No. 838,510. PATENTED DEC. 11, 1906.

S. OTIS.

DUMP CAR.

APPLICATION FILED DEC. 26, 1903.

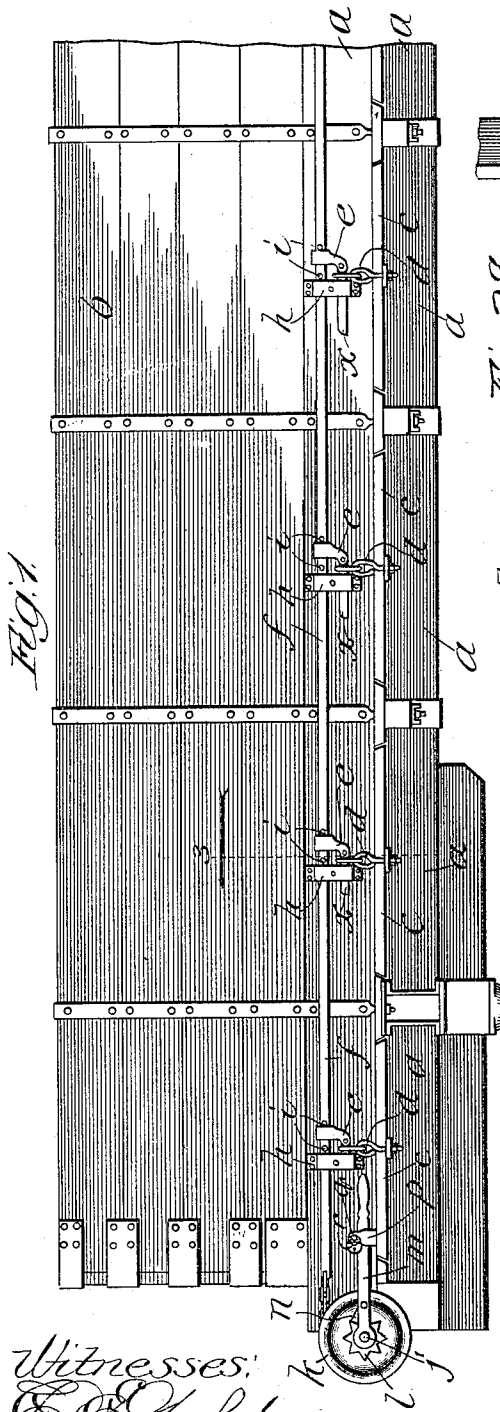

Fig. 1.

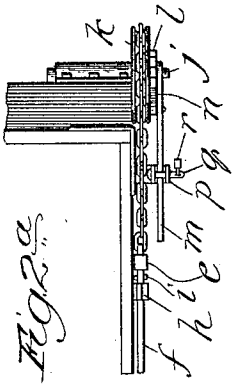

Fig. 2a.

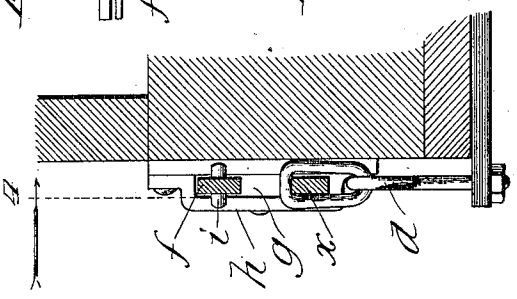

Fig. 3.

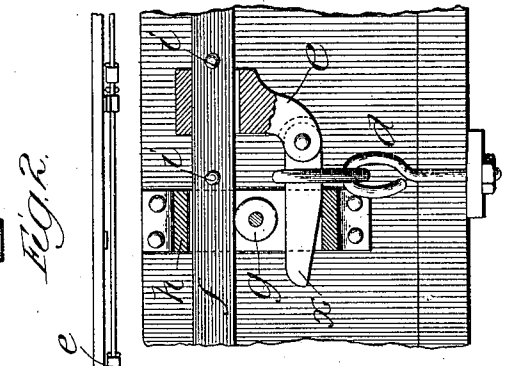

Fig. 2.

