(No Model.)

3 Sheets—Sheet 1.

W. McMAHON.

DUMPING CAR.

No. 554,531. Patented Feb. 11, 1896.

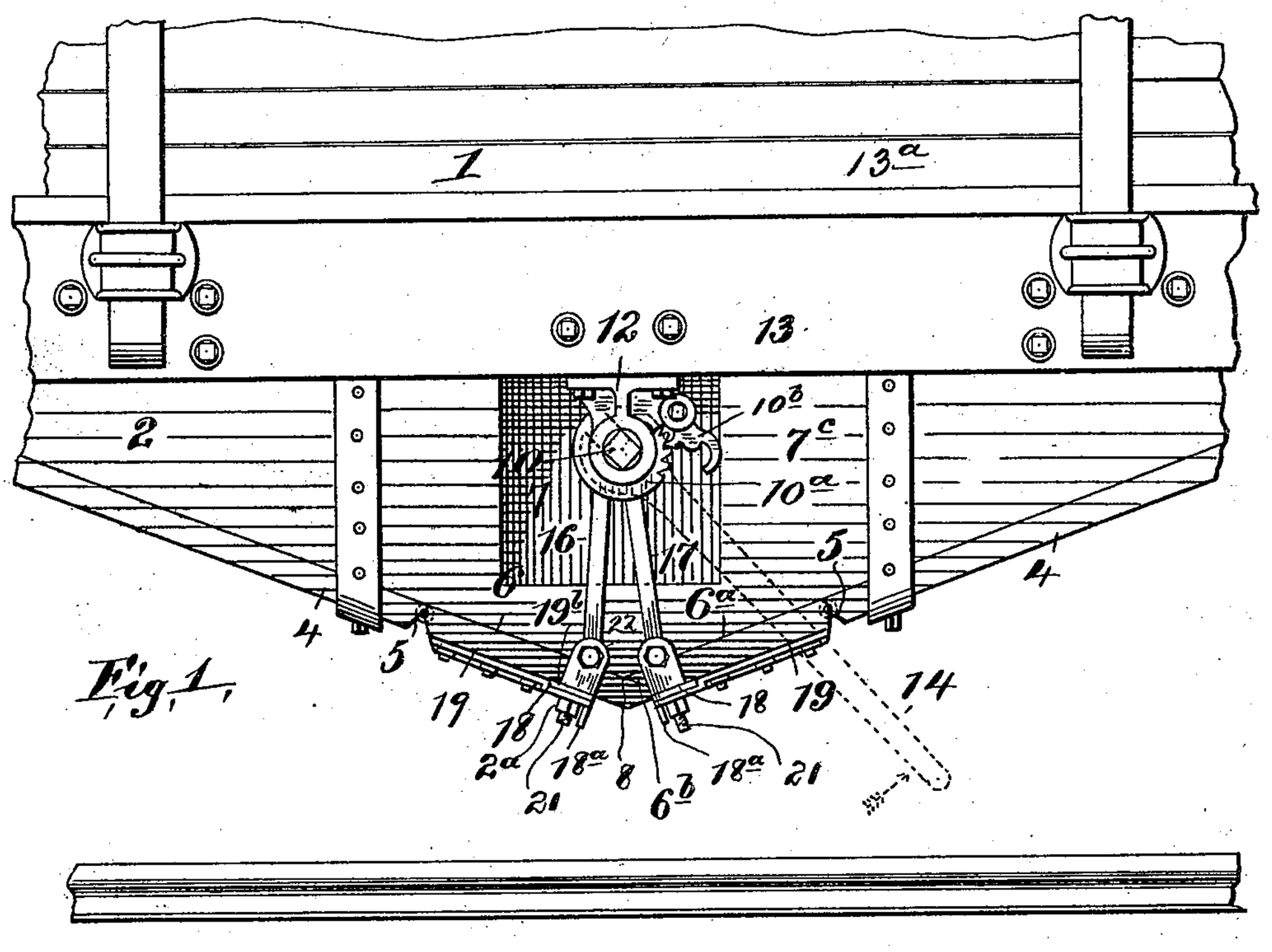

Fig. 1.

