

No. 652,314.

Patented June 26, 1900.

G. H. HULETT.
LOADING OR UNLOADING APPARATUS.

(Application filed Nov. 29, 1899.)

(No Model.)

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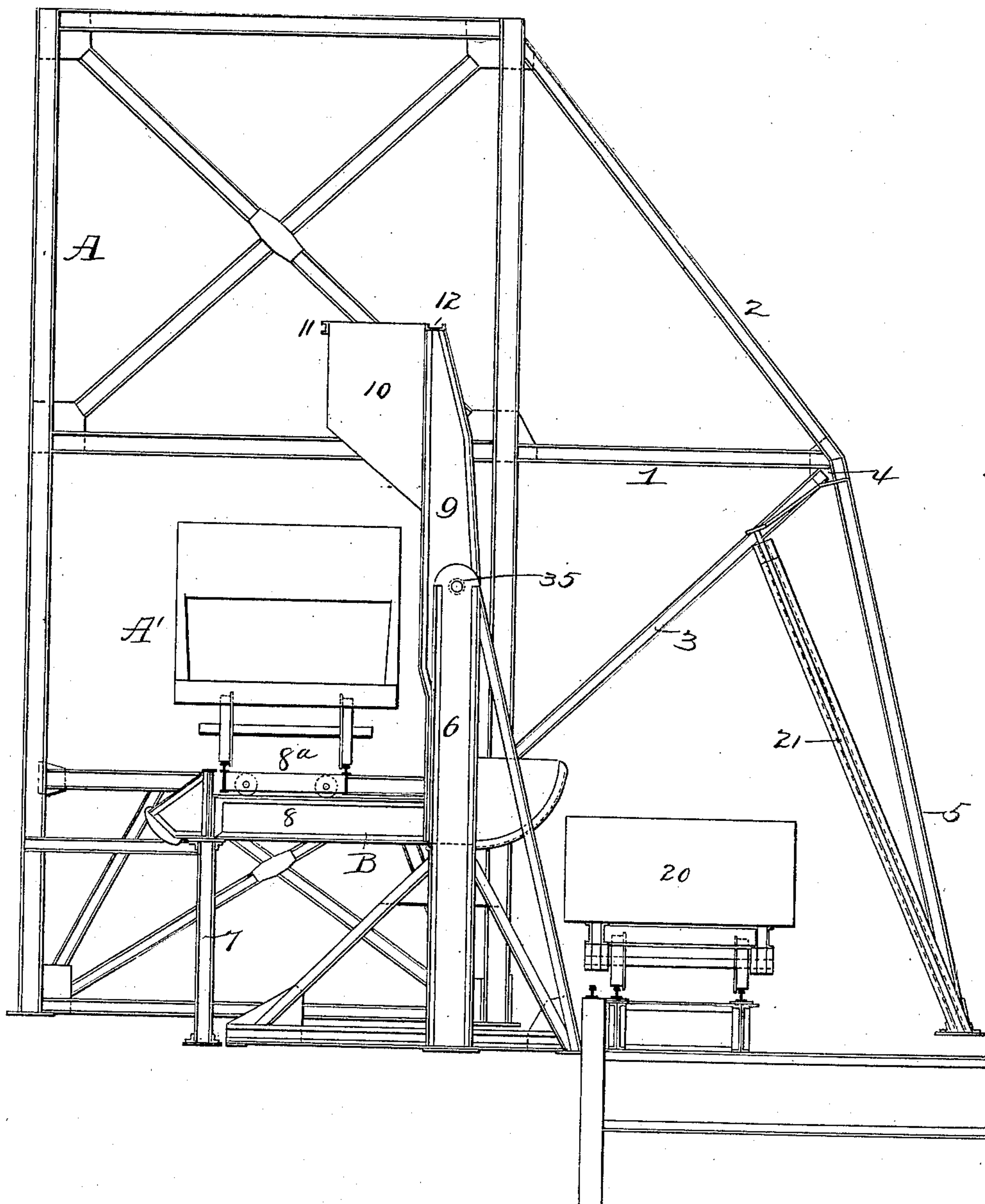


FIG. 1.

WITNESSES
E. D. Nottingham
G. F. Downing.

