D. E. BLAIR.

DUMP CAR.

APPLICATION FILED SEPT. 8, 1909.

1,007,324.

Patented Oct. 31, 1911.

3 SHEETS—SHEET 1.

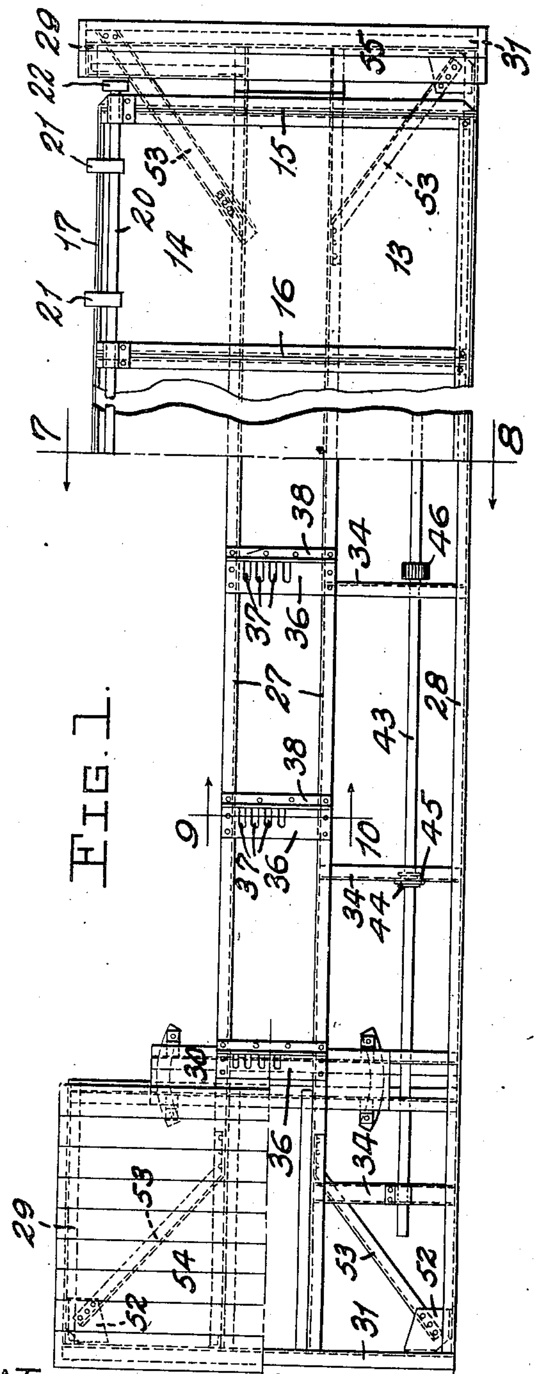

FIG. 1.

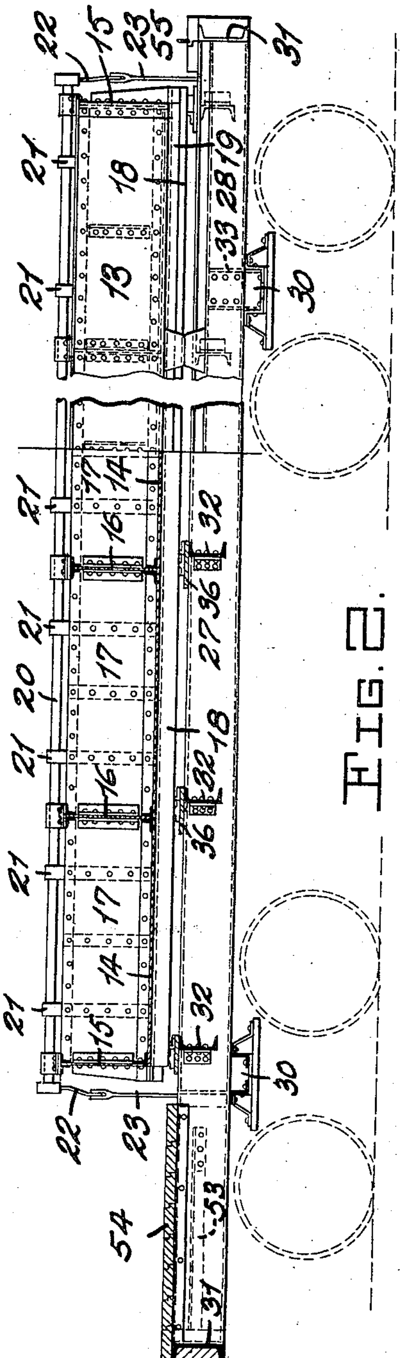

FIG. 2.

