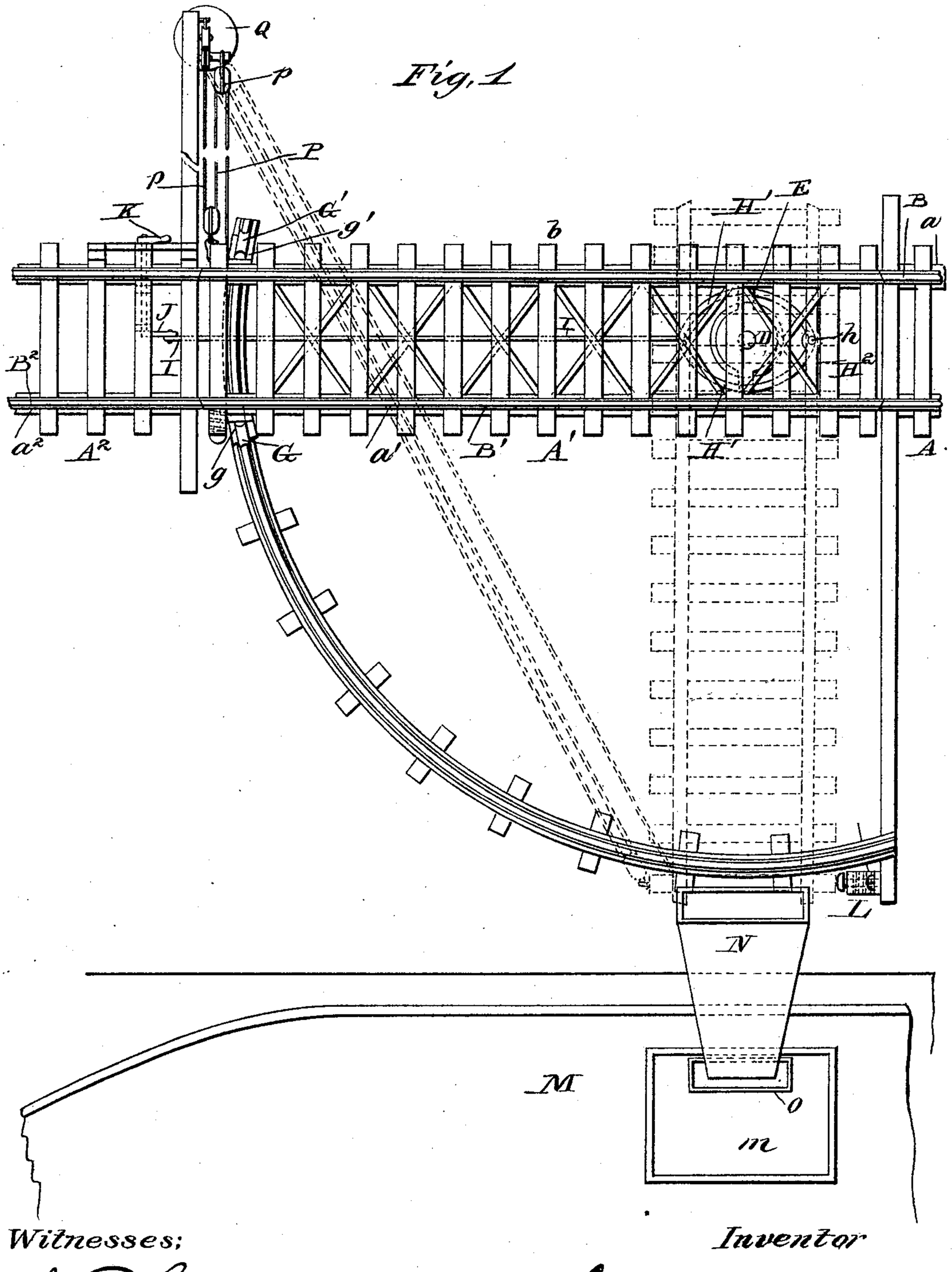
(No Model.) 4 Sheets—Sheet 1.

L. D. HOWARD.

CAR UNLOADING APPARATUS.

No. 587,206. Patented July 27, 1897.

Fig. 1



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CAR UNLOADING APPARATUS.

