J. DE H. BUNN.

DUMPING WAGON.

APPLICATION FILED JULY 23, 1908.

923,943.

Patented June 8, 1909.

3 SHEETS—SHEET 1.

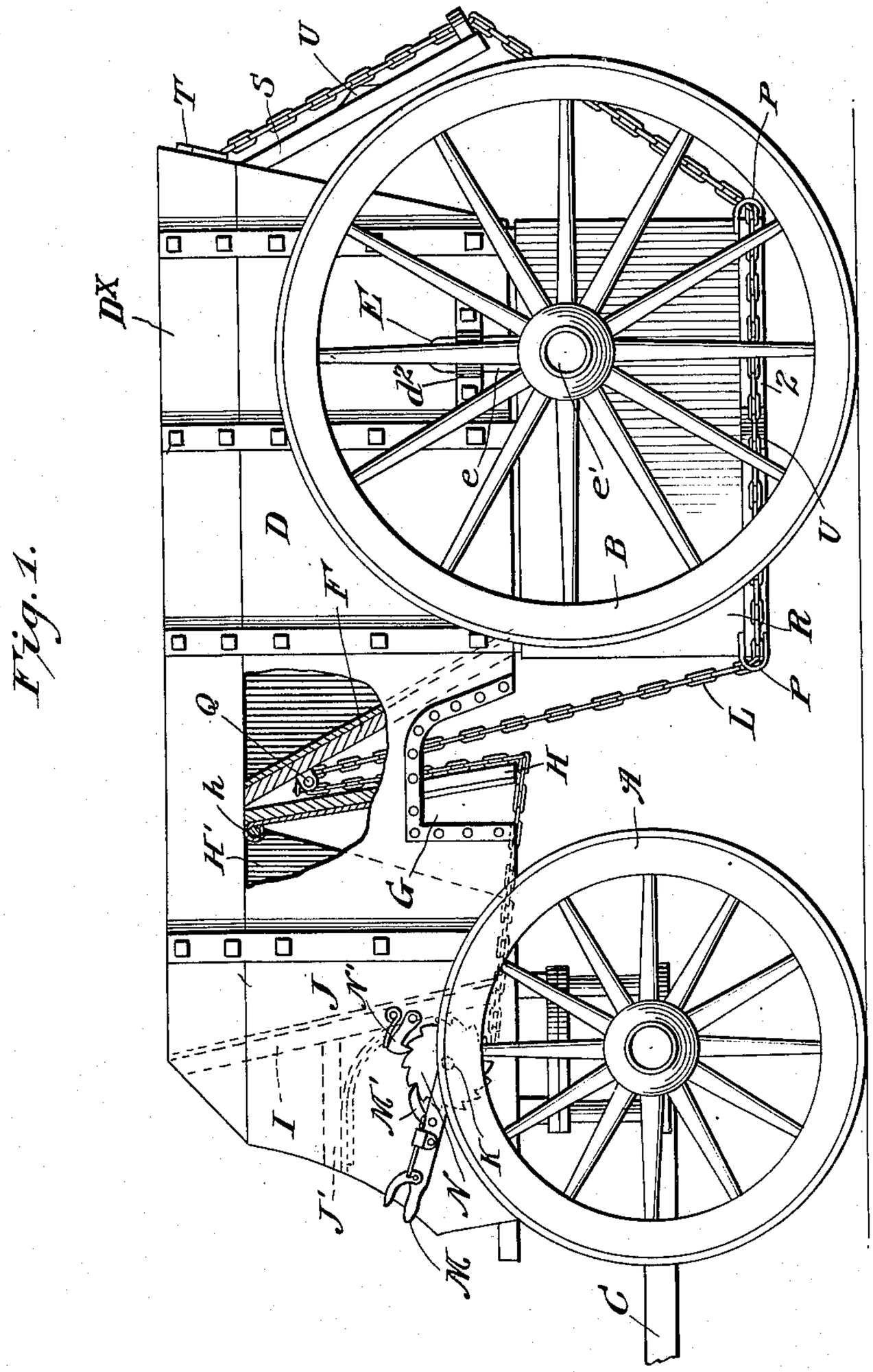

Fig. 1.