INVENTOR
Geo. H. Hulett
By H. A. Seymour
Attorney

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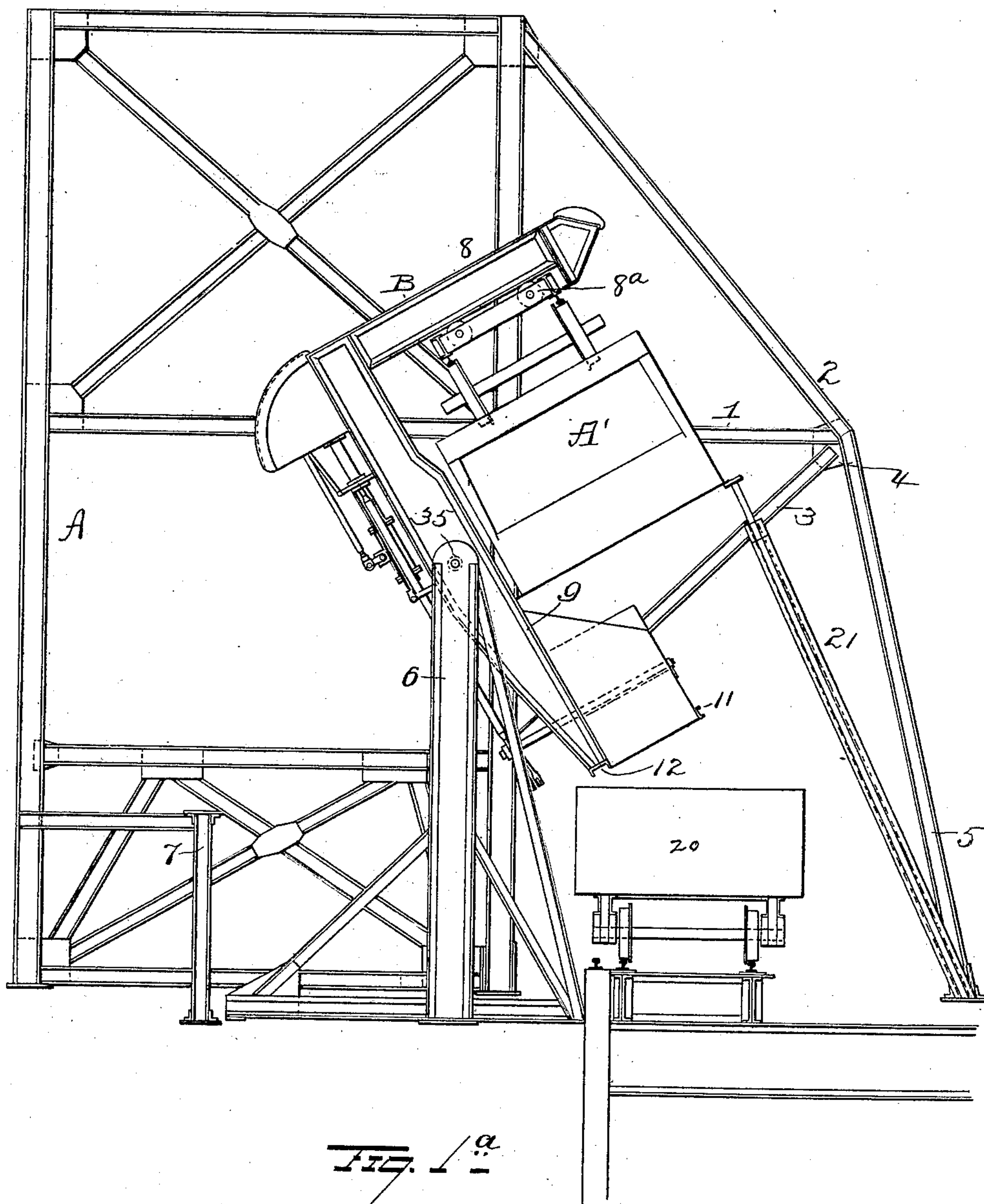


