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D. S. WATSON, E. BUSHNELL & J. F. SANDERSON.

DUMP WAGON.

APPLICATION FILED OCT. 16, 1906.

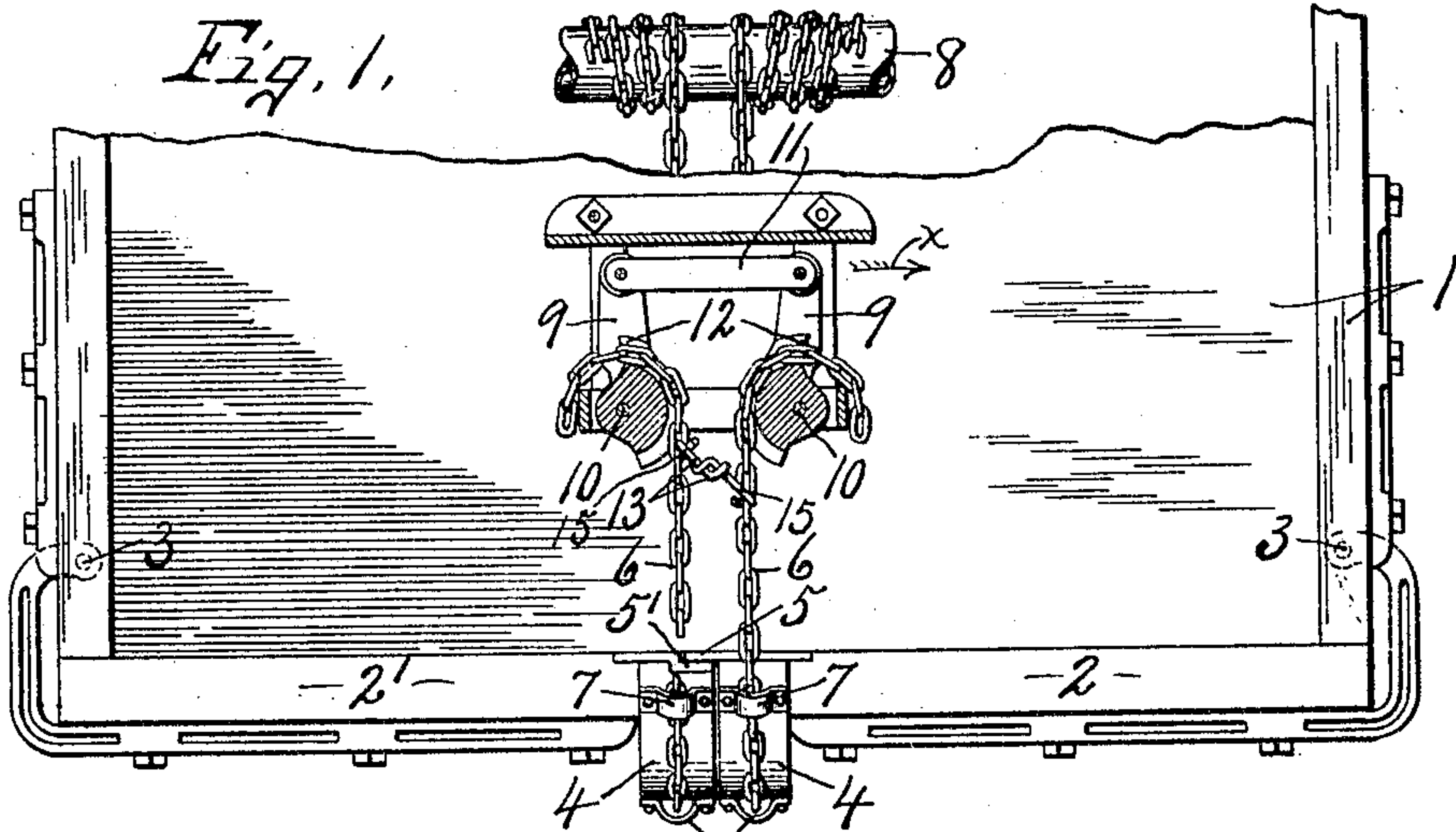


Fig. 2.