Witnesses

M. C. Lyddane

J. D. L. Wuthall.

Inventor

Joseph De Haven Bunn

By Joshua R. H. Potts

Attorney

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3 SHEETS—SHEET 2.

Fig. 2.

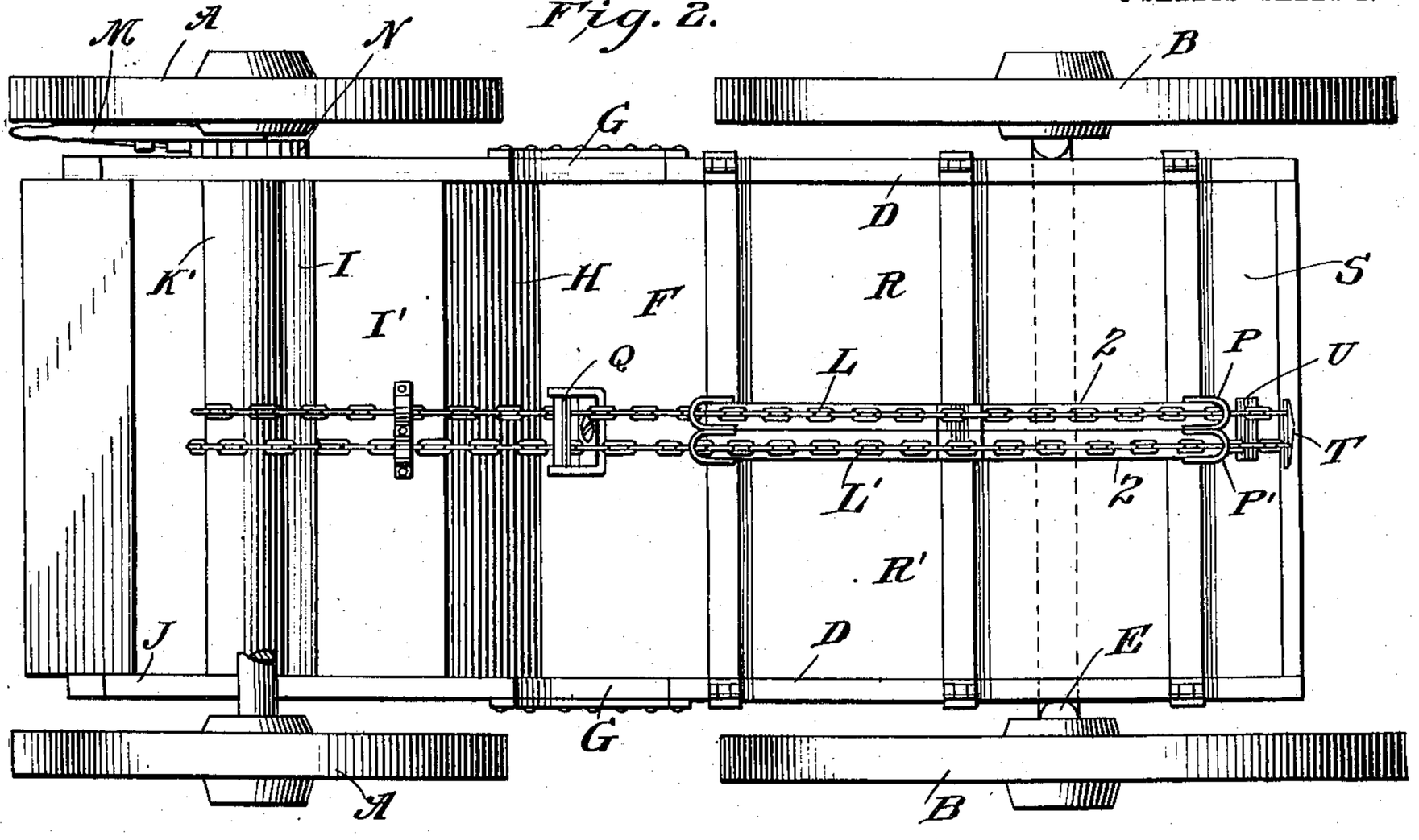
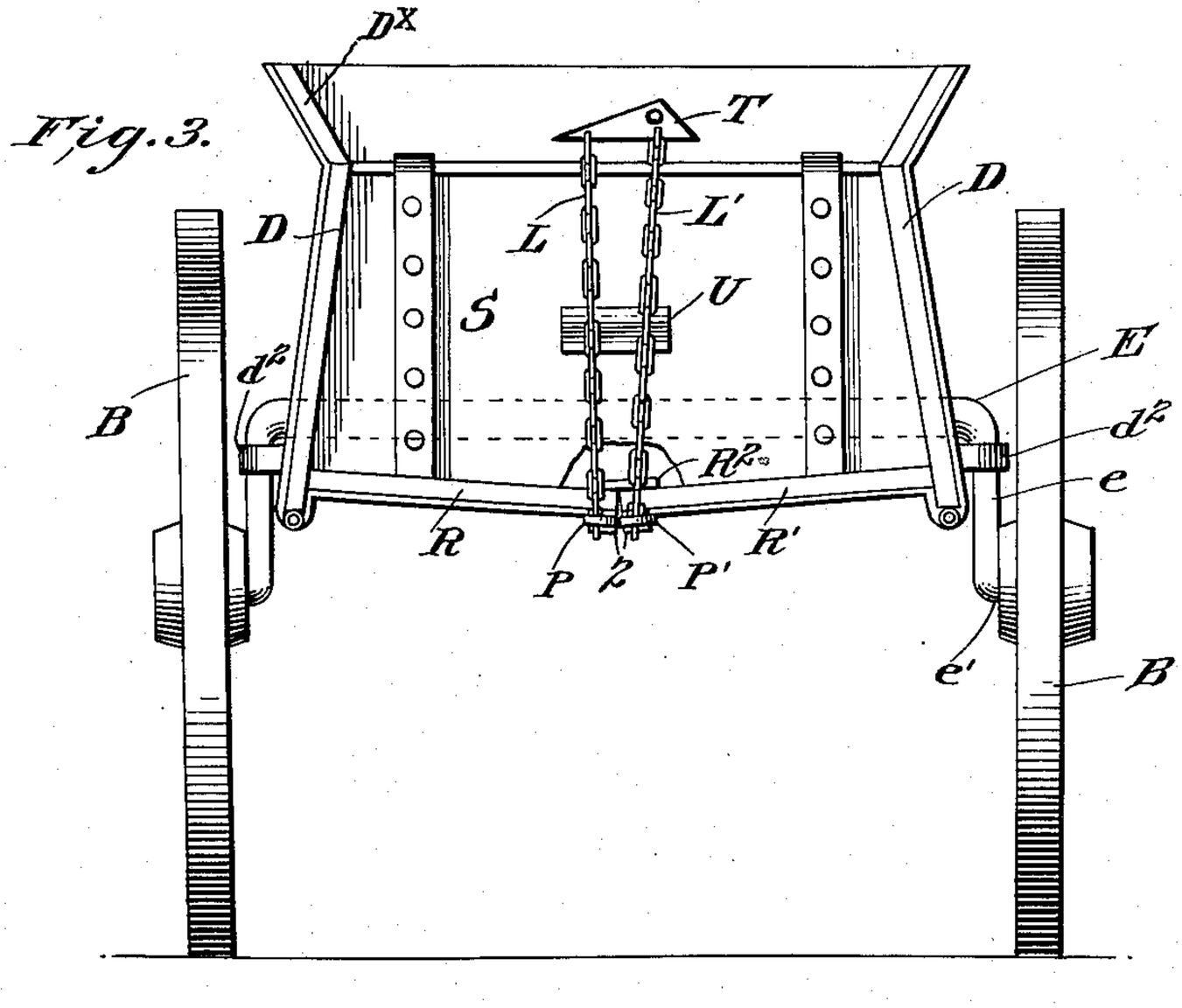


Fig. 3.



