No. 812,359. PATENTED FEB. 13, 1906.

S. OTIS.

DUMP CAR.

APPLICATION FILED FEB. 8, 1904.

Fig. 1.

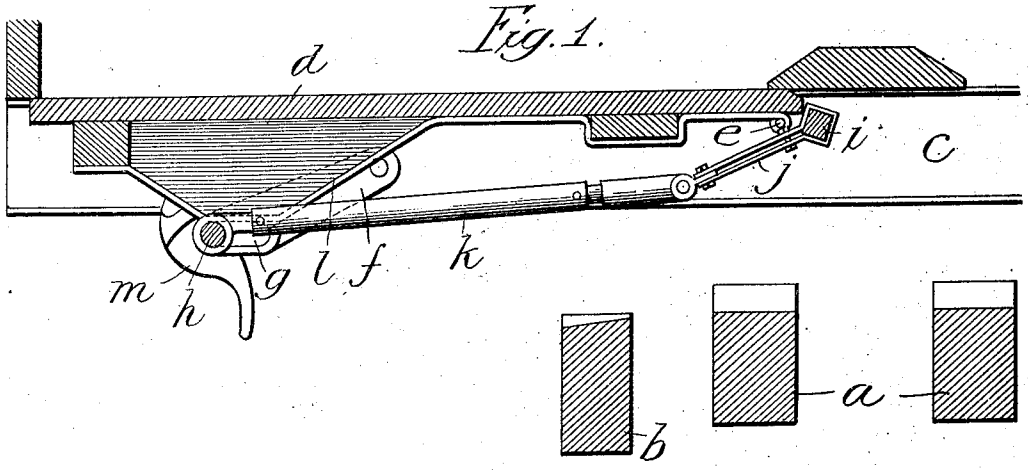


Fig. 2.

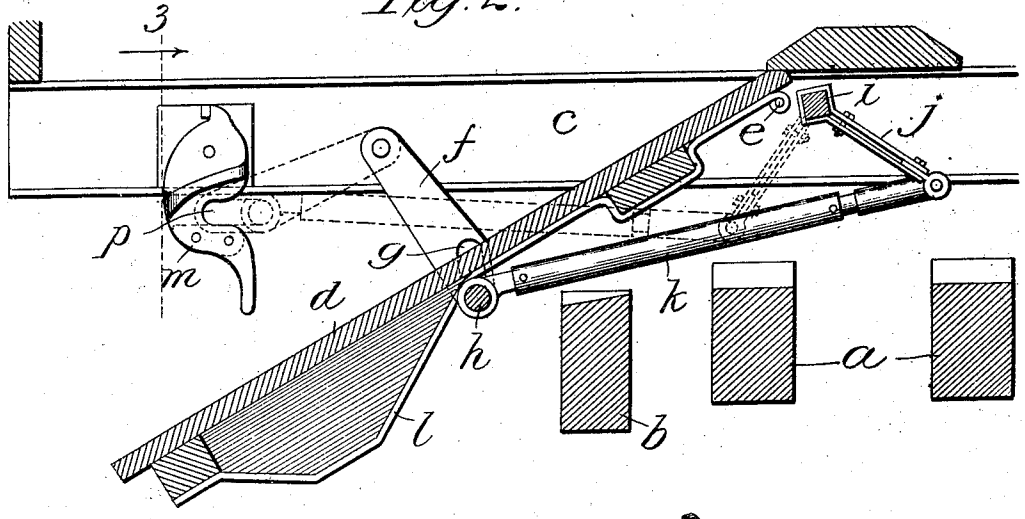


Fig. 3.

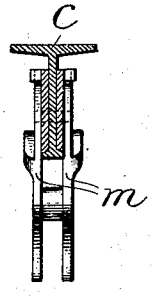
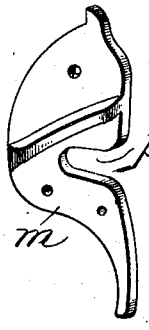


Fig. 4.



Witnesses:

Chas. E. Gaylord.

John Enders.

Inventor:

Spencer Otis.

