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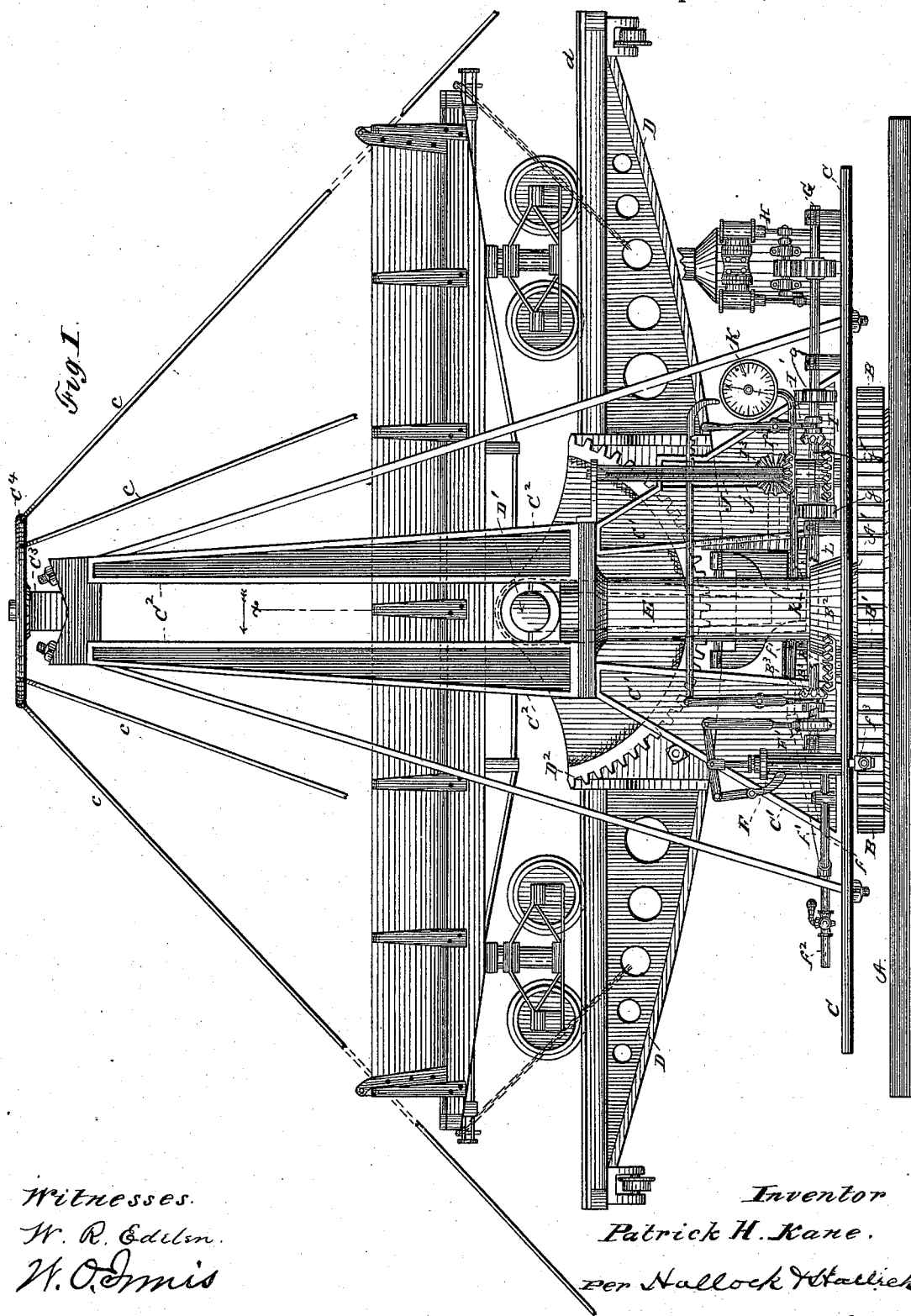
3 Sheets—Sheet 1.

P. H. KANE.

CAR LOADING AND UNLOADING DEVICE.

