(No Model.)

2 Sheets—Sheet 1.

J. M. GOODWIN.

DUMPING CAR.

No. 458,752. Patented Sept. 1, 1891.

Fig 1.

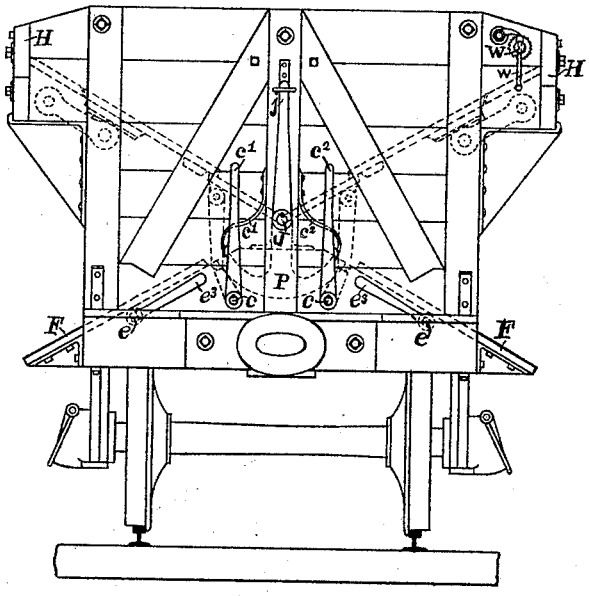
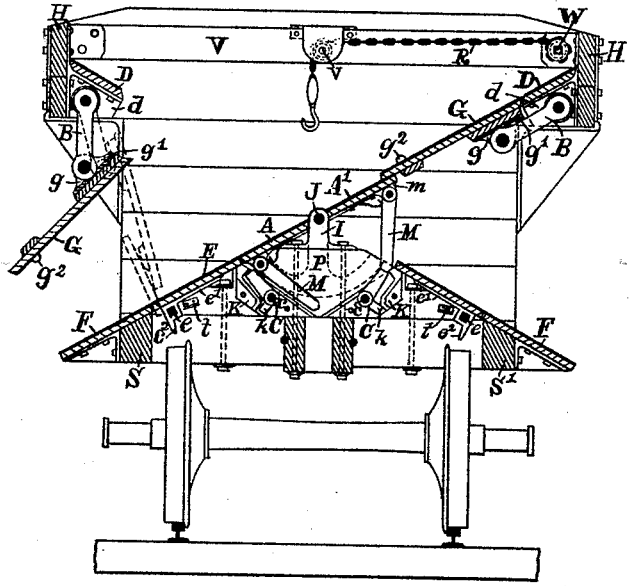


Fig 2.



WITNESSES.

Frank. Miller.

Albert H. Bates.

INVENTOR.

John M. Goodwin

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(No Model.)

2 Sheets—Sheet 2

J. M. GOODWIN.

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Fig 3.

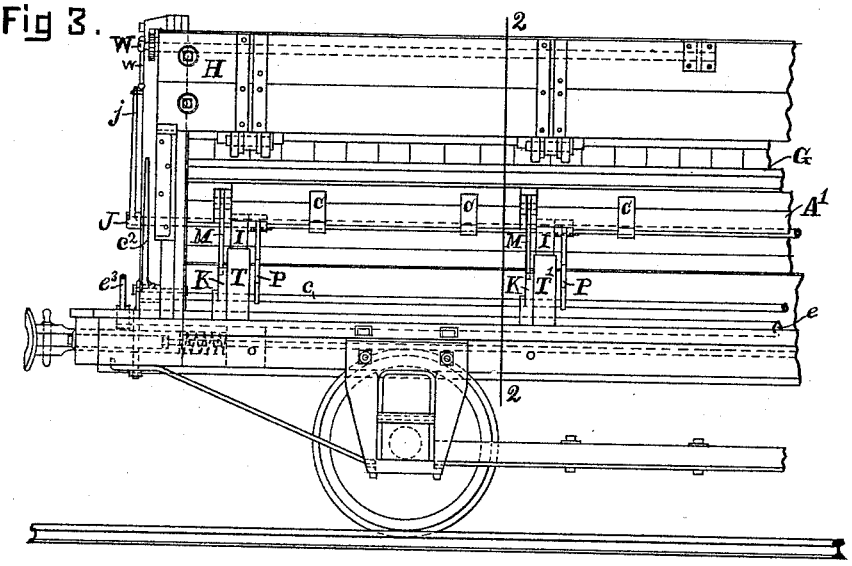


Fig 4.

