

No. 617,994.

Patented Jan. 17, 1899.

J. T. RICHARDSON.
DUMPING WAGON.

(Application filed Mar. 13, 1897.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1

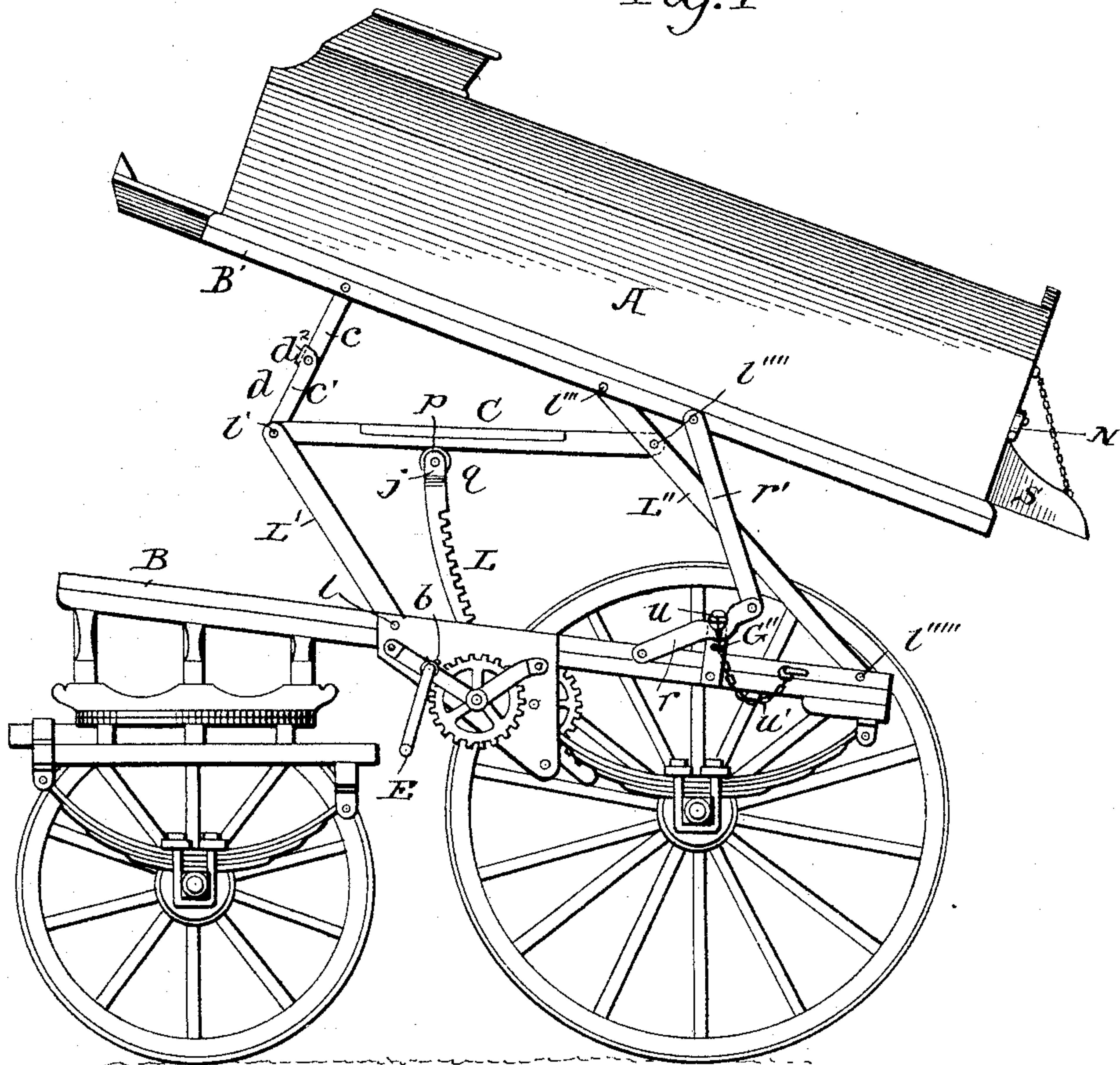
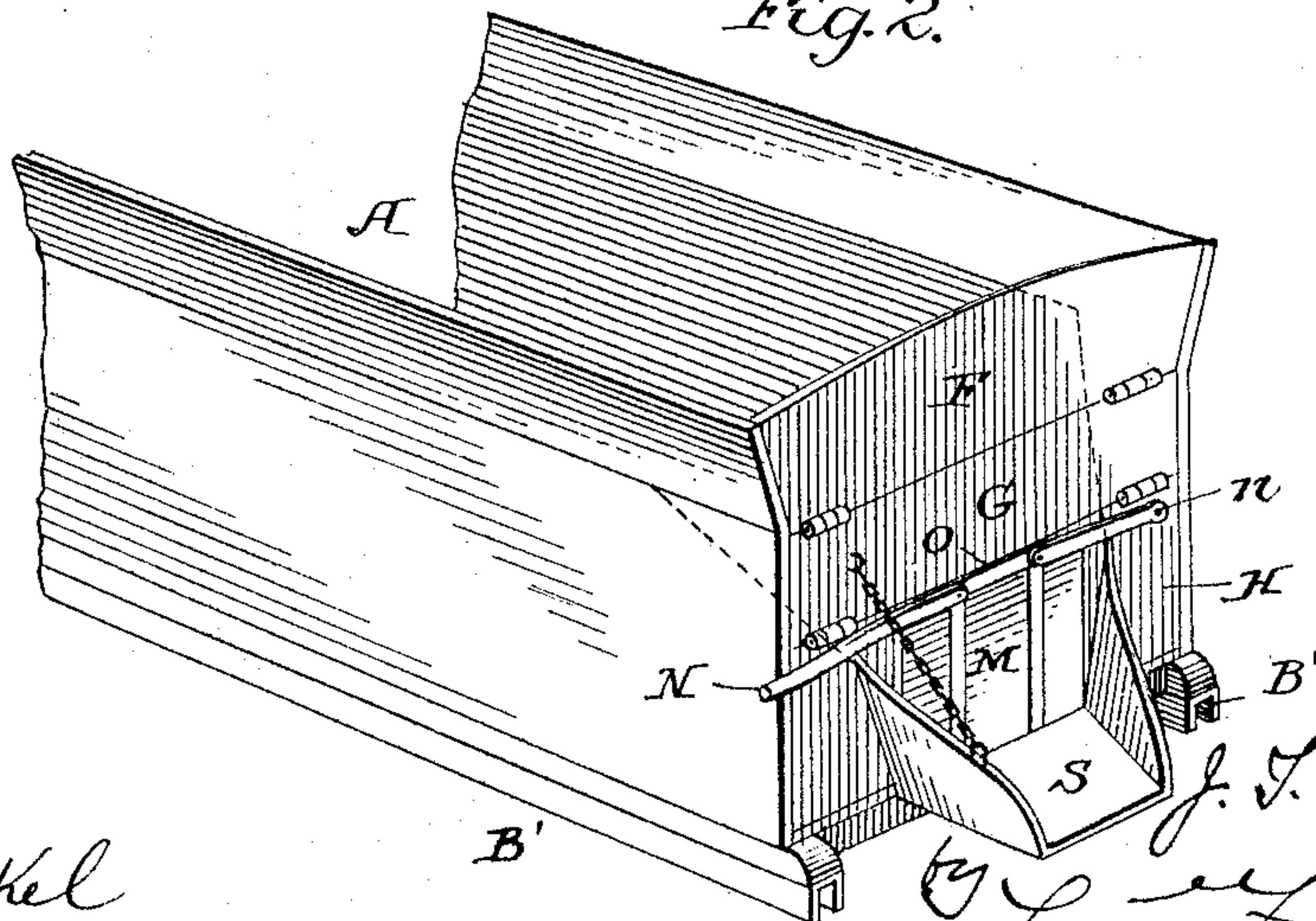


Fig. 2



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Fig. 4.

