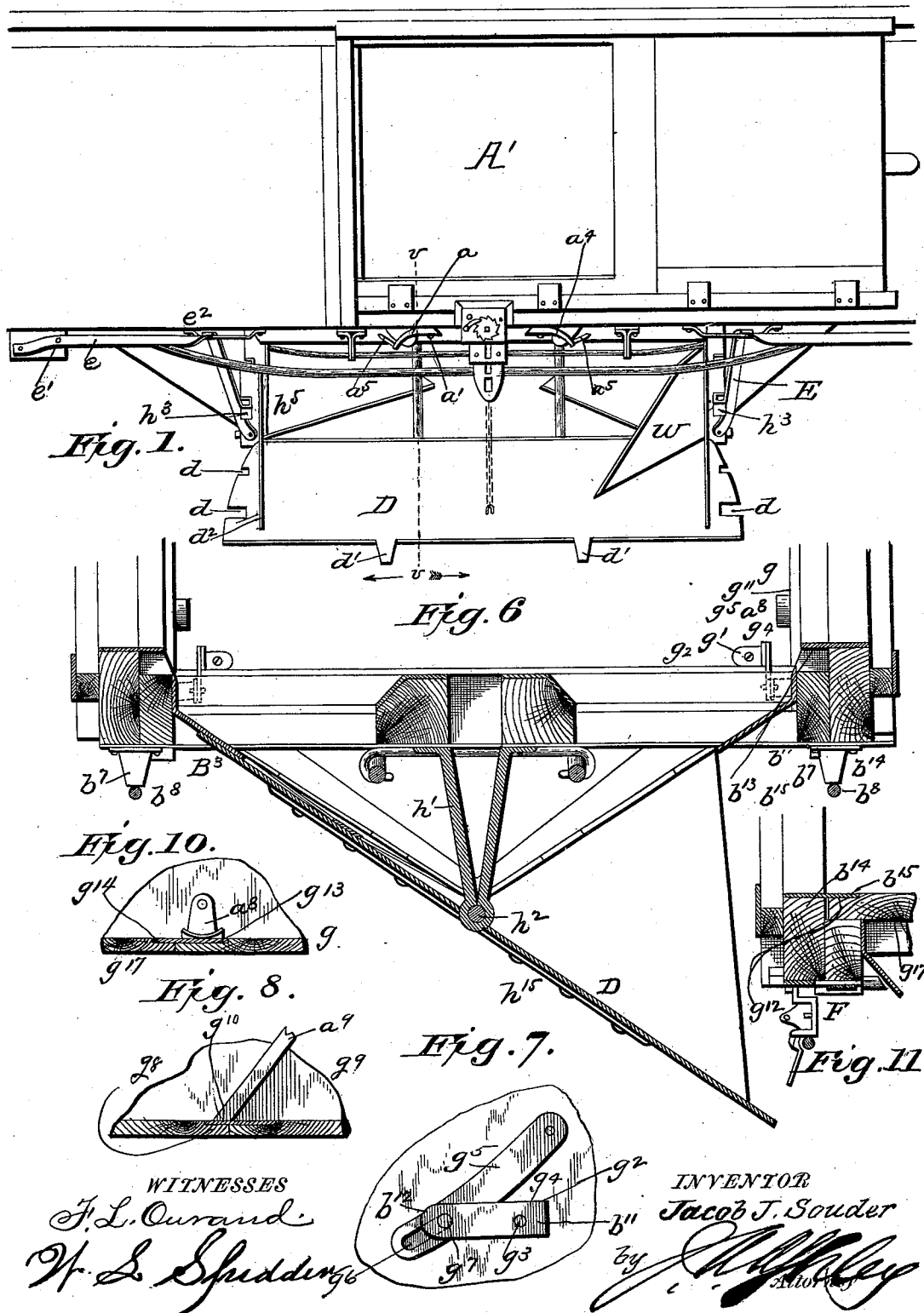


3 Sheets—Sheet 1.

No. 466,469.

Patented Jan. 5, 1892.



J. J. SOUDER.
DUMPING CAR.

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Fig. 9.

