No. 762,809. PATENTED JUNE 14, 1904.

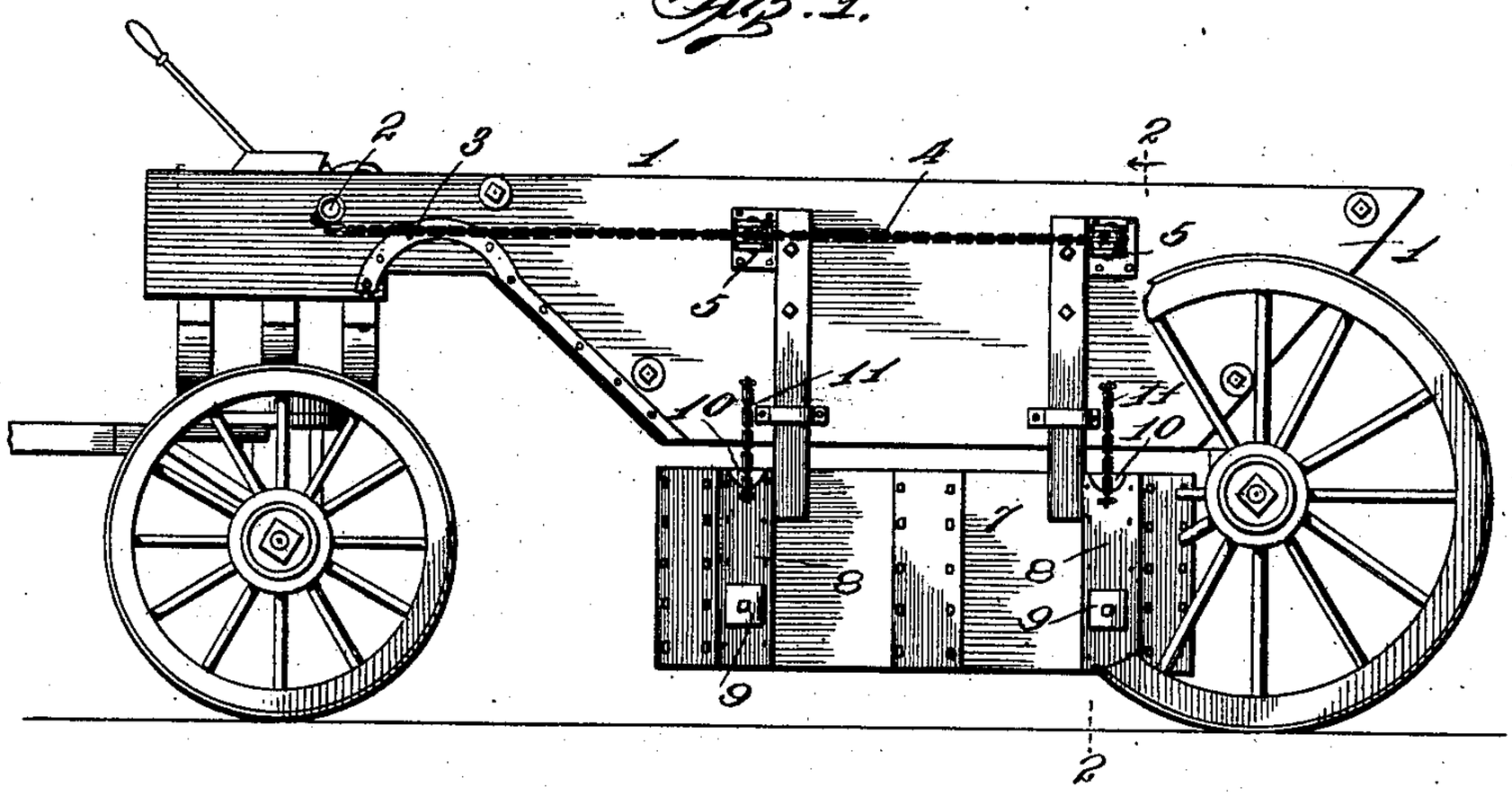
J. F. DAY.

DUMPING WAGON.

APPLICATION FILED APR. 18, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.



