No. 652,757. Patented July 3, 1900.

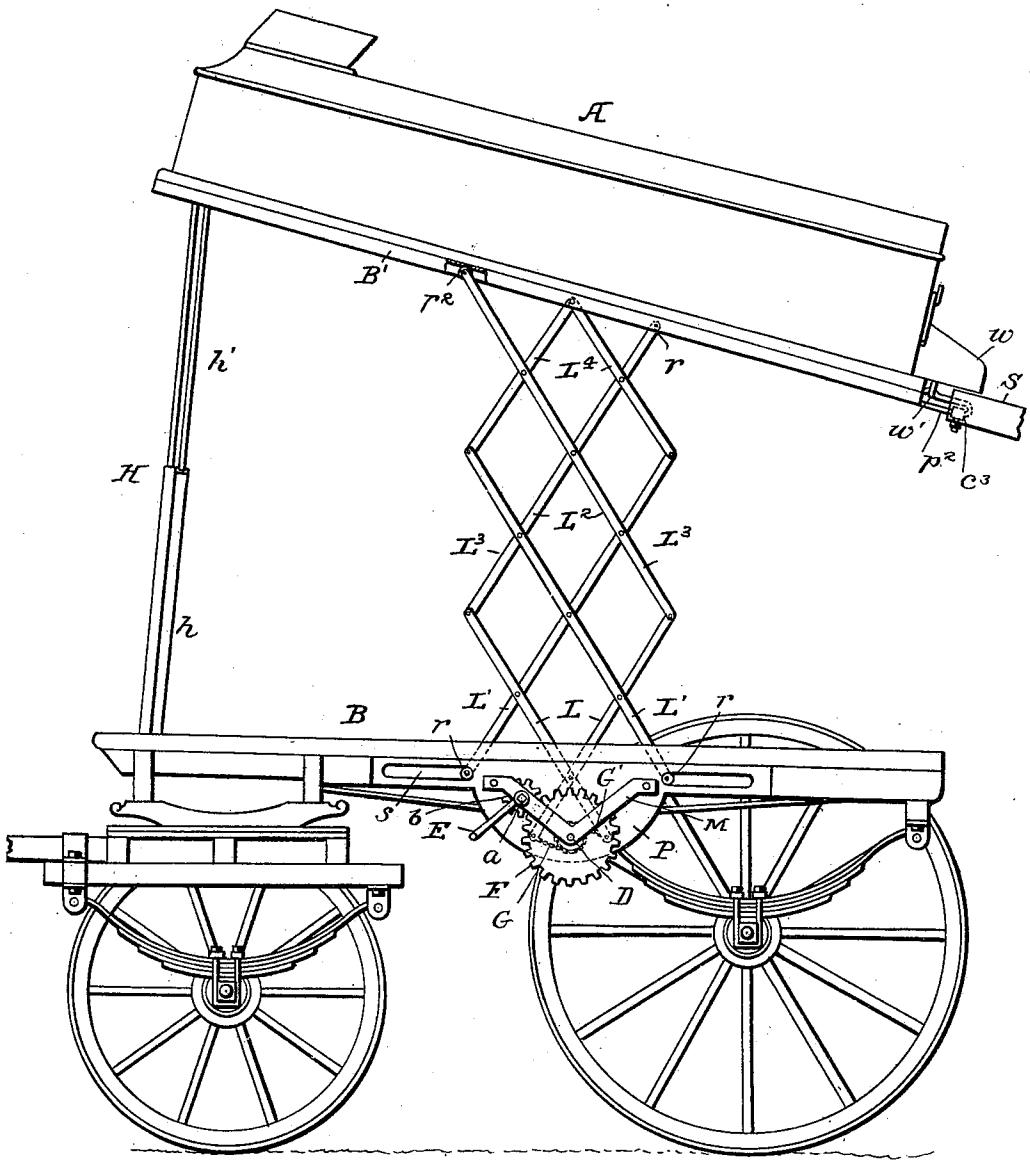
A. H. EGE.

DUMPING WAGON.

