(No Model.) 2 Sheets—Sheet 1.

J. J. SOUDER.

DUMPING CAR.

No. 464,087. Patented Dec. 1, 1891.

Fig. 1.

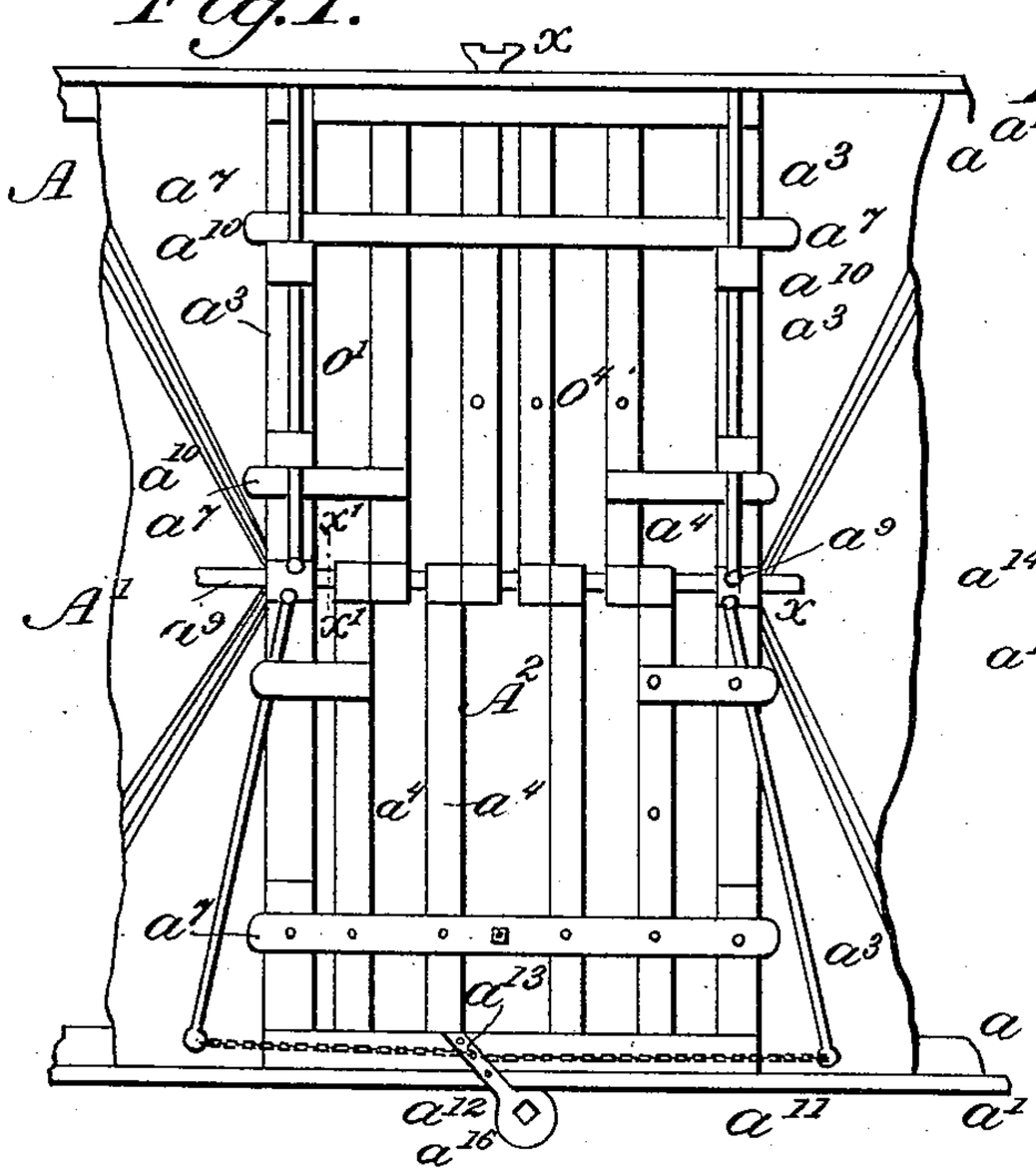


Fig. 2.