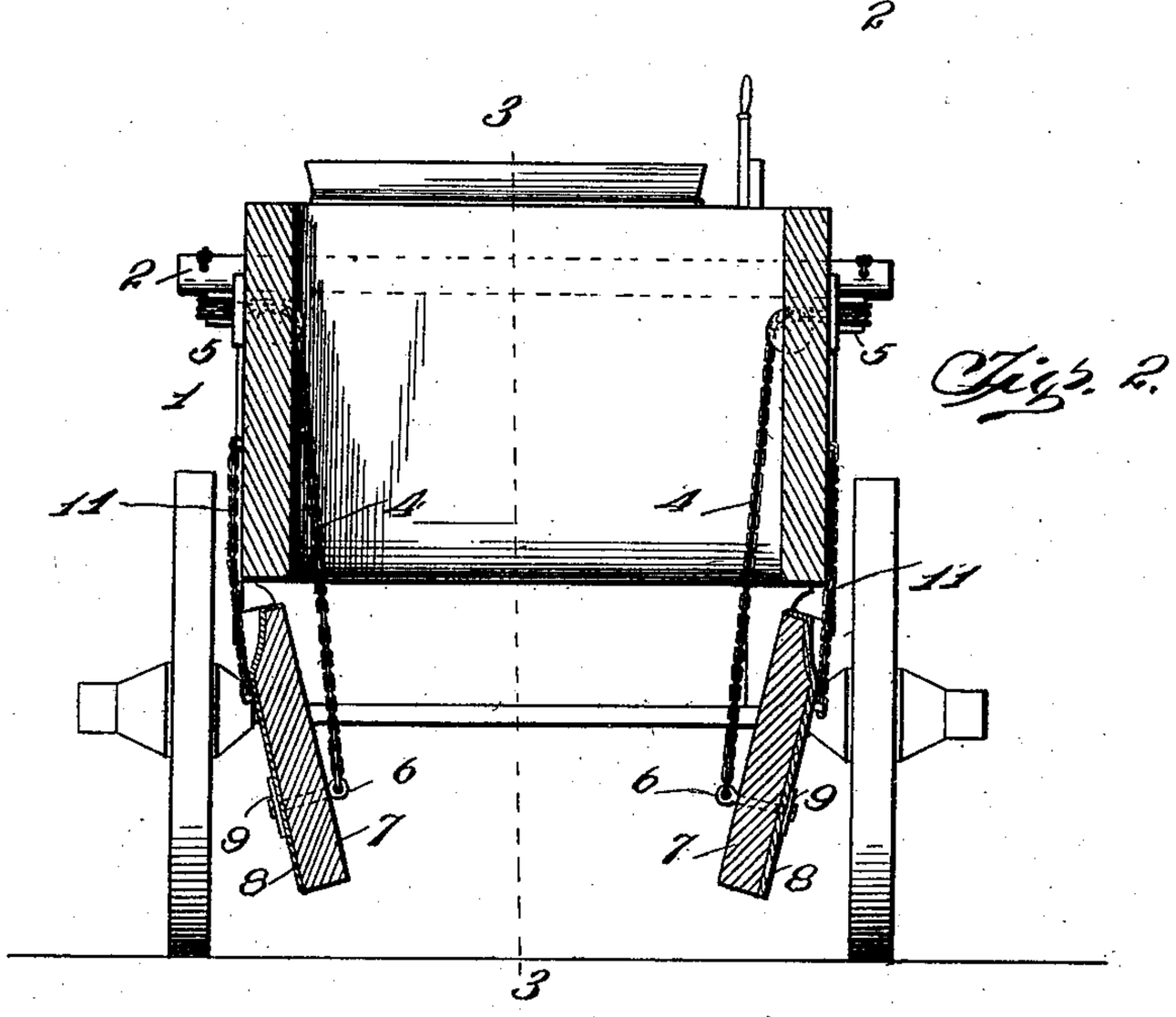


Fig. 2.