No. 305,600.

Patented Sept. 23, 1884.



Witnesses.  
W. R. Edlin.  
H. O. Emis

Inventor  
Patrick H. Kane.  
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ATTY'S

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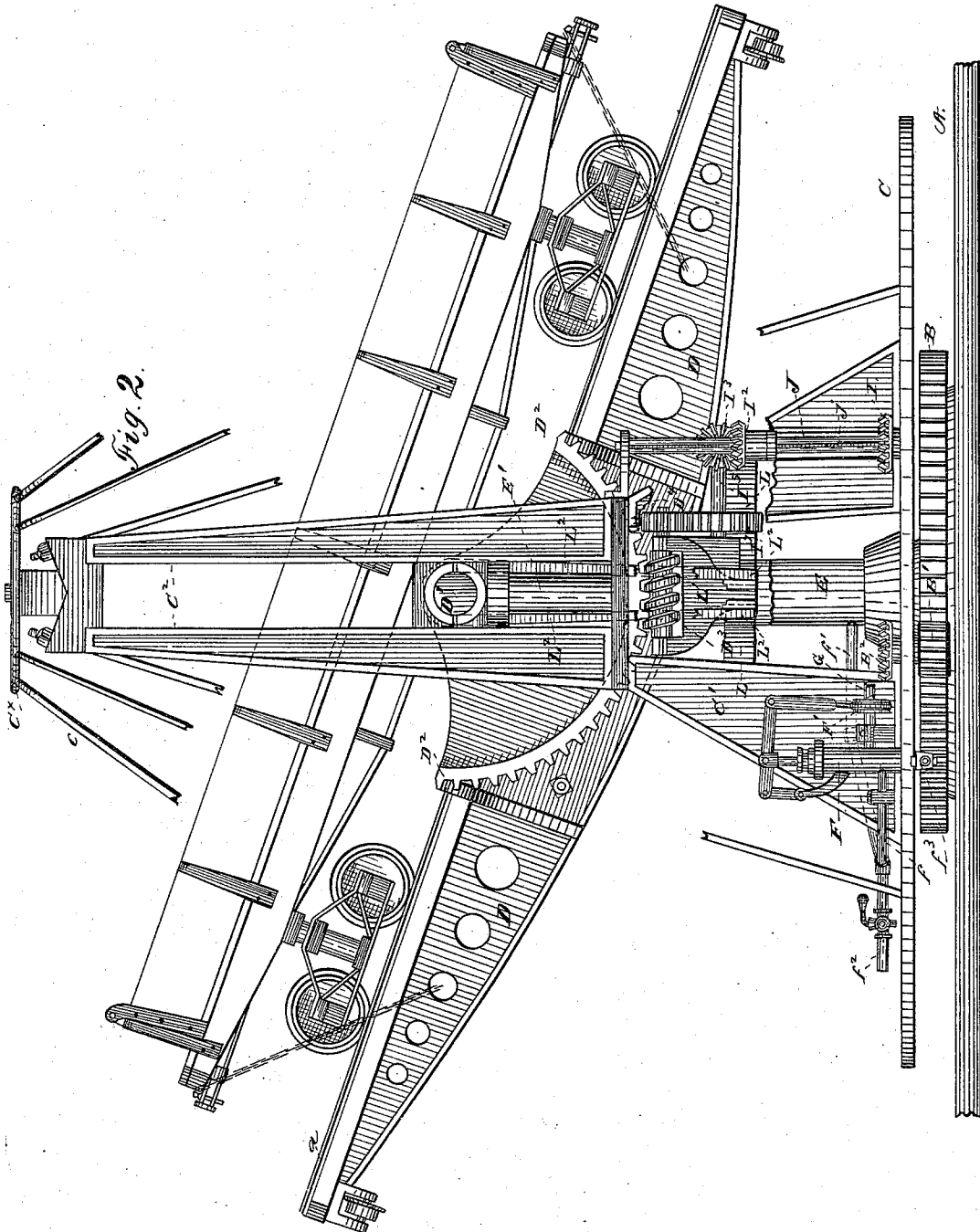
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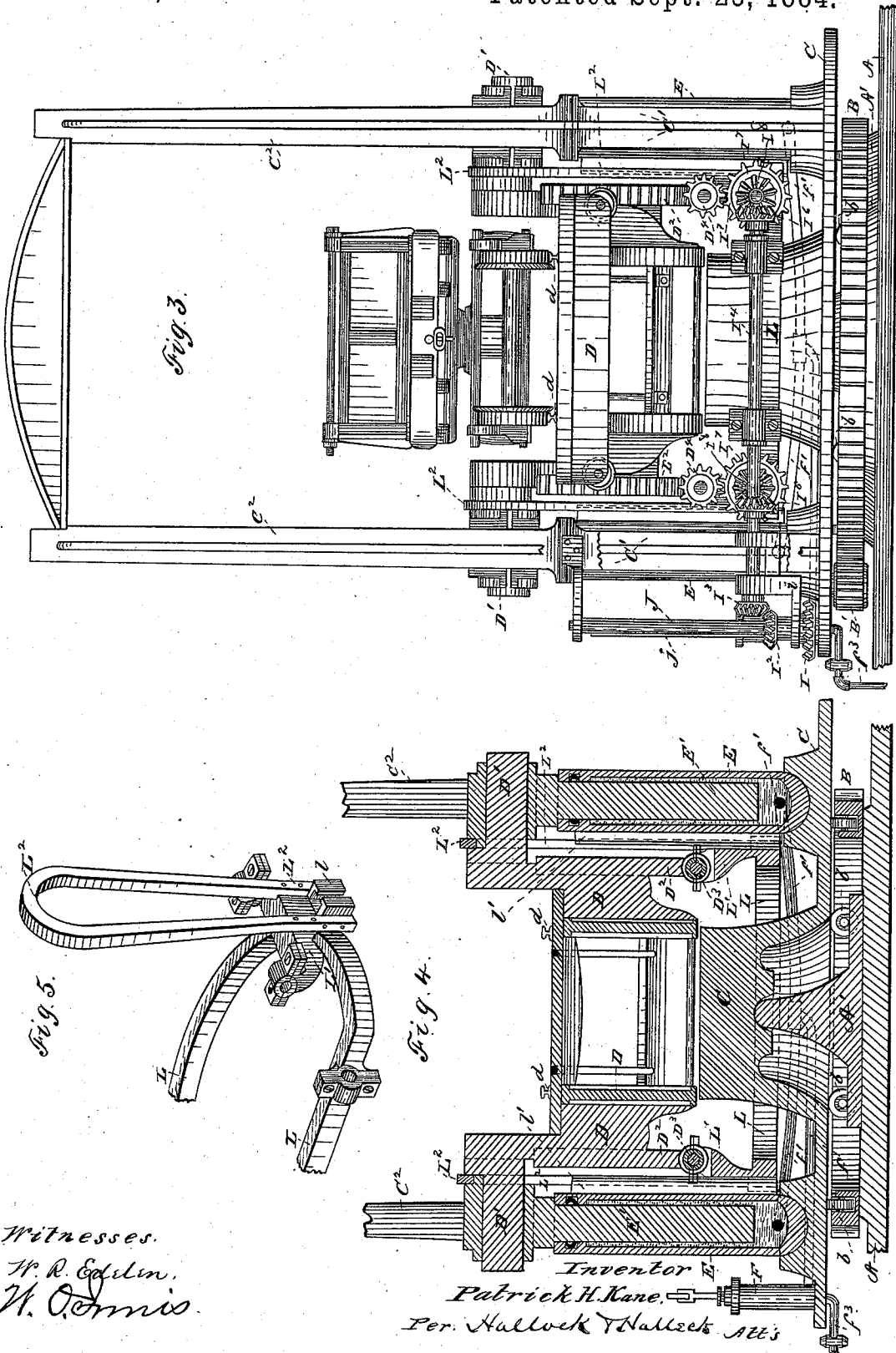
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# UNITED STATES PATENT OFFICE.

