J. V. ERICSON.

DUMPING RAILWAY CAR.

APPLICATION FILED OCT. 28, 1909.

955,452.

Patented Apr. 19, 1910.

4 SHEETS—SHEET 1.

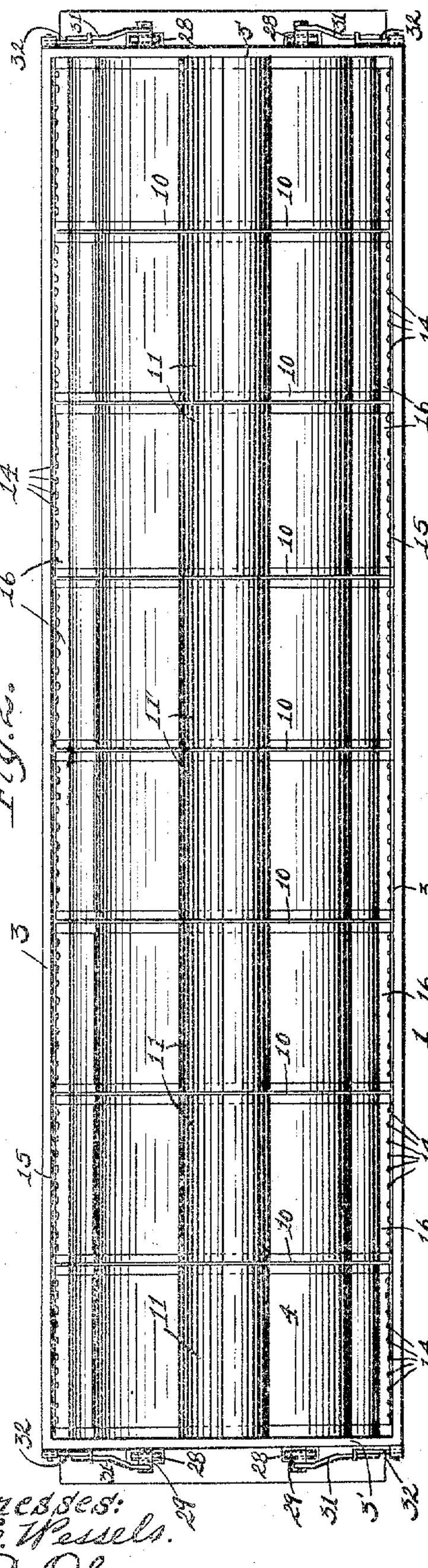

Fig. 2.

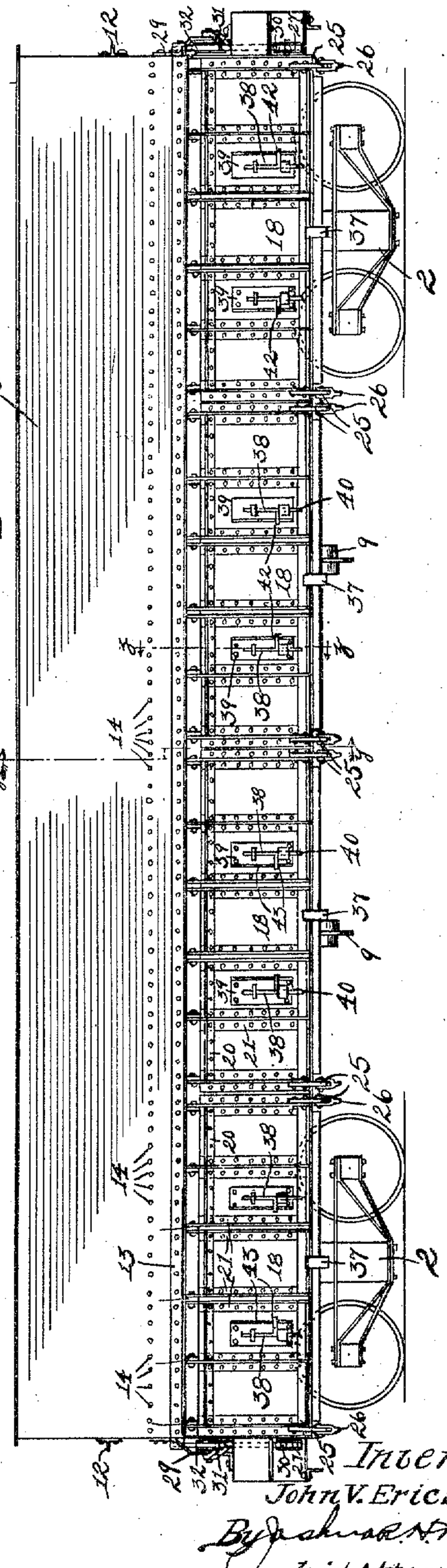

Fig. 1.

