







# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN DUMPING-CARS.

Specification forming part of Letters Patent No. 193,101, dated July 17, 1877; application filed May 15, 1877.

*To all whom it may concern:*

Be it known that I, MATTHEW VAN WORMER, of Dayton, in the county of Montgomery and State of Ohio, have invented a new and useful Improvement in Dump-Cars, which improvement is fully set forth in the following specification and accompanying drawings, in which latter—

Figure 1 is a top view of one of my improved dump-cars. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical cross-section in the line *xx* of Fig. 2. Fig. 4 is a bottom view of the same. Fig. 5 is an end view of the car in the act of dumping, one part being broken away to exhibit the gate-operating mechanism. Fig. 6 is a perspective view of the bearing of the king-bolt used in my dumping-car. Fig. 7 is a perspective view of the king-bolt used in my dumping-car.

The nature of my invention consists in certain constructions, combinations, and arrangements of parts hereafter fully described and specifically claimed.

In the drawings, A represents a truck, such as is ordinarily used for gondola-cars, having four wheels, *a*, and spring-bed A', generally termed "cross-timber." Upon two trucks of this description the car-bed rests, and it is fastened thereto by means of universal joints, serving as king-bolts and dumping-bolts. The cross-timber A' has a socket, B, with a flange, B<sup>1</sup>, fastened to it in a central position. The said socket B incloses a ball-head, C, which forms the lower end of the king-bolt C<sup>1</sup>. A plate or flange, C<sup>2</sup>, is attached to the king-bolt C<sup>1</sup>, so that it may be conveniently fastened to a plate, D, on the lower part of the car-frame. The socket B is provided with a transverse slot, *b*, (shown in Fig. 6,) which permits a lateral inclination of the king-bolt and car-body of about forty-five degrees.

The king-bolt C<sup>1</sup>, its ball end C, and plate C<sup>2</sup> may be cast or wrought in one piece, as shown, and the socket B contains the bearing of the lower part of the ball C, the upper part of which is covered by two crown-pieces, B<sup>2</sup>, fitted upon the socket B by means of a step, *b*<sup>2</sup>, and suitably fastened with bolts or otherwise.

The outer car-frame E is made in the ordinary manner, but is provided with a special

cross-shaped dumping-frame, consisting of a number of longitudinal bars, E<sup>1</sup>, strengthened above each truck by means of two cross-bars, E<sup>2</sup>, with which they are interlocked, the whole of them being securely fastened to the frame E. The cross-bars E<sup>2</sup> are at such distance from each other that when the car is dumped they have the cross-timber A' of the truck between them, without touching either it or the wheels *a*. The oblong space formed by the crossing of the bars E<sup>1</sup> and E<sup>2</sup> is bridged over by the plate D, which is well fastened to the same, and thereby furnishes a firm connection between the car and its described king-bolt. A staple or chain, *d*, may be fastened between and to one of the cross-bars E<sup>2</sup> and the cross-timber A', to prevent the truck A from running off if the king-bolt should break.

The car-body is kept in horizontal position by means of transverse slides F, placed between it and the cross-timber A', and held to the lower surfaces of the car-frame by means of longitudinal guide-rods *f*, which pass either through the said slides or through metallic bearings *f*<sup>1</sup>, attached to the said slides.

To prevent the slides F from striking the wheels *a* when the slide is drawn out so the car may dump, I provide them with cross-channels *f*<sup>2</sup>, of appropriate depth and width.

The cross-timber A has at each side of the socket B a strong friction-roller, F', by which the slides F are supported without wear when either the slide or the truck moves independently of the other.

Each slide F may be provided at its top with friction-rollers *f*<sup>3</sup>, which bear and travel upon the lower surfaces of the car-frame E and the longitudinal bars E<sup>1</sup>.

The tracks of the said rollers F' *f*<sup>3</sup> upon the slides F and the car-frame E and bars E<sup>1</sup> may be lined with metal to prevent the wearing away of the wood.