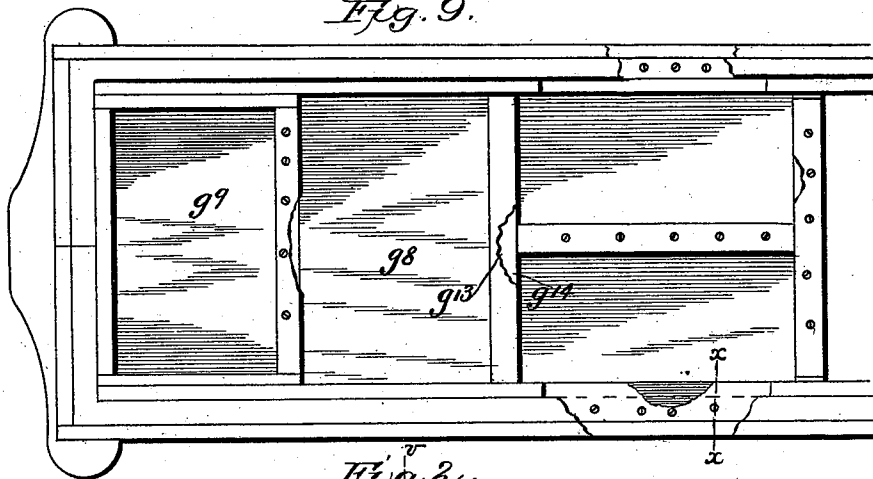


Fig. 10.

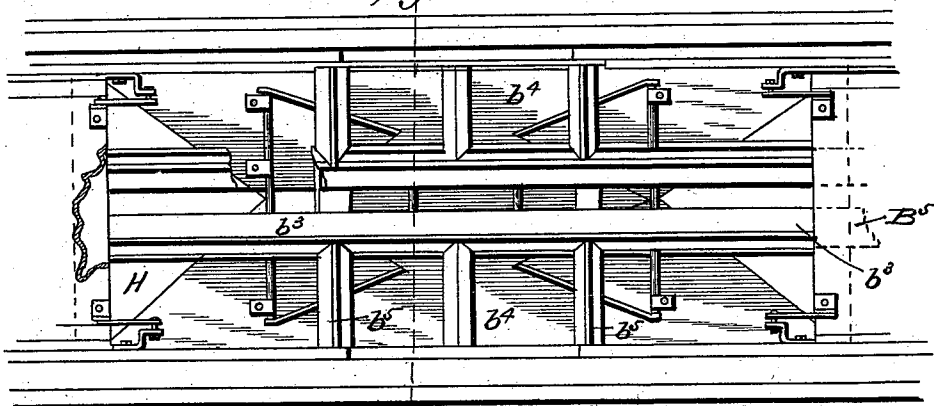
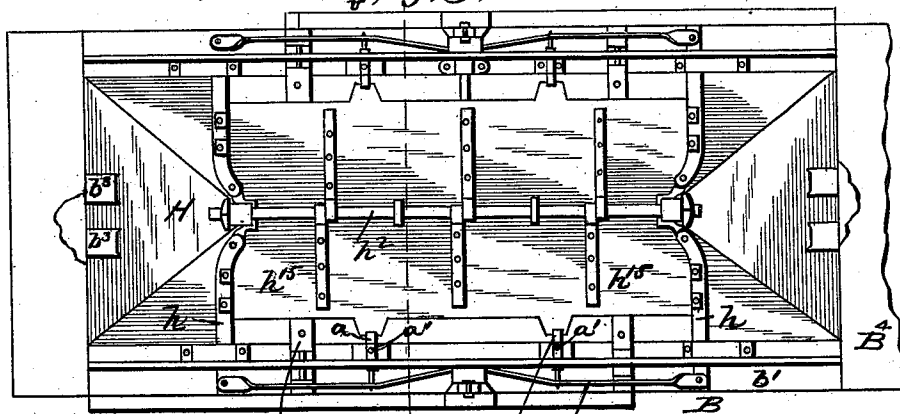


Fig. 3. b' B



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Fig. 4.