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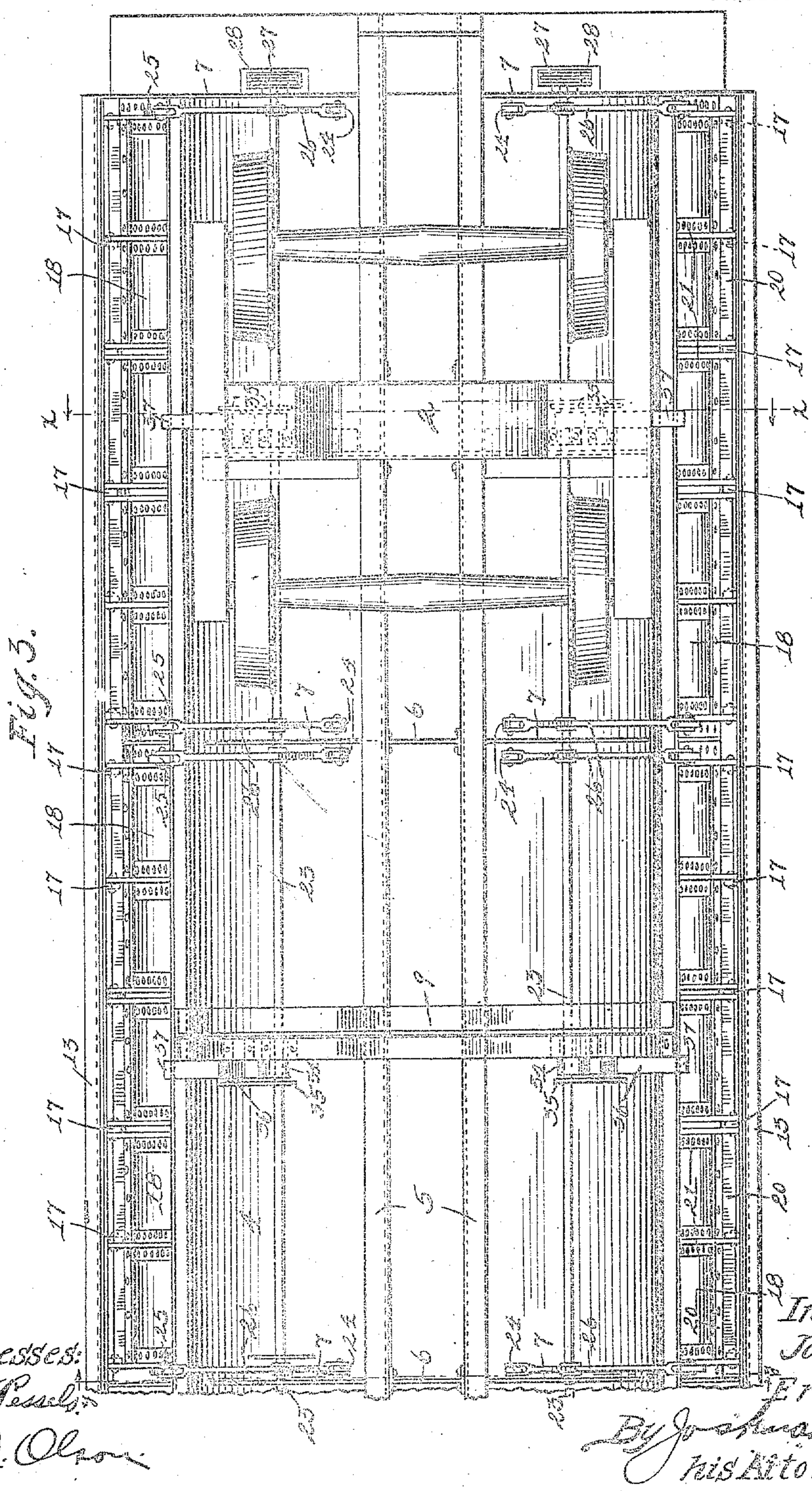

Fig. 3.

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4 SHEETS—SHEET 3.

Fig. 4.