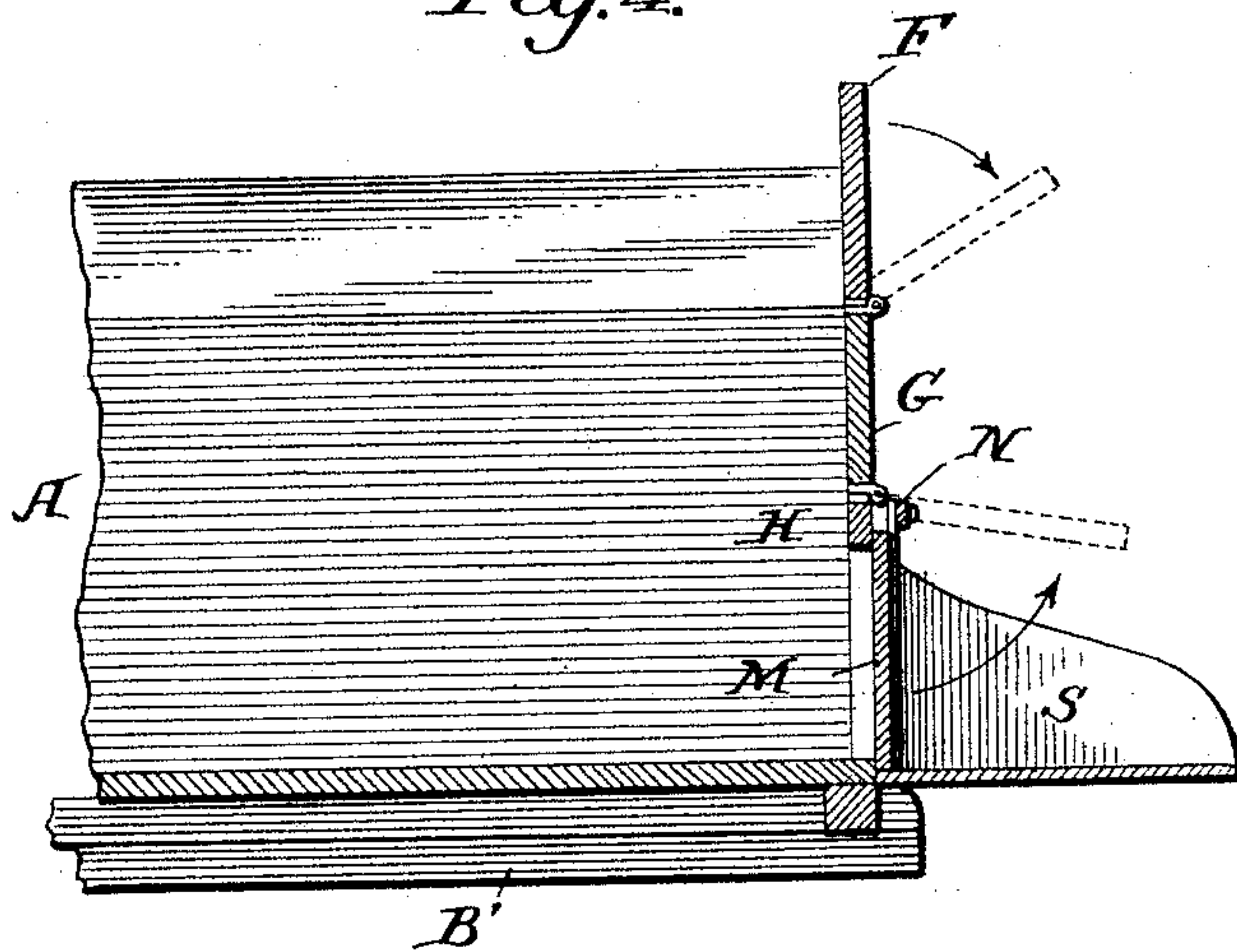
