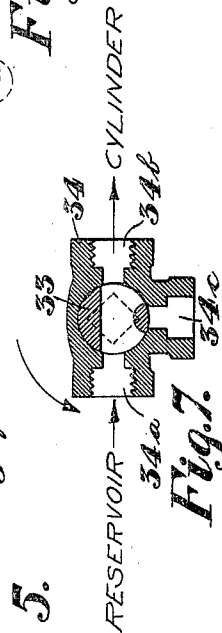


Fig. 7.

Witnesses
Francis C. Miller.
P. D. Woods.

34

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UNITED STATES PATENT OFFICE.

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DUMP-CAR.

1,019,263.

Specification of Letters Patent.

Patented Mar. 5, 1912.

Application filed October 21, 1909. Serial No. 523,784.

To all whom it may concern:

Be it known that we, CHARLES A. LINDSTRÖM and JOHN F. STREIB, citizens of the United States, residing at Pittsburgh, Northside, and Avalon, respectively, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Dump-Cars, of which the following is a specification.

10 An object of the present invention is to provide an efficient means for operating a dump car of that type wherein the sides of the car are elevated to discharge the lading.

15 A further object of the present invention is to provide detail improvements in the construction of this type of car.

One important advantage in a car of this type is that clogging of the discharge outlets by lading, such as coke, is obviated, 20 being a common occurrence, where a dump car is provided with proportionately small discharge openings closed by separate doors, that such openings become clogged by the lading due to the flow of the lading in at 25 least three different directions from each side of the car toward the outlet. In a car of the present type, wherein the sides of the car are raised, there are practically no cross-flows of lading toward the outlet, as the material flows directly toward the discharge 30 opening. Such a car is illustrated in the accompanying drawings in which like reference characters refer to like parts, and in which—

35 Figure 1 is a sectional side elevation of a car embodying our invention; Fig. 2 is a sectional plan view of the same; Fig. 3 is an end elevation of the same; Fig. 4 is a like view with the sides and side end connecting 40 sheets removed; Fig. 5 is a transverse section of the car in two different planes in line 5—5, Fig. 2; Fig. 6 is a transverse section of the car on the line 6—6, Fig. 2, showing also the car sides raised for discharging the 45 lading; and Fig. 7 is a detail section of the operating valve.

50 *The car.*—Referring now in detail to the drawings, 1 represents the center sill structure of the underframe, preferably comprising a pair of channels extending continuously throughout the length of the car, or from end sill to end sill. The car bolsters

(Fig. 5) consist of triangular plates 2 recessed or notched out at their lower side to receive the center sill structure 1. Plates 2 55 are stiffened by vertical angles 2^a, 2^b, by lower edge angles 2^c, tie plates 2^d and a cross-brace angle 2^e. Angles 2^a are widened at their lower portions to form a connection between the center sills 1 and the plates 2. 60 Tie plates 2^d are riveted to center sills 1, and lower edge angles 2^c and cross angle braces 2^e are riveted to plates 2 and center sills 1. Bolster plates 2 are, therefore, rigidly secured to the center sill structure 1. 65

Between the longitudinal center of the car and the bolsters are located intermediate floor supporting frames (Fig. 5), each consisting of a vertical lower plate 3, notched 70 similarly to plates 2 to receive the center sill structure 1, and a vertical upper or apex plate 3^a with a space intervening and connected to each other with vertical angles 3^b each extending downwardly between the center sills and serving to secure the frame 75 thereto. Plate 3 is furthermore secured to the center sill structure 1 by means of a bent angle 3^c which is riveted to the center sill structure 1 and to said plate. Plate 3 is also secured to center sill structure 1 by 80 special angle connections 3^d riveted to the center sill structure 1 and to the edge of the plate 3 at the recess or notch formed in said plate to receive the center sill structure 1. Plate 3, in addition to being stiffened by 85 angles 3^b, 3^c and 3^d, is stiffened along its lower edge by angles 3^e. Angles 3^e are curved or bent upwardly to avoid the car wheels.

At the longitudinal center of the car is 90 located a central floor supporting frame constructed in the same manner as the intermediate floor supporting frame with the exception that the lower edge of plate 3 is straight and is stiffened by a straight angle 95 3^f, and with the further exception that a tie member 3^g connects angles 3^f.

The bolsters and the several floor supporting frames are connected to and spaced from each other at their lower outer edges by angles 4 (Figs. 5 and 6), extending preferably 100 throughout the length of the car, or from end sill to end sill.

5 are floor supporting angles connecting

the upper ends of the vertical angles 2^a, 2^b, or the upper ends of the angles 3^b and 3^c, and secured also at their lower ends to the outer ends of the angles 2^c, 3^c or 3^f, all depending upon whether the particular floor angle is located over the bolster, intermediate floor frame or the central floor frame.

6 is the floor sheeting riveted edge to edge along its upper edge at 6^a, and riveted to the angles 5 to form a car bottom inclined at a suitable angle in two directions from the transverse center of the car to the car sides.

