(No Model.)

4 Sheets—Sheet 1.

W. A. THACHER.

DUMPING CAR.

No. 489,243. Patented Jan. 3, 1893.

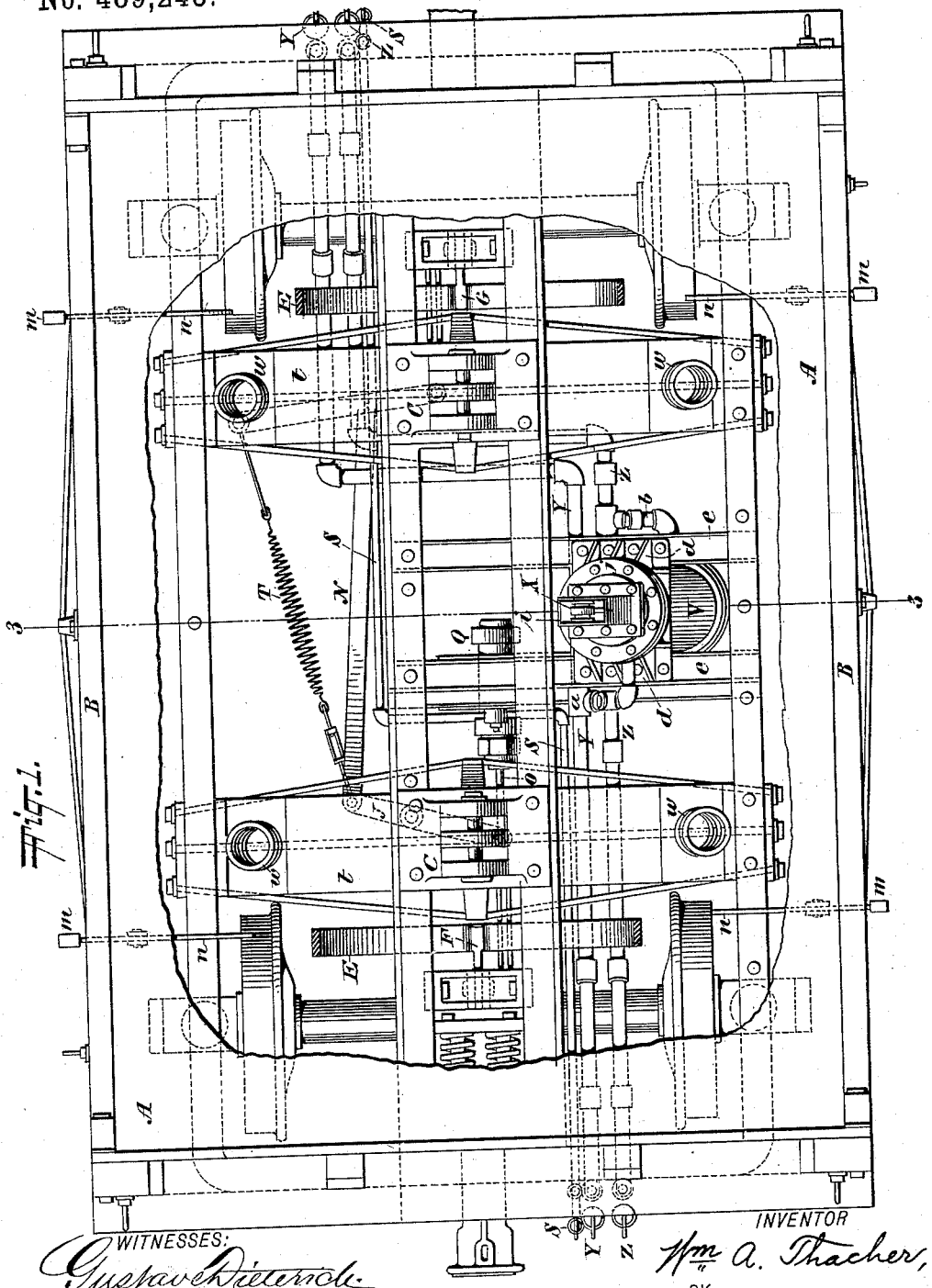

Fig. 1.

WITNESSES:

Gustave Dieterich

Ed. D. Miller.

INVENTOR

Wm A. Thacher,

BY

Chas. C. Gill

ATTORNEY.

(No Model.)

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W. A. THACHER.