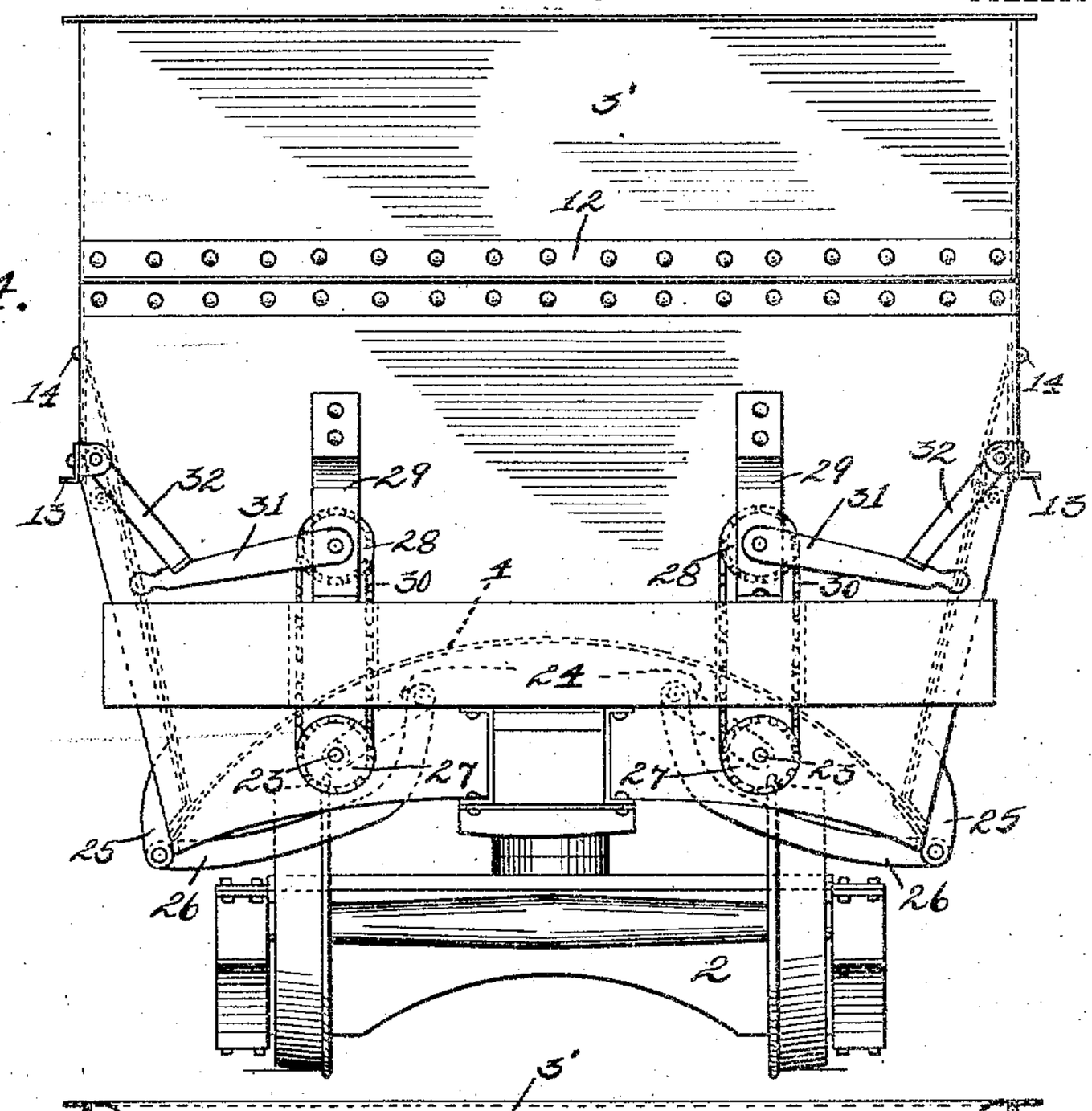
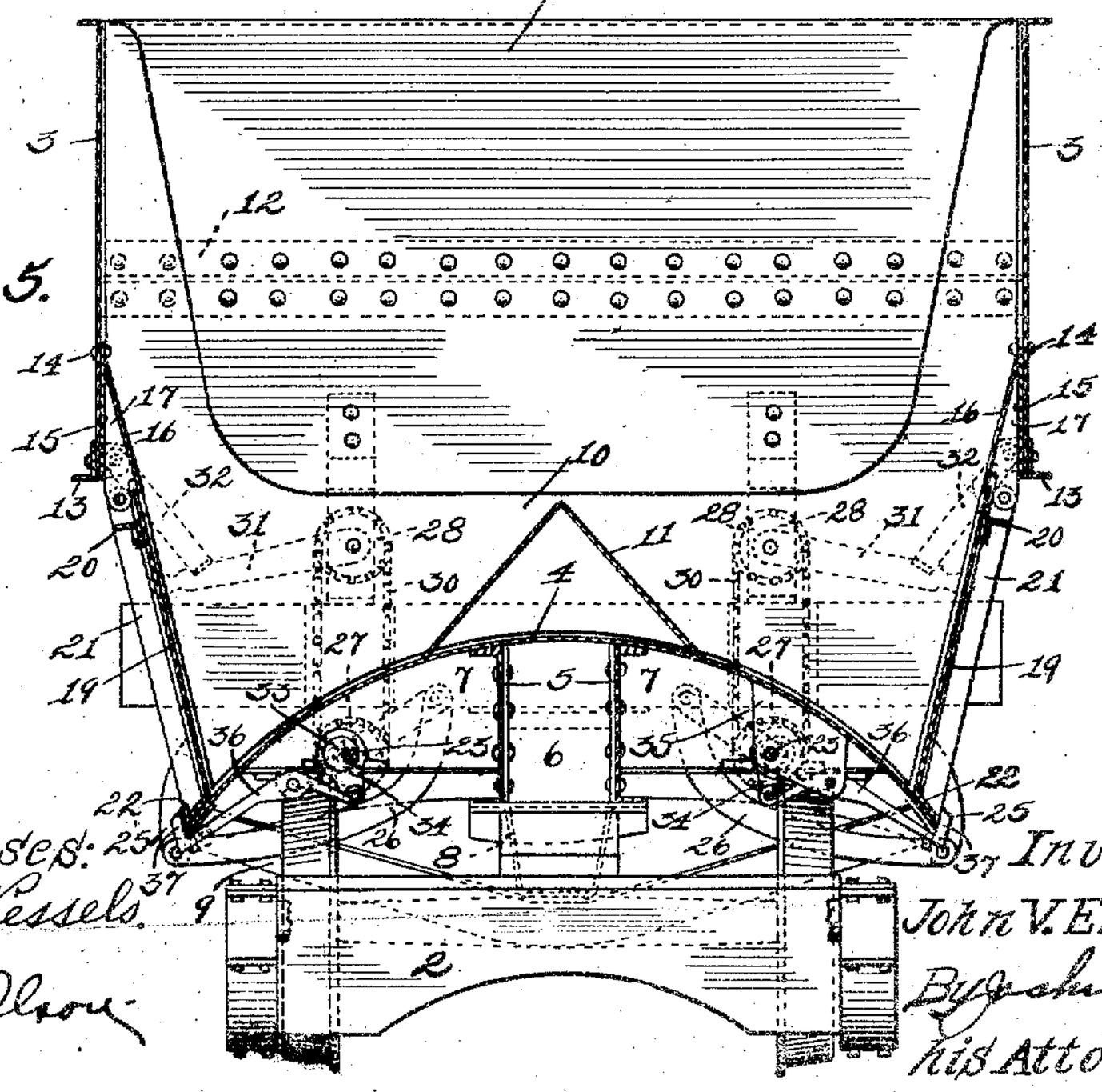


Fig. 5.



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4 SHEETS—SHEET 4.

Fig. 6.