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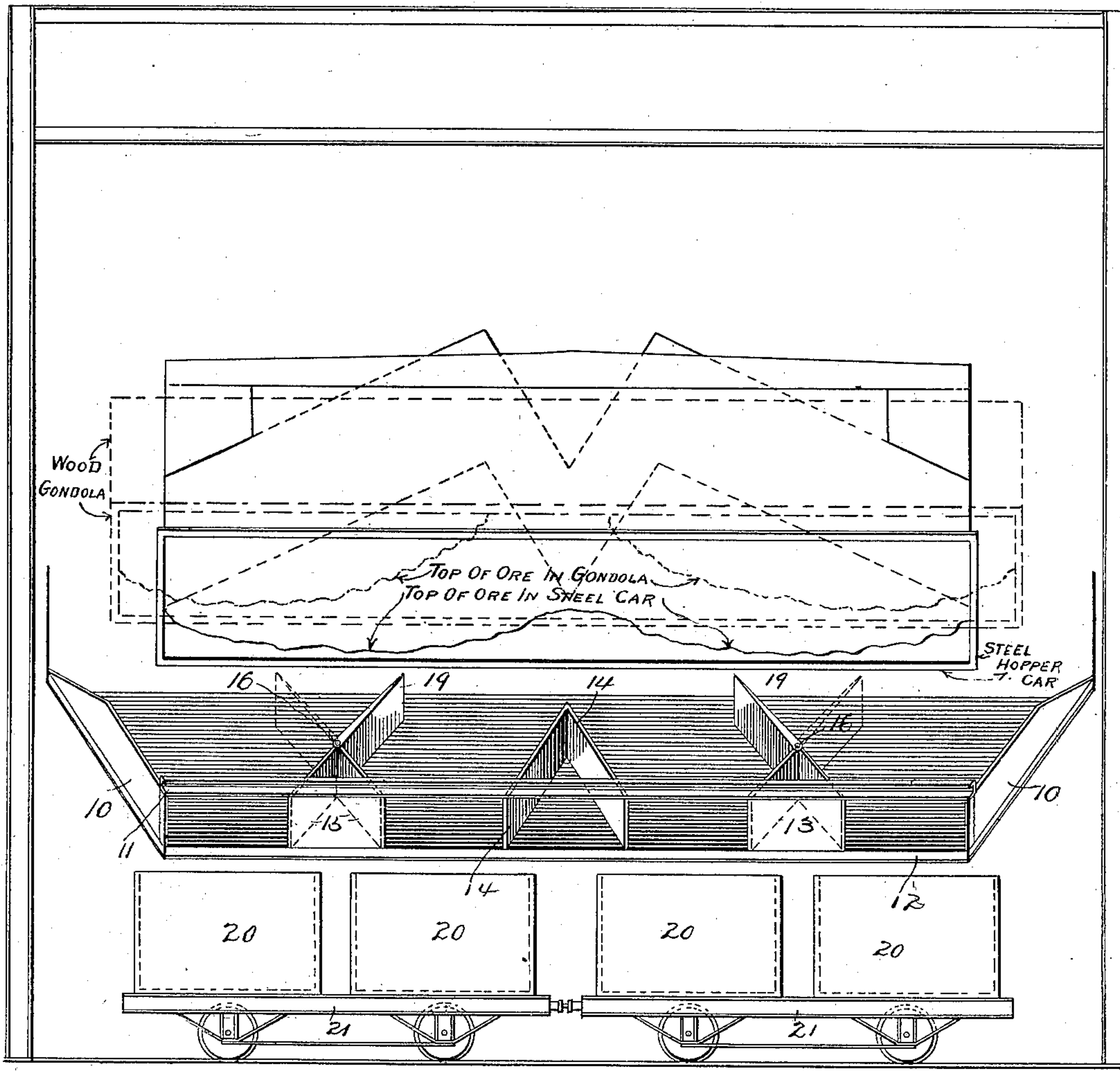


FIG. 2.

