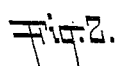
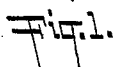


2 Sheets—Sheet 1.

No. 496,672.

Patented May 2, 1893.



WITNESSES:

WITNESSES:
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(No Model.)

2 Sheets—Sheet 2.

W. A. THACHER.
DUMPING CAR.

No. 496,672.

Patented May 2, 1893.

Fig. 3.

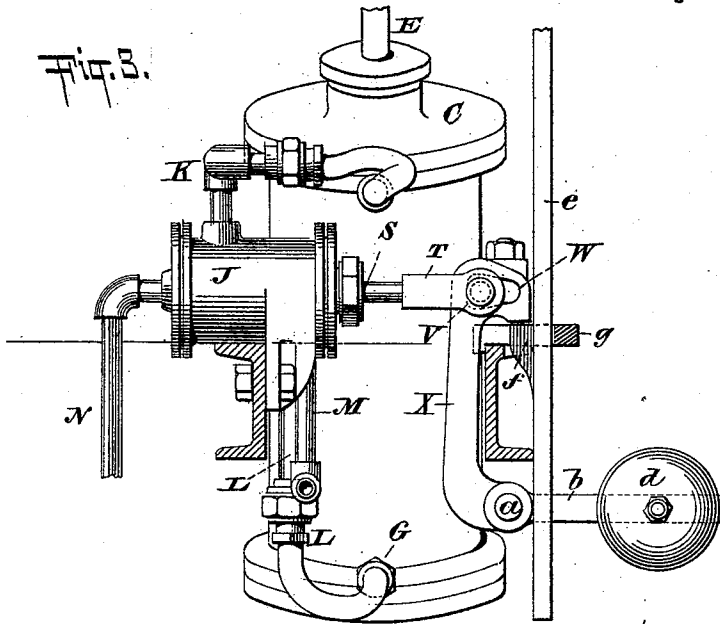


Fig. 4.

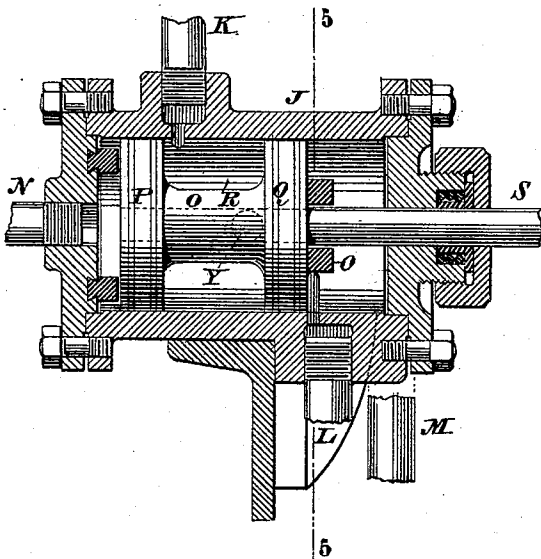
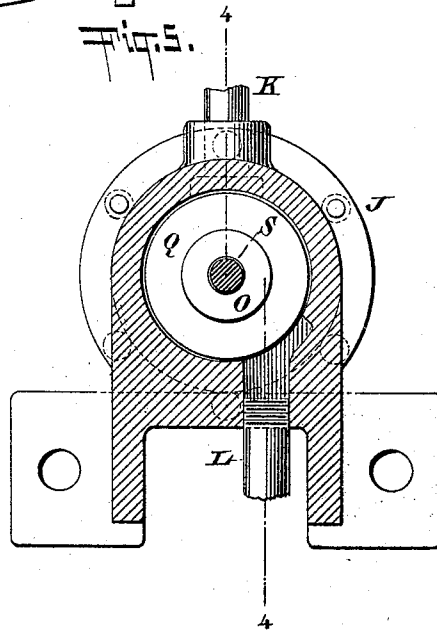


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM A. THACHER, OF NEW YORK, N. Y.

DUMPING-CAR.