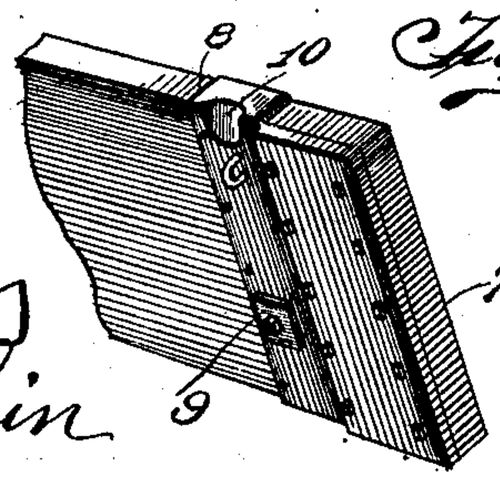


Fig. 5.

Witnesses

L. Lessford Handy

Edgar M. Kitchin

Inventor

Josiah F. Day

By Mason Fenwick Lawrence

His Attorneys.

No. 762,809. PATENTED JUNE 14, 1904.

J. F. DAY.

DUMPING WAGON.

APPLICATION FILED APR. 18, 1903.

NO MODEL. 3 SHEETS—SHEET 2.

Fig. 3.

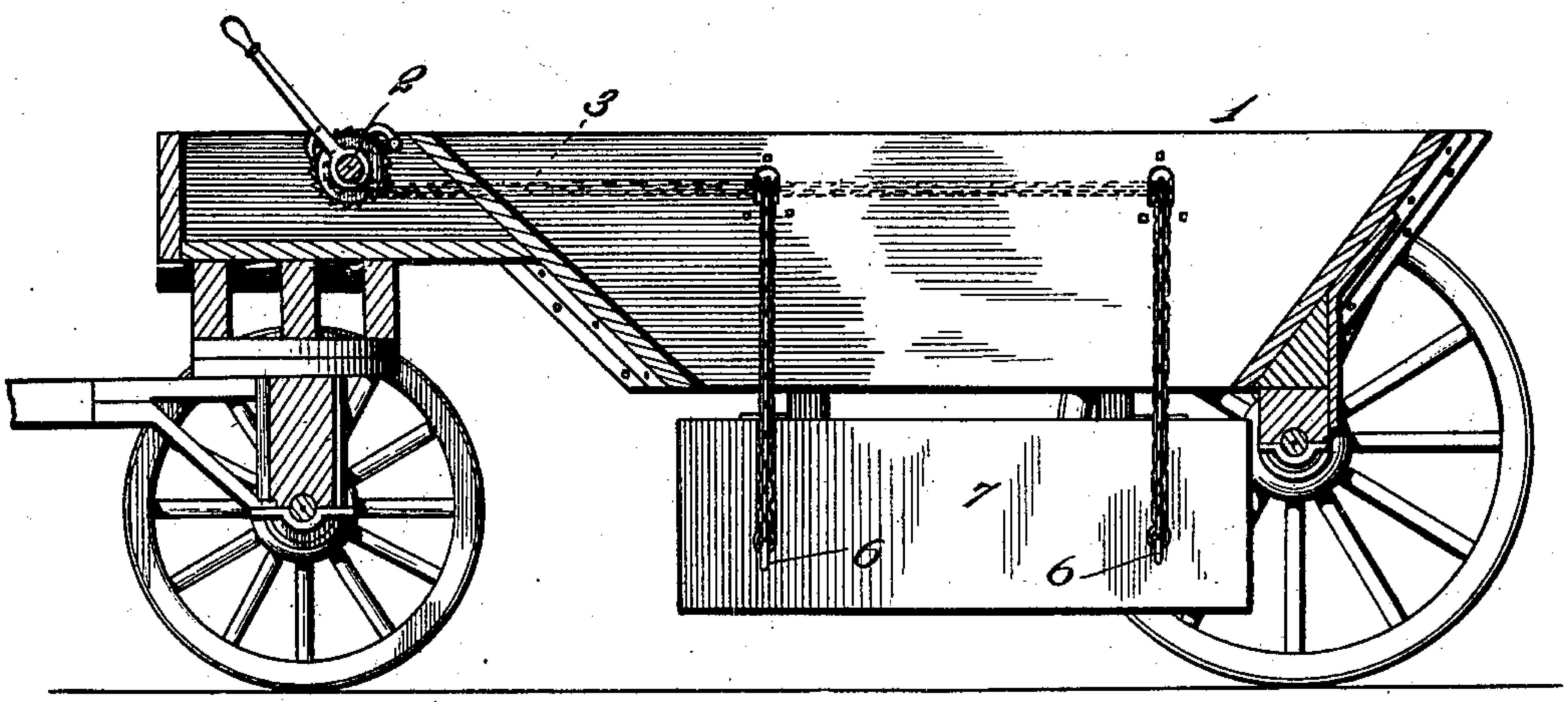
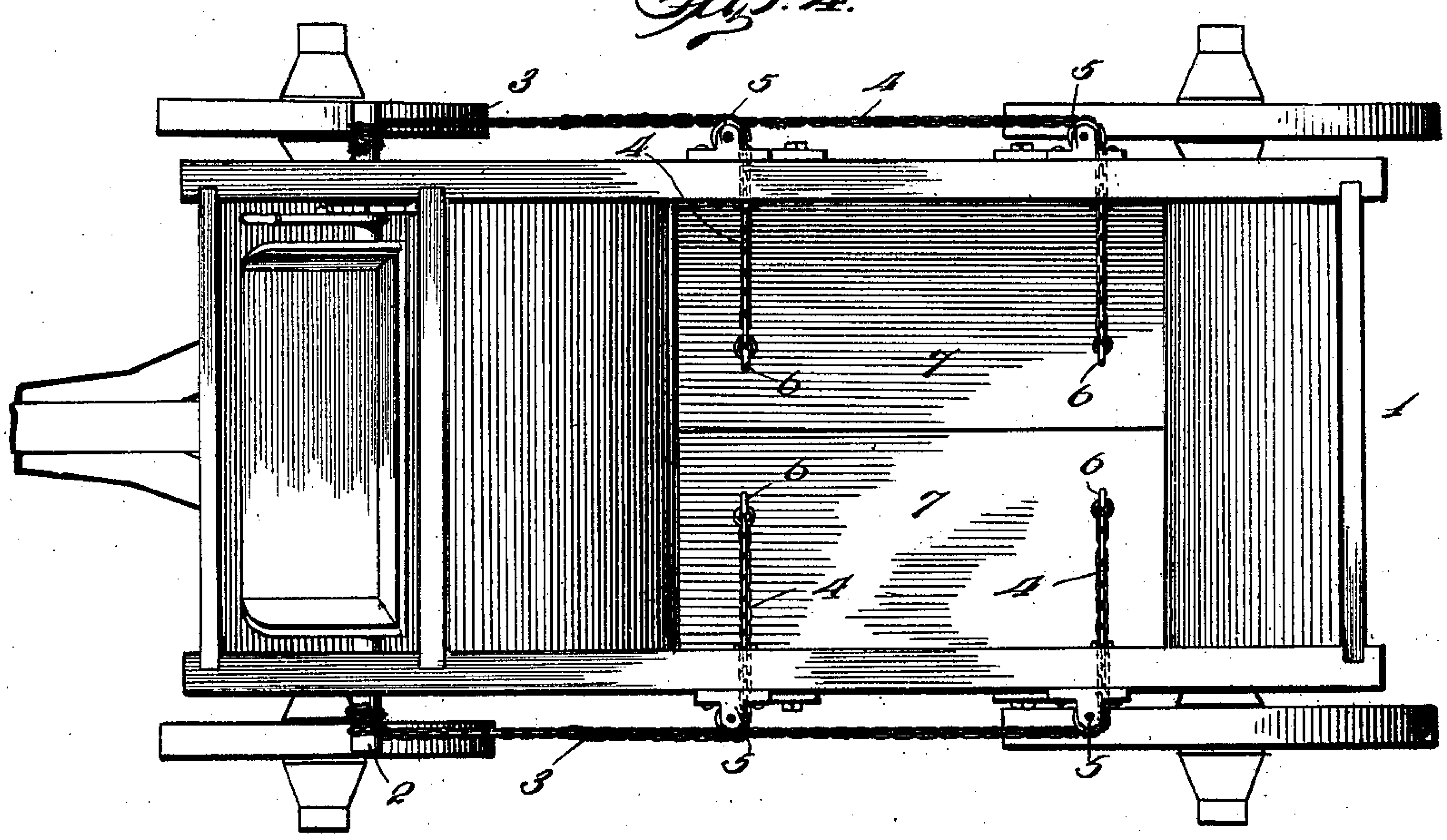


Fig. 4.



