This invention relates to a new and improved railway car, and more particularly to a box car especially adapted for facilitating the loading, transportation, and unloading of grain and similar materials.

More specifically, the car is divided into a series of separate compartments, closed on all sides, each provided with one or more filling openings at the top, and having a hopper-shaped bottom for directing the material to a lower discharge opening. This opening is normally covered by a sliding closure, and below this is an angularly adjustable delivery spout for directing the discharged material to a desired point at the side of the car. Means are provided whereby one or more of the sliding closures can be simultaneously moved to or from the closing position, from a convenient station at one side of the car.

The numerous objects and advantages of this invention will be more clearly apparent from the following detailed description of an approved construction.

In the accompanying drawings:

Fig. 1 is a side elevation, partially broken away, showing about one-half of the car, it being understood that the remaining portion of the car is substantially a duplication of the parts here shown.

Fig. 2 is a top or plan view of this portion of the car.

Fig. 3 is a view looking up at the bottom of this portion of the car, and railway truck being omitted.

Fig. 4 is a vertical central section on a larger scale, through the bottom of the hopper and the discharging mechanism.

Fig. 5 is a perspective view, partly broken away, of one of the castings comprised in the discharging mechanism.

Fig. 6 is a detail view of the rack and pinion mechanism for operating one of the closures, the view being taken substantially on the line 6–6 of Fig. 1.

Fig. 7 is a central vertical section taken substantially on the line 7–7 of Fig. 6.

The car, which is of the usual substantially rectangular box-car proportions, comprises an outer open framework, built up of suitable angle irons, and is supported on the usual railway trucks, one of which is indicated diagrammatically at 2.

Supported in the framework 1 is the main body portion of the box-car, divided by a plurality of transverse partitions into a series of separate compartments, for holding the grain or other similar material. The body is built up of metal sheets or plates, suitably riveted or otherwise secured to each other and to the angle beams of framework 1. The partitions not only divide the car into the separate compartments, but also tie the side walls of the car together, preventing spreading and permitting the car to be filled to the roof, which is not possible with the usual single compartment box car. The roof 5 of the car which serves as the upper closing wall for all of the compartments, is provided above each compartment with one or more (here shown as 2) filling openings, through which the grain is poured into the compartment. As here shown, each filling opening comprises a frame or casting 6, having upstanding walls 7, over which fits a closure 8 having downward flanges 9, the closure being hinged at one side 10 to the roof of the car, and provided at the opposite side with a suitable lock or latch 11.

The bottom of each compartment is in the form of a hopper 12, formed of four inwardly sloping walls, converging at suitable angles towards a central discharge opening. Below each discharge opening is mounted a casting 13, best shown in Figs. 4 and 5, which has upper horizontally extending flanges 14, secured to and supported by a pair of the cross-beams 15, which form a portion of the base of the car framework 1. Casting 13 comprises a substantially square or rectangular portion 16 having a bottom horizontal wall 17 connecting with a downwardly extending cylindrical portion 18 which terminates at its lower edge in an outwardly extending horizontal flange 19. A second inner casting 20 has upper horizontally extending flanges 21, mounted above the flanges 14 of casting 15 on the beams 13, and also has upwardly inclined flanges 22 which are suitably secured to the lower edges of hopper 12 so that the upper portion of casting 20 forms substantially a continuation of the lower end of the hopper. Hopper 20 is so formed that it terminates at its lower edge in a circular opening 23, somewhat smaller in diameter than the inner diameter of cylindrical portion 18 of casting 13. The outer walls 24 of casting 20 fit snugly within the rectangular portion 16 of casting.
13, and the bottom wall 25 is spaced somewhat above the horizontal wall 17 of casting 13 so as to provide an intermediate slide-way for the closure 26. This closure plate 26 slides in and out through a suitable slot or opening 27 in one side wall of casting 13.

A rack-bar 25 extends horizontally from each closure 26 towards the adjacent side of the car, and is preferably supported near its outer end upon a roller 29 mounted in the bracket 30 carried by a portion of the framework 1. A horizontal rotary shaft 31, provided at one end with a crank or handle 32 is mounted in suitable bearings adjacent and parallel to one side of the car, so that the crank 32 is readily accessible to the operator standing at that side of the car. A gear or pinion 33, meshing with rack 28, is mounted loosely on shaft 31, between a pair of collars 34 and 35, each of which is keyed to the shaft 31. Pinion 33 is formed in one side face with an annular channel 36 from which extends inwardly a series, here shown as four, of radial slots 37. A pair of similar dogs 38 are centrally pivoted at 39 in slots 40 in the collar 33. A spring 50 under the outer arm 42 of each dog tends to throw the inner end 41 down into one of the slots 37. Latches 51 normally hold the dogs in the full line position indicated in Figs. 6 and 7, so that their inner ends 41 will project into the annular channel 36, and gear or pinion 33 may turn freely on the shaft 31. However, by releasing latch 51 from the outer end 42 of one of the dogs, the inner end 41 of the dog will be moved down into one of the slots 37 thereby locking gear 33 to the collar 35 and hence the shaft 31.

By suitably manipulating these dogs 38, the gears 33 may be connected or disconnected with shaft 31 as may be desired. It is to be understood that any other suitable form of clutch may be substituted for the one here shown and described, for connecting the gears 33 with the operating shaft 31.