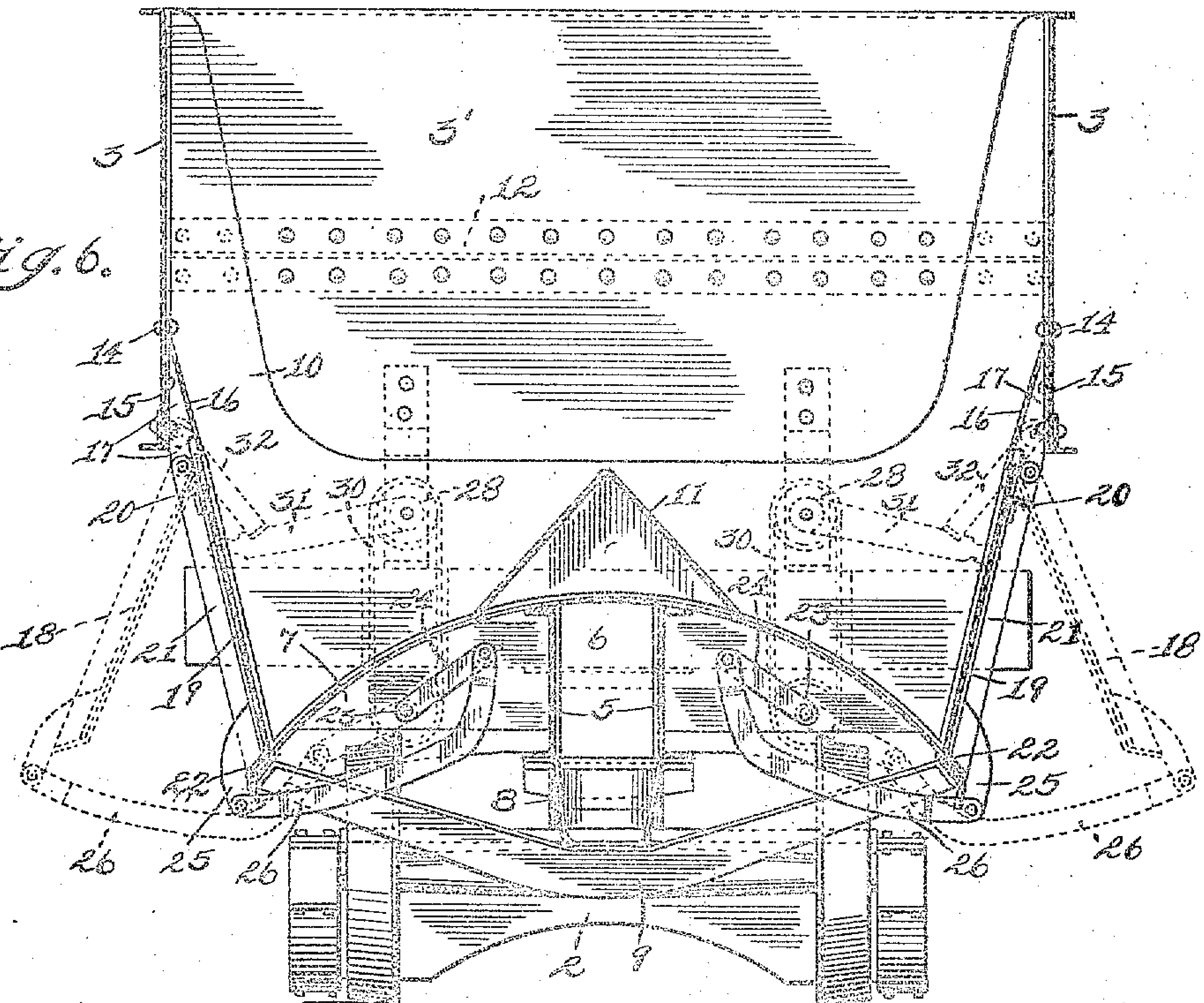


Fig. 7.