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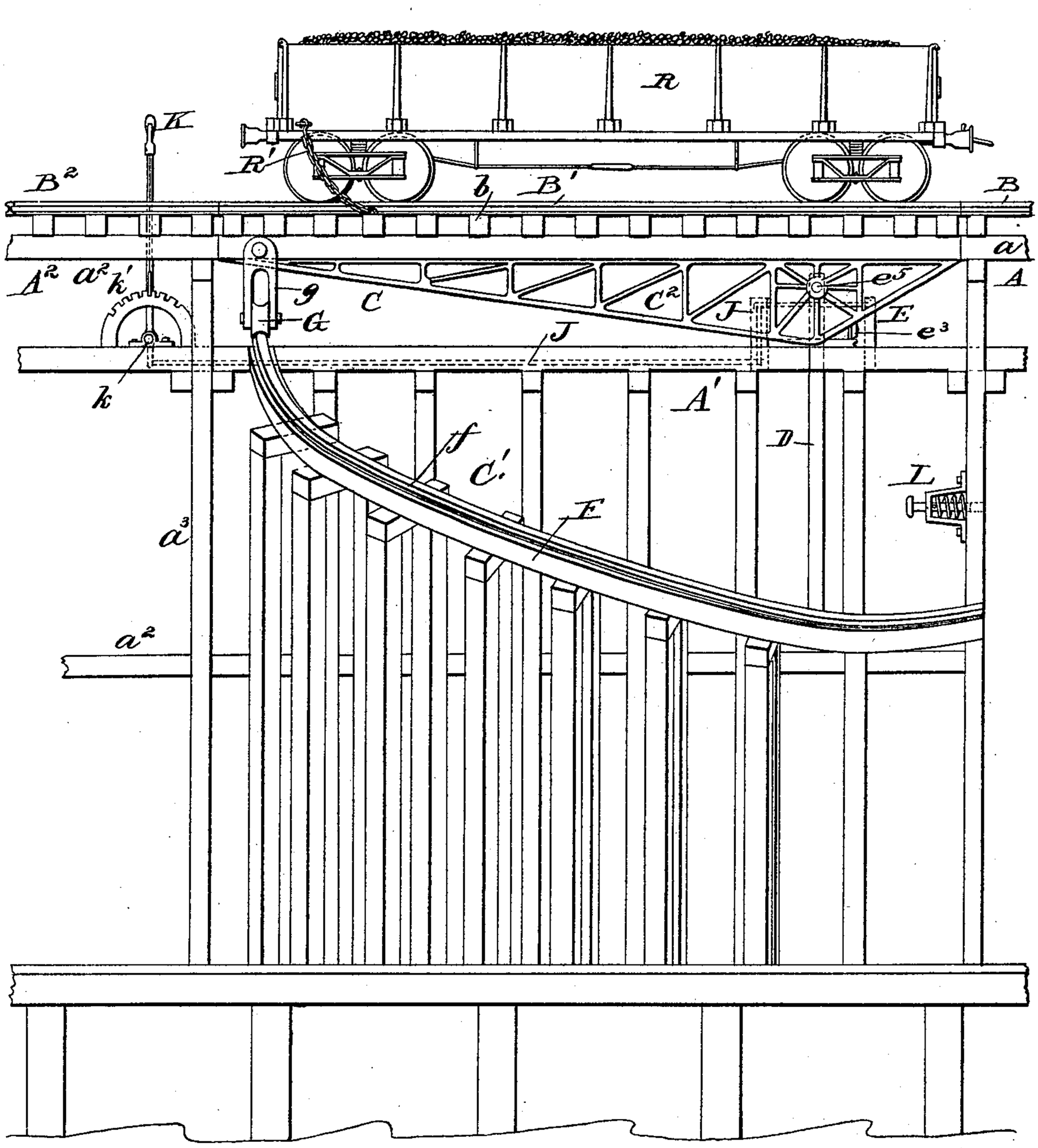
Fig. 2



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(No Model.) 4 Sheets—Sheet 3.