(Application filed Dec. 30, 1899.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.



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(No Model.) 3 Sheets—Sheet 2.

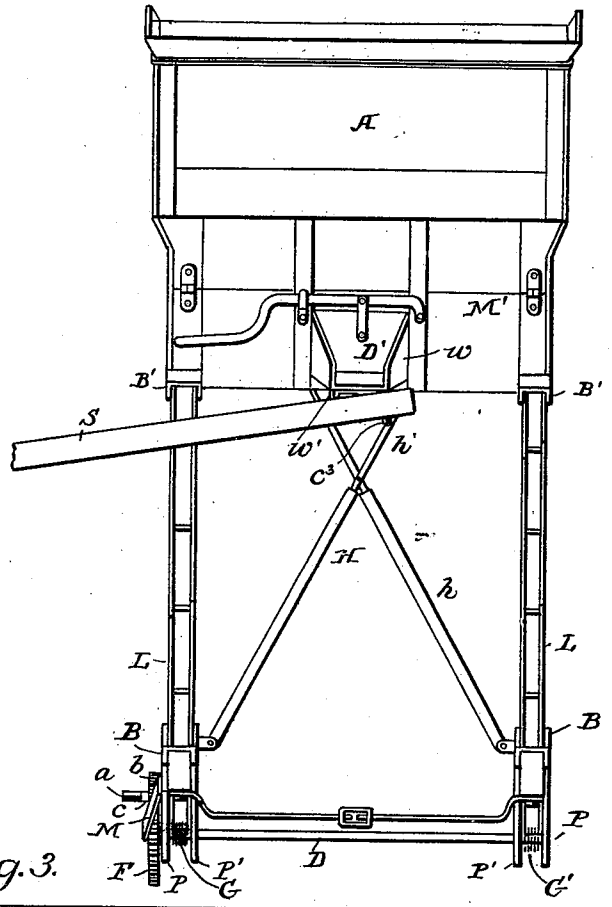
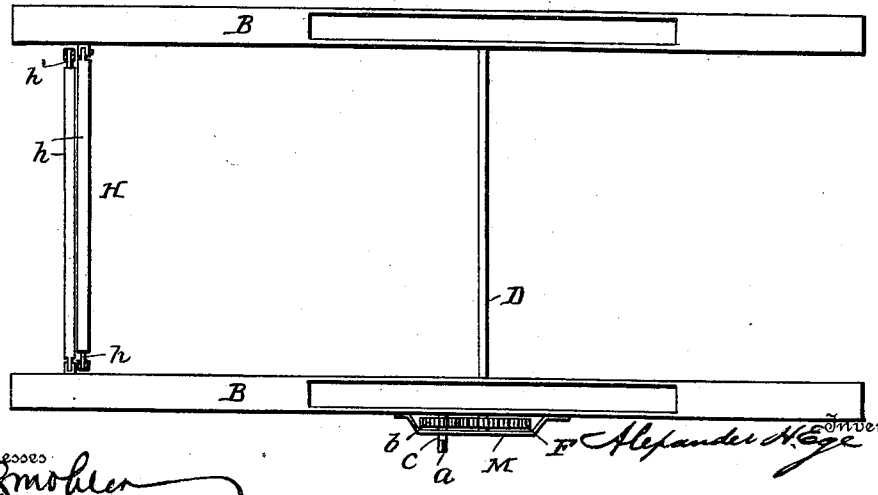


Fig. 2.

Fig. 3.



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Fig. 4.

