

No. 875,908.

J. HEBERLING.  
DUMPING WAGON.

PATENTED JAN. 7, 1908.

APPLICATION FILED FEB. 6, 1907.

4 SHEETS—SHEET 1.

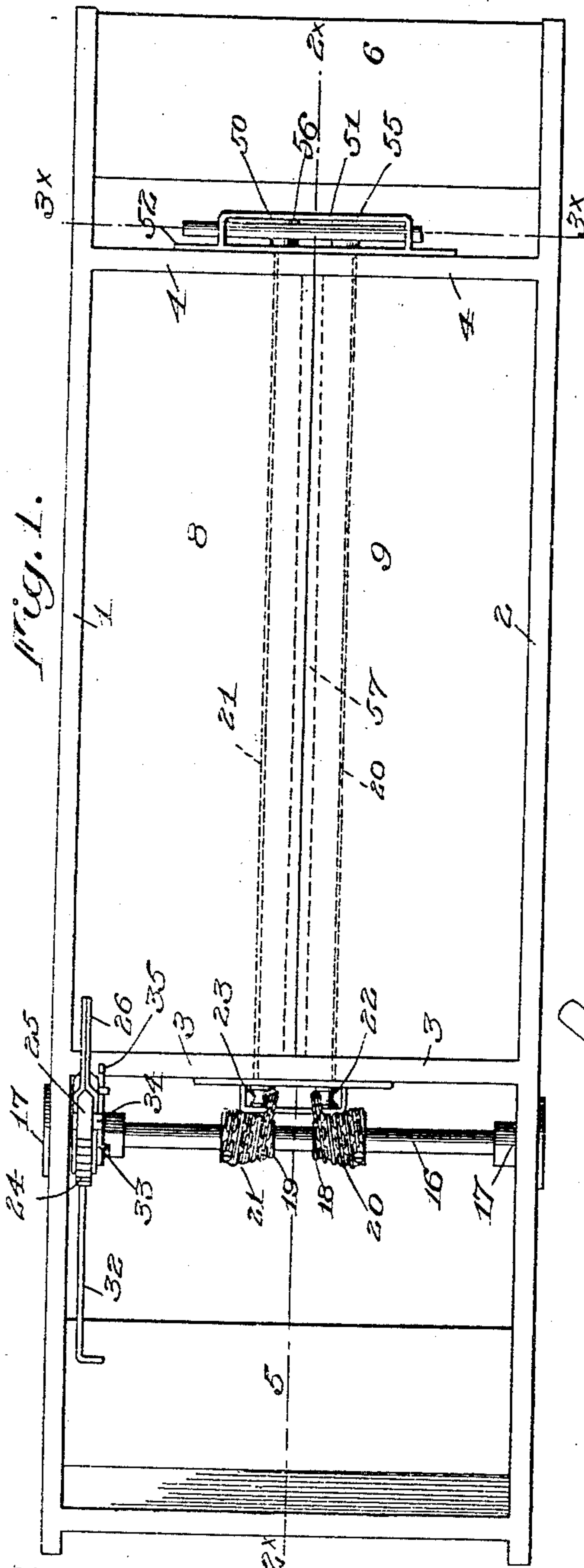


Fig. 1.

Witnesses

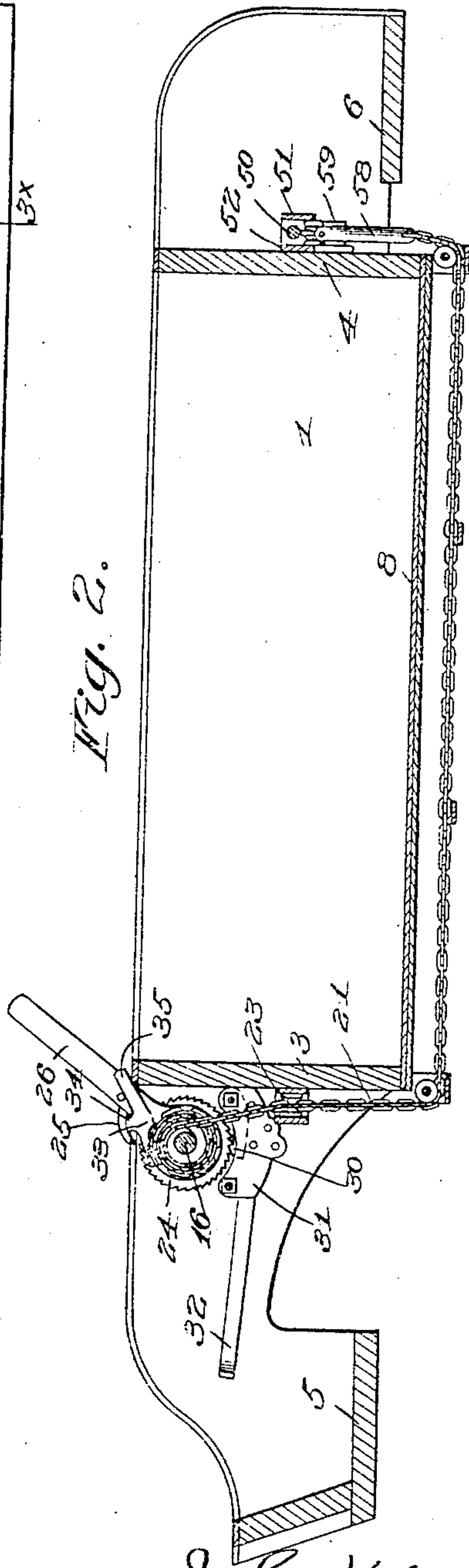
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Fig. 2.

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4 SHEETS—SHEET 2.

