

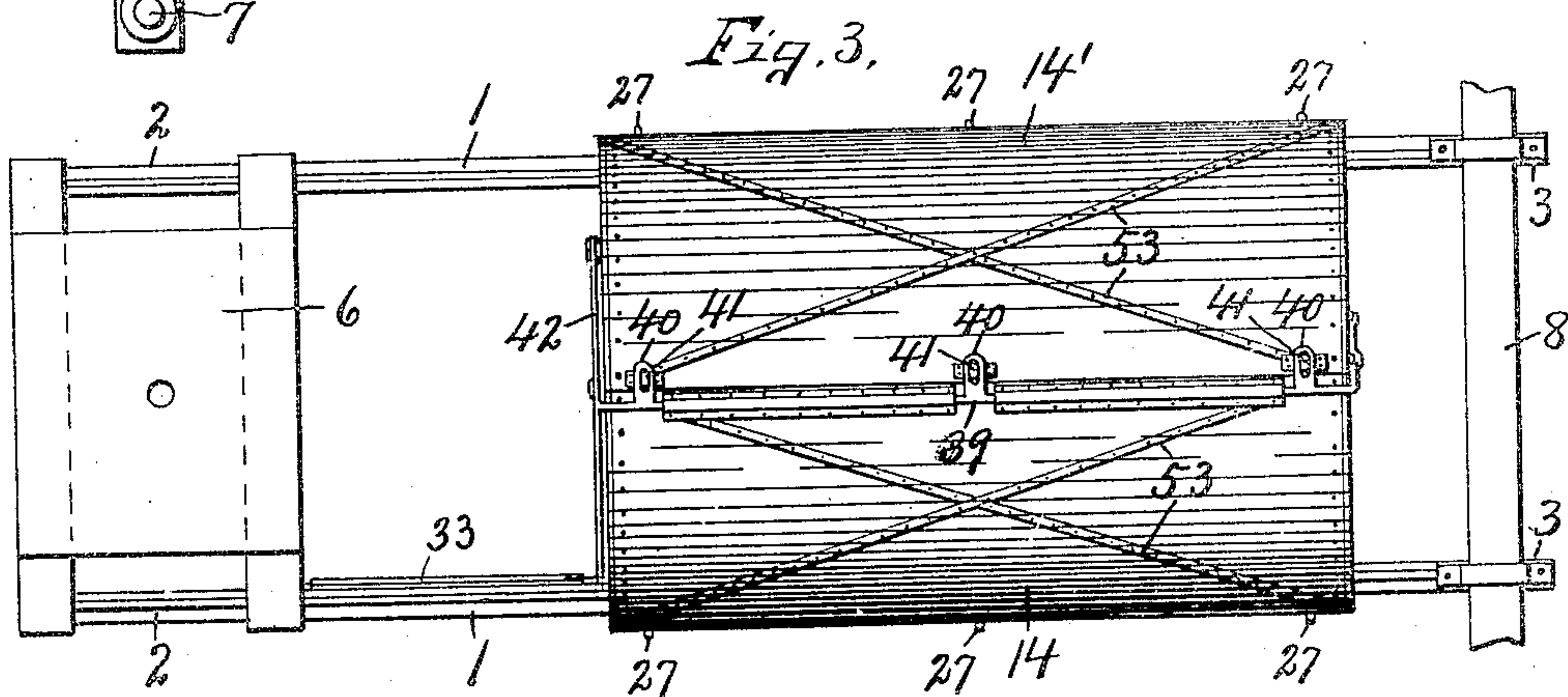