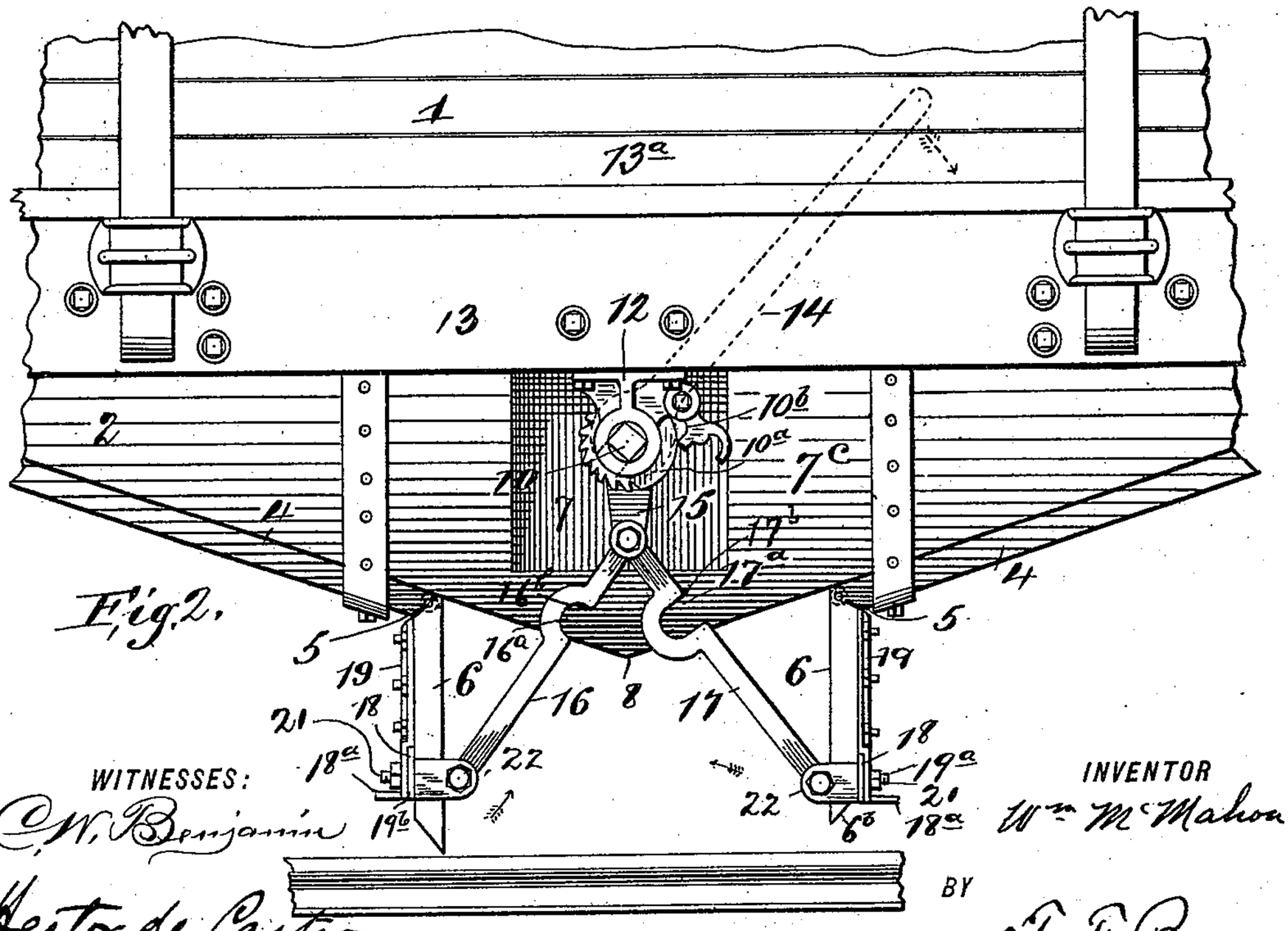

Fig. 2.