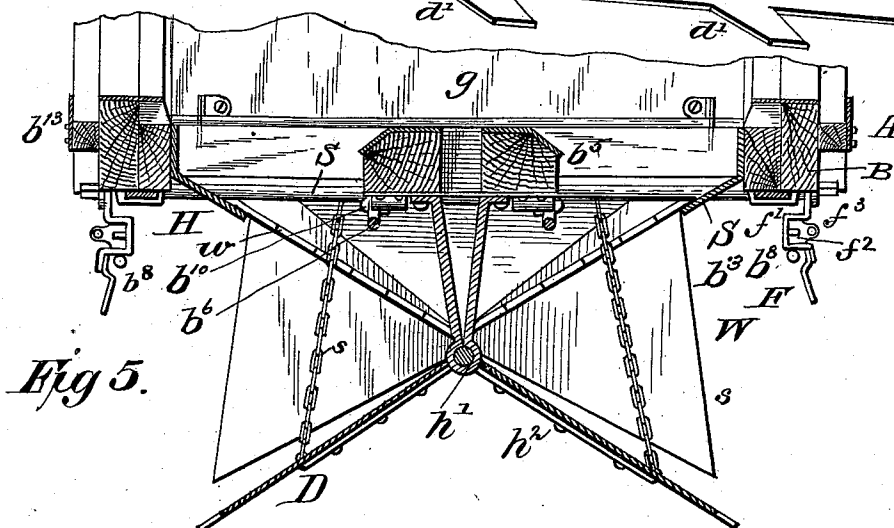
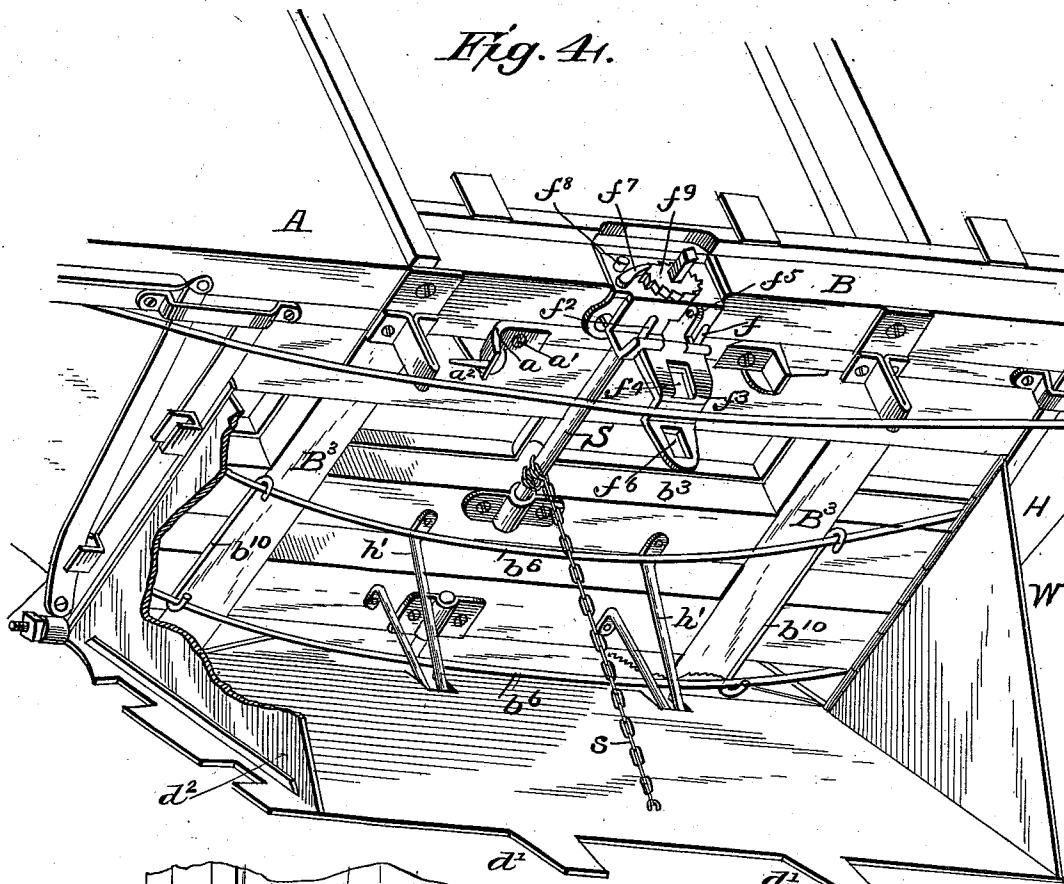


Fig 5.

