

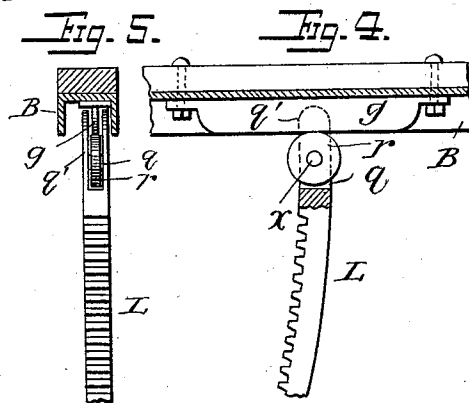
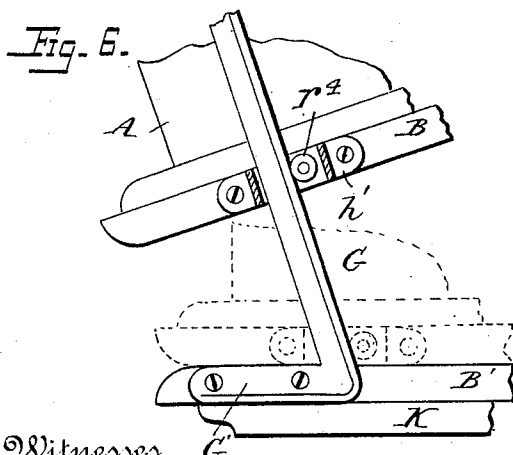
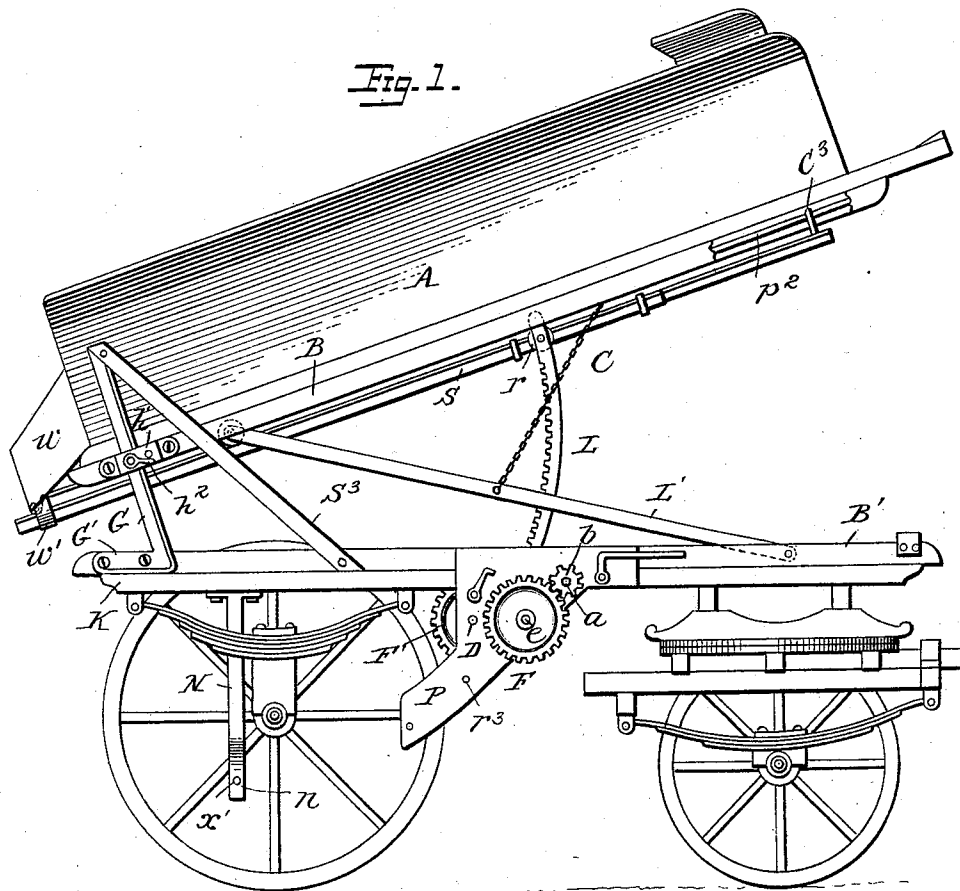
(No Model.)

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J. T. RICHARDSON.
DUMPING WAGON.