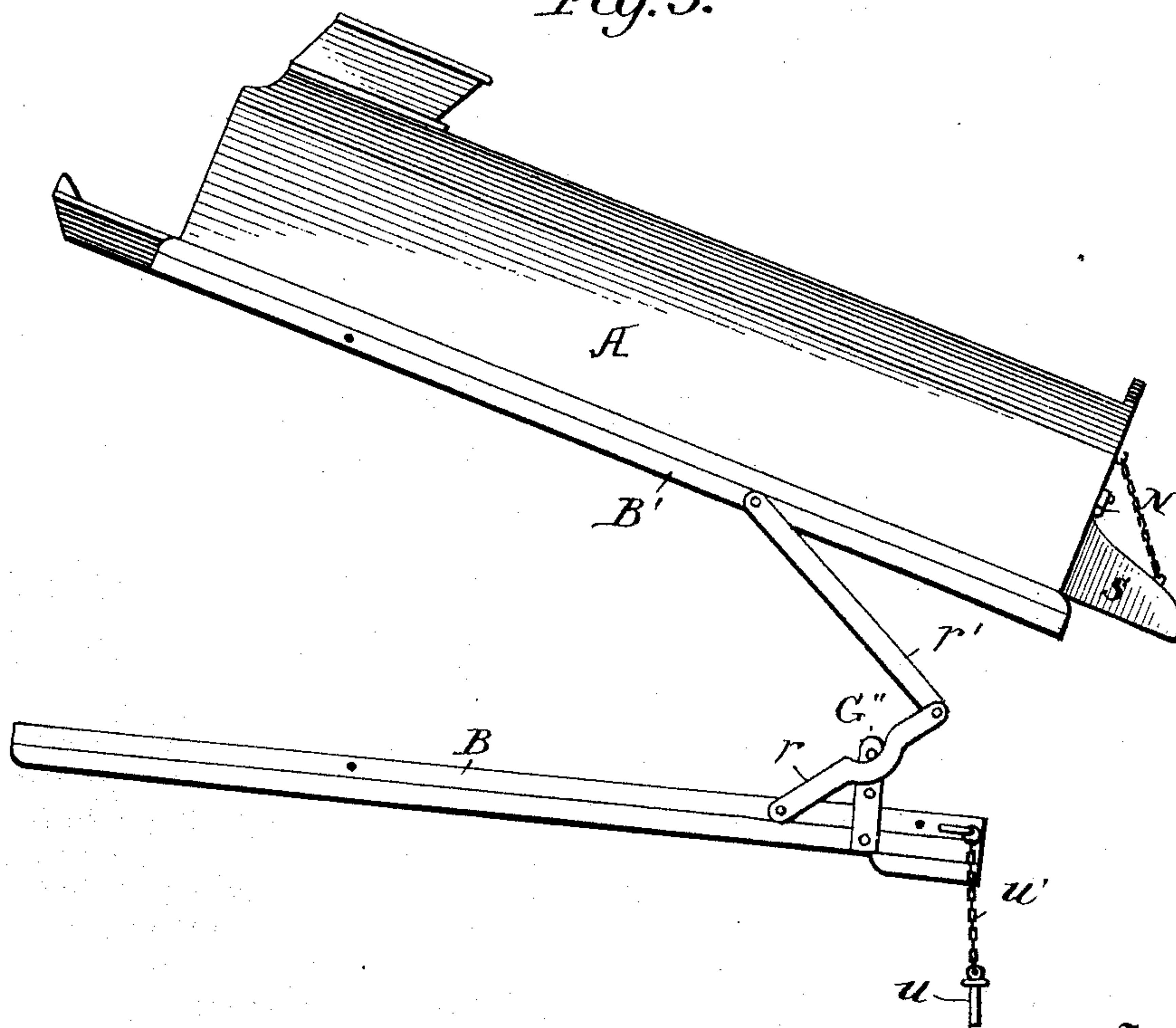


