

(No Model.)

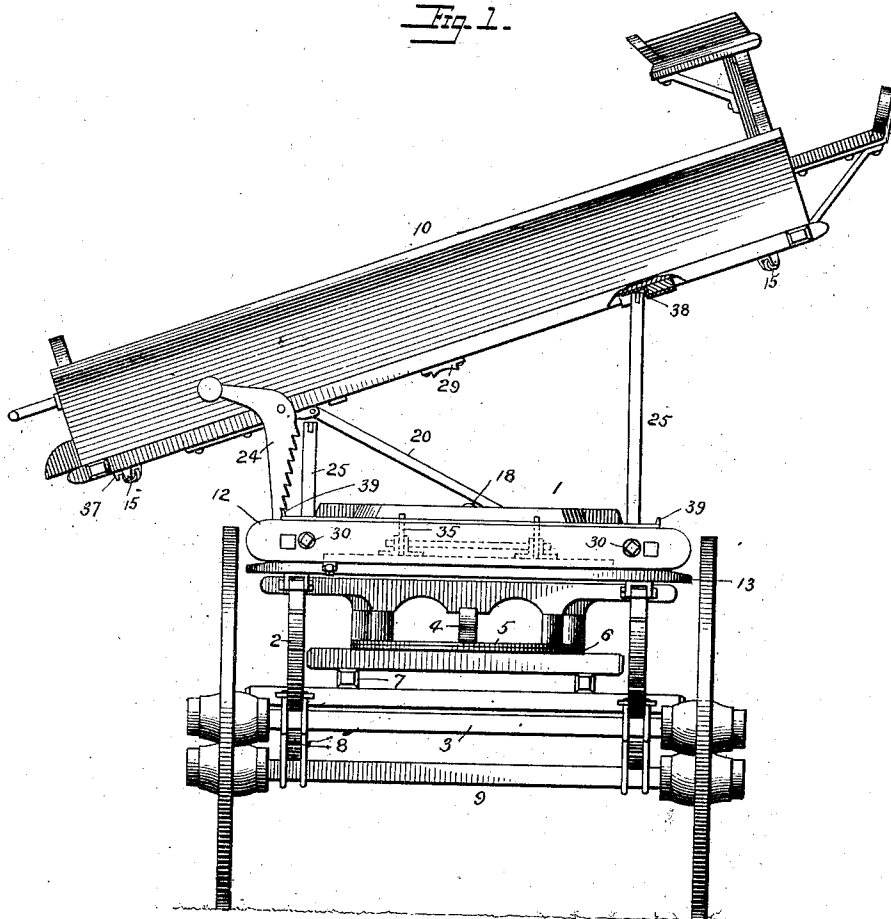
E. L. LAYTON.
COAL WAGON.

3 Sheets—Sheet 1.

No. 463,251.

Patented Nov. 17, 1891.

Fig. 1.