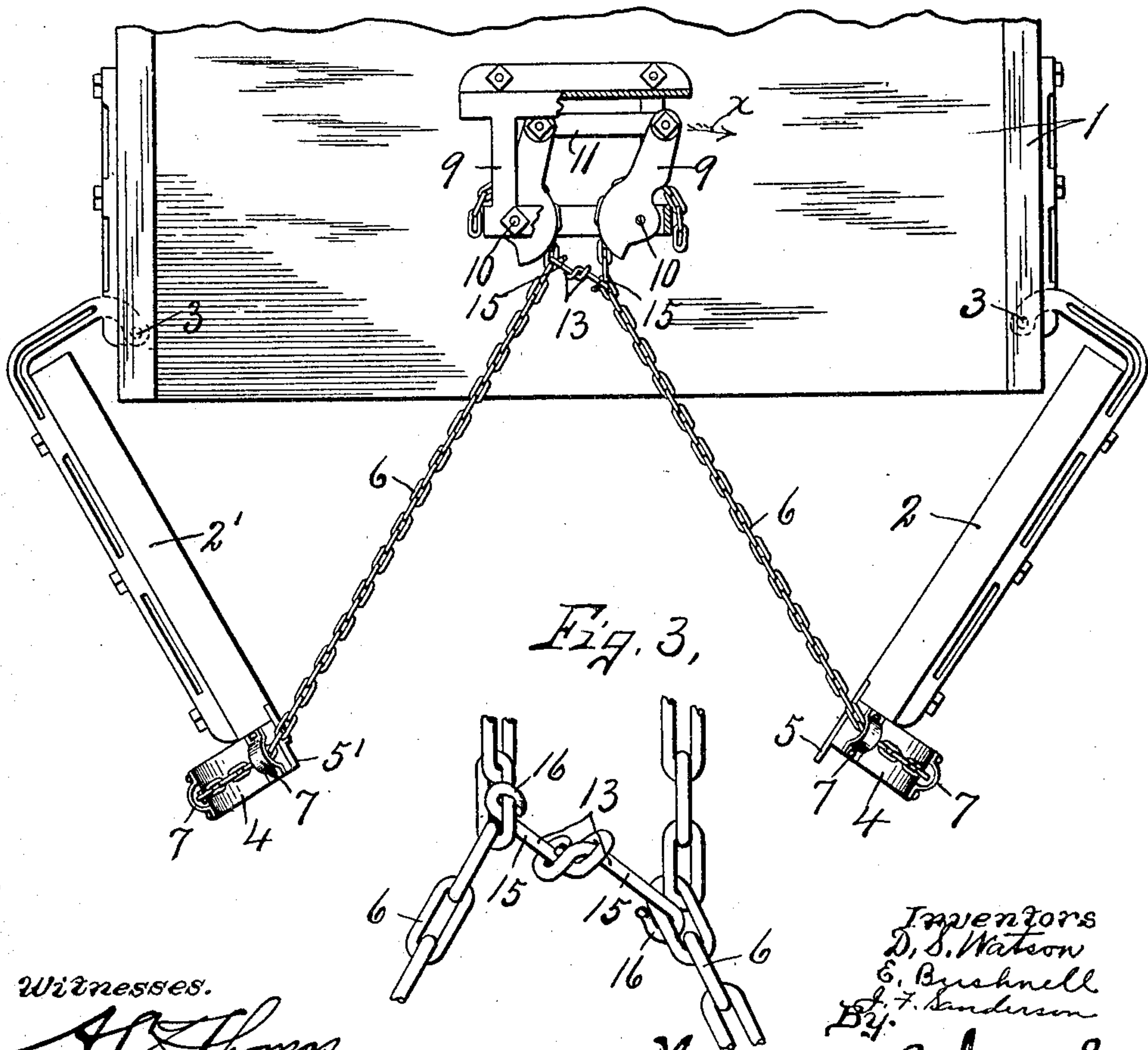