Inventor
Josiah F. Day

Witnesses
L. Gossford Handy
Ruth J. Mitchell.

By Mason Fenwick Lawrence
his Attorneys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 762,809. PATENTED JUNE 14, 1904.

J. F. DAY.

DUMPING WAGON.

APPLICATION FILED APR. 18, 1903.

NO MODEL. 3 SHEETS—SHEET 3.

Fig. 6.

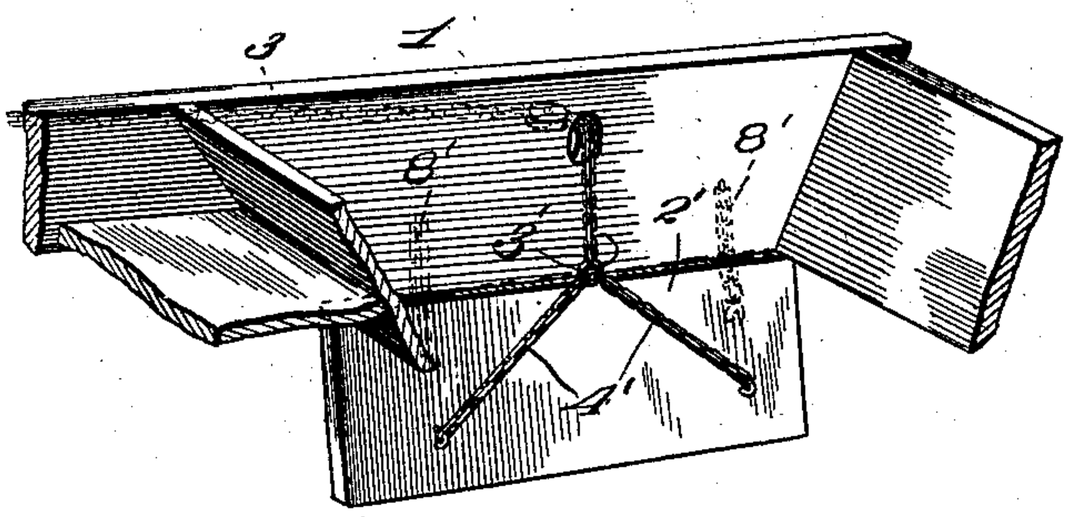


Fig. 7.