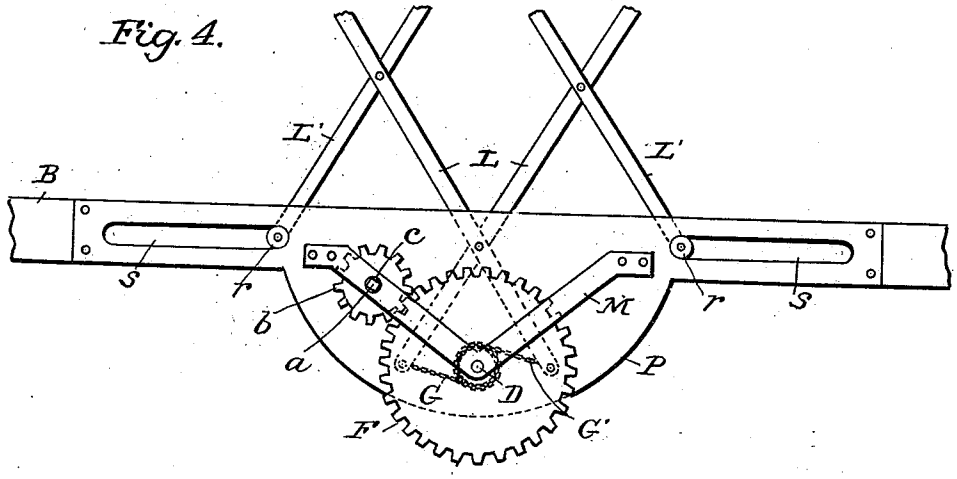


Fig. 5.

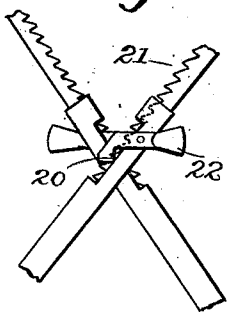


Fig. 8.

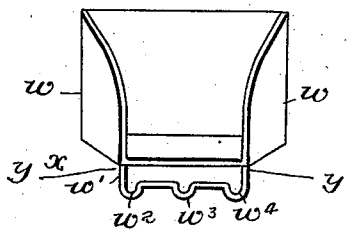


Fig. 9.

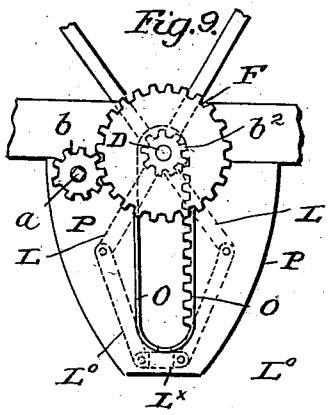


Fig. 6

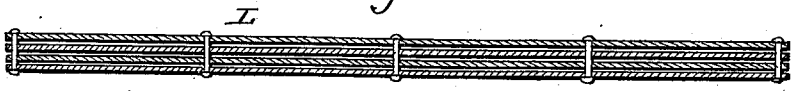
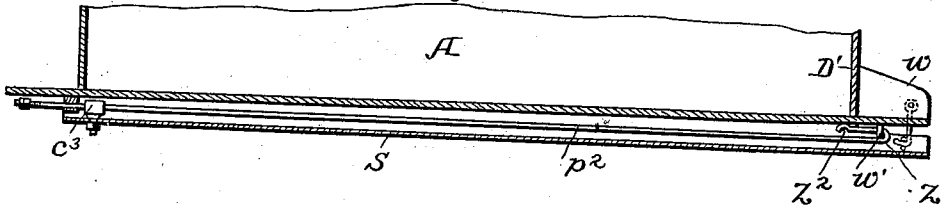


Fig. 7



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UNITED STATES PATENT OFFICE.

ALEXANDER H. EGE, OF MECHANICSBURG, PENNSYLVANIA.

DUMPING-WAGON.

SPECIFICATION forming part of Letters Patent No. 652,757, dated July 3, 1900.

Application filed December 30, 1899. Serial No. 742,048. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER H. EGE, a citizen of the United States, residing at Mechanicsburg, in the county of Cumberland and State of Pennsylvania, have invented a certain new and useful Improvement 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 the rear end of my wagon-body or of the front end only, if desirable, said mechanism being utilized by means of a crank, a system of gearing, and elevating-bars crossing each other transversely and hinged or swiveled together, each to each, operating from a common point of initial movement and by a continuous motion at will, as hereinafter set forth.