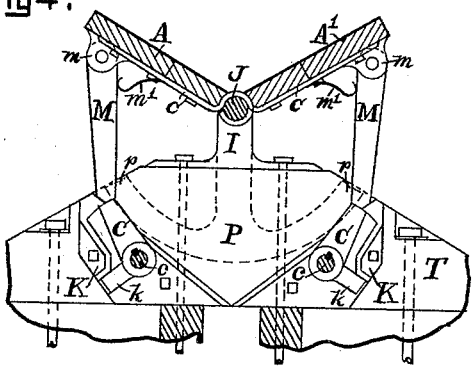
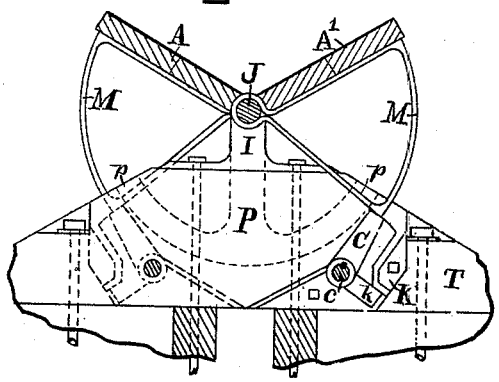


Fig 5.



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UNITED STATES PATENT OFFICE.

JOHN M. GOODWIN, OF SHARPSVILLE, PENNSYLVANIA.

DUMPING-CAR.

SPECIFICATION forming part of Letters Patent No. 458,752, dated September 1, 1891.

Application filed December 19, 1890. Serial No. 375,277. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. GOODWIN, a citizen of the United States, residing at Sharpsville, in the county of Mercer and State of Pennsylvania, have invented certain new and useful Improvements in Dumping-Cars, of which the following is a specification, reference being made to the drawings accompanying the same and made a part thereof.

My invention is an improvement in dumping-cars which discharge or dump the load without any careening or tipping of the car-body; and it is particularly an improvement in the class of non-careening dumping-cars in which the cargo-carrying floors incline downward from the sides toward the middle of the car, thereby forming a cargo-box which, when in the cargo-carrying position, is generally substantially V-shaped in cross-section, as shown in several prior patents heretofore granted to me.

The car which is shown in the drawings, and which contains my invention hereinafter described, is a car which, without any careening or tipping of the car-body and without any interference of the dumping apparatus with the running-gear of the car or with the track on which the car travels, may be made to discharge its load of dumpable material, first, the entire load outward from the car, outside the running-gear and on either side of the car; or, second, the entire load downward and inside the lower frame of the car, and thence between the track-rails; or, third, a part of the load on one side of the car and a part on the other side of the car, outside the track-rails; or, fourth, a part between the rails and a part on either side of the car, outside the rails, all of said several operations or modes of dumping the load being accomplished without any lifting of the load.

My invention consists, primarily, in the combination, with a car having a hinged side valve which, when in position where it forms a part of the cargo-carrying floor, pitches from the side to which it is attached downward toward the middle of the car, of a floor-section extending lengthwise of the car and hinged at or near the middle of the car, and means for supporting said section in and releasing it from the positions where it forms the bottom of the cargo-carrying floor and may support the inner edge of its associated side valves.

It also consists in the novel combination of mechanism for retaining the bottom floor-sections in and releasing them from the cargo-carrying position without lifting the load.

It also consists in novel combinations of mechanism provided for returning the parts to the cargo-carrying positions after the load has been dumped.

It also consists in the novel details of construction of the several parts of the car and the combinations and sub-combinations thereof, which are hereinafter described, and pointed out definitely in the claims.