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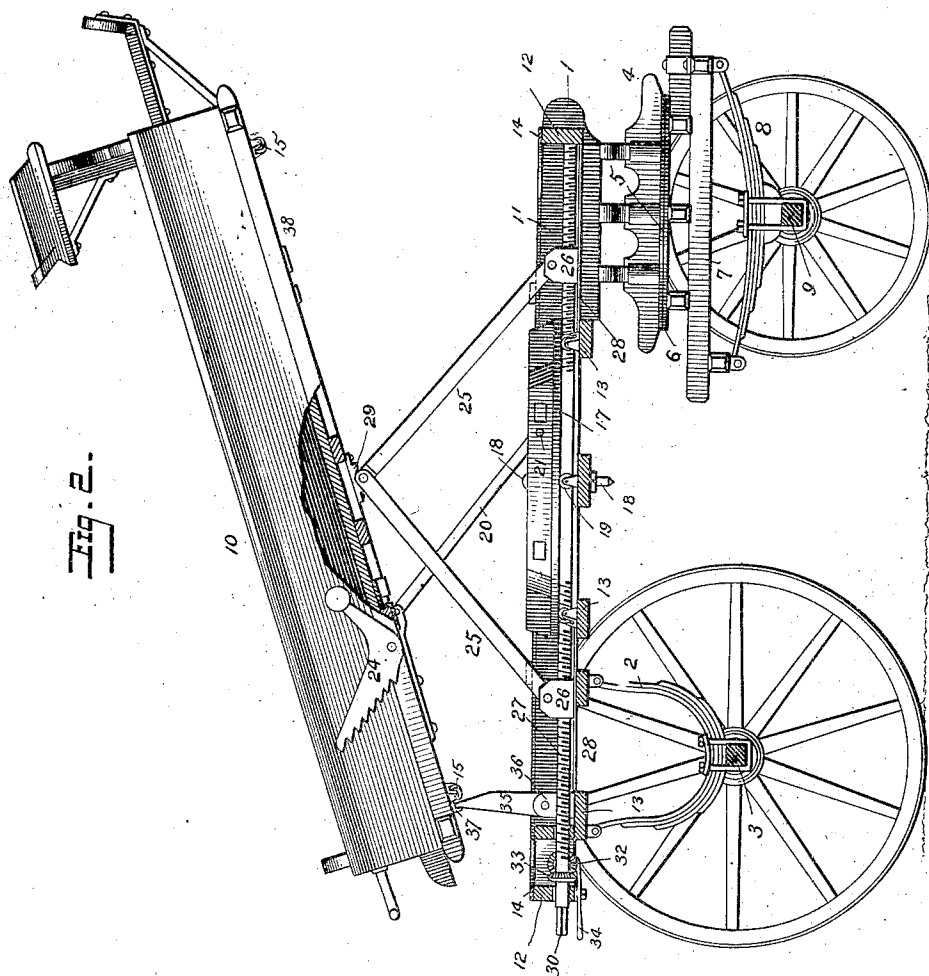
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Fig. 3.

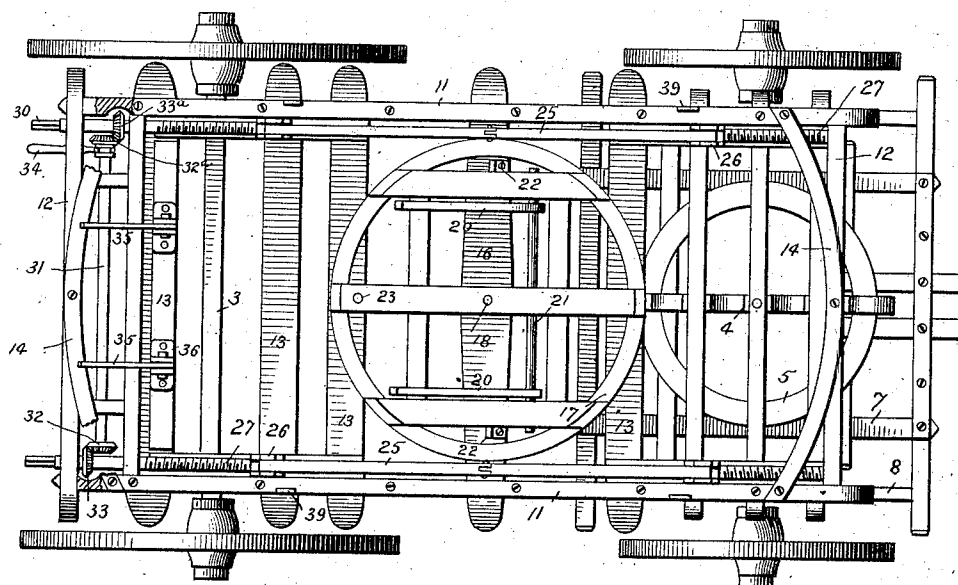
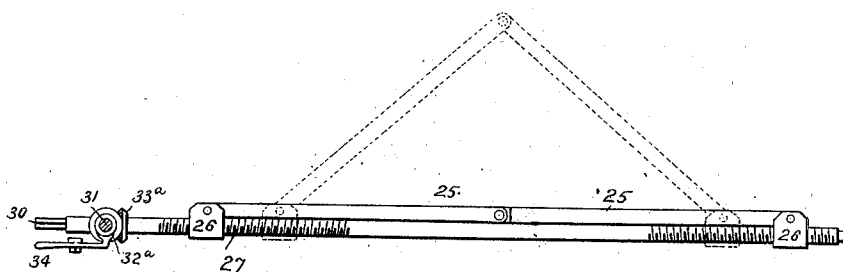


