

(No Model.)

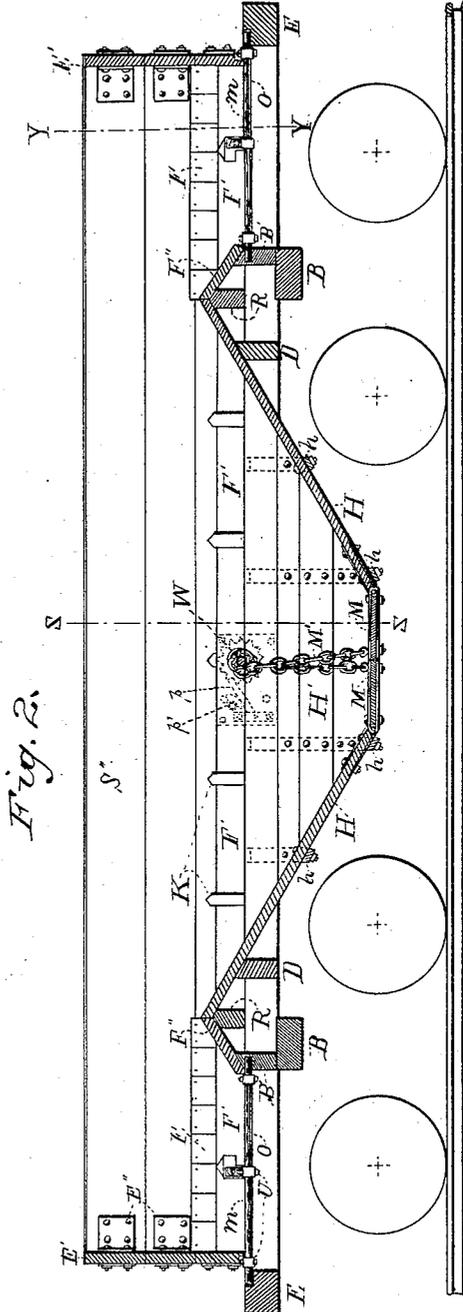
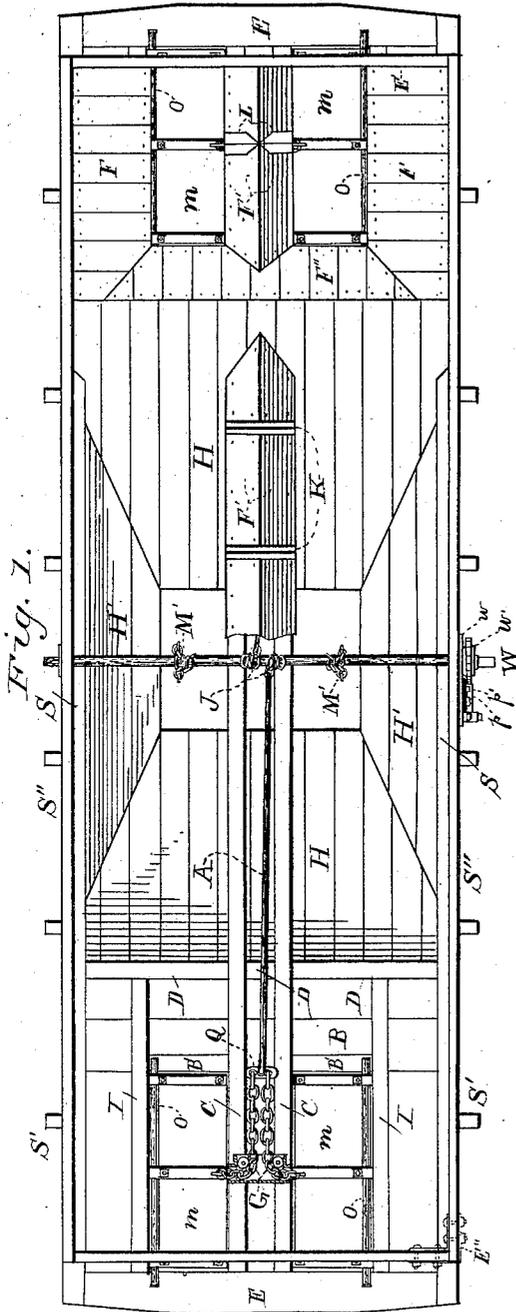
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W. B. SEARS & J. C. MATHEWS.

DUMPING CAR.