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(No Model.) 3 Sheets—Sheet 2.

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Fig. 3.

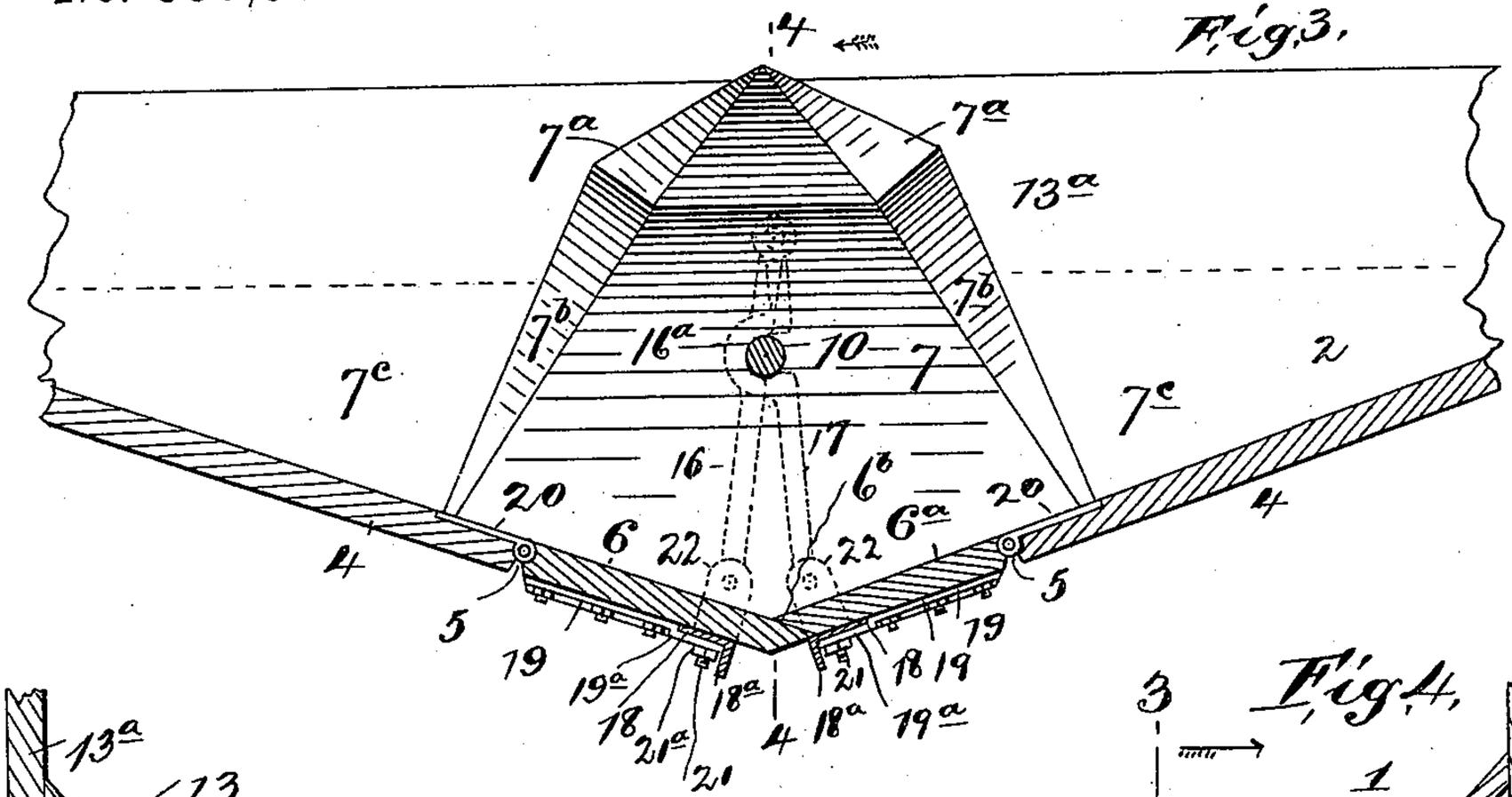


Fig. 4.