SPECIFICATION forming part of Letters Patent No. 496,672, dated May 2, 1893.

Application filed February 7, 1893. Serial No. 461,322. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. THACHER, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Dumping-Cars, of which the following is a specification.

The invention relates to improvements in dumping cars, and pertains more particularly to the class of cars shown and described in Letters Patent of the United States numbered respectively 489,242 and 489,243, granted to William A. Thacher January 3, 1893. In the aforesaid Letters Patent the cars are provided with tilting body sections and compressed air mechanism whereby said sections may, from the engine, be tilted to dump their load and then returned to their horizontal position. In the patent numbered 489,242 above referred to is shown and described a system of compressed air mechanism consisting of a dumping cylinder, a latch cylinder and a release valve cylinder, the dumping cylinder being used for tilting and returning the car body, the release valve cylinder for admitting air to one end of the dumping cylinder and exhausting it from the other end thereof, and the latch cylinder for locking the car in its horizontal position and releasing the same just prior to its being tilted to dump the load.

My present invention consists in a novel construction, arrangement and combination of the dumping cylinder and release valve and latch cylinder, with their connections, and in the present instance instead of employing independent latch and release valve cylinders, I employ a single cylinder which in connection with its valve is adapted to serve as a combined latch and release valve cylinder.

The particular mechanism constituting the present application for Letters Patent is designed with special reference to the cars illustrated in the above mentioned Letters Patent No. 489,243 and is applicable to the said cars as a substitute for the compressed air mechanism illustrated in said patent. The invention is not confined to any special style of transportation car, and I refer to the cars shown in the said Patent No. 489,243 as illustrating cars to which the present mechanism is without alteration directly adapted.

In accordance with the invention sought to

be protected hereby, I mount upon the truck frame of the car an oscillating dumping cylinder whose piston rod will extend upward and be connected with the tilting car body, and intermediate the inlets to the opposite ends of the dumping cylinder is provided the combined release valve and latch cylinder having inlets for the air from the main pipe lines and outlets therefor to the opposite ends of the dumping cylinder. Within the combined release valve and latch cylinder is provided a sliding piston valve whose rod is directly connected with the latch which locks the car body in its horizontal position and releases the same preparatory to said body being tilted.

The particular nature of the invention, together with the details of a construction embodying same will be pointed out more fully hereinafter, with reference to the accompanying drawings, in which:—

Figure 1 is a side elevation of the dumping cylinder, the release valve and latch cylinder and the pipe connections, together with detached portions of the truck frame and tilting car body. Fig. 2 is a top view of same, partly in section. Fig. 3 is a section of same on the dotted line 3—3 of Fig. 1 and looking in the direction of the arrow. Fig. 4 is an enlarged vertical longitudinal section through the combined latch and release valve cylinder, said section being on the dotted line 4—4 of Fig. 5, and Fig. 5 is a vertical transverse section through the combined release valve and latch cylinder on the dotted line 5—5 of Fig. 4, looking to the left.

In the drawings A designates a portion of the truck frame of the car, and B a portion of the tilting body of same. The dumping cylinder is lettered C and, as illustrated more clearly in Fig. 2, is mounted upon the trunnions D, D, so as to oscillate during the movement of tilting the car body as indicated by dotted lines in Fig. 1. The dumping cylinder C is provided with the usual piston connected with the rod E which, as indicated in Fig. 1, is pivotally secured at its upper end to the car body. The dumping cylinder C is provided with inlets F, G, one inlet being at each end of the cylinder.

The main pipe lines extending through the train are designated respectively by the let-

ters H, I, and these pipe lines lead from a reservoir of compressed air located on the locomotive in a well-known manner. On the locomotive is provided a valve within reach
5 of the engineer by which the air may be directed into either the main pipe line H for tilting the car body or into the main pipe line I for returning the car body to its former horizontal position.

10 Intermediate the main pipe lines H, I, and the inlets F, G, to the dumping cylinder, is suitably mounted the combined release valve and latch cylinder, J having pipe connections K, L, leading therefrom to opposite ends of
15 the said dumping cylinder and pipe connections M, N, leading to the main pipelines H, I.