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UNITED STATES PATENT OFFICE.

JACOB J. SOUDER, OF WASHINGTON, DISTRICT OF COLUMBIA.

DUMPING-CAR.

SPECIFICATION forming part of Letters Patent No. 466,469, dated January 5, 1892.

Application filed June 1, 1891. Serial No. 394,734. (No model.)

To all whom it may concern:

Be it known that I, JACOB J. SOUDER, a citizen of the United States, residing in the city of Washington, in the District of Columbia, have invented a new and useful Dumping-Car, of which the following is a description.

The invention relates particularly to certain improvements in the dumping-car shown in a former construction by me, which constitutes the subject of United States Patent No. 371,224, which was issued to me October 11, 1887.

The present car, like that above referred to, is constructed with a view to the convenient transportation simultaneously of granular material in bulk in a lower compartment and of miscellaneous merchandise in packages in an upper compartment.

The invention consists in certain improvements in the construction of the bed-frame and its immediate connections, whereby the supports of the same are strengthened and whereby additional and more readily available space is afforded for discharging the granular contents of the car; in certain modifications in the construction of the hopper and its bottom connections, whereby the longitudinal hinge rod or bar of the discharging-chutes or drop-doors is supported directly by the transverse supporting-bars of the hopper; in certain improvements in the drop-doors, whereby the locking-bars are engaged directly with the body of such doors and with the lugs upon the transverse supporting-bars; in the provision of auxiliary lugs and supports upon the exterior sills of the bed-frame and of locking-bars which engage with said supports to maintain them in their supporting position; in the provision of hinged inwardly-swinging wings which, when in their outward adjustment, constitute the sides of the discharging-chute; in certain improvements in connection with the pivoted and adjustable floor-sections, and in various other novel constructions, all of which will first be particularly described, and then distinctly pointed out in the claims.

In the drawings, Figure 1 is a side elevation of the central or hopper portion of the car, the sliding side door being open and the hinged falling or drop door, which constitutes

the lower portion of the discharging-chute, being arranged in its discharging position. Fig. 2 is a top plan view of such hopper portion of the car, the roof and the central detachable floor-sections being removed and the pivoted floor-sections being thrown back to exhibit the hopper and the related portions of the bed-frame of the car. Fig. 3 is a bottom plan view of a like central portion of the car, the discharging-chute doors and their locking appliances being in their closed and locked adjustment. Fig. 4 is a perspective view, the car being tilted, showing details of the bottom of the bed-frame, a portion of one of the wings of the drop-door and portions of the bed-frame being broken out and the drop-door of the discharging-chute being open. Fig. 5 is a transverse vertical section of the lower portion of the car on the line *vv* in Figs. 1, 2, and 3, looking in the direction of the feathered arrow. Fig. 6 is a transverse vertical section on the line *vv* in Figs. 1, 2, and 3, looking in the direction of the unfeathered arrow. Fig. 7 is a detail of the pivoted floor-section as when looking from outside the car through an orifice in the wall of the same. Fig. 8 is a detail, partly in section and partly in elevation, of the fixed end floor-section, the pivoted floor-section, and the inclined brace-rest, showing the manner in which the pivoted floor-sections engage under the projecting flange or covering-piece of the fixed floor-section. Fig. 9 is a partial top plan view, the roof of the car being removed and the floor-sections being in their horizontal adjustment. Fig. 10 is a detail, partly in section on the line *ww* in Fig. 9, showing the connection of the pivoted floor-sections with the central detachable floor-sections. Fig. 11 is a section on the line *xx* in Fig. 9, showing the relation of the floor covering-plate in the side-door openings to the coincident detachable floor-sections.