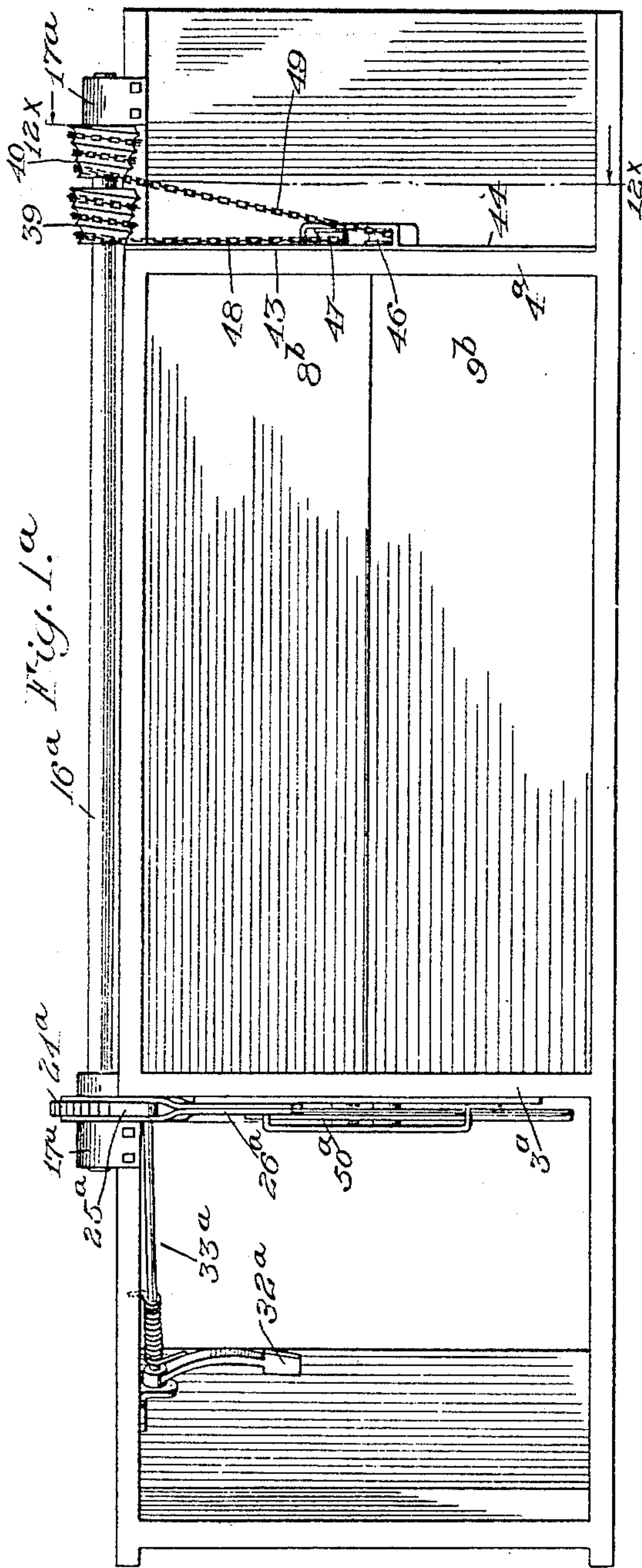


Fig. 1a

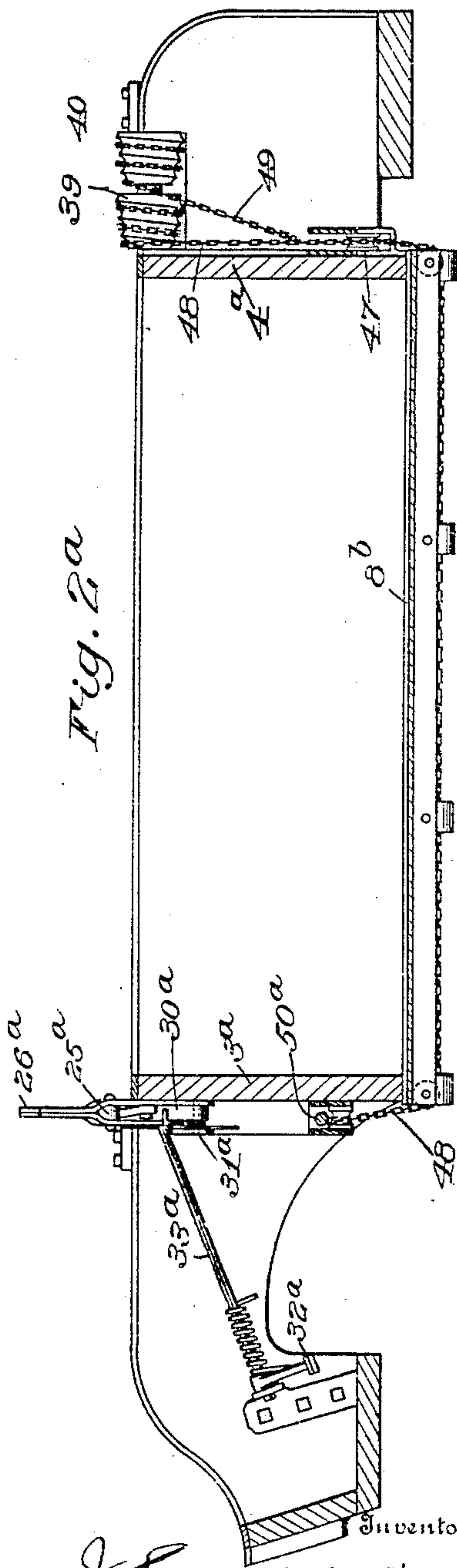


Fig. 2a

Witnesses

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4 SHEETS—SHEET 3.

Fig. 12.