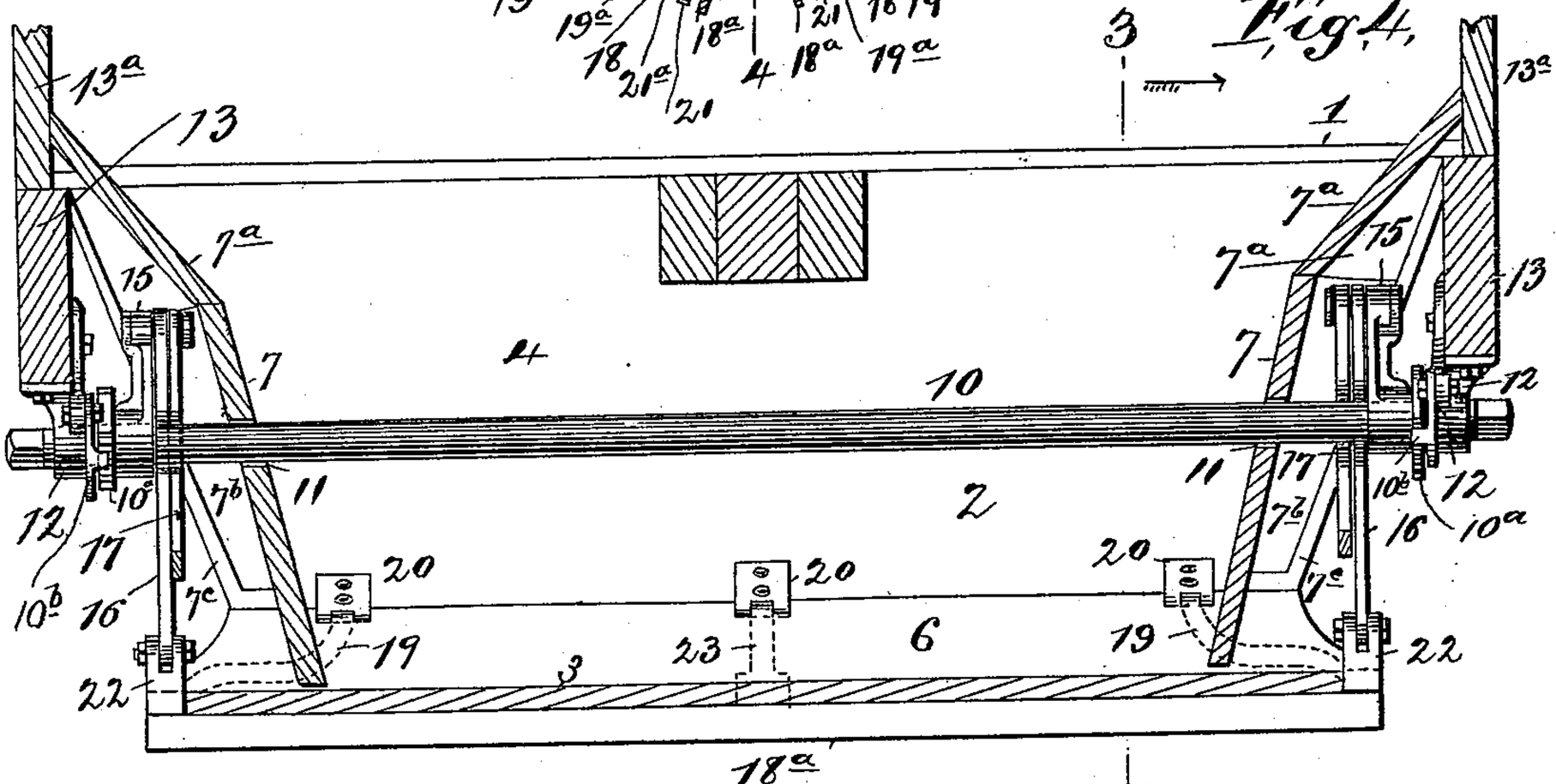
