Oct. 16, 1934. D. HINDAHL 1,977,308

BALLAST CAR

Filed Aug. 25, 1932 4 Sheets-Sheet 1

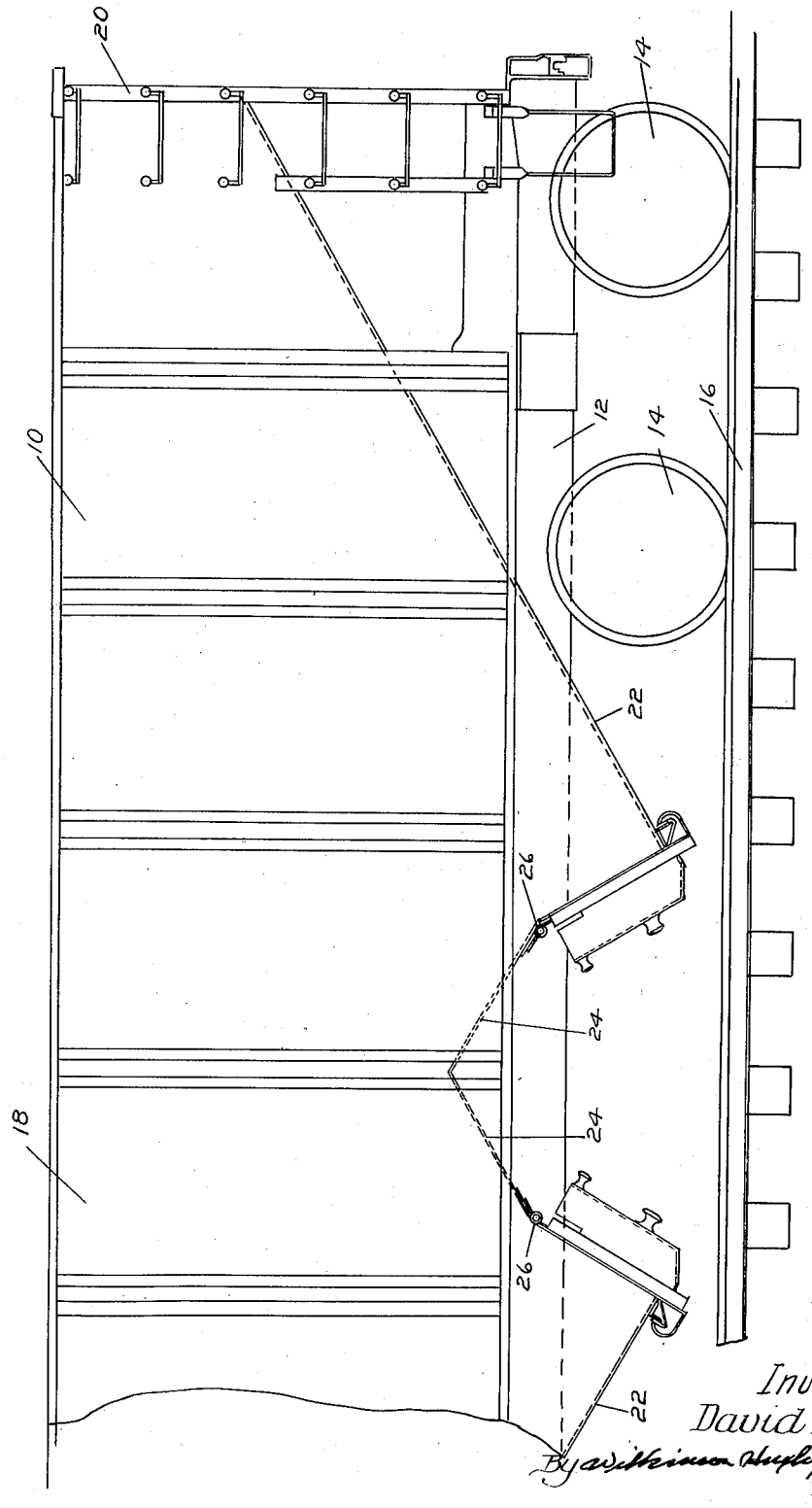


Fig. 1

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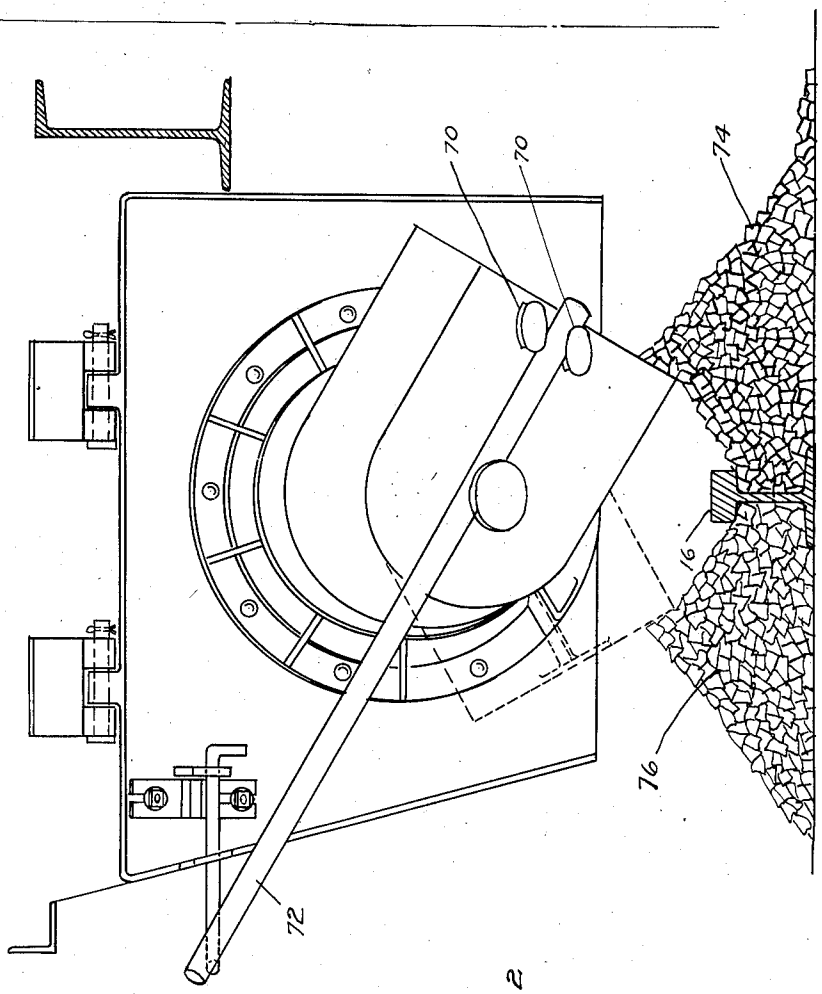