7 (Figs. 1, 2, 4, 5 and 6) is the car end wall or sheeting riveted along its lower edge to end sill 8, and also riveted or secured to floor sheeting 6 through means of suitable angular flanges or separate angles 8'. Sheet 7 is stiffened at its upper edge on the outside of the car by a pressed metal strip 9 (Fig. 1) substantially U-shape in section. On the inside of the car, sheeting 7 is stiffened at its central portion by a pair of angular flanged plates or gussets 10 riveted face to face and joggled at their lower ends to overlap the meeting edges of the floor sheets 6 to which gussets 10 are riveted. End sheeting 7 is furthermore braced on the outside by ribbed strips 11 (Fig. 4) extending from the upper outer corners to the lower center of the car ends.

The car sides 12 are made in any customary manner, such as by plates 12^a (Fig. 1) riveted together through the medium of stakes 12^b, superposed special channel coping 12^a extending along the upper edges of the sides 12 and special channel strengthening strips 12^c extending along the lower edges of the sides 12 and abutting the lower ends of the stakes 12^b (Figs. 5 and 6). Sides 12 are slightly longer than the interior length of the car (Figs. 1 and 2), that is, they extend beyond the car ends 7 and are connected at their extreme ends by side lifting sections, plates or portions 12^f connected to the side sheeting 12^a through means of flanges or angle sections 12^c (Fig. 2) on the side sheeting 12^a riveted to the lifting sheets, sections or portions 12^f. Lifting sheets, sections or portions 12^f are of less depth than the sides 12 (Figs. 1 and 3) and of slightly less depth than the ends 7, being cut away at their lower edges to avoid the end sill structure 8. Lifting sections, sheets or portions 12^f are strengthened along their lower edges by strips 12^g and carry at their upper edges combined hoods and bracing channels 12^h (Figs. 1 and 2) projecting over the end walls 7, of the car to prevent foreign matter from falling between the end walls 7, the lifting sheets, sections or plates 12^f and the sides 12. Sides 12 are further spaced, stiffened and tied together at the longitudinal center of their upper edges by a plate 13 secured to sides 12 by angles 14, said plate 13 be-

ing stiffened along its upper edge by a pair of ribbed arched stiffening strips 15, riveted face to face, one on each side of said plate 13, and preferably of pressed steel formation (Figs. 1, 5 and 6).

16 are hooked-shaped side keepers (Figs. 1, 5 and 6) riveted to side sills 4, with the inner sides of their noses inclined inwardly across the vertical plane of the car sides, said keepers being of suitable number and location, shown in the drawings as located in line with the central and intermediate floor supporting frames. These keepers project slightly beyond the plane of car sides 12 and their function is to receive the lower edges of the sides 12 by entering channel strips 12^e to prevent spreading or bulging of the car sides 12.

Car operating mechanism.—Having described the construction of the car, the mechanism for raising the sides of the car for the purpose of discharging lading will now be described.

Mounted on each of the end sill structures 8, beyond the lifting sheets, sections or portions 12^f, are one or more cylinders 17 (Figs. 1, 2 and 3), there being shown in the drawing two in each end of the car, to which compressed air, steam or other fluid pressure is supplied in the manner hereinafter described.

18 are piston rods mounted to reciprocate in cylinders 17 and carrying at their upper ends bosses 18^a by means of which piston rods 18 are connected to crossheads 19 riveted to the lifting frame through channel 20 riveted to the lifting sheet, section or portion 12^f at each end of the car so that as pressure is admitted to cylinders 17, piston rods 18 are forced upwardly raising the lifting section, portion or sheet 12^f, and hence also raising the car sides rigidly connected thereto (Figs. 1 and 3). For the purpose of further bracing, stiffening and counteracting any undesirable movement due to leverage on the crossheads 19, flanged braces 21 (Figs. 1 and 3) extending from and riveted to crossheads 19 and the upper edges of lifting sections, portions or sheets 12^f, are employed.

A special feature of the present invention is means for preventing an uneven movement or raising of the car sides 12, or, in other words, means for insuring or causing a parallel movement of the side structure during the raising and lowering operation. Such means consist of a shaft 22 (Figs. 1, 4 and 5) running substantially the entire length of the car body and journaled in the several floor supporting frames and bolsters, a pinion or gear 23 mounted at each end of said shaft 22 between the car end 7 and the lifting sections, portions or sheets 12^f, rack 24 (Figs. 1 and 3) riveted or secured to the inner faces of the lifting