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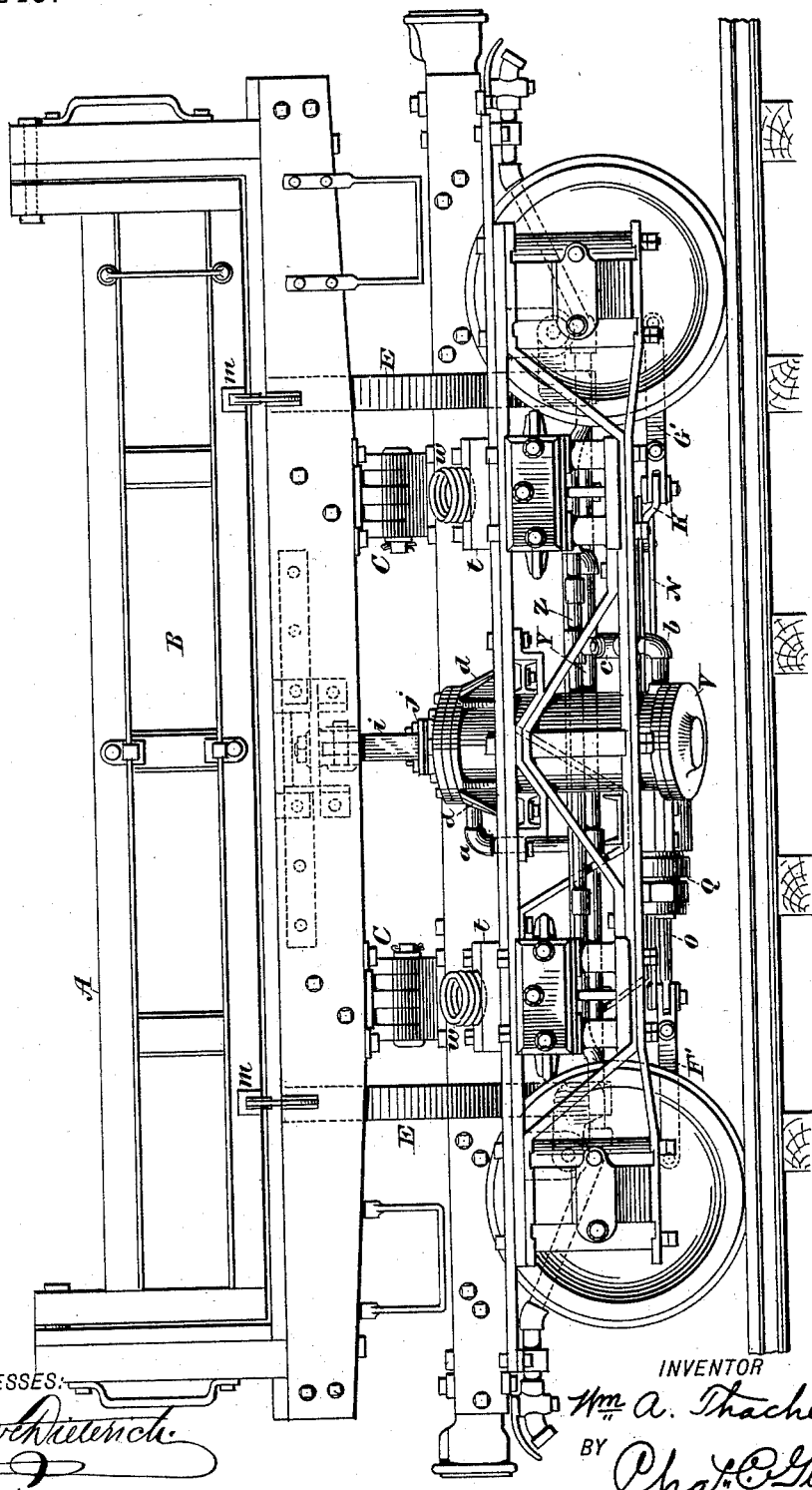


Fig. 2.

WITNESSES:
Gustav Kieler ch.
Ed. D. Miller.

INVENTOR
Wm. A. Thacher,
BY Chas. C. Gill
ATTORNEY.