Fig. 3.



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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. 617,994, dated January 17, 1899.

Application filed March 13, 1897. Serial No. 627,309. (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, crushed stone, or other loose material and the deposit of the same at the desired place of unloading, whereby a saving of time and labor is effected.

With these objects in view the invention consists of the 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 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, as hereinafter set forth.

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 with the body elevated in position for dumping. Fig. 2 is a perspective view of the rear end of the wagon-body, showing the construction that it is preferred to use for the discharge of sand or other loose material. Fig. 3 is a side elevation of the wagon-body and truck-rail, illustrating more particularly the means for retaining the rear end of the body at any desired elevation; and Fig. 4 is a vertical sectional view of the rear end of the wagon and truck-rail.

Referring more particularly to the drawings, A designates the wagon-body, which may be of any desired construction. The framework upon which the body A rests consists, as is usual, of the truck-rails B B, superimposed upon any suitable gearing capable of sustaining the great weight that such vehicles are required to carry, and these truck-rails B may be variously constructed and strength-

ened to suit the requirements of any particular case.

As shown in Fig. 1, the power used to elevate the 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 by a series of gear-wheels to the toothed segmental lifting-arcs L L, as shown and described in detail in the Letters Patent hereinbefore referred to. The upper ends *q q* of the lifting-arcs L L are provided with jaws *j j* or similar bearings for the reception of friction-rollers *p p*, which in practice bear upon and roll freely over horizontal lifting-bars C C, connecting supplemental lifting-bars L' L' and L'' L'', to which said bars C C are pivotally connected at their ends. The forward supplemental lifting-bars L' L' are also pivoted at both ends, the lower ends *l l* being pivoted to the truck-rails B B, preferably at a point distant about one-third of the length of the said rails from their forward ends, and the upper ends L' L' pivoted to the forward ends of the bars C C. The rear supplemental lifting-bars L'' L'' are likewise pivoted at their lower ends to the truck-rails B B, and at their upper ends they are pivoted to the body-rails B' B' at such points *l'''* as will best sustain the wagon-body and load in stable equilibrium.

The lifting-bars C C L' L' L'' L'' are so proportioned, arranged, and pivoted together that the combined distances between the points *l'* and *l'''* and between *l'''* and *l''''* are equal to the combined distances between the points *l'* and *l* and between *l* and *l''''*. Therefore the said bars may be folded together to lie perfectly flat between the truck-frame bars.

To the forward ends of the bars C C and to the body-rails B' B' are pivoted bridle-bars *d d*, the said bars being hinged at or about the longitudinal centers of the same, which hinging is necessary in order to enable the bars to accommodate themselves to the different heights of elevation of the wagon-body when the latter is being elevated or lowered preparatory or subsequent to the act of dumping. One of the bridle-bars *c c'* is provided with a lug or projection *d²*, which when the bars are in their straightened position engages with the edge of the opposite bar and

prevents further relative movement between the bars.

As shown, when the front of the wagon-body is at its greatest elevation the bridle-bars $d d$ are in a straight line, this straightening being effected by pivoting the horizontal levers C to the lifting-bars L'' at a greater distance from the points at which the said bars are pivoted to the truck-frame than that between the points of connection between the said levers with the lifting-bars L' and the point at which the bars L' are pivoted to the truck-frame. When the body is in its lowered position, the distance between the points L' and L'' is smallest; but as the body is lifted the distance between these points gradually increases, carrying the body rearwardly relative to the horizontal levers C , and consequently straightening the arms $c c'$ of the bridle-bars.

By referring to Fig. 1 it will be seen that when the power to elevate the wagon-body is applied to the crank E and thence transmitted by the medium of the engaging gears to the lifting-arcs $L L$ the latter will be elevated in a vertical plane, and by said elevation the rollers $p p$ will be caused to roll freely forward upon the lifting-bars $C C$, and in so doing the supplemental lifting-bars $L' L'$ and $L'' L''$, in consequence of their being pivoted to the forward and rear ends of the said bars $C C$, are raised from their horizontal places of rest to an inclined position, and while maintaining their mutual parallelism are elevated continuously to a position at about forty-five degrees to the truck-rails $B B$.

During the elevation of the wagon-body A the arms $c c'$ of the bridle-bars $d d$ approach constantly from an acute-angular connection when at rest to that of a right line of prolongation when the forward end of the body reaches its greatest elevation, and when so elongated the function of said bridle-bars is to retain the forward end of the wagon-body in a state of rest while the rear end of the body is being lifted to its maximum elevation.

