A terracing door assembly for a railway hopper car having an outer door which also functions as a chute and an inner ballast flow control door. A mechanism is provided to lock the outer door in its closed position and also in several lowered and open positions. The inner ballast flow control door may be opened to a variety of positions ranging from fully closed to fully opened and may be locked in these positions by means of a sliding locking bar whose ends ride in guides located on opposite sides of the ballast discharge opening. A tool is provided for opening and closing the inner ballast flow control door.

4 Claims, 6 Drawing Figures
RAILWAY BALLAST DISTRIBUTING CAR DOOR ASSEMBLY

SUMMARY OF THE INVENTION

This invention is concerned with a terracing door assembly for a hopper car and more particularly with such an assembly having a ballast flow control door.

An object of this invention is a terracing door assembly for a hopper car having an inner ballast flow control door which may be opened to a variety of positions to control the flow of ballast across a discharge chute door.

Another object is a discharge chute door which may be selectively locked in a number of lowered positions.

Another object is a ballast flow control door which may be opened to a variety of positions and locked in each of said open positions.

Other objects may be found in the following specification, claims and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is illustrated more or less diagrammatically in the following drawings wherein:

FIG. 1 is a partial perspective view of a hopper car having a ballasting door assembly of this invention and showing the ballast flow control door being opened;

FIG. 2 is a plan view of a tool for operating the ballast flow control door;

FIG. 3 is an enlarged partial side elevational view of the tool of FIG. 2;

FIG. 4 is a partial enlarged cross-sectional view of the terracing door assembly of this invention with the ballast flow control door shown in phantom in its fully open position and the discharge chute door shown in one of its lowered positions;

FIG. 5 is an end view of the ballast flow control door and locking bar with parts broken away; and

FIG. 6 is a partial side elevational view showing the discharge chute door in its lowest position.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 shows a terracing door assembly of this invention installed in the side of a discharge chute of a hopper car. The terracing assembly includes a generally rectangular frame 11 which may be secured to the side 13 of the chute in any conventional manner such as by welding or riveting. The frame includes side members 15. A rod 17 is secured to and extends between the side members 15 adjacent the lower ends thereof. As shown most clearly in FIG. 4, a tube 19 is journaled on the rod 17. A pair of arms 21 fit around the tube 19 and are secured thereto as by welding. The arms are spaced apart and are located adjacent the ends of the tube.

Sleeves 23 (FIG. 6) each having ratchet portions 25 at one end thereof, fit over the ends of the tube 19 with the ratchet portions located at the outer ends thereof. The sleeves 23 are fastened to the arms 21 by means of keys which are not shown. Coil springs 29 are positioned over the sleeves 23 with one end of each spring held in position by a J bolt (not shown). The other end of each spring is connected to a notch 33 in an arm 21, see FIG. 4. A cover 35 is provided for each spring with each cover being welded to a horizontally extending inclined plate 37 which in turn is secured to angle member 38 which extends between and is secured to the side members 15 of the frame 11.

A discharge chute door 39 is welded to the arms 21. The door is equipped with side plates 41 which, in the closed position of the door, fit inside the side members 15 of the frame 11. The ratchet portion 25 of each sleeve 23 is provided with a first stop wall 45, a first notch 47, a second notch 49 and a second stop wall 51.

A locking member 57 is provided for the discharge chute door 39. This locking member includes a pair of arms 59 which are secured to a rod 61 which in turn is journaled to the side members 15 of the frame 11. Formed as a part of each arm and located adjacent the rod 61 is a hook portion 63 having a notch 65. When the discharge chute door in its closed position, the notches 65 are adapted to engage stub rods 43 which extend outwardly from the side plates 41 of the door 39 in the manner shown in FIG. 1.

A rod 67 is pivotally attached to each arm 59 and extends downwardly along the side member 15 of the frame. The other end of each rod is pivotally connected to a ratchet portion engagement member 69. The ratchet portion engagement member 69 contacts the first stop wall 45 when the discharge chute door 39 is in its closed position (not shown) to assist in locking the door in this position. The ratchet portion engagement member 69 also contacts the first notch 47 of the ratchet 25 in the manner shown in FIG. 4 to lock the discharge chute door 39 in an intermediate open position and engages the second notch 49 as shown in FIG. 6 to lock the discharge chute door 39 in its lower open position. The engagement member 69 may also engage the second stop wall 51 to limit opening movement of the discharge chute door 39. A stub handle 71 is attached to and extends outwardly from the free end of each arm 59.