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Fig. 3

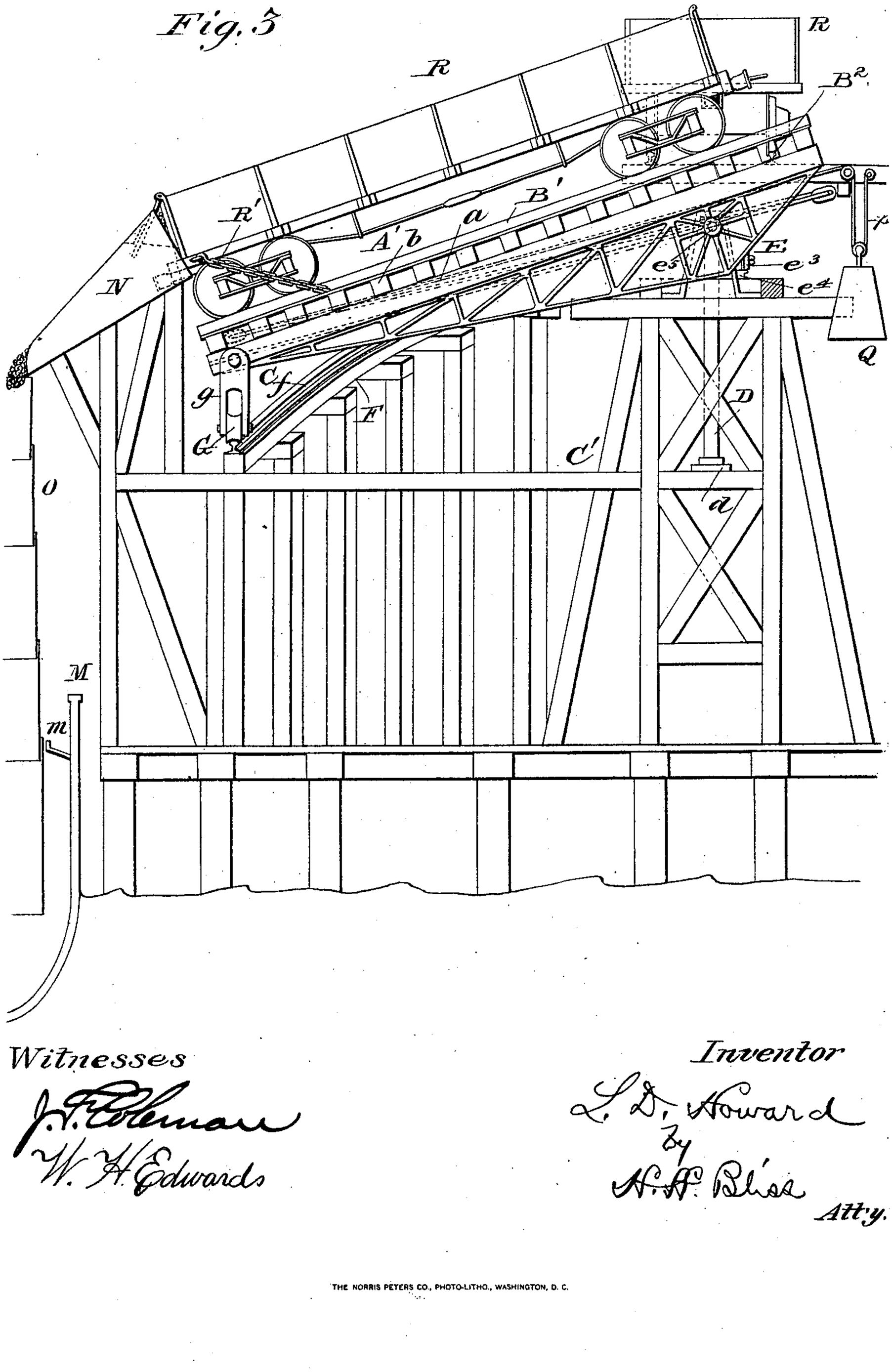

