Aug. 7, 1928. 1,679,547

A. C. SCHMOHL ET AL

DUMP CAR

Filed June 29, 1926 2 Sheets-Sheet 1

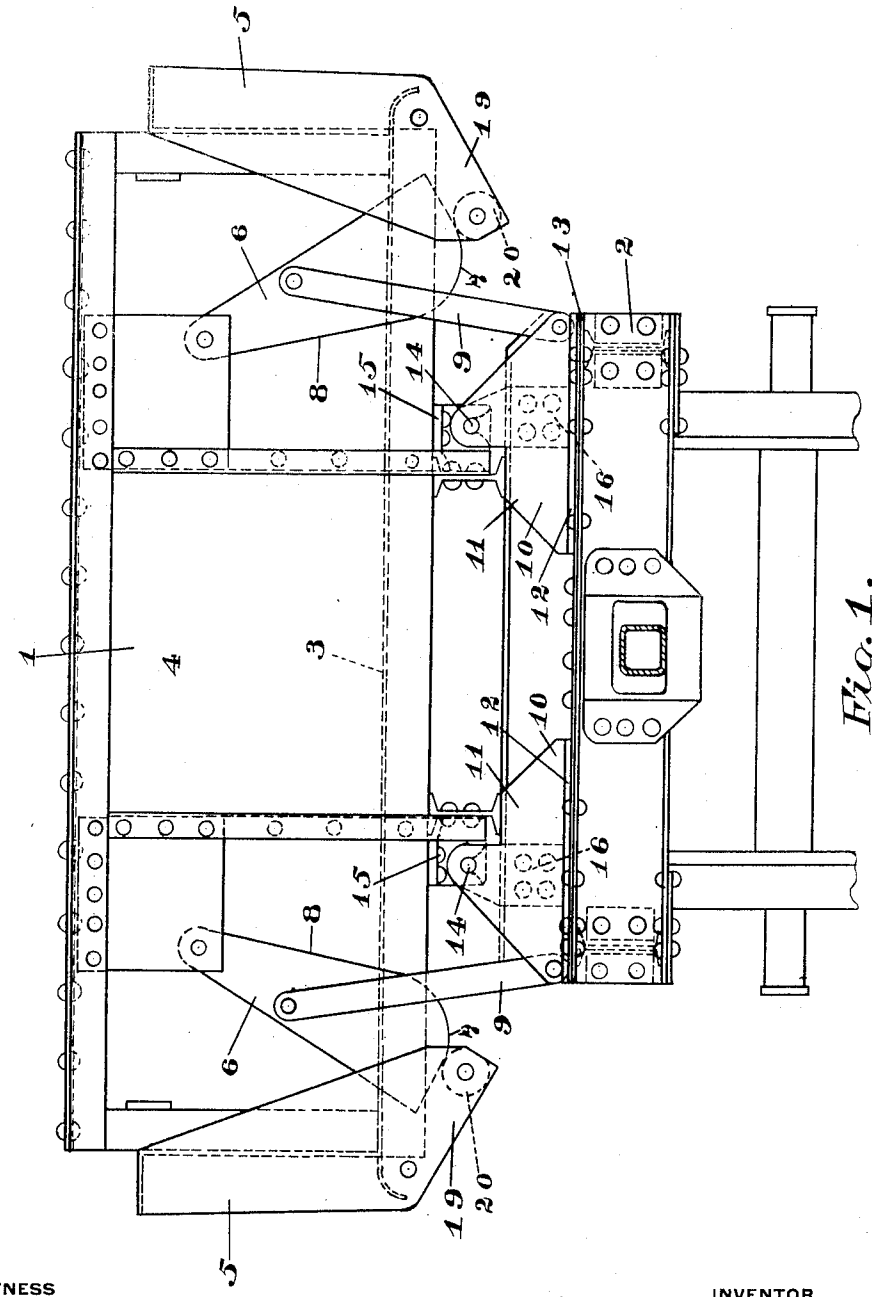


Fig. 1.

WITNESS

Frank C. Miller.

INVENTOR

Alfred C. Schmohl,
and William L. Burnes.
by A. B. Lambe, Atty.