A ballast flow control door 81 is mounted on the frame 11 inwardly of the discharge chute door 39. The door is hinged at one end to a horizontally extending rod 83 by means of loops 85. The horizontal rod 83 extends between and is attached to the side members 15 of the frame 11 near the top thereof. A central opening 87 of generally rectangular shape is formed in the door 81. A covering plate 89 mounted on spacers 91 is positioned behind the opening 87. The covering plate 89 and spacers 91 form a channel 93 on the rear surface of the door 81. A slide piece 95 dovetails in the channel 93 and has a portion which extends slightly outward from the front of the opening 87.

A locking bar 97 is attached to the outwardly extending portion of the slide piece and the opposite ends of the locking bar ride in channel-shaped guides 99 which are affixed to the side members 15 of the frame 11.

An operating tool 107 for the ballast flow control door is shown in use in FIG. 1 and in detail in FIGS. 2 and 3. The T-shaped tool includes an elongated handle 109 having a tubular cross piece 111 fastened at one end thereof and reinforced by triangular gussets 113. Short tubular rods 115 are attached to the outer ends of the tubular cross piece 111 to function as fulcrums.

The use, operation and function of the invention are as follows:

The terracing discharge chute door 39 is shown in its fully open position in FIG. 1 in which the ratchet engagement member 69 is seated in the second notch 49 of the ratchet 25 to thereby lock the door in its fully open position. Also, in this figure the operating tool 107 is shown in engagement with the slide piece 95 and locking bar 97 and is being used to raise these members to open the ballast flow control door 81. The locking bar is moved upwardly as guided by the guides 99 and the door 81 will swing outwardly under the pressure of the ballast. The locking bar will automatically lock in any position along the guides 99 when the operating tool 107 is released. In any selected position, the weight of the door 81 plus the ballast will force the bar 97 against the sides of the guides 99 to lock the bar and door in place.

To release the locking bar from locked engagement with the guides 99, the tubular cross piece 111 of the operating tool 107 is inserted in the channel 99 above the locking bar 97 and slide piece 95 with the cross piece contacting the door 81 and the fulcrum rods 115 engaging the inside surface or walls of the guides 99. The operating tool is then rotated about the fulcrum rods 115 forcing the door 81 inwardly and thus releasing the locking bar 97 from engagement from the inside surfaces or walls of the guides 99. When the locking bar 97 is released it will fall under its own weight to its lowest position thereby closing the door 81. By adjusting the opening of the ballast flow control door 81, the amount of ballast allowed to flow out over the discharge chute door 39 may be controlled.
The discharge chute door 39 may also be locked in a slightly elevated discharge position shown in FIG. 4 in which it provides at least 5 inches ground clearance so that it will not interfere with switches and switch operating mechanisms during ballasting operation in yards. This intermediate position is obtained by the provision of an additional notch 47 in the ratchet portions 25 of the door supports.

What is claimed is:

1. A ballast flow control door assembly for a terracing outlet of a hopper car of the type in which the terracing outlet includes a frame installed in a discharge chute of the hopper car, a door pivotally mounted to the bottom of said frame for movement from an upstanding position in which it closes said opening to lowered positions in which said door functions as a chute for said opening,

   said ballast flow control door assembly including:

   a pair of guides mounted on opposite sides of said frame, a ballast flow control door pivotally mounted to the top of said frame for outward opening movement relative thereto with said pivotal mounting located inwardly of said guides, and

   a locking bar extending across the width of and mounted on said door for sliding movement from the top to the bottom thereof,

   said locking bar having end portions positioned in said guides to operate the door.

2. The ballast flow control door assembly of claim 1 further characterized in that said discharge chute door is adjustable to a plurality of lowered positions and means are provided to selectively lock said discharge chute door selectively in each of said positions.

3. The ballast flow control door assembly of claim 1 further characterized in that said guides are inclined to the vertical and the upper portions of said guides are located outwardly of the pivotal mounting of said ballast flow control door and the lower portion of said guides are located inwardly of said pivotal mounting.

4. The ballast flow control door assembly of claim 1 further characterized in that said control bar is affixed to a slide plate and said slide plate is dovetailed in a channel in said ballast flow control door.