By Thomas F. Sheridan.

Att'y.

UNITED STATES PATENT OFFICE.

SPENCER OTIS, OF CHICAGO, ILLINOIS, ASSIGNOR TO NATIONAL COAL DUMP CAR COMPANY, OF RAPID CITY, SOUTH DAKOTA, A CORPORATION OF SOUTH DAKOTA.

DUMP-CAR.

No. 812,359. Specification of Letters Patent. Patented Feb. 13, 1906.

Application filed February 8, 1904. Serial No. 192,635.

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.

The invention relates to that class of dump-cars which are provided with drop-bottom portions formed of a plurality of swinging sections opening downwardly, and especially to the means by which these doors are closed, held closed, and permitted to open, all of which will more fully hereinafter appear.

The principal object of the invention is to provide a dump-car having a drop-bottom portion formed of a plurality of swinging doors opening downwardly with simple, economical, and efficient lever mechanism for closing and opening the same.

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 portion formed of a plurality of swinging sections pivotally secured to the framework of the car at each side of the longitudinal center thereof, compound-lever mechanism pivotally secured to the framework of the car and adapted to close and hold the drop-bottom sections in closed position, pivoted latch mechanism for locking the compound-lever mechanism, and thereby the swinging sections, in closed position, and means for operating the said compound-lever mechanism.

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 cross-sectional view of a portion of a car provided with lever mechanism for opening and closing the drop-bottom sections, showing such parts as they appear when constructed in accordance with these improvements and in closed position. Fig. 2 is a similar view to that shown in Fig. 1, with the parts shown in open position; Fig. 3, a cross-sectional detail taken on line 3 of Fig. 2 looking in the directions of the arrow, and Fig. 4 an enlarged perspective detail of one of the pivoted latches more fully hereinafter set forth.

In illustrating and describing these improvements I have only shown and will herein describe that which I consider to be new, taken in connection with so much as is old as will properly 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.

In constructing a dump-car in accordance with these improvements I provide a supporting-framework having longitudinal sills *a b* and cross-sills or deck-beams *c*, which may be provided with side and end boards, as may be neccessary in such cases. To provide a drop-bottom for said car, I use a plurality of swinging sections *d*, which are pivotally secured at their inner edges *e* to the supporting-framework of the car and at each side of the longitudinal center thereof, so that they may open downwardly to discharge any material that may be therein to either or both sides of the railway-tracks. To provide simple, economical, and efficient mechanism for closing and opening these swinging sections which form the drop-bottom, a plurality of swinging levers *f* are provided and pivotally secured to the transverse sills or deck-beams of the car, as shown particularly in Figs. 1 and 2. These swinging levers are slotted, as at *g*, at or near their lower end portions, and through such slots are passed rod mechanisms *h*, which by means of said swinging levers are swung into and out of operative position, as will more fully hereinafter appear.

To swing these swinging levers, with their rod mechanisms, into and out of operative position, rock-shaft mechanism *i* is provided, having arms or levers *j* clamped thereto. Connecting-rod mechanism *k* is also provided and pivotally secured to the arms *j* and by means of the rods *h* to the swinging-lever mechanisms. The lower surface of the doors are provided with brackets *l*, having flat and inclined portions, so that said rods or levers may be arranged to contact the same, and thereby raise the swinging sections into and hold them in closed position, as will more fully hereinafter appear. A plurality of

latch mechanisms *m* is provided and pivotally secured to the transverse sills of the car, as shown particularly in Figs. 2 and 3. These latch mechanisms have notched portions *p*, with which the rods *h* may be engaged and which when the parts are engaged, as shown in Fig. 1, act to hold the same in closed position.

From the foregoing description of construction and operation it will be seen that whenever the rock-shaft *i* is rocked in one direction that it will vibrate the swinging lever and cause it to swing the rod mechanism *h* upwardly, and thereby raise the swinging sections into closed position. As the parts reach their closed position the rod mechanism contacts the pivoted latch and swings it outwardly until said sections are completely closed, when the notch *p* of said latch will register with the rod *h* and drop inwardly to locking position, thereby preventing any accidental opening of the parts. In opening the door the reverse is true. The rock-shaft is rocked in an opposite manner and the rod moves from its locking engagement with the latch until it is free of said latch, when said rod and levers again swing downwardly and permit the swinging sections to swing downwardly to open position.