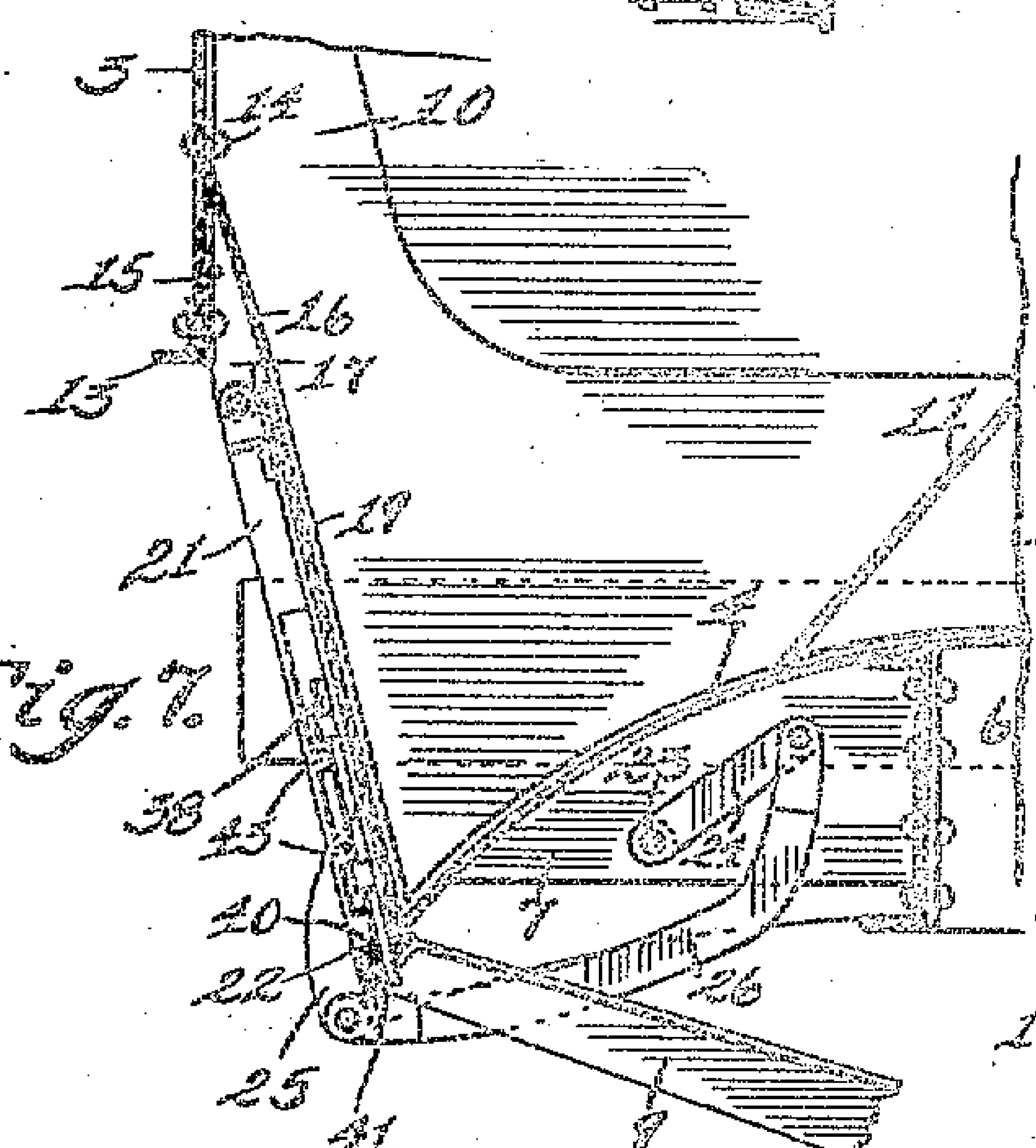


Fig. 8.

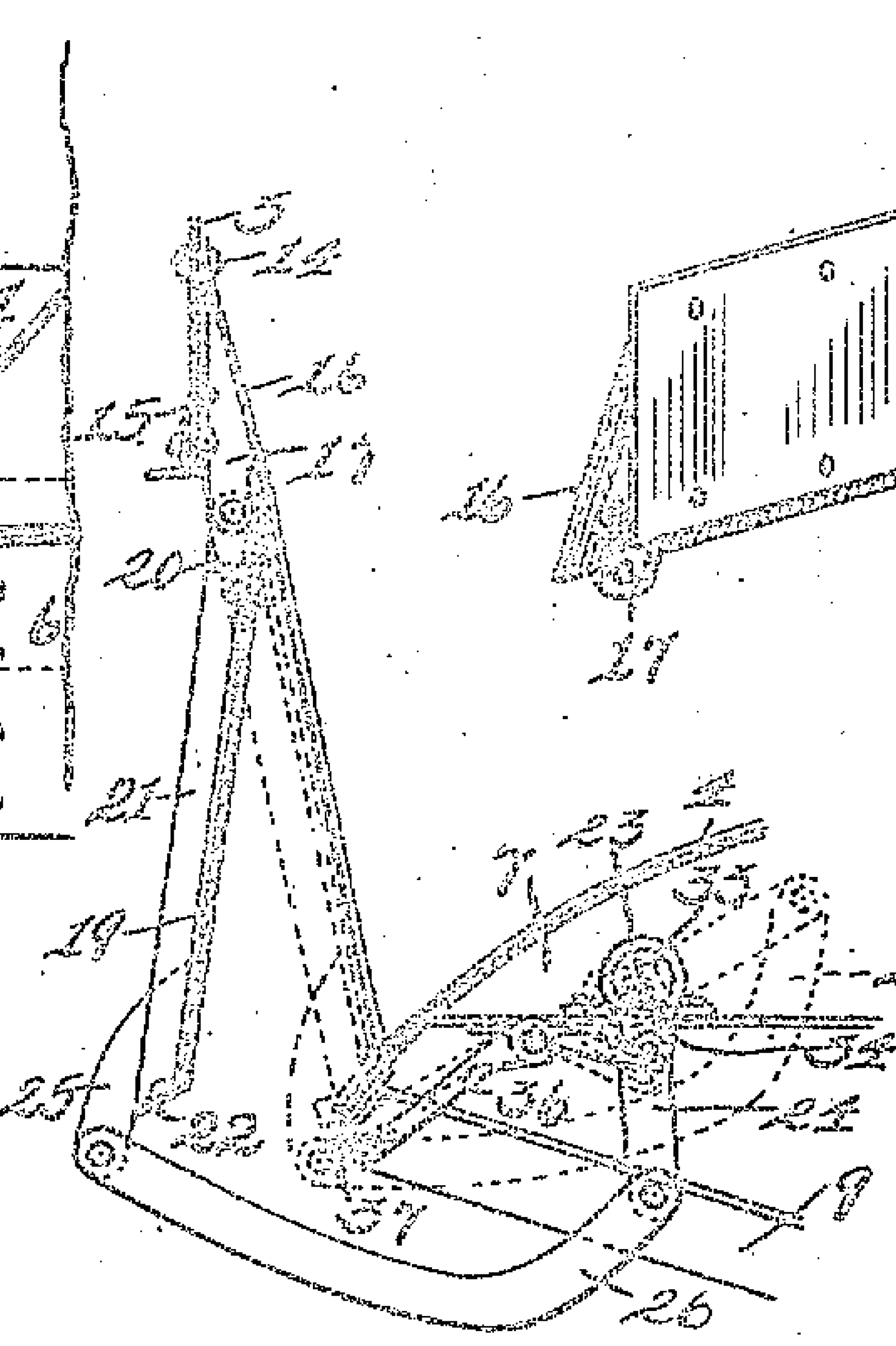


Fig. 9.