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M. C. Lyddane

J. D. L. Mulhall.

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Attorney

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3 SHEETS—SHEET 3.

Fig. 4.

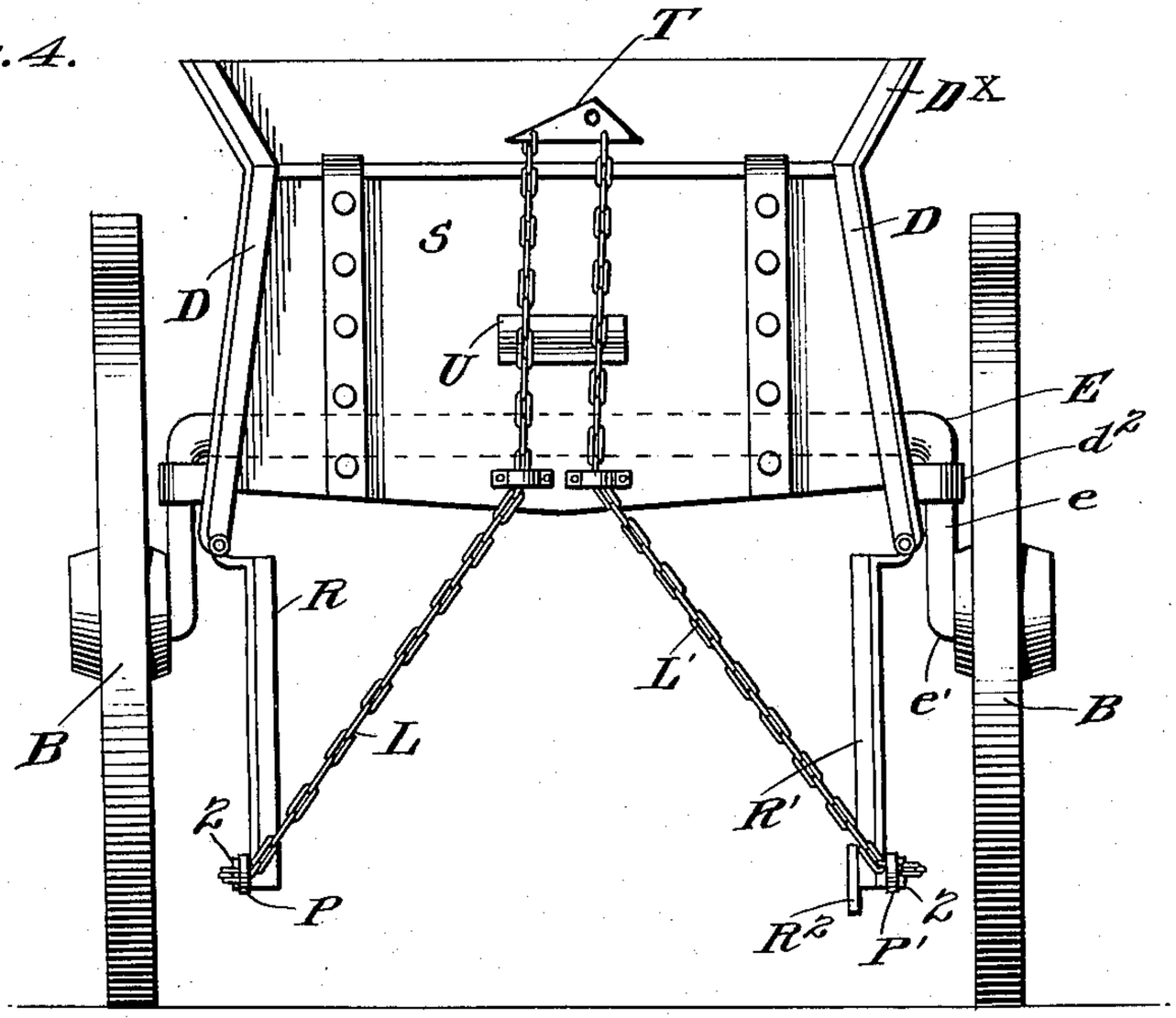


Fig. 5.