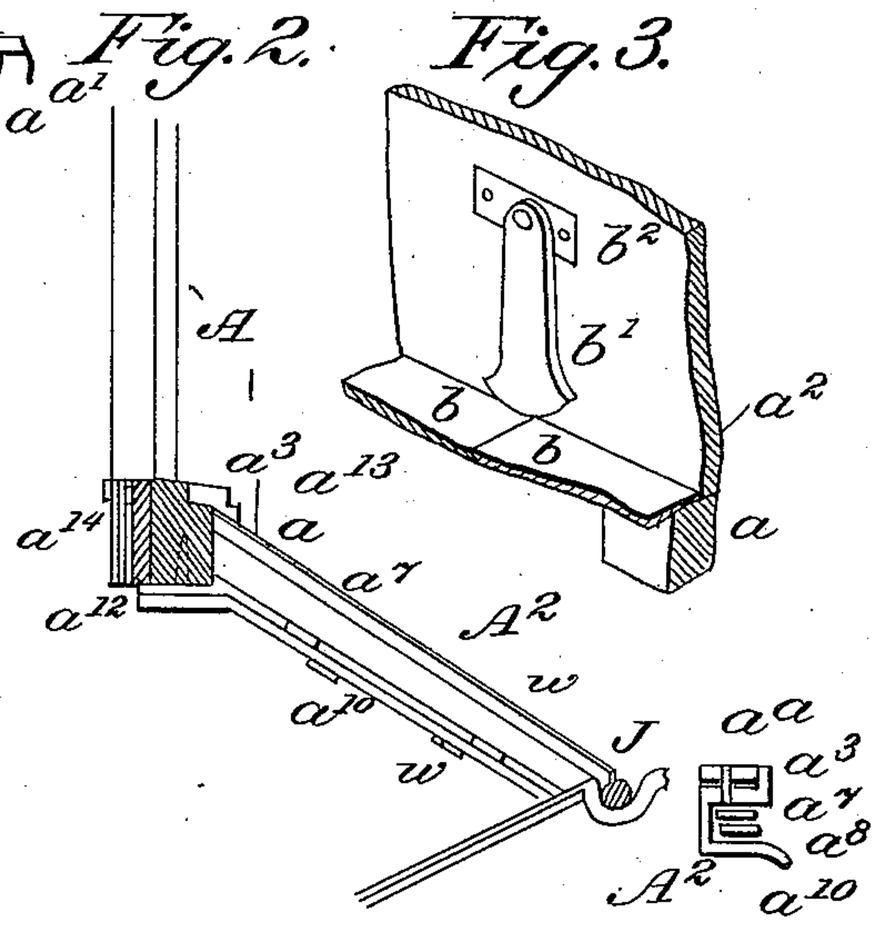


Fig. 3.

Fig. 9.