WITNESSES

E. D. Nottingham
G. F. Downing

INVENTOR

Geo. H. Hulett
By H. A. Seymour
Attorney

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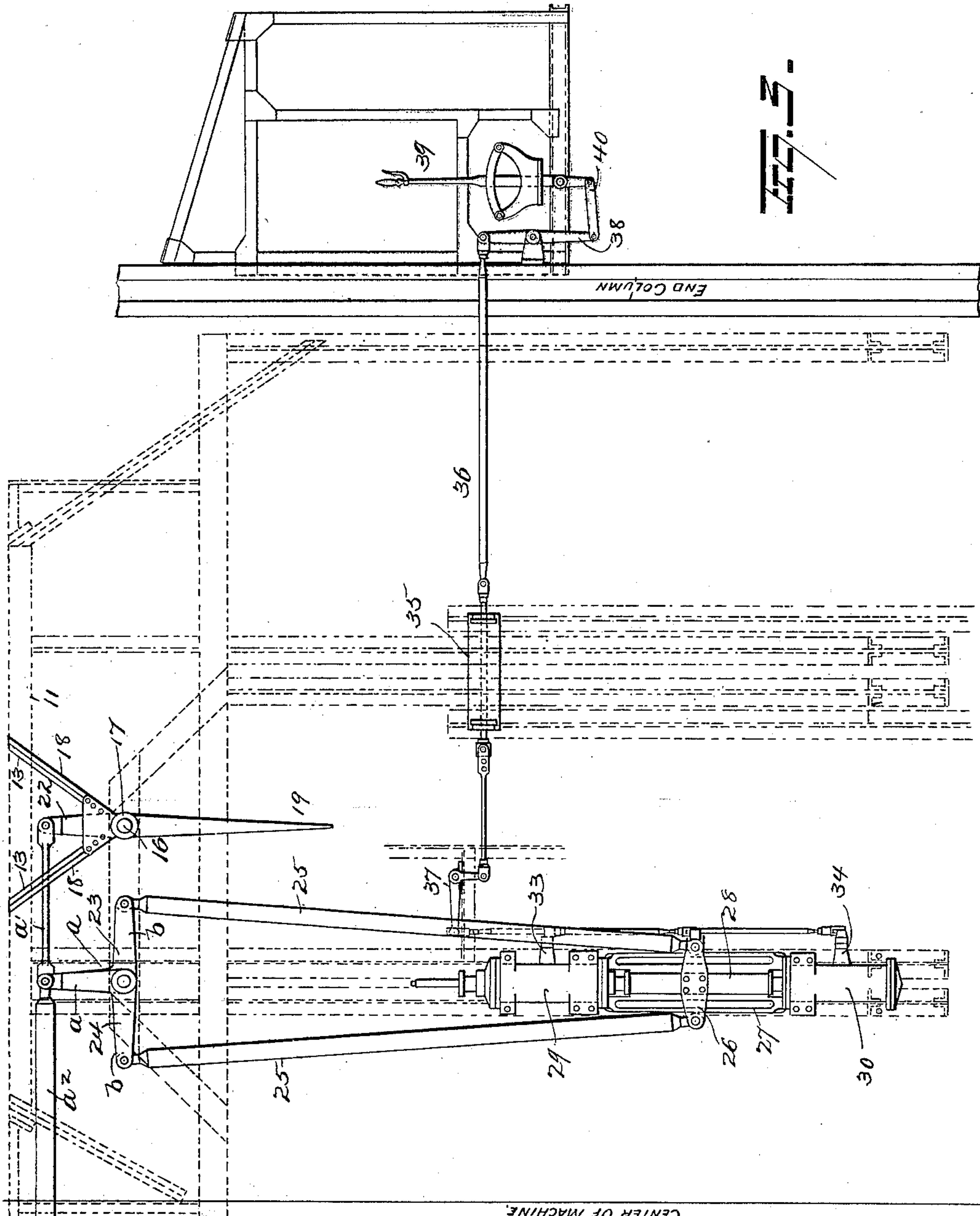
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(No Model.)

5 Sheets—Sheet 4.



WITNESSES
E. J. Nottingham
G. F. Downing

CENTER OF MACHINE.

INVENTOR
Geo. H. Hulett
By H. A. Seymour
Attorney

No. 652,314.

Patented June 26, 1900.