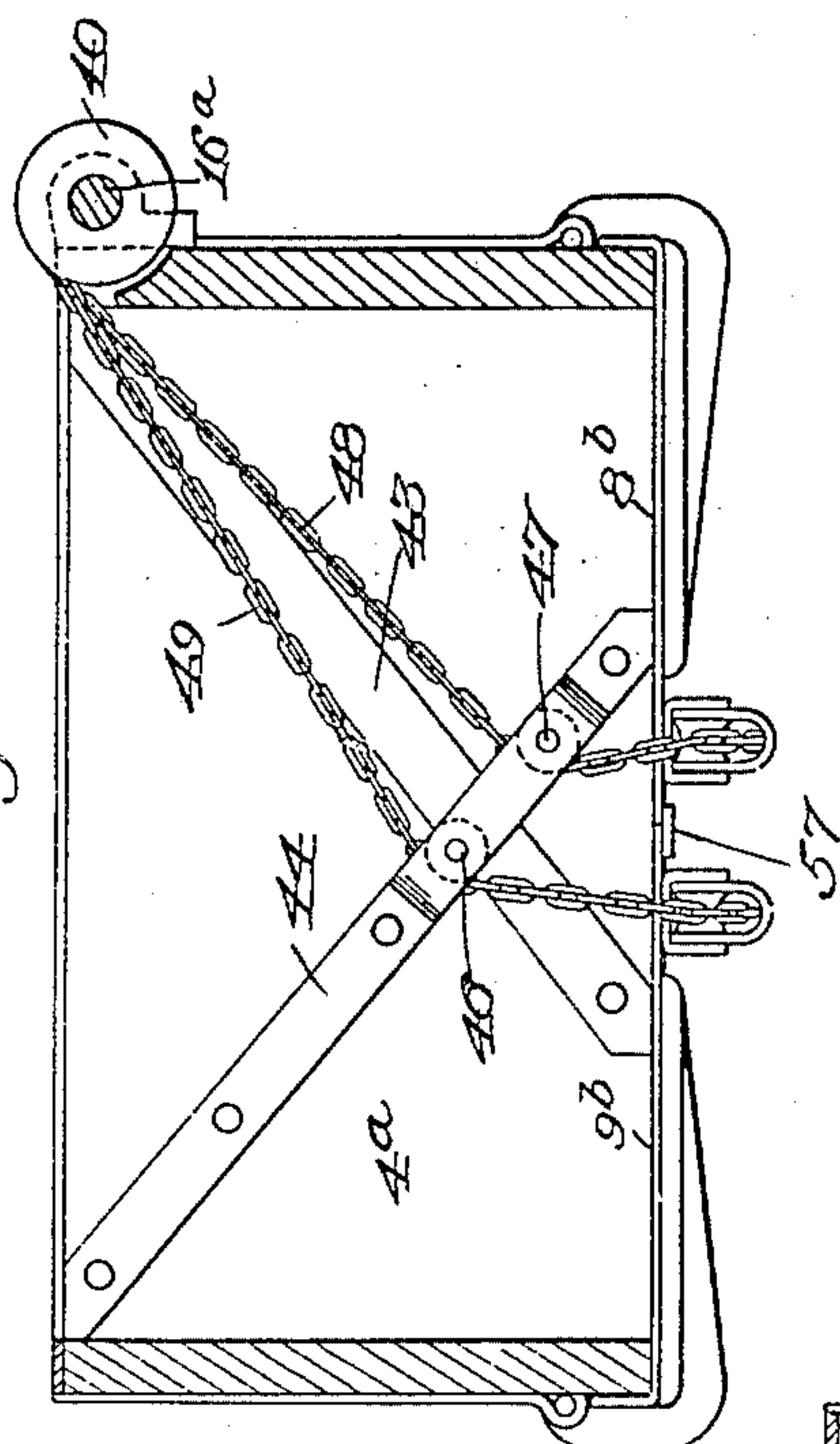


Fig. 6.