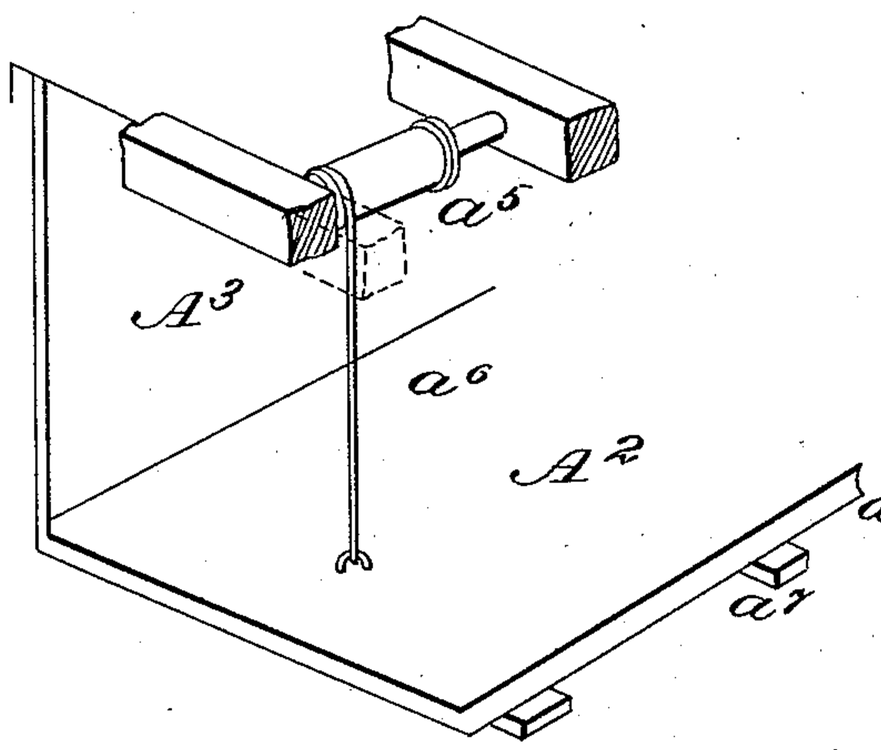
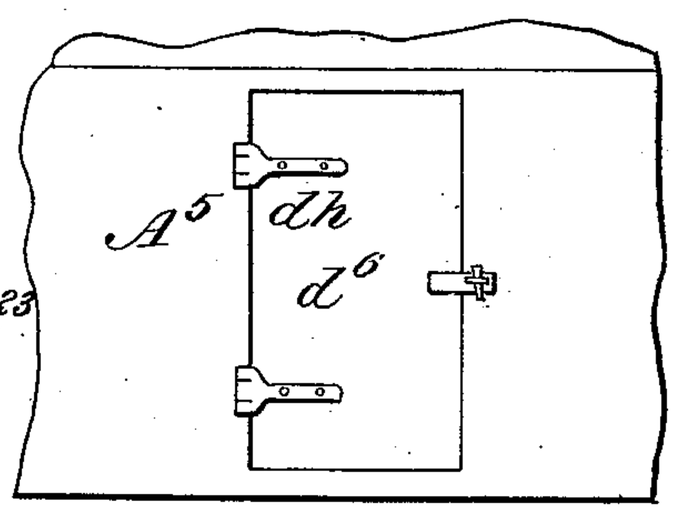


Fig. 6.



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(No Model.) 2 Sheets—Sheet 2.

J. J. SOUDER.

DUMPING CAR.

No. 464,087. Patented Dec. 1, 1891.

Fig. 12.