In adapting the body A for use in dumping sand, lime, or other similar material it is preferred not only to widen the entrance to the discharge-spout S to a degree nearly as wide as that of the body itself, but also to incline the inner vertical side to the body rearwardly at such an angle as will be in a right line with that of the vertical sides of the said spout, as indicated in dotted lines, Fig. 2.

To further facilitate the operation of dumping, the rear vertical end of the wagon-body is constructed in three longitudinal sections, which are designated as "upper" section F , "intermediate" section G , and "lower" section II , the intermediate section being stationary and secured terminally to the rear ends of the sides of the body. The upper section F is hinged at its lower horizontal edge to the upper horizontal edge of the fixed section G , and the lower section is hinged at its upper horizontal edge to the lower horizontal edge

of the said fixed section in such manner as to admit of its being swung upward when discharging the load and may require a maximum opening for the delivery of the same. The hinging of the upper section to the intermediate section G is to permit said section to be swung downward to facilitate and lessen the labor of loading when the same is done by shoveling, the height of the top of the body A being thus reduced by the vertical breadth of the said section F . In event of the material to be discharged not requiring the use of the maximum discharge-opening obtained by swinging the section II upward a lifting-door M is employed, which door is located centrally of the lower section II , and is capable of being lowered or elevated at will by means of a lever N , terminally swiveled at the point n to the section II and pivoted centrally of its length to a swinging bar o , one end of the lever being left free to be grasped by the operator for the purpose of elevating or depressing the same to operate the door.

The wagon-body A is capable of being divided into two or more compartments for the reception of different kinds of coal, and when so constructed the rear compartment is necessarily the first to be emptied. This emptying of the rear compartment tends to throw a preponderance of weight to the forward end of the body, which tends to cause the said end to descend before the discharge of the contents of the rear end. To obviate this, devices are attached to the rear end of the body, which when properly adjusted operate to retain the said end at any desired point of elevation and at the same time prevent the premature descent of the front end of the body. As shown, these devices consist of two bars or levers $r r'$ of unequal length, which are pivoted to each other at one end and at their free ends are pivoted to the truck-rails B and body-rails B' , respectively, the point at which the bar r' is pivoted to the body-rail being rearward of the pivotal point l'' of the lifting-levers L'' . When the wagon-body is resting upon the truck-rails B , the said bars $r r'$ lie substantially parallel to each other. When, however, the body is at its highest point of front and rear elevation, the two bars $r r'$ have arrived at their maximum point of separation. At this juncture and preparatory to the deliverance of the load or a part thereof a pin u is passed through a perforation of a continuous guard-plate G^2 and made to impinge against the upper edge of the shorter bar r , thereby preventing said arm from rising and maintaining the longer arm r' in its proper relative position. By this means the front end of the wagon-body is prevented from descending until the load is discharged and the pin u withdrawn from engagement with the guard-plate G^2 . When not in use, the pin u is suspended freely by means of a chain u' , which prevents it from being misplaced. By arranging the friction-rollers of the lifting-

arcs L L to engage the horizontal lifting-bars C C instead of the body-rails the arcs may be made shorter and very much cheaper. The wagon-body may also be lifted a greater distance by this construction for the reason that the curvature of the lifting-arc being a segment less than a quadrant, which latter arc is the limit of the body elevation, the excess of said quadrant operates to depress the rear end of the body without elevating the front end, since the body is practically balanced as near as possible upon its longitudinal center. This is particularly true of wagons of one-ton capacity, where a greater height of elevation is desirable. Another advantage of this arrangement is derived from the improved leverage attained by the use of the horizontal lifting-bars C C and their connections, by which the body may be elevated with greater rapidity than is possible where the lifting-arcs L L engage directly with the body-rails B.