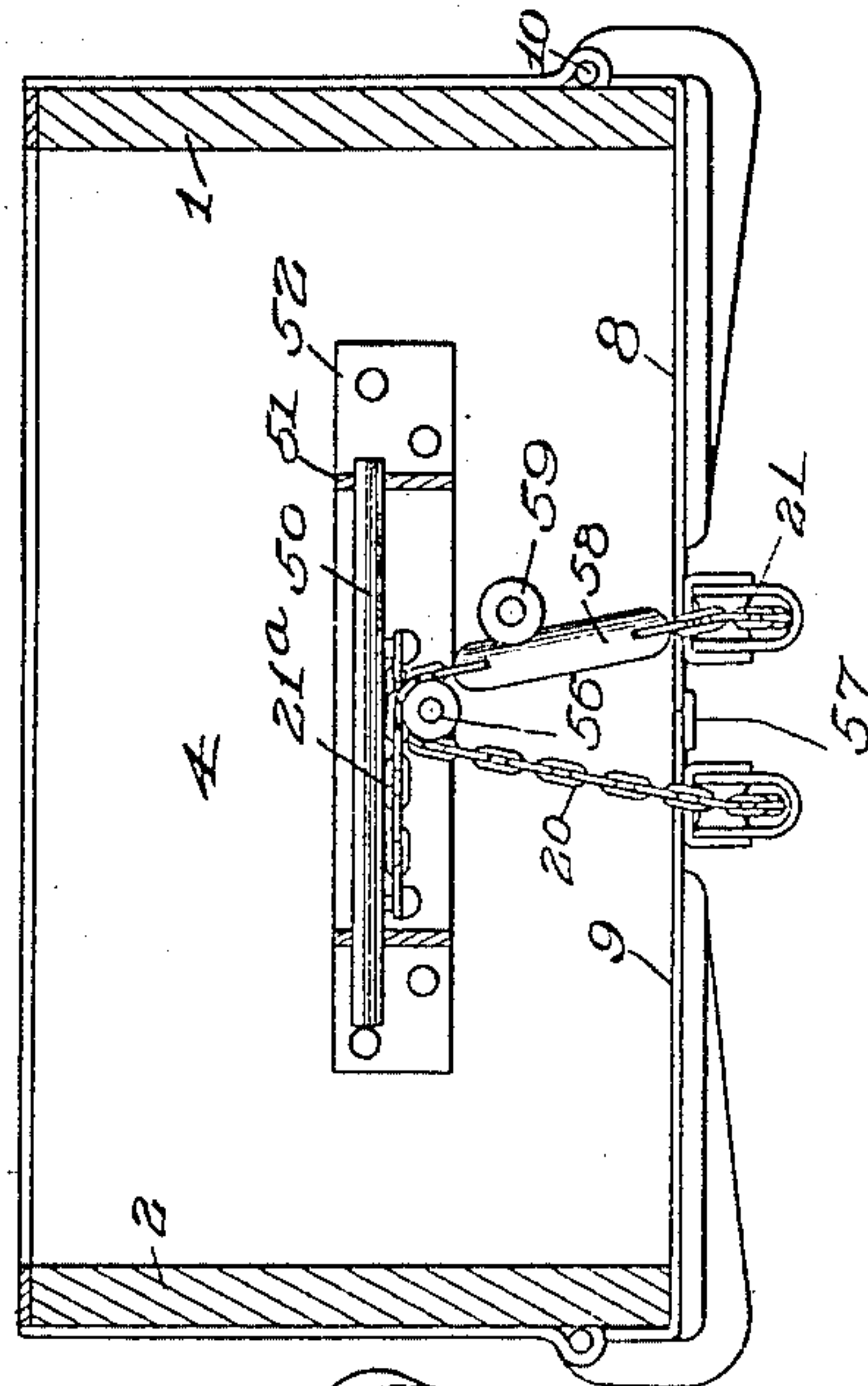


Fig. 3.

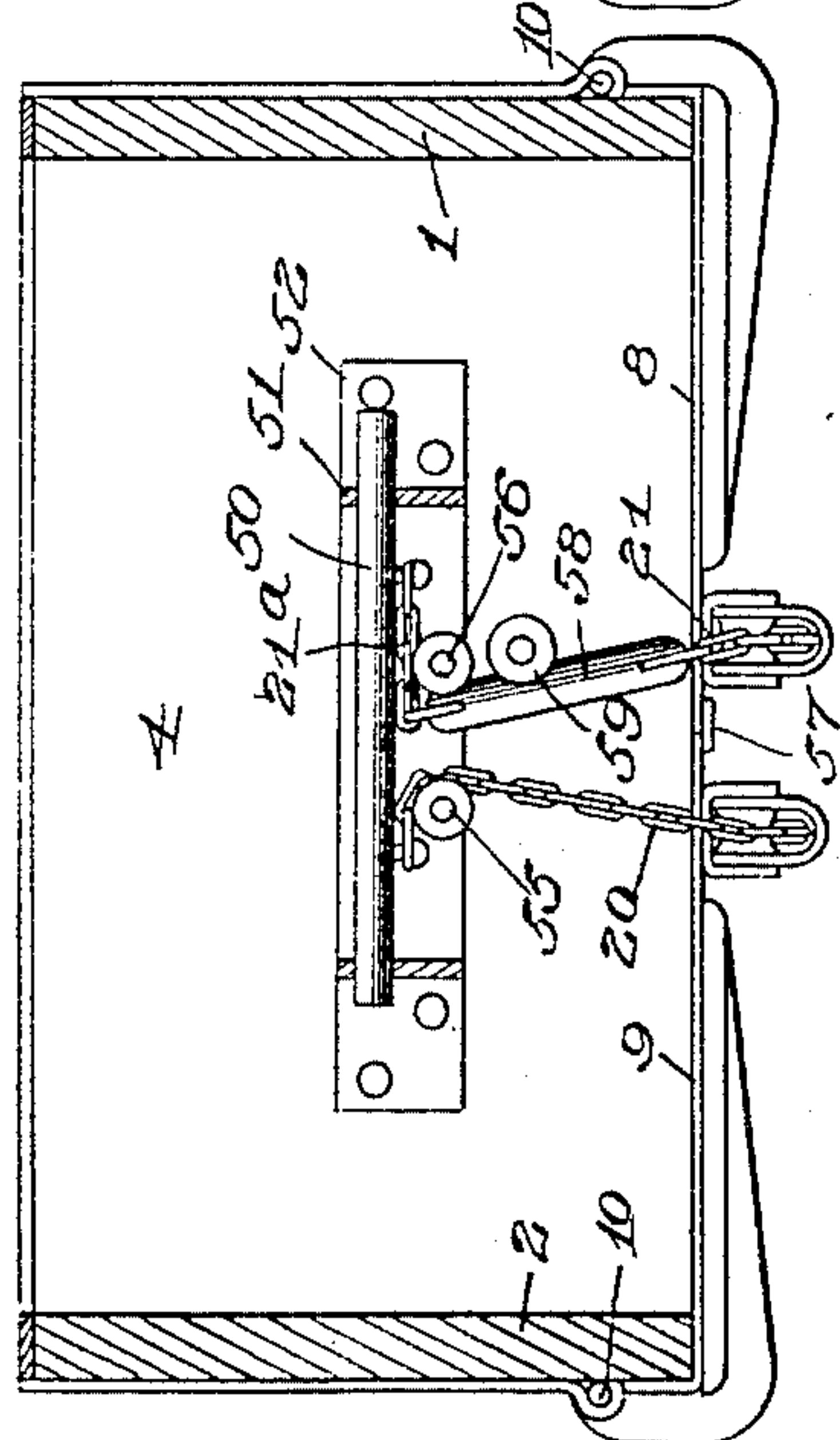


Fig. 4.