Referring now to the drawings, Figure 1 is an end view of a car embodying my invention. Fig. 2 is a transverse vertical sectional view on line 2 2 of Fig. 3, the view being from the end of the car, which is shown in Fig. 3. The full lines in this figure show the position of the parts when the car is dumping its load to one side of the car, and the dotted lines in this figure show the position of the parts when the load is being dumped downward through the bottom of the car and between the track-rails. Fig. 3 is a side view of one end of the car, the discharge-floor sections having been removed for the purpose of more clearly showing the other parts. Fig. 4 is a detached sectional view showing the hinged floor-sections and mechanism for returning them to the position shown, for retaining them in that position, and for releasing them from that position. Fig. 5 is a similar view of a modified form of the same parts.

In the car represented in the drawings the levers and other mechanism for operating the several parts are provided on one end of the car only, and the parts can therefore be operated only from that end; but it is obvious that, if desirable, both ends of the car may be made alike in this respect.

Referring now to the parts by letter, S S′ represent the main sills, and T T′ represent trusses extending across the car between the main sills. To the tops of these trusses and in the middle of the car are secured the pedestal brackets I I, in which is mounted a shaft J, which extends the entire length of the car and out through one end.

A A′ represent bottom floor-sections, which

extend the entire length of the car, and are loosely hinged to the shaft J by means of strap-hinges C C, which are bolted to the under side of said floor-sections.

H H represent the top sides of the car. In the construction shown in the drawings each end of each top side is supported by a metal bracket, which is fixed to the corresponding corner-post of the car. Upon the inboard face of each top side the brackets *d d* are placed. The plates of these brackets extend entirely, or almost entirely, across the inboard face of the top sides, and being bolted to the top sides serve to combine the members thereof to and stiffen the top sides. On the top flanges of the brackets *d d* an upper inclined floor D is fixed, which extends the entire length of the car. The vertical web of each bracket, appropriately re-enforced locally by the boss, is perforated to admit the pivot of each pair of hinged links B B. In the construction illustrated in the drawings it is intended to employ on each side of the car four pairs of these hinging-links. The lower ends of these links are connected by pivot-pins with the brackets *g*, secured to the under side of the upper edge of the associate valve G. These valves G G extend the entire length of the car and they may be made of planks lying edge to edge combined as a valve by cleats. These wood valves may be faced with metal, or the valves may be made wholly of metal. The lower edges of the valves G G are supported by resting upon the hinged floor-sections A A. When the several parts of the car are in position to retain the load of the car, the upper edge of each valve G is prevented from swinging down while its lower edge is resting on the floor-section A by the flange *g'* on the bracket *g*, which lies above the links B B and engages with them when said links and valve have been moved to the position shown at the right-hand side of Fig. 2. Each of the main sills S S' is beveled from near its upper inner edge outward and downward, as shown. Supported by each sill thus beveled and by several brackets secured thereto and having the same pitch is the fixed inclined discharge-floor F.

Secured to the several trusses T T' on each side of the car are brackets in which are the bearings of a rock-shaft *e*.

E E represent movable discharge-floor sections extending the entire length of the car, one on each side thereof, which are rigidly connected each with its associate rock-shaft *e* by wrought-iron straps *e'*. The location of the rock-shaft *e*, the proportionate width of these floor-sections, and the proportions of the straps and the manner in which they are connected with the discharge-floor sections are substantially such as the drawings show, whereby when the discharge-floor sections are thrown inboard they will be supported by the inclined upper edge of the trusses T T' and in position where they will form a continuation of the hinged floor-sections A A' when the car is discharging its load at the side, as shown by the full lines at the left side of Fig. 2. When set for dumping a load between the sills of the car, the hinged discharge-floor sections E E are thrown outboard until stopped and held by their engagement with the fixed discharge-floor F. The engagement of the lugs e^2 on the strap *e'* with small brackets *t*, secured to the trusses T, also contribute to holding said hinged discharge-floor sections rigidly in the position shown by the dotted lines at the left side of Fig. 2. The end of each rock-shaft *e* extends through the end of the car, and the lever e^3 is secured to said rock-shaft, whereby the same may be rocked to move the discharge-floor sections E E into either of their two operative positions, as shown. When the hinged sections A A are in the position shown at the left side of Fig. 2, where they are serving as a part of the discharge-floor, they are supported upon the inclined upper edge of the trusses T T'.