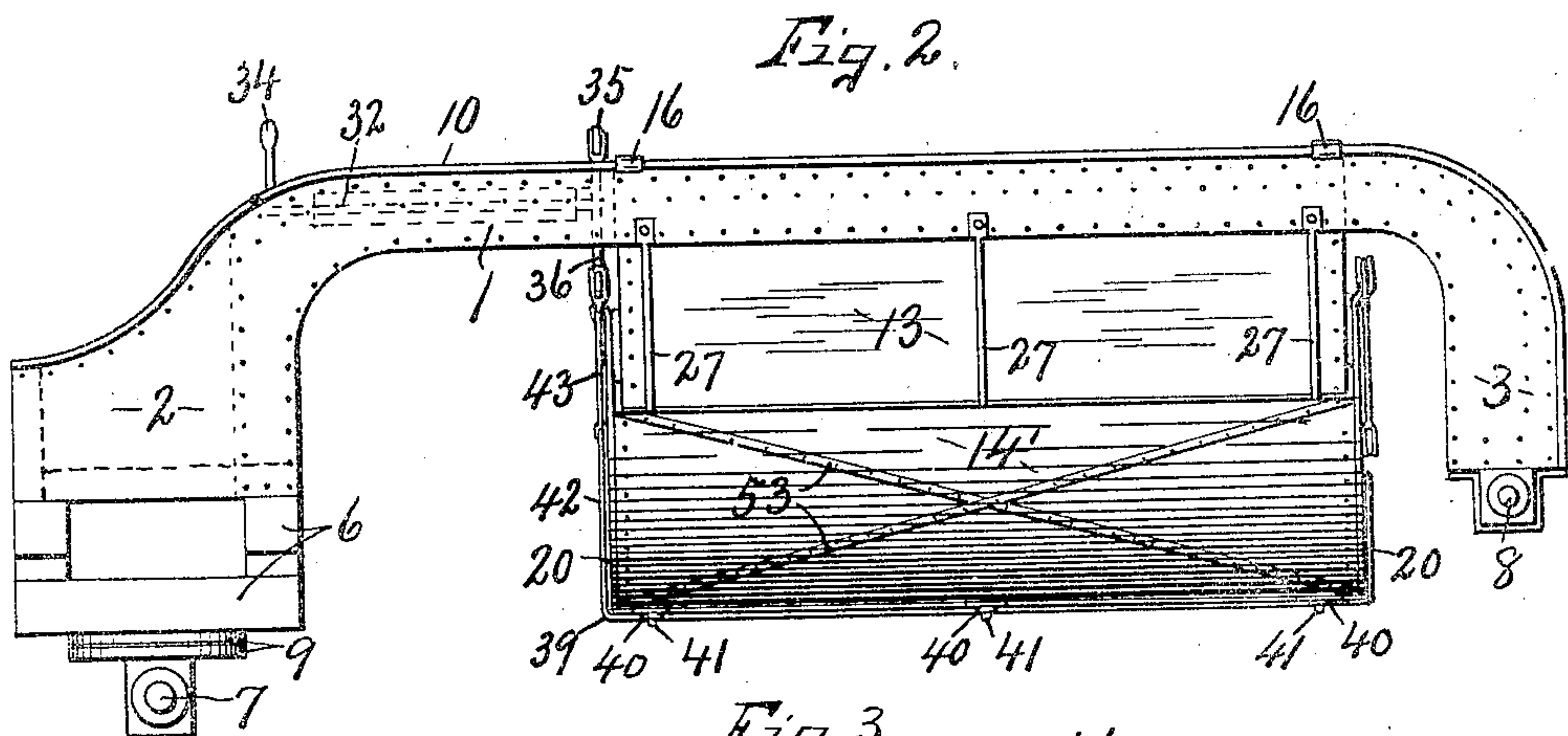