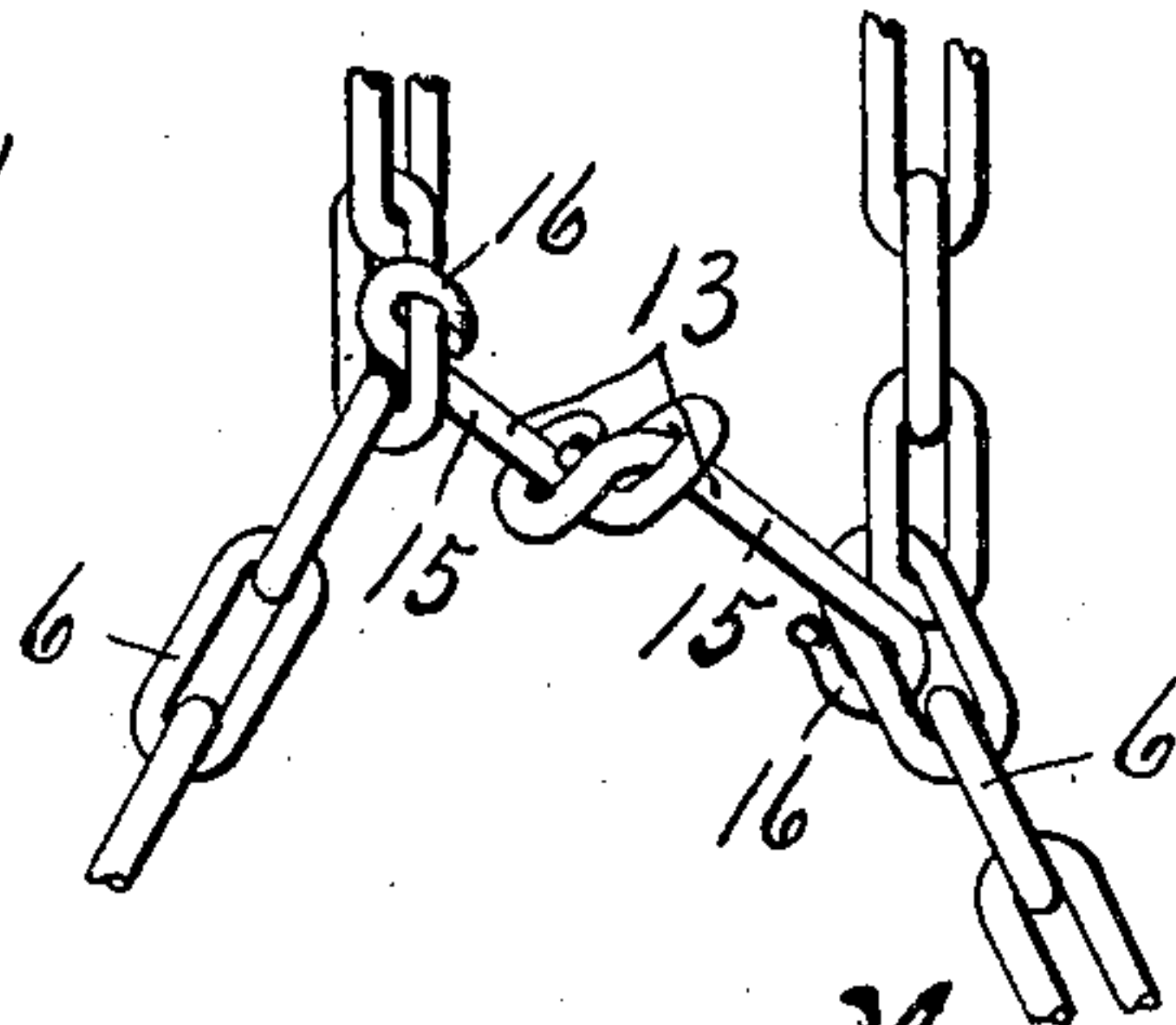