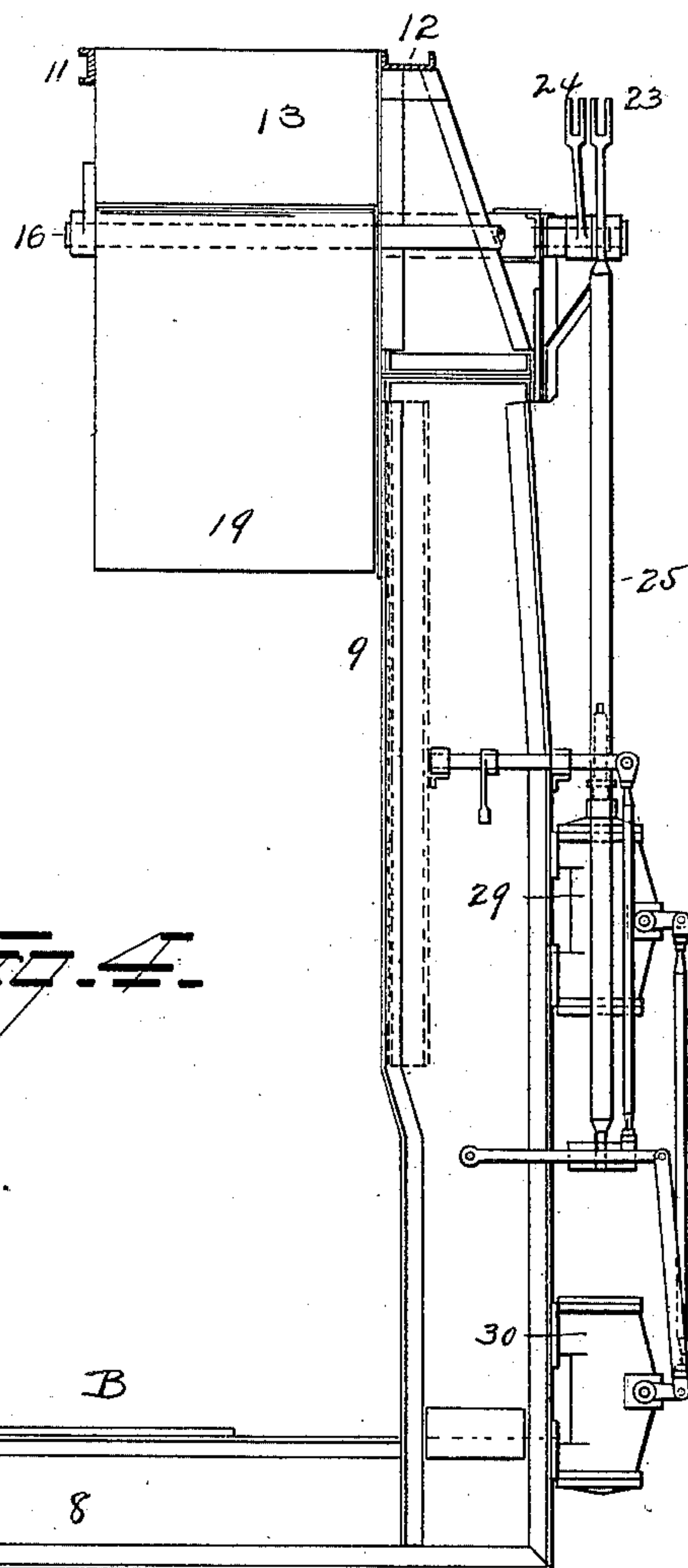
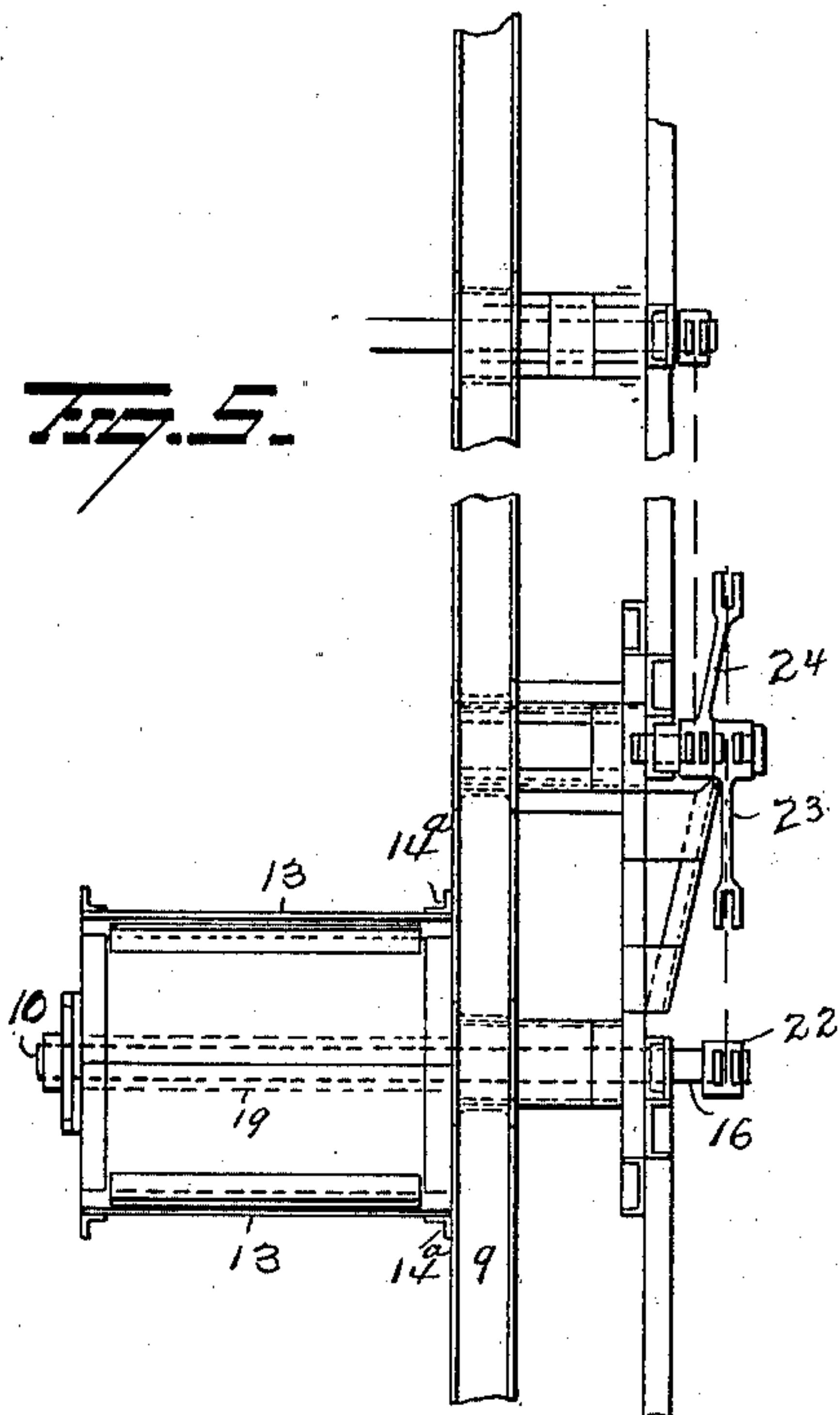
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5 Sheets—Sheet 5.