As will be seen in the drawings, I provide in the bed-frame B of the car A, between the cross-sills $b^2 b^2$ at the ends of the hopper H, the single pair of short longitudinal sills $b^3 b^3$, which are arranged near together over the middle of the hopper. This construction affords a large clearing-space b^4 between such central sills $b^3 b^3$ and the exterior longitudi-

nal sills $b' b'$, which is essential in discharging coarse mineral or other substances. To compensate for possible loss of strength resulting from this change in construction, half-sills $b^5 b^5$ are provided between the central and the exterior longitudinal sills, and underneath and across these half-sills, at the inner extremity thereof, is extended a longitudinal truss-rod b^6 , which is secured by its ends to the transverse end sills of the bed-frame or equivalent fixed part of the car. The exterior longitudinal sills $b' b'$ also are each provided with a longitudinal truss-rod b^8 , which is similarly secured to the extremities of the bed-frame and which in its central portion bears against the lower ends of the equalizing-braces $b^7 b^7$, which are suitably secured to and which project downwardly from the under surface of the bed-frame. If desired, the rods b^6 may be connected by transverse tie-rods b^{10} .

The hopper H is, as shown, directly supported by the transverse bars h , which rest by their ends in the body of the exterior longitudinal sills b' . In addition to these supports I provide the stirrups $h' h'$, which by each end are secured to the short longitudinal sills $b^3 b^3$. I provide a hinge-bar h^2 , which is coterminous with the lowest portion of the hopper, which is secured within the lower and curved portion of the transverse bars h and of the stirrups h' and which receives the looped ends of the hinge straps or cleats h^{15} .

Under my construction the body of the drop-doors D has notches d in the ends thereof corresponding to the lugs or catches h^3 upon the transverse supporting-bars h , and when such doors are raised to their closed position the pivoted supporting-arms E, having at their pivoted end an outward curve, as seen in Figs. 1 and 3, engage both the lugs h^3 upon the supporting-bars h and the main portion of the body of the door D itself. In addition to these supports at the ends of the drop-doors I provide upon the outer edge of such doors projecting lugs d' , and upon the bottom surface of the bed-frame of the car I attach holding lugs or latches a , which are movable in a horizontal plane upon their pivot a' . In connection with these swiveled holding-lugs a I provide upon the bed-frame the downwardly-extending catches a^2 , each having a notch. (Not shown in the drawings.) When the drop-doors D are lifted to their closed position, an outward movement of the locking end a^4 of the lug a brings such end into engagement with the lower face of the projecting lugs d' and with the notch (not shown) in the catch a^2 . By the same movement the pin a^5 upon the opposite end of the holding-lug a is caused to project directly outward at a right angle with the side of the car, and in this position it is engaged, when the door is locked, within a perforation e' in the locking-bar e , which moves in the way or guide a^6 , secured to the bed-frame, and which is connected by a pivot-joint e^2 to the pivoted sup-

porting-arm E. Each locking-bar e , in addition to the perforation e' for engagement with the pins a^5 of the holding-lugs a , is provided near the outer extremity thereof with a perforation e^3 , by which, when in its locking position, it is received upon a pin f^2 in a downwardly-projecting extension f' of the locking appliance F.

As a means for closing the interval between the body of the hopper and the ends of the drop-doors, when such doors are in their open or discharging adjustment, I provide the wings W, each of which is connected by a hinge-joint w to the body of the hopper and is adapted to be swung bodily inwardly, and, when the drop-door is closed, to lie flatly at full length against the upper surface of the same. A flange or stop d^2 is provided upon the upper surface of the door, near each end thereof, which in closing the door enters a corresponding shallow groove h^4 , which is formed or bounded upon one side by a downturned edge h^5 of the body of the hopper and upon its opposite side by the body of one of the transverse supporting-bars h and effects a tight closure therewith. When the door is dropped, the closing-wing W is thrown outward against the flange or stop d^2 , and is held thereto by rigid adjustment of the door through the operation of the winding-shaft S and its chain s . When the wing and the door are closed and the locking-bar e is in engagement with the pins a^5 of the pivoted holding-lugs a and with the pins or studs f^2 upon the locking appliance F, the hinged covering and securing plate f^3 of such locking appliance is closed down upon the pivoted locking-bar e , its perforation f^4 receives the loop of the staple f^5 upon the extension f' , and its perforation f^6 receives the squared end of the winding-shaft S. Primarily the winding-shaft is held against backward revolution by engagement of the pawl f^7 with the teeth of the ratchet f^9 , the pawl being in turn secured by the cam f^8 ; but additional security is assured through the provision of the securing plate or hasp f^3 and the engagement of the shaft within the perforation f^6 of such plate, the whole, as will be understood, being finally secured by engagement of any suitable padlock in the loop of the staple f^5 .