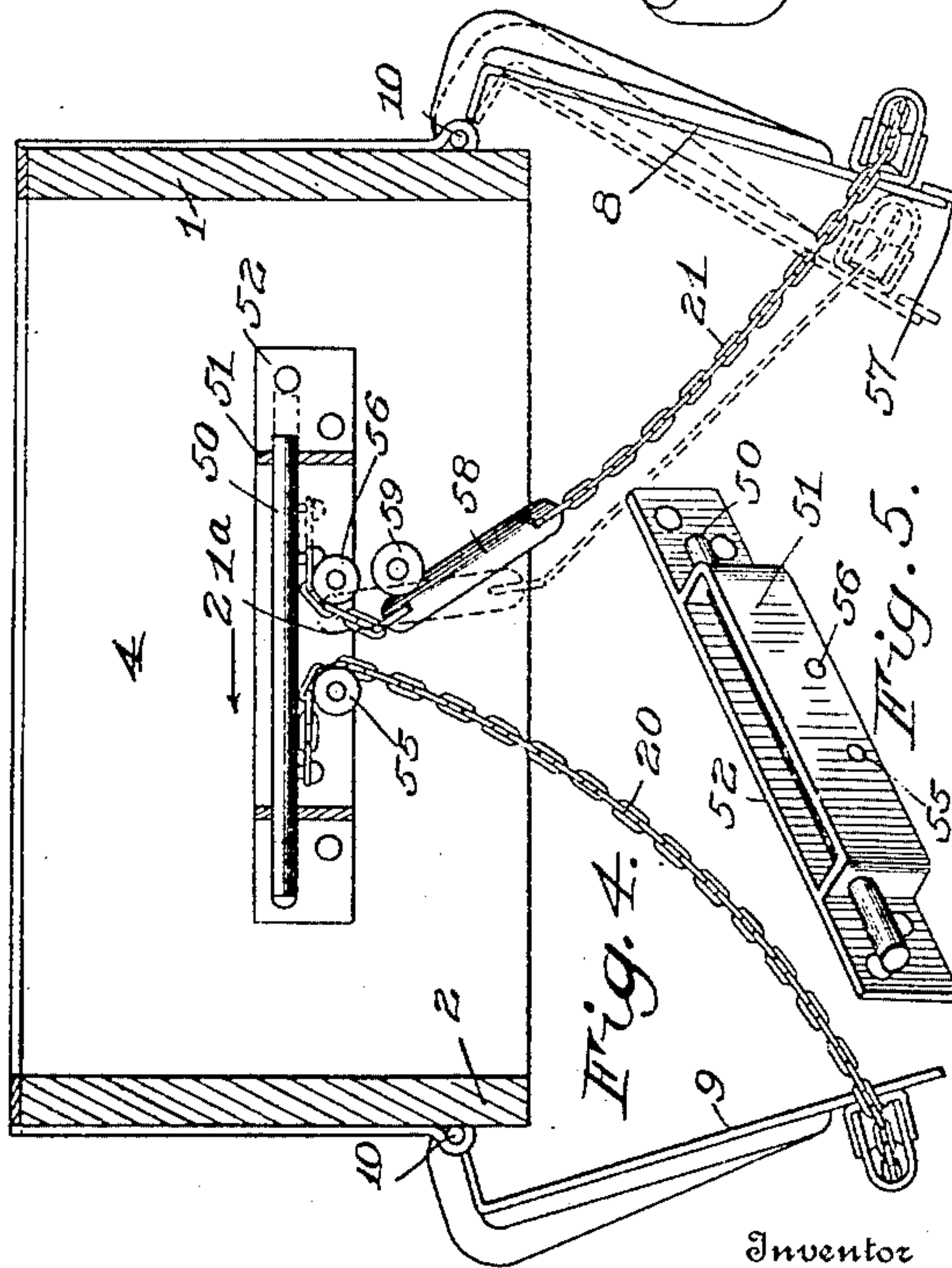


Fig. 5.

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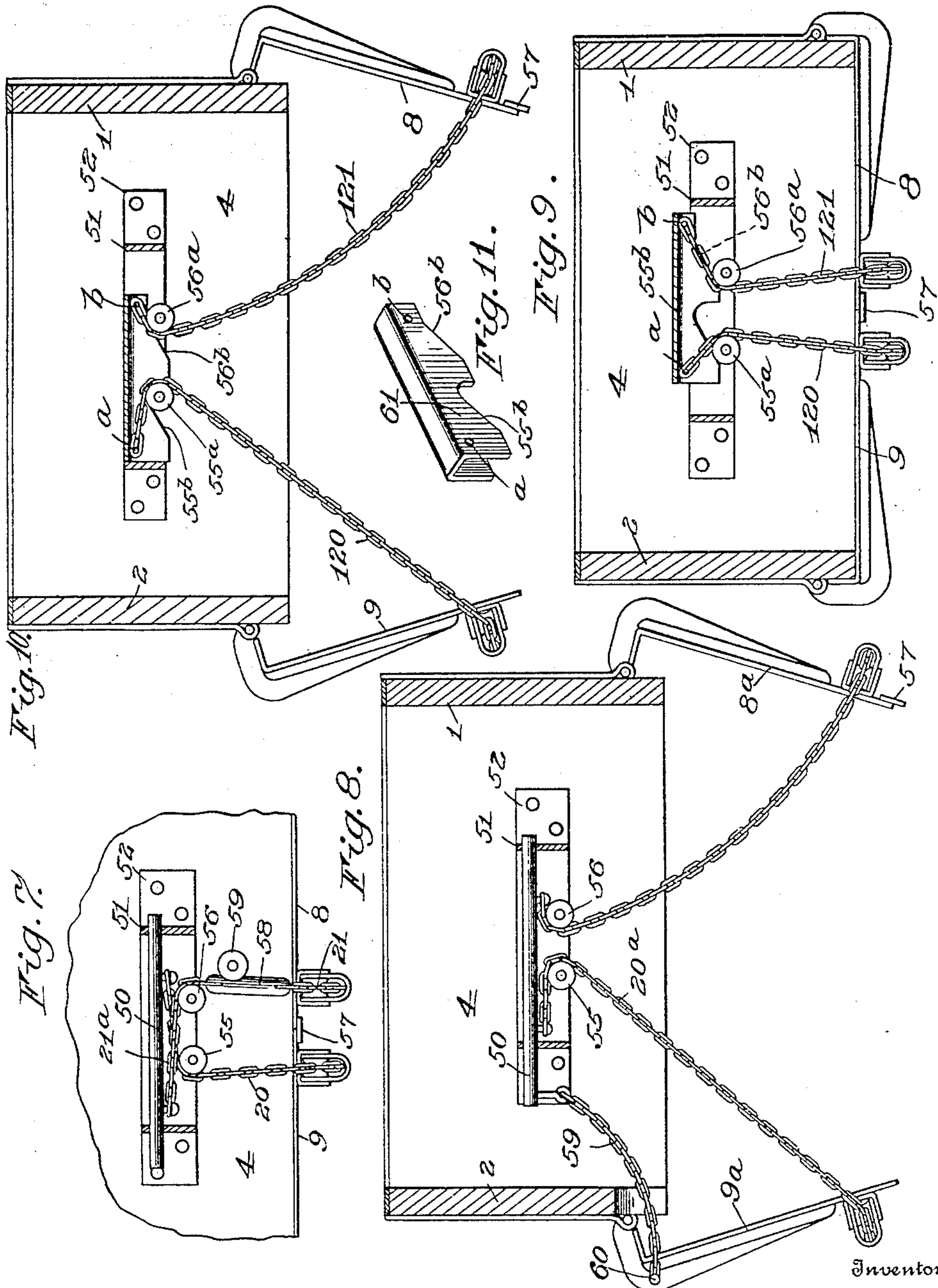
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4 SHEETS—SHEET 4.