Aug. 7, 1928. 1,679,547

A. C. SCHMOHL ET AL

DUMP CAR

Filed June 29, 1926 2 Sheets-Sheet 2

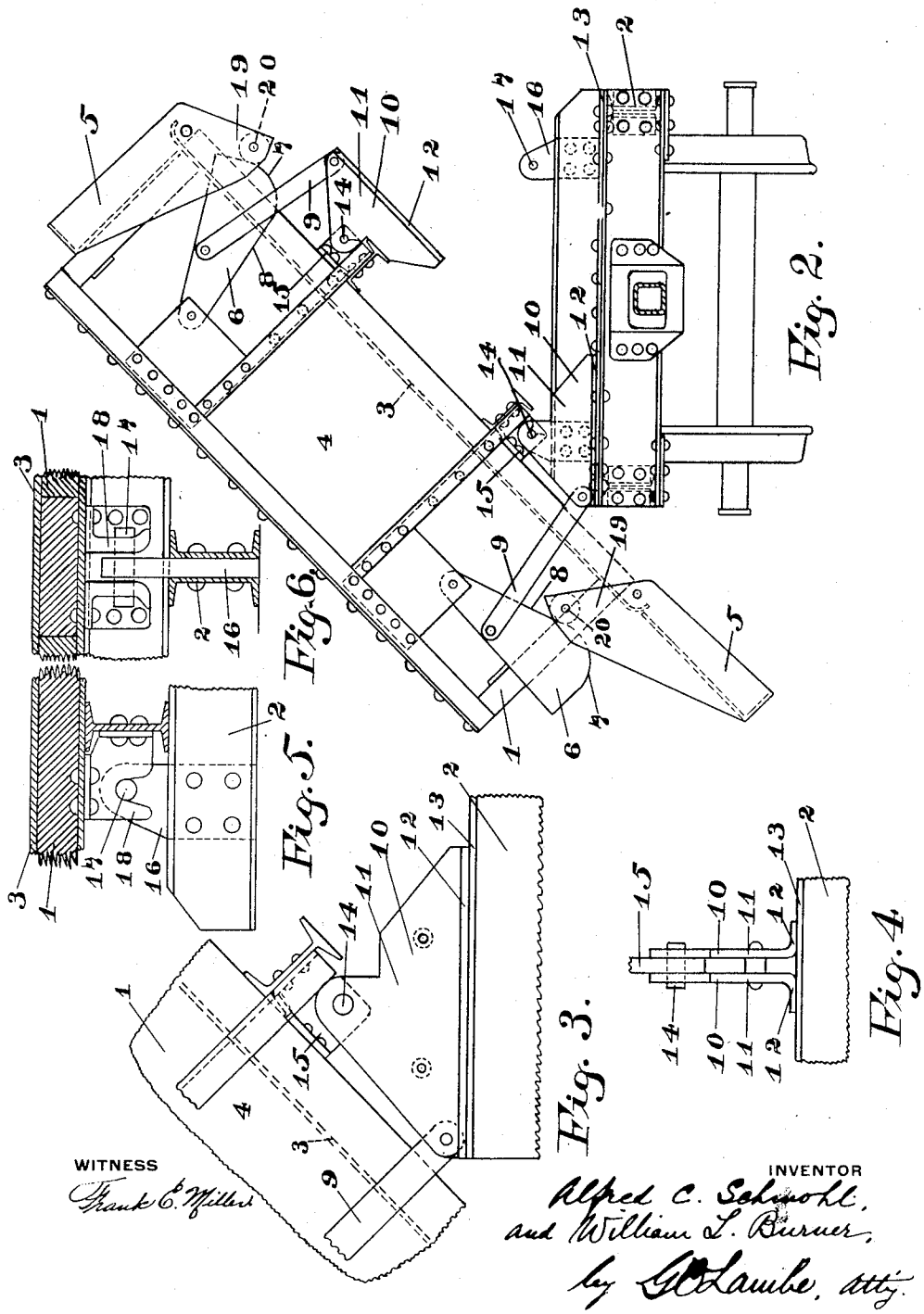


Fig. 2.

Fig. 6.

Fig. 5.

Fig. 3.

Fig. 4.

WITNESS

Frank C. Miller

INVENTOR

Alfred C. Schmohl,
and William L. Burner,
by G. C. Lambe, atty.

Patented Aug. 7, 1928. 1,679,547

UNITED STATES PATENT OFFICE.