Fig. 2

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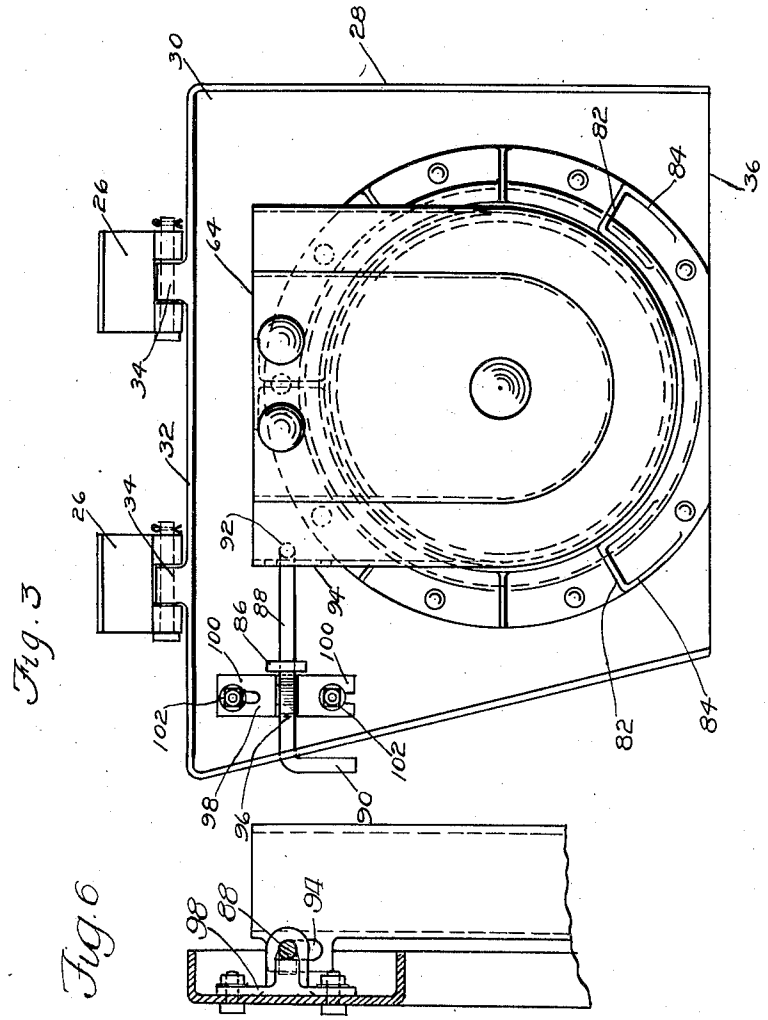


Fig. 3

Fig. 6