Fig. 3.



Witnesses.

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DUMP-WAGON.

No. 871,012.

Specification of Letters Patent.

Patented Nov. 12, 1907.

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To all whom it may concern:

Be it known that we, DAVID S. WATSON, ELMER BUSHNELL, and JAMES F. SANDERSON, of Canastota, in the county of Madison, in the State of New York, have invented new and useful Improvements in Dump-Wagons, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to certain improvements in dump wagons having laterally swinging bottom doors meeting at substantially the longitudinal center of the box and controlled by chains or cables passing under the meeting edges of the doors and having their front ends wound upon a suitable drum, and their rear ends attached to an equalizing mechanism similar to that set forth in the application of D. S. Watson, No. 326,618, filed July 17, 1906. In this class of dump wagons it is desirable to provide the meeting edges of the doors with lengthwise plates which lap one upon the other when the doors are closed, and it, therefore, becomes necessary to provide means whereby one door will always close slightly in advance of the other to assure positive-over-lapping of the plates, after which the equalizer is brought into action by the further winding of the actuating drum and cables to positively close the lagging door.

In other words, my present invention is an improvement upon that set forth in the pending application previously referred to, in the particular device which is employed to cause one door to always close slightly in advance of the other during the winding of the cable upon the drum.

In the drawings,—Figures 1 and 2 are rear elevations of a portion of a dump box showing portions of our improved winding mechanism for controlling the operation of the doors, said doors being shown as closed in Fig. 1 and open in Fig. 2, while the equalizing members are shown in section in Fig. 1 and in elevation in Fig. 2. Fig. 3 is an enlarged detail view of the connection between the rear ends of the door operating chains for causing one door to close in advance of the other.

The dump box as —1— is shown as provided with laterally swinging bottom doors —2— and —2'— which are hinged at —3— to the sides and meet at substantially the longitudinal center of the box, the meeting edges of said doors being provided with reinforcing ribs —4— and lengthwise flanges —5— and —5'— which lap one upon the other to prevent leakage of any part of the load, between the meeting edges of the doors.

In this instance, the flange or plate —5— is made to over-lap upon the top face of the adjacent edge of the door —2'— or rather upon the top face of the plate —5'— and, therefore, it is imperative in closing the doors, that the door —2— having the over-lapping

flange —5— be closed slightly in advance of the door —2'—, so as to prevent any possibility of the meeting edges of the flanges abutting one against the other during the operation of closing the same, which, of course, would prevent positive closing of the doors.

The operation of the doors is controlled by a pair of cables or chains —6— which are passed under the meeting edges as the ribs —4—, of the doors, through suitable loops —7—. The front ends of these chains are attached to and are adapted to be wound upon a suitable drum —8— at the front end of the box, and their rear ends are drawn upwardly some distance above the bottom doors and separately attached to rocking members —9— which are pivoted at —10— to the rear end of the box and have their upper ends connected for simultaneous action by a suitable link —11—. These rocking members —9— together with the connecting link or bar —11— constitute what may be termed an equalizing mechanism to assure the positive closing of the lagging door after one has been closed slightly in advance of the other as fully explained in the pending application previously referred to. The inner faces of the lower ends of these rocking members —9— are concentric with their swinging axes —10— and are preferably grooved to receive the chains —6—.

The upper side of the portions of the members —9— to which the chains are attached are provided with abutments —12— with which one of the links of each chain is engaged to resist downward pull upon the drum and at the same time to enable the rear ends of the chains to be adjusted relatively to the members —9— so as to make the operating portions of the chain, passing under the doors between the drum and equalizing mechanism substantially equal.

The mechanism thus far described is substantially the same as that of the pending application previously referred to, and is not herein specifically claimed except in combination with the improvement forming the subject matter of this invention.