ALFRED C. SCHMOHL, OF BEAVER FALLS, AND WILLIAM L. BURNER, OF KOPPEL, PENNSYLVANIA, ASSIGNORS TO KOPPEL INDUSTRIAL CAR AND EQUIPMENT COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

DUMP CAR.

Application filed June 29, 1926. Serial No. 119,282.

This invention relates to railway dump cars of the tilting body type having outwardly swinging sides or side doors for discharging lading substantially clear of the track rails, and has for an object the provision of means for permitting the side door at one side of the car to open outwardly by gravity when the body is tilted in the direction of this door, and to close the door when the body is being righted and further to maintain the door in its closed position when the body is tilted in the opposite direction.

Another object of the invention is to provide the tilting body of a dump car, having a side wall or door at each side hinged at or near its lower edge and adapted to swing outwardly to open position, with means for permitting the door or side wall on the lowering side of the body to move by gravity to its open position, while a similar means at the opposite or rising side of the car will maintain the door or side wall on this rising side of the car closed.

These and other objects will be apparent from the following description.

Referring to the drawings in which like reference characters refer to like parts, Fig. 1 is an end elevational view of a car embodying the invention, the body being shown in its righted position; Fig. 2 is a like view, on a reduced scale, showing the body tilted to one side of its dumping position; Fig. 3 is an enlarged end elevational view of a portion of the car with the body tilted to its dumping position, as shown in Fig. 2; Fig. 4 is an enlarged side elevational view of a portion of the underframe and the door operating mechanism; Fig. 5 is an enlarged cross sectional view of a portion of the car showing the pivotal connections between the body and the underframe, and Fig. 6 is a longitudinal sectional view of the same.

Referring now in detail to the drawings the reference character 1 indicates a dump car body which may be of any suitable construction and which is tiltably mounted on an underframe 2 which may also be of any suitable construction. In the present embodiment of the invention the body is tiltable toward one side or the other, but it will be understood that the invention may be embodied in a car in which the body is tiltable toward one side only. The body 1 preferably comprises a floor 3, ends 4 and side walls or side doors 5 which side walls or doors are hinged at or near their lower edges to the floor supporting framing of the body. These doors are adapted to swing outwardly and downwardly and when in open position each one is adapted to form an extension of the floor 3 to direct the discharge of the lading clear of the track rails.

At both ends of both doors, mechanisms, which are independent of each other, are provided for operating and controlling the doors. Each one of these mechanisms comprises a segmental member 6 which is pivotally mounted adjacent its inner end to the adjacent end wall 4 and at its outer end is provided with a cam surface 7, such surface being joined with a substantially flat surface 8 on the underside of the member 6. To this member 6 there is pivotally connected one end portion of a member 9, the other end portion of such member being pivotally connected with spaced angular members 10, the vertical flanges 11 of which are connected with the member 9 and the horizontal flanges 12 of which are adapted to seat or rest on a platform plate 13 secured to the underframe. These members 10 are also pivotally connected with the car body through the medium of a pin 14 which passes through the flanges 11 of the members 10 and through a bracket 15 secured to the car body.

At intervals throughout the length of the underframe and on both sides of the longitudinal center line thereof, supports 16 are provided which are secured to the underframe and extend upwardly therefrom. Adjacent their upper ends these supports are provided with trunnions 17 which extend in the direction of the length of the car. Secured to the underside of the body are bearing members 18, which, when the body is in its righted position, rest upon the trunnions at both sides of the underframe. When the body is being tilted toward one side, the bearing members at this side of the body will be in engagement with their respective trunnions 17 and will pivot on these trunnions. The bearing members at the opposite or rising side of the body will be moved out of engagement with their respective trunnions. It will here be noted that the axes of the pins 14 and the trunnions 17 at one side of the car are substantially in alignment when the body is being tilted toward

this side so that the members 10 will not in any way interfere with the tilting movement of the body.

When the car body is in its righted position the members 10 at both sides and both ends of the car will seat upon the platform plate 13. When the car body is being tilted to the left the members 10 on the left hand side of the car will remain seated on the platform plates 13 while the members 10 at the opposite side of the car will rise with the body out of engagement with the plates 13.