I provide at each lower corner of the hinged floor-sections g of the floor G a hinge-piece g' , the outwardly-projecting ear g^2 of which has a perforation g^3 to receive a pivot-pin g^4 , by which it is connected to a link-bar g^5 , the opposite extremity of which has a slot g^6 . Upon the coincident inner face of the sill b' is secured an angular lug b^{11} , the perforated flange or ear b^{12} of which receives a pivot-pin g^7 , which extends through the slot g^6 in the link-bar and moves freely therein. The section g is beveled upon its outer edge g^{11} from the top downwardly and inwardly, and the coincident portion of the sill b' is provided with a rest or bearing-piece b^{13} , which is correspondingly beveled from the top down-

wardly and outwardly from the sill. The slot g^6 in the link-bar g^5 permits free movement of the section g upon the hinge connection, so that the section, when opened, may be thrown back against the inclined rest-braces a^9 without danger of injury to the hinge connections, and so that when the section has been lowered to its horizontal position it may engage by its cut-away portion or recess g^8 beneath the projecting covering-flange g^{10} of the fixed floor-sections g^9 . It will be noted that under this construction the floor-sections g are hinged, not to the fixed sections g^9 of the floor, but to the bed-frame of the car, and that the provision of the beveled support or rest b^{13} affords a continuous bearing for the section, while avoiding the feature—objectionable in a self-clearing car—of a shelf-like bearing projection.

Although I have shown the transverse sills b^2 as extending across the body of the bed-frame and the intermediate longitudinal sills b^3 b^5 as terminating at such transverse sills and as being continued by a separate short longitudinal sill B^5 between transverse sills b^2 and the end sills b , it will be apparent that the sills b^2 and the sills b^3 might be halved together and suitably re-enforced, the sills b^3 under such construction extending from end to end of the bed-frame, the essential purpose of this part of my invention being accomplished under any construction in which the longitudinal sills b^3 are placed near together in the center of the bed-frame and in which the half-sills b^5 are so placed in connection therewith as to produce the discharge-openings b^4 . In a similar manner these inner longitudinal sills might extend from end to end of the bed-frame in uniform dimensions, spacing-blocks being let in between the two sills, and between these sills and the exterior longitudinal sills, directly above the body-bolsters B^4 , the ends of the hopper being secured to such blocks, as in this construction, they are secured to the sills b^2 at the same point.

As seen in Figs. 2, 3, 4, and 6, tie-plates B^3 extend along and are secured upon the lower surface of the half-sills b^5 , securing the same together and preventing inward or outward movement of the longitudinal sills of the bed-frame.

As seen in Figs. 5, 6, 9, and 11, I provide in the opening for the side door A' of the car upon the sill b' covering-plate b^{14} , the inner portion of which constitutes a flange b^{15} , which overhangs one of the central detachable floor-sections g^{17} of the floor G and extends into a corresponding recess g^{12} in the upper surface of such floor-section. At each end the sections g^{17} have a similar recess g^{14} to receive the covering-plate g^{13} of one of the pivoted floor-sections g . A stop a^8 is pivoted to the lining a^7 of the car in such relation to the plate upon the section g that when the covering-plate g^{13} of such section is engaged with the recess g^{14} in the section g^{17} it will be held

in such engagement by adjustment of the stop against the covering-plate.

As will be seen in Fig. 9, the two detachable floor-sections g^{17} are at their meeting edges provided with a recess and a corresponding flange like those shown at the junctions of the floor-sections g^9 and g ; and g and g^{17} .