Secured to the trusses T T' on each side of the car are the brackets K, in which are formed the bearings for the two rock-shafts *e*, and one end of each of said rock-shafts extends through the end of the car and is provided with a hand-lever, by means of which it may be rocked for the purpose hereinafter specified. Mounted upon said rock-shaft *e*, and secured thereto by set-screws or other appropriate means, are the bell-crank detents C. The lower arms of the detents engage each with a lug *k* on its associate bracket K, by which the upward movement of the upper arm of said detent is stopped. The end of the upper arm is, as shown, finished in the arc of a circle, of which the axis of the shaft is the center, and this end of the upper arm, when in the position shown, and the upper surface of the bracket K form a substantially V-shaped rest for the lower end of the strut M, secured to the under side of the floor-section A.

Secured to the under side of the outer edge of the floor-sections A A are supporting props or struts M. These struts may be pivoted to the brackets *m*, secured to the under side of said floor-sections, as shown in Fig. 4, or they may be made rigid with said floor-sections, as shown in Fig. 5, wherein said struts and the hinges of the floor-sections are made of the same piece of metal, braced as shown. When the floor-sections A are in a position where they form a part of a cargo-carrying floor, the struts M are supported by the engagement of their lower ends with the detents C and brackets K, as shown in the drawings. The bracket K is provided with a recess, into which the detent C may enter when the shaft is rocked, whereupon the prop M is released and slides inward over the detent C, and the floor-sections A A fall away from the load which they are carrying to the position shown at the left side of Fig. 2, where they form a part of the

discharge-floor. It will be noticed that when the struts are supporting the floor-sections A the strain on them is substantially an endwise or compression strain, and the strain on the detents is of a similar character. The strain on the rock-shaft is a shearing strain, because the detents are fastened to it close to the brackets K. By this construction and arrangement of the parts named the floors A are securely and firmly supported. In a four-wheel car, as shown in the drawings, it is proposed to use four struts and associated supporting devices on each side of the car, although more or fewer may be used, as desired. When the struts are pivoted to the lower side of the floor-sections A, a spring m' is provided, which exerts a continuous pressure on said strut, tending to throw its lower end outward.

It is also desirable to provide means whereby the detents will be automatically returned to the position shown in Figs. 4 and 5, where they support the struts. For this purpose I provide a leaf-spring c^2, engaging with the lever or handle c', which is rigidly secured to each rock-shaft c at the end of the car, which spring serves to return the handle, and consequently the shaft c and detents, to the retaining position when they have been moved out of that position to release the floor-sections.

When loaded, the position of the parts constituting the cargo-box on both sides of the car is as shown on the right side of Fig. 2. When it is desired to dump the load wholly at one side—for example, on the left side, as shown in Fig. 2—care is first taken to see that the hinged discharge-floor section E is resting on the trusses T, forming a continuation of the fixed discharge-floor section F. The lever c' on the left side of the car is moved to the left, thereby rocking the shaft c and withdrawing the ends of the detents from beneath the struts M. The floor-section A on the left side of the car drops away from the load, thereby releasing the valve G, which thereupon falls and swings outboard, and the floor-section A swings downward until caught and supported on the trusses T, as shown by the full lines in Fig. 2. It will be noticed that the fixed inclined floor D, the valve G, and the hinged floor-section A on the right side of the car and the hinged floor-section A and the two discharge-floors E and F on the left side of the car form a continuous downwardly-inclined platform extending the entire length of the car, over which the load slides by gravity and is discharged wholly outside the running-gear.

To discharge through the lower frame of the car and between the rails the hinged discharge-floor section E is first swung to the position shown in Fig. 2 by the dotted lines. Then when the shaft c is rocked and the floor-section A released it falls, as before. The valve G thereby released swings outward until it engages with the discharge-floor section E, as shown. An opening is thus formed between the hinged section A and the fixed discharge-section F, through which the load falls between the rails. The valve G is returned to cargo-carrying position by means of a shaft W, mounted in bearings secured to the top sides. An iron tie-plate V extends across the car midway between its end, and in it is mounted a sheave v, over which a chain R passes. The chain is fastened to the shaft W, which extends through the end of the car, and a lever w is provided for winding the chain on the shaft. A hook on the end of the chain hooks into a staple g^2 on the valve. As the shaft W is revolved the valve G is drawn to its cargo-carrying position. A ratchet and pawl at the end of the shaft W holds the valve G while the hinged floor-section A is being returned to its cargo-carrying position.