No. 303,757.

Patented Aug. 19, 1884.



Witnesses  
 Edwin Saunders  
 Alfred W. Newton

Inventors  
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Fig. 3.

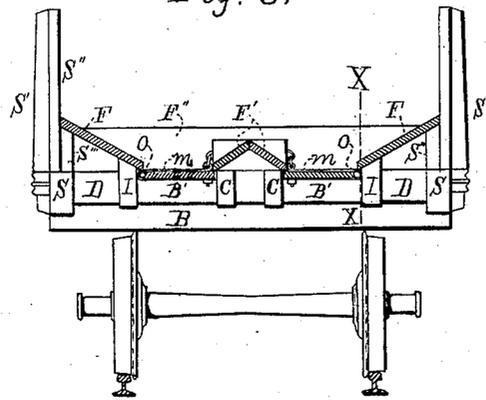


Fig. 4.

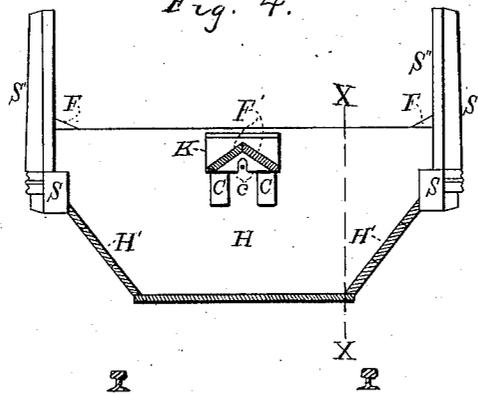


Fig. 5.

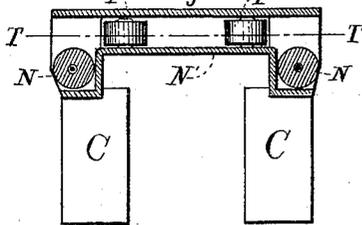
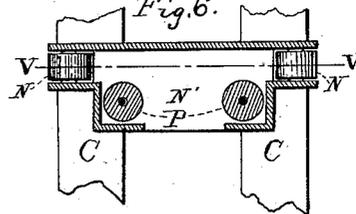


Fig. 6.



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# UNITED STATES PATENT OFFICE.

WILLIAM B. SEARS, OF EAST SAGINAW, AND JOHN C. MATHEWS, OF DETROIT, MICHIGAN; SAID MATHEWS ASSIGNOR TO SAID SEARS.

## DUMPING-CAR.

SPECIFICATION forming part of Letters Patent No. 303,757, dated August 19, 1884.

Application filed February 7, 1884. (No model.)

### To all whom it may concern:

Be it known that we, WILLIAM B. SEARS and JOHN C. MATHEWS, native citizens of the United States, residing, respectively, at East Saginaw, in the county of Saginaw, and at Detroit, in the county of Wayne, all in the State of Michigan, have invented a new and useful Dump-Car, of which the following is a specification.

The objects of our invention are to secure the discharge of the entire load without changing the body-framing, draw-gear, brake-gear, or trucks, or the general construction of the cars now in use on American railroads, and to arrange the car so that the entire load will be dumped between the rails.

The invention consists in the arrangement of the flooring of the car, the addition of suitable drop-doors, and suitable mechanism for closing, securing, and releasing the drop-doors, as will be fully set forth in the detailed description, drawings, and claims forming this specification.

In the accompanying drawings, Figure 1 is a top plan view of the car, with part of the flooring removed to show more clearly the end drop-doors and mechanism for operating the same. Fig. 2 is a vertical longitudinal section on lines X X of Figs. 3 and 4. Fig. 3 is a vertical cross-section on line Y Y of Fig. 2. Fig. 4 is a vertical cross-section on line Z Z of Fig. 2. Fig. 5 is an enlarged vertical cross-section of the sheaves and housing on line V V of Fig. 6. Fig. 6 is an enlarged horizontal section of the same on line T T of Fig. 5.

In the several views, S S are the side sills, I I the intermediate sills, C C the center sills, all running lengthwise of the car, and D D are distance-pieces or stiffeners running across between the aforesaid sills, all in connection with the body-bolsters B B, which run across under and sustain the longitudinal sills and the end sills, E E, to which the ends of the longitudinal sills are mortised and tenoned, forming the "body-framing" of the car.