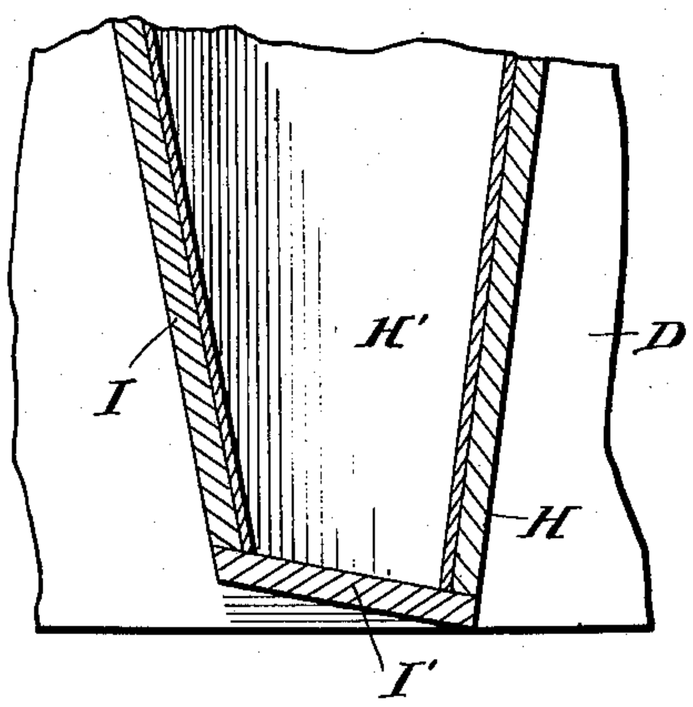
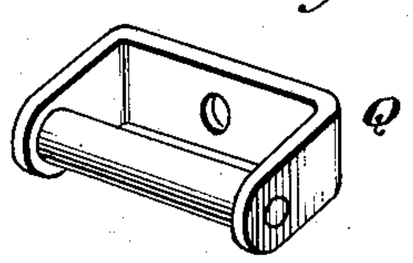


Fig. 6.



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By Joshua R. A. Potts

Attorney

UNITED STATES PATENT OFFICE.

JOSEPH DE HAVEN BUNN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO FRANCIS F. EASTLACK, JR., OF PHILADELPHIA, PENNSYLVANIA.

DUMPING-WAGON.

No. 923,943. Specification of Letters Patent. Patented June 8, 1909.

Application filed July 23, 1908. Serial No. 444,905.

To all whom it may concern:

Be it known that I, JOSEPH DE HAVEN BUNN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Dumping-Wagons, of which the following is a specification.

My invention relates to wagons and particularly to a dumping wagon, the object of my invention being to provide a wagon of this character which shall have a maximum of capacity and a minimum of length; which shall have dumping gates so arranged that the whole contents of the wagon may be discharged at one time by the pressure of material within the wagon and wherein all the dumping gates shall be operated together. A further object of my invention being to so arrange the gates in relation to each other that the pressure of the load on one gate will act to hold the other gates closed.

A still further object is to provide gates which shall discharge the load without offering any impediment thereto, and in which the load will hold the gate in close contact with the sides of the wagon.

To these ends my invention consists in a dumping wagon having the rear axle thereof passing through the body of the wagon and the wheel housing located in the middle of the body, the space forward of the housing being used for carrying a portion of the load.

The invention further consists in providing dumping gates beneath all portions of the body adapted to be opened simultaneously.

The invention also consists in the arrangement of parts and details of construction particularly stated in the appended claims.

In the drawings, Figure 1 is a side elevation. Fig. 2, is an under side view. Fig. 3 is an end elevation, the gates being closed. Fig. 4, is an end elevation with the gates open. Fig. 5 is a detail enlarged section of the forward compartment. Fig. 6, is a detail perspective of a chain roller.

Like reference characters throughout the several views designate like parts.