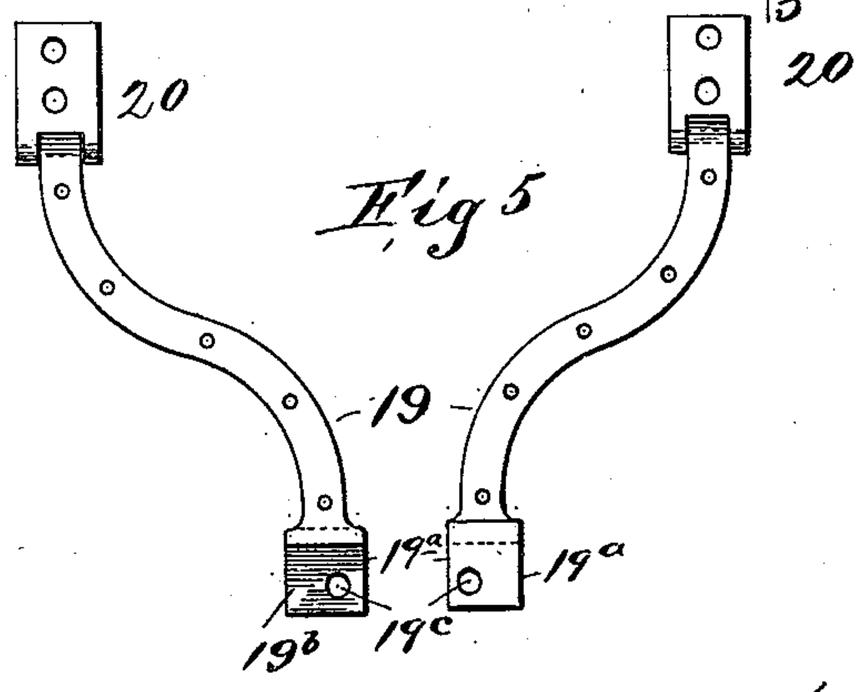