To the under side of the body-bolsters B B are secured any suitable form of center plates and side bearings, through which the car-body rests on two bogie four-wheel trucks of any desirable form now used.

To the outside of the side sills, S S, any number of stakes S' S' are secured, to the inside of and against which the side boards, S'', are secured, with their lower edges resting on top of the side sills, S S. The end boards, E E, run across and rest on all the longitudinal sills in turn, and their ends are firmly secured to the ends of the side boards, S'', by sheet-iron corner-pieces, E' E'. The side and end boards form the sides and ends of the box that retains the load on the car.

In the ordinary construction, extending between the stiffeners D D, lengthwise of the car and across the car between the side sills, S S, is a hopper, which will be designated as the "central" hopper, which is formed of the inclined floors H H and H' H', which are supported by the suspension-bars h h h h, the ends of which are turned over the side sills, to which they are secured. The upper ends of the inclined floors H H and H' H' rest against the side sills, S S, and the stiffeners D D. At the bottom of the hopper is an opening provided with two drop-doors, M M, to which are attached chains M' M'. These chains are carried up and attached to the winding-shaft W, which runs across and rests on the longitudinal sills. The ends of the winding-shaft w pass through the side boards, S'' S'', one end passing through a winding-shaft plate, w, which is secured to the side board and side sill. The end of the bar protruding beyond this plate w is made square, and passes through the winding-shaft ratchet w'. To the square end of the shaft, which protrudes through the ratchet, a removable crank is adjusted, and the shaft is revolved, which in turn winds up the chains M' M', and raises the doors M M, thus closing the opening at the bottom of the center hopper to retain the load. Attached to the winding-shaft plate w are the pawl p and the dog p', which engage with the ratchet w', and secure the winding-shaft and drop-doors from unwinding and opening.

If, in addition to the construction so far described, a flat floor is laid on the longitudinal sills extending from the stiffeners D D to the end sills, E E, the result would be a car exactly corresponding to the well-known "hopper-bottom gondola" now extensively used,

in which only that part of the load resting vertically over the central hopper discharges itself, while nearly one-half the entire load remains resting on the flat floor, and must be 5 shoved down through the hopper. The invention hereinafter described and claimed, however, replaces the flat floors at either end of the car, and, in combination with the center hopper, allows the entire load to discharge 10 itself.

In the anthracite-coal trade, for which this invention has been more especially designed and perfected, it is absolutely necessary that the entire load shall fall between the rails into 15 the trestle-pockets.

To deflect or discharge that part of the load resting vertically outside of the rails so that the same will fall between the rails, inclined floors F F, extending from the center hopper 20 each way to the end of the car, are substituted for the original horizontal flooring. The outer ends of this flooring rest against the sides, S' S', of the body, and, if desired, on suitable timbers, S''' S''', Fig. 3, which in turn rest on 25 the side sills. The inner ends of these inclined floors rest on the intermediate sills, I I, Fig. 3, and slightly overlap the same.

The only available space between the body-framing through which the load can be dumped is between the intermediate sills, outside of the 30 center sills, and between the body-bolsters and the end sills, the space between the center sills being obstructed by the draw-gear, and the openings between the body-bolsters and stiffeners being too small to be of practicable 35 value for dumping purposes. All the unavailable spaces and the center sills and body-bolsters which are obstructions are therefore covered by inclined flooring F' F' and F'' F'', 40 and by continuing the end inclined floors, H H, of the central hopper up to form a junction with the inclined floors F'' F'' over the ridge-timbers R R. The lower edge of the inclined floors F'' F'' rests on and slightly overlaps the 45 saddle-blocks B' B', which rest on the body-bolsters B B and extend from the intermediate to the center sills. The inclined floors F' F' extend the entire length of the car and rest on cross-pieces c, Fig. 4, the lower edges 50 slightly overlapping the outside edges of the center sills. Across the top of these inclined floors are secured step-saddles K K. The top edges of these step-saddles are rounded or beveled, so as to deflect the load off to either side 55 onto the inclined flooring, which in turn will deflect it into the openings when the drop-bottoms are released. These step-saddles are for the purpose of furnishing train-men a foothold in passing over the car in the discharge 60 of their duty when the car is empty.

