Dec. 1, 1931. A. C. SCHMOHL ET AL 1,834,426

CAR CONSTRUCTION

Filed Aug. 1, 1930 2 Sheets-Sheet 1

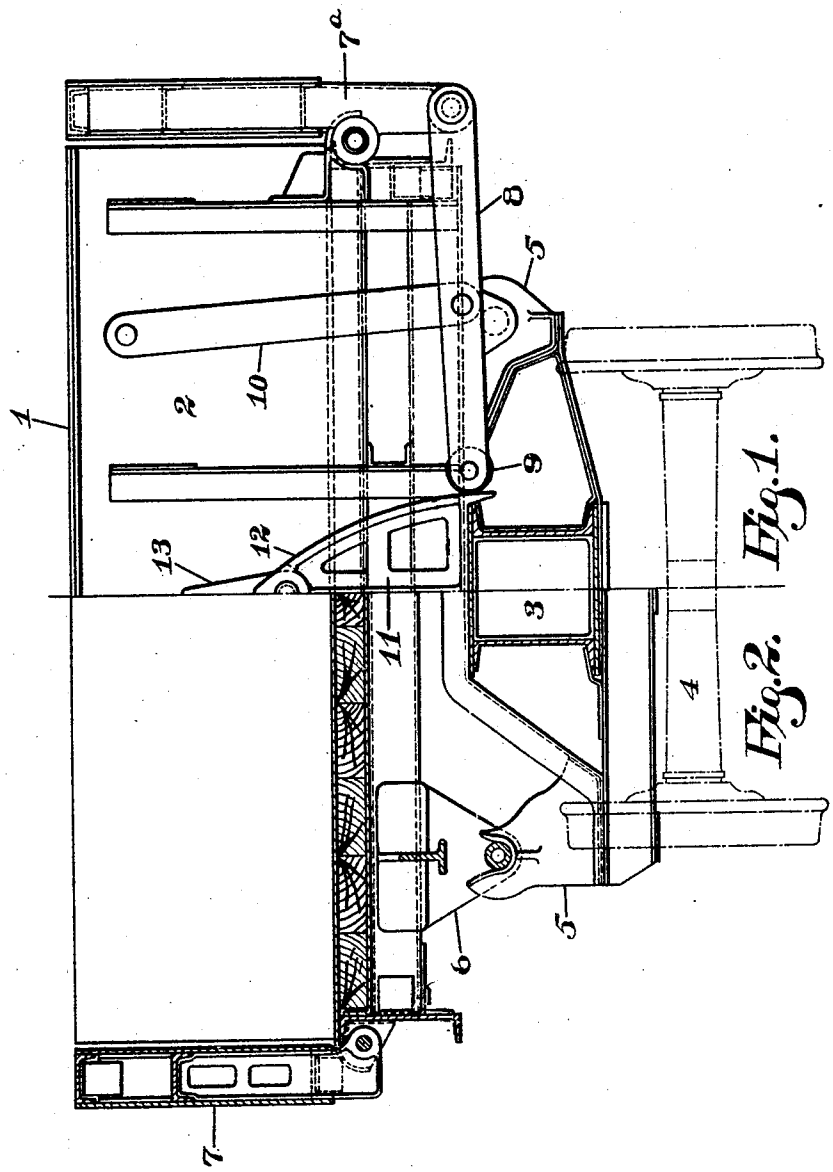


Fig. 1.

Fig. 2.