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3 SHEETS—SHEET 2.

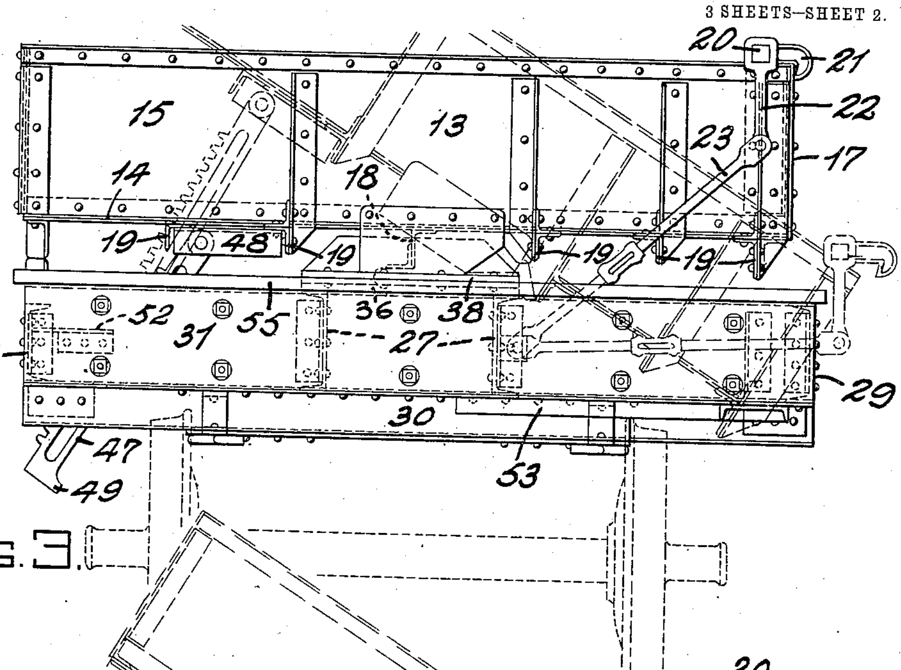

FIG. 3.

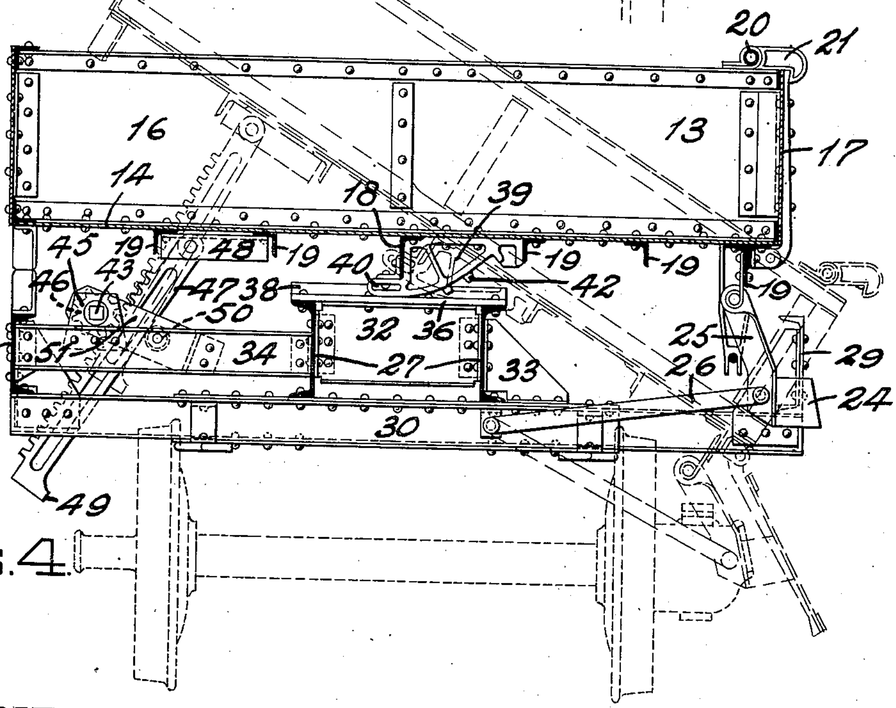

FIG. 4.