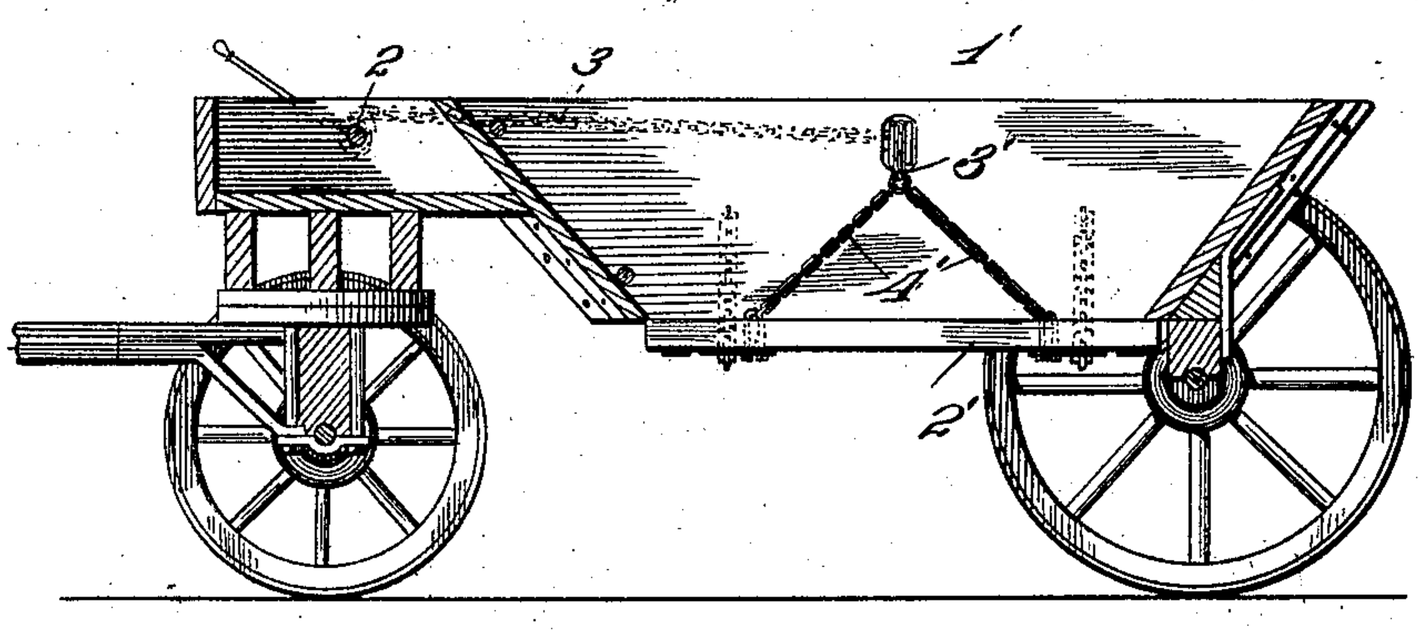
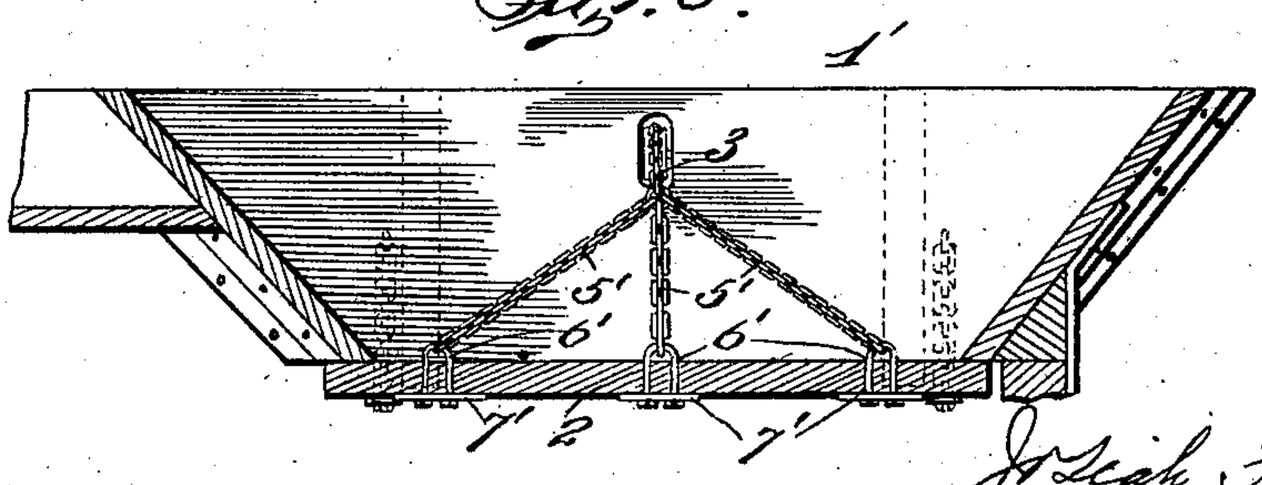


Fig. 8.



Witnesses:
L. Gusford Handy
Mary S. Handy.

Inventor.
Josiah F. Day
By William Fenwick Harris
his Attorney

No. 762,809. Patented June 14, 1904.

UNITED STATES PATENT OFFICE.

JOSIAH F. DAY, OF NEW YORK, N. Y.

DUMPING-WAGON.

SPECIFICATION forming part of Letters Patent No. 762,809, dated June 14, 1904.

Application filed April 18, 1903. Serial No. 153,271. (No model.)

To all whom it may concern:

Be it known that I, JOSIAH F. DAY, a citizen of the United States, residing at New York, in the borough of Manhattan and State of New York, have invented certain new and useful Improvements in Dump-Wagons; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in dumping-wagons, and particularly to that type of dumping-wagons which are provided with doors which form the bottom thereof and so mounted as to be capable of being opened to discharge the load and conveniently close again, the operation being performed readily by the driver of the wagon.