The slides F are moved from and toward the cross-timbers A' by means of cords or chains G G<sup>1</sup>, as seen in Fig. 4. A shaft, G<sup>2</sup>, having a wheel, *g*, which is moved by a pinion, *g*<sup>1</sup>, on a crank-shaft, *g*<sup>2</sup>, serves as the drum for winding the said cords or chains upon it, and thereby moving the slides F. The cords G are fastened directly to the shaft G<sup>2</sup> and slides F, and serve to pull the slides from the cross-



timbers of the trucks preparatory to dumping. The cords  $G^1$  are also fastened to the shaft  $G^2$ ; but they are passed around pulleys  $g^3$  at the ends of the car, and then fastened to the outer sides of the slides  $F$ , and they thus serve to pull the slides to their normal position upon the cross-timbers  $A'$ . As the car is dumped to one side only at a time, the cords  $G$   $G^1$  of the opposite side are either detached from the corresponding slides, or the car may be provided with one separate shaft,  $G^2$ , for each side of the car, in which case another crank-shaft,  $g^2$ , is placed on the other side.

The car-body is provided with a flooring,  $H$ , fastened upon the frame  $E$  and the bars  $E^1$   $E^2$ , and a number of stakes,  $H'$ , are inserted in the floor, and are fastened below, by means of staples  $h$ , to the inner sides of the frame  $E$ .

The end-boards  $I$  of the car-body are fastened to the stakes, but the side-boards  $I'$  are hinged to the tops of the stakes  $H'$  at  $i$ , as seen in Figs. 1, 2, 3, 5, so that they may swing outward.

I have shown one board,  $I'$ , at each side of the car; but it is more advantageous in cars of great length to have two such boards at each side.

Each side-board  $I'$  is provided with one or more draw-bolts,  $J$ , operated by levers  $j$ , whereby the lower part of the side-board may be fastened in its normal position by pushing the draw-bolt  $J$  down into a socket,  $J'$ , on the car-frame  $E$ .

A draw-bolt,  $K$ , is fastened to the side of the car-frame, which, in its normal position, projects above the floor  $H$ , and thereby keeps the side-boards or gates  $I'$  closed.

The draw-bolt  $K$  is provided with an operating-lever,  $K'$ , pivoted at  $k$  to the car-frame, and being so shaped that when the car is dumped it strikes one of the wheels  $a$ , and thereby withdraws the draw-bolt  $K$  below the bottom surface of the car, thereby permitting the board  $I'$  to swing off, as shown in Fig. 5.

Operation: When the loaded car arrives at its destination, the bolts  $J$  of the dumping side are withdrawn from the sockets  $J'$ . By turning the crank  $g^2$  on the opposite side the corresponding slides  $F$  are moved off the cross-timbers  $A'$ , and the car is deprived of its support on the dumping side, and it instantly dumps either of itself or by means of a slight lift on the other side. Near the end of the dumping the lever  $K$  comes in contact

with the wheel  $a$ , and by thus moving the draw-bolt  $K$  down liberates the board  $I'$ , whereupon the load in the car is discharged. The car-body is then swung back in its horizontal position, and the slides  $F$ , by reversing the movement of the crank  $g^2$ , are moved back to their normal position, for holding the car-body steady before the car is started back to reload.

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

1. The outer frame  $E$  of a dumping-car, having the bars  $E^1$   $E^2$  and the plate  $D$  arranged above the supporting-truck, whereby they form a central support for the car-body, and the lateral bars  $E^2$ , in dumping, pass down between the cross-timber and the wheels of the truck without touching them, substantially as set forth.

2. The connection between a dumping-car and a truck, consisting of a plate,  $B^1$ , having a socket,  $B$ , with spherical bearing and crown-pieces  $B^2$ , and a plate,  $C^2$ , having a neck,  $C^1$ , and ball  $C$ , substantially as set forth.

3. In a dumping-car, the horizontally-moving slides  $F$ , substantially as set forth.

4. The stakes  $H'$ , fitted into the floor  $H$  of a gondola or dumping car, and fastened to the inner sides of the frame  $E$  by staples  $h$ , whereby their resistance to outward strain is increased, substantially as set forth.

5. The combination of the gate  $I'$  and the lower draw-bolt  $K$ , having its fulcrum  $k$  on the dumping-frame  $E$ , whereby the operating-lever  $K'$  is brought in contact with the wheel  $a$  when dumping, substantially as set forth.

6. The combination of the cross-timber  $A'$ , having a friction-roller,  $F'$ , and the slide  $F$ , substantially as set forth.

7. The combination of the car-frame  $E$  and bars  $E^1$ , having guide-rods  $f$ , and the slides  $F$ , having friction-rollers  $f^3$ , substantially as set forth.

8. The combination of the car-frame  $E$ , shaft  $G^2$ , cords or chains  $G$   $G^1$ , pulleys  $g^3$ , and slides  $F$ , substantially as set forth.

Witness my hand in the matter of my application for a patent for an improvement in dump-cars.

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Witnesses:

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