No. 609,167. Patented Aug. 16, 1898.

J. T. RICHARDSON.

DUMPING WAGON.

(Application filed Mar. 13, 1897.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

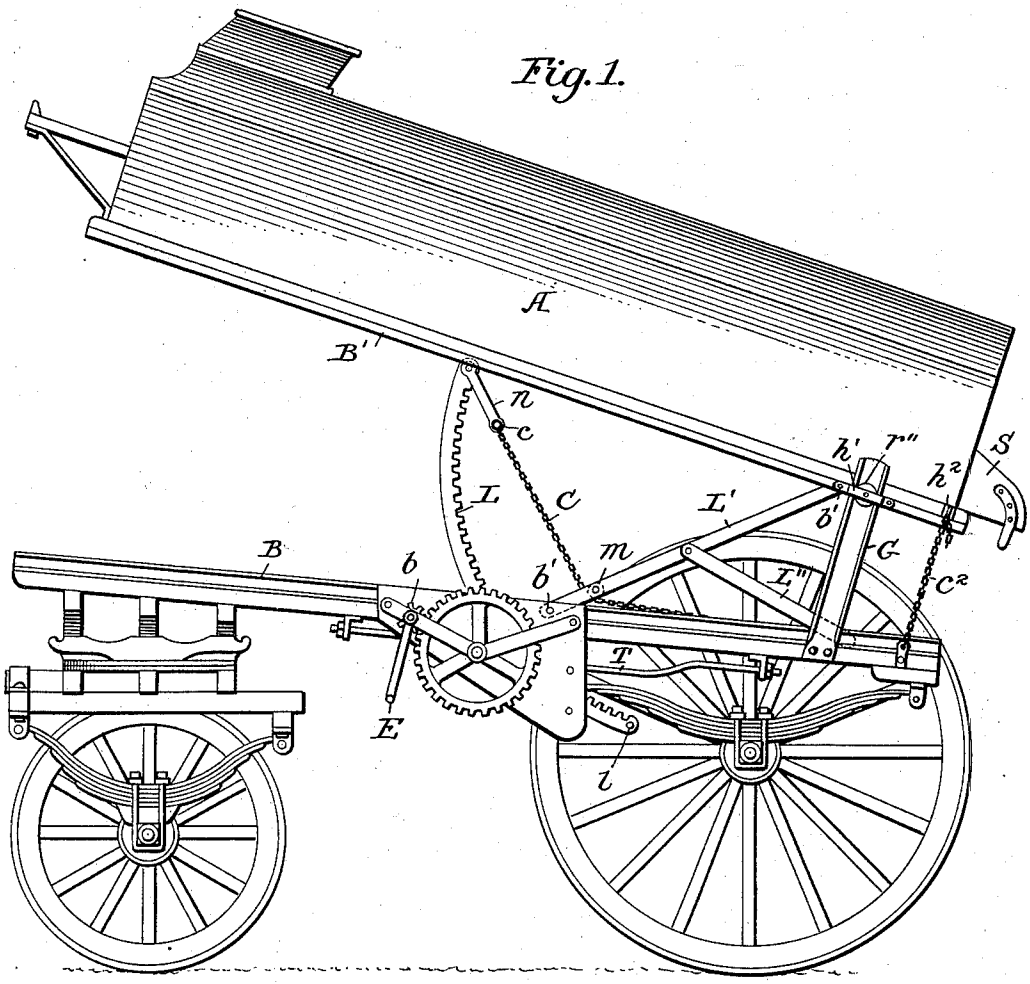
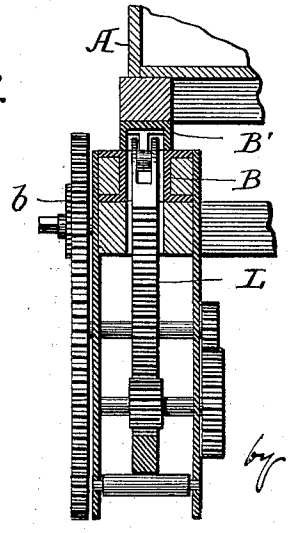


Fig. 3.



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Fig. 2.