Fig 5



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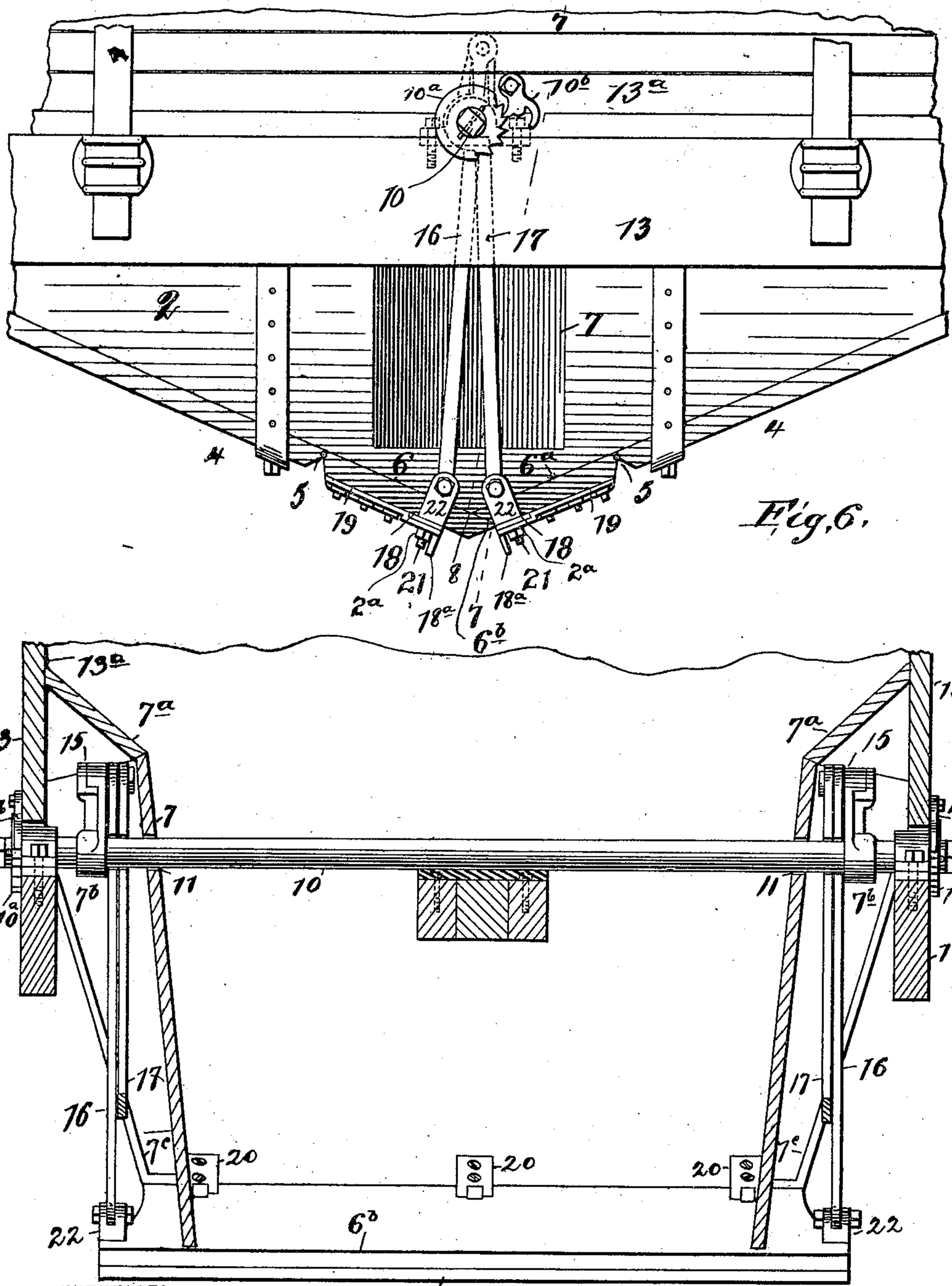

Fig. 6.

Fig. 7

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UNITED STATES PATENT OFFICE.

WILLIAM McMAHON, OF RAHWAY, NEW JERSEY.

DUMPING-CAR.

SPECIFICATION forming part of Letters Patent No. 554,531, dated February 11, 1896.

Application filed September 10, 1895. Serial No. 562,032. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM McMAHON, of Rahway, Union county, New Jersey, have invented certain new and useful Improvements in Dumping-Cars, of which the following is a specification.

My invention relates to the class of cars known as "hopper-bottom" cars, and more particularly to improvements in the construction of the hoppers and the doors or gates that close the same.

Another object of the invention is to provide improved means for strengthening and supporting the doors or gates and for connecting them with the devices that raise and lower them.

The invention consists in the novel details of improvement and the combinations of parts, that will be more fully hereinafter set forth, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part hereof, wherein—

Figure 1 is a side elevation of a portion of a dumping-car embodying my improvements, showing the doors or gates in the closed position. Fig. 2 is a similar view showing the doors or gates lowered. Fig. 3 is a section, on the plane of the line 3 3 in Fig. 4, through the hopper. Fig. 4 is a cross-section on the plane of the line 4 4 in Fig. 3. Fig. 5 is a detail of the hinges for the gates or doors. Fig. 6 is a side view of the car, showing the shaft 10 above the side sills; and Fig. 7 is a cross-section thereof.

Referring now to the accompanying drawings, in which similar numerals of reference indicate corresponding parts in the several views, the numeral 1 indicates the body of a car of the type commonly known as "gondolas," which may be of any suitable construction.