Witnesses

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# UNITED STATES PATENT OFFICE.

JOHN HEBERLING, OF ROCHESTER, NEW YORK.

## DUMPING-WAGON.

No. 875,908.

Specification of Letters Patent.

Patented Jan. 7, 1908.

Application filed February 6, 1907. Serial No. 355,975.

*To all whom it may concern:*

Be it known that I, JOHN HEBERLING, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Dumping-Wagons; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of the specification, and to the numerals marked thereon.

My present invention relates to dumping wagons and particularly to that class in which the wagon box comprises movable bottom sections or doors and it has for its object to provide an improved mechanism for operating these parts into the closed position, whereby the operating connections may be automatically adjusted to permit one door to be closed in advance of the other and both of them to be drawn tightly against the bottom of the wagon box.

To these and other ends the invention consists in certain improvements and combinations of parts all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings: Figure 1 is a top plan view of the wagon box illustrating the application thereto of devices constructed in accordance with my invention. Fig. 2 is a longitudinal sectional view taken on the line 2<sup>x</sup> 2<sup>x</sup> of Fig. 1. Figs. 1<sup>a</sup> and 2<sup>a</sup> are views showing respectively, a top plan and a longitudinal section of the type of dumping wagon provided with a longitudinally - extending winding shaft and illustrating the application thereto of devices controlled in accordance with my invention. Fig. 3 is a rear elevation shown partly in section taken on the line 3<sup>x</sup> 3<sup>x</sup> of Fig. 1. Fig. 4 is a similar view showing the bottom sections or doors in the open or released position. Fig. 5 is a perspective view of the equalizing member detached from the wagon box. Figs. 6 and 7 are views showing different ways of attaching the door operating connections to the equalizing member. Fig. 8 is a view showing a modification of the means for automatically adjusting the equalizing device. Figs. 9 and 10 are views similar to those shown in Figs. 3 and 4 illustrating another form of the equalizing device, in which the latter is shown in the two positions of adjustment which it assumes when the bottom sections are respectively closed and opened. Fig. 11 is a

detail view of the device shown in Figs. 9 and 10, and Fig. 12 is a sectional view taken on the line 12<sup>x</sup> 12<sup>x</sup> of Fig. 1<sup>a</sup> showing the rear end of the wagon box.

Similar reference numerals in the several figures indicate similar parts.

In illustrating my invention, I have shown the devices embodying it applied to the body portion or box, of a dumping wagon comprising the side pieces 1 and 2 between which are located the forward and rear ends 3 and 4, respectively. It is customary in wagons of this character to extend the side pieces at their forward ends, as shown, where they are connected by a foot board 5, and at their opposite extremities which are connected by a cross piece 6, which latter, with the board 5, forms a convenient means of attachment for mounting the wagon body on the usual running gear, which has been omitted from these illustrations.

The bottom sections or doors 8 and 9 extend longitudinally beneath the ends and sides of the box and are pivotally connected to the latter by suitable hinges 10, their inner proximate edges meeting midway between the sides 1 and 2. Extending transversely of the wagon box between the extended forward ends of the side pieces 1 and 2 is a shaft 16 journaled at its ends in bearings 17 and provided at its center with drums 18 and 19 in which the door operating connections 20 and 21 are adapted to be wound. These connections pass downwardly between the guide pulleys 22 and 23 and thence longitudinally beneath the respective bottom sections or doors 8 and 9 to the rear end of the wagon box where they are attached to the equalizing device to be presently described. At one end of the shaft is a ratchet wheel 24 by means of which the shaft may be rotated to close the bottom section by engagement therewith of the pawl 25 carried on the oscillatory operating arm 26. The ratchet wheel is normally locked by a detent 30, arranged in a housing 31, which may be released by a treadle or foot lever 32. Attached to the arm 26 is a pivoted releasing member 33 having a laterally - projecting finger 34, extending beneath the pawl 25 and a projecting end 35 which is adapted to co-operate with the end of the box, when the operating arm is moved into the position shown in Fig. 1, to automatically adjust the pawl into the inoperative position. The advantage of this means of releasing the



pawl 25 will be apparent from the fact that the latter may be disengaged by the operator before the shaft 16 is released, by the retracting of the detent 30, or if the operator neglects to do this, the pawl will automatically be disconnected as the operating lever is rotated into the position shown in Fig. 1, by the movement imparted to the shaft 16 as the door operating connections are permitted to unwind.

To adapt a wagon of this character for transporting finely divided material, such as sand, or plastic substances such as asphalt, mud or plaster, it is necessary to provide means for closing both bottom sections or doors tightly into engagement with the bottom edges of the box and to cover the joint formed by the meeting edges of the two bottom sections with a covering strip or batten. Considerable inconvenience has been encountered in using these wagons for the above mentioned purposes, which is due in a large measure to the wear and unequal stretching of the door operating connections which permits one door or section to sag at one or both of its ends when the other is drawn into engagement with the box. My present invention comprehends means whereby this difficulty may be obviated which also permits a relative automatic action to take place between the door operating connections whereby the closing of one of them in advance of the other may be assured, thus permitting the application of the covering strip or batten to one of the doors, without providing a special form of winding mechanism for taking up one connection independently of the other, which is advantageous, as it does not require skill or particular attention on the part of the operator.