Within the cylinder J is provided the piston valve O having the heads P, Q, and forming between said heads the space R. The
20 piston rod S connected with the piston valve O has upon its outer end the head T containing the pin V which passes loosely through the elongated slot W formed at the upper end of the pivoted latch X hereinafter more particularly referred to. The cylinder J is also
25 provided with an exhaust port Y illustrated by dotted lines in Fig. 4, and said cylinder is stationary on the truck frame while the dumping cylinder C adjacent thereto is adapted to oscillate on the trunnions D, D. A portion
30 of the connections between the said cylinder J and the inlets F, G, to the dumping cylinder are flexible as indicated in Figs. 1 and 2, the purpose of the flexibility of the connections being to permit the oscillatory movement of the dumping cylinder without injury to or strain upon the cylinder J or its pipe
35 connections.

The latch X is pivotally mounted at *a* and
40 is provided with the arm *b* supporting the weight *d*, the latter as indicated in Fig. 3, having the effect of preserving a constant tension in the upper end of the latch X outward toward the bar *e*, which is carried by the car
45 body and provided with the shoulder or projection *f* adapted to be engaged by the nose of the latch X. The bar *e* extends downward through a guide *g* shown in Fig. 2 and is loose at its lower end in order that it may move
50 with the tilting car body.

The advantages of the mechanism constituting the present invention will be best understood from an explanation of the operation of the same. When it is desired to tilt the
55 body sections of the cars composing the train, the air will be turned into the pipe H and pass throughout the train, the result being that at each car the air will pass upward through the pipe M into the combined release valve and
60 latch cylinder J and drive the piston valve O therein to the end of the cylinder, in which it is illustrated in Fig. 4, this movement having the effect of drawing the upper end of the pivoted latch X from over the shoulder *f* and
65 causing the head P of said valve to pass beyond the pipe K and the head Q beyond the pipe L, under which condition of the valve

the air which entered the cylinder through the pipe M will immediately upon the valve
O having been moved from over the pipe L 70 pass downward through said pipe L and into the lower end of the cylinder C, elevating the piston therein and causing the rod E to tilt the body of the car. It will be observed that the first action of the air ascending through
75 the pipe M from the pipe H is to free the latch X from the shoulder *f* in order that the car body may be free to be tilted upward, and that immediately thereafter the air descends through the pipe L and into the lower end of
80 the dumping cylinder for the purpose of tilting the car body. After the car body has been tilted and its contents discharged the engineer will cut off the supply of air from the main pipe line H and direct it into the main
85 pipe line I, in order that the air may ascend through the pipe N of each car of the train and pass thence into the cylinder J and drive the piston valve O to the opposite end of the cylinder, causing thereby the pipe K to be put
90 into communication with the pipe L and moving the pivoted latch X to its outward position, being that illustrated in Fig. 3; the movement of the valve O under the force of the air from the pipe N also causes the head Q of
95 said valve to cover the port leading from the pipe M and establishes a communication between the pipe L and the exhaust Y. Under the condition of the valve O when moved to the end of the cylinder J opposite to that
100 at which the pipe N enters it will be noted that the air from the main pipe line I will ascend through the pipe N and pass through the pipe K to the upper end of the dumping cylinder C, causing the piston in the latter
105 to descend and, through its rod E, draw the tilting car body to its former horizontal position. While the air passes to the upper end of the cylinder C for the purpose of returning the car body, the air contained in the
110 lower part of said cylinder and the pipe connections L may exhaust through the space R and aperture Y, thus releasing the air from the lower side of the piston in the dumping
115 cylinder and facilitating the full and unobstructed action of the air entering the upper end of said cylinder. The cylinder J and valve O thus not only operate the latch X but direct the air from the main pipe lines into
120 the respective ends of the dumping cylinder and permit the release of the air from one side of the piston in said dumping cylinder while the active air is entering at the other side thereof. The cylinder J is thus a combined release valve and latch cylinder, and
125 performs the functions of both the release valve cylinder and the latch cylinder described in the aforesaid Letters Patent No. 489,242. When the air is admitted from the pipe M to the cylinder J, the rod S immediately, without any lost motion, draws the
130 latch X from over the shoulder *f* but, owing to the elongated slot W, and the fact that the rod S moves outward before the bar *e* de-