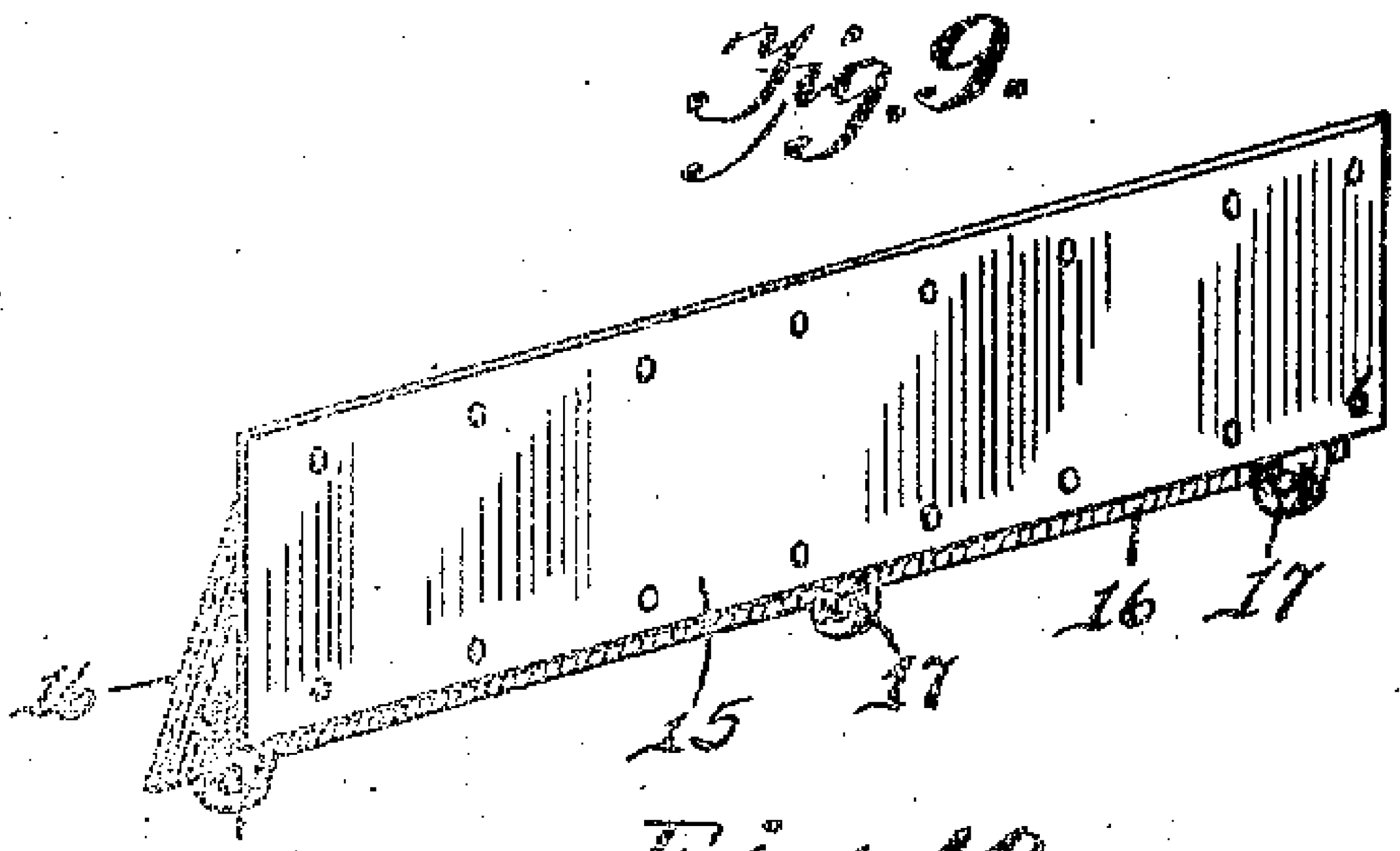
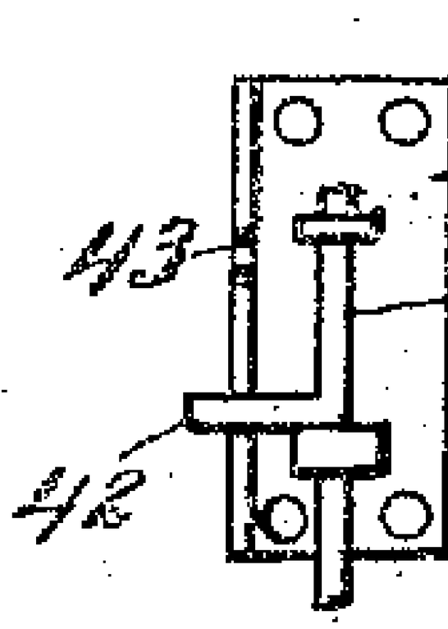


Fig. 10.



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UNITED STATES PATENT OFFICE.

JOHN V. ERICSON, OF CHICAGO, ILLINOIS.

DUMPING RAILWAY-CAR.

955,452. Specification of Letters Patent. Patented Apr. 19, 1910.

Application filed October 28, 1909. Serial No. 525,036.

To all whom it may concern:

Be it known that I, JOHN V. ERICSON, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Dumping Railway-Cars, of which the following is a specification.

My invention relates to dumping railway cars more generally known as "gondola" freight cars.

The object of my invention is to provide a car of the character mentioned in which the dumping doors embodied therein may be readily and quickly unlocked and swung to opening or dumping position and which may as easily and expeditiously return to closing position.

Another object is the provision of a dumping car which will be so designed that the load carried thereby, when dumped, will be deposited outside of or laterally beyond the track rails and hence in a position in which the progress of the car wheels will not be impeded thereby.

A further object is to provide a car which throughout will be of a strong, durable, and economical construction.

Other objects will appear hereinafter.