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Fig. 4

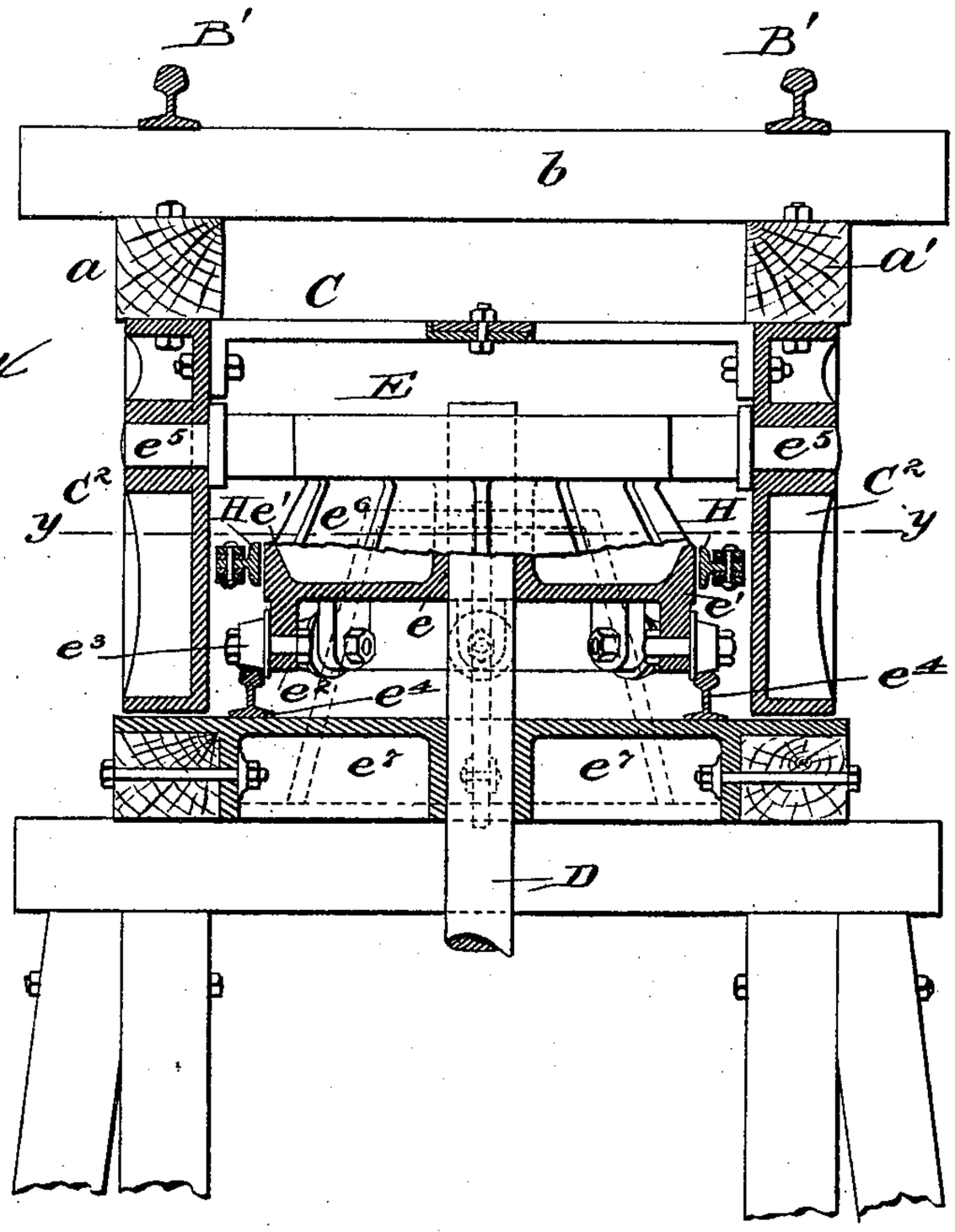
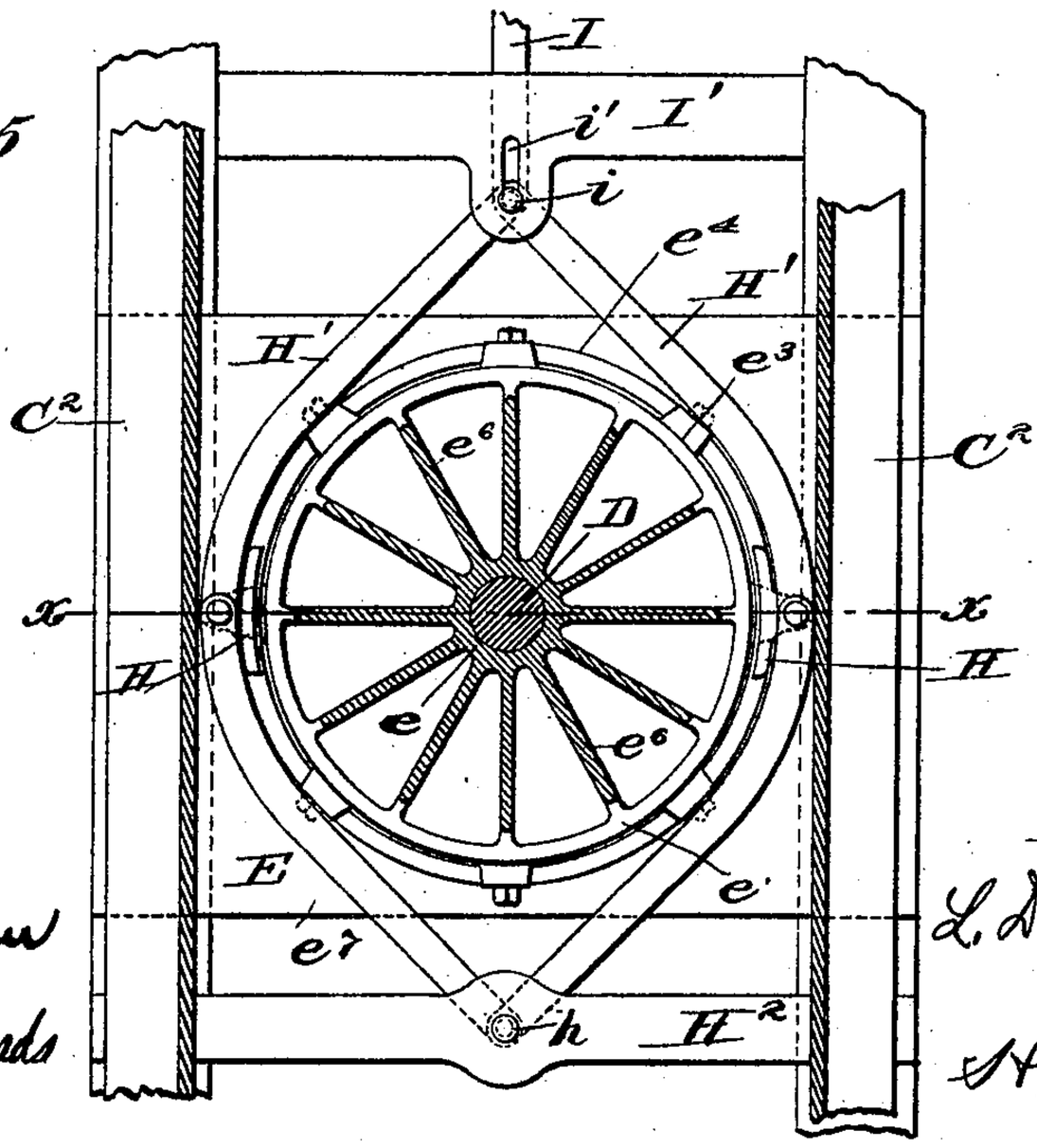