Fig. 4.



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UNITED STATES PATENT OFFICE.

EDWARD L. LAYTON, OF TRENTON, NEW JERSEY.

COAL-WAGON.

SPECIFICATION forming part of Letters Patent No. 463,251, dated November 17, 1891.

Application filed February 1, 1890. Serial No. 338,923. (No model.)

To all whom it may concern:

Be it known that I, EDWARD L. LAYTON, a citizen of the United States, residing at Trenton, Mercer county, New Jersey, have invented certain new and useful Improvements in Coal-Wagons, of which the following is a specification.

My invention relates to dumping-wagons, and more especially to that class of dumping-wagons which are usually employed in the delivery of coal and other similar heavy and bulky objects.

Prior to my invention it has been common to provide dumping-wagons with means whereby the rear of the wagon could be depressed or the front elevated, so that the contents of the wagon could be dumped to the rear. It has also been proposed to construct such wagons so that the load could be dumped at the side.

One of the objects of my invention is to construct a wagon in such a manner that the load may be dumped either at the rear or at the side at pleasure and as is most convenient in delivering the material.

A further object of my invention is to provide means whereby the body of the wagon may be elevated to any desired height and inclined at any desired angle, either toward the rear or either side of the running-gear.

A still further object of my invention is to provide means whereby these various objects may be attained, which shall be simple, cheap, and effective, and not liable to get out of order, and capable of withstanding the heavy wear and tear incident to the use of such wagons in carrying and delivering heavy loads.

To these ends my invention consists in a dumping-wagon having the capabilities herein set forth and provided with means for carrying them out, arranged and constructed substantially as hereinafter described.

In the accompanying drawings I have illustrated the preferred embodiment of my invention, in which—

Figure 1 is a rear view showing the wagon-body elevated to deliver the load at one side of the running-gear. Fig. 2 is a side view, partially in section, showing the wagon-body in position for delivering the load to the rear of the running-gear; and Fig. 3 is a plan view

of the bed-plate and its connections. Fig. 4 is a detail of the elevating device.

In carrying out my invention I have shown in the accompanying drawings a bed-plate 1, mounted upon the U-shaped springs 2, secured to the axle 3 at the rear, and at the front end connected to a head-block 4, carrying a fifth-wheel 5, mounted on a head-block 6, supported by a platform 7, which in turn is supported by a truck-spring 8, secured to the axle 9. While I have found this to be a most satisfactory running-gear for the purposes of my invention, it will be understood that this forms no part of my invention, and any other well-known and suitable running-gear may be used.

The bed-plate 1 is a substantial structure of frame-work made in any desired manner to properly support the wagon-body 10 and the operating mechanisms. As shown in the accompanying drawings, it consists of the side pieces 11, connected together by suitable cross-pieces 12 12, and having on each side of its center a number of cross-pieces 13, although it is evident that this particular construction can be varied to suit the exigencies of the case. Mounted upon the top of this bed-piece are two segmental track-pieces 14, and upon these track-pieces bear the rollers 15, secured to the under side of the wagon-body 10, they being preferably mounted in stands or bearings, as shown. Normally the ends of the wagon-body rest upon these segmental tracks through the medium of these rollers; but the main portion of the weight of the body and its load is supported upon the turn-table 16, mounted in the central portion of the bed-plate. This turn-table 16 consists of a suitable frame-work, preferably circular in outline, to the under side of which is secured a track 17, made of a metal plate, circular in form. This turn-table is connected by a pivot 18 to one of the cross-pieces 13 of the bed-plate to maintain it in its central position, and it is supported upon a series of rollers 19, mounted in stands secured to the cross-piece. There may be any desired number of these rollers, and I have shown in the present instance six, so distributed around the periphery of the turn-table that it will be supported equally in all directions. This construction I deem of considerable importance, in that the bearing-surface