PATRICK H. KANE, OF OIL CITY, PENNSYLVANIA.

## CAR LOADING AND UNLOADING DEVICE.

SPECIFICATION forming part of Letters Patent No. 305,600, dated September 23, 1884.

Application filed July 25, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, PATRICK H. KANE, a citizen of the United States, residing at Oil City, in the county of Venango and State of Pennsylvania, have invented certain new and useful Improvements in Car Loading and Unloading Devices; 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 make and use the same.

The nature, scope, and purpose of this invention will fully appear from the following description and claims.

The functions of the device are such that a railroad-car can be raised or lowered, turned so as to face in any desired direction, tipped so that, if it is an open car, its contents will be dumped or spilled from the car, and, lastly, to weigh the contents of the car.

The objects or purposes of thus handling a car, are:

First. That the car may be lowered so as to receive massive pieces of freight without lifting the same up to the car. This use of the device will be specially desirable at points where cars or locomotives or large machinery of any kind are to be loaded. Where this function alone is to be wanted, the device need not necessarily be provided with means for turning or tipping the car.

Second. That the car may be raised up and, if wanted, turned to face at an angle to the track, and tipped so as to dump its contents. This use of the device will generally be for unloading cars freighted with coal or iron ore, and particularly where the contents are to be transferred directly into a ship. When thus employed the device will receive a loaded car from the main track in the same manner as a common turn-table. It will turn the car so as to face in the direction its contents are to be dumped. It will then raise the car, if necessary, to a proper height, and then tip the car so its contents will be dumped out. The device may be made so as to tip the car, and not so as to turn it, or to turn and tip and not hoist it, or it may be made, as here shown, so as to perform all these functions. This will depend on the requirements, of course.

Third. That the weight of the contents of the car may be determined.

The device is illustrated in the accompanying drawings, as follows:

Figure 1 is a side elevation. Fig. 2 is a like view showing some of the parts broken away, and showing the platform inclined as in the act of tipping the car. Fig. 3 is an end elevation taken from the right of Fig. 1. Fig. 4 is a vertical section on the line *x* in Fig. 1, the upper rigging not being shown. Fig. 5 is a perspective view showing details of construction not clearly shown in the other figures.

Like letters of reference indicate corresponding parts in all the figures.

The device, as shown, consists of the following principal parts: A base, A, with a central pivot, A', and a fixed concentrically-arranged gear, B, a superstructure which consists of a platform, C, mounted pivotally on the base A A', and an upright frame-work, C' C'', two lifting-jacks, E E' E E', and a car-receiving platform, D, mounted on trunnions D', which are journaled on the jack-pistons E' E'.

The operating mechanism consists of a steam-engine or other motor, H, mounted on the platform C; a main shaft, G, operated by said engine; a pump, F, for operating the hydrostatic lifting-jacks, which is operated from said main shaft G; a pinion, B', mounted on the said platform C and gearing with the large concentrically-arranged gear B on the base, and operated from said main shaft G by the beveled gears B<sup>2</sup> B<sup>3</sup>, for the purpose of turning the superstructure pivotally on the base; and, finally, segment-gears D<sup>2</sup> D<sup>3</sup>, connected with the car-platform D, and arranged concentrically with its trunnions D' and operated from worm-gears D<sup>4</sup>, which are operated from the main shaft G by the intermediate gearings, I<sup>1</sup> I<sup>2</sup> I<sup>3</sup> I<sup>4</sup> I<sup>5</sup> I<sup>6</sup> and D<sup>4</sup>, and the shafts I<sup>1</sup> I<sup>2</sup>, which latter devices are employed for tipping the car-platform so as to dump the contents of the car.

The device for weighing the car and contents consists of an ordinary pressure-gage, K, connected with the chamber of one of the hydrostatic jacks by a pipe, *k*. By this device the weight of the whole mass sustained by the jacks can be noted both before and after the car is loaded or unloaded, as the case may be, and the difference between the two weights shown will be the weight of the contents of the car.

The gage K may be placed at any point desired, for the pipe *k* can be extended as desired.