Suitable drop-doors, m m, are hinged to bars O O, the inner ends of which rest in a notch in the top of the saddle-blocks B' B', the outer ends resting in similar notches cut in the top 65 of the end sills, E E. The drop-doors are preferably constructed of oak, with U-straps U passing around the bars O and on each side

of the doors, and firmly secured to the same by through-bolts. The drop-doors shut close 70 up against the overlapping inclined floors, in which slight recesses are cut to admit the U-straps, so that by setting the bars O O close up against the bottom of the overlapping floors the doors, when closed, will fit tight up, so as 75 to safely retain the load. The bolt that passes through the end of the center U-strap of each door is an eyebolt, and to it are attached chains G G, Fig. 1, which pass up over sheaves N N, 80 Figs. 5 and 6, that are inclosed in housings N', Figs. 5 and 6. These housings are cast in one piece, and rest directly on and extend across both center sills, C C, the center inclined floors, F', being cut away to admit 85 them. They are covered by deflecting-blocks L L, Fig. 1, which prevent any part of the load lodging on the top of the housings. The chains are then carried around the sheaves P, Figs. 5 and 6, to the equalizer Q, Fig. 1. 90 From the center of the equalizer rods A run toward the center of the car. To the end of these rods winding-chains J, Fig. 1, are attached. The chains are in turn attached to the center of the winding-shaft W in such a manner that 95 in revolving the shaft to close the drop-bottoms of the central hoppers the end drop-bottoms, m m, will be simultaneously closed and secured. Part of the chains G, the equalizers Q, the rods A, and the winding-chains J are all covered 100 and protected by the inclined floors F', so that the load does not rest on or interfere with the free working of the same. All the strains on the sheaves are carried by the housings, and 105 neutralize each other, except the downward resulting strain resisted directly by the center sills and the longitudinal strains which are resisted directly by the opposite housing through the inclined floors F', which act as braces or 110 distance-pieces, and, in addition, as covers for the mechanism, and deflect the load from over the center sills into the center hopper.

It will be readily perceived that this invention 115 relates wholly to the body of the car, and can be used in a four-wheeled gondola-car as readily as in an eight-wheeled car; that the entire floor of the car consists of hoppers with suitable drop-bottoms to close the openings; that 120 all such drop-bottoms being connected with the same center winding-shaft are simultaneously closed, secured, and released by one operation, and that part of the hoppers discharge 125 part of the load between the end of the car and the truck center or body-bolster.

What we claim, and desire to secure by Letters Patent of the United States, is—

1. In a dump-car, the combination, with the 125 center hopper extending from one body-bolster to the other, of hoppers resting upon the body-framing of the car, and side bolsters, S''' S''', with hinged drop-doors m m, extending from the body-bolsters to the end sills, substantially 130 as and for the purposes set forth.

2. In a dump-car, the combination of the inclined floors F' F', the inclined floors F' F', the hinged drop-doors m m, the body-bolsters

B B, the end sills, E E, the center sills, C C, and the intermediate sills, I I, whereby the load resting between the body-bolsters and the ends of the car will discharge through the space  
 5 between the ends of the car and the body-bolsters and between the intermediate sills outside of the center sills, substantially as and for the purposes set forth.

3. In a dump-car, the combination of the inclined floors F F, the inclined floors F' F', the car ends E' E', and the hinged drop-doors *m m*, all arranged so that the drop-doors will shut up under and against the lower edge of the perpendicular car ends and inclined floors,  
 15 so as to securely retain the load, substantially as and for the purposes set forth.

4. In a dump-car, the combination of the winding-shaft W, placed across the car, the ratchet *w'*, the pawl *p*, the hinged end drop-bottoms, *m m m m*, which extend from the body-bolsters to the end sills, the rods A, chains G, and chains J, whereby all the drop-bottoms are  
 20 simultaneously operated, substantially as and for the purposes set forth.

5. In a car constructed substantially as described, the combination of drop-bottoms *m*, hinged to bars O, the ends of which lie on the end sills, and blocks placed on the body-bolsters, chains G, housings N', sheaves enclosed in the housings, the equalizers Q, rods A, and chains J, all operating as and for the  
 25 purpose set forth.

6. A car having the entire floor composed of hoppers with suitable step-saddles placed on the inclined floors thereof, substantially as and  
 35 for the purposes set forth.

7. In a dump-car, the saddle-blocks B' B', in combination with the doors *m m*, rods O O, straps U U, and notches cut in the end sills and saddle-blocks to retain the ends of the bars  
 40 O O, substantially as and for the purposes set forth.

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