of the track connected to the turn-table is on the under side, and this bears upon the top of the rollers 19. In this way I avoid the objection to the use of turn-tables as heretofore constructed, as there is no liability of the track becoming foul and dirty through the dust and refuse or other matter lodging upon the track and interfering with its free rotation; but I have found that the track in this form is kept free and clear from obstructions and allows the turn-table to rotate freely.

The wagon-body is connected to the turn-table through the medium of the links or pitmen 20, which are pivotally secured at one end to the under side of the wagon-body by any suitable strips or connections and at the other end to a rod or bearing 21, mounted in the frame-work of the turn-table. From this construction it will be seen that the wagon-body, being supported substantially upon the turn-table and its ends resting upon the segmental tracks at the end of the frame-work, is free to be turned to either side of the wagon, so that its rear can be brought at pleasure to the most convenient place for depositing the load.

In order to prevent the wagon-body turning too far, it being preferable to have it at right angles to the bed-plate when a side dump is to be effected, I provide a stop 22, which in the present instance I have shown mounted on the central cross-bar 13, which is adapted to engage a stop 23, shown in dotted lines on the under side of the turn-table. While it will be understood that this stop is not absolutely essential, still I have found it convenient, as it aids the operator in determining the amount of movement in rotating the wagon-body and its load preparatory to a side delivery. It will be understood that by this construction it requires comparatively little force to turn the wagon-body with its load in either direction, as all the bearings are rotary and practically frictionless.

In order to prevent the wagon-body from turning accidentally or otherwise, I provide some suitable stop devices, which shall lock the body into a position parallel with the bed-piece, and I have shown pivoted arms or lugs 24 arranged on each side of the wagon-body and adapted to be thrown down to engage with the sides of the bed-plate when it is desired to secure the parallelism between the wagon-body and the bed-plate, or to be thrown up into the position shown in Fig. 2. This arm or lever may be a simple stop, or, as preferred, may be adapted to perform other functions.

In order to elevate the wagon-body and its load preparatory to delivering the latter, I provide on each side of the bed-plate a lifting device, which is preferably in the form of a toggle-lever, consisting of the arms 25, pivoted together at one end and connected at their outer ends to the screw-blocks 26. These screw-blocks are mounted upon a shaft 27, supported in the bed-plate and provided

at its ends with right and left hand screws engaging the screw-blocks. These screw-blocks are preferably formed with a flat base bearing upon the track-pieces 28, mounted in the bed-plate, so that the shaft 27 is relieved from the direct pressure of the weight of the load, and as these blocks are moved toward or from each other by turning the shaft they move along this track and are practically supported thereby. These toggle-levers, there being one on each side, are not connected directly with the wagon-body, but are preferably fitted to bear in sockets 29, which are preferably of metal and secured to the under side of the wagon-sills.

Some suitable means of turning the shafts 27 must be provided, and I have shown each shaft having a squared end or key-post 30, by means of which, with the aid of a suitable wrench or key, the shafts may be turned independently. When, however, it is desired to dump the load at the rear, it is preferable to operate both of the said shafts 27 simultaneously, and I therefore provide means for doing the same, and in the present instance I have shown a cross-shaft 31, mounted in the frame-work between the transverse sills and provided at its ends with a bevel-gear 33, secured to the shafts. In order that the shafts may be rotated independently, notwithstanding this beveled gear connection, I arrange one of the bevel-gears, as 32^a, loosely upon the shaft 31 and provide a suitable shifting device 34, by means of which it may be thrown into and out of gear with the bevel-wheel 33^a, so that the shafts may be operated independently or together, as desired, by simply shipping or unshipping the bevel-gear 32^a.