The details of construction of the device may be varied from those hereshown without in any way affecting the principal features above described.

The construction as shown in the drawings is as follows: The base A may be mounted on masonry, or on a track which will be on a substantial foundation. For instance, if the device is used on a dock for loading coal, &c., onto ships it may be mounted on a broad, firm track, so it can be moved from point to point along the dock, so as to be used at the termini of a series of tracks. The pivot-block A' and the large gear B will be firmly secured to the base A. Friction-rollers *b* are provided for supporting the outer edge of the platform C. The frame-work C' C<sup>2</sup> is firmly secured to the platform C, and where desired it may be further sustained by guys *c c c*, which connect with a wheel, C<sup>4</sup>, which is pivoted or swiveled to the crown-block C<sup>3</sup> of the frame. This swivel allows the frame to revolve while the guys stand still. The uprights *c*<sup>2</sup> of the frame serve as guides for the trunnion-boxes of the car-platform, which set on the pistons E' E' of the hydrostatic jacks E E, which are arranged within openings in the parts *c*<sup>1</sup> of the frame-work. The hydrostatic jacks are both connected with the pump F by pipes *f f'*, and thus both jacks are affected exactly alike and simultaneously.

*f*<sup>3</sup> represents the supply-pipe leading to the pump; and *f*<sup>2</sup> the waste-pipe, by opening which the jacks are relieved of fluid and lowered. The pump F is operated by an eccentric, F', on the shaft G. The eccentric F' is provided with a clutch for throwing it into action. I have shown this as a ratchet-clutch, the shifting part of which is on the pinion B<sup>3</sup>, which is made to shift and be put in gear with either the eccentric F' or the gear B<sup>2</sup>, on the stem of the gear B', by which the superstructure is revolved. This double service of the part B<sup>3</sup> is practical, because it will not be desirable to be working the pump during the operation of turning the superstructure on its pivot.

The mechanism for tipping the car consists of the segment-gears D<sup>2</sup> D<sup>2</sup>, which are arranged concentrically with the trunnions D' D' of the car-platform D and the worms D<sup>3</sup> D<sup>3</sup> and their operating-gears. The worms are mounted in brackets L' on a frame, L, which is hung by straps L<sup>2</sup> L<sup>2</sup>, which pass up over the trunnion-boxes. The frame L is provided on each side with guide-heads *l*, which embrace splines *l'* on the inside of the jack-barrels E. The frame L is thus supported in a horizontal position, and so that it moves up and down with the car-platform. On this frame is supported the following gearing for actuating the worms D<sup>3</sup> D<sup>3</sup>, namely: the shafts I<sup>4</sup> and I<sup>5</sup> and the gears I<sup>3</sup>, I<sup>6</sup>, I<sup>7</sup>, I<sup>8</sup>, and D<sup>4</sup>. The shaft I<sup>4</sup> extends through a slot in the

frame-piece C' on the side toward the shaft G, and is journaled in an angle-bracket, *i*, which supports the sliding beveled pinion I<sup>2</sup> on the upright shaft J, which is provided with a spline, *j*. The shaft J is revolved from the main shaft G by the gears I I'. When the car-platform is moved vertically, the gear I<sup>2</sup> is moved vertically along the shaft J by the bracket *i*, and is thus always kept in gear with the pinion I<sup>3</sup> on the shaft I<sup>4</sup>. By this means the car-platform can be tipped when at any elevation desired. The main shaft G passes the upright shaft J by a counter-shaft, G', and gears *g g*, as the construction is illustrated. The car is received on the tracks *d* on the platform D, and secured thereon in any manner desirable, (I show it secured by chains,) so it will be held on the platform as it tips.

The end-boards of the car may be made removable or be hinged, so as to let down or swing up, or they may be fixed and immovable. In the latter case of course all the contents of the car will not dump out, but a small part will be kept back by the end-board, and will have to be shoveled out. When the end-boards are fixed, it will be well to provide a sheet-iron hood to go over the end of the car and form a spout or covered chute.