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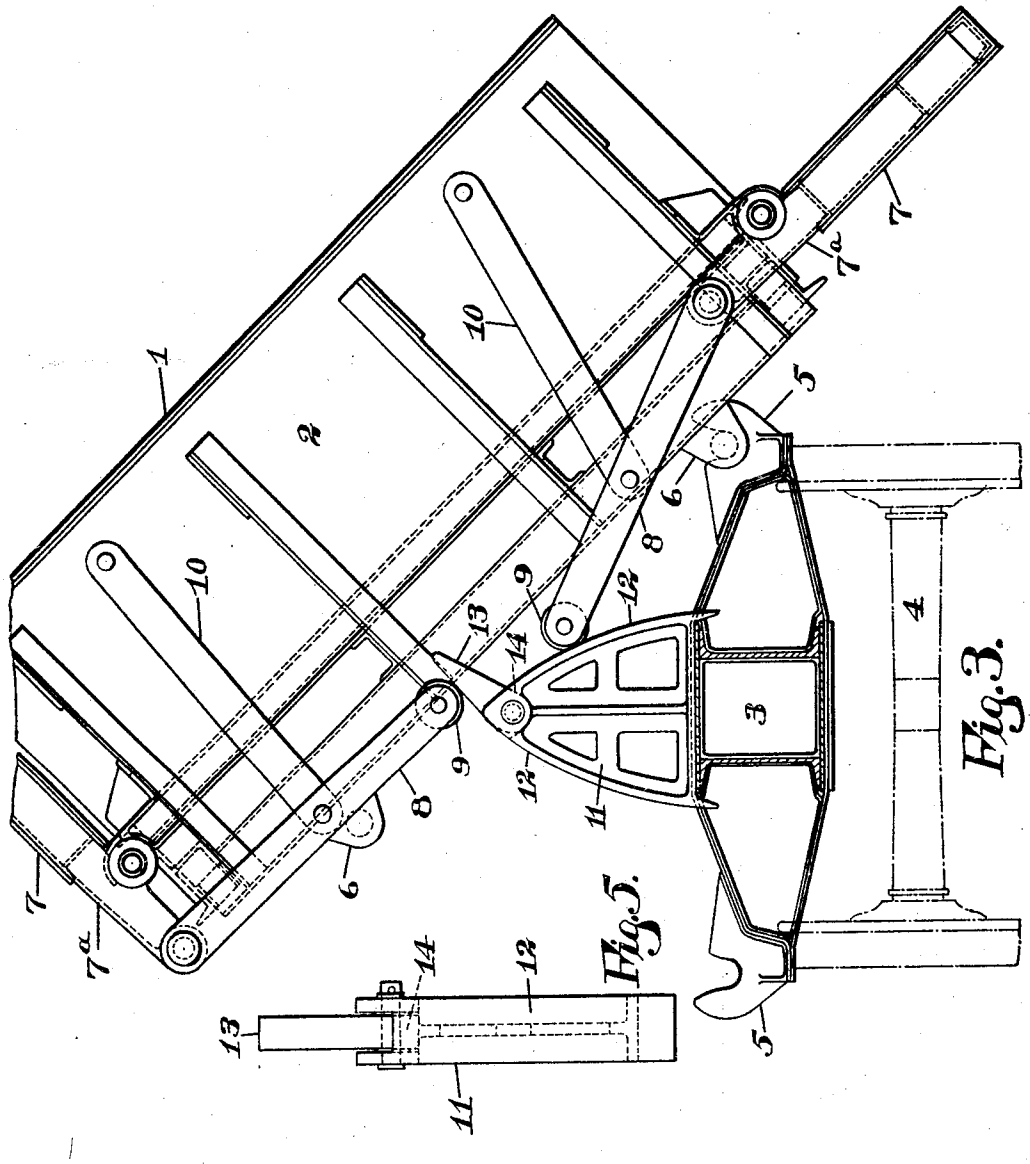


Fig. 3.

Fig. 5.

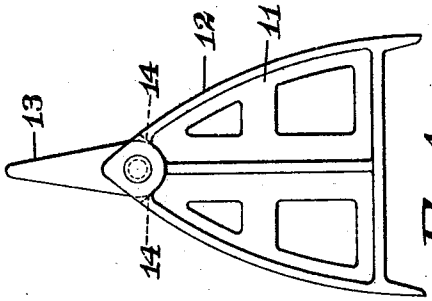


Fig. 4.

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Patented Dec. 1, 1931 1,834,426

UNITED STATES PATENT OFFICE

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CAR CONSTRUCTION

Application filed August 1, 1930. Serial No. 472,242.

Our invention relates to railway cars and in particular to that type of car known as a dump car having the body tiltably supported on the underframe and adapted to tilt about either side of the underframe to discharge the lading.

An object of our invention is to provide a dump car having downwardly and outwardly opening side doors with a door operating mechanism for each door which will automatically and selectively control the opening and closing movements of the door as the body tilts in dumping.