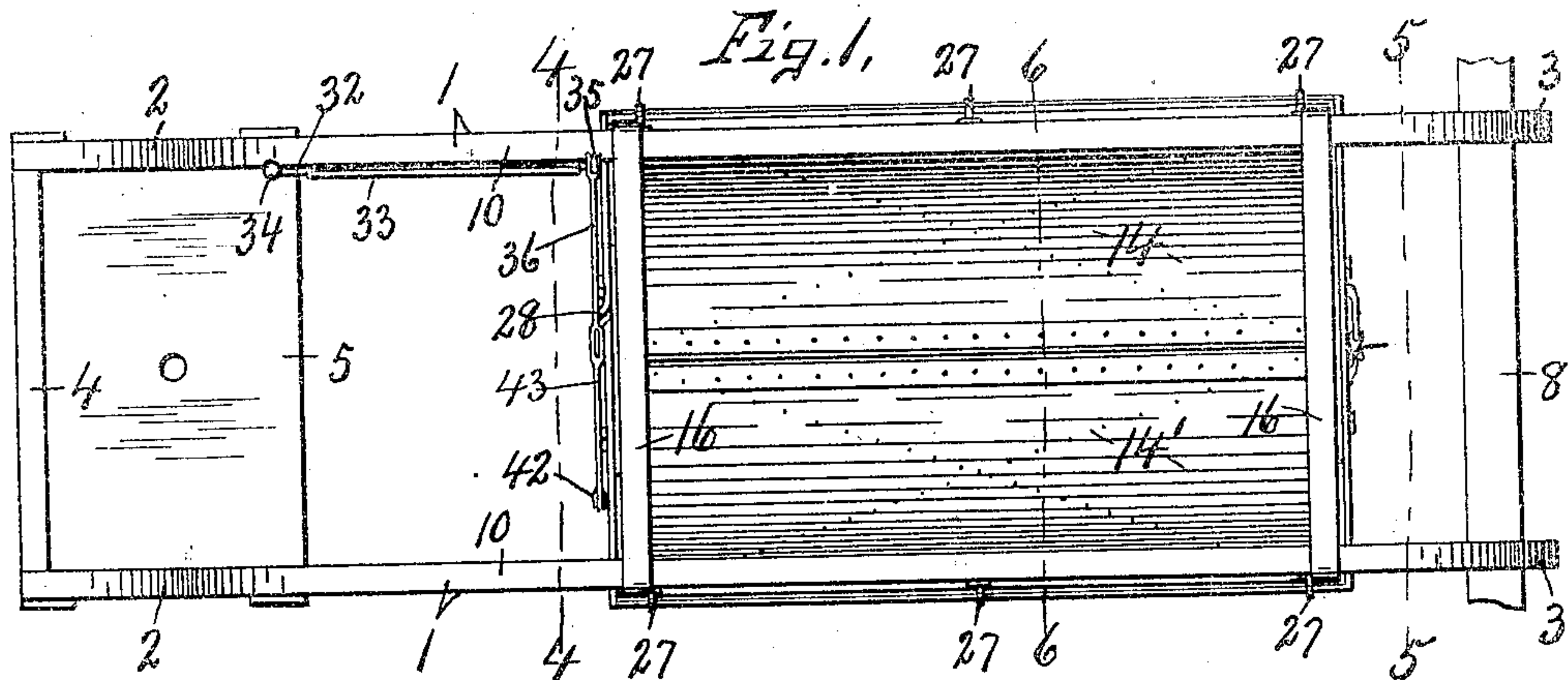
No. 877,884.