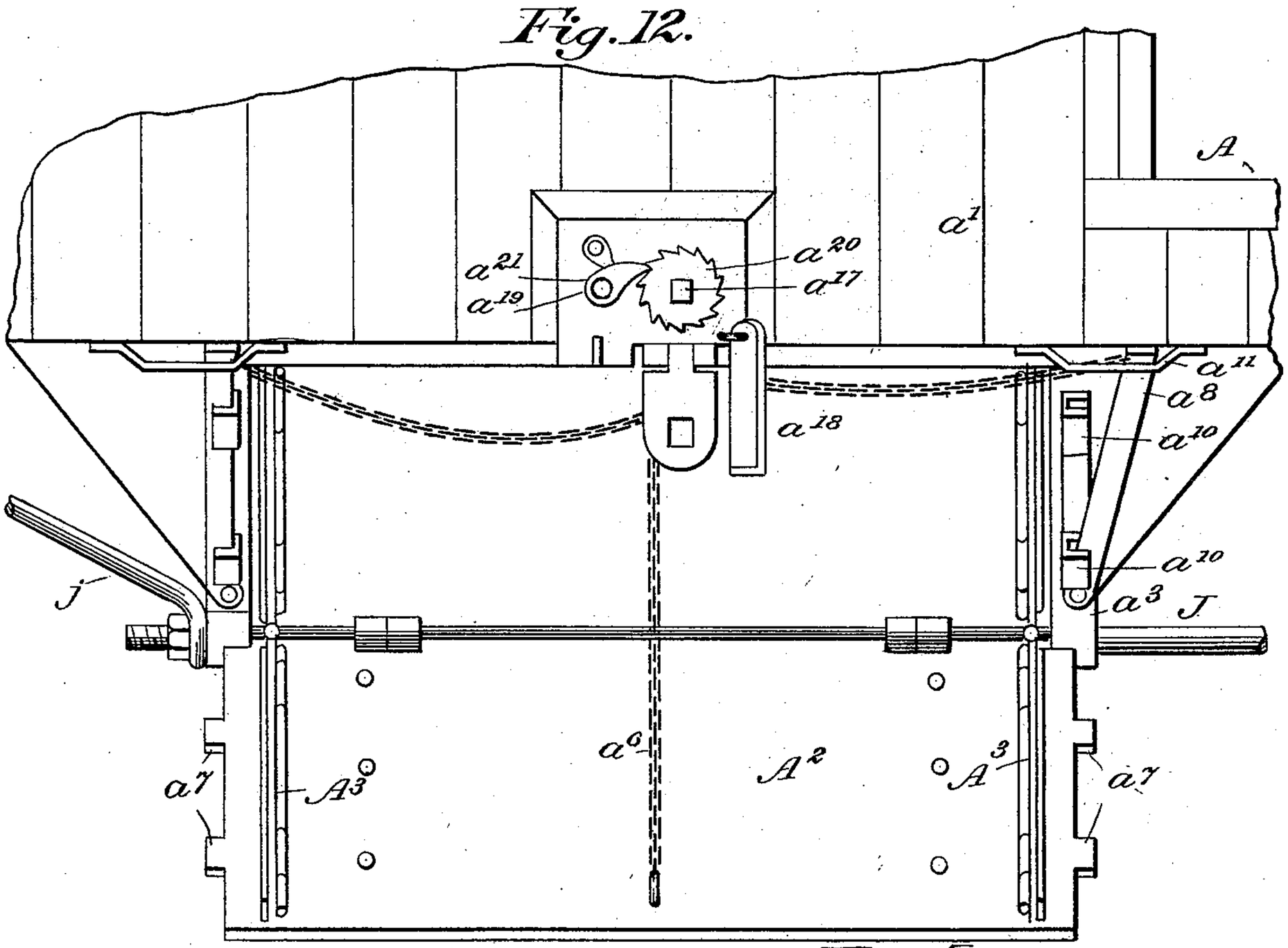


Fig. 4.

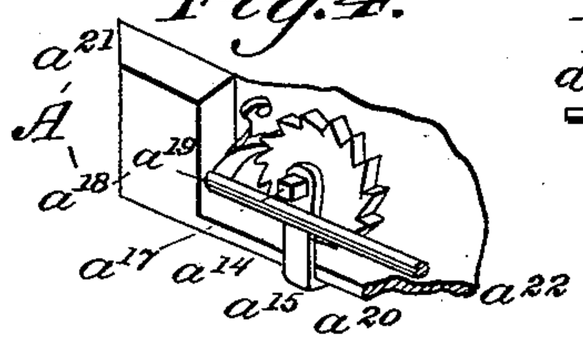


Fig. 5a.

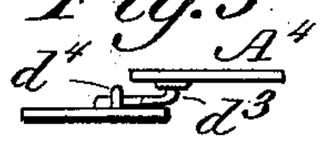


Fig. 5.

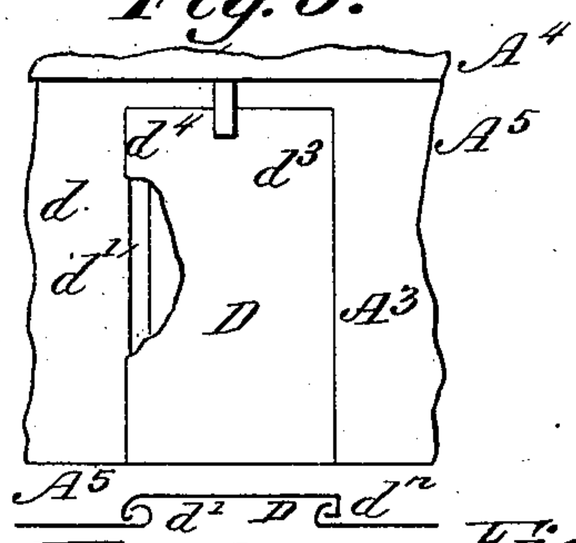


Fig. 7.

