Feb. 5, 1924. 1,482,559

H. S. HART

HOPPER CAR

Filed Aug. 4, 1921 2 Sheets-Sheet 1

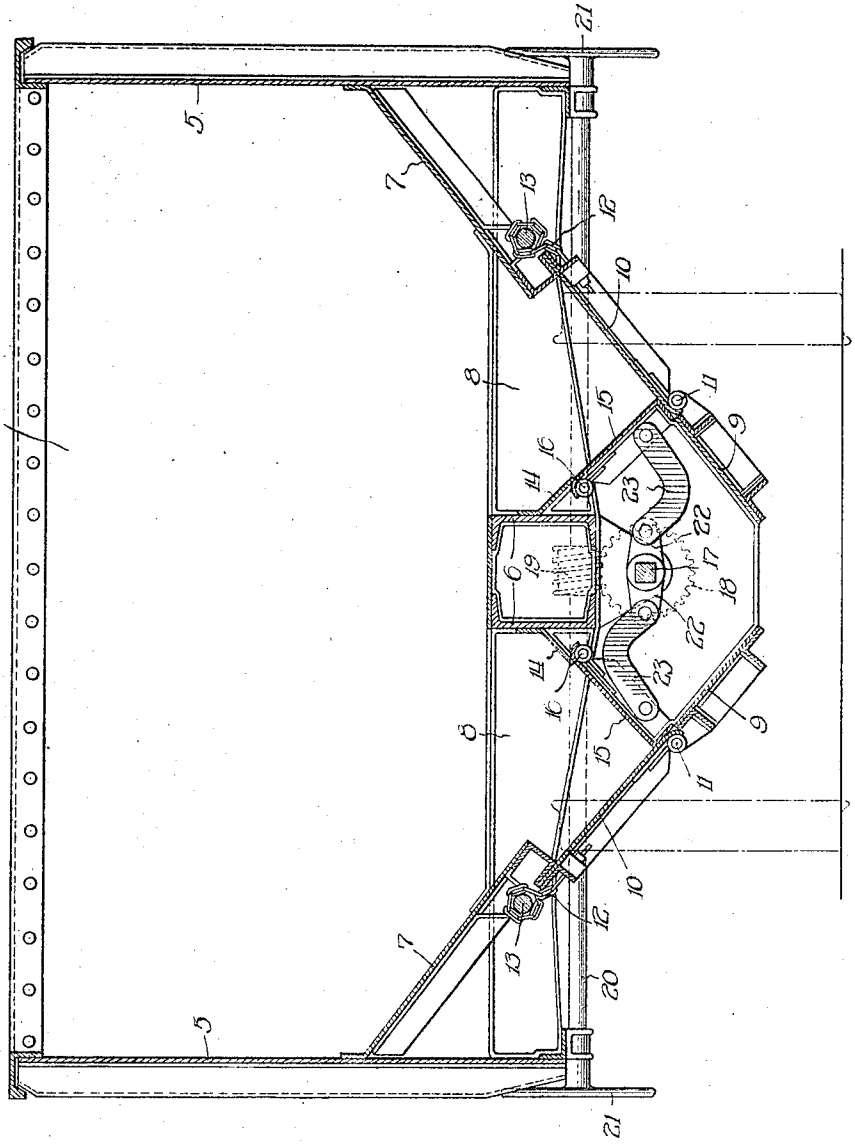


Fig. 1

Witness:
R. Burkehardt

Inventor:
Harry S. Hart,
By Wilkinson Huxley Byron & Knight
attys

Feb. 5, 1924. 1,482,559

H. S. HART

HOPPER CAR

Filed Aug. 4, 1921 2 Sheets-Sheet 2

Fig 2.