A designates the front wheels and B the rear wheels of a dumping wagon and C the tongue. The front wheels are provided with the usual bolsters and fifth wheel common to all wagons. The body of the wagon is formed with the inwardly inclined or tumble-home sides D, through the rear portion of which passes the fixed axle E. The ends of this axle are cranked as at *e* and extend downwardly on either side of the wagon body, and then outward as at *e'* forming bearings for the rear wheels, the axle being held in position by the straps d^2. The body is provided just forward of the rear wheel or at about its middle with an inclined portion F which extends over the wheel housing G. This housing is formed by cutting out the sides D sufficiently to allow the front wheels to enter beneath the wagon when they are turned.

Forward of the wheel housing and extending transversely across the body between the sides D and practically the height of said sides is a gate or door H pivoted by a pintle *h* at its upper edge to the sides. This gate is inclined downwardly and forwardly, and the front end I of the body is fixed and inclined downwardly and rearwardly, and the bottom I' is also downwardly inclined, thus the space H' inclosed between the gate H and the end I is hopper shaped. Forward of the space H' the sides D are continued as at J to support the seat J', the foot board and the drum or windlass mechanism whereby the gates are operated, and which may be of any convenient construction. In the mechanism shown K designates a shaft mounted in said sides J carrying the drum K' on which the chains L, L' for operating the bottom and end gates are wound. Pivoted on shaft K is a lever M having a pawl M' adapted to engage with a ratchet N fixed on the shaft K, whereby the shaft may be turned to wind up the chain and close the gates. A pawl N' pivoted to the outside of the wagon is adapted to engage the ratchet N as it is turned by a lever M. By reciprocating the lever M the drum may be operated to wind up the chains. By raising pawls N' and M' out of engagement with the ratchet N, the shaft is allowed to turn thus unwinding chains L, L'.

The bottom of the main body of the wagon is formed with two gates R, R' hinged to the inside faces of the sides D at the lower edges of the sides. These gates extend along the whole length of rear compartment of the body from the rear housing G to the extreme end of the wagon. When closed the gates are not perpendicular to the sides D, but incline downwardly from both sides toward the middle of the wagon as shown in Fig. 3. They are suitably braced by the strips 2

bolted along the edges of the gates and provided with eyes P, P′. One of said gates as R′ is provided with an iron strip R^2 along its inside edge which when the gate is closed extends over the edge of the other gate R, thus preventing dirt or other material carried from sifting down through the crack between the gates. This construction necessitates that one of the gates as R′ shall be closed ahead of the other gate R, and hence the necessity of the differential link T to be later described. The rear edges of the sides D are downwardly and forwardly inclined and pivoted between said sides is the end gate S which fits snugly in place to close the rear end of the wagon, the lower edge of the gate being inclined from its middle upwardly and outwardly so as to fit the upper faces of the rear ends of the bottom gates when they are closed.

The chains L, L′ pass from the drum K′ to and under the front portion of the wagon body to the edge of the forward gate H, then upward to a roller or pulley Q, then downward to the margins of the bottom gates R, R′ lengthwise along the margins of said gates through the eyes P, P′, then upward to and across the end gate S at its middle and at their upper ends are connected to a triangular pivoted link T, one end of which is shorter than the other. The shortest portion of the link T is connected to the gate R′ which is to close just ahead of the gate R. It will be seen that by winding up the drum K′ the chains L, L′ will be tightened and the bottom gates brought up to the position shown in Fig. 3, while at the same time the forward and end gates are closed and held tightly in this position. When the wagon is loaded the load presses against and acts to throw open these gates against the tension of the chains L, L′. As a consequence the greater the pressure at any one of the gates the greater the tension of the chain attached to that gate and the greater its pull upon the other gates, thus the load assists in holding the gates closed. Strut blocks U are placed at the middle of the gates so that the chains will support and act against the middle of the gates as well as at the ends thereof, and so that the gates will not tend to warp or bend under their load.

When the pawl on the lever M is thrown out of engagement with the ratchet N and the pawl N′ released, the drum is free to rotate in a reverse direction and the pressure on the forward gate, bottom gates, and end gate will act to open the same, drawing the chains to the position shown in Fig. 1. It will be seen that the sides of the wagon are inclined just sufficiently so that the upper edge of the sides is in vertical alinement with the inner faces of the bottom gates when these gates have been dropped. Because of this and because of the tumble-home sides of the body there is no impediment to the dropping of the load and the space between the sides is practically entirely clear.