portions, sections or sheets 12ⁱ in mesh with gears 23; racks 25 (Figs. 1 and 3), preferably two in number, at each end of the car and riveted also to the inner face of the lifting portions, sections or sheets 12ⁱ and a gear 26 (Figs. 1 and 4) for each of the said racks 25 in mesh with racks 25 and mounted on a shaft 27 stationarily journaled on the outer face of the car end sheeting 7. In order to prevent one side 12 from creeping on the other, gears 26 are rigidly mounted on shaft 27, and in order to permit use of gears 26 of suitable diameter without unduly increasing the distance between the car ends 7 and lifting portions, sections or sheets 12ⁱ, the car end sheeting 7 is perforated at 28 (Fig. 1 and 4) at the points of location of the gears 26 so that gears 26 project into the car body. These perforations 28 are covered by concave caps 29 (Figs. 1, 5 and 6) riveted to the inner face of the car end sheeting 7. It will thus be seen that as the car sides are raised the racks 25 at each end of the car prevent one side 12 from creeping on the other, while the racks 24, pinions 23 and shaft 22 prevent one lifting portion, section or plate 12ⁱ from creeping with relation to the other, so that the parallel movement of the opposite edges of the car side structure is maintained both in elevating and in lowering.

For the purpose of causing operation of piston rods 18, the following means may be employed: Mounted beneath the car flooring 6 is a pressure reservoir 30 (Figs. 1, 2 and 6), supplied in any suitable manner with pressure, having a discharge pipe 31 with extensions 31^a connected to further extensions 31^b which connect with the cylinders 17. For the purpose of supplying reservoir 30 with pressure, a pipe 32 may be employed, which may be the train pressure pipe, connecting reservoir 30 with any suitable source of supply, such as the locomotive, and any suitable check valve may be employed for trapping pressure in said reservoir. Any suitable means may be employed for regulating the supply of pressure from the reservoir 30 to the respective cylinders 17, such, for instance, as the valve 33 and housing 34 (Figs. 2 and 6). Housing 34 is provided with ports 34^a, 34^b and 34^c (Fig. 7). When valve 33 is turned to position shown in Fig. 7, pressure will pass through port 34^a, valve 33 and port 34^b and to cylinders 17, whereupon sides 12 will be raised. If valve 33 is turned in the direction of the curved arrow from the position shown in Fig. 7, port 34^a will be closed and port 34^c opened, allowing pressure to escape from cylinders 17 through port 34^c and thus allowing the sides 12 to drop.

Any suitable means may be used for operating valve 33, such as a rod 35 and lever 36, the latter being located preferably at the

end sill of the car on which directions for operating the lever may be stenciled if desired (Figs. 2 and 3).

Having thus described our invention, the following is what we claim as new therein and desire to secure by Letters Patent:

1. In a dump car, the combination with a ridge-shaped floor, of a pair of center sills and an A-shaped floor frame comprising a vertical plate notched to receive said center sills, a pair of parallel vertical angles riveted to said center sills between the latter and also riveted to said plate to stiffen the frame and a transverse angle having upturned ends riveted to said center sills and also riveted to said plate.

2. In a dump car, the combination with a ridge-shaped floor, of an A-shaped floor frame comprising a vertical plate notched along its lower edge to avoid the car truck and a stiffening angle extending along the lower edge of said plate.

3. In a dump car having an inclined floor, a floor frame comprising a vertical plate notched along its lower edge to avoid the car trucks, an inclined stiffening member extending along one edge of said plate and a stiffening member extending along the notched edge of said plate and intersecting the said first-mentioned stiffening member.

4. In a dump car, the combination with an inclined floor, of a floor frame comprising a vertical plate notched along its lower edge to avoid the car truck, a stiffening member extending along said lower edge, an inclined stiffening member extending along another edge of said plate and intersecting said first-mentioned stiffening member and a transverse stiffening member having a horizontal central portion and upturned ends.

5. In a dump car having a liftable side and a cross-bearer, an immovable side keeper secured to said cross-bearer and having a V-shaped recess formed therein to receive the lower edge of the car side.

6. In a dump car comprising a liftable side and a cross-bearer, an angle riveted to said cross-bearer and having its flange inwardly and downwardly disposed and a side keeper having a shank portion riveted to said angle, abutting the depending flange of said angle and having an engaging portion extending at an angle to said shank portion to engage the car side.

7. In a dump car comprising a pair of liftable wall sections, a central strut, connecting said sections and an arched stiffening member secured to said central strut.

8. In a dump car comprising a pair of liftable wall sections, a central stiffening plate connecting said sections, and arched pressed metal reinforcing members riveted to said plate on opposite sides thereof and face to face.

9. In a dump car comprising a pair of

liftable wall sections, a deep central stiffening plate connecting said sections, and arched pressed metal reinforcing members riveted to said plate on opposite sides thereof and face to face.

5 10. In a dump car comprising a pair of liftable wall sections, a deep central stiffening plate connecting said sections and arched pressed metal reinforcing members riveted

to said plate on opposite sides along its upper edge. 10

In testimony whereof we affix our signatures in presence of two witnesses.

CHARLES A. LINDSTRÖM.

JOHN F. STREIB.

Witnesses:

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HARRY A. KNIGHT.