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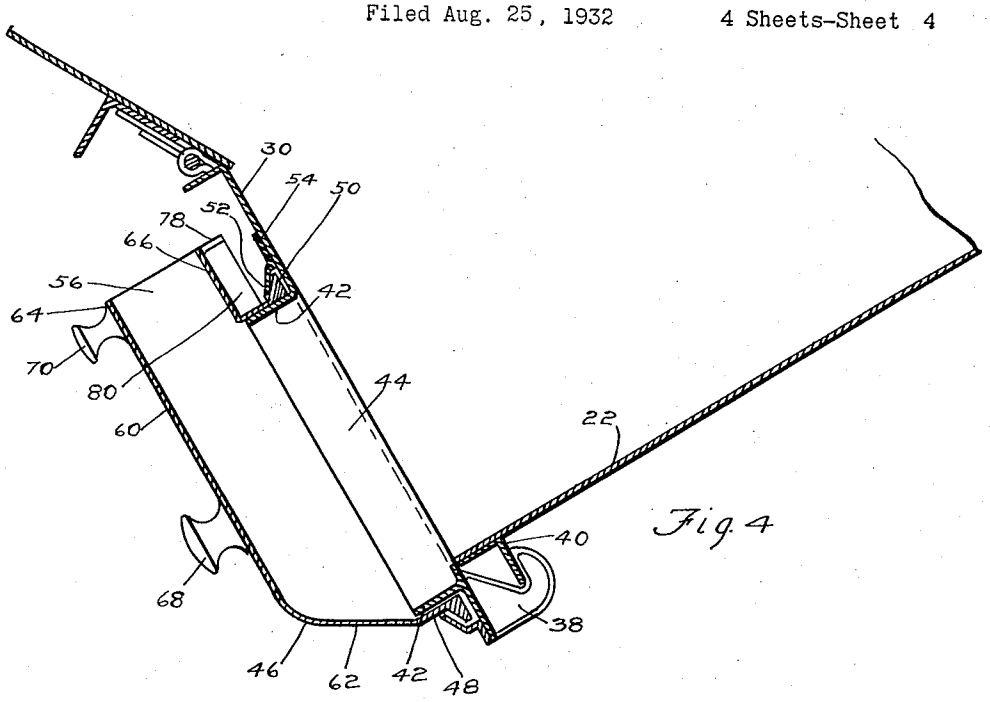
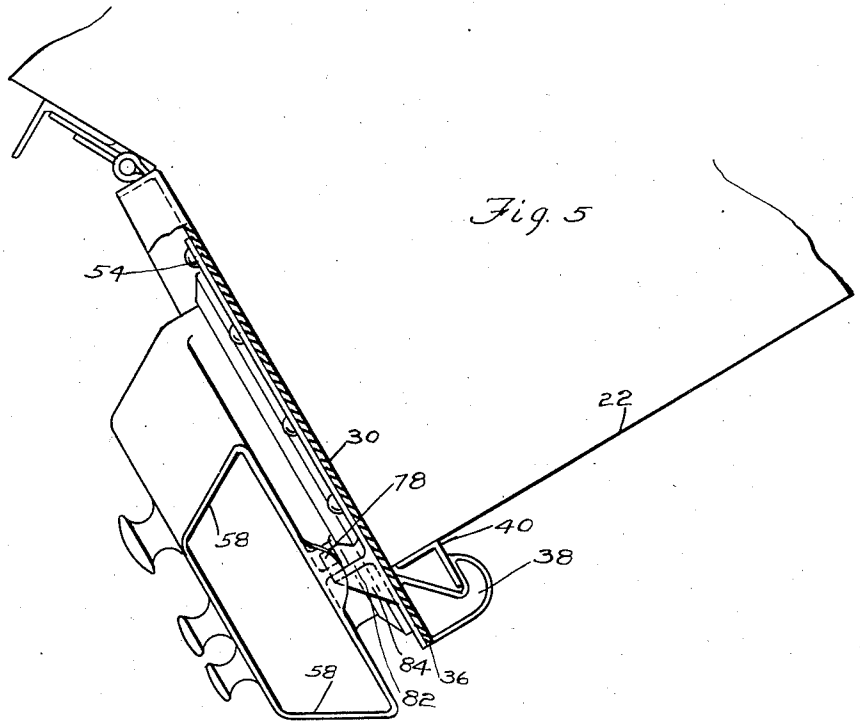