PATENTED JAN. 28, 1908.

W. L. COLLINS.
DUMP WAGON.

APPLICATION FILED JULY 29, 1907.

2 SHEETS—SHEET 1.



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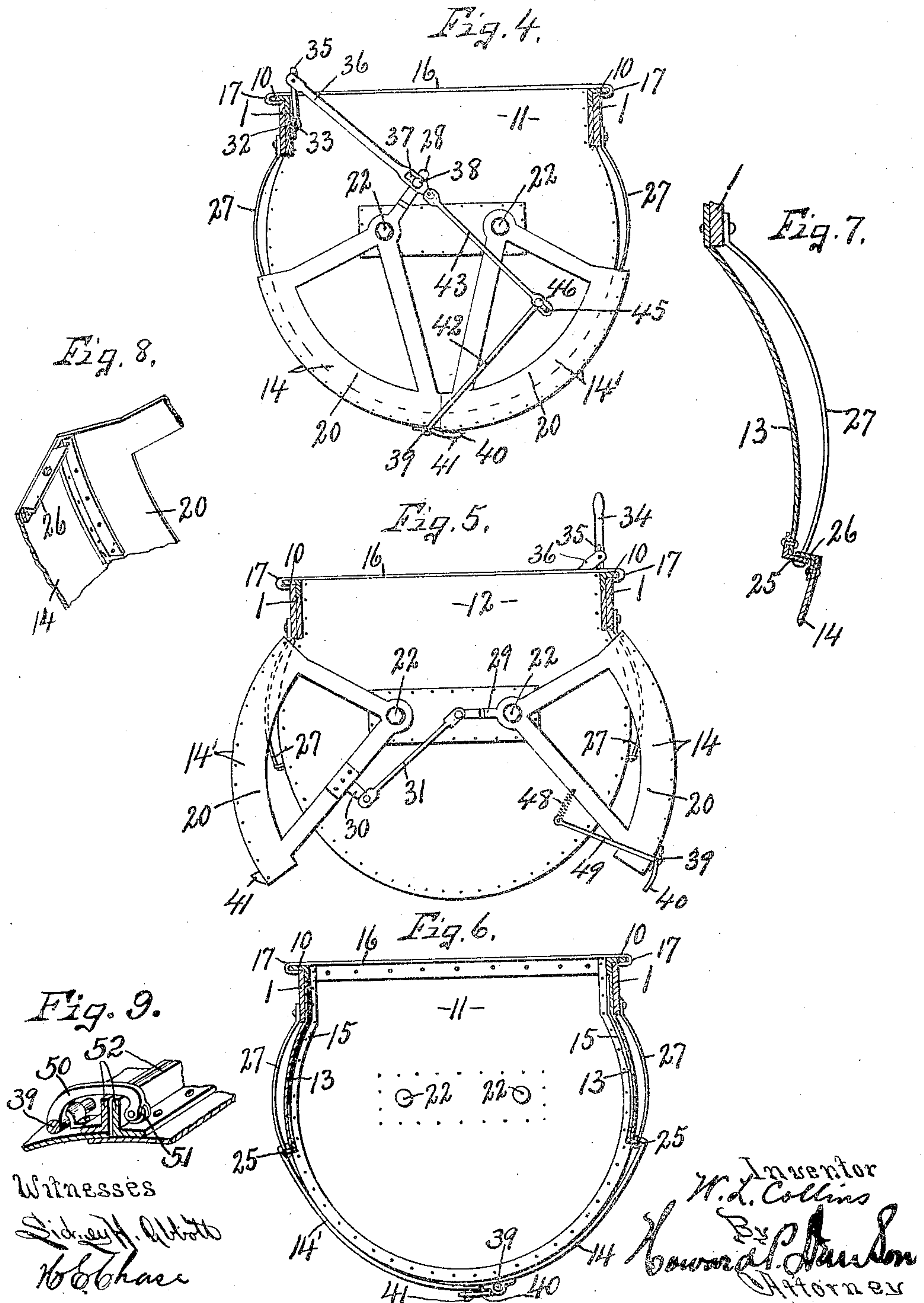
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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

WILBUR L. COLLINS, OF BALDWINVILLE, NEW YORK, ASSIGNOR OF ONE-HALF TO EDWARD L. MONTAGUE, OF BALDWINVILLE, NEW YORK.

DUMP-WAGON.

No. 877,884.

Specification of Letters Patent.

Patented Jan. 28, 1908.

Application filed July 29, 1907. Serial No. 386,014.

To all whom it may concern:

Be it known that I, WILBUR L. COLLINS, of Baldwinsville, in the county of Onondaga, 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 of the laterally swinging bottom door type and refers more particularly to the construction of the box and doors and to the mechanism for operating, locking and guiding the latter.

One of the specific objects is to mount the ends of the doors upon separate pivots or pivotal bearings upon the ends of the box some distance above the bottom and also some distance inwardly from the sides so that when the doors are open their inner longitudinal edges will swing upwardly and outwardly to afford ample clearance when drawing the wagon away from the discharged load as distinguished from that class of wagons in which the doors are pivoted at their outer edges to the sides of the box. In other words I have sought to suspend the doors in such manner that in all positions their meeting edges will be wholly above the horizontal plane of the front axle and when opened such meeting edges will occupy a position in a plane above that assumed when closed.

A further object is to provide means for positively opening and closing the doors with as little lost motion as may be practicable as distinguished from the lost motion incidental to the use of chains.