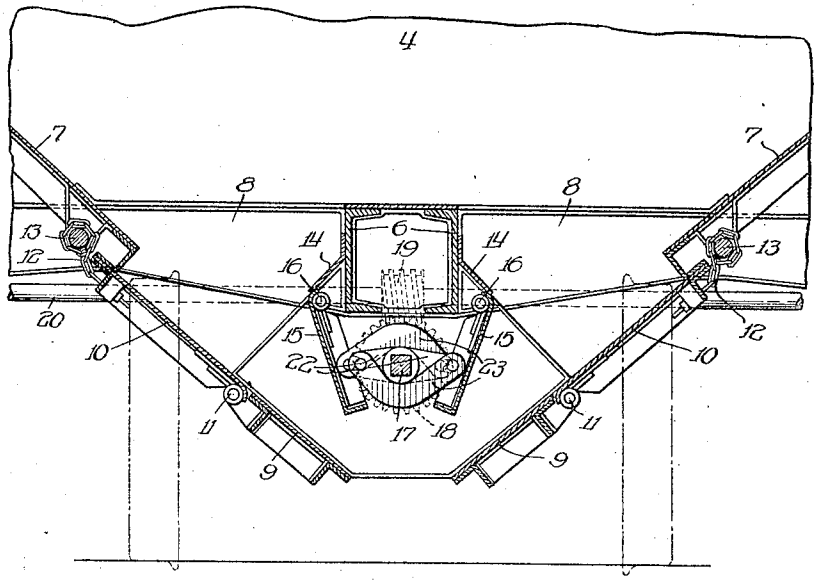
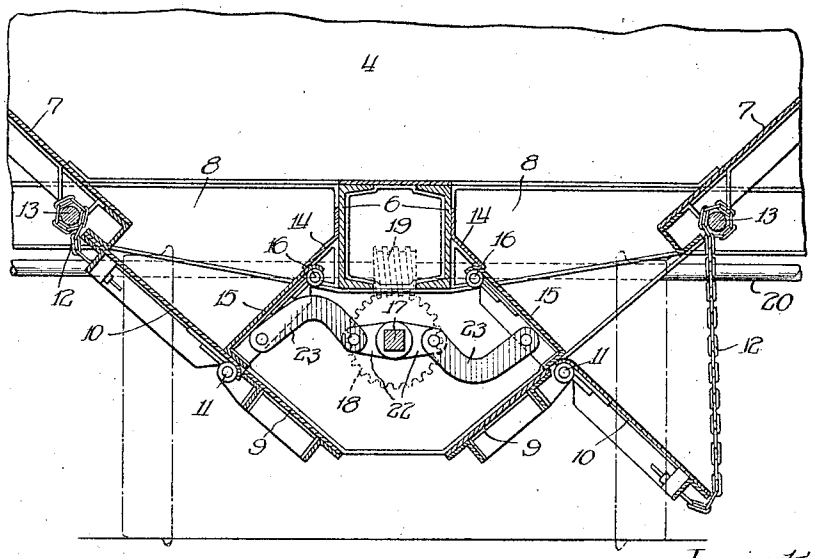


Fig 3



Witness:
R. Burkhardt.

Inventor:
Harry S. Hart.
By Wilkinson, Huxley, Byron & Knight
Attys.

Patented Feb. 5, 1924. 1,482,559

UNITED STATES PATENT OFFICE.

HARRY S. HART, OF CHICAGO, ILLINOIS.

HOPPER CAR.

Application filed August 4, 1921. Serial No. 489,697.

To all whom it may concern:

Be it known that I, HARRY S. HART, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Hopper Cars, of which the following is a specification.

This invention relates to a new and improved hopper car, and more specifically to an arrangement of dump doors and door operating mechanism for such cars.

In a number of uses of dump cars it is highly desirable that it be possible selectively to dump either between the tracks or to either or both sides of the tracks.

It is an object of the present invention to provide a dump door arrangement in association with such cars, adapted for either side or center dumping. An additional object is to provide a construction of this character which is simple in design and composed of comparatively few and rugged parts. It is a further object to provide doors of this type so located as to permit the carrying of a large load and properly to control and direct the dumping thereof. Other and further objects will appear as the description proceeds.

In the embodiment of my invention, which I have selected for illustration, I have shown a car in which the floor between the trucks is in the form of a longitudinally extending hopper, the car being provided with the usual center sill and cross sill members. This central hopper is composed of upper fixed members and lower fixed members with doors bridging the space between the upper and lower fixed members. Additional doors bridge the space between the center sill and the lower fixed members. These doors and hopper floors form a V-shaped hopper upon each side of the center sill, the doors upon the outer side opening outwardly and downwardly and the doors between the center sills and lower fixed members swinging inwardly. These latter doors in their closed position are directed substantially toward the hinge of the outer doors and the lower fixed portion of the hopper floors forms a continuation of the outer hopper wall extending below the apex.

I have illustrated a preferred embodiment of my invention in the accompanying drawings, in which—

Figure 1 is a cross section of a car provided with doors constructed according to my invention, both sets of doors being closed.

Figure 2 is a view similar to Figure 1, but showing the inwardly opening doors in the open position.

Figure 3 is a view similar to Figure 2, but showing the right hand outwardly opening door in the open position.

Referring now to the drawings; the car comprises the end 4, vertical sides 5, center sills 6, upper hopper floor portions 7 and cross frame members 8. The longitudinally extending members 9 are secured to the lower part of the inwardly sloping lower edges of the member 8 and form the lower fixed hopper floor members located below the level of the center sill. The outwardly opening doors 10 are pivoted at 11 adjacent the upper edges of the members 9. The upper edges of the doors extend up to and below the lower edges of the hopper portions 7. The chains 12 are connected to the doors 10 and their upper ends are secured to shafts 13, which latter may be rotated by any desired mechanism (not shown).

Short fixed floor portions 14 are secured upon either side of the center sill 6. At the lower edge of these portions 14 the inwardly opening doors 15 are hung upon pivots 16. As shown in Figure 1, these doors 15, when closed, extend approximately in line with the pivots 11 of doors 10 and bridge the space between the center sill and the lower fixed members. The center door operating shaft 17 is carried by the lower portion of the members 8 at a point below the center sills 6. This shaft 17 carries the gear wheel 18, the latter being in mesh with the worm gear 19 carried by the transverse shaft 20. This shaft 20 is provided at either end with operating hand wheels 21. The shaft 17 is further provided with oppositely extending arms 22 to which are secured arcuate links 23, the opposite end of the links being secured to the doors 15.