No. 529,878.

Patented Nov. 27, 1894.



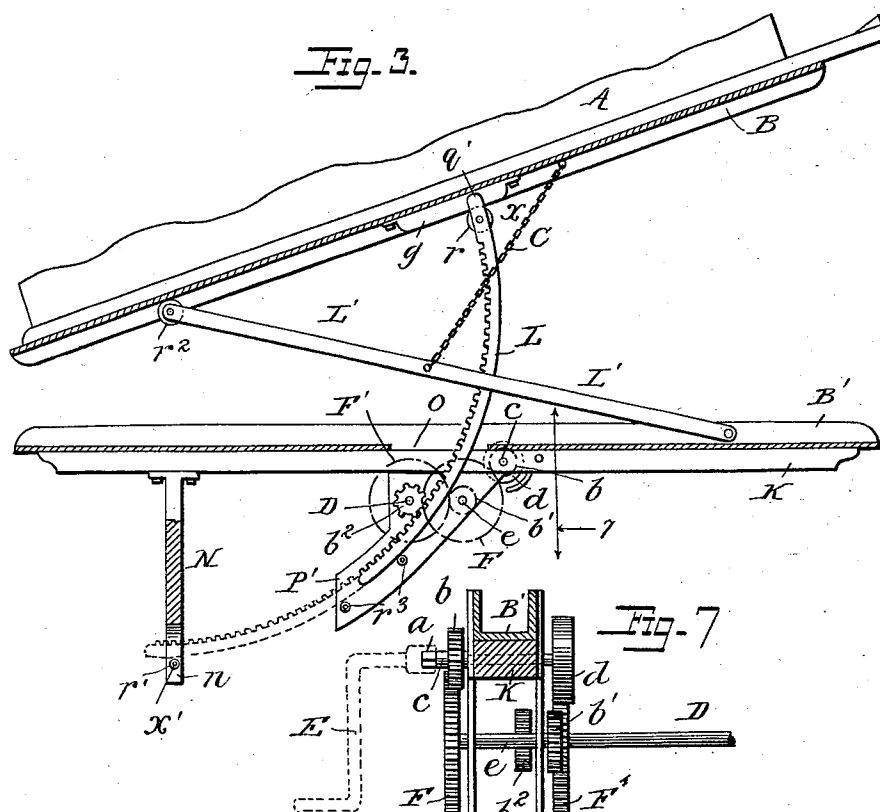
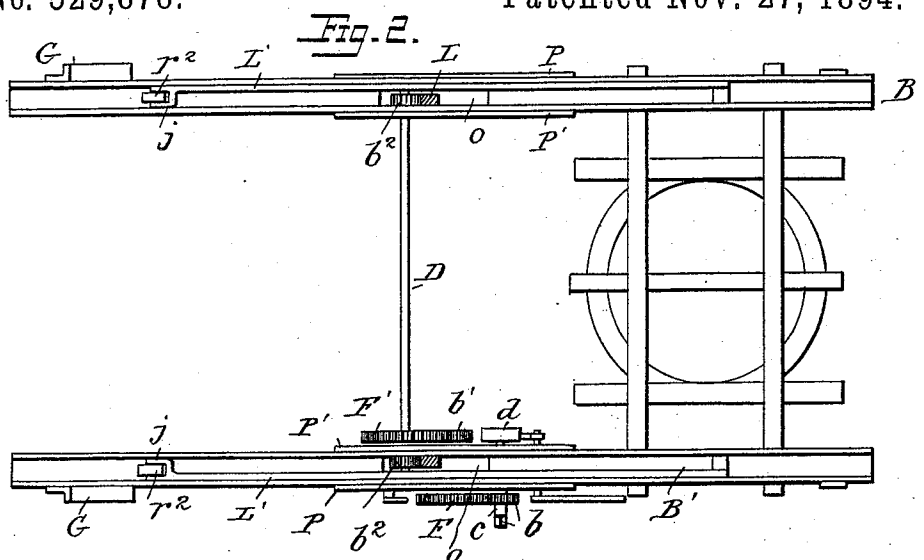
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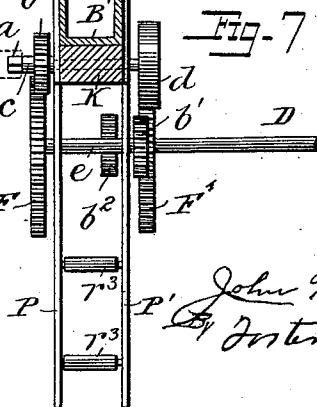
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UNITED STATES PATENT OFFICE.