Another object is to provide means for positively locking the doors in their closed position in such manner that the weight of the load tends to tighten the lock.

A still further object is to provide external guides for the doors and to also provide the sides of the box and upper edges of the doors with interengaging stops which serve also as reinforcing flanges to stiffen such parts and prevent undue strain of the load upon the doors.

Other objects and uses will be brought out in the following description.

In the drawings—Figures 1, 2 and 3 are respectively top plan, side elevation and in-

verted plan of a portion of a dump wagon embodying the various features of my invention. Figs. 4, 5 and 6 are enlarged transverse sectional views taken on lines 4—4, 5—5 and 6—6, Fig. 1, except that in Fig. 5, the doors are shown in their open position. Fig. 7 is an enlarged detail sectional view of one side of the box and a portion of the adjacent door showing particularly the guide and limiting stops for the door. Fig. 8 is a perspective view of a portion of one corner of one of the doors. Fig. 9 is a perspective view of an inverted portion of a modified form of door lock.

This dump wagon comprises essentially a main supporting frame, a box having laterally swinging bottom doors, and operating means therefor, and additional means for locking the doors in their closed position.

The main supporting frame consists of opposite parallel side bars —1— forming upper portions of the sides but extending some distance beyond the ends of the box, and terminating in front and rear pendent enlargements —2— and —3— extending some distance below the plane of the intermediate portions, the enlarged front extremities —2— being connected by cross bars —4— and —5— constituting a front platform to which a bolster —6— is secured for supporting a front axle —7—.

The rear pendent ends —3— are mounted directly upon and are rigidly connected by a rear axle —8—, a suitable fifth wheel —9— being interposed between the front axle —7— and bolster —6—.

The upper longitudinal edge of each side of the bar —1— is capped by a flanged rail —10— consisting in this instance of an angle iron having one of its flanges disposed horizontally and extending outwardly transversely from the other flange for the purpose of reinforcing the side bars and affording a smooth metal wearing surface at the top extending from end to end of the side piece and at the same time the inner lengthwise depending flange serves as a convenient means of attachment for the main portion of the side bars which may be formed of wood or metal.

The box proper is arranged wholly between the front and rear axle leaving ample intervening space for turning of the wheels under the bars —1— and between the bol-

ster —6— and front end of the box, said box consisting in this instance of front and rear ends —11— and —12—, sheet metal side pieces —13— and laterally swinging bottom sheet metal doors —14— and —14'—.

The ends —11— and —12— are secured by angle irons —15— to the side bars —1— of the main supporting frame and are capped by metal bars —16— having their ends over-
turned or clenched at —17— upon the out-
turned flanges of the angle irons —10— whereby the side bars —1— are firmly drawn and held against adjacent edges of the ends —11— and —12—. These end pieces —11—
and —12— extend a considerable distance below the horizontal plane of the bars —1— and their bottom and side edges below the bars —1— are preferably circular or curved as best seen in Figs. 4 to 6 inclusive, the lateral or transverse width of the portions of the end pieces directly below the side pieces —1— being greater than that between said side pieces and therefore their opposite side edges are swelled laterally beyond the vertical planes of the side bars —1— and then curved downwardly and inwardly toward each other to conform to the downwardly flaring side pieces —13— which are also bulged or swelled outwardly below the horizontal plane of the side pieces —1— so as to afford ample clearance for the load in the act of discharging the same. That is, as soon as the load begins to discharge by its own gravity, the fact that the sides —13— flare downwardly and outwardly from each other permits the full load to discharge at once by relieving the friction between such load and the sides —13—.