With these objects in view my invention consists in a railway car characterized as above mentioned and in certain details of construction and arrangement of parts all as will be hereinafter fully described and more particularly pointed out in the appended claims.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification, and in which,

Figure 1 is a side elevation of my dumping car in its preferred form, Fig. 2 is a top plan view thereof, Fig. 3 is an enlarged bottom plan showing substantially one-half of the car, Fig. 4 is an end elevation thereof, Fig. 5 is a vertical transverse section taken on substantially the line *x*—*x* of Fig. 3, Fig. 6 is a vertical transverse section taken on line *y*—*y* of Figs. 1 or 3, Fig. 7 is an enlarged sectional detail taken on substantially the line *z*—*z* of Fig. 1, Fig. 8 is a fragmentary detail illustrating the operation of the dumping door operating and locking mechanisms, and Fig. 9 is a slightly enlarged detail perspective of one of the door-hinge shields embodied in the construction, and Fig. 10 an enlarged detail of the locking bolt.

Referring now to the drawings 1 indicates the sheet metal body of the car mounted in the usual manner upon suitable wheel trucks 2. Included in said body are the vertically disposed preferably integrally formed side and end walls 3—3′ respectively, and the transversely arcuate or substantially semi-cylindrical bottom 4, said end walls only being extended and secured directly to said bottom. Centrally positioned and longitudinally extending beneath the bottom 4 are a pair of supporting channel center sills 5 reinforced at intervals by transversely extending connecting plates 6. Provided at intervals also beneath the bottom 4 are supporting segmental plates 7 the vertical inner edges of which are secured to the outer vertical sides of the sills 5, the upper curved edges thereof resting in engagement with the under surface of the bottom 4. Having their central portions engaging straps 8 secured at intervals to and depending from the sills 5 and their extremities secured to the longitudinal edges of the bottom 4 are reinforcing trusses 9 preferably formed of T-iron, the purpose of which is to form additional supports for the center of the construction.

Transversely extending in the body is a plurality of preferably equally spaced reinforcing ribs or partitions 10 the outer or contacting edges of which are flanged to facilitate a rigid securing thereof to the bottom 4 and side walls 3. Extending beneath successive partitions 10, the same being secured thereto and to the bottom 4 are centrally positioned longitudinally extending angular hoods 11 the purpose of which is to divide and deflect the descending or dumping load to direct it toward the discharge opening. Transversely extending upon and riveted to the end walls 3′ intermediate the upper and lower extremities thereof, are T-irons 12 and upon the side walls 3 adjacent the lower edge thereof angle irons 13, the purpose of which in either case being to add to the strength and durability of the construction.

Secured as by rivets 14 to the inner surface of the side walls 3 adjacent the lower edges thereof are a series of alining plates 15 each of which extends between adjacent partitions 10. Having its upper edge rig-

idly secured close to the upper edge of each of the plates 15, the same being preferably formed integrally therewith, is an inwardly obliquely disposed plate 16, an important purpose of which will be hereinafter described. Spacing said plates 15 and 16, the same depending therefrom and being preferably formed integrally therewith, are a series of hinge lugs 17 to which are hingedly secured a series of depending dumping doors 18 which, when in innermost or closed position entirely close the bottom of the car body. Each of said doors is comprised of a substantially rectangular metallic plate 19 reinforced at its lateral and upper edges by angle bars 20 and intermediate the former by a series of cross bars 21, the upper ends of said lateral and intermediate cross bars being extended for connection with the hinge lugs 17. The lower edge 22 of each of the plates 19 is flanged or bent outwardly, said edge being adapted when said doors are in closed position, to rest in engagement with the upper outer edge of the bottom 4.

With the construction as described, it will be observed that the hinge connections of the dumping doors with the body side walls are exteriorly guarded by the lower edge of the latter and internally by the obliquely disposed plate 16, hence the possibility of injury thereto so as to render the same inoperative is reduced to a minimum.

Mounted beneath the bottom 4 close to the lateral edges of the latter in bearings formed in the plates 7, are longitudinally extending shafts 23, preferably four in number, two being provided upon either side, each of which extends from the center of the body to one extremity thereof. Having their inner extremities secured rigidly to the shafts 23, are spaced projecting arms 24. Having their inner bifurcated extremities pivoted to the outer extremities of the arms 24 and their outer bifurcated extremities pivoted to lugs 25 secured to and downwardly projecting from the lower edges of the doors 18 adjacent the extremities thereof, are curved links 26. Said parts are so arranged in proportion that, when the shafts 23 are in one position, or as clearly shown in Figs. 6 and 7, the doors 18 will be held in closed position, and when said shafts are rotated to another position, or as shown in Fig. 8, said doors will be swung to the opened position. Further said parts are so proportioned that when in closing position the arms will be slightly over dead center, hence the construction will be self locking, however, as a safe guard against accident, other locking means, as will be hereinafter described, have been provided. In order to effect the actuating rotation of the shafts 23 each is provided at its exteriorly projecting outer extremity with a sprocket 27. Traveling over each of the latter and a similar sprocket 28 rotatably mounted in the body end wall and a bracket 29 secured to the latter, the same passing through the end sill of the car body is a sprocket chain 30. By means of handles 31 fixed to the sprocket 28, the rotation thereof, hence of the shafts 23, and consequently the operation of the doors 18 may evidently be effected. Pivoted arms 32 arranged adjacent the handles 31 are adapted to be rocked to engage and to hold the same in closing position by preventing reverse movement thereof.