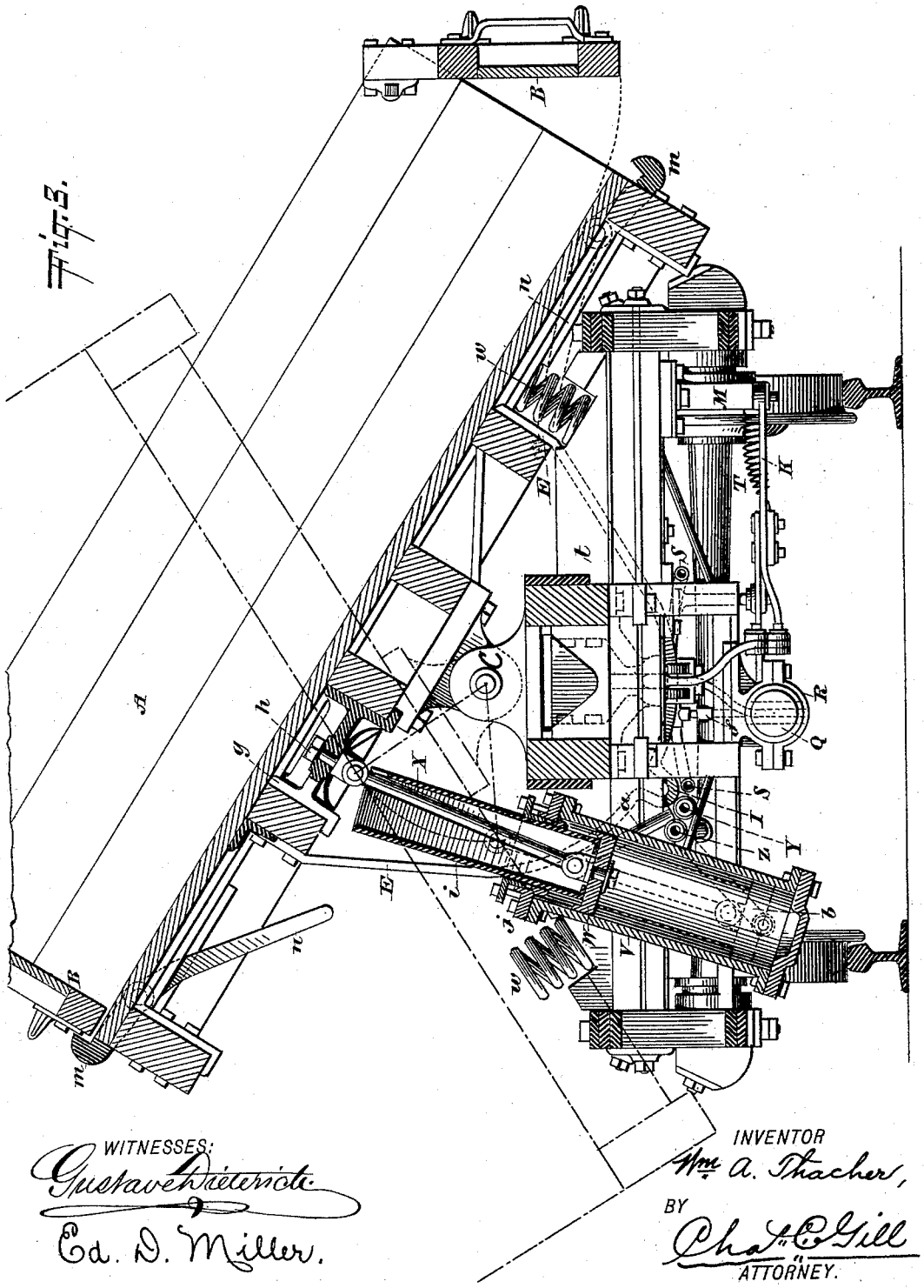
(No Model.) 4 Sheets—Sheet 3.

W. A. THACHER.

DUMPING CAR.

No. 489,243. Patented Jan. 3, 1893.

Fig. 3.



WITNESSES:
Gustave Vieterote.
Ed. D. Miller.

INVENTOR
Wm. A. Thacher,
BY
Chas. C. Gill
ATTORNEY.

(No Model.) 4 Sheets—Sheet 4.

W. A. THACHER.

DUMPING CAR.

No. 489,243. Patented Jan. 3, 1893.