The combined vertical width of the side bars —1— and sheet metal sides —13— is considerably less than the vertical depth of the ends —11— and —12— leaving a clear open space between the lower edges of the side pieces —13— about equal to the transverse width of the ends —11— and —12—, for the discharge of the load, when the doors are open. These doors —14— and —14'— are nearly identical in construction and consist of sheet metal segments or quadrants having a combined arc length substantially equal to the length of the arc between the lower edges of the side pieces —13— measured around the curved lower edges of the end pieces —11— and —12— against which the opposite ends of the doors —14— and —14'— are adapted to abut when closed. In other words the curvature of the doors is substantially the same as that of the lower edges of the ends of the box so as to fit closely thereagainst and prevent any leakage at the joints when the doors are shut but in order to prevent such leakage the opposite ends of each door is provided with up-turned flanges —20— lapping against the front and rear faces of the ends —11— and —12—. These

doors are pivoted at their opposite ends upon separate pairs of pivotal pins —22— on the end pieces —11— and —12— in a plane some distance above the lower edges of the side pieces —13— but at opposite sides of the longitudinal center of the box as best seen in Figs. 4 and 5, so as to cause the meeting edges of the doors to swing clear of the ends when opening to discharge the load. By pivoting these doors as just described on separate pivots at opposite sides of the longitudinal center of the box, the portion of the load at the opposite side of the vertical plane of the pivots will tend to close the doors thereby relieving the strain upon the locking and operating mechanisms hereinafter described and at the same time permitting the doors to be easily operated by the mechanism provided therefor.

As clearly shown in Fig. 7, the lower edges of the side pieces —13— are provided with out-turned flanges —25— and the upper edges of the doors are provided with in-turned flanges —26—, the flanges —25— being interposed in the path of movement of the flanges —26— as the doors are closed thereby forming limiting stops and affording some support for the upper edges of the doors and transmitting part of the strain of the load to the side pieces —13—.

In order to prevent lateral bulging or spreading of the upper edges of the doors and also to keep said doors in proper position while being opened and closed I provide each side of the box with one or more, in this instance three, guide rods —27— and at the outside of the side pieces —13— and extending from the flanges —25— to the side pieces —1—, the flanges —26— on the upper edges of the doors being provided with apertures for receiving said guide rods —27—. It is now clear that any lateral strain upon the upper edges of the doors is transmitted to the side pieces —13— through the medium of the connection between the flanges —26— and guide rods —27—, which latter are curved or concentric with the swinging axes of the door.

As best seen in Figs. 4 and 5 the ends of the doors are disposed in vertical planes at substantially right angles to the bottom and extend upwardly at the outer sides of the front and rear ends of the box and are pivoted at —22— as previously described, the front and rear ends of the door —14— being provided with crank arms —28— and —29— at the side of the swinging axis opposite that to which the bottoms proper are secured while the rear end of the opposite door —14'— is provided with a crank arm —30— between its pivotal axis and bottom and preferably on the meeting edge of the rear end of the door, the latter crank arm being connected by a link —31— to the crank arm —29— which link plays between the pivots

of the door as the latter are opened and closed and operates to transmit motion from one door to the other.

A rock shaft —32— is journaled in suitable bearings —33— on one of the side bars —1— and is provided at its front end with a crank hand piece —34— whereby the shaft may be rocked in its bearing.

The rear end of this shaft is provided with an additional crank arm —35— which is pivotally connected to one end of a link —36— having its opposite end pivotally connected with a lost motion to the arm —28— of the door —14—, said link having an elongated slot —37— to receive the pivotal pin as —38— and allow a limited lengthwise movement of the link when the shaft —33— is operated in one direction to unlock the meeting edges of the doors slightly in advance of the opening of the same.

As shown in Figs. 2 to 5 inclusive, this locking mechanism comprises a rock shaft —39— journaled upon and extending lengthwise of the under side of the door —14— and is provided with a series of in this instance three, loops —40— extending laterally from the shaft and adapted to interlock with corresponding shoulders —41— on the lower side of the meeting edges of the door —14— thereby locking the meeting edges of the doors together against accidental opening.

The front end of the rock shaft —39— is provided with a crank shaft —42— extending upwardly therefrom and to which is pivotally connected one end of the link —43—, the opposite or upper end of said link being pivotally connected to the lower end of the link —36— as best seen in Fig. 4.

The lower end of the link —43— is provided with an elongated slot —45— for receiving the pivotal pin as —46— and establishing a slight lost motion between the link —43— and crank arm —42— to permit the doors to be swung to their extreme open position and still leave the locking members —40— in operative position.