Fig. 4.

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UNITED STATES PATENT OFFICE.

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DUMP-CAR.

No. 838,510. Specification of Letters Patent. Patented Dec. 11, 1906.

Application filed December 26, 1903. Serial No. 186,644.

To all whom it may concern:

Be it known that I, SPENCER OTIS, 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 Dump-Cars, of which the following is a specification.

This invention relates to that class of dump-cars which are provided with side and end boards and a drop-bottom portion formed of a plurality of swinging sections pivotally secured at their inner edges to the framework of the car at each side of the longitudinal center, and more particularly to the means for holding and locking the swinging sections in closed position, as will more fully hereinafter appear.

The principal object of the invention is to provide a drop-bottom dump-car with simple, economical, and efficient mechanism for holding and locking the swinging sections that form the drop-bottom portion in closed position.

Other and further objects of the invention will appear from an examination of the drawings and the following description and claims.

The invention consists principally in a dump-car in which there are combined a supporting-frame portion, a drop-bottom therefor formed of a plurality of swinging sections, and means for holding and locking such swinging sections in closed position and releasing them one at a time successively.

The invention consists, further and finally, in the features, combinations, and details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a portion of a car as it appears when constructed in accordance with these improvements; Fig. 2, a plan view of the sliding bar, with its operating mechanisms, looking at it from above; Fig. 2^a, a continuation of the mechanisms shown in Fig. 2; Fig. 3, an enlarged sectional detail taken on line 3 of Fig. 1; and Fig. 4, a side elevation, partly in section, of the mechanism shown in Fig. 3, taken on line 4 of such figure looking in the direction of the arrow.

In illustrating and describing these improvements I have only illustrated and will here describe that which I consider to be new, taken in connection with so much as is old as is necessary to disclose the invention to others and enable those skilled in the art to practice the same, leaving out of consideration other and well-known elements, which if set forth herein would only tend to confusion, prolixity, and ambiguity. Those who desire a fuller or more detailed description of the arrangement of the swinging sections that form the drop-bottom of the car and the pivotal connection thereof are referred to Letters Patent of the United States No. 739,913, granted to me the 29th day of September, 1903.

In constructing a dump-car in accordance with these improvements I provide a supporting-frame portion *a*, which may be composed of any usual arrangement of longitudinal and transverse sills and of the requisite strength to support and hold the other elements in operative position. This car is provided with upwardly-extending side-boards *b* and the usual end-boards. (Not shown.) It is further provided with a drop-bottom portion and composed of a plurality of swinging sections *c*, pivotally secured to the framework of the car at their inner edges and to each side of the longitudinal center in a manner similar to that shown in my former patent hereinabove alluded to. To hold the swinging-bottom sections locked in their closed position and to release them in a successive manner, each swinging section is provided with what I prefer to term a "chain mechanism" *d*, composed of one or more links, though it will be understood that any other desirable mechanism, such as a hasp, may be substituted in place of this chain mechanism, as necessity may demand or occasion require. A plurality of supporting-hooks *e e* is provided, the hook portions of which are of different lengths, so that they may engage and disengage the chain mechanism referred to in a successive manner, and thereby lock and hold one door after another in closed position and release them to open position in a successive manner To move these hooks into their engaging and disengaging positions, a sliding bar *f* is provided and mounted on antifriction-rolls *g*, which in turn are rotatably mounted in brackets *h* that are fixed to the supporting side sills of the car. These hook mechanisms are loosely mounted upon the sliding bar between pins *i*, so that such sliding bar may be moved a short distance in either di-

rection without imparting any motion to the hook mechanisms or until the said pin mechanisms contact the perforated hub of such hooks.