This improvement consists specifically in providing a flexible connection —13— for the rear ends of the chains between the equalizing members —9— and doors to which said chains are operatively connected. As shown in the drawings, this flexible connection —13— extends diagonally between the adjacent portions of the chains —6— so that one end is higher than the other, the lower end being connected to the chain which passes under the door which is to close in advance of the other thereby constituting a tie between said chains, just below the equalizing members —9— so that when the meeting edges of the doors are thrown downwardly and outwardly by the dumping of a load or by their own gravity the resultant force of such action of the doors, through the medium of the chains

connected thereto, is transmitted to the inner side of the lower end of the rocking element —9— to which the door —2'— is connected. That is, by tying the chains —6— together just below the equalizing members —9— by a flexible diagonal tie as —13— so that the lower end of said tie is attached to the chain of the door which is to close first, it is evident that when said doors are released by the release of the winding drum, the momentum of the door —2— swinging downwardly and outwardly transmits its power to the chain of the door —2'— through the medium of the tie —13—, thereby drawing downwardly upon the upper end of the opposite chain which is attached to the door —2'— and exerting a downward pull upon the equalizing member —9— of the door —2'— at the inside of its pivot —10—, thereby rocking said equalizing member and transmitting similar rocking movement to the opposite equalizing member —9— through the medium of the link —11—. In like manner the momentum and weight of the downwardly and outwardly swinging door —2'— through the medium of the chain —6— exerts a similar downward pull upon its equalizing member —9— and thereby adds to the force exerted by the opposite door —2— to rock the equalizing members —9— in the direction indicated by arrow —X—, Figs. 1 and 2.

It is now clear that the resultant force of the momentum and gravity of both doors is transmitted to the equalizing member —9— of the door —2'— through the medium of the tie —13— causing the equalizing members —9— to rock in the direction indicated by arrow —X—, thereby causing the chain —6— of the door —2'— to unwind from its equalizing member —9— and the opposite chain —6— of the door —2— to be wound upon its equalizing member —9—. This action causes the meeting edge of the door —2— to be drawn upwardly while the other door is allowed to recede slightly so that during the operation of winding the chains upon the drum the equalizing members —9— will remain in the position shown in Fig. 2 and the door —2— will be closed slightly in advance of the opposite door —2'—.

As soon as the door —2— is closed the winding of its chain will cease and the tension produced upon its chain by the continued operation of the drum will draw down upon the inner side of its corresponding equalizing member —9—, thereby rocking both equalizing members through the medium of the link —11— in the opposite direction causing the chain of the door —2'— to be further wound upon its equalizing mem-

ber —9— until said door —2'— is closed firmly against the under side of the plate —5—.

The tie —13— is shown as consisting of a pair of links —15— having sliding interlocking connection with each other and each having a hook shaped extremity —16— detachably hooked into one of the links of its corresponding chain —6— so that the tie may be properly adjusted in the links of either of the chains to produce the desired effect of closing one door in advance of the other although it is evident that any other flexible tie between the chains, adjusted as described, will perform the same function, the object of flexibility being to permit the tie to flex under the varying actions of the chains and equalizers without kinking or buckling the chain when the doors are closed.

What I claim is:

1. In combination with the swinging bottom doors of a dump wagon, chains adjusted under the meeting edges of the doors, rocking equalizing members connected for simultaneous action and to which said chains are attached, and a tie connecting the chains between the equalizing members and doors.

2. In combination with the swinging bottom doors of a dump wagon, a pair of rocking elements connected for simultaneous action, cables attached to said elements and passed under the meeting edges of the doors, and a tie connecting the chains between the rocking elements and doors.

3. In combination with the swinging bottom doors of a dump box, chains adjusted under the meeting edges of the doors, movable elements to which the ends of the chains are attached, and a tie connecting said chains between the movable elements and doors.

4. In combination with the swinging bottom doors of a dump box and operating chains therefor, movable anchors for the rear ends of cables, and a tie connecting said cables between the anchors and doors.

5. In combination with the swinging bottom doors of a dump wagon and their operating cables passed under the meeting edges of the doors, movable anchors for the rear ends of the cables, and a tie extending diagonally between and connecting said cables.

6. In combination with the swinging bottom doors of a dump wagon and their operating cables passed under the meeting edges of the doors, an equalizer connected to the cables, and a flexible tie connecting said cables between the equalizer and doors.

In witness whereof we have hereunto set our hands this sixth day of October 1906.

DAVID S. WATSON.
ELMER BUSHNELL.
JAMES F. SANDERSON.

Witnesses:

MABEL M. LEWIS,
C. WOOD.