Each one of the doors is provided at each one of its ends with a downwardly depending arm 19 having a roller 20 mounted thereon, which roller is adapted to contact with the surfaces 7 and 8 of the member 6 at one end of the door. When the body is in its righted position the rollers 20 are in engagement with the surfaces 7 of the members 6 and thus hold the doors or sides in their closed or load retaining positions.

Assuming that the car body is being tilted to the left hand side, from its righted position as shown in Fig. 1, toward its tilted position as shown in Fig. 2, the operations of the mechanisms are as follows:—As the body is tilted toward the left it is supported on the trunnions 17 on the left hand side of the underframe, and in some cases the members 10 may form additional supports for the body. The members 10 at this side of the car remain seated on the platform plates 13 during the entire tilting and righting movement of the body while the members 10 at the opposite side of the body rise with the body out of engagement with the platform plates 13 as the body is tilted and will again be moved into engagement with the plates 13 when the body is righted. As the body pivots on the trunnions 17 at the left hand side of the underframe, the members 6 at this side of the body will, due to the members 9 connecting the members 6 and 10, be prevented from moving an excessive distance with this left hand side of the body and thus proper relative movement between the body and the members 6 is insured. As the members 6 are thus held in their positions the door 5 on the left hand side of the body moves downwardly with the body and the rollers 20 travel on the surfaces 7 and 8 so that the door, which swings outwardly by gravity to its discharging position, is controlled in its opening movement. When the door is in its full open position it will be held in this position by the rollers 20 engaging the surfaces 8 of the members 6, which members are held against upward movement by the members 9 and 10. As the right hand side of the body rises the bearing members 18, which are secured to this side of the body, will rise out of engagement with their respective trunnions 17. The members 6, 9 and 10 also rise with this side of the body and do not change their positions, thus maintaining the door on this side of the car closed until the body is righted and tilted toward the right hand side of the car. When the body is being tilted toward the right hand side of the car, the operations of the mechanisms are reverse of those just described, i. e. the mechanisms at the right hand side of the car will permit the door at this side of the car to move by gravity to its open position while the mechanisms at the left hand side of the car will maintain the door at this left hand side of the car closed. After the body has been tilted to the left and it is being righted, the door moves upwardly with the body and as the members 6 are held in their proper position against excessive movement with the body by means of the members 9 and 10, the rollers 20 will be in such engagement with the surface 8 of the members 6 that the door will be caused to swing upwardly toward its closed position. As the body reaches its righted position the rollers are in engagement with the surfaces 7 of the members 6 and thus maintain the door closed until the body is again being tilted toward the left.

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 body tiltably mounted on said underframe, a door for said body adapted to move downwardly and outwardly to its discharging position when said body is tilted, means for controlling the opening movement of said door when said body is being tilted and for causing said door to be moved to its closed position as the car is being righted, said means comprising a member pivotally connected with said body adapted to loosely engage said underframe, a member pivotally connected with said body adapted to cooperate with said door, and a connection between said members for maintaining the second mentioned member in its operative position.

2. In a dump car, an underframe, a body tiltably mounted on said underframe, a door for said body adapted to move downwardly and outwardly to its discharging position when said body is tilted, a member pivotally mounted on said body adapted to cooperate with said door to control the opening movement of the door when said body is being tilted, and for closing said door when said body is being righted, a member pivotally mounted on said body adapted to seat on said underframe when said body is being tilted and when said body is righted, and a connection from one of said members to the other for maintaining the first mentioned member in its operative position.

3. In a dump car, an underframe, a body tiltably mounted on said underframe, a

door for said body adapted to move downwardly and outwardly to its discharging position when said body is being tilted, a member pivotally mounted on said body adapted to cooperate with said door to control the opening movement thereof when the body is being tilted, to close the door when the body is being righted and to maintain the door closed when the body is in its righted position, and means for maintaining said member in its proper cooperating position with said door when said body is operated, said means comprising a member pivotally connected with said body and adapted to seat on said underframe, and a connection from one of said pivotal members to the other.

4. In a dump car, an underframe, a body tiltably mounted on said underframe, a door hinged adjacent its lower edge to said body, said door in its closed position forming a side wall for said body, a downwardly depending arm on said door, a member pivotally mounted on said body having surfaces with which said arm cooperates to control the opening movement of said door when the body is being tilted and to close said door when said body is being righted, and means for maintaining said member in its proper position relative to said body, said means comprising a member pivotally mounted on said body and adapted to engage said underframe, and a connection from one of said members to the other.