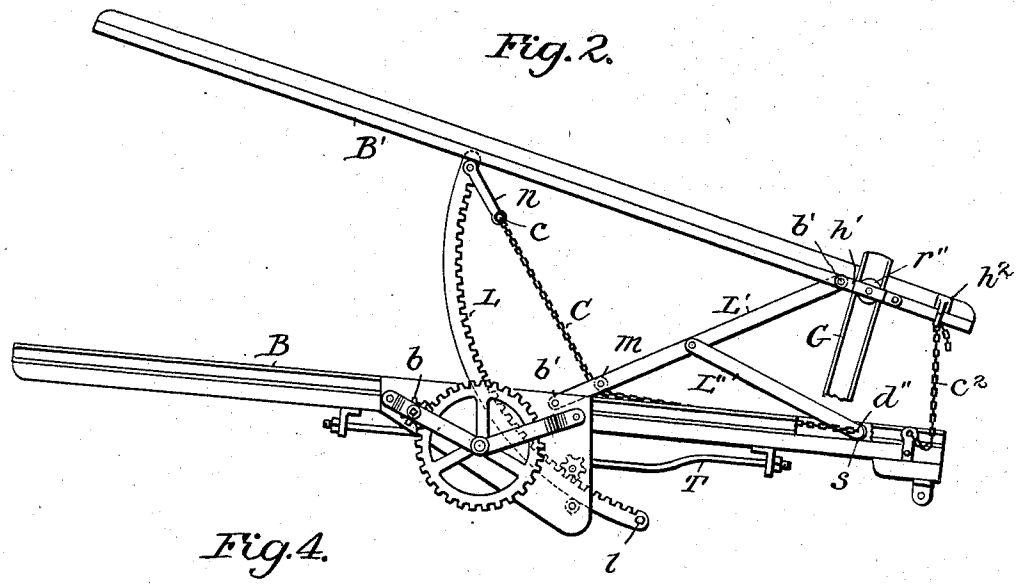


Fig. 4.

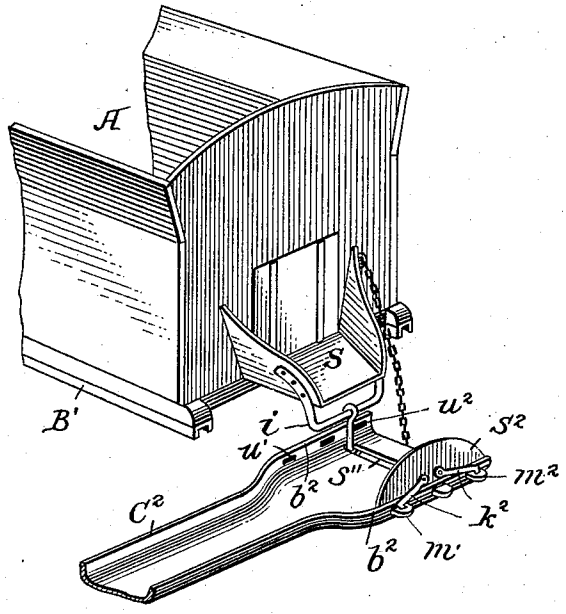


Fig. 5.

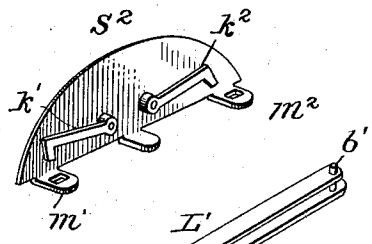


Fig. 7.

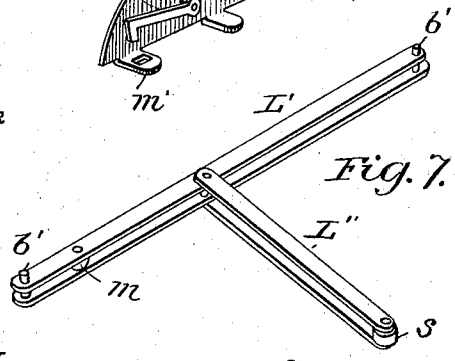
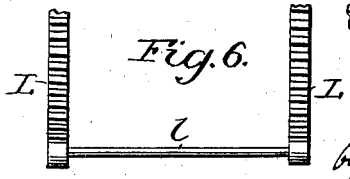


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN T. RICHARDSON, OF HARRISBURG, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO ALEXANDER H. EGE, OF MECHANICSBURG, PENNSYLVANIA.