In the drawings, Figure 1 is a side view of my improved dumping-wagon, showing the body elevated ready for dumping. Fig. 2 is an end view of Fig. 1, showing in addition also the chute attached to the spout of the body and arranged for side delivery. Fig. 3 is a top plan view showing the wagon-frame or truck with longitudinal centers of truck-rails cut away to supply an opening in which the hoist-levers rest, the fixed revolving shafts, cogged gearing, and stay-bars in place, the body, sills, and wheels being removed. Fig. 4 is a longitudinal detached side view of the cogged gearing, showing the brace-work or outer bearings for the support of the same, the mode of attaching the hoisting-chains to the revolving shaft, and the slots in which the ends of the supplemental lift-bars roll when extra high lift is required. Fig. 5 is a vertical longitudinal view of a modified form of stay-bars, parts being broken away. Fig. 6 is a similar vertical section of the double lift-bars, which are used to elevate the body when loaded with excessive weights. Fig. 7 is a longitudinal sectional view of the chute and its supporting means, parts being broken away. Fig. 8 is a detail end view of the wagon-body, the chute being detached; and Fig. 9 is a detail view of a modified form of hoisting apparatus.

To describe my invention in detail, I will designate the wagon box or body in each of the figures of the drawings by the letter A. I prefer to make said body somewhat deeper in its rear end than front end for obvious reasons.

The framework upon which the wagon-body A rests consists, primarily, of the truck-rails B B, made, preferably, of wood and strengthened to support the superincumbent weight either by channel-plates or plain bars of metal, preferably of steel, extending over the whole or a greater part of the length of the said rails B B. If channel-plates be used, I prefer that the flanges of the same should be so placed on the rails as to extend vertically downward, the said rails filling the channels or longitudinal grooves thereof and securely fastened to the latter by bolts, rivets, or other efficient connections. If it be desirable to further strengthen the said rails B B, as shown in Fig. 1, truss-rods are placed under the longitudinal centers of the same of a length more or less equal to the said truck-rails.

In the case of the sills B′ B′ of the body A it is best to strengthen the same by the use of similar channel-plates fastened thereto with the flanges thereof extending downward, the longitudinal grooves or gutters thereof being unfilled, as and for a purpose hereinafter set forth.

It is seen that the power used to elevate the body A to the desired position for 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*. The contiguous truck-rail B and the downwardly-projecting plates P P′ are securely fastened to the outer and inner vertical faces of said rails B B, as shown in Figs. 1 and 4, and keyed to or otherwise secured in place. 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 long shaft D, journaled through the outer braces or supports M, the plates P P′ contiguous thereto, and also to their coördinates on the opposite side of the wagon, in which said shaft D terminates. The said wheel F by its revolution upon the said long shaft D ad-

mits of the wrapping about the periphery of the latter chains G G', so attached thereto as to admit of their being wrapped thereabout in opposite directions, as and for the purpose hereinafter more fully set forth.

It is seen, as shown in Figs. 1 and 4, that the power used to elevate the body A by means of the said gearing is transmitted by the said chains G G' or their equivalents and their connections to the levers or lifting-bars L L, L' L', $L^2 L^2$, $L^3 L^3$, and $L^4 L^4$ on the crank side of the wagon, as shown in Fig. 1, and their coördinate levers on the opposite side thereof, said levers being pivoted terminally and intermediately to each other and in the cases of $L^2 L^2$ and $L^3 L^3$ and their coördinates terminally to the body-sills and truck-rails, respectively, so as to separate angularly from or engage laterally with each other, each to each, by what is known as the "scissors" or "lazy-tongs" movement, and thus by said movement alternately elevate and depress the said wagon-body at the will of the operator. In the present construction the levers of the lazy-tongs consist of two series of levers, the combined length of each series varying and being arranged in such manner that when the levers are separated the forward end of the wagon-body will be elevated in advance of the rear end, thereby causing the said body to incline downwardly from front to rear. It is further seen that in this alternate elevation and depression of said levers and as contributory thereto the levers L' L' and their coördinates on the opposite side of the wagon, as shown in Fig. 1, are furnished at their lower or truck ends and at their upper body ends with rollers $r\ r$ and $r^2 r^2$, in the former case to admit of said ends rolling horizontally forward or backward in the slots $s\ s$ to the extent required, and in the latter case to admit of the said upper or body ends upon their rollers $r^2\ r^2$ moving freely to and fro at a more or less incline in the channel-grooves of the channel-plates B' B' and their coördinates within the required limits, as the act of raising and lowering the body demands.