The mechanism provided for returning the sections A A to the cargo-carrying position is as follows: P represents a lever, which is rigidly secured to the central shaft J and stands normally in a substantially vertical position. Extending to each side of the vertical arm are the arms p p, the ends of which engage beneath the sections A. When the shaft J is rocked by the lever j at the end of the car, the section A is swung upward until the struts automatically assume the position in engagement with the dogs C, where they support said section A. I have employed four levers P, constructed as above described, located at about equal distances apart, but less or more may be employed, if thought desirable. When the section A is secured, as above described, in its cargo-carrying position, the valve G is lowered until its edge rests upon said section A, as first described.

In the foregoing description I have described a symmetrical car, as shown in the drawings—that is, a car in which both sides are alike; but it is clear that a car capable of dumping between the rails or on one side could be made by using on one side of the car only the mechanism I have shown on both sides, and I therefore do not wish my claims to be construed as including the mechanism claimed only when duplicated—that is, used on both sides of the car—except when distinctly so stated therein.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a dumping-car, the combination of a fixed side, a side valve hinged thereto, and a hinged lower floor-section adapted when in the cargo-carrying position to support the lower edge of said valve, and mechanism for supporting said lower floor-section in and releasing it from said cargo-carrying position, substantially as and for the purpose specified.

2. In a dumping-car, the combination of a fixed top side, a side valve hinged thereto, and a lower floor-section hinged near the middle

of the car, mechanism for supporting said floor-section in and releasing it from a position where it supports the side valve and forms with it a continuous downwardly and inwardly inclined cargo-carrying floor, with an outwardly-inclined discharge-floor located below the cargo-box, and means for stopping and supporting said hinged lower floor-section when released from its cargo-carrying position in a position where it forms with said discharge-floors a continuous downwardly and outwardly inclined discharge-floor, substantially as and for the purpose specified.

3. In a dumping-car, the combination of fixed top sides and side valves hinged thereto with a centrally-placed shaft extending lengthwise of the car, two lower floor-sections loosely hinged to said shaft, and means for supporting said sections with their free edges above their hinged edges and beneath the lower edges of said valves, and outwardly and downwardly inclined cross-trusses adapted to support said sections when released by their other supports in position with their free edges below their hinged edges, substantially as and for the purpose specified.

4. In a dumping-car, the combination of a hinged lower floor-section, struts secured to its under sides, and devices secured to the frame of the car adapted to engage with the lower ends of said struts and hold them in a substantially upright position, whereby the free edge of the floor-section is supported above the hinged edge, substantially as and for the purpose specified.

5. In a dumping-car, the combination of a hinged lower floor-section and struts or props secured to its under side with brackets secured to the frame of the car, a rock-shaft journaled in said brackets, and detents secured to said rock-shaft and adapted to engage with said struts, substantially as and for the purpose specified.

6. In a dumping-car, the combination of a hinged lower floor-section, struts or props secured to its under side, brackets secured to the frame of the car, a spring-actuated rock-shaft journaled in said brackets, and detents rigidly secured to said shaft and adapted to engage with said struts, substantially as and for the purpose specified.

7. In a dumping-car, the combination of a hinged lower floor-section and struts secured to its under side with brackets K, having the lugs *k*, a rock-shaft journaled in said brackets, and bell-crank detents secured to said shaft and adapted to engage with said struts, substantially as and for the purpose specified.

8. In a dumping-car, the combination of a hinged lower floor-section and struts pivoted to its under side and springs pressing said struts outward with brackets secured to the frame of the car, a rock-shaft journaled in said brackets, and detents secured to said rock-shaft, substantially as and for the purpose specified.

9. In a dumping-car, the combination of two lower floor-sections hinged to the same centrally-located longitudinal shaft, and the levers P, rigidly secured to said shaft having the oppositely-extended lateral arms *p p*, substantially as and for the purpose specified.

JOHN M. GOODWIN.

Witnesses:
EUNICE C. M. GOODWIN,
H. V. P. GOODWIN,