Fig. 5



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UNITED STATES PATENT OFFICE.

LYMAN D. HOWARD, OF COLUMBUS, OHIO.

CAR-UNLOADING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 587,206, dated July 27, 1897.

Application filed November 8, 1894. Serial No. 528,246. (No model.)

To all whom it may concern:

Be it known that I, LYMAN D. HOWARD, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Car-Unloading Apparatus; and I do 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 make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 is a plan view of a mechanism embodying my improvements. Fig. 2 is a side elevation of the same. Fig. 3 is a transverse view showing the car in the position occupied when unloading. Fig. 4 is a transverse vertical section, on a larger scale, showing the rotary supporting devices for the tilting track on the line $x\ x$, Fig. 5. Fig. 5 is a horizontal section of the same on line $y\ y$, Fig. 4.

In the drawings I have shown a sufficient portion of a railroad-track and of its trestle-support to illustrate the manner of carrying out my invention. As shown, there are three sections of the track, and the trestle-support or framework may be considered as being in three parts, one indicated by A, another by A′, and the third by A^2. These may be constructed in any suitable way. I have shown, more or less conventionally, longitudinal beams at $a\ a'\ a^2$ and vertical uprights a^3. The intermediate frame A′ has some parts peculiar to itself which will be described below. On these parts of the framework or trestle are supported the rails B B′ B^2.

The rails B′ are the ones utilized for tilting the car to unload it. The framework A′ comprises an upper part C and also a lower part C′. The upper part C has the movable rails B′ secured directly to it, they resting upon cross-ties b, which are supported upon longitudinal beams b'. To the under sides of these beams b' there are secured truss-frames or longitudinal supporting-beams C^2 C^2. These rest upon a rotary head, which as a whole is indicated by E and is mounted upon a vertical spindle D, which extends downward a distance sufficient for strength and firmness and is stepped at d in the framework.

The head E has a central tubular bearing e, fitted to the shaft D, which is cast with or secured to the outer peripheral part e', there being preferably vertical webs e^6 integral with the hub and the periphery. From the above-described parts there extends downward a flange e^2, by which can be supported a series of rollers or wheels e^3. These wheels rest upon a circular track e^4, which rests upon the base part e^7 of the frame. At the upper end of this rotary head there are trunnions e^5, integral with or secured to it, and upon these trunnions are mounted the aforesaid truss-beams or frame-pieces C^2.

It will be seen that the track-rails B′ and the parts rigid therewith can be not only raised and lowered upon the trunnions e^5, but can be also carried laterally around the axis of the spindle D, the rotary head E being so connected to them in such way as to turn with them and provide for them an adequate support at all times.

It will also be seen that the trunnions and rotary head are situated nearer to one end of the rails B′ than the other, and the latter ends will naturally tend to move downward as soon as there is a lateral movement around the spindle D.

To support the ends of the rails and their frame, I provide a curved track f on a beam or holder F, carried by the part C′ of the frame, this part consisting of uprights and cross-beams arranged in such a way as to support the track f in or nearly in an arc struck from the axis of spindle D.

Between the track-rails B′ and their movable frame C and the curved track f, I interpose rollers or wheels G G′ and connect them to the frame by one or more hangers or supports $g\ g'$. The wheel G is lower than the wheel G′, so as to maintain the track-rails B′ always level.

By examining Fig. 2 it will be seen that when car R is in place on the rails B′ its center of gravity is at a distance from the axes of the parts e^5 and D and that as soon as the track-rails B′ are permitted to move the gravity of the car will cause the rails and their support C to move downward along the track f. To control their downward movement, I employ a friction-governor.

H H are brake-shoes adapted to engage with

the periphery e' of the rotary head E. They can be moved against and from said periphery by the levers H'. The latter are pivoted at one end to a bar or brace H^2, as indicated at *h*, and at their other ends are connected to a draw rod or lever I by a pivot *i*, the pivot *i* extending above the lever H' and through a slot *i'*, formed in a guiding and strengthening bar I', similar to the bar H^2.

To the rod or lever I is connected the link J, which in turn is pivoted to the operating-lever K, the latter being pivoted at *k* and having a lock mechanism at *k'*.

With these devices, it will be seen, the operator can accurately regulate the descent and also the movement of the car when it is being unloaded.

When the parts are arranged in the way shown, the car is permitted to descend until the rails B' are at about right angles to their normal position, as shown in Fig. 3 and by dotted lines in Fig. 1, and the depression of the end of the car at such time is sufficient to permit its load to be conveniently discharged. As shown in the drawings, a vessel is indicated at M, and the parts above described are arranged to deliver the load through the hatchway *m*, use being made of a chute N, adjacent to the car and from which the material passes, through flexible chute O, to the interior of the vessel.

After the load has been discharged from the car the car and the track are returned to their normal position by a counterbalance-weight. P is a rope, chain, or the like connected to the track and also to a weight Q, there being one or more pulley-blocks, as at *p*. The weight Q is of a gravity between that of the loaded car and that of the empty car and track, so that it will not prevent the load from descending when desired, but at the same time will cause the return of the car and track after the load has been discharged.

To limit the downward movement of the car and to prevent accident, I employ a spring stop or buffer at L, which is impinged on by the track or frame at its lowermost position.