It will be obvious that in consequence of both pairs of inclined lifting-levers being pivoted to the truck-rail at their lower ends their upper ends when in motion describe arcs of circles, and being attached to the wagon-body necessarily operate to shift the said body rearwardly. Moreover, the space thus traversed by the body during the time of elevating is considerable, and hence it will be obvious that a less length of chute is necessary to convey the load than would be required if the body had no such retrograde movement. It follows also by the use of the present arrangement of lifting-levers, aggregating a greater degree of rigidity and rapidity of action in their respective vertical planes, that the use of the rear guides, boxes, and rollers that have been necessarily employed in prior constructions are dispensed with.

Without limiting myself to the precise construction and arrangement of parts shown and described, since it will be understood that various modifications may be made in such construction and arrangement without departing from the spirit of my invention and that some of the features of my invention may be used without others,

What is claimed is—

1. In a dumping-wagon the combination with a body and its frame, of the truck-frame, three pairs of lifting levers or bars, the first pair of said levers being pivoted at their lower ends to the truck-frame and at their upper ends to the forward ends of the second pair of horizontally-arranged levers, the rear ends of said second pair of levers being pivoted to the third pair of levers which third pair of levers are pivoted at their lower ends to the truck-frame and at their upper ends to the body-frame, and operating mechanism comprising lifting-arcs the upper ends of which engage with bearing-surfaces of the second pair of lifting-levers and means for elevating and depressing the lifting-arcs, substantially as described.

2. In a dumping-wagon, the combination

with the truck-frame, of the body and its frame, a pair of lifting-levers, bridle-bars consisting of two arms articulating terminally each to each, the upper ends of the upper pair of arms being pivoted to the body-frame and the lower ends of the lower pair of arms being pivoted to the lifting-levers, and means for elevating the lifting-levers, substantially as described.

3. In a dumping-wagon, the combination with the body and its frame, of a truck-frame, a lifting-lever pivoted to the truck-frame and to the body-frame, means for elevating the lifting-lever, two arms pivoted to each other, one of said arms being pivoted to the truck-frame and the other being pivoted to the body-frame at a point rearward of the point at which the lifting-lever is connected thereto and means directly engaging one of said arms for locking the arms against movement relative to each other, substantially as described.

4. In a dumping-wagon, the combination with the body and its frame, of a truck-frame, two pairs of lifting-levers pivoted to the truck-frame at their lower ends, one of said pairs of levers being also pivoted to the body-frame, a pair of horizontal levers pivoted to both pairs of lifting-levers, and means engaging the horizontal levers to elevate the lifting-levers, substantially as described.

5. In a dumping-wagon, the combination with the body and its frame, of a truck-frame, two pairs of lifting-levers pivoted to the truck-frame at their lower ends, one of said pair of levers being also pivoted to the body-frame, a pair of horizontal levers pivoted to both pairs of lifting-levers, means engaging with the horizontal levers to elevate the lifting-levers, a pair of pivotally-connected bars, one of which is pivoted to the body-frame at a point rearward of the pivotal point of the lifting-levers, and the other one of said bars being pivoted to the truck-frame, and means for limiting the separation of said bars, substantially as described.

6. In a dumping-wagon the combination with the body and its frame, of the truck-frame, two pairs of lifting-levers pivoted to the truck-frame and connected to the body-frame, a pair of horizontal levers connecting the said pairs of lifting-levers, lifting-arcs adapted to engage the horizontal levers to elevate the same and means for elevating and depressing the lifting-arcs, substantially as described.

7. In a dumping-wagon, the combination with the body and its frame, of the truck-frame, two pairs of lifting-levers pivoted to the truck-frame, bridle-bars connecting the upper end of the first pair of levers with the body-frame the second pair of levers being pivoted at their upper ends directly to the body-frame, a pair of horizontal levers connecting the two pairs of lifting-levers, and means for elevating the lifting-levers, substantially as described.

5 S. In a dumping-wagon, the combination with the truck and body frames, of means for elevating the body-frame above the truck-frame, comprising in part a pair of horizontal levers, lifting-arcs engaging with the horizontal levers, and means for elevating the lifting-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:

R. S. CARE,

CHAS. C. STROH.