In order that the rear end of the wagon-body may be raised somewhat from the bed-plate when the body and its load are raised for a rear dump, I provide the toes 35, which are mounted in the bearings 36, secured upon one of the cross-pieces 13, and these toes normally rest upon the segmental track 14 at the rear of the wagon.

To the under side of the wagon-body I attach lips 37, which are adjacent to the tips of the toe-pieces 35 and engage with the same as the body is elevated, and thereby insure the elevation of the rear of the body when the screw-shafts and toggle-levers are being operated to prepare for a rear dump.

Such being the general construction of my improved dump-wagon, I will now describe the mode of operation. When it is desired to dump the load at the rear, the bevel-gear 32^a being shipped into engagement with its corresponding bevel-gear 33^a, power is applied to one of the shafts by a suitable wrench or key and the shaft rotated, and this through the intervention of the bevel-gears and their shafts causes the other shaft to rotate in unison therewith and the blocks 26 on each side of the wagon-body are gradually brought toward each other, causing the toggle-levers 25 to bear against the under portion of the body

and to raise the same. As the body commences to rise, the links or pitmen 20 hold the wagon-body steady and cause it to move forward slightly, and at the same time the toes 35, engaging the lips 37, act as levers to elevate the rear portion of the body from the bed-plate. When the body is raised to the desired elevation, it is held in position without the intervention of any locking devices and the load is delivered through the medium of any suitable chute or otherwise, and then the body is returned to its normal position by the reverse movement of the shafts 27 and is ready for another load.

When, however, it is desired to deliver the load at the side, the stops or arms 24 are turned up, in the manner indicated in Fig. 2, and the body rotated upon the turn-table 16 to the position desired, the stops 22 limiting its movement in either direction. Suppose the wagon-body to be thrown into the position shown in Fig. 1. To elevate the front end of the body it is only necessary to operate the shaft 27 on the right-hand side of the bed-plate, and to do this the bevel-gear 32^a is unshipped and the key or wrench is applied to the proper shaft, and the toggle-levers 25, which now bear upon the under side of the wagon-body, and preferably in a socket-piece 38, operate to elevate the body to the desired angle, and the load may be delivered. If, however, it is desired to deliver the load at a higher elevation—as, for instance, over a fence or other obstruction—the whole wagon-body may be elevated in the manner shown in Fig. 1. To do this I preferably operate the shaft 27 adjacent to the rear of the wagon-body to elevate it to the desired position, when the arms or stop-pieces 24, which are provided with teeth on either side, as shown, may be made to engage with lugs or projections 39 on the bed-plate, and thereby serve to support the rear portion of the wagon free from the toggle-links under the rear end. The shaft of the toggle-link under the front end of the wagon is then operated and the toggles elevated to the desired angle, and the wagon-body is then practically supported by the arms 24 at the rear and the toggle-arms 25 at the front and is maintained or steadied by the pitmen or links 20 and kept from sliding off from the bed-plate. The load then being delivered, the parts are returned to their normal positions by the reverse movement of the shafts and the unlocking of the arms 24 and the rotation of the body and the turn-table 16, when the arms 24 are dropped into their normal position and the wagon is in condition to receive another load. It will thus be seen that by the construction set forth I am enabled to deliver the load at the rear or at either side of the bed-plate, and I make use of the same elevating apparatus under either condition. It will further be seen that under all conditions the wagon-body is maintained in proper relations to the turn-table by the links 20, and may be supported in an elevated po-

sition at its rear, either by the toe-pieces or the arms at the side, as the case may be. It will further be observed that it requires the least expenditure of power to operate the wagon-body, the toggle-levers and their connecting-screws exerting an immense pressure upon the bottom of the body with the least expenditure of force on the part of the operator, and as the body normally rests upon rollers it can easily be rotated to either side.