WITNESSES

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3 SHEETS—SHEET 3.

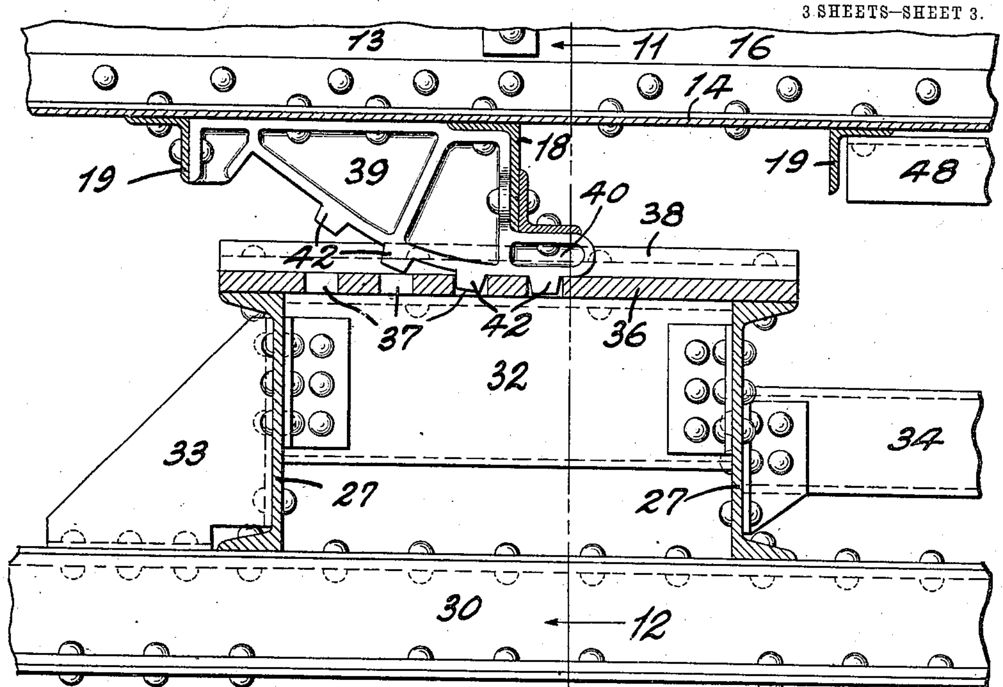

FIG. 5.