The present invention has reference more particularly to the construction and arrangement of the chain or cable mechanism connected to the doors for supporting the same when in a closed condition and permitting of the operation of the same to open and close the doors, the present invention being an improvement upon the chain supporting and operating means shown in my Letters Patent No. 714,286, dated November 25, 1902, for improvements in dumping-wagons.

I have found from practical experience that where a large amount of dirt or concrete is dumped into a wagon constructed in accordance with my Letters Patent above referred to the bottom doors are liable to be bent or bowed downwardly at the outer end, which is due to the fact that the connecting chain or cable is attached by a single connection at a point about midway of the length of the doors. To overcome this objection, I form the operating-chain, which connects with the inside of the doors, with branch connections, which extend in opposite directions and connect with the doors at points to one side of the center of the length of the doors. By this construction and arrangement the weight and strain is borne by the branching connections, which prevents the ends of the doors from being bent downwardly.

In the accompanying drawings, Figure 1 represents a view in side elevation of a wagon embodying the features of the present invention. Fig. 2 represents a transverse vertical section taken on the plane of line 2 2 of Fig. 1. Fig. 3 represents a longitudinal vertical section taken on the plane of line 3 3 of Fig. 2. Fig. 4 represents a top plan view of the present improved wagon. Fig. 5 represents an enlarged detail fragmentary perspective view of a part of one of the doors forming the bottom of the present improved wagon. Fig. 6 is a detail fragmentary perspective view of a portion of a slightly-modified form of wagon. Fig. 7 represents a longitudinal vertical section through a wagon constructed after the manner illustrated in Fig. 6. Fig. 8 represents an enlarged detail longitudinal vertical section through a wagon-body provided with a still further modification.

In order to obtain the greatest strength and carrying capacity of a dumping-wagon, I employ the elements disclosed in the accompanying drawings, in which—

1 indicates a suitable body mounted upon any preferred form of gear and carrying at its forward end a suitable windlass or other mechanism 2 for taking up and paying out a chain 3, one of which is arranged at each side of the body 1. The rear of the chain 3 is crotched, forming two branches 4 4, and each side of the body 1 is apertured and carries suitable brackets 5 5, about which brackets and through which apertures the respective branches 4 are passed, said branches extending downwardly within the body and engaging a suitable eyebolt 6, carried by the respective doors 7 7, forming the bottom of the wagon-body. Each bolt 6 is passed through its respective door 7, through a transverse cleat 8, secured to the rear face of said door, and to a block or suitable attaching means 9 in the rear of said cleat, whereby the connection between the door and chain is made secure and capable of resisting enormous strain. Each cleat 8 is preferably of metal and extends across the under face of one end of its respective door 7 and is provided at its outer end—that is, at the outer edge of the door—with a notched portion 10 for the reception of a supporting-chain 11 when the doors 7 are in a closed position. A plurality of chains

11 is employed, and each of the chains is fixed upon one side of the body 1 of the outer face thereof and is fixed to the respective door 7 by being attached to its corresponding cleat 8 near the outer end of said cleat.

In operation, presuming the elements to be in the position indicated in Figs. 1, 2, and 3, the operator winds the windlass 2, and thereby raises the door 7 to the closed position. (Indicated in Fig. 4.) The body 1 may now be filled with material to be conveyed, and when the load is desired to be discharged the windlass 2 is released and the doors 7 dropped again to the open position, said doors being supported, by means of chains 11, with their outer edges contiguous, the under edges of the sides of body 1 and the chains 4 preventing said doors from swinging too far outwardly, limiting them to a position in a diagonal plane, but leaving the same free to swing or vibrate laterally sufficiently for discharging the contained load and preventing the clinging of matter to the upper faces of said sides.