WITNESSES
E. J. Nottingham
G. F. Downing.

INVENTOR
Geo. H. Hulett
By H. A. Seymour
Attorney

UNITED STATES PATENT OFFICE.

GEORGE H. HULETT, OF AKRON, OHIO, ASSIGNOR OF ONE-HALF TO THE WEBSTER, CAMP & LANE MACHINE COMPANY, OF SAME PLACE.

LOADING OR UNLOADING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 652,314, dated June 26, 1900.

Application filed November 29, 1899. Serial No. 738,668. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. HULETT, of Akron, in the county of Summit and State of Ohio, have invented certain new and useful
5 Improvements in Loading or Unloading Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to
10 make and use the same.

My invention relates to improvements in loading and unloading apparatus, and more particularly to means for dumping the contents of cars.

15 It has heretofore been proposed to dump coal from cars into large buckets and to provide means for distributing the car-load of coal simultaneously in several buckets. Such apparatus has operated successfully to dis-
20 tribute the coal evenly among the several buckets, because the car from which it was dumped was filled evenly from end to end, and therefore the coal flowed at a uniform volume from the car throughout its entire
25 length. In the employment of what are known as "gondola cars," such as now in common use for transporting ore, it has been found necessary to so load them that the maximum weight shall be removed from the center of
30 the car and made to come more directly over the trucks. This is because such cars are not of sufficient stability to withstand the great weight of ore at a point centrally between their ends. Cars loaded with ore in
35 the manner above indicated—viz., so that the load will be disposed at respective sides of the center of the car and each portion of the load will have a center of gravity between the center and one end of the car—cannot
40 when bodily dumped be evenly distributed among a series of buckets by means of the fixed distributing devices heretofore employed.

What are known as "hopper-cars" are used
45 quite extensively for transporting ore, and with these the center of gravity of the load is coincident with that of the car. These cars are built to withstand considerable weight, are much shorter than gondola cars, and are usu-
50 ally completely filled. When a hopper-car is bodily inverted to discharge the contents

into several buckets, the latter would have to be placed quite close together, and this is neither practicable nor feasible—no more so than to separate them in pairs, as would be
55 necessary to receive ore dumped from gondola cars. It is therefore important that some means be provided for insuring an equal distribution of ore as it is being dumped from the car into buckets placed at predetermined
60 distances apart, regardless of the kind of car employed or the manner of loading.

It is one object, therefore, of my present invention to provide means for adjusting the distributing devices in accordance with the
65 disposition of the load or ore in the cars, so that the even distribution of the ore among a series of buckets will be insured when the car is bodily inverted.

A further object is to provide means for
70 adjusting the distributing devices of a car-dumping apparatus and holding the movable parts of such distributing devices rigidly in the position to which they may be adjusted.

With these objects in view the invention
75 consists in the combination, with means for inverting a car and an apron on which the load is discharged, of fixed distributors on said apron for deflecting the material into several buckets and adjustable deflectors co-
80 operating with said fixed distributors to insure the even distribution of the material to the several buckets regardless of the character of car being used and the disposition of the load therein.
85

The invention also consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figures 1
90 and 1^a are elevations illustrating my invention. Fig. 2 is a face view with some of the parts removed, showing a car inverted to discharge its contents into a series of buckets, and also showing the distributing devices in
95 perspective. Fig. 3 is a face view showing the appliances for manipulating the adjustable deflectors; and Figs. 4 and 5 are edge and end views, respectively, of the appliances for operating the deflectors.
100