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

DUMPING-WAGON.

SPECIFICATION forming part of Letters Patent No. 529,878, dated November 27, 1894.

Application filed May 2, 1894. Serial No. 509,825. (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.

The object of my invention is to secure an improved and expeditious means for the ready transportation and unloading of coal, sand, crushed stone, or other loose material, and the deposit of the same at the desired place of unloading to the saving of time and expenditure of labor.

My invention consists of an improved mechanism for elevating both the front end and rear end of my wagon body, or of the front end only, if desirable, said mechanism being utilized by means of a crank and a system of gearing from a common point of initial movement, and by a continuous motion at will. Said invention is an improvement upon a former invention granted to me by Letters Patent dated April 18, 1893, as hereinafter set forth.

In the drawings:—Figure 1 is a side elevation of my improved dumping wagon the wheels having been removed on the side next to the observer. Fig. 2 is a top plan view showing the wagon frame or truck, channel plates, and the fixed and revolving shafts with their terminating rollers, the body, sills, and wheels being removed. Fig. 3 is a skeleton side view showing the channel plates, lifting arcs, lifting levers, lifting chains, and fixed stirrups in position of the body channel plates partially lifted vertically when dumping light weights without shifting rearward. Fig. 4 is a longitudinal detached view of my friction guide showing the upper end of the lifting arc in engagement therewith. Fig. 5 is a vertical transverse section of the same. Fig. 6 is a side view of the rear guides or standards between which the rear ends of my wagon body is raised and maintained with the inclosing friction box and pulleys, and the heads of the bolts or rivets by which said box is fastened to the channel plate flanges. Fig. 7 is a part vertical section on the line 7, Fig. 3.

To describe my invention in detail I will

designate my wagon box or body in each of the figures thereof by the letter A. I prefer to make said body somewhat deeper in its rear end than front end for obvious reasons.

The frame work upon which the wagon body A, rests consists primarily of four channels made preferably of steel. The two plates B, upon opposite sides upon which the sills of the body A rest are fastened thereto by bolts or rivets passing through the webs or the upper flanges thereof, as the said webs are in horizontal or vertical position in relation to the oppositely engaging channel plates B'. The said channels B' when used to strengthen the upper longitudinal beams K, of the truck are preferably placed with their flanges projecting upward.

When I use the channel plates B, B', as described in my Letters Patent of April 18, 1893, the other actuating parts in connection therewith are as hereinafter described.

It is seen that the power used to elevate the body A, to the desired position in dumping is applied to the crank E, attached to the hub *a*, of the pinion *b*, which is securely fastened to the short shaft *c*, terminating in the brake wheel *d*, the beam K, and the downwardly projecting plates P, P', (which are also securely fastened to the said outer and inner flanges of said channel B') and keyed or otherwise secured in place that the pinion *b*, and the brake wheel *d*, may perform in turn their required function. By further reference to said figures, it is seen that the pinion *b*, meshes into the cogged periphery of the wheel F, fitted upon the short shaft *e*, also attached to the said plates P, P', and terminating in the pinion *b'* in close proximity to the said inner plate P'. The said wheel F by its revolution transmits its motion to the said pinion *b'*, which in turn meshes into the cogged periphery of the wheel F', and thence by the revolution of its long shaft D and the terminal pinions *b*² thereof (located in vertical lines centrally engaging the said channels B' between the flanges thereof upon opposite sides of the wagon bed) the motion is further communicated by the meshing of the cogs of said pinions *b*² into the cogged concaves of the lifting arcs L, said shaft D being journaled through the bearing plates P P' and their co-

ordinates, also attached similarly to the flanges of the channel B' upon the opposite side of the wagon bed. By the said meshing of the said pinions b^2 under the applied power the said lifting arcs L are enforced upward in a vertical plane through the orifices o , piercing the bottoms of the channels B' so located as to freely admit thereof. The upper ends of said arc lifters L are bifurcated into jaws q , for the reception therein of the rollers r , and their axles x . The ends of said jaws q , are so prolonged beyond the rolling surfaces of the rollers r , as to form guards q' that in turn act as bearing surfaces between which the frictional guides g are received, and thereby confine the said rollers r , upon the bearing surfaces of said guides when the body A is being elevated or lowered, against lateral displacement.