In the modified form of lifting mechanism illustrated in Fig. 9 chains are dispensed with and a toothed rack-bar O is employed, the teeth of which intermesh with those of the pinion b^2. At its lower end the rack-bar is pivotally connected by means of a cross-piece $L^\times$ to the lower ends of links L^0, which are in turn pivotally connected to the lower ends of the levers L L. When it is required to elevate a body of a larger than the average capacity, I propose to use double the number of lift-bars, as shown in longitudinal section in Fig. 6, but otherwise to adapt the same to the performance of their functions as in case of the single-bar intersections shown in Fig. 1. When it is not required to raise the body A to its greatest height, the lift-bars $L^3 L^3$ in Fig. 1 may be omitted. In this case the slots $s\ s$ and rollers $r\ r$ are not required, and therefore the same may be dispensed with. In order to give stability to the said engaging levers in the performance of their said function, particularly when it is desirable to elevate the body to an excessive height, I pivot to the forward ends of the truck-rails and diagonally to the forward ends of the body-sills, stay rods or bars H H, composed of the sections $h\ h'$, said sections being so constructed as to engage telescopically with each other at their inner ends of contact, while their opposite or outer ends, in consequence of their pivoted connection with the said forward ends of the truck-rails and body-sills, are enabled to conform themselves to the different heights to which the body is elevated and at the required incline. Also when the body is at rest upon the truck-rails the said construction of the said sections admits of the latter assuming a horizontal position transversely with the body, as shown in Fig. 3. If still greater stability is desired than may readily be obtained by the use of the aforesaid stay-rods, said stability may obviously be increased by adding similar stay-bars to the rear end of the body-sills and truck-rails.

In the construction of my stay-bars H H, I prefer to make the ends of the sections $h\ h'$ that engage each other of box form, said box being open longitudinally, preferably of right-angular clearance, and of such dimensions as will conform in the main to the vertical cross-section of the plain part of the stay-rod H, that the latter may readily journal said longitudinal box-clearance for purposes of free telescoping, as shown in Figs. 3 and 5, hereinbefore mentioned. I prefer said mode of telescoping the sections of my stay-bars H H on account of the economy and simplicity of such construction, as well as its efficiency in operation. In some cases, however, it may be convenient to use the pipe form of sectional stay-bars, and therefore I do not restrict myself to the hereinbefore-described construction. It being evident also that the body while performing its necessary functions will be raised to and retained at different heights, according to the demands of delivery, I propose to accommodate the specific function of the stay-bars thereto. This I accomplish by locking the laterally-engaging sections $h\ h'$ thereof together, each to each, when the said body has been raised to the required elevation in any particular case. The most simple method of binding said sections together when so required is to journal through perforations previously pierced therein one or more pins provided for that purpose—means that not only prevent further elevation or depression of the body during the retention of said pins in place, but also give the required rigidity of support to the stay-bars coöperating with the said lifting-bars L L' L^2 L^3 L^4 and their coördinates in sustaining the body and its contents when elevated and in imparting increased stability thereto under the conditions of the discharge thereof. It is obvious that automatic means, such as a pawl, (see Fig. 5,) may be used as a locking device

in connection with said oppositely moving and sliding sections. Said pawl 22, being swiveled to the one section and its grip 20 overlapping the same and dropping by gravity into cogs 21, wrought into the upper and longitudinal edge of the other laterally-engaging section, operates to lock the said sections of the stay-bars together as against the descent of the body, but passing over the cogs unobstructed when moving in the opposite direction. When it is necessary to have the body descend after the delivery of its load, the said pawl 22 is thrown back out of cog contact and retained therefrom by having its finger-piece weighted at its free end, whereby the line of gravity of the said pawl is brought to the rear of its swivel with its engaging stay-bar section, and hence while in this position is inoperative.