DUMPING-WAGON.

SPECIFICATION forming part of Letters Patent No. 609,167, dated August 16, 1898.

Application filed March 13, 1897. Serial No. 627,310. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. RICHARDSON, a citizen of the United States, residing at Harrisburg, county of Dauphin, State of Pennsylvania, have invented certain new and useful Improvements in Dumping-Wagons, of which the following is a specification.

This invention relates to certain new and useful improvements in dumping-wagons, having for its object to secure an improved and expeditious means for the ready transportation and unloading of coal, sand, fresh stone, and other loose material and the deposit of the same at the desired place of unloading, resulting in a saving of both time and labor.

With these objects in view the invention consists of an improved mechanism for elevating both the front and rear ends of a wagon-body or for elevating the front end only, if desired, said mechanism being actuated at will by means of a crank and a system of gearing from a common point of initial movement and by a continuous motion. Said invention is an improvement upon a former invention granted to me by Letters Patent dated November 27, 1894, No. 529,878.

In the accompanying drawings, forming a part of this specification, and in which like letters of reference indicate corresponding parts, Figure 1 is a side elevation of the improved dumping-wagon, the body being elevated in position for dumping and the wheels upon one side being removed. Fig. 2 is a side elevation of the truck-rail and lifting devices. Fig. 3 is a transverse sectional view of the lifting mechanism, showing more particularly the relative arrangement of the body and truck-rails, parts being broken away. Fig. 4 is a detail perspective view of the rear end of the wagon-body with a chute connected thereto. Fig. 5 is a detail perspective view of the protecting-shield detached from the chute. Fig. 6 is a detail elevation of the lower ends of the lifting-arcs, parts being broken away. Fig. 7 is a detail perspective view of the main and supplemental lifting-levers.

Referring more particularly to the drawings, A designates the wagon-body, which may be made of any suitable material or combination of materials and is preferably formed deepest at its rear end.

The framework upon which the wagon-body A is supported consists, primarily, of four rails or beams of either wood or steel, or both, or of any other material suitable to sustain the weight and resist the shocks or concussion to which the structure is subjected in the performance of the functions for which the invention is devised.

The two lower beams B B, which will be hereinafter designated as "truck-rails," and the two upper beams B′ B′, hereinafter referred to as "body-rails," may be of any suitable construction, but preferably, and especially in cases where the weight to be transported and elevated is excessive, the beams are formed of the channel-plates shown in the prior patent hereinbefore referred to, but are arranged in a different manner—that is to say, each truck-rail is constituted of two channel-plates arranged to lie parallel in the same horizontal plane, with their flanges extending horizontally and their webs extending vertically. The space between each pair of channel-plates is less than that of the horizontal breadth of the channel-plates forming the body-rail, and said body channel-plates are disposed in the planes of the spaces, so that when the body rests on the truck-rails the vertical flanges of the body channel-plates will rest upon the horizontal flanges of the truck channel-plates, as shown in Fig. 3. By this arrangement of the channel-plates a greater strength of resistance to a superimposed load is attained than would be possible if one truck channel-plate were used on each side of the wagon. In the further completion of the truck channel-plates the channels thereof are either wholly or partially filled with some suitable material lighter than that of which the channels themselves are formed, preferably wood.

The power used to elevate the wagon-body A to the desired position for dumping is applied to a crank E, attached to the hub of a contiguous pinion *b*, and thence transmitted through a series of gears to the toothed lifting-arcs L L, substantially in the manner indicated in the Letters Patent hereinbefore referred to.

The construction of the upper ends of the lifting-arcs L L is also substantially the same as that shown in the said Letters Patent, as is also the case of the guides *g* in their construction and attachment to the body-rails B′ B′. In regard, however, to the lower ends of the lifting-arcs L L a construction is employed which enables the stirrups shown in the prior patent to be dispensed with. This improvement consists in connecting the heretofore free lower ends of said arcs by a rigid rod or bar, which not only gives a most desirable rigidity and mutual support to the said arcs, but at the same time serves to limit their upward movement, guarding the same from being forced beyond the required scope of meshing in the event of the operator, through carelessness, failing to cease rotating the crank at the required limit of elevation of the body.