In the construction of my guides g , I prefer the use of a plain bar of iron or steel some two inches broad, one-half or three fourths of an inch thick and some eighteen inches long, and flattened at both ends transversely to the thickness of the bar, to afford bearings through which I pass bolts, said bolts being extended through the bottoms of the channels B, and their overhanging sills of the body A, and securely fastened thereto by means of nuts.

By further examination of the arc lifters L, L, it is seen that the lower free ends thereof, when the body A rests upon the wagon bed, pass through the jaws or open ends n , of the rigid stirrups N, said ends n being furnished with friction rollers r' . The said stirrups N, N, are bolted by their upper T ends to the bottoms of the channels B' at points a little to the rear of the rear axles of the wagon, and between the rear springs thereof. The openings of the free ends of the stirrup are so made by their separation into jaws whose limbs n , are sufficiently extended and separated as to admit of the insertion therein of the rollers r' , and their axles x' .

By a further examination of my lifting appliances it is seen that the lifting levers L', are plain bars swiveled to the forward ends of the channels B' and the free ends furnished with jaws j , and rollers r^2 said lifting levers being of a length somewhat less than that of the body A and lie when at rest in the channels of the channel plates B' except when they are elevated into an inclined position by the use of the lifting chains C. The function of said levers L' when so inclined is that of elevating the rear end of the body A when that is required in the act of dumping. The said chains C are attached at their lower ends to the lifting levers L' at points about equi-distant between the ends of the latter, while the upper ends of the said chains are fastened to and through the bottoms of the channels B, and overlying sills of the body A, at points somewhat forward of the longitudinal centers of the said channel plates B. The said chains C perform the im-

portant function of transmitting the upward movement of the body A, under the applied power, to the lifting levers L'. By said location of the upper ends of the said chains to the channel plates B, a very important principle or additional function is evolved both in the balancing of the loaded wagon body about the lateral axis thereof, and the distribution of the weight of the rear end of the said body over the forward portion thereof, and the consequent retention of the vertical line of gravity within the central area of the base thereby increasing the stability of the loaded wagon even upon ground of unequal surface, in addition to the relief of the strain upon the lifting levers L' when exercising their function in the elevation of said body when in the act of dumping.

The plates P, P', while furnishing bearings for the shafting of the gearing hereinbefore described also supply additional bearings for the axles of two or more friction rollers r^3 upon which the upper and central portions of the arcs L slide when in motion while similar bearings are supplied for the lower free ends thereof by the rollers r' of the stirrups N, as hereinbefore described, the latter performing the additional function of a support to said free ends, when the body A is not elevated and the wagon is either at rest or in transit while transporting its load from place to place, thus guarding against fracture of the said arcs from the mere unsupported weight of said free ends, or from sudden shock under the liabilities of use either from collision with other vehicles or otherwise.

For convenience in depositing the contents of my wagon I locate an opening more or less centrally in the tail board of my wagon body A, and from thence extend to the rearward thereof, a spout w of suitable length, and somewhat narrower at its point of delivery in order to facilitate the flow of said contents into my chute S. At the free end of said spout w , I attach a stirrup w' for the rear support of my chute rod p^2 as hereinafter more fully described.

In such cases as it is not desirable to dump the contents of my wagon body A directly from the spout w at a near point of delivery, but to deposit the same at a greater or less distance inaccessible by the wagon, I propose to use a chute S consisting of one or more longitudinal sections telescoping together, and hence capable of being elongated at will to the desired length for convenient deposit. Also in such cases as I cannot deliver the contents of my wagon to a point inaccessible to the rear of my wagon directly owing to the fact that said point is only approachable at some angle other than a right angle; I so attach my chute S terminally to the said spout w , of my body A as to admit of the chute being swung to one side at the desired angle for said delivery. For this purpose I swivel a bar or similar appliance to a convenient point on the under side of the

bottom of the wagon body A, at the front end thereof and of such a length that it will project in the rear to a short distance beyond the spout end *w*, the said projection resting in a stirrup in or similar device attached to the end of said spout, as and for the purpose hereinbefore described. To the front end of my chute, I attach an eye bolt C³ of sufficient opening as to admit of its sliding freely thereupon to the extent of the length of the rod which terminates at its free end in a hook to which the eye of the bolt is suspended when the chute is drawn out to its limit, and thus admits of the lateral movement of the free end of the chute to any point desired at angular intersection with the line of the wagon bed as hereinbefore mentioned.