As illustrated, I prefer to have the points of attachment of the two branch chain connections to the doors such that the distance between the same will be greater than the combined distance between the said points of attachment and the two outer ends of the doors, so that the weight of the load between these points will be greater than the combined weights of the load between said points and the two outer ends of the doors, thus enabling me to utilize this overbalancing-weight to overcome any tendency of the ends of the doors to sag, the weight of the load between the two points of attachment of the branch chain serving as a leverage with the points of attachment as the fulcra, which will throw the ends of the doors upward against the body of the wagon and secure tight joints. This I have found of great advantage in handling heavy material, and more particularly soft material, such as concrete and mortar. In other constructions where a single chain is connected at only one point with the doors or bottom boards and that at about the center of the length of the doors when a heavy load of earth is discharged into the wagon—say from a steam-shovel, two yards at a time, this amount of earth weighing more than three tons—the concussion of the load when instantly dropped is so great as to cause the two ends of the bottom boards or doors to sag down or bend from one and one-half to two inches, and owing to the length of said chain and the same being attached at the center of the length of the doors the doors or bottom boards are usually unable to return to their original horizontal position. In practice I have found from experimenting that on a given sized wagon the best results are obtained by locating the points of attachment of the branch chain about eighteen inches from the center of the board, which leaves in this sized wagon ten and one-half inches at either end between the points of attachment of the branch chain and the extreme ends of the doors or bottom boards. I of course do not limit myself to the precise location of the points of attachment of the branch chains. It will also be observed that by this construction and arrangement of the branch attaching-chains the concussion and strain is thrown against the two heavy iron braces or cleats which are provided on the side boards, which is another important feature of the present improved construction.

In Figs. 6 and 7 I have illustrated a modified form of chain connections, which connections are designed to produce the effect of throwing the ends of the doors upwardly similarly to the structure just described. In this modified form I employ, in connection with the suitable body 1′, doors 2′, supported by chains 8′, connected with the outer face of the sides of said body and connected to the under face of the respective doors. The doors 2 are designed to be operated—that is, lifted—into position and retained as long as desired by means of a chain or flexible cable 3′. This chain 3′, corresponding to the chain 3 above described, extends into the body 1 through the side thereof, and then said body is crotched, forming branch connections 4′, the ends of which connections are secured to the respective doors 2′ at points between the center of the length of said doors and their outer ends.

Fig. 8 illustrates another slight modification of the invention, in which three branch chains, as 5′ 5′, are employed and connected to the doors forming the bottom of the wagon. By this construction and arrangement three points of support are secured, thus taking part of the strain off of the side branches of the chain. This last-described structure is necessarily rigid and strong; but I find the first-described device somewhat preferable thereto.

I have illustrated in connection with the modification shown a modified form of connecting means for the branch chains, which consists of a staple 6′, extending through the respective door and passing through a plate 7′, the staple and plate being secured in position by means of nuts threaded onto the ends of the staple.

Although I have shown chains for supporting the hinged doors forming the bottom of the wagon-body, it will of course be understood that any other fixed means suitable for the purpose may be substituted therefor, and it is with this understanding that the term "chain" is used in the claims.

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

1. In a dumping-wagon, the hopper discharge-opening of which is unobstructed by

a center sill, side walls, swinging doors connected therewith, said doors forming a closure for said discharge-opening, of a chain for raising said doors passing through each side wall, said chain having a plurality of branches which are connected with said doors at points relatively near the ends of said doors.

2. In a dumping-wagon, a hopper provided with an unobstructed discharge-opening, of a plurality of doors entirely closing said opening, flexible supporting means for the outer edges thereof, a windlass extending transversely of said hopper at one end, a chain connected with said windlass at each end and extending thence along the side wall of said hopper and terminating in a plurality of branches which are connected with said doors relatively near the ends thereof.

3. In a dumping-wagon, a hopper provided with unobstructed discharge-opening, a plurality of doors adapted to entirely close said opening, supporting means for the outer edges thereof, a windlass extending transversely of said hopper at one end thereof, chains extending from said windlass along the outer side walls of said hopper, and a plurality of extensions running from said chain through each side wall and being connected with said doors at different points thereon.

4. In a dumping-wagon, the combination with a body portion and hinged doors constituting the bottom thereof, of a chain at each side of said body portion connected to its respective door, each chain being provided with three branch connections, two of said connections engaging the respective door at points intermediate the length thereof, the combined distance between said points and ends of the door being less than the distance between said points.

5. In a dumping-wagon, the combination with a body portion formed with side walls and swinging doors constituting the bottom, of a chain passed through each side wall centrally thereof, two side branches connected to each chain and extending to and engaging the door upon the respective side of said body portion, and a third, central branch extending from said chain and engaging said door centrally thereof.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

JOSIAH F. DAY.

Witnesses:

GEORGE W. SIMPSON,

CHARLES WEINSTEIN.