Prior to allowing the car to descend it is locked upon the rails B by a chain R, which can be quickly attached or released.

After the empty car has been returned to the level position the chain R' is released and the car is advanced to the track-section B^2 and another is moved on from the track B to the track B', and it in turn is emptied, as described.

What I claim is—

1. The combination with the permanent track of the movable track-section, supported on a vertical pivot adjacent to the permanent track and adapted to move laterally about said pivot, and the downwardly-inclined guide upon which the outer end of the movable track-section rests when moving laterally, substantially as set forth.

2. The combination with the permanent track of the movable track-section pivotally supported upon vertical and horizontal pivots near one end, whereby it is adapted to be moved laterally and to have the other end depressed while so moving, substantially as set forth.

3. The combination with the fixed track of the movable track-section mounted to turn about a pivot, a disk connected with said movable section and arranged concentric with the pivot thereof, and shoes for engaging with said disk adapted to be actuated from the stationary track, substantially as set forth.

4. The combination with the stationary track, of the movable track-section mounted to turn about a vertical pivot, a disk or brake-wheel connected to said movable section, levers pivoted at one side of said disk and carrying shoes adapted to contact therewith, and means for operating said levers from the stationary track, substantially as set forth.

5. The combination with the track, of the movable track-section, the rotary head E connected with said track-section and mounted on a vertical pivot, the levers H pivoted at a common pivot and extending on opposite sides of said head, brake-shoes carried by said levers and adapted to contact with the outer face of the head E, and a draw-rod connected to the levers and extending to a point on the stationary track, substantially as set forth.

6. The combination with the permanent track-section, of a movable track having a horizontal pivot and a vertical pivot, an inclined guide upon which one end rests and down which it is adapted to travel and the counterbalancing-weight by which it is returned to its normal position, substantially as set forth.

7. In a car-unloading apparatus, the combination with a stationary track, A, for loaded cars, and a stationary track, A^2, for empty cars, of the movable track-section supported to move both vertically and horizontally and adapted to be held in line with the track, A, an inclined guide for said movable section extending concentric with the vertical pivot of said section, whereby when a loaded car is moved onto such movable track-section the latter will be automatically moved and the car thereon be held in position to discharge its load, and means for automatically moving the movable track-section into line with the other stationary track A^2 to allow the empty car to pass thereon, substantially as set forth.

8. In a car-unloading apparatus, the combination with the two stationary tracks, A, A^2, of the intermediate, movable, track-section, A', a vertical pivot for such movable track-section, a horizontal pivot for said movable track-section, a downwardly-inclined guideway for the movable track extending concentric with the said vertical pivot, and a weight connected with said movable track-section, substantially as and for the purpose set forth.

9. In a car-unloading apparatus, the com-

bination with the stationary track-sections, A, A^2, and a discharge spout or chute arranged at one side of one of the stationary tracks, of the movable track-section, a turn-table, for the movable track-section adapted to rock about a horizontal axis, a stationary, downwardly-inclined guide extending concentric with the vertical axis of the turn-table to a point adjacent to the discharge-chute, and a movable support mounted on said guide and connected with the movable track-section, substantially as and for the purpose set forth.

10. In a car-unloading apparatus, the combination with the two stationary track-sections, A, A^2, arranged in the same longitudinal line, of the movable track-section, a turn-table, a support for the movable track-section mounted on said turn-table to rock about a horizontal axis, a stationary, downwardly-inclined, guide extending concentric with the axis of the turn-table, and rollers mounted on said inclined guide and connected to the movable track-section, substantially as set forth.

11. In a car-unloading apparatus, the combination with a stationary track for loaded cars, and a stationary track for empty cars, of a movable track-section, means for securing a car on said movable track-section, a support for said movable track-section adapted to allow said section to simultaneously move from a position in line with and in the plane of the stationary track for loaded cars to a position out of the longitudinal line of and in a plane inclined to the plane of the last said stationary track and maintain the car on said movable track-section in position to discharge its load, and means for moving said movable track-section, and the empty car thereon, from the last said position to a position in line with and in the planes of the stationary track, for empty cars, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

LYMAN D. HOWARD.

Witnesses:
R. THOS. HUTCHINS,
CHARLES W. MILLER.