I do not intend to be limited to the use of hydrostatic jacks, for any of the well-known forms of jacks can be used in the connection here shown by providing proper operating mechanism; but I consider the hydrostatic jack the best for the place.

What I claim as new is—

1. In a car loading and unloading device, the combination of a car-receiving platform and lifting-jacks applied to raise and lower said platform, substantially as and for the purposes described.

2. In a car loading and unloading device, the combination of a car-receiving platform mounted on trunnions, and lifting-jacks supporting the journal-boxes of said trunnions, substantially as and for the purposes described.

3. In a car loading and unloading device, the combination of a horizontally-rotary platform, a frame-work supported on said platform, and a car-receiving platform mounted in said frame-work on trunnions, substantially as and for the purposes described.

4. In a car loading and unloading device, the combination of a horizontally-rotary platform, a car-receiving platform mounted in said frame-work, and lifting-jacks applied to raise and lower said car-receiving platform, substantially as and for the purposes described.

5. In a car loading and unloading device, the combination of a horizontally-rotary platform, a frame-work supported on said platform, a car-receiving platform mounted in said frame-work on trunnions, and lifting-jacks supporting the journal-boxes of said trunnions, substantially as and for the purposes described.

6. In a car loading and unloading device,

the combination of a frame-work, and a car-receiving platform mounted in said frame-work on trunnions, substantially as and for the purposes described.

5 7. In a car loading and unloading device, the combination of a frame-work, a car-receiving platform mounted in said frame-work on trunnions, and worm-gears for turning said platform on its trunnions, substantially as described.

10 8. In a car loading and unloading device, the combination of a frame-work, a car-receiving platform mounted in said frame-work on trunnions, lifting-jacks applied, substantially as described, to sustain said platform by its trunnions and raise and lower the same, and worm-gears for turning said platform on its trunnions, substantially as and for the purposes described.

20 9. In a car loading and unloading device, the combination of a horizontally-rotary platform, a frame-work supported on said platform, a car-receiving platform mounted in said frame-work on trunnions, and worm-gears for turning said car-receiving platform on its trunnions, substantially as and for the purposes described.

30 10. In a car loading and unloading device, the combination of a horizontally-rotary platform, a frame-work mounted on said platform, lifting-jacks mounted on said platform within said frame-work, a car-receiving platform mounted on said lifting-jacks on trunnions, and worm-gears for turning said car-receiving platform on its trunnions, substantially as and for the purposes described.

40 11. In a car loading and unloading device, the combination of a horizontally-rotary platform, C, gearing B B' for revolving said platform, a frame-work, C' C'', mounted on said

platform, hydrostatic lifting-jacks mounted on said platform and within said frame-work, a pump for operating said lifting-jacks mounted on said platform, a car-receiving platform mounted by trunnions on said lifting-jacks, 45 worm-gears for turning said car-receiving platform on its trunnions, a motor mounted on said platform C, and gearing, substantially as described, for operating the gearing for revolving the platform C, and the worm-gears. 50 and the pump from said motor.

12. In a car loading and unloading device substantially as herein shown, the combination, with a car-receiving platform, and hydrostatic jacks for raising said platform, of a pressure-gage, K, applied substantially as and for the purposes described. 55

13. In a car loading and unloading device substantially as herein shown, the combination, with the car-receiving platform D, having trunnions D', and segment-gears D'', of the frame L, supporting-straps L', and guides l l', for supporting the worms D'' D'', and their operating gearing, substantially as described. 60

14. In a car loading and unloading device 65 substantially as herein shown, the combination, with the lifting-jacks E E' and E E', the car-receiving platform D, having trunnions D' D', journaled on said jacks, and segment-gears D'' D'', the suspended frame L, the worms D'' D'', and the gearing for operating said worms, of the feathered upright shaft J, the sliding pinion I', and the angle hanger or bracket i, substantially as and for the purposes described. 70

In testimony whereof I affix my signature in 75 presence of two witnesses.

PATRICK H. KANE.

Witnesses:

JNO. K. HALLOCK,  
W. O. INNIS.