The upper part of the pivoted latch mechanisms are arranged to contact lugs or projections *r* on the transverse beams, so as to limit the inward swinging movement of said latches. From a careful inspection of the foregoing it will be seen that I have provided mechanisms for opening and closing the swinging sections which form the drop-bottom of the car which are simple to understand, economical to build and repair, and very efficient in operation, all of which will be understood and appreciated by those skilled in the art.

I claim—

1. In a dump-car of the class described, the combination of a supporting-framework, a drop-bottom therefor 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 thereof, compound-lever mechanism pivotally secured to the framework of the car and adapted to swing and hold the swinging sections in closed position, pivoted latch mechanism for locking and holding the lever mechanism and thereby the swinging sections of the drop-bottom in closed position, and means for operating the said compound-lever mechanism, substantially as described.

2. In a dump-car of the class described, the combination of a supporting-framework, a drop-bottom therefor formed of a plurality of swinging sections pivotally secured at their inner edges to the framework of the car and at each side of the longitudinal center thereof, vibratable lever mechanism pivotally secured to the framework of the car to close said drop-bottom sections, pivoted latch mechanism for holding said vibratable lever mechanism and thereby the drop-bottom sections in closed position, and lever mechanism pivotally connected with said vibratable lever for vibrating the same, substantially as described.

3. In a dump-car of the class described, the combination of a supporting-framework, a drop-bottom portion formed of a plurality of swinging sections pivotally secured at their inner edges to the frame portion at each side of the longitudinal center thereof, a plurality of vibratable levers pivotally secured to the framework of the car, a rod engaging said vibratable lever mechanism for swinging the same and thereby the drop-bottom sections into and out of closed position, a rock-shaft, and a connecting-rod pivotally connected with said rod and with the rock-shaft to operate said vibratable lever mechanism, substantially as described.

4. In a dump-car of the class described, the combination of a supporting-framework, a drop-bottom portion formed of a plurality of swinging sections pivotally secured at their inner edges to the frame portion at each side of the longitudinal center thereof, a plurality of vibratable levers pivotally secured to the framework of the car, a rod engaging said vibratable lever mechanism for swinging the same into and out of closed position, a rock-shaft, a connecting-rod pivotally connected with said rod and with the rock-shaft to operate said vibratable lever mechanism, and pivoted latch mechanism for holding said rod and vibratable lever mechanism and thereby the drop-bottom sections locked in closed position, substantially as described.

5. 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 pivotally secured at their inner edges to the supporting-framework of the car and at each side of the longitudinal center thereof, swinging lever mechanism pivotally secured to the framework of the car, rod mechanism connecting a plurality of said swinging levers together whereby they are swung into and out of closed and open positions so as to contact said swinging bottom-sections and close or open the same, and means for swinging said rod and lever mechanisms into and out of said 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 pivotally secured at their inner edges to the supporting-framework of the car and at each side of the longitudinal center thereof, swinging lever mechanism pivotally secured to the framework of the car, rod mechanism connecting a plural-

ity of said swinging levers together whereby they are swung into and out of closed and open positions so as to contact said swinging bottom-sections and close or open the same, means for swinging said rod and lever mechanisms into and out of said positions, and latch mechanism engaging said rods so as to prevent a swinging movement of said vibratable levers, 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 pivotally secured at their inner edges to the supporting-framework of the car and at each side of the longitudinal center thereof, a plurality of swinging lever mechanisms pivotally secured to the framework of the car, rod mechanism connected with said swinging lever mechanisms and adapted to swing therewith into and out of open and closed positions so as to open and close said swinging sections, a rock-shaft, and a connecting-rod pivotally secured to said rock-shaft and to said rod and swinging lever mechanisms so as to swing the same into and out of said positions, 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 pivotally secured at their inner edges to the supporting-framework of the car and at each side of the longitudinal center thereof, a plurality of swinging levers pivotally secured to the framework of the car and provided with mechanism at their lower ends with which they swing into and out of closed and open positions, a rock-shaft, a connecting-rod pivotally connecting said rock-shaft and swinging lever mechanisms together so as to swing the same with the rod mechanism into and out of said positions, and pivoted latch mechanism for holding said rods and swinging levers and thereby the drop-bottom sections locked in closed position, substantially as described.