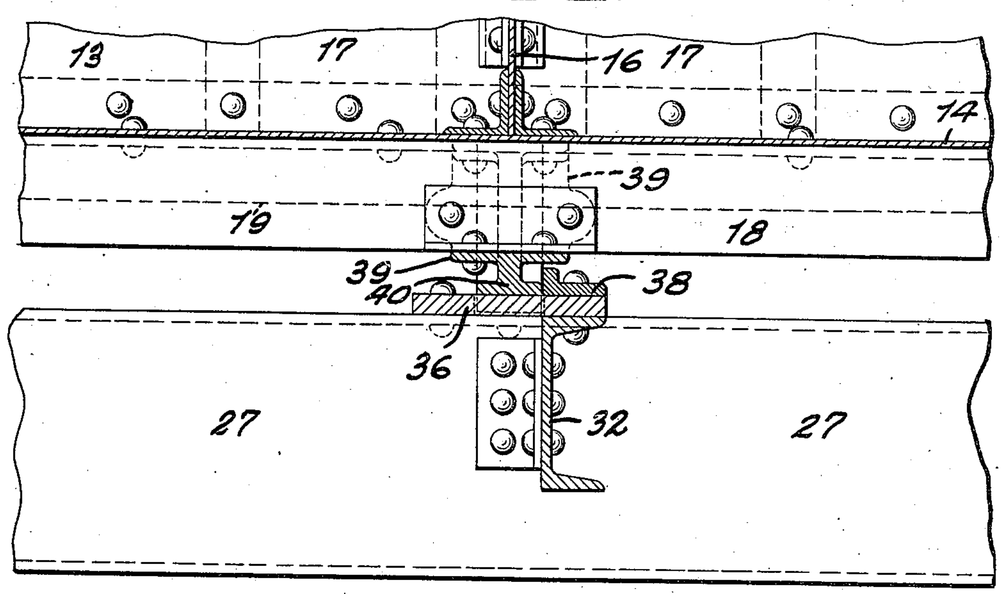

FIG. 6.

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DUMP-CAR.

1,007,324. Specification of Letters Patent. Patented Oct. 31, 1911.

Application filed September 8, 1909. Serial No. 516,874.

To all whom it may concern:

Be it known that I, DAVID E. BLAIR, of the city of Montreal, in the Province of Quebec and Dominion of Canada, have invented certain new and useful Improvements in Dump-Cars, of which the following is a full, clear, and exact description.

This invention relates to dump cars of the type having side doors, which are automatically released and opened when the car is tilted to one side so as to open up the whole side of the car for the discharge of the load. The car body is mounted upon the center sills of the under frame and is supported centrally thereof upon rolling hinges so constructed that when the loaded car is released from its normal horizontal position, it will tilt to one side automatically to discharge its load.

The main object of the invention is to provide a simple, durable, efficient and comparatively inexpensive construction, that will be sufficiently strong to carry the load and resist the various strains to which it is subjected; that can be quickly and easily tilted to one side to discharge its load, and that can be returned to its normal position with great facility.

A further object is to provide a car which will be particularly adapted to carry loads such as ballast and the like; that can be discharged lengthwise along one side of the car, said car being provided with means to prevent the ballast from spreading between the car trucks, thus detaining the car unnecessarily on lines where the passenger traffic is heavy.

For particulars of body construction, reference may be had to my complementary specification, Ser. No. 516,875.

In the drawings which illustrate my invention:—Figure 1 is a plan view of a car, the right half showing the body of the car, and the left showing the under frame. Fig. 2 is a side elevation of the dumping car, the left half being shown in central longitudinal section. Fig. 3 is an elevation of the rear end of the car. Fig. 4 is a vertical transverse section on the line 7—8 of Fig. 1. Fig. 5 is an enlarged vertical transverse section on the line 9—10 of Fig. 1. Fig. 6 is an enlarged, vertical, longitudinal section on the line 11—12 of Fig. 5.

Referring to the drawings, 13 designates a car body comprising floor plates 14, end walls 15, and transverse diaphragms or partitions 16. One side wall of the car is fixed, but the opposite side wall consists of a series of doors 17 extending from end to end of the car, said doors being hinged at the bottom to swing outwardly and downwardly. The car body is stiffened by a series of longitudinal angle bars, the center angle upon which the body is supported being designated by the numeral 18 and the angles on each side of the center, by the numeral 19. The doors 17 are operated by means of a lock shaft 20, carrying door latches 21, said shaft 20 being actuated by means of a lever 22, pivotally connected to a link 23 secured to the under frame of the car. When the doors drop, they are supported at a suitable angle to prevent the load from spreading underneath the car by means of buffers 24 carried upon hangers 25, said hangers being held in position by means of the pivoted links 26, which are also secured to the under frame of the car.

The under frame comprises a center sill consisting of the channel beams 27 which are connected and supported by means of suitable plates riveted thereto in the usual manner. At one side of the underframe, a side sill 28 extends from end to end of the car, while at the opposite side, the side sills 29 are provided adjacent the car trucks. The car is carried upon bolster frames 30 under which the trucks are located.

31 designates the end sills of the underframe, and 32 the tie plates connecting the channel beams of the center sill. The bolster frame is strengthened and supported by means of the gusset plates 33.

34 designates the transverse beams extending from the center sill 27 to the side sill 28, said beams carrying the shaft which operates the tilting mechanism. The channel beams of the center sill 27 are connected at intervals by means of cover plates 36 which are provided with apertures 37, the purpose of which will be hereinafter explained.