Keyed to each of the shafts 23 at points thereon substantially opposite the centers of the doors 18 are eccentrics 33 mounted upon each of which is an eccentric strap 34. Rockingly mounted between brackets 35 secured to and depending from the bottom 4 are bell crank levers 36 the inner ends of which are connected to the straps 34. The forward ends 37 of said levers are hooked in form, as clearly shown in Figs. 5 and 8, said construction being so adjusted, that, when the shafts 23 are in a position in which the doors 18 are closed, said forward hooked ends 37 of said levers will engage the lower edges of said doors, as clearly shown in Fig. 5 and in dotted lines in Fig. 8, to hold said doors in such position; but upon the rocking of said shafts from such position, said levers will be rocked, as shown in full lines in Fig. 8, to disengage said doors permitting of the outward swinging or opening thereof. Hence it will be observed that the unlocking and opening or the closing and locking of the dumping doors, in the construction thus far described, may be simultaneously effected by the rotation or actuation of the handles 31. As a still further safeguard in locking said doors in closed position, I provide each of the latter with a sliding bolt 38 mounted upon a plate 39 rigidly secured to the front surface of the former. The flanged lower edge 22 of each door is provided with a perforation 40 arranged in axial alinement with and adapted to receive the bolt 38, and the lateral edges of the bottom 4 with similar perforations 41 so arranged that the perforations 40 will register therewith when the doors are in closed position. By means of handles 42 provided upon each bolt 38, the latter may be readily slid to locking or unlocking position. By means of notches 43 formed in a flange projecting from one of the edges of each of the plates 39, for the reception of the handles 42, the latter may be readily held in raised or lowered that is locking or unlocking position, hence with such construction when the doors are in closed position, the bolts 38 may be dropped into the perforations 40 and 41 to positively lock the same in such position, and upon desiring to open said doors said bolts may be raised to disengage said perforation and hence to release said doors.

By the provision of a car of the construction described one of the highest possible efficiency regarding both the strength, practicability and also one of a comparatively low cost to build, will be provided.

While I have shown what I deem to be the preferable form of my car, I do not wish to be limited thereto as there might be many changes in the details of construction and arrangement of parts without departing from the spirit of the invention comprehended within the scope of the appended claims.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

1. The combination in a railway dumping car of a body comprising vertical end walls, incomplete vertical side walls, and a transversely arcuate bottom, doors hinged to said side walls adapted to complete the same, operating means for said doors comprising shafts longitudinally extending of said body, arms projecting from said shafts, link connections between said arms and said doors, locking means for said doors in operative connection with said shafts whereby rotation of said shafts causes the simultaneous unlocking and opening of said doors or simultaneous closing and locking thereof, substantially as described.

2. The combination in a railway dumping car of a body comprising vertical end walls, incomplete vertical side walls, and a transversely arcuate bottom, spaced transverse partitions provided within said body, a longitudinally extending hood centrally provided upon said body, doors hinged to said side walls adapted to complete the same, operative means for said doors comprising rotary shafts longitudinally extending of said body, arms projecting from said shafts, curved links connecting the free ends of said arms and said doors whereby said arms will be on dead centers with said doors and in closed position, locking means for said doors in operative connection with said shafts whereby rotation of said shafts causes the simultaneous unlocking and opening of said doors or the simultaneous closing and locking thereof, substantially as described.

3. The combination in a railway dumping car of a body comprising side and end walls, and a transversely arcuate bottom, dumping doors hinged to the lower inner edges of said side walls, shield plates internally guarding hinge connections between said doors and said side walls, operative means for said doors comprising rotary shafts longitudinally extending of said body beneath said bottom, arms projecting from said shafts, curved links connecting the free ends of said arms and the lower ends of said doors whereby, when said doors are in closed position, said arms will be on dead centers relative to the axes of said shafts, locking means for said doors comprising rock levers adapted to engage said doors, means operatively connecting said levers and said shafts whereby rotation of said shafts to open said doors causes the simultaneous unlocking of said doors or rotation of said shafts to close said doors causes the simultaneous locking thereof, substantially as described.

4. The combination in a railway dumping car, and a transversely arcuate bottom, a plurality of transverse partitions traversing the interior of said body, an angular hood longitudinally extending of said body centrally upon said bottom, a plurality of dumping doors hinged at the lower edge of each of said side walls, operative means for said doors, said means comprising rotary shafts longitudinally extending at either side of the body center sill, projecting arms provided upon said shafts, and curved links connecting the free extremities of said arms and said doors, means for locking said doors in closed position, said means comprising hooked engaging levers rockingly mounted intermediate of said shafts and said doors, eccentric and strap connections between said levers adapted to be actuated upon the rotation of said shafts, substantially as described.

5. The combination in a railway dumping car of a body comprising side and end walls, and a transversely arcuate bottom, reinforcing metallic plates provided at the lower inner edges of said side walls, an inwardly obliquely disposed plate having its upper edge secured to each of said first named plates, depending hinge lugs formed between said plates, depending doors hinged to said lugs, operative means for said doors, said means comprising rotary shafts longitudinally extending of said body beneath said bottom, projecting arms provided upon said shafts, and curved links connecting the free ends of said arms and said doors whereby, when said doors are in closed position, said arms will be on dead centers relative to the axes of said shafts, means for locking said doors in closed position, said means comprising levers rockingly mounted intermediate said doors and said shafts, the outer ends of said levers being adapted to engage the lower edge of said doors when the latter are in closed position, and eccentric and strap connections between the inner ends of said levers and said shafts whereby, when said doors are in closed position said levers will be rocked to engage the same, and when said doors are swung to opened position said levers will simultaneously disengage the same, substantially as described.

6. The combination in a railway dumping car of a body comprising side and end walls, and a transversely arcuate bottom, doors hinged to the lower edges of said side walls,

operative means for said doors, said means comprising rotary shafts longitudinally extending of said body at either side of the center sill thereof, one end of each of said shafts projecting through either of the ends of said body, projecting arms provided upon said shafts, curved links connecting the free ends of said arms and the lower edges of said doors, and means operatively connected with said exteriorly projecting ends of said shafts for rotating the same, locking means for said doors, said means comprising rock levers having their outer ends hooked to engage said doors, and eccentric and strap connections between the inner ends of said levers and said shafts, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

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Witnesses:

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JANET E. HOGAN.