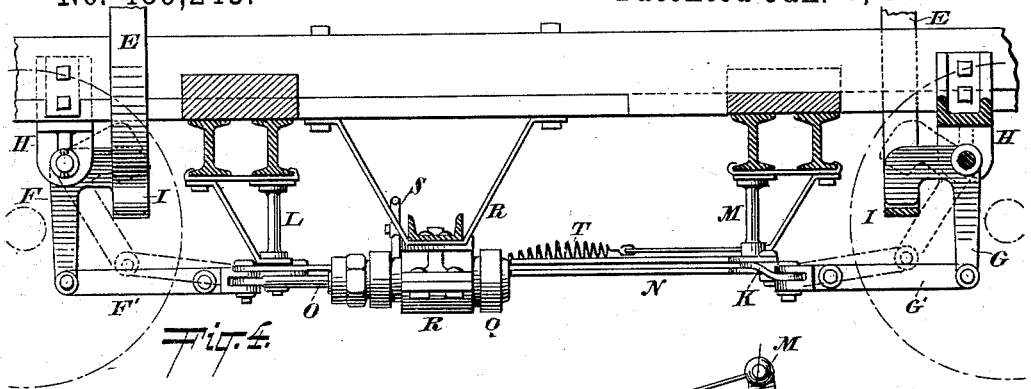


Fig. 4.

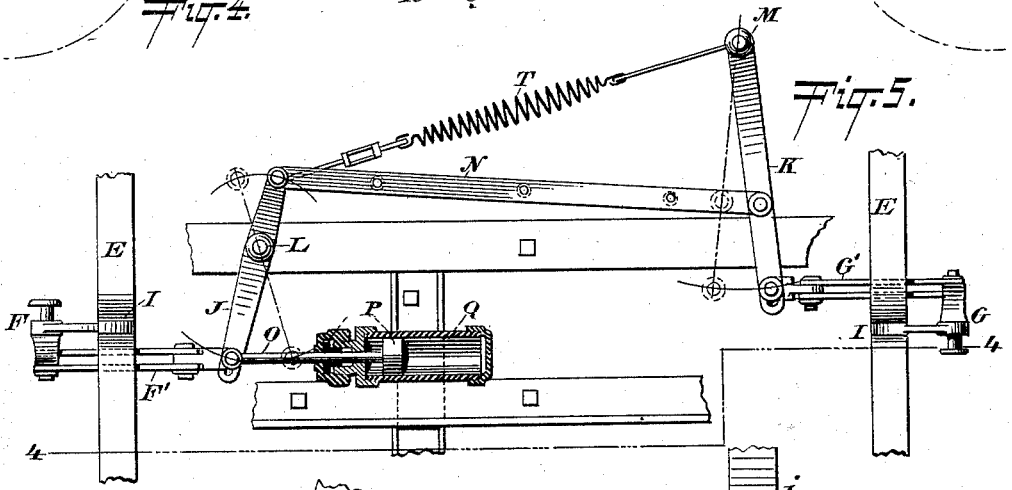


Fig. 5.

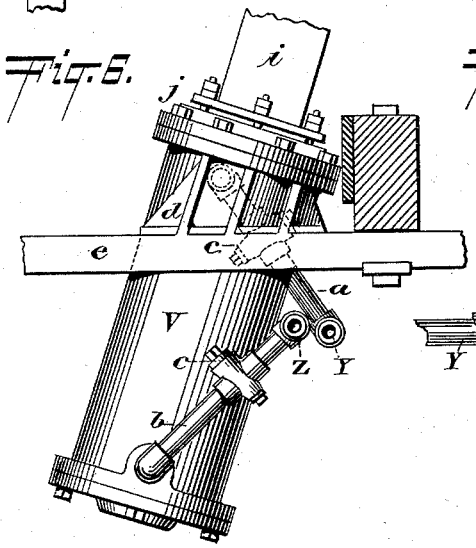


Fig. 6.

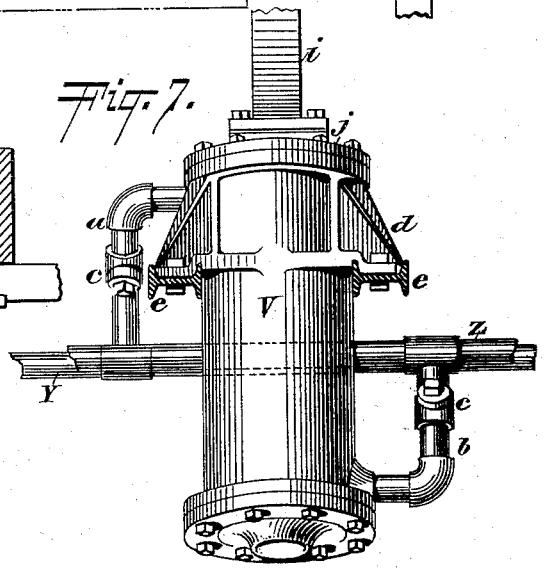


Fig. 7.