The car-body 1 is provided with a hopper 2, which is constructed and arranged as follows: 3 is the main flooring of the car-body, and 4 4 are the downwardly-diverging bottom-boards or floorings of the hopper, to whose inner edges 5 5 the gates or doors 6 6 are hinged so as to swing downwardly to dump a load, as shown. The gates or doors 6 6^a are so arranged that when closed they will lie in a plane with their corresponding supporting-flooring 4, the gates thereby forming an obtuse angle when closed. (See Figs. 1 and 3.) In order that the gates 6 6^a will make a tight fit with the sides of the hopper when they are closed, the said sides on their lower edges, after they pass from the floorings 4 4 toward the center of the hopper, are extended along in line with said floorings to a point 8, where they form an obtuse angle against which the gates fit when closed, as in Fig. 1.

To form a tight fit between the meeting edges of the gates 6 6^a, the latter are made to overlap when closed, as shown in Figs. 1 and 3. For this purpose the lower corner of the free edge of the gate 6^a is beveled at 6^b, so that when said gate is closed said beveled edge 6^b will lie substantially parallel with the opposite flooring 4, whereby when the gate 6 is closed it will bear against the beveled edge 6^b of the gate 6^a to tightly close the opening in the bottom of the hopper 2.

From the above description it will be seen that a hopper is provided whose bottom opening is tightly closed at all points, the gates to which can readily open to dump the load. Furthermore, by the peculiar angular position of the gates they do not have to swing downwardly so much as when the gates lie on a horizontal plane, and therefore not so much movement is required to raise them into the closed position.

The gates arranged as above, in connection with the above-described hopper, can be operated by any suitable means, but I prefer to use the gate or door operating devices shown in the accompanying drawings, wherein 10 is a rock-shaft extending across the car, and shown in Figs. 1 to 5 as below the main flooring 3 of the car-body. The shaft 10 extends through apertures 11 in the sides 7 of the hopper, and it is journaled at its ends in bearings or brackets 12, carried by the side sills 13 of the car-body. The ends of the shaft 10 are squared to receive a handle 14 by which it can be rocked, but any other means may be provided for this purpose. Rigidly secured to the shaft 10, outside of the walls 7 of the hopper, are crank-arms 15, to which are pivotally connected links, bars, or hangers 16 17, the lower ends of which are pivotally connected with the gates 6 6^a, respectively, near their

free edges, as shown. The links 16 17 have recesses 16^a 17^a forming shoulders 16^b 17^b, which lap over and rest upon the shaft 10 when the gates are raised to assist in sustaining them.

In Figs. 1 to 5 the shaft 10 is shown extending through the hopper, and the bearings 12 depend from the sills 13, but in Figs. 6 and 7 the shaft 10 is above the hopper, the bearings 12 resting on the sills 13. The position of shaft 10 may be varied as required. With this construction when the shaft 10 is rocked so as to swing the crank-arms 15 downwardly the links 16 17 will be lowered and thus cause the gates to swing down, as in Fig. 2. When the rock-shaft 10 is again turned back the crank-arms 15 will rise and thus lift the links 16 17, which will raise the gates to the closed position, as in Fig. 1, the shoulders 16^b 17^b passing over the shaft 10, as in Fig. 3. The above-described gate-operating devices are more fully set forth in my Patent No. 541,981, dated July 2, 1895, to which reference is made for a more detailed description thereof.