In the drawings the hopper is represented as composed of metal, and for the transportation of mineral substances I prefer to so construct it; but of course I do not restrict myself in the choice of material.

Having thus described my invention, I claim—

1. The combination, with the end sills b b , of the intermediate transverse sills B B , the intermediate longitudinal sills b^3 , the half-sills b^5 b^5 , forming in connection with the intermediate and the exterior longitudinal sills the discharge-openings or clearing-spaces b^4 , and the longitudinal truss-rods b^6 , extending across the inner ends of the half-sills b^5 , substantially as and for the purpose set forth.

2. The combination, with the hopper H , of the hinge-bar h^2 , the transverse supporting-bars h , inclosing the hinge-bar at its ends and having the lugs h^3 , the drop-doors D , having the end notches d , and the supporting-arms E , pivoted to the transverse bars h and to the body of the hopper, substantially as and for the purposes specified.

3. The combination, with the bed-frame of the car, having the swiveled holding-lugs a , of the drop-doors D , having the projections d' , substantially as described and shown.

4. The combination, with the bed-frame of the car, having the holding-lugs a , provided with the pins a^5 , of the pivoted locking-bar e , having perforations e' for engagement by such pins, substantially as and for the purposes described.

5. In a dumping-car for railways, the combination, with the hopper H , of the inwardly-swinging wings W W , adapted when closed to rest at length upon the face of the drop-door and adapted when open to form the sides of the discharging-chute, substantially as set forth.

6. In a dumping-car for railways, a hopper which has upon the margin of its discharging-opening an exterior downturned edge or flange, combined with a drop-door which has upon its inner surface an upwardly-extending flange, which in closing the door engages behind the flange upon the hopper to effect a tight closure therewith.

7. In a dumping-car for railways, a hopper which has upon the margin of its discharging-opening an exterior downwardly-extending flange, and a transverse supporting-bar which extends along the bottom of the hopper at a short distance from and parallel to a downwardly-extending flange upon the margin of its discharging-opening, combined with a drop-door which has an inner upwardly-extending flange, whereby in effect a groove or recess is formed in or upon the outer surface of the

hopper and whereby in closing the doors a joint which is secure against loss of granular material is produced.

5 8. The combination, with the hopper H and with the longitudinal shaft or hinge-rod h^2 , of the drop-doors D, having the flange or stop d^2 and the inwardly-swinging wings W W, substantially as specified.

10 9. The combination, with the bed-frame of the car, of the locking appliances F, having the holding-studs f^2 for the locking-bars e and having also the hasp f^3 , provided with locking-opening f^6 for the shaft S and with opening f^4 for the locking-loop f^5 , substantially as
15 set forth and shown.

10 10. The combination, with the hopper H, of the hinge-bar h^2 , the transverse bars h , having the lugs h^3 , the drop-doors D, having the end notches d , the supporting-arm E, engaging the lugs upon the transverse bars h , and
20 a locking-bar connected to such supporting-arm and adapted to be secured to a fixed part of the car, substantially as described.

25 11. The combination, with the intermediate longitudinal sills b^3 b^3 and with the longitudi-

nal shaft or hinge-bar h^2 , of the stirrups h' , embracing the hinge-bar and secured by their ends to the intermediate longitudinal sills, substantially as specified.

12. The combination, with the intermediate 30 longitudinal sills b^3 b^3 and with the half-sills b^5 b^5 , of the transverse tie-plates B³, substantially as and for the purposes set forth.

13. The combination, with the fixed end section g^9 of the floor G, of the section g , 35 loosely pivoted to the exterior sill of the bed-frame of the car, substantially as and for the purposes described.

14. The combination, with the bed-frame, of the detachable floor-sections g^{17} , having end 40 recess g^{14} , the pivoted floor-sections g , having flange g^8 and the pivoted stop a^8 , the flange engaging the recess and the stop engaging the flange to secure both floor-sections in position upon the bed-frame.

JACOB J. SOUDER.

Witnesses:

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JOHN T. MITCHELL.