The lifting-levers L′ L′ are each formed of two separated parallel bars, which are secured together by means of bolts *b*′, the lower ones of which serve to pivotally secure the lower ends of the levers to the truck-rails at points a short distance in the rear of the opening in the truck-frame through which the lifting-arcs L L pass, and the upper bolts serve to pivotally connect the upper ends of the levers to the body-rails, near the rear ends thereof.

Journaled between the bars of the lifting-levers are friction-rollers *m m*, which serve as bearings for lifting-chains C C, and preferably these rollers are arranged near the longitudinal centers of the levers; but it will of course be understood that they may be arranged at any other point.

Pivotally connected at their upper ends to the lifting-levers L′ L′, at about the longitudinal centers thereof, are rear or supplemental lifting-levers L″ L″, each constructed of two separated parallel connected bars, the lower ends of said supplemental levers being provided with friction-rollers *s s*, which bear and are free to move upon the truck-frame during the elevation or depression of the wagon-body.

The lifting-arcs L L at their upper ends are provided with rearwardly-projecting pivoted arms *n n*, and the rear ends of said arms *n n* are perforated for the reception of terminal links *c c* of the lifting-chains C C. The said lifting-chains, as before stated, pass under and are in superficial contact with the peripheries of the friction-rollers *m m* of the lifting-levers L′ L′. Thence they pass rearwardly and are secured to the supplemental lifting-levers L″ L″ at the points *d*″.

In the operation of elevating the wagon-body A preparatory to dumping it will be seen that after the front of the body is raised to a point somewhat in excess of one-half of its maximum height the lifting-chains C C begin to become taut, and when under the continued application of the power said chains become stretched to a maximum degree the supplemental levers L″ L″ are drawn from their horizontal positions of rest to an incline of constantly-increasing elevation under the forward free motion of the lower ends of said levers L″ L″, the upper ends of which operate as fulcra at their points of swivel connection with the levers L′ L′, while the upper ends of the said levers L′ L′, being rigidly swiveled to the body-rail B′ B′, operate to force the rear end of the wagon-body to the height desired or to the limit thereof. It will also be seen that the body retrogrades rearwardly in proportion to the incline of the rear guides G G, though not to a degree to affect in the least the stability of the wagon and load even at the maximum of elevation.

Preferably the guides G G are channeled and are slightly inclined rearwardly for obvious reasons. The lower ends of the guides are bolted or otherwise fastened to the truck-rails B B at a short distance from their rear ends for the purpose of maintaining their upwardly-inclined bearings in a fixed position. The frictional surfaces of the guide are the flanges of the channel and the longitudinal depressions the housings for the friction-rollers *r*″. In connection with said guides and to effectively inclose the friction-rollers within the channel, brackets *h*′ *h*′ are employed, whose covering portions are perforated for the reception of the pins upon which the friction-rollers are journaled, said brackets being securely held in place by bolts passing through the ends thereof in close engagement with the outer sides of the channel-flanges and thence continuously through the rear engaging body-rails B′ B′.

In event of its being desirable to discharge the contents of the wagon-body at some point of deposit located more or less at right angles to the plane of the side of the body, a chute C^2 is so connected at its receiving end with the discharge-spout S at the delivery end of the wagon-body as to permit the chute to be swung around to a position coincident with the desired angle of delivery. For this purpose the end of the chute is broadened at the point of engagement with the spout S and is provided with a slot *s*″, extending transversely over the greater part of the said engaging part of the chute, which slot is adapted to receive an eyebolt *i*, the function of which has been fully described in the Letters Patent hereinbefore referred to.

