(No Model.) 3 Sheets—Sheet 1.

T. LONG.

CAR UNLOADING APPARATUS.

No. 560,727. Patented May 26, 1896.

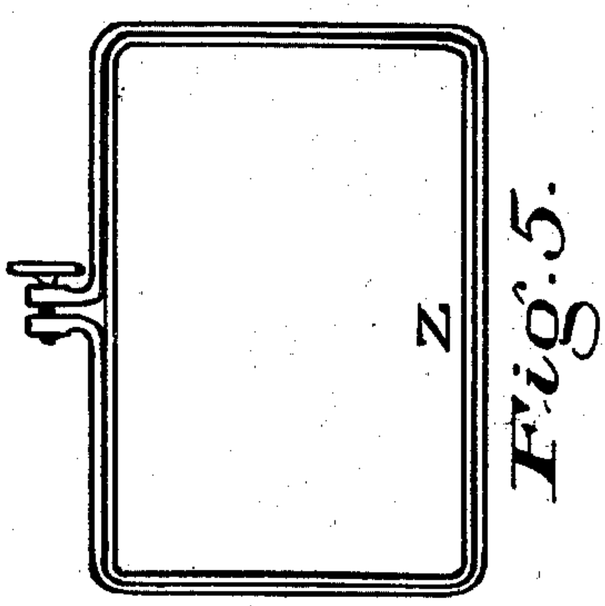

Fig. 5.

Fig. 1.

Witnesses.
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(No Model.) 3 Sheets—Sheet 2.

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