Another object of our invention is to provide such a car with a door operating mechanism which will positively close and lock the open door when the body is righted after discharging the lading.

Another object of our invention is to provide a door operating mechanism which will positively retain the doors locked in closed position when the car is in transit and which will retain the door on the rising side of the body closed when the body is tilted to discharge the lading.

A further object of our invention is to provide a door operating mechanism which will limit the opening of the discharging door by the tilting movement of the body and which will permit the opening door to be stopped upon the door striking an obstruction at the side of the track while the body is dumping and permitting the body to complete its dumping movement so as to prevent injury to the door or the door operating mechanism.

Referring now to the drawings, Fig. 1 shows in elevation one half of the end of a dump car embodying our invention, the car being symmetrical about the longitudinal centerline; Fig. 2 shows in elevation a section through one half of the car; Fig. 3 shows in elevation the end of the dump car embodying our invention, with the body in fully tilted position to discharge the lading; Figs. 4 and 5 show in enlarged detail a portion of the door operating mechanism.

Our invention is shown embodied in a dump car supported on trunnions at each side of the underframe for the reason that in this type of car the body is stable at all times during the transport of the car and by this type of construction the body can be placed close to the underframe so as to obtain greater stability. It is to be understood, however, that should it be desired to construct a car having a body supported on rocker trunnions at each end of the body at the longitudinal center line of the body, our invention could be applied to this type of car by making slight modifications which will be readily apparent to the ordinary mechanic skilled in the art.

Referring now to the drawings where like reference characters refer to like parts, reference character 1 indicates a dump car having a body 2, underframe 3 and the usual trucks 4. Adjacent each side of the underframe are a plurality of bearings 5 disposed in line longitudinally of the underframe for supporting the trunnions 6 mounted on the body adjacent each side thereof and about which the body tilts in dumping. At each side of the body and hinged adjacent the floor thereof are doors 7 which form the sides of the body and which open outwardly and downwardly as the body is tilted to discharge the lading.

At each end of the car and mounted thereon are mechanisms for each door which prevent movement of the doors during transport and control the opening of the discharging door during the time the body is tilted to discharge the lading. These door mechanisms comprise a member 8 pivotally mounted at one end to a downwardly projecting portion 7^a of the door and having at the other end a member 9 which engages with the underframe to control the movements of its respective door. Mounted intermediate the ends of the member 8 is a member 10 which is pivotally mounted at its other end to the car body. This member 10 acts as a support for the member 8 and assists in guiding the member 8 so as to maintain the member 8 in the proper position to control its attached door.

Mounted on each end of the underframe and adjacent the member 8 is a member 11 forming part of the door operating and controlling mechanism. This member 11 com-

prises oppositely disposed, intersecting arcuate faces 12 which provide tracks on which the member 9 of the door mechanism moves.

Mounted on the member 11 adjacent the upper end thereof where the arcuate faces 12 intersect is a member 13, rotatably mounted to have movement in a direction transversely of the faces 12 of the member 11, which provides an extension of the face 12 on which the member 9 of the door operating mechanism moves to control its respective door. Disposed below the face 12 of the member 11 are suitably placed stops 14 which engage with the member 13, as it moves transversely of the member 11 and which limit the movement of the member 13 to a position in line with the faces 12 of the member 11.

Referring now to Fig. 3 of the drawings, showing the body in fully tilted position with the door on the right hand side of the body in fully opened position and the mechanism on the left hand side of the body holding the left hand door in closed position, it will be noted that the member 9 of the door operating mechanism secured to the left hand door in moving along the face 12 of the member 11 moves the member 13 to the right into engagement with the stop 14 mounted on that side of the member 11. The member 13 in this position forms a continuation of the face 12 at the left side of the member 11 so that the member 9 moves from the face 12 of the member 11 to the adjacent face of the member 13 to assist in controlling the movements of the left hand door. At the right hand side of the body the mechanism secured to the right hand door moves upwardly and inwardly along the adjacent face 12 of the member 11 to permit the door to open outwardly and downwardly by gravity and the weight of the lading being discharged. It will be noted that the opening movement of the door is caused by the force of gravity and the weight of the lading and that the movement of the door controlling mechanism is caused by the opening movement of the door so that should the door strike an obstruction at the side of the track and stop by reason of its contact therewith, the body can complete its dumping without injury to the door or attached mechanism.