The brackets are provided with recesses at their lower portions, into which the free ends of the hooks are slid as they near the limit of their engaging motion and by which they are held locked in closed position, so that the chains cannot be disengaged therefrom from any movement, shock, or jar imparted to the car until the sliding bar carries said hooks out of engagement with the brackets. To operate said sliding bar, each end of the car is provided with a main operating-shaft *j*, on which is mounted a sheave-pulley *k*, provided with a ratchet-wheel *l*. Loosely mounted on said shafts and adjacent to the ratchet-wheel is an operating-lever *m*, provided with pawl mechanism *n*, so that said operating-lever may be vibrated and, according to which side the pawl is in engagement with the ratchet-wheel, the main operating-shaft or shafts be rotated step by step in the desired direction. The operating-lever *m* at the left hand of the card is vibrated when it is desired to move the sliding bar to the left, while the operating-lever at the opposite end of the car is vibrated when it is desired to move the sliding bar to the right. Bifurcated brackets *p* are provided, adapted to engage the operating-levers, as shown particularly in Figs. 1 and 2. These bifurcated brackets are perforated at their free edges and may be provided with locking-bolts *q*, having padlocks *r* to hold them in locked position, and thereby prevent tampering with the mechanisms, so as to release the drop-bottom until it is desirable to do so.

Examining Fig. 2 it will be seen that these hooks are composed of two portions—a main portion *e*, which is slidingly mounted on the sliding bar, and a tongue portion *x*, which is pivoted thereto and tapered on its under side. By this arrangement it will be seen that the sliding bar, with its hooks, may be moved up almost to engaging position with the socalled "chain mechanism" or any other suitable mechanism, such as an eyebolt or hasp, and the doors lifted up one at a time, so that the hook may be slid into engaging position by the operative. When all of such doors have been raised and the hook slid into engagement, the operating-lever *m* may be vibrated and all of the hooks forced into complete engagement, the tapering portion of the hooks all acting like wedges to closely seal the swinging sections in engagement with the frame of the car.

I claim—

1. In a dump-car of the class described, the combination of a supporting-frame portion, a drop-bottom therefor formed of a plurality of swinging sections provided with holding link portions, a sliding bar, a plurality of hooks independently and loosely mounted on such sliding bar and provided with tapered pivoted forward portions adapted to engage with said link portions and hold the swinging sections in closed position, means for retaining the hook in engaging position, and means for operating said sliding bar, substantially as described.

2. In a dump-car of the class described, the combination of a supporting-frame portion, a drop-bottom therefor formed of a plurality of swinging sections, and means for holding such swinging sections in closed position and releasing them one at a time successively, substantially as described.

3. In a dump-car of the class described, the combination of a supporting-frame portion, a drop-bottom therefor formed of a plurality of swinging sections, chain mechanism secured to each swinging section, a hook for and adapted to engage each chain mechanism, and means for successively operating said hooks to engage and disengage the chain mechanism and hold said swinging sections in closed position and release them to open position, substantially as described.

4. In a dump-car of the class described, the combination of a supporting-framework, a drop-bottom composed of a plurality of swinging sections pivotally secured thereto, chain or similar mechanism for and secured to each swinging bottom-section, a plurality of hook mechanisms—one for each chain mechanism—adapted to engage and be released from the same in a successive manner, and means for moving said hook mechanisms to engage and disengage said chain mechanisms in a successive manner to hold the swinging bottom-sections in closed position and release them to open position one after the other, substantially as described.

5. In a dump-car of the class described, the combination of a supporting-framework, a drop-bottom composed of a plurality of swinging sections pivotally secured thereto, chain or similar mechanism for and secured to each swinging bottom-section, a plurality of hook mechanisms—one for each chain mechanism—adapted to engage and be released from the same in a successive manner, a sliding bar upon which said hooks are loosely mounted, and means for reciprocating said sliding bar so as to move the hooks into engaging and disengaging positions, substantially as described.