A represents an upright framework or tower provided at points between its top and bottom

with horizontal forwardly-projecting braces 1, the free end of each of which is connected with the upper and lower portions of the frame or tower by means of diagonal braces 2 3. The braces 2 3 are connected together and with the free end of the horizontal brace 1 by means of a suitable coupling 4, and to each of said couplings the upper end of a post or upright brace 5 is secured, the lower end of which rests on a suitable base. Posts 6 project upwardly within the front portion of the frame or tower and serve to pivotally support a cradle B, the rear end or edge of the latter being normally supported by short posts 7 in the frame or tower. The cradle B comprises a base 8, provided with tracks mounted on a movable platform 8^a for the accommodation of an ore-car A', and a normally-upright apron 9, pivotally connected with the posts 6 and projecting a distance above the same. The ends of the apron are beveled, and coincident with these beveled ends diagonal flanges project at right angles to the face of the apron and constitute fixed deflectors 10 to assist in the distribution of the ore discharged from the car when the cradle is tilted to invert the latter. At the free end of the apron the ends of the flanges or deflectors 10 are connected by a beam or girder 11, and another beam or girder 12 is secured to the free end of the apron itself. Between these beams or girders the outer or forward ends of V-shaped fixed distributors 13 14 15 are secured, said distributors being disposed on the face of the apron, and each member of each distributor is provided at one edge with a flange 14^a, lying against the face of the apron and bolted thereto. At the apex of each V-shaped distributor 13 15 a shaft 16 is mounted and passes through the apron, and for each of these shafts a bearing-sleeve 17 is provided and braced by means of bars 18, extending therefrom to the beam or girder 11, to which they are securely bolted.

An adjustable deflector 19 is secured to each shaft 16. These deflectors constitute an important feature of my invention and enable me to insure the even distribution of ore from the inverted car to a series of buckets 20, placed in certain predetermined positions and regardless of the character of the cars employed and the manner of loading the same. The buckets 20 are carried on suitable trucks 21, and it is very desirable and, in fact, quite necessary in the practical operation of transferring ore from cars to buckets, when the cars are inverted for this purpose, that the trucks and the buckets thereon shall be always placed in the same position with respect to the apparatus. Without the provision of the adjustable deflectors 19 this could not be accomplished because of the different kinds and sizes and lengths of cars employed for carrying ore and the different methods of loading the cars. Thus when a gondola car having its load of ore divided between its ends is inverted to discharge such divided load a

comparatively-small quantity of ore would flow into the central buckets of the series, while the end buckets would be overlooked if some means be not provided to operate in conjunction with the fixed distributors to regulate the even distribution of the divided load to all the buckets of the series.

When a hopper-car is used, it is apparent that when it is inverted and its contents made to flow over an apron having only the fixed distributors the conditions above described would be reversed and the major portion of the ore would pass to the central buckets of the series and they would quickly overflow, while the end buckets would receive little or no ore. By means of the deflectors 19 all of this inconvenience can be avoided by adjusting said deflectors according to the disposition of the load in the car being dumped—that is to say, when gondola cars having the load in two sections at respective sides of its center are being dumped the adjustable distributors will be so disposed as to cause an amount of ore to enter the central buckets of the series equal to the amount passing to the outer buckets. When a hopper-car is dumped, the deflectors 19 will be moved to a position opposite to that which they occupied for a gondola car, so as to distribute the ore in such manner as to cause the same amount to enter the outer buckets as flows to the inner or central buckets of the series.

The contents of the cars will be discharged (whether they be of the gondola or the hopper type) by inverting them, and this will be accomplished by turning the cradle or its pivotal support by any suitable means, and any approved devices (not shown) may be employed for holding the car in place on the cradle. It is desirable to provide means for preventing the cradle from being tilted farther than is necessary and for supporting the weight of the cradle and its load (should the latter not be promptly discharged) when the cradle is inverted. For this purpose I employ a series of posts 21.

It now remains to describe the construction and operation of the appliances for manipulating and locking the adjustable deflectors. The shaft 16 of each deflector 19 is extended beyond its bearing in the apron and provided with an arm 22. The arms 22 of the respective deflectors are connected, respectively, with the arms *a* of bell-crank levers 23 24 by means of rods or pitmen *a'* *a'*². Rods or pitmen 25 are connected at one end with the arms *b* of the bell-crank levers 23 24, and the other ends of said rods or pitmen are connected with the respective ends of a sliding cross-head 26. The cross-head 26 is mounted on suitable guides on a bed 27 and is secured to a piston-rod 28. Cylinders 29 30 are located at the respective ends of the bed 25, and into these cylinders the respective ends of the piston-rod 28 project and are provided with pistons within the respective cylinders. The cylinder 29 is intended to receive steam for

moving the piston 31, and thus transmitting motion through the system of rods and levers above described to the adjustable deflectors to move them in one direction or the other for the purpose hereinbefore fully explained. To control the admission and exhaust of steam from the cylinder 29, a suitable valve 33 is provided.