5. In a dump car, an underframe, a body tiltably mounted on said underframe, a door hinged to said body, said door in its closed position forming a side wall for said body, a member pivotally mounted on the end wall of said body adapted to be engaged by said door to control the opening movement of said door when said body is being tilted and to close said door when said body is being righted, a member pivotally mounted on said body and connected with the first mentioned member and adapted to engage said underframe.

6. In a dump car, an underframe, a body tiltably mounted on said underframe, a door hinged to said body and forming a side wall therefor, a member pivotally connected with said body, said member having a curved end surface, and an arm on said door adapted to engage said surface to hold said door closed when said body is in its righted position, a member pivotally mounted on said body adapted to engage said underframe and a connection between said pivotally mounted members.

7. In a dump car, an underframe, a body tiltably mounted on said underframe, a door hinged to said body, a roller on said door below said hinge, a member pivotally connected with said body and having a surface adapted to be engaged by said roller to maintain said door in its closed position, a surface on said member adapted to be engaged by said roller to control the opening movement of said door when the body is being tilted, and means for controlling the movement of said member, said means comprising a member pivotally mounted on said body adapted to engage said underframe, and means operatively connecting said members.

8. In a dump car, an underframe, a body tiltably mounted on said underframe, a side door for said body, a plurality of members pivotally mounted on said body, a connection from one of said members to the other of said members, and means on said door adapted to engage one of said members for controlling the opening movement of the door when said body is being tilted in one direction and to maintain said door in closed position when the car is being tilted in the opposite direction, the other of said members being adapted to engage said underframe when said body is being tilted in the first mentioned direction and adapted to move out of engagement with said underframe when said body is being tilted in the opposite direction.

9. In a dump car, an underframe, a body tiltably mounted on said underframe, a door for said body, supports at the side of said underframe upon which said body is supported and upon which said body is adapted to pivot, a member pivotally mounted on said body adapted to cooperate with said door to control the opening movement of said door as said body is being tilted and to close said door when said body is being righted, and a member pivotally mounted on said body and connected with the first mentioned member for maintaining the first mentioned member in its cooperating positions with said door, the pivot point of the second mentioned member being substantially in line with the supports upon which said body pivots.

10. In a dump car, an underframe, a body tiltably mounted on said underframe, a door pivotally mounted on said body, supports on said underframe upon which said body is supported and upon which said body is adapted to pivot, and means for operating said door, said means comprising a member pivotally mounted on said body and adapted to engage said underframe, the axes of the supports and the pivot of said member being substantially in alignment.

11. In a dump car, an underframe, supports on said underframe, a body tiltably mounted on said supports, a side door, and means for operating said door, said means comprising a member pivotally mounted on said body adapted to cooperate with said door, a member pivotally mounted on said body adapted to engage said underframe, and a connection from one of said members

to the other whereby the first mentioned member is maintained in its cooperating positions with said door.

12. In a dump car, an underframe, supports on said underframe, a body tiltably mounted on said supports, a side door pivotally mounted on said body, and means for operating said door, said means comprising a member pivotally mounted on said body adapted to be engaged by said door, a member pivotally mounted on said body adapted to engage said underframe, the pivot of the last mentioned member being substantially in line with the supports upon which said body tilts, and means connecting said members.

13. In a dump car, an underframe, supports on said underframe, a body tiltably mounted on said supports, a side door, and means for operating said door, said means comprising a plurality of members pivotally connected with said body, one of said members being adapted to cooperate with said door and being movable with said body a limited distance when said body is being tilted or righted, the other of said members being stationary and engaging said underframe, and a connection from one of said members to the other whereby relative movement between said body and the first mentioned member is caused.

14. In a dump car, an underframe, supports on said underframe, a body tiltably mounted on said supports, a side door pivotally mounted adjacent the floor of said body, and means for operating said door, said means comprising a plurality of members loosely connected with said body and with each other, one of said members being adapted to cooperate with said door, and the other of said members being adapted to engage said underframe to cause relative movement between said body and first mentioned member when said body is tilted or righted.

In testimony whereof, we affix our signatures.

ALFRED C. SCHMOHL.
WILLIAM L. BURNER.