The normal position of the car, with both sets of doors closed, is shown in Figure 1. If it is desired to dump the material between the tracks, the shaft 17 is rotated in

the clockwise direction by means of the hand wheels 21. The links 23 are thus drawn inwardly and about the shaft 17 and the doors 15 are swung inwardly to the position shown in Figure 2. The material in the car then passes by gravity down between the doors 15 and the members 9. These members 9 serve not only as guide members, but are also of importance in securing adequate strength and rigidity of the car structure.

If it is desired to dump to the side,—for example, to the right,—the right hand shaft 13 is rotated in a counter-clockwise direction and the door 10 swings down to a position in which it is shown in Figure 3. It then forms a dumping platform in substantial prolongation of the adjacent center dump door 15 which serves to guide the material out of the car. The left hand door is operated in a similar manner, or, if desired to dump to both sides, both doors 10 may be opened.

My construction thus provides a car which is simple in design and composed of but few parts and which affords a large carrying capacity with a properly controlled and directed dump delivery.

What I claim is:

1. A car of the class described having its floor between the trucks in the form of a longitudinally extending hopper, said hopper comprising sides sloping downwardly and inwardly from the sides of the car to a point below the center sill, the lower edge of said hopper sides being spaced apart, and means for selectively discharging the entire portion of the load in the hopper either through this lower spaced portion of the hopper or toward the sides of the car.

2. A car of the class described having its floor between the trucks in the form of a longitudinally extending hopper, the side portions of said hopper below the center sill being fixed and spaced apart at their lower edges, doors hinged adjacent the upper edges of these fixed portions, and other doors hinged adjacent the lower edge of the center sill and extending toward the upper edges of these fixed portions.

3. A car of the class described having its floor between the trucks in the form of a longitudinally extending hopper, the hopper having V-shaped portions located laterally of the center sills, said portions having their lower ends closed by inwardly opening doors and outwardly opening doors, the doors being in angular relation to each other and together forming the apex of the V, the outwardly opening door being pivoted adjacent the apex, and the inwardly opening door being pivoted at its upper edge adjacent the center sills.

4. In a dump car, ends, sides, center sills, fixed floor portions and downwardly extending cross frame members having inwardly sloping lower edges, V-shaped hopper portions located laterally of the center sills, outwardly opening doors secured adjacent the lower edge of said frame members and inwardly opening doors in angular relation to said outwardly opening doors, said two sets of doors forming the lower part of the V-shaped hopper portions.

5. In a dump car, ends, sides, center sills, fixed floor portions and downwardly extending cross frame members having inwardly sloping lower edges, V-shaped hopper portions located laterally of the center sills, outwardly opening doors secured adjacent the lower edges of said frame members and inwardly opening doors in angular relation to said outwardly opening doors, said two sets of doors forming the lower part of the V-shaped hopper portions, the outwardly opening doors being pivoted adjacent the apex of the V.

6. In a dump car, ends, sides, center sills, fixed floor portions and downwardly extending cross frame members having inwardly sloping lower edges, V-shaped hopper portions located laterally of the center sills, outwardly opening doors secured adjacent the lower edges of said frame members and inwardly opening doors in angular relation to said outwardly opening doors, said two sets of doors forming the lower part of the V-shaped hopper portions, and fixed floor members carried by the lower edges of the frame members and adapted to guide material passing through the inwardly opening doors.

7. In a dump car, ends, sides, center sills, fixed floor portions and downwardly extending cross frame members having inwardly sloping lower edges, V-shaped hopper portions located laterally of the center sills, outwardly opening doors secured adjacent the lower edges of said frame members and inwardly opening doors in angular relation to said outwardly opening doors, said two sets of doors forming the lower part of the V-shaped hopper portions, a longitudinal shaft carried by said frame members and means connecting said shaft to both sets of inwardly opening doors whereby rotation of said shaft operates the doors.

8. A car of the class described having its floor between the trucks in the form of a longitudinally extending hopper, the side of said hopper comprising upper and lower fixed portions, a door bridging the space between the said portions, said door being hinged adjacent the upper edge of the lower fixed portion, and a door hinged adjacent the center sill and extending to the hinge point of said bridging door.

9. A car of the class described having a V-shaped hopper on each side of its center sill, the outer side of each of said hoppers being extended below the apex thereof, a

downwardly and outwardly swinging door mounted in each of these outer sides, and inwardly swinging doors hinged adjacent the center sill and extending therefrom to the apexes of the hoppers.

10. A car of the class described having its bottom comprising longitudinally extending V-shaped hoppers, one side of said hoppers comprising a door hinged adjacent the center sill and extending to the apex of the hopper, the other side of the hopper comprising a door hinged at the apex and swinging downwardly to form in connection with the first named door a dumping platform.

Signed at Chicago, Illinois, this 26th day of July, 1921.

HARRY S. HART.