9. In a dump-car of the class described, the combination of a supporting-framework, a drop-bottom portion therefor composed of a plurality of swinging sections pivotally secured at their inner edges to the supporting-framework of the car and at each side of the longitudinal center thereof, a plurality of swinging levers pivotally secured to the framework of the car and provided with slots at their lower ends, rod mechanism arranged in the slots of said swinging levers with which it is swung into and out of closed and open positions, a rock-shaft, and a connecting-rod pivotally secured to said rock-shaft and rod and swinging lever mechanism for swinging the parts into and out of said positions, substantially as described.

10. 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 pivotally secured at their inner edges to the supporting-framework of the car and at each side of the longitudinal center thereof, a plurality of swinging levers pivotally secured to the framework of the car and provided with slots at their lower ends, rod mechanism arranged in the slots of said swinging levers with which it is swung into and out of closed and open positions, a rock-shaft, a connecting-rod pivotally secured to said rock-shaft and rod and swinging lever mechanism for swinging the parts into and out of operative position, and latch mechanism arranged to engage said rod and hold the same with the swinging levers and thereby the drop-bottom sections in closed positions, substantially as described.

11. A car provided with a suitable track, drop-door, in combination with a wedge member movable on said track beneath said door and a compound lever for moving said member outwardly and inwardly to close and open the door respectively, substantially as described.

12. In a dump-car, the combination of a car-frame, a dumping-door pivotally mounted therein, and door-supporting mechanism mounted in the car-frame in engagement with the door and movable transversely thereof between its longitudinal center and outer swinging edges, for supporting the door in both opened and closed positions at or outside of its longitudinal center.

13. In a dump-car of the class described, the combination of a plurality of dumping-doors forming the drop-bottom thereof and extending longitudinally of the car, a rock-shaft, and lever mechanism pivotally secured to the rock-shaft and secured to the frame of the car outside of the longitudinal center of the doors for operating said dumping-doors, substantially as described.

14. 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 pivotally secured at their inner edges to the framework of the car at each side of the longitudinal center, a plurality of vibratable door-supporting mechanisms pivotally secured in slotted plates on the framework of the car for closing and opening said swinging sections, rod mechanism for securing a plurality of said vibratable mechanisms together and holding them against lateral displacement, a rock-shaft, a connecting-rod pivotally secured to said vibratable mechanisms and rock-shaft, and a plurality of fixed latches secured to the framework of the car for holding said vibratable mechanisms in their closed position, substantially as described.

15. In a dump-car, the combination of a

car-frame, a dumping-door pivotally mounted therein, door-supporting mechanism mounted in the car-frame in engagement with the door, and movable transversely thereof between its longitudinal center and outer swinging edges for supporting the door in both opened and closed positions at or outside of its longitudinal center, and means for preventing the movement of the door-engaging portion of such supporting mechanism beyond the longitudinal center of the door.

16. In a dump-car, the combination of a car-frame, a dumping-door pivotally mounted therein, and door-supporting mechanism pivotally connected with the car-frame between the side of the car and the longitudinal center of the door and in engagement with the door between its longitudinal center and outer swinging edges when in opened position and during the movement of the door.

17. In a dump-car, the combination of a car-frame, dumping-doors pivotally mounted therein, and door-supporting mechanism connected with the car-frame between the side of the car and the longitudinal center of the dumping-doors and in engagement with such doors between their longitudinal centers and outer swinging edges in both opened and closed positions, for operating such doors and supporting them at or outside of their longitudinal centers in their open and closed positions.

SPENCER OTIS.

Witnesses:
ANNIE C. COURTENAY,
ANNA L. SAVOIE.