A discharge spout 43 has its upper cylindrical end 44 connected to a collar or casting 45 provided with an inwardly projecting horizontal flange 46, between which and the outwardly projecting flange 19 of the casting 13 is arranged a ball or roller bearing assembly 47 by means of which the spout is revolubly supported. The outwardly and downwardly extending end portion of spout 43 is supported upon an arcuate bracket 48 hung at its ends from posts 49 projecting down from the bottom of framework 1. By means of the mechanism just described, the spout 43 is permanently supported beneath the discharge opening of the hopper, but may be swung to either side of the car to discharge the grain at the most convenient position.

It is to be understood that each compartment 3 is provided with the discharge mechanism just described, and that the car may comprise any suitable number of hoppers, depending upon the length of the car and the size of each compartment.

Normally the closures 26 are all moved inwardly into position beneath the respective discharge openings. Suitable means will be provided to lock each closure in this position to prevent unauthorized emptying of the compartment. When the car is to be loaded, the appropriate covers 8 are swung open and the grain or other material is poured in through the openings. When the covers 8 are again moved to closed position and locked, the compartments are entirely closed and sealed. When it is desired to discharge a compartment, the spout 43 thereunder is swung to the desired position, and the dogs 38 corresponding to that compartment are manipulated to lock the corresponding gear 33 to shaft 31. Then by turning crank 32 closure 26 is slid out so that the grain may be discharged from hopper 12 through cylinder 18 and spout 43 into the outer receptacle provided therefor.

It will be noted that as here shown, the operating mechanisms for two of the closures 26 are operated from the same shaft 31. If both gears 33 are simultaneously clutched to shaft 31, both closures may be opened or closed by the same operation of crank 32. Obviously three or more closures might be similarly operated from the same shaft 31 and crank 32.

A car constructed as above described, is simple and strong, and the compartments are almost completely closed at all times so as to hold and protect a maximum amount of material. The compartments are easily filled and emptied from outside the car, without the necessity of the operator, or any loading or unloading mechanism, entering the compartments at any time. The manually operated discharging mechanism is readily accessible from the side of the car, and easily manipulated by a single operator.

I claim:

1. A railway car comprising an open angle-iron framework, top, bottom and side walls mounted within this framework to enclose a space for holding grain or similar material, a plurality of transverse partitions secured within these walls to divide the space into a plurality of separate compartments, and individual filling and discharge openings for each compartment.

2. A railway car comprising an open angle-iron framework, top and side walls mounted within this framework to enclose a space for holding grain or similar material, a plurality of transverse partitions secured within these walls to divide the space into a plurality of separate compartments, and individual filling and discharge openings for each compartment.
3. A railway car comprising an open angle iron framework and a plurality of walls enclosing the space within the framework, a plurality of transverse partitions dividing this enclosed space into a plurality of separate compartments, each compartment having an upper inlet opening and a hopper bottom tapering toward a discharge opening, and closures for the openings.

4. A railway car comprising an angle iron framework and a plurality of closed compartments mounted in the framework, each compartment having a hopper-shaped bottom tapering toward a lower discharge opening, a casting comprising an upper horizontal flange hung from a pair of cross-beams of the framework, an upper chamber, and a smaller lower discharge spout, the upper end of the spout being connected with the lower end of the chamber by a horizontal wall, and the lower end of the hopper bottom projecting into the chamber so that a narrow horizontal passage remains between the hopper and the horizontal wall, and a sliding closure mounted in this passage.

5. A railway car comprising an angle iron framework and a plurality of closed compartments mounted in the framework, each compartment having a hopper-shaped bottom tapering toward a lower discharge opening, a casting comprising an upper horizontal flange hung from a pair of cross-beams of the framework, an upper chamber, and a smaller lower discharge spout, the upper end of the spout being connected with the lower end of the chamber by a horizontal wall, and the lower end of the hopper bottom projecting into the chamber so that a narrow horizontal passage remains between the hopper and the horizontal wall, a sliding closure mounted in this passage, and a laterally extending spout extension pivoted at the lower end of the first-mentioned discharge spout.

6. A railway car comprising an angle iron framework and a plurality of closed compartments mounted in the framework, each compartment having a hopper-shaped bottom tapering toward a lower discharge opening, a pair of telescoping castings having overlapping horizontal flanges whereby they are hung from a pair of cross-beams of the car framework, the upper casing being secured to the lower end of the hopper to form a continuation thereof, and the lower end of the lower casing forming a discharge spout, and a horizontally slidable closure confined between the telescoped portions of the two castings.

7. A railway car comprising a plurality of separate compartments, each compartment having a hopper-bottom tapering toward a discharge opening, a sliding closure for each opening, a rack connected with the closure, a longitudinally extending horizontal shaft near one side of the car, a plurality of pinions loose on the shaft and each meshing with one of the racks, a clutch for connecting each pinion with the shaft when desired, and means for manually rotating the shaft.

8. A railway car comprising a plurality of separate compartments, each compartment having a hopper-bottom tapering toward a discharge opening, a sliding closure for each opening, a discharge spout having a vertically extending portion pivotally connected beneath the opening, and a horizontally extending portion for directing the discharged material to either side of the track, and a hanger for supporting the horizontal portion of the spout in any of its adjusted positions.

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