While I have thus described the preferred embodiment of my invention and the means of operating it, it will be understood that the details of construction and arrangement may be varied by those skilled in the art without materially departing from the principles of my invention, and I therefore do not wish to be confined to the exact construction shown and described.

What I claim is—

1. In a dumping-wagon, the combination, with the bed-plate and turn-table mounted thereon, of a wagon-body normally resting on the bed-plate and turn-table, links connecting the body to the turn-table, and elevating devices interposed between the body and the bed-plate, substantially as described.

2. In a dumping-wagon, the combination, with the bed-plate and turn-table mounted thereon, of a body normally resting on the bed-plate and turn-table, elevating devices interposed between the body and bed-plate, and connections between the bed-plate and the rear of the wagon-body, whereby the rear portion of the body is elevated, substantially as described.

3. In a dumping-wagon, the combination of the bed-plate, a turn-table secured thereto and rotating thereupon, a wagon-body normally resting on the bed-plate and turn-table, links connecting the body and turn-table, elevating devices interposed between the body and the bed-plate, and toe-pieces connected to the bed-plate and engaging the rear of the body to insure its elevation, substantially as described.

4. In a dumping-wagon, the combination of the bed-plate carrying rollers secured thereto and having segmental tracks at its ends, a turn-table mounted on the bed-plate and having a track on its under side bearing on the rollers, and a wagon-body mounted on the turn-table and provided with rollers bearing on the segmental tracks, substantially as described.

5. In a dumping-wagon, the combination, with the bed-plate, of a wagon-body supported thereon, elevating devices interposed between the wagon-body and bed-plate and consisting, essentially, of the toggle-levers and connecting-screws for said levers, substantially as described.

6. In a dumping-wagon, the combination, with the bed-plate, of a wagon-body normally supported thereon, elevating devices interposed between the wagon-body and bed-plate and consisting, essentially, of toggle-levers and connecting-screws for said levers, and

toes connected to the bed-plate and engaging the rear of the wagon-body to elevate the same, substantially as described.

7. In a dumping-wagon, the combination, 5 with the bed-plate, of a turn-table mounted thereon, a wagon-body connected to said turn-table, elevating devices interposed between the wagon-body and the bed-plate and consisting, essentially, of toggle-levers, and 10 operating-screws secured to the bed-plate and arranged to bear on the under side of the wagon-body to elevate it to dump to the rear or at the sides, substantially as described.

8. In a dumping-wagon, the combination, 15 with the bed-plate, of a turn-table mounted thereon, a wagon-body connected to said turn-table by links, toggle-levers interposed between the wagon-body and bed-plate, shafts for operating the same having right and left 20 hand screws and mounted in the bed-plate, and gear connections between the shafts, whereby one or both may be operated at pleasure, substantially as described.

9. In a dumping-cart, the combination of the 25 bed-plate, the right and left hand screw-shafts mounted thereon, toggle-levers operated by said screw-shafts, a transverse shaft mounted in the bed-plate, bevel-gears connecting the screw-shafts with the transverse shafts, and 30 shifting devices for one of the bevel-gears, substantially as described.

10. In a dumping-wagon, the combination, with the bed-plate, of a turn-table mounted 35 thereon, a wagon-body connected with the turn-table by links, whereby it may be turned to either side of the bed-plate, and elevating devices consisting of the shafts mounted in the bed-plate and connected to operate the 40 toggle-levers, the said toggle-levers bearing against the base of the wagon-body at the sides or toward the ends, as the case may be, to tilt the body for a rear or side delivery, substantially as described.

11. In a dumping-wagon, the combination, 45 with the bed-plate and wagon-body, of elevating devices interposed between the wagon-body and the bed-plate, consisting, essentially, of the screw-shafts and toggle-levers operated thereby, the toggle-levers being connected to 50 the shafts by means of blocks, and a track arranged underneath the screw-shafts to support the blocks, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD L. LAYTON.

Witnesses:

J. S. BARKER,

W. S. MCARTHUR.