Fig. 4

Fig. 5



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UNITED STATES PATENT OFFICE

1,977,308

BALLAST CAR

David Hindahl, Chicago, Ill., assignor to Rodger Ballast Car Company, Chicago, Ill., a corporation of Maine

Application August 25, 1932, Serial No. 630,438

5 Claims. (Cl. 105—286)

This invention relates to improvements in railway hopper cars whereby such hopper cars which may be of standard construction may be readily converted into ballast cars.

The usual hopper car designed for the purpose of handling lading such as coal or the like, is provided with transverse V-shaped hoppers at each end of the car, the hoppers being equipped with doors adapted to swing to open positions for discharge of the lading directly on top of the car rails. On the other hand, ballast cars are usually provided with longitudinally disposed hoppers equipped with discharge means for the discharge of the ballast transversely of the car, either between or outside of the car rails. It will be understood that the discharge of material for the ballast cars must be so controlled that the rails will not be covered with the ballast material, but instead the material will be disposed in piles between the rails and outside of the rails in such a manner that the material may be spread and leveled by other means, such as a plow car.

It is highly desirable to provide apparatus whereby the ordinary hopper cars may be readily converted for the handling of ballast, and it is a purpose of the present invention to disclose such improvements.

According to the present invention, it is only necessary to replace the pivoted discharge doors on the ordinary hopper cars by the improved means herein disclosed, whereby the car may be used for the handling of ballast in such a manner that the ballast material is discharged transversely of the car, either between or outside of the car rails.

It is further an object of the present invention to disclose ballast discharge control means including a frame which may be attached to a hopper car in place of the ordinary hopper discharge door, which frame is provided with a rotatable discharge directing member normally retained in upright position, which may be turned in one direction to discharge the ballast material between the car rails or which may be turned in the opposite direction to discharge the ballast material outside the car rails.

Further improvements of the present invention reside in the provision of cooperating abutments on the frame and the rotatable discharge directing member, whereby the opening movement is definitely limited in such manner that the discharge of the ballast material will not cover the car rails.

Various additional objects and advantages of the improvements herein disclosed will be readily apparent to one skilled in the art as the description proceeds.

It is to be understood that the following description relates to a preferred embodiment given by way of example and is not to be construed as limiting the invention to the particular structure shown and described but, instead, the scope of the invention is to be ascertained from the appended claims which should be interpreted with an appreciation of the objects and advantages shown and described.