In the case of the use of pipe-telescoping appliances, as stay-bars, equivalent means for the locking of the sections each to each will obviously be needed, as and for the reasons hereinbefore substantially set forth.

The parts M M (shown in Figs. 1 and 2) are retaining-bars or rigid keepers whose function is to afford bearings of support to the hubs of the wheel F and the pinion *b*, said bearings, in connection with those of the housing-plates P P′, hereinbefore mentioned, being necessary to sustain the reaction exerted by the said pinion and wheel in transmitting the power from the crank-lever to the subsequent appliances utilized for the elevation of the body.

For convenience in depositing the contents of the body I so construct the tail-board of the same as to secure two openings or doors therein of different dimensions in order that the said contents may be emptied either in mass or in intermittent and restricted quantities. In the former case, as shown in Fig. 2, I divide said tail-board horizontally into unequal portions, the upper portion being stationary and the lower portion or door M′ hinging thereto, so as to admit of the latter being rotated upward at will when it is desired to supply an opening large enough for said mass delivery, in which case the spout, being rigidly attached thereto, goes upward therewith also by said upward motion. In the case of delivery in restricted and intermittent quantities and as preparatory thereto I locate about centrally of said larger door a second opening and covering-door D′, of the dimensions substantially of the receiving end of the spout *w*, that extends rearwardly therefrom, said spout being of convenient length and somewhat narrower at its point of delivery than at its receiving end. It is also seen that ingress to said spout is controlled by said small lift-door D′, that is opened and closed at will by the operator. At the free or delivery end of said spout *w* I attach a stirrup *w′* for the support of the chute-rod p^2, hereinafter more fully described.

In such cases as it is not desirable to dump the contents of the body A directly from the spout *w* at a near point of delivery, but at some point at a greater or less distance inaccessible by the wagon; I propose to use a chute S, consisting of two or more longitudinal sections telescoping together, thence capable of being elongated at will to the desired length for convenient deposit. Also in such cases, as I am not able to deliver the contents of the wagon to a point accessible to the rear end thereof directly, owing to the fact that said point is only approachable at some angle, I so attach my chute S terminally to said spout *w* of the body A as to admit of the chute being swung to one side at the desired angle for the said delivery, as shown in Fig. 2. For this purpose I attach a bar or chute-rod p^2, Fig. 7, or similar appliance to a convenient point on the under side of the body A at the front end or cross-sill thereof and so adjusted that it will slide to and fro longitudinally at will to a limited extent under the footboard of the same. The rear end of said bar p^2 when drawn out to its limit of rearward thrust is of such length as will admit of its being bent back upon itself for a short distance and at its extremity curved into a hook so wrought as to adapt said extremity to rest securely by its own weight against lateral oscillation (except at will) at or in any one of the curved seats w^2, w^3, or w^4 (as the case may be) of the stirrup *w′*, suspended at the free spout end, as hereinbefore set forth, but projecting beyond said stirrup *w′* when drawn out to such an extent as will admit of the chute being swung around and at the same time afford full breadth of chute to receive the contents of the body when being discharged at an angle laterally. To the front end of the chute I attach an eye-bolt c^3, of sufficient opening as to admit of its sliding freely therewith upon and to the extent of the length of the rod at or near the point at which said rod terminates at its free end in said hook, as above stated, said chute by its suspension from said eyebolt admitting of its being drawn out to its limit aforesaid, and thus admitting of the lateral movement of the free end thereof to any point desired at angular intersection with the line of the wagon-bed, as hereinbefore mentioned.