WITNESSES:
Gustave Wittenich.
Ed. D. Miller.

INVENTOR
William A. Thacher,
BY
Chas. C. Gill
ATTORNEY

UNITED STATES PATENT OFFICE.

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

DUMPING-CAR.

SPECIFICATION forming part of Letters Patent No. 489,243, dated January 3, 1893.

Application filed September 2, 1892. Serial No. 444,859. (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 embraces a car having a pivotally mounted body, latch mechanism whereby the car body may be effectually maintained in its horizontal position, and compressed air mechanism under the control of the engineer whereby the car body may be tilted to dump its contents and then returned to its horizontal position, all as hereinafter fully described and particularly designated in the claims.

Referring to the accompanying drawings:—Figure 1 is a top view of a dump car embodying the invention, a portion of the floor of the car being broken away to disclose the latch and compressed air mechanism; Fig. 2 is a side elevation of same; Fig. 3 is a vertical transverse section of same on the dotted line 3—3 of Fig. 1, the car body being shown in one tilted position by solid lines and in its other tilted position by dotted lines; Fig. 4 is a detached side elevation of the latch mechanism with the supporting beams, the two positions of said mechanism being indicated and a portion of said supporting beams being in section on the dotted line 4—4 of Fig. 5; Fig. 5 is a detached top plan view of said latch mechanism, the latch cylinder being in section; Fig. 6 is a detached side elevation on an enlarged scale of the air cylinder, partly broken away, forming a part of the mechanism for dumping the car; and Fig. 7 is a front view of same.

In the drawings A designates the car body having doors B at opposite sides, and mounted on the truck frames by means of the central pivotal bearings C, which permit said body to tilt to either side, as shown in Fig. 3, when actuated by the compressed air mechanism. The car body A is preserved in its horizontal position by means of the curved bars E secured to the lower side of the car body, and the co-operating latches F, G, which are pivotally carried by the hangers H, secured to the truck, see Fig. 4, and engage the inner surface of said bars E, the latter being formed at their center or lower extremity with the recesses I, to receive the engaging edges of the latches F, G, when it is desired that the car body shall be locked in its horizontal position. The latches F, G, will be connected together by leverage mechanism, so that both may operate simultaneously in locking or freeing the car body, and in the present instance, as shown in Figs. 4 and 5, the latches F, G, are connected respectively by links F′, G′, with the levers J, K, which are mounted on pivotal bearings L, M, and connected by a rod N extending from the shorter arm of the lever J to a point conveniently near the outer end of the lever K. At the point at which the longer arm of the lever J is coupled with the link F′ there is secured the outer end of the piston rod O carrying the piston P within the auxiliary air cylinder Q, which is supported in the hanger R from the middle longitudinal beams of the car truck and provided with air pipe connections S leading to a source of compressed air under the control of the engineer. Upon the compressed air being allowed to pass into the cylinder Q through the pipe connections S, the piston P will be driven toward the far end of the cylinder and the rod O will draw inward the longer arm of the lever J, link F′ and connecting arm of the latch F, turning the latter on its pivot and elevating its engaging edge above the recess I of the adjoining bar E, while at the same time the movement of the lever J is communicated through the rod N, lever K and link G′ to the lower arm of the latch G, turning the latter inward and elevating its engaging edge above the recess I of its adjoining bar E, as shown by dotted lines in Fig. 4. The latches F, G, are thus simultaneously elevated from their engaging recesses I, I, by the action of the compressed air on the piston P and the movement communicated by the latter to the levers J, K, and rod N; and the said latches will remain in this elevated position so long as the pressure of the air is maintained on the piston P, but thereafter the spring T connected with the levers will exert its tension to effect the return of the latches, levers and piston to their normal position, which is that illustrated in Fig. 5. When the engaging edges of the