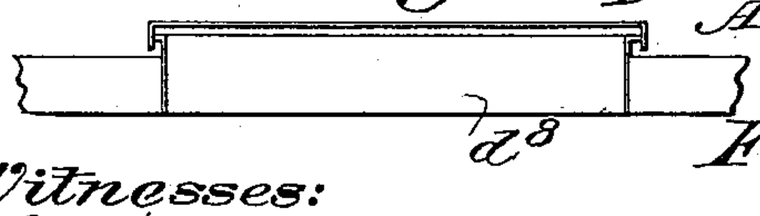


Fig. 8.

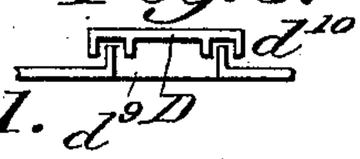


Fig. 10.

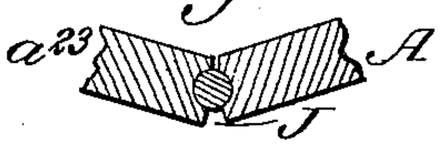
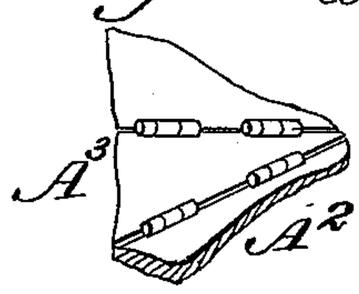


Fig. 11.



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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. 464,087, dated December 1, 1891.

Application filed March 30, 1891. Serial No. 387,067. (No model.)

To all whom it may concern:

Be it known that I, JACOB J. SOUDER, a citizen of the United States, residing in Washington, in the District of Columbia, have invented certain Improvements in Dumping-Cars, of which the following is a description.

The invention relates, generally, to dumping-cars for granular material, and which are or may be adapted to transport miscellaneous merchandise as well.

The present invention consists, mainly, in certain improvements in and in connection with the hopper or hoppers and the discharge-chutes or dumping-sections of the car, whereby the strength of the same is greatly increased, whereby the pivoted dumping-sections are secured in place and the strain upon the same is diminished when they are closed, and whereby a single fastening device is made to secure in position both the axle of the lifting appliances and the appliances which secure the dumping-sections in position when they are closed.

The invention consists, also, in certain improvements in the roof of the structure, whereby an opening for granular material is securely covered.

In the drawings, Figure 1 represents a bottom plan view of a central or intermediate portion of a car, showing a hopper having my improvements applied thereto. Fig. 2 is a detail representing a partial transverse vertical section, on the irregular line *x x* of Fig. 1, *a* being a section on the line *w w* in such Fig. 2. Fig. 3 is a detail in perspective representing a portion of the floor and the lining of the car. Fig. 4 is a detail perspective, showing a portion of the exterior face of the car and of the means by which the lifting and supporting appliances are secured in place when the drop-sections or dumping-chutes are closed. Fig. 5 represents a top plan and a longitudinal vertical section of a portion of the roof of the car, Fig. 5ª showing a modification thereof. Fig. 6 is a view similar to that represented in Fig. 5, but showing a modification in the application of the door. Figs. 7 and 8 represent, in vertical section, further modifications of the means by which the roof-opening may be closed. Fig. 9 represents in perspective a portion of one of the dumping-sections and some of its connections. Fig. 10 is a transverse section on the line *x x* of Fig. 1. Fig. 11 is a detail showing a modification in the construction of the flexible portion of the dumping-sections. Fig. 12 represents a side elevation of the central portion of the car, one of the dumping-sections or drop-doors being in its discharging position.