6. In a dump-car of the class described, the combination of a supporting-framework, a drop-bottom therefor composed of a plurality of swinging sections, chain mechanism for each swinging section, a sliding bar provided with a plurality of hook mechanisms loosely mounted thereon to engage and disengage the chain mechanisms of each swinging door in a successive manner, bracket mechanism secured to the supporting-framework

of the car in which said sliding bar has its bearings and also arranged to lock said hook mechanisms in their engaging position, and means for moving said sliding bar forwardly and backwardly and thereby the hook mechanisms into engaging and disengaging positions, substantially as described.

7. In a dump-car of the class described, the combination of a supporting-framework, a drop-bottom therefor composed of a plurality of swinging sections, chain mechanism for each swinging section, a plurality of hook mechanisms, the hooks of which are of different lengths to engage and disengage said chain mechanisms, a sliding bar upon which such hook mechanisms are loosely mounted and by which they are moved into engaging and disengaging positions with the chain mechanisms in a successive manner, and main operating-shafts at each end of the car connected with said sliding bar to move the same backwardly and forwardly, substantially as described.

8. In a dump-car of the class described, the combination of a supporting-framework, a drop-bottom therefor composed of a plurality of swinging sections, chain mechanism for each swinging section, a plurality of hook mechanisms, the hooks of which are of different lengths to engage and disengage said chain mechanisms, a sliding bar upon which such hook mechanisms are loosely mounted and by which they are moved into engaging and disengaging positions with the chain mechanisms in a successive manner, bracket mechanism secured to the supporting-framework of the car and provided with antifriction-rolls upon which said sliding bar is mounted and also with recesses in which said hook mechanisms are held and locked in their engaging positions with said chain mechanism, main operating-shaft mechanisms for moving said sliding bar backwardly and forwardly, and lever-and-ratchet mechanism on such main operating-shaft mechanism to rotate the same, substantially as described.

9. In a dumping-car, the combination with the car-body and the hinged dumping-door forming a part of the car-bottom, of means for locking the door in the closed position, an operating-rod extending longitudinally of the car-body, stationary devices mounted on the car-body at suitable intervals and forming supporting-guides for the rod which slides freely thereon, an operating-lever connected with the rod at one extremity, and a suitable operative connection between the rod and the locking means whereby the door may be locked in the closed position or released at pleasure.

10. In a dumping-car, the combination with the car-body, and a hinged dumping-door, of means for locking the door in the closed position, said means including stationary hangers and movable members coöperating with the hangers, an operating-rod supported and guided by the hangers and connected in operative relation with the movable locking members, and actuating means connected with the rod to release the movable locking members from or throw them into locking engagement with the door at will.

11. The combination with the car-body provided with a dumping-door, forming a part of its bottom, means for locking the door in the closed position including stationary hangers and movable locking members, the movable members being provided with means for imparting a limited degree of lifting movement when actuated to perform the locking function, to overcome any sagging tendency of the door, the latter being provided with members which are engaged by the locking means, an operating-rod, a suitable connection between the rod and the movable locking members, the hangers being provided with supporting-guides which the rod engages, and means for actuating the rod to perform the door-locking and door-releasing function.

12. In a dumping-car, the combination with the car-body and the hinged dumping-door forming a part of the car-bottom, of means for locking the door in the closed position, an operating-rod extending longitudinally of the car-body, stationary devices mounted on the car-body at suitable intervals and forming supporting-guides for the rod which slides freely thereon, an operating-lever connected with the rod at one extremity, a suitable operative connection between the rod and the locking means whereby the door may be locked in the closed position or released at pleasure, and means for positively locking the lever in a position corresponding with the closed position of the door.

13. In a dumping-car, the combination with the car-body and the hinged dumping-door forming a part of the car-bottom, of means for locking the door in the closed position, an operating-rod extending longitudinally of the car-body, stationary devices mounted on the car-body at suitable intervals and forming supporting-guides for the rod which slides freely thereon, an operating-lever connected with the rod at one extremity, a suitable operative connection between the rod and the locking means whereby the door may be locked in the closed position or released at pleasure, and a latch for positively locking the lever in the position corresponding with the closed position of the door.

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