Adapted to be attached to their side of the receiving end of the spout S is a shield S^2, which serves to stop the contents of the wagon-body which under the impetus of discharge might otherwise be thrown over the rims b^2 b^2 of the chute. This connection is made by passing the slotted clips m' m^2 to the slots u' u^2 of one of the chute-rims b^2 b^2, as the case may be, and clamping said clips fast thereto by passing the ends of pivoted hooks k' k^2 through the slots of the clips. It is obvious that a duplicate shield may be used, if desired, in which case both shields would be rigidly attached to the rims of the chute. Since, how-

ever, said side deliveries are infrequent, but one shield will be usually required.

By referring to Fig. 1 it will be seen that a short chain c^2 connects the truck-rail B and the body-rail B'. As auxiliary to the chain c^2 is a hook h^2, connected to the body-sill at or near its rear end in order that when the rear end of the body has been raised to the desired height an intermediate or terminal link of the chain may be passed onto the said hook. In unloading, if for any reason the rear portion of the load should be emptied more rapidly than the front portion the chain, being attached as described, becomes taut, and thus prevents the descent of the said front of the body until the entire load contained therein has been discharged, after which the body may be lowered at will without injuring any part of the gearing of the same.

As a reinforcement of the resistive strength of the truck-rails against undue sagging under a superincumbent weight, particularly upon the rough cobble-stones or other irregular surfaces, it is found advisable in practice to attach a truss T to the under side of the truck-rails, which truss is so located as to extend over the greater part of the longitudinal center of said rails. It is preferred also to make the amplitude of the truss adjustable, so as to take up any sagging that may supervene under the strain of long usage. For this purpose one or both ends of the truss-rod may be threaded for the reception of an adjustable nut.

While I have shown and described the lifting-arc connected to the supplemental lifting-levers by means of a chain, it will be understood that a lever may be substituted for the chain, if found desirable, the said lever being connected to the lifting-arcs and to the lower ends of the supplemental levers.

Without limiting myself to the exact construction and arrangement of the parts shown and described, since it will be understood that various changes may be made in such construction and arrangement without departing from the scope of the invention and some of the features used without others, what I claim is—

1. In a dumping-wagon, the combination with the body and truck frames, of lifting-arcs having their free ends bearing on the under surface of the body-frame, lifting-levers pivoted to the truck-frame and to the body-frame, supplemental lifting-levers pivoted to the lifting-levers and bearing upon the truck-frame, and chains passing around bearings near the lower ends of the lifting-levers and connecting the upper ends of the lifting-arcs with the supplemental levers, substantially as described.

2. In a dumping-wagon, the combination with the body and truck frames, of lifting-arcs having their free ends bearing on the under surface of the body-frame, lifting-levers pivoted to the truck-frame and to the body-frame, supplemental lifting-levers pivoted to the lifting-levers and a connection between the upper ends of the lifting-arcs and the supplemental lifting-levers, substantially as described.

3. In a dumping-wagon, the combination with the body and truck frames, of lifting-arcs having their free ends bearing on the under surface of the body, lifting-levers pivoted to the truck-frame and to the body-frame, and connections between the upper ends of the lifting-arcs and the lifting-levers adjacent the lower ends thereof, substantially as described.

4. In a dumping-wagon, the combination with the body and truck frames, of vertically-lifting arcs whose upper ends roll freely on the under surface of the body-frame, lifting-levers pivoted to the truck-frame and to the body-frame, supplemental lifting-levers pivoted to the lifting-levers and bearing upon the truck-frame, and chains connecting the supplemental levers to the lifting-arcs, substantially as described.

5. In a dumping-wagon, the combination with the body-frame comprising parallel channeled rails having horizontal webs and vertical flanges, of the truck-frame comprising rails each of which consists of separated parallel channeled bars having vertical webs and horizontal flanges upon the upper edges of which the rails of the body-frame normally bear, and means for elevating and depressing the body-frame, substantially as described.

6. In a dumping-wagon, the combination with the body and truck frames, of lifting-arcs and their operating means, lifting-levers pivoted to the truck-frame and engaging with the body-frame, supplemental lifting-levers pivoted to the lifting-levers and bearing and adapted to move upon the truck-frame, and connections between the upper ends of the lifting-arcs and the supplemental lifting-levers, substantially as described.

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

JOHN T. RICHARDSON.

Witnesses:
R. S. CARE,
CHAS. C. STROH.