A further advantage gained by pivoting the bottom gates to the inside face of the sides and supporting them by chains along the middle is that the pressure of material upon the gates when these gates are closed exerts a lateral thrust and acts to hold the bottom gates in contact with the sides of the wagon, thus preventing to a great extent the sifting of the material downward between the edges of the bottom gates and the sides. In addition to this, the gates are hinged to the side walls in a much stronger manner than if they were attached to the outside faces of the side walls. This last manner of hinging them would require a longer hinge and increase the liability of bending the hinge through the weight of the material. As before stated the material in the forward portion H′ of the wagon body is dumped through the gate H which is held closed by the chains L, L′. This is accomplished by disengaging the ratchet which engages the shaft K, thus allowing the drum K′ to turn reversely and the chain to run off.

It will be seen that both the front and rear compartments of the wagon are hopper shaped, that the pressure of the load is continually against the gates tending to open them, and that said pressure will immediately dump the contents of the wagon upon the chains L, L′ being released. When bottom gates are used it is necessary that the rear wheels be located at the extreme rear of the wagon beyond the gates. This makes the wagon inconveniently long. It will also be seen that by reason of the rear axle of my wagon passing through the body of the wagon instead of at its end, that I provide a wagon much shorter than usual and yet having the same capacity. Side boards $D^{\times}$ may be suitably attached to the sides D to increase the capacity of the wagon if desired. These are the ordinary construction and require no special description.

The wagon as described and illustrated is particularly convenient because of its shortness and its ability to be used and operated under conditions which would practically prevent the using of long wagons, such as are commonly used for hauling dirt and other loose materials.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A dumping wagon having a body formed with a wheel housing extending transversely through its middle, an inclined gate pivoted at its upper end and forming the forward side of said housing and adapted to dump the contents of the body contained therein forward of the housing, a partition forming the rear face of said housing and gates for dump-

ing the material carried in the body rearward of the housing.

2. A dumping wagon having a body formed with a wheel housing extending transversely through its middle, an inclined pivoted gate forming the forward side of said housing and adapted to dump the contents of the body contained in the wagon forward of the housing, a partition forming the rear face of said housing, gates forming the bottom of the wagon body rearward of the housing, an end gate pivoted at its upper end to the sides of the body and adapted to open under pressure of material, chains connected to the body above the upper end of said end gate passing beneath the lower edge of the same and beneath the bottom gates and forward gate, a winding drum on which said chains are wound mounted upon said body, and means for taking up the slack of said chains.

3. A dumping wagon having a body formed with a wheel housing extending transversely through its middle, a pulley in the upper portion of said housing, an inclined pivoted gate forming the forward side of said housing and adapted to dump the contents of the body carried forward of said housing, a rearwardly inclined partition forming the rear face of said housing, gates pivoted to the sides of the body and forming the bottom of the body, an end gate pivoted at its upper end to said sides closing the end of said body and contacting at its lower end with the bottom gates, chains attached to the body above the upper end of said end gate and passing across the same, downwardly beneath the bottom gates and into the wheel housing over the pulley mounted thereon, and then across the face of said forward gate, a drum mounted upon the wagon body on which said chains are wound, and mechanism for operating said drum.

4. In a dumping wagon, the combination with a body and bottom gates hinged to the body, of a crank axle extending through the body, the cranks at the ends projecting downwardly from the body and then at right angles outwardly from the body, and straps secured to the body and across the downwardly projecting portions of the axle securing the latter against rotary movement.

5. In a dumping wagon, the combination with a body widest at its lower end, and bottom gates hinged to the body, of a crank axle extending through the body, the cranks at the ends projecting downwardly from the body and then at an angle outwardly from the body, and devices securing the downwardly projecting portions of the axle to the body.

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

JOSEPH DE HAVEN BUNN.

Witnesses:
FREDERIC B. WRIGHT,
J. A. L. MULHALL.