A in Figs. 1, 2, and 4 designates the car as a whole, *a* being the exterior longitudinal sills, *a'* the exterior casing or sheathing, and a^2 the lining of the same. In Figs. 1 and 2, a^3 represents a transverse supporting-bar, which at its center or mid-length is bent downwardly, as shown, to conform to the longitudinal truss-rod J and which at its ends rests upon and is securely attached to the sills *a*. The dumping-sections A^2 of the hopper A', instead of being secured to a plate which is supported by the longitudinal truss-rod, are made fast to a series of heavy metallic straps a^4, which at the inner end of the sections are bent around the body of the truss-rod itself, the meeting ends of the coincident sections being in close contact when the sections are closed. Instead of the series of pulleys upon the sills and dumping-sections employed in my former construction as means for elevating and securing the sections, I provide a direct connection of the chain or wire rope a^6 at one end with the drum a^5, and at the opposite end with the section A^2, as seen in Fig. 9. The dumping-sections are provided upon each end with strong projecting lugs a^7, which are securely attached to the body of the section, and the supporting-bars a^3 are provided with a supporting-arm or supporting-lever a^8, which at its inner end, near the intersection of the truss-rod and the transverse supporting-bar, is, by means of a heavy through-bolt a^9, pivotally connected to such supporting-bar. The supporting-bars a^3 are provided also with a suitable number of lugs a^{10}, which extend laterally outward from the bar toward the end of the car. Under this construction, when by means of the drum and its shaft the pivoted dumping-section has been elevated to its closed position, the pivoted supporting-arm a^8 is moved from its position as seen in the lower half of Fig. 1 to the position indicated in the upper half of that figure. When in this latter position the supporting-arm rests upon the lugs of the

transverse supporting-bar, while the arm in turn supports the dumping-section, the lugs a^7 of which rest directly upon such arm. At their outer extremity the supporting-arms will preferably be connected to a chain or cable a^{11}, which at its opposite end is made fast to one end of a short swivel-bar a^{12}, which is mounted upon a pivot-pin a^{13}, which is secured in the body of the car, as seen in Figs. 1 and 2. The corresponding arm at the opposite side of the same dumping-section has a similar connection with the other extremity of the swivel-bar, and it will be seen that when the swivel-bar is moved to a position at a right angle to the length of the car, as seen at the top of Fig. 1, the arms will be maintained in their supporting position upon the lugs a^{10}, and beneath the lugs a^7. At its outer extremity the swivel-bar is provided with a locking-arm a^{14}, which is connected to the bar by a hinge a^{15} and which is provided with a perforation a^{16}, which, when the locking-arm is raised to a perpendicular position, as represented in Fig. 4, engages the correspondingly-shaped end a^{17} of the shaft of the winding-drum a^5, thereby locking the same against rotation. As an additional safeguard, a fastening-bar a^{18} is provided, one end being secured by the same pivot-pin a^{19} which secures the pawl a^{21} of the ratchet-wheel a^{20} in its operative position. When a winch is to be applied to the shaft to operate the winding mechanism, the body of the fastening-bar is turned upwardly to an extent sufficient to permit removal of the head of the locking-arm a^{14} from its engagement with the end of the shaft. In locking the fastening-bar is extended across the recess directly beneath the projecting end a^{17} of the shaft, and the unattached end is then secured by a padlock or other suitable means to a staple which is fixed in the body of the sill a.

Instead of using independently-pivoted wings to form the side walls of the chute of which the dumping-sections A^2 constitute the bottom, as in my former construction, I close the sides by a triangular section A^3, of flexible material, such as canvas, duck, or leather, which by means of screws or tacks is secured to the edge of the hopper-opening and to the edge of the dumping-section. In closing the dumping-sections the slack of these triangular ends is taken up in the chute-space as the sections are elevated.

As will be seen in Fig. 3, I dispense with the hinges by which in my former construction the floor-sections of the upper or miscellaneous merchandise-compartment were attached, placing such sections b removably upon the sills a and other members of the bed-frame. To prevent accidental displacement of the sections or abrasion of the same which might occur in movement of the car when empty, a stop b' is attached by pivot b^2 to the lining a^2 of the car, the stop being of such length as to rest at its lower end snugly against the upper surface of the two coincident floor-sections, either of which when the stop is turned aside may be readily lifted without disturbing the other.

In order that the car may be more readily supplied with granular material, hatchways or doorways d in suitable number are provided in the roof A^3 of the car.

As represented in Fig. 5, the opening in the roof is provided with a flange or combing d', which extends first upwardly and then outwardly, to adapt it to be engaged by the corresponding downwardly and inwardly turned flange d^2 of the door D, which in being applied in place is passed from the outer edge of the roof toward the running-board A^4 thereof. As thus applied, the door extends outward to the extremity of the overhang of the roof, and the outer end and the two sides of the flange or frame d' of the opening d are embraced by the flange of the door. In practice it will probably be found expedient to extend the inner extremity of the door under the outer portion of the running-board and to secure the door by hasp d^3, staple d^4, and padlock (not shown) attached in either of the two ways represented or in any suitable manner.