In illustrating the present embodiment of my invention I have shown the preferred form thereof in Figs. 3 and 4, in which the equalizing of the connections is accomplished by supporting one end of each of them on a guiding projection or idler mounted on the box and providing means serving as a connection between them, whereby as one connection is drawn over or wound upon its guide or projection in one direction the other is permitted to unwind or move over its respective guide or projection in the opposite direction. One form of mechanism for accomplishing this object may comprise a connection, such as a transversely movable bar 50, reciprocating in bearings formed in the ends of a bridge piece 51 mounted upon a bed plate or strap 52, secured to the rear end 4 of the box, and two guides such as projections or idler pulleys 55 and 56, located beneath the bar.

The door operating connections 20 and 21 extend upwardly at the rear ends of the doors around the guides 55 and 56 and are attached to the bar 50 at points located lat-

erally of the centers of said pulleys, whereby the bar, or connection between the chains, may be reciprocated in one direction or the other when a greater strain is imparted to one of the connections than to the other. This arrangement of the parts, it will be seen, provides mechanism which is automatically adjustable to compensate for the unequal length of the operating connections caused by an unequal wear, or stretching, of the chains which are usually employed for this purpose, so that when the shaft 16 is rotated to wind up the connections, the lateral movement of the equalizing bar will pay out to the shorter chain an amount equal to that portion of the longer chain which must be taken up to close its door, thereby enabling both bottom sections or doors to be drawn tightly against the bottom of the wagon box.

It will be seen that if the equalizing bar is moved to one side or the other when the doors are opened that the connection which is shortened temporarily will operate to close its door or bottom section in advance of the other and that a mechanism for adjusting the relative lengths of said connections or chains may be provided to cause the door which is to be closed first to precede the second a sufficient distance so that a lip or projecting batten on the edge of the latter will not strike the former when the edges of said doors approach each other in their closing movement. In reality the necessary adjustment of the chains or connections to accomplish this object is slight, as the length of one of them is increased the same amount that the other is decreased. In this connection it is desirable to provide means for positively actuating the equalizing mechanism to effect the aforescribed adjustment, which is preferably operated automatically by one of the doors when they are released.

The covering strip or batten is designated by the numeral 57 and is shown as applied to the door 8. In order to close this door after the door 9 I arrange in the chain or connection 21 a bar or link 58 which bears against the face of a projection or roller 59 located beneath the idler 56, and is connected to the equalizing member by a short section of chain 21<sup>a</sup>. The upper end of the bar or link projects above the roller and its lower end extends into proximity with the door 8 when the latter is closed, as shown in Fig. 3, the various cooperating parts being arranged so that when in its normal position the bar extends substantially in a vertical direction and is held in engagement with the roller 59. Now, when the doors are released it will be seen that as they rotate about their pivots or hinges 10, their meeting edges separate and that the connection 21 is carried laterally by the edge of the door 8, out of alinement with the lower end of the bar or link 58, as shown in dotted lines in Fig. 4. This move-



ment of the connection or chain tends to rotate the bar around the projection or roller 59, as a fulcrum point, before the doors have reached their limit of outward movement 5 and while the connections or chains are unwinding from the drums. The drawing of the bar or link into alinement with the chain 21 causes the connecting section 21<sup>a</sup>, between it and the equalizing device, to be 10 drawn over the idler 56 to move the equalizing device longitudinally in the direction indicated by the arrow in Fig. 4, whereby the connection 21 is lengthened and the connection 20 is shortened.

15 The modification shown in Fig. 8 illustrates another way the equalizing device may be moved automatically, which consists in connecting one of the doors 9<sup>a</sup> with the end of the equalizing bar 50 by a short 20 length of chain 59 attached to said door near its pivotal point, as indicated by 60. When this form of actuating means is employed, the connection should be attached to the door which is to be closed in advance of the 25 other door, which is indicated by 8<sup>a</sup>, and its length should be such that the tension applied thereto by the weight of the door as it approaches the limit of its opening movement will overcome the friction of the operating 30 connection 20<sup>a</sup>.

In Figs. 9, 10 and 11 a modification of the form of equalizing member is shown, which operates to adjust the door operating connections or chains without reference to the 35 doors themselves, but which may be used in conjunction with either of the actuating devices shown in Figs. 4 or 8. These illustrations show the member as being formed of a short length of channel iron, the side 40 walls 61 of which are adapted to rest on the edges of the guides or idlers 55<sup>a</sup> and 56<sup>a</sup> at opposite sides of the chains 120 and 121, which latter are secured at their ends by pins *a* and *b*. The edges of the side walls 61 45 are provided with inclined surfaces 55<sup>b</sup> and 56<sup>b</sup> which are adapted to cooperate with the idlers 55<sup>a</sup> and 56<sup>a</sup> to cause the equalizing member to move vertically when it is operated. The member is given a natural inclination to move in one direction by making 50 the inclined surfaces of sufficient length in proportion to the distance through which it moves, so that they always bear against the projections or idlers, as shown in Fig. 9. An 55 equalizing member constructed in this manner will gravitate into the position shown in Fig. 10, when the doors or bottom sections are released.

It is not necessary to pass the door operating connections between the separate 60 guides or idlers 55 and 56 as they might be arranged as shown in Fig. 7, in which they bear against the outer sides of the guides, nor it is necessary to employ two separate 65 guides as a single projection may be em-

ployed, as shown in Fig. 6, which may be formed by journaling the two idlers on a common pivot.

Each of the equalizing devices I have shown is capable of operation with equal 70 advantage when the winding shaft 16<sup>a</sup> is extended longitudinally of the wagon box, as shown in Figs. 1<sup>a</sup> and 2<sup>a</sup>, but in such case I prefer to locate the winding drums 39 and 40 at the rear end of the shaft and locate 75 the equalizing devices, indicated by 50<sup>a</sup>, at the forward end 3<sup>a</sup> of the wagon box. The door operating connections 48 and 49 are then supported at the rear end of the wagon box 4<sup>a</sup> by guides 46 and 47 arranged out of 80 horizontal alinement and above the inner edges of the doors 8<sup>b</sup> and 9<sup>b</sup>, as shown in Fig. 12. These guides are mounted on two diagonally arranged straps 43 and 44 which extend at an angle from the upper corner of 85 the end 4<sup>a</sup> and overlap at their lower ends for the purpose of strengthening the end of the box. The winding shaft 16<sup>a</sup>, shown in these figures, is supported at its ends in bearings 17<sup>a</sup> and at its forward extremity is 90 provided with a ratchet wheel 24<sup>a</sup> with which cooperates the pawl 25<sup>a</sup>, on the operating arm 26<sup>a</sup>, and is normally locked by a detent 30<sup>a</sup>, pivoted on a plate 31<sup>a</sup>, which may be released by a treadle 32<sup>a</sup> on an 95 oscillatory shaft 33<sup>a</sup> having at its end a projection (not shown) adapted to disconnect said detent.