scends, the reverse movement of the said rod S does not throw the said latch W over the said shoulder *f*, the weight *d* being utilized to bring the latch X outward to its extreme position. When it is desired to tilt the car body it is necessary to entirely free the latch X from the shoulder *f*, but during the return movement of the car body the latch X will be in its outward position before the shoulder *f* arrives at its lower position, shown in Fig. 3, and hence the lower surfaces of said shoulder are inclined and the elongated opening W is provided in order that during the descent of the bar *e* with the car body, the said shoulder may operate as a wedge and pass downward against and below the nose of the latch X, pushing the latter inward to the extent of its elongated opening W while the weight *d* preserves the contact of the latch and shoulder until the latter has passed to its lower position, when the weight will immediately throw the upper edge of the latch outward and engage the said shoulder. During the motion of the car body connected to the rod E, the dumping cylinder C oscillates on its trunnions D sufficiently to prevent any straining of the connections and permit the rod E to yield to the line of travel of said body. The mounting of the cylinder C so as to oscillate is a feature of importance, since thereby the mechanism may be simplified and rendered positive, durable and efficient.

Without limiting my invention to the details of construction nor to any special style of automatic-discharge transportation car for use in connection with my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a car, the oscillatory dumping cylinder mounted on the truck frame and having its piston rod pivotally connected with the car body, combined with connections for compressed air leading from the engine to the opposite ends of said cylinder, substantially as and for the purposes set forth.

2. In a car, the oscillatory dumping cylinder mounted on the truck frame and having its piston rod pivotally connected with the car body, combined with the release valve cylinder, connections for compressed air leading thereto and flexible pipe connections leading therefrom to the opposite ends of the dumping cylinder; substantially as and for the purposes set forth.

3. In a car the oscillatory dumping cylinder

mounted on the truck frame and having its piston rod pivotally connected with the car body, combined with the release valve cylinder, connections for compressed air leading to said cylinder, connections for compressed air leading therefrom to opposite ends of the dumping cylinder, the release valve adapted to admit air to one end of the dumping cylinder while exhausting it from the other end thereof, and an automatic latch for locking the car body in its horizontal position; substantially as and for the purposes set forth.

4. In a car, the dumping cylinder mounted on the truck frame and having its piston rod connected with the car body, combined with the valve cylinder intermediate the main pipe line and the dumping cylinder, the pipe connections leading from the valve cylinder to opposite ends of the dumping cylinder, the valve in said valve cylinder adapted to admit air to one end of the dumping cylinder while exhausting it from the other end thereof, the latch locking the car body, and the rod intermediate said latch and said valve; substantially as and for the purposes set forth.

5. In a car the dumping cylinder mounted on the truck frame and having its piston rod connected with the car body, combined with the cylinder J having the pipes M, N, leading from the main pipe lines and the pipes leading to opposite ends of the dumping cylinder, the valve in said cylinder J and having the heads P, Q, and rod S, and the pivoted latch connected with the rod S; substantially as and for the purposes set forth.

6. In a car the dumping cylinder mounted on the truck frame and having the rod connected with the car body, combined with the main pipe lines for compressed air, the latch cylinder intermediate said main pipe lines and the dumping cylinder and containing the reciprocating valve, the pivoted weighted latch connected with said valve and having the elongated aperture, and the bar connected with the car body and having the shoulder engaging said latch; substantially as and for the purposes set forth.

Signed at New York, in the county of New York and State of New York, this 6th day of February, A. D. 1893.

WILLIAM A. THACHER.

Witnesses:

CHAS. C. GILL,
J. S. SPENCER.