latches F, G, are above the recesses I, I, of the bars E, the car body A will be free to be turned in either direction on its bearings C; and the compressed air mechanism by which the car body is turned on its bearings C to dump its load and then returned to its horizontal position form an important part of the present invention and commence to operate immediately upon the elevation of the latches F, G, from the recesses I of the bars E. The mechanism for tilting the car body consists of the cylinder V, piston W, hinged rod X, main pipes Y, Z, for compressed air, and the connections *a*, *b*, having valves *c* and extending respectively from the main pipes Y, Z, to the upper and lower ends of the cylinder V. The cylinder V is secured in an inclined position to the truck frame, being supported by the bracket *d*, and girders *e*, and as stated above has an inlet *a* for compressed air at its upper end and a like inlet *b* for compressed air at its lower end, only one of said inlets being in use at one time. The piston W is connected by the hinged rod X with the body A, as shown in Fig. 3, an iron girder *g* and bolt *h* being conveniently provided to receive the upper end of said rod. The lower end of the rod X is secured in a hinged manner to the upper surface of the piston W, and is practically inclosed by the oblong extension *i* forming a part of or secured to and moving with the said piston. The extension *i* passes through a stuffing box or gland *j* in the upper cylinder head and operates in the nature of an enlarged hollow piston rod inclosing the hinged rod X and permitting the latter to have a movement from a line parallel with the longitudinal center of the cylinder V, as indicated in Fig. 3. The normal position of the piston W is at about the middle of the cylinder V, and hence said piston may be moved toward either end of said cylinder with the result of tilting the car body in either direction desired. To tilt the car body to the position shown by full lines in Fig. 3, the compressed air will be turned into the pipe Z, whence it will pass through the inlet pipe *b* into the lower end of the cylinder V and drive the piston W and rod X upward, turning the body A on its bearings and dumping the load, after which the compressed air having been cut off from the pipe Z and turned into the pipe Y and inlet *a*, the piston W will be depressed to its normal position and return the car body to its horizontal position. Should it be desired to tilt the car body to the position shown by dotted lines in Fig. 3, the compressed air will be turned into the pipe Y, whence it will pass through the inlet *a* into the upper end of the cylinder V and depress the piston W, thus pulling downward on the rod X and the car body and causing the latter to dump its load. The main pipe lines Y, Z, will lead to a source of compressed air and be under the immediate control of the engineer of the train, who will turn the air into either pipe Y, Z, in accordance with which side of the track it may be desired shall receive the load.

As stated above the mechanism for tilting the car body is not set in motion until the latches F, G, have been elevated from the recesses I of the bars E, and hence it will be understood that the engineer will first free the latches and then tilt the car body. As soon as the car body has commenced to move and the recesses I are beyond the latches F, G, the air may be cut off from the latch cylinder Q, and the engaging edges of the latches allowed to follow the inner curved surface of the bars E, against which said edges will be held by the tension of the spring T. The latches F, G, being thus permitted to follow the surface of the bars E, will, when the car body has attained its horizontal position snap into the recesses I, I, and thus lock said body, the air being at such time cut off from the pipe Y or Z according to which was in use. The air pipe S for the latch cylinder Q, and the main air pipes Y, Z, for the dumping cylinder V, will extend to and from said cylinders and pass the entire length of the car in order that they may be coupled at their ends in a well known manner to the adjoining ends of like pipes provided in the other cars of the train, it being intended that the cars shall all be alike and that the air pipes shall be coupled together and lead to the engine so that the dumping of the entire train may be accomplished at once and be under the direct control of the engineer. If for any reason it should be desired not to dump any one or more cars while unloading the rest of the train, such car or cars may be cut off from the action of the compressed air by closing their inlet valves *c* in the pipes *a*, *b*, and the valve *f* (Fig. 3) in the pipe leading from the pipe S to the latch cylinder Q, thus allowing the air to pass through the pipes S, Y, Z, of the particular car or cars without affecting the same, but in condition to tilt the remaining cars it may be desired to dump.

The doors or sides B, B, of the car body are pivotally secured or hinged at their upper edges and at their lower edges, when closed, are engaged by the pivoted latches *m*, whose cam arms *n* extend inward in position when the car body is tilted to come into contact with the frame of the truck and be thereby moved upward, freeing the door B and permitting the latter to open, as shown in Fig. 3, preparatory to the contents of the car being dumped. Upon the return of the car to its horizontal position, the arms *n* of the latches *m* leave the truck frame and their weight operates the latches to again lock the door, which as the car body is returned to normal position swings inward to a closed condition. The locking and unlocking of the doors B is thus rendered automatic and all manual labor avoided. The truck frame supports on its transverse beams *t* and at opposite sides of the car the coiled springs or cushions *w*, which, as clearly indicated in Fig. 3, prevent

the car body when tilted from coming into violent contact with the truck frame, the springs receiving the first pressure of the body and preventing undue concussion.