The cylinder 30 is intended for the reception of water, and the flow of the water from one end of the cylinder to the other is controlled by means of a valve 34. When both valves 33 34 are open, the piston-rod will be moved in one direction (according to the position of the valve 33) by steam entering the cylinder 29, and the piston therein will move in the cylinder 30, displacing the water therein and causing it to flow from the end of said cylinder in front of the piston and enter the end of the cylinder behind the piston. During this movement of the piston-rod motion will be transmitted to the adjustable deflectors, as before explained. When the deflectors 19 shall have been properly adjusted, both valves 33 34 will be closed. The result of thus closing the valves will be to stop the movements of the deflectors and at the same time close communication between the respective ends of the hydraulic cylinder 30 and prevent movement in either direction of the piston therein, the piston-rod 28, and the connections between the latter and the adjustable deflectors 19. The deflectors 19 will therefore be locked in the positions to which they may be adjusted.

In order that the valves 33 34 can be manipulated without interfering with the cradle by which the cylinders 29 30 and connected devices are carried, it is necessary that the valve-rod shall be coincident with the fulcrum of the cradle. For this purpose the pivot-pin 35 of the cradle is made tubular, and through it a longitudinally-movable sectional valve-rod 36 passes. One end of the rod 36 is connected with one arm of a bell-crank lever 37, and the other arm of the latter is connected with both valves 33 and 34, so as to operate them simultaneously. The other end of the longitudinally-movable rod 36 is connected with one arm of a pivoted lever 38, and with the other arm of the lever 38 an operating-lever 39 is connected through the medium of a link 40.

From the above it will be seen that by operating the lever 39 the adjustable deflectors can be made to assume any desired angle and be locked in such position.

Various slight changes might be made in the details of construction of my invention without departing from the spirit thereof or limiting its scope, and hence I do not wish to limit myself to the precise details herein set forth.

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

1. The combination with means for invert-

ing a car and an apron on which the load is to be discharged, of fixed distributors on said apron for deflecting the material into several buckets and adjustable deflectors cooperating with said fixed distributors to insure the even distribution of the material to the several buckets, regardless of the character of car being used and the disposition of the load therein.

2. The combination with a cradle for inverting a car and an apron carried by said cradle to receive the load from the car, of adjustable deflectors on said apron.

3. The combination with a cradle for inverting a car and an apron carried by the cradle to receive the load from the car, of adjustable deflectors on the apron and means for moving and locking said adjustable deflectors.

4. The combination with means for inverting a car and an apron to receive the material from the car, of adjustable deflectors on said apron, a motor for moving said deflectors and a hydraulic brake or lock connected with said motor for holding the deflectors in the positions to which they may be adjusted.

5. The combination with a pivoted cradle adapted to support a car and an apron carried by said cradle and adapted to receive the load from the car, of adjustable deflectors on the apron, two cylinders supported by the apron, pistons in said cylinders, a rod connecting said pistons, means for controlling the admission to and exhaust of steam from one of said cylinders, means for controlling the passage of water from end to end of the other cylinder, and connections between the piston-rod and the adjustable deflectors.

6. The combination with a pivoted cradle adapted to support a car and an apron carried by the cradle to receive the load from the car, of adjustable deflectors on the apron, a motor and a hydraulic lock, a rod common to the pistons of both, connections between said rod and the adjustable deflectors for controlling the movements of the latter, a valve for the motor, a valve for the hydraulic lock and means for opening and closing said valves simultaneously.

7. The combination with a pivoted cradle adapted to support a car and an apron carried by the cradle and adapted to receive material from the car, of adjustable deflectors on said apron, a motor and a hydraulic lock carried by the apron, a rod common to the pistons of said motor and hydraulic lock, arms on the shafts of said deflectors, bell-crank levers connected with the arms of the respective deflectors, rods or pitmen connecting the respective bell-crank levers with said piston-rod and means for simultaneously controlling said motor and hydraulic lock.

8. The combination with a pivoted cradle and an apron, of adjustable deflectors on said apron, a motor and a hydraulic lock carried by the apron and connected with the deflec-

tors for adjusting and locking them, valves
for said motor and hydraulic lock, a rod pass-
ing through the pivoted support of the cradle
and connected with said valves to operate
5 them simultaneously and means for operat-
ing said rod.

In testimony whereof I have signed this

specification in the presence of two subscrib-
ing witnesses.

GEORGE H. HULETT.

Witnesses:

S. W. FOSTER,

S. G. NOTTINGHAM.