In referring to Fig. 6, I show my guides or standards G backwardly inclined (about thirty degrees from vertical) wrought in the form of an L, the short arm G', thereof being bolted or otherwise securely fastened to the outer flanges of the truck channels B' for the purpose of maintaining the upwardly inclined guide bearings G in a fixed position in connection with the stay rods S³ which are fastened at their one extremity to the upper ends of the guides G and at their other extremity to the said channel flanges B' at points some two feet in advance of the angles of the said guides. In connection also with the said guides and inclosing the same upon the outer sides thereof I use brackets or holders h' containing friction pulleys r⁴ so placed and retained in contact therewith, as to admit of their rolling upon the upwardly inclined plane surfaces of the guides G (when the rear end of the body A is being raised), said pulleys r⁴ revolving upon axles journaled or fastened into drillings piercing the covering portions of the holders h'. Moreover as it is often desirable to retain said rear end of the body A at a desired height while dumping, I tap a hole through the covering portion of said bracket h' at a point opposite the flat vertical surface of the guide G', and insert therein a short crank armed set screw h² which upon being screwed home impinges terminally and so firmly against said flat surface of the said guide G that no power of gravity or weight alone can overcome. When said rear end is in process of elevation said set screw rests loosely in its threaded socket and hence does not impede the elevation of said rear end of the body until so required as stated.

The advantages that I claim in the characteristic features of my dumping wagon are evident from a mere statement of the same.

First, by the use of channel plates I strengthen both the body sills and the truck beams very materially while the labor required to adjust the same is merely nominal—the channels being of such commercial sizes as are readily got from the stock of those engaged in the rolling of such appliances. Then again said channels being of iron or steel they supply the bearings needed for the operating

mechanism of my wagon without additional strengthening as is necessary when the said parts are of wood. Also by my arrangement of co-operating parts I am enabled to attain a greater simplicity of structure united with great co-operating strength, and therefore am enabled to avoid the liabilities of wear and tear in use to a great extent as proven by experience. For the same reason also the cost of construction is very materially reduced.

Without limiting myself to the precise construction and arrangement of parts shown and described, I claim as my invention—

1. In a dumping wagon, the combination with the body, the truck supporting frame and oppositely engaging channel plates, of lifting levers or bars swiveled to the forward ends of the truck channel plates and the opposite free ends rolling upon the lower surfaces of the opposite body channels, and operating mechanism comprising lifting arcs with their upper ends impinging freely upon the body channels and means for raising and lifting arcs, substantially as described.

2. In a dumping wagon the combination with the supporting frame, the body and lifting arcs, of fixed stirrups for the reception and support of the lower free ends of the lifting arcs, substantially as described.

3. In a dumping wagon the combination with the body and truck frame, of a single pair of lifting levers pivoted to the forward ends of the truck frame with their free ends bearing on the under surface of the body sills, chains connecting said lifting levers and body directly without any intermediate means or agency, and means for raising the body, substantially as described.

4. In a dumping wagon the combination with the body and truck frame of lifting arcs with their upper ends rolling freely on the under surface of the body sills, and means for raising said lifting arcs, substantially as described.

5. In a dumping wagon the combination with the body and truck frame, of lifting arcs whose upper ends roll freely on the under surface of the body sills parallel therewith, by the engagement of said free ends with friction guides rigidly attached to said under surface, substantially as described.

6. In a dumping wagon, the combination with the body and truck-frame, of vertically lifting arcs whose upper ends roll freely on the undersurface of the body, friction guides attached to the under surface of the body, lifting levers pivoted to the truck-frame and bearing on the body, chains connecting the levers to the body, and means for securing the body when elevated, substantially as described.

7. In a dumping wagon, the combination with the body and truck-frame, of lifting arcs having their free ends bearing on the under surface of the body, levers pivoted to the truck, and bearing on the under surface of the body, chains connecting said levers to

said body, guides controlling the movement of the body, and means for locking the rear end of the body at any point of its raised position, substantially as described.

- 5 8. In a dumping wagon, the combination with the body and truck frame, of vertically lifting arcs whose upper ends move freely on the under surface of the body, the arcs having upward and forward movement with relation

to the body, and means for raising the arcs, 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:

I. A. FAIRGRIEVE,

J. D. SCULLY.