In the present embodiment of the invention, shown in the drawings, the arcuate, oppositely disposed faces 12 of the member 11 are formed as an arc having a center at the trunnion on the opposite side of the underframe. All points on the face 12 of the member 11 adjacent the door on that side of the underframe are on the line followed by the member 9 of the door mechanism, so that the position of the member 9 on the face 12 of the member 11 limits the inward movement of the member 8.

Should it be desired to provide another means for supporting the body on the underframe it will be readily apparent that the shape of the face 12 of the member 11 can be easily changed so as to secure the same effective control of the member 8, as is done by the shape of the face 12 of the member 11 disclosed in the drawings.

It will be readily apparent from an inspection of the drawings that each door on each side of the body is independent in movement from the other door on the opposite side of the body, that the movement of the doors is controlled by the tilting movements of the car body and that when the body is in righted position as shown in Fig. 1 the doors are securely locked against accidental opening while the car is in transit.

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

1. In a dump car, an underframe, a dump body, trunnions at each side of said body about which the body tilts in dumping, doors pivoted at the sides of said body and opening outwardly and downwardly to discharge the lading, a member mounted on said door, a member mounted on said underframe, one end of said member mounted on the door moving longitudinally of said member mounted on the underframe, to control the movement of its respective door as the body moves in dumping.

2. In a dump car, an underframe, a body mounted on trunnions at each side of said underframe and tilting about one of said trunnions in dumping, doors pivotally mounted at each side of said body and opening outwardly and downwardly to discharge the lading, a member mounted on said door and a member mounted on said body, said body mounted member supporting the member mounted on the door, a stop mounted on the underframe and engaged by said member mounted on the door, said member mounted on the door forming a compression lock to maintain the door in closed position during transport of the car and to maintain the door, when on the rising side of the body, in closed position as the body moves in dumping.

3. In a dump car, an underframe, a dump body tiltably mounted on trunnions adjacent each side of said underframe and tilting to either side thereof in dumping, doors pivotally mounted adjacent the floor of said body and opening outwardly and downwardly to discharge the lading as the body is tilted, a door controlling mechanism mounted on the body and engaging with the underframe to maintain the door closed when the body is horizontal, to permit the opening of the descending door as the body is tilted and to close and lock said door when the body is righted, said mechanism comprising a member pivotally mounted at one end to the door and having the other end in engagement with the underframe, a member pivotally mounted

on the body and being connected to the other of said members intermediate the ends thereof.

4. In a dump car, an underframe, a body tiltably mounted on trunnions adjacent each side of said underframe, doors pivotally mounted on said body adjacent the floor thereof and means for controlling the movement of said door as the body moves in dumping, said means comprising a member mounted on the door and in engagement with the underframe, said member being controlled by the tilting movement of the body to permit the discharging door to open by gravity as the body is tilted and to positively close and lock said door as the body is righted.

5. In a dump car, an underframe, a body tiltably mounted on said underframe on trunnions adjacent each side thereof, doors pivotally mounted at the sides of said body adjacent the floor thereof and independent mechanisms connected to each door for controlling the movement thereof as the body moves in dumping, said mechanism comprising a member mounted on the underframe and having an arcuate face, each point thereof being a constant distance away from the trunnion on the opposite side of the car, a member pivotally mounted on said door and extending to an engagement with the adjacent arcuate face of said underframe member and a member pivotally mounted on said body for guiding the movements of said door mounted member along the arcuate face of said underframe mounted member as the body moves in dumping.

6. In a dump car, an underframe, a body tiltably mounted on said underframe on trunnions adjacent each side thereof, doors pivotally mounted at each side of said body and opening outwardly and downwardly to discharge the lading, independent mechanisms for each door mounted on said body and engaging with the underframe to lock the doors in closed position when the body is horizontal, to maintain the rising door closed as the body is tilted, to limit the opening of the discharging door by the tilting of the body and to close and lock the opened door as the body is righted, said mechanism comprising a member mounted on said underframe, a member pivotally mounted on said door and in engagement with said underframe member, a member pivotally mounted on the body and connected to the member mounted on the door and a member pivotally mounted on said underframe member to form an extension thereof upon which the member mounted on the door moves to maintain the rising door closed as the body is tilted.