As seen in Fig. 6, a door d^6 is attached by hinges $d\,h$ to a frame or flange which rises from the edges of the opening d.

As represented in Fig. 7, a door D is applied after the manner of a trap-door around a flange d^8 of the opening d.

As shown in Fig. 8, the door or cover D is provided with an inner flange d^9 and an outer flange d^{10}.

As illustrated in the detail in Fig 10, which is a transverse section on the line $x\,x$ of Fig. 1, and as seen also in Fig. 9, the inner edge of each dumping-section is provided with a groove a^{23}, which extends from one extremity to the other of the section. The groove is semicircular in transverse section, and from its outer edges the body of the section is beveled or cut away upwardly and downwardly to an extent just sufficient to insure close contact of the coincident sections when both are closed for receiving granular material and sufficient to permit both sections to be thrown open at once if in making repairs or for any other purpose it should be found desirable to do so. Under this construction, as will be seen, the body of the truss-rod is completely encircled by the two semi-cylindrical grooves in whatever position either or both of the sections may be adjusted. As will be seen in the drawings, the longitudinal truss-rod J is not formed in a single piece, but is composed of a central or hinge-rod portion and of double or bifurcated end continuations $j\,j$ thereof which are connected together by any suitable means, the outer ends being made fast to the cross-sills of the bed-frame in any approved manner.

In some cases, as when very hard material is to be transported, the flexible portions of the dumping-sections will be composed of me-

tallic sheets or sections hinged together at their meeting edges, the part as thus constituted being hinged at its top to the body of the hopper and at its lower extremity to the pivoted section. Under this construction, as the dumping-section is being closed, the hinged sections will move inwardly and be folded each upon the other. This modification is represented in Fig. 11.

Having described my invention, I claim—

1. In a car, the combination, with the longitudinal truss-rod, of the transverse supporting-bars extending across the bottom of the hopper beneath the truss-rod and connected at their ends to the exterior longitudinal sills of the car.

2. The combination of the transverse supporting-bars provided with supporting-lugs, as described, the pivoted dumping-sections having projecting lugs, and the supporting-arms pivotally connected to the supporting-bars and adapted to engage the lugs upon the supporting-bars and the lugs upon the dumping-sections.

3. The combination, with the hopper and with the frame of the car, of the supporting-bar extending across the bottom of the car along the edge of the hopper-opening and provided with supporting-lugs, the dumping-sections having projecting lugs, the swivel-bar pivoted to the bottom of the car and adapted to engage the shaft of the winding mechanism, and the supporting-arms pivotally secured to the supporting-bars and connected to the swivel-bars, substantially as described.

4. The combination, with the winding mechanism having shaft, ratchet-wheel, and pawl, of the swivel-bars attached to the body of the car, the locking-arm connected to the swivel-bars and engaging the winding-shaft, and the pivoted fastening-bar engaging both the locking-arm and the winding-shaft, substantially as described.

5. The dumping-sections A^2, having rigid bottom and flexible side portions and pivoted by their strengthening-straps directly to the longitudinal truss-rod.

6. The combination of the dumping-sections A^2, each having in its inner edge a longitudinal groove semicircular in transverse section, with the longitudinal truss-rod J, substantially as set forth.

7. The combination of the dumping-sections A^2, each having in its inner edge a semicylindrical groove and each having beveled or cut-away portions extending outwardly from the edges of such groove, with the longitudinal truss-rod J, substantially as specified.

8. A car for granular material, the roof of which is provided with an opening which has an upwardly and outwardly projecting flange or combing and with a cover which has a downwardly and inwardly extending engaging-flange upon the outer end and upon the sides thereof, whereby the cover is insertible endwise from the overhang toward the running-board of the roof, substantially as set forth.

9. In a dumping-car for railways, a longitudinal truss-rod to which are directly pivoted drop-doors or dumping-sections, the truss-rod thereby serving, in addition to its ordinary functions, as a hinge-rod for the discharging-doors of the hopper.

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