The general operation of the elements constituting the invention has been explained above, and from the foregoing description taken in connection with the accompanying drawings, it will be understood that the car is of the most substantial and durable kind, that its operation is reliable, that the car body may be tilted to dump its load at either side of the track; that it is locked automatically after returning to its horizontal position, and that the entire train is under the absolute control of the engineer in his cab, who, by simply turning the valves may quickly dump the load and return the car body to position whether the train is stationary or in motion. It is to be noted also that by means of a single air cylinder placed at one side of the center of the car, the car body may be dumped in either direction at will and return to position under the positive control of the piston W and rod X.

What I claim as my invention and desire to secure by Letters Patent, is—

1. In a car, the tilting car body, combined with the dumping cylinder, the piston therein having the hollow extension passing through the head of said cylinder, the hinged connecting rod operated by said piston, and pipe connections leading to said cylinder; substantially as set forth.

2. In a car, the tilting car body, combined with the dumping cylinder, the piston therein having the hollow extension passing through the head of said cylinder, the hinged connecting rod within said hollow extension, and the main supply pipes leading to the opposite ends of said cylinder; substantially as set forth.

3. In a car, the pivotally mounted car body and means for tilting said body to dump its load, combined with the pivoted latches engaging said body to lock it in a horizontal position, the auxiliary cylinder having a piston and rod, and mechanism intermediate said rod and said latches for imparting motion from the former to the latter; substantially as set forth.

4. In a car, the pivotally mounted car body and means for tilting the same to dump its load, combined with the pivoted latches engaging said body to lock it in a horizontal position, the auxiliary cylinder and intermediate connections for freeing said latches from the car body, and the spring for reengaging said latches; substantially as set forth.

5. In a car, the pivotally mounted car body and means for tilting the same to dump its load, combined with the downwardly extending curved bar secured to the bottom of the car body, the pivoted latch engaging the same, the auxiliary air cylinder connected with said latch to operate the same, and the pipe connection leading to said cylinder; substantially as and for the purposes set forth.

6. In a car, the pivotally mounted car body and means for tilting the same, combined with the downwardly extending curved bar secured to the bottom of the body, the pivoted latch engaging the same, the auxiliary air cylinder connected with said latch to operate the same, the pipe connection leading to said cylinder, and the spring acting on said latch; substantially as set forth.

7. In a car, the pivotally mounted car body having the downwardly extending curved bars, combined with the pivoted latches engaging said bars, leverage mechanism connecting said latches, and the auxiliary air cylinder connected with said mechanism for simultaneously operating said latches; substantially as set forth.

8. In a car, the pivotally mounted body having the downwardly extending curved bars, combined with the pivoted latches engaging said bars, the levers J, K, connected together by the rod N and by links with said latches, the spring T connected with said levers, and the air cylinder having its piston rod also connected with said levers; substantially as set forth.

9. In a car, the body pivotally mounted on the truck to tilt to either side, combined with the dumping cylinder, the piston therein, the hinged rod connecting said piston and body, and pipe connections leading to both ends of said cylinder, the dimensions and relative relation of the parts being such that the position of the piston will be at the middle of the cylinder when the car body is in a horizontal position and that the body may be tilted to either side under the action of the air in the said cylinder; substantially as and for the purposes set forth.

10. In a car, the pivotally mounted car body, and means for securing the same in horizontal position, combined with compressed air mechanism for releasing said body, the dumping cylinder with compressed air connections leading thereto, and the piston within said dumping cylinder and connected with the car body; substantially as set forth.

11. In a car, the pivotally mounted car body, combined with the dumping cylinder for tilting the said body to dump its load, the latch engaging said body to lock it in a horizontal position, the auxiliary air cylinder having a piston and rod the latter being connected with said latch, and pipe connections for compressed air leading to said cylinders, substantially as and for the purposes set forth.

Signed at New York, in the county of New York and State of New York, this 1st day of September, A. D. 1892.

WILLIAM A. THACHER.

Witnesses:
CHAS. C. GILL,
ED. D. MILLER.