The shaft 10 carries a ratchet-wheel 10^a to be engaged by a pawl 10^b to keep the shaft from rotation until desired. As shown in Fig. 4, the gate-operating devices 15 16 17 are located in the space between the side sills 13 and sides 7 of the hopper, whereby these devices are out of the way—that is to say, they are within the side lines of the car and outside of the hopper, so as not to be injured by the load therein. To enable this location of the gate-operating devices and yet properly guide the load in the hopper, the side walls 7 7 of the hopper are set inwardly from the line of the side of the car-body, as in Fig. 4, and are inclined downwardly to the gates, the upper edges of the sides 7 of the hopper being met by downwardly-inclined boards 7^a, which form a pyramid-like cover or top, which extends from the sides 13^a of the car-body. Beneath the boards or covers 7^a other properly-shaped boards 7^b extend from the side boards 7 to the parallel sides 7^c of the hopper. These boards 7, 7^a, and 7^b form a housing which sets into the hopper at its central part and guides the load through the lower opening of the hopper while protecting the gate-operating mechanism.

The gates 6 and 6^a are hinged and strengthened as follows: On their under surfaces are metal bars 18, which extend along near the free edges of the gates, said bars being preferably angle or L or T irons having the web 18^a extending outwardly, whereby combined strength and lightness are obtained. Near each end of the gates on their under surfaces are secured bars 19, the ends 19^a of which lie adjacent to the outer sides of the gates at their free edges. The bars 19 thence curve inwardly and extend along the faces of the gates to a point inside of the sides 7 of the hopper, where they are pivoted to hinge-plates 20, which are bolted to the inclined flooring 4 of the hopper, the bars 19 being likewise bolted to the gates at suitable intervals. The ends 19^a of the bars 19 are also recessed on their inner faces at 19^b to overlap the brace-bar 18 to assist in holding the latter upon the gate and materially strengthen the structure. The bars 19 are also provided at their ends 19^a with apertures 19^c to receive screw-studs 21 that project from brackets 22, which studs also pass through apertures in the bars 18, nuts 21^a serving to hold the parts 18, 19, and 22 together. The brackets 22 are pivotally connected with the links or bars 16 17, whereby the latter are connected with the gates outside of the hopper.

Centrally of the gates is a bar 23, which is bolted thereto and pivotally connected with a hinge-plate 20 and also bolted to the cross-bar 18. These bars 10 and 23 serve to strengthen the gates or doors by passing entirely across them from edge to edge, and the curved bars 19 permit their hinge-plates 20 to be carried well inwardly, while the brackets 22 are connected to the bars 19 at or near the ends of the gates, whereby the gates are materially strengthened at the point of connection with the links 16 17.

Having now described my invention, what I claim is—

1. A car having a hopper provided with a lower opening, and gates to close said opening, said hopper having side recesses formed by housings set in the sides of said hopper, and means for operating said gates located in said recesses and within the line of the sides of the car, substantially as described.

2. A car having a hopper provided with a lower opening and gates to close said opening, a recess in the side of said hopper formed by a side board 7, set inwardly from the main side of the hopper, inclined boards 7^b, connecting the side board 7 with the main side of the hopper and inclined or pyramidal boards or a cover 7^a, covering the boards 7 and 7^b, substantially as described.

3. A car having a hopper provided with a lower opening and gates to close said opening, combined with bars 18 extended along the inner edge of said gates, and hinge-bars having recesses at the ends to receive the bars 18 over which the bars 19 lap, the bars 19 being curved and lying along the surface of the gates one end of each of said bars lying at or near the edges of said gates, the opposite ends of said bars being pivotally connected with hinge-plates which are connected with the hopper substantially as described.

4. A car having a hopper provided with a lower opening and gates to close said opening, combined with bars 18 extended along the inner edge of said gates, and hinge-bars having recesses at the ends to receive the bars 18 over which the bars lap, the bars 19 being curved and lying along the surface of the gates one end of each of said bars lying at or near the edge of said gates, the opposite

ends of said bars being pivotally connected with hinge-plates which are connected with the hopper, brackets 22, connected with the bars 18 and 19, links pivotally connected with the said brackets and means for operating said links to raise and lower said gates substantially as described.

Signed at New York, in the county of New York and State of New York, this 18th day of July, A. D. 1895.

WILLIAM MCMAHON.

Witnesses:

HECTOR DE CASTRO,

T. F. BOURNE.