When the doors are in their closed position the pivotal pin —38— is engaged with the lower end of the slot —37— on the link —36— and the pivotal pin —46— is engaged with the upper end of the slot —45— so that when the shaft —32— is rocked to open the bottom doors, the locking members —40— will first be thrown out of operative position at which time the upper end of the slot —37— engages the pin —38— of the crank arm —28— and by the continued movement of the rock shaft —32— the doors will be positively forced open assisted by the weight of the load thereon, that is, the door —14— will be opened by the link —36— while the other door —14— will be simultaneously opened through the medium of the link —31— at the rear end of the box.

The locking members are held in their operative position by a spring —48— which has one end connected to the rear end of the door —14— and its other end connected to a crank arm —49— on the rear end of the rock shaft —39— as best seen in Fig. 5.

In Fig. 9 I have shown a modified form of locking device somewhat similar to that shown in Figs. 4 and 5 and consisting of a rock-shaft —39— having one or more hook-shape fingers —50— provided on their free ends with rollers —51— adapted to interlock with a lengthwise flange —52— on the door opposite to that upon which the shaft —39— is journaled, both of the doors being, in this instance, provided with lengthwise flanges preferably angle irons extending lengthwise thereof and serving to reinforce or stiffen the meeting edges of the doors.

In Figs. 2 and 3 I have shown the bottom doors as provided with additional reinforcing straps or braces —53— extending diagonally from corner to corner in intersecting planes thereby enabling me to use comparatively light sheet metal for the doors and at the same time bracing said doors against torsional strains.

It will be observed that the meeting edges of the doors swing laterally and upwardly from their closed position and are always in a plane above the plane of the front axle and when in the plane of the rear axle so that after the load is discharged the doors will readily clear it when the vehicle is drawn away.

What I claim is:

1. In a dump wagon, a dump box having laterally swinging bottom doors curved transversely and provided with end pieces pivoted to the ends of the box at opposite sides of the longitudinal center of said box, means for opening and closing the doors, and additional means brought into action by the door operating means for locking the doors in their closed position.

2. In a dump wagon, a box having laterally swinging bottom doors inclining outwardly and upwardly from their meeting edges and provided with end pieces extending some distance upwardly from the bottom and pivotally connected to the front and rear ends of the box at opposite sides of the longitudinal center of said box, means for locking the doors in their closed position, further means for opening and closing the doors, and connections between the door operating means and locking means whereby the doors are unlocked by the operation of the door operating means to open the doors.

3. In a dump wagon, a dump box having laterally swinging bottom doors provided with up-turned end pieces pivoted at the opposite ends and each on opposite sides of the longitudinal center of the box, a rock-shaft journaled on the box, a link eccentrically

connected to the rock-shaft and to one of the doors, additional connections between said doors for transmitting motion from one to the other, a rock-shaft journaled on one of the doors and provided with means for engaging and locking one of the doors in its closed position, and connections between the door operating mechanism and rock-shaft for unlocking the doors just prior to opening the same.

4. In a dump wagon, a box having downwardly flaring sides and provided with laterally swinging bottom doors inclining upwardly from their meeting edges, said doors having up-turned end pieces pivoted to the ends of the box at opposite sides of its longitudinal center, a rock-shaft journaled on the box, a link eccentrically connected to the rock-shaft and to the end piece of one of the doors, means for transmitting motion from one door to the other, and additional means for locking the doors in their closed position.

5. In a dump wagon, a dump box having laterally swinging bottom doors curved upwardly from their meeting edges and provided with up-turned end pieces pivoted to the opposite ends of the box midway between its sides and longitudinal center, means for opening and closing the doors, and additional means brought into action by the door operating means for locking the doors in their closed position.

6. In a dump wagon, a dump box having laterally swinging bottom doors provided with end pieces pivoted to the opposite ends of the box between its sides, means for opening and closing the doors, and guides for the doors concentric with their swinging axes.

In witness whereof I have hereunto set my hand this 27th day of July 1907.

WILBUR L. COLLINS.

Witnesses:

MILDRED M. NOTT,
HOWARD P. DENISON.