The car body is supported upon a series of castings 39, the outer edge of which is in the form of a segment, and these castings form rolling hinges upon which the car is pivoted and tilted to one side to discharge its load. These curved hinge members are secured to the center longitudinal angle beam 18 at one side and to the next adjacent angle beam 19 which supports the car floor, as clearly shown in Fig. 5. The hinge members are further riveted or bolted to the

floor plates adjacent the transverse diaphragms. It will be seen that the curved edge of the hinge member is toward the side to which the car is tilted, said hinge member being provided with a toe-piece 40 which carries the load and prevents the car from tilting back too far when being returned to its normal position. The end motion of the car is prevented by means of bearing plates 38 adjacent the hinges. The curved edge of the hinge member 39 is provided with a series of teeth 42 which operate in the apertures or slots 37 in the plates 36. The car being mounted upon the rolling hinges 39 may thus be tilted to one side, as shown in dotted lines in Fig. 4, and the center of support of the car body is preferably out of line with the central axis of the car in order that it may dump itself automatically when released.

The operation of tilting the car is accomplished by means of a shaft 43 which is preferably squared, being provided at intervals with bearings 44, which operate in bearing plates 45. Pinions 46 are mounted on the shaft 43 and engage or mesh with the teeth of the racks 47, which are secured to the angle bars 48, located between the floor bars 19 on the opposite side of the car from the doors. The racks 47 are provided with projecting toe-pieces 49 at their lower ends which engage the guide rolls 50 mounted on the plates 51 and prevent the car from tilting too far downwardly. Gusset plates 52 are provided to brace the end sills 31, and diagonal braces 53 connect said gusset plates with the center sill. The front end of the car may be provided with an operating platform 54 and the rear end with a platform 55.

The operation of the tilting and dumping mechanism will be readily understood from the foregoing description. The car is loaded in its normal level position and is held in place by the engagement of the pinion 46 with the rack 44, the shaft 43 being locked and released by any well known mechanism. To discharge the contents of the car the shaft 43 is released and as the center of support of the car body is slightly out of line with the center of gravity, it will be automatically tilted in the direction shown in broken lines in Fig. 4. The rolling hinge members carry the car body easily to this dumping position and the teeth 42 operating in the slots 37, prevent any slipping movement. End motion of the car body is prevented by means of the plates 38. The doors are automatically released when the car begins to tilt and fall downwardly to a position which will prevent the contents of the car from falling back under the trucks. The car, when emptied, will return by gravity to its former position. When the car is loaded the center of support of the body is nearer the closed side than the open side thereof, so that the body tilts by gravity to dump the load. In tilting the body rolls on the hinge irons so that the center of support is shifted past the center of gravity toward the door side of the body. Thus, when the load is discharged, the body automatically rights itself, the momentum attained in the first part of the movement being sufficient to carry the body to a horizontal position, where it is locked.

While I have shown the preferred embodiment of my tilting and operating mechanism, it will be understood that several modifications may be made without departing from the spirit of my invention.

Having thus described my invention, what I claim is:—

1. A dump car of the character described comprising a car body, an underframe having a longitudinal center sill, hinge members between the center sill and the car body, means for tilting the car laterally upon its hinges, discharging doors at one side of the car, means for releasing said doors with the tilting movement of the car, buffers pivoted under the car body, and means for positioning said buffers to support the discharging doors, substantially as described.

2. A dump car of the character described comprising a car body, an underframe having a longitudinal center sill, hinge members interposed between the car body and the underframe, a longitudinal shaft, pinions mounted thereon, a series of toothed racks coöperating with said pinions to tilt the car laterally, discharging doors at one side of the car, buffers adapted to support said doors in their lowered position and means for positioning said buffers, substantially as described.

3. A dump car of the character described comprising an underframe, a car body, and curved members supporting the car body on the underframe, said members being positioned to support the car body at one side of its center of gravity in horizontal position and shaped to shift the center of support to the other side of the center of gravity when the body tilts.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

DAVID E. BLAIR.

Witnesses:
STUART R. W. ALLEN,
E. R. MCKENZIE.