The advantages that I claim in my improved dumping-wagon are evident from the description of the coöperating parts thereof, as hereinbefore set forth. First, the use of my diagonally-intersecting lift-bars, swiveling with each other, each to each, and terminally moving freely, enables me to attain very great height of body elevation combined with great rapidity of movement—a combination that is of great value both in economy of time when it is required to deliver the contents of the body at a distance therefrom, notwithstanding intervening objects, such as fences and grass-plots, which make it impossible otherwise to deposit the load by gravity with the average length of chute heretofore in use. Also in consequence of my simplicity of construction and the strength of the con-

stituent parts of my lifting apparatus I am able to reduce materially the disarrangement of the engaging parts thereof during the process of elevating the body for the delivery of its contents or in lowering the same after said delivery.

The benefits derived from the use of my adjustable stay-bars, operating either automatically or otherwise at will, are unrivaled in value both from the standpoint of safety in the support given to the body independent of the hoist apparatus and in the increased stability thereby afforded against the inequalities of road-surface, high winds, &c.

For the above reasons I materially reduce also the expense of the manufacture of the different parts that constitute the aforesaid complete structure.

I claim as my invention—

1. In a dumping-wagon, the combination of the body and truck frames, means for elevating the body-frame above the truck-frame, oppositely-disposed stay-bars pivotally connected to the truck and body frames adapted to lie normally transversely across the said frames, and means for locking said bars together to prevent the movement of one relative to the other, substantially as described.

2. In a dumping-wagon the combination with the body, the truck or supporting frame, of lifting-levers whose upper free ends roll, the one forward and the other rearward, in the channels of the body-sills, and whose lower free ends roll, the one forward and the other rearward in slots wrought in the truck-rails, substantially as described.

3. In a dumping-wagon, the combination of the body and truck frames, means for elevating the body-frame above the truck-frame, oppositely-disposed sectional telescoping stay-bars pivotally connected to the truck and body frames adapted to lie normally transversely across the said frames, and means for locking said bars together to prevent the movement of one relative to the other, substantially as described.

4. In a dumping-wagon, the combination of the body and truck frames, means for elevating the body-frame above the truck-frame, oppositely-disposed sectional telescoping stay-bars pivotally connected to the truck and body frames adapted to lie normally transversely across the said frames, and means for automatically locking said bars together to prevent the movement of one relative to the other, substantially as described.

5. In a dumping-wagon, the combination of the body and truck frames, two series of levers pivoted together to form lazy-tongs, means for guiding the upper and lower ends of two or more of the levers upon the truck and body frames, and mechanism for moving the levers to and from each other, substantially as described.

6. In a dumping-wagon, the combination with the body and truck frames, of stay bars or supports to the body at any point of elevation thereof, said bars consisting of two or more longitudinal sections telescoping together, one of said sections being provided with teeth and the other with a pawl adapted to interlock therewith, as and for the purpose set forth.

7. In a dumping-wagon, the combination of the body and truck frames, two series of levers pivoted together to form lazy-tongs, means for guiding the upper ends of one series of levers upon the truck-frame and the lower ends of the other series upon the body-frame, mechanism for moving the second set of levers to and from each other, and adjustable means for maintaining the front end of the body-frame in a fixed elevated position, substantially as described.

8. In a dumping-wagon, the combination of the body and truck frames, series of levers connected together to form a lazy-tongs, the upper and lower ends of two or more of the levers being adapted to slide longitudinally with respect to the truck and body frames, and means for positively moving the levers to and from each other, substantially as described.

9. In a dumping-wagon, the combination of the body and truck frames, two series of levers pivoted together to form lazy-tongs, one series of the said levers engaging the body-frame and mechanism carried by the body-frame for moving the levers to and from each other, the said mechanism comprising a rack-bar connected to the levers, a gear-wheel intermeshing with the rack-bar, and means for rotating the gear to reciprocate the rack-bar, substantially as described.

10. In a dumping-wagon, the combination of the body and truck frames, two series of levers pivoted together to form lazy-tongs and connected to the body and truck frames, the combined length of the levers of one series of levers being less than that of the other, and mechanism for moving the levers to and from each other, substantially as described.

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

ALEXANDER H. EGE.

Witnesses:
H. S. MOHLER,
M. G. MOHLER.