Referring to the accompanying drawings:—

Figure 1 is a side elevational view of a railway hopper car having the present improvement attached thereto.

Figure 2 is a vertical section looking toward the discharge control means and illustrating the manner in which the ballast material is discharged from the car.

Figure 3 is a plan view of the discharge control means which is adapted to be substituted for the ordinary discharge door of a hopper car.

Figure 4 is a vertical section taken transverse to that of Figure 2, but with the discharge controlling and directing member in upright position.

Figure 5 is an end elevation, partially in section, of the structure shown in Figure 2; and

Figure 6 is a detail section of the latching means.

Referring to Figure 1, it will be noted that the present invention is disclosed as embodied in a hopper car 10, having the usual underframe 12 for supporting the car on wheels 14 running on rails 16. The car body includes side walls 18, end walls 20 and sloping floors 22 terminating below the underframe in the space between the car trucks. Centrally of the car and arranged transversely thereof are the sloping floors 24 forming shedding surfaces to direct the lading toward the sloping floors 22. The sloping floors 24 are provided at their lower edges with hinges 26 by which the usual pivoted discharge doors are customarily mounted.

According to the present improvements, the usual discharge doors are replaced by structures 28, such as shown in Figure 3. Structure 28 includes a frame 30 having an area corresponding to the discharge door which it replaces and is provided at its upper edge 32 with pintle connections 34 for attachment to the hinges 26 fastening to the sloping floor 24. The frame 30 is provided at its lower edge 36 with hooks 38 adapted to engage and cooperate with an

angle bar 40 fastened to the underside of the sloping floor 22, whereby the frame 30 is rigidly held in position.

The frame 30 is provided with an outwardly directed annular flange 42 (Fig. 4) surrounding an opening 44 through which the ballast material may pass from the inside of the car. It will be noted that the flange 42 at its bottom portion is parallel with but spaced somewhat below the level of the sloping floor 22. The annular flange 42 forms a support for a rotatable hopper member generally indicated 46, which includes an annular portion 48 adapted to fit over the annular flange 42. The annular portion 48 is provided with an annular enlargement 50 which is enclosed by the flange 52 of a ring-shaped member 54 which is fastened to the frame 40 by rivets 54. Engagement of the flange 52 with the enlargement 50 holds the hopper 46 against axial displacement from the frame 30, but permits relative rotation thereof.

The hopper 46, when in normal upright or closed position, has an open upper end 56 and the body of the hopper is formed by outwardly divergent side walls 58, a front wall 60 disposed perpendicular to the sloping floor 22 of the car, and a bottom wall 62 substantially horizontal and parallel with the ground. The top edges 64 of the front wall 60 and the side walls 58 lie in a plane parallel with and spaced from the axis of rotation of the hopper member. A back wall 66 is provided extending upward from the annular portion 48.

It will be understood, by referring to Figure 4, that the discharge controlling hopper when in normal upright position may become substantially filled with ballast material from the inside of the car, but the material will not discharge from the upper open end of the hopper until it is turned sufficient to permit flow.

The front wall 60 is provided with a single lug 68 substantially on the axis of rotation of the hopper and a pair of spaced lugs 70 adjacent the upper end of the hopper. By means of a bar 72, as illustrated in Figure 2, the lugs 68 and 70 may be engaged in such a manner as to turn the hopper from its normal position either to the position shown in full lines in Figure 2, or the position shown in dotted lines in the same figure. It will be noted that the ballast material 74 is being deposited on the inner side of the rail 16, while if the hopper were in the position shown in dotted lines, the ballast material 76 would be deposited outside of the rail 16.

From Figure 5 it will be noted that one of the side walls 58, when the hopper is in open position, forms the sloping bottom wall thereof and it will be apparent in Figure 5 that the side wall 58, which is now at the bottom, has its lower edge substantially parallel with the ground, whereby the ballast material flows out smoothly and evenly transversely of the car.

The extent to which the hopper may move to open position should be so determined that the angle of repose of the ballast material will be such that the rail 16 will not be covered with material. By proper adjustment of the opening movement of the hopper, the ballast material will stop flowing when the pile of ballast material reaches a height substantially as shown in Figure 2. There is, therefore, provided cooperating abutments on the hopper 26 and frame 30 which limit the opening movement of the hopper, as hereinafter described.

Referring to Figures 4 and 5, the back wall 66 is provided at its upper edge with a rib 78 merging with a vertical rib 80. When the hopper is turned from its normal upright position, the rib 80 is adapted to engage one of the radial flanges 82 formed integral with the ring 54 which is riveted to the frame 30. The flanges 82 are suitably braced by webs 84.

It will be further understood that any desirable provision may be made for locking and holding the hoppers 26 in normal upright position, and I have shown in Figure 3 one form of locking means which may be employed. Upon the frame 30 is fixed a boss 86 through which may slide a rod 88 having a crank handle 90. The rod 88 has a bent inner end 92 adapted when the rod is turned 90° to pass through a slot 94 in the side wall 58 of the hopper 26. When the crank handle 92 is hanging in vertical position, the bent end 92 hooks within the hopper 26 and holds the same in upright position. In order to hold the rod 88 against rotation, I form the rod 88 through a portion of its length of a square section 96 which may be engaged by a slidable plate 98 having slots 100 engaging fastening members 102.

Therefore, by following the teachings of the present disclosure, the standard hopper car may be converted into a ballast car by attaching, in place of the usual pivoted discharge doors, ballast discharge controlling structures such as herein disclosed. The usual hopper car is provided with four discharge doors, each of which may be replaced in the manner described herein. The ballast material will flow from the hoppers into the rotatable discharge controlling and directing members, but in the normal position thereof, the material will not flow out of the upper open ends. In order to cause the discharge of the ballast material between the rails and outside of the rails, it is only necessary to turn the rotatable discharge directing members to their desired positions. For example, two of the members could be turned inwardly to direct the ballast material between the rails, while the other two members could be turned outwardly to discharge material outside of the rails.

I claim:

1. In a railway car, a transverse hopper having sloping bottom walls and ballast discharge control means adapted to replace the usual pivoted discharge door associated with said hopper, said means comprising a frame attached to said hopper, and a discharge controlling member mounted on and rotatable with respect to said frame, said member being adapted to receive ballast material from said hopper and movable in one direction to deposit said ballast material inside of the car rails and movable in the opposite direction to deposit said ballast material outside of the car rails.

2. In a railway car, a transverse hopper having sloping bottom walls and ballast discharge control means adapted to replace the usual pivoted discharge door associated with said hopper, said means including a frame secured to said hopper, a discharge controlling and directing member mounted on and rotatable with respect to said frame, said frame having an opening through which the ballast material may flow from said hopper into said member, means normally holding said member in upright position to restrict flow of said ballast material from said hopper, and means limiting move-

ment of said member in either direction from its upright position, whereby the ballast material may be deposited either inside or outside of the car rails.

3. In a railway car, a transverse hopper having bottom walls sloping longitudinally of the car, a rotatable discharge control member associated with a bottom wall of said hopper and forming a continuously open discharge passage therethrough, said member in normal position serving to restrict the flow of material from said hopper through said member due to the angle of repose of the material and the direction of the discharge passage and means by which said member may be rotated into positions to permit discharge of the material from said hopper either inside or outside of the car rails.

4. In a ballast car having transversely extending hoppers, a rotatable discharge control member associated with the hopper, said member forming a pocket to receive material from said hopper, said member having an open discharge end and means permitting movement of said member from a normal substantially vertical position, in which the flow of material from said member is restricted, to either side for deposit of the discharged material either inside or outside of the car rails.

5. In a railway car having a plurality of transversely extending hoppers, said hoppers having bottom walls sloping longitudinally with respect to the car, rotatable discharge control members associated with a bottom wall of each of said hoppers, said members forming pockets to receive material from said hoppers and having open discharge ends and said members being movable from normal positions, in which the flow of the material is restricted, in either direction to dispose the discharged material inside or outside of the car rails.

DAVID HINDAHL.