7. In a dump car, an underframe, a body tiltably mounted on said underframe, doors at each side of said body opening outwardly and downwardly to discharge the lading as the body is tilted, a door operating mechanism for each door, said mechanism comprising a member pivotally mounted at one end to said door, a member mounted on said underframe at the longitudinal center line thereof, said member having intersecting arcuate, inwardly converging faces, said faces forming a track on which the free end of said door member moves to control its respective door as the body moves in dumping.

8. In a dump car, an underframe, a body tiltably mounted on said underframe, doors at each side of said body opening outwardly and downwardly to discharge the lading as the body is tilted and a door operating mechanism for each door, said mechanism comprising a member pivotally mounted at one end to each door, a member mounted on said underframe and having upwardly and inwardly inclined faces forming a track for the free end of said pivotally mounted door member and means for guiding said door member along said inclined face of said underframe member.

9. In a dump car an underframe, a dump body tiltably mounted on trunnions at each side of said body, doors pivotally mounted on said body adjacent the sides thereof and opening outwardly and downwardly in dumping, a door operating means connected to each door for controlling the movements of said door, said mechanism comprising a member mounted on each door and engaging with the underframe to form a compression lock and a member mounted on the body and engaging with the door member intermediate the ends thereof.

10. In a dump car, an underframe, a dump body tiltably mounted on trunnions at each side of said body, doors pivotally mounted at each side of said body and opening outwardly and downwardly as the body is tilted, a member pivotally mounted at one end to each of said doors, a member mounted on said underframe, adjacent each end thereof, having oppositely disposed arcuate faces intersecting on the longitudinal center line of said underframe at the upper edge of said member, each of said pivotally mounted door members having its free end in engagement with the adjacent arcuate face of the underframe member to control the movement of its respective door as the body moves in dumping.

11. In a dump car, an underframe, a dump body tiltably mounted on said underframe on trunnions adjacent each side thereoef, doors for said body hinged adjacent the floor thereof, a member mounted on each of said doors, a member mounted on the underframe, said door members forming a compression lock between said underframe member and their respective door to control the movements of said door.

12. In a dump car, an underframe, a dump body tiltably mounted on said underframe on trunnions adjacent each side thereof, doors

for said body hinged adjacent the floor thereof, and a door operating mechanism for each door, said mechanism comprising a member mounted on the underframe, a member connecting each door with said underframe member and means for guiding said door connecting member along said underframe member in a direction opposite to the tilted body as its respective door opens.

13. In a dump car, an underframe, a body tiltably mounted about either side of said underframe on trunnions at each side thereof, doors pivoted at each side of said body adjacent the floor thereof, a mechanism for each door for controlling the movements thereof as the body moves in dumping, said mechanism comprising a member mounted on said underframe, a member mounted on said door and a member mounted on said body, said members mounted on the underframe and body cooperating to control the adjacent door through its attached member as the body moves in dumping.

14. In a dump car, an underframe, a body tiltably mounted thereon, doors hinged adjacent the floor of said body and opening outwardly and downwardly as the body is tilted, a member fixed to said underframe, independent members pivotally mounted on each of said doors and bearing on said underframe member to automatically and selectively control the opening and closing movements of their respective doors.

15. In a dump car, an underframe, a body tiltably mounted thereon, doors pivoted adjacent the floor of said body, independent mechanisms for each door pivotally mounted thereon and extending in a direction transversely of said underframe, a member mounted on said underframe intermediate the oppositely disposed door members, each of said door members forming a compression lock with said underframe member to control the movement of its respective door.

16. In a dump car, an underframe, a body tiltably mounted thereoen, doors for said body hinged adjacent the floor thereof, independent mechanisms for each side door mounted on the body for automatic, selective control of their respective doors as the body is tilted in dumping, said mechanisms comprising a member pivotally mounted on the door and abutting against the underframe and a member connected to said door member and to said body.

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