The devices embodying my invention may be manufactured cheaply and applied to 100 wagons heretofore constructed, and owing to their simple construction they are not liable to injury or derangement as a result of the severe use to which devices of this nature are subjected. 105

I claim as my invention:

1. In a dumping wagon, the combination with a box, movable bottom sections thereon and connections cooperating with said sections for closing them, of a horizontally movable member attached to said connections 110 and mounted to reciprocate on the box in one direction or the other to equalize between the connections the tension applied to them. 115

2. In a dumping wagon, the combination with a box, movable bottom sections thereon and separate connections cooperating with the bottom sections, of a device arranged between said connections for equalizing the 120 tension applied to them and means actuated by the opening movement of one of the sections to adjust said device into a position to cause a relative shortening of the connection of one section and lengthening of the connection of the other section and means for drawing 125 said connections to close the sections.

3. In a dumping wagon, the combination with a box, movable bottom sections thereon, and connections for operating said sec- 130



tions, of a device cooperating with the connections for equalizing the tension applied to them, said device being adapted to be adjusted in one direction to cause a relative

5 shortening of the connection of one section and a lengthening of the connection of the other section to cause the former to be closed in advance of the latter, means actuated by the opening movement of one of the sections  
10 to move said device into a position to lengthen its operating connection and means for drawing the connections to close the sections.

4. In a dumping wagon, the combination  
15 with a box, movable bottom sections thereon, one of which is adapted to be closed in advance of the other, connections for operating said sections and means for drawing them to close said sections, of an equalizing bar  
20 guided on the box and attached to the connections, means actuated by the section which is to be closed last for adjusting the bar into a position to cause the operating connection of said section to be shortened  
25 relatively to the other connection.

5. In a dumping wagon, the combination with a box having movable bottom doors, a guide arranged on the box, a member mounted thereon and relatively stationary projections located in proximity thereto, of connections cooperating with the doors and said  
30 projections and each attached to the member to impart movement thereto in opposite directions and means for drawing the connections to close the doors.  
35

6. In a dumping wagon, the combination with a box having movable bottom doors, a guide arranged on the box, a member mounted thereon and relatively stationary projections located in proximity thereto, of connections cooperating with the doors and each  
40 passing around one side of one of the projections and attached to the member at a point in rear of the side of the projection around  
45 which it passes and means for drawing the connections to close the doors.

7. In a dumping wagon, the combination with a box comprising side pieces, ends and movable bottom doors, of braces arranged  
50 diagonally on one of the end pieces, idlers mounted thereon and a winding shaft arranged exteriorly of the box at one side thereof, connections anchored at one end of the box, extending longitudinally beneath  
55 the doors, engaging said idlers and attached to the shaft, and means for operating the latter.

8. In a dumping wagon, the combination with a box comprising side pieces, ends and  
60 movable bottom doors, of two projections arranged on one end of the box, a movable member supported above the projections, two separate door operating connections attached to the member at fixed points and  
65 cooperating with the projections to cause

the member to move relatively thereto in opposite directions when a strain is alternately applied to said connections and means for drawing the connections to close the doors.

9. In a dumping wagon, the combination with a box, two movable bottom sections thereon, a winding shaft and separate connections attached thereto at one end and extending longitudinally beneath the doors, of  
75 projections on the box supporting the opposite extremities of said connections and means uniting the supported extremities of the connections for causing the movement of said connections around their respective projections in opposite directions to equalize  
80 the tension applied to them.

10. In a dumping wagon, the combination with a box, two movable bottom sections thereon, a winding shaft on the box and two  
85 projections arranged at one end of the box, of two flexible connections attached to the shaft at one end extending longitudinally beneath the sections and passing around said projections at their other extremities and  
90 mechanism uniting the supported extremities of the connections for simultaneously drawing one connection around its projection and paying out the other connection over its projection.  
95

11. In a dumping wagon, the combination with a box, bottom sections thereon and separate connections cooperating with the latter, of means for drawing them to close  
100 the sections, mechanism supporting the ends of the connections, for equalizing the tension imparted to them a projection arranged stationary relatively to said mechanism and a member fulcrumed thereon and adapted to be actuated by one of the connections for  
105 imparting movement to the equalizing mechanism to automatically set it in a predetermined position of adjustment.

12. In a dumping wagon, the combination with a box, bottom sections thereon and  
110 separate connections cooperating with the latter, of means for drawing them to close the sections, equalizing mechanism supporting the ends of the connections, a relatively stationary projection and a member attached to one of the connections and fulcrumed on the projection and adapted to impart movement to the equalizing mechanism to automatically set it in adjusted  
115 position upon the opening of the sections.  
120

13. In a dumping wagon, the combination with a box, bottom sections thereon and separate connections cooperating with the latter, of means for drawing them to close  
125 the sections, equalizing mechanism supporting the ends of the connections, a relatively stationary projection and a member interposed in one of the connections in proximity to the equalizing mechanism and bearing loosely against the projection and adapted  
130



to be rotated around the latter by the drawing action of the connection when the bottom sections are released to impart movement to the equalizing device in one direction.

14. In a dumping wagon, the combination with a box, bottom sections thereon, a winding shaft and operating connections connected thereto and cooperating with the sections, supports around which the ends of the connections pass, and a movable member to which each of them are connected, of a

projection arranged stationary relatively to one of the supports, a rigid bar forming part of one of the connections which is adapted to cooperate with the projection upon the opening of the sections to actuate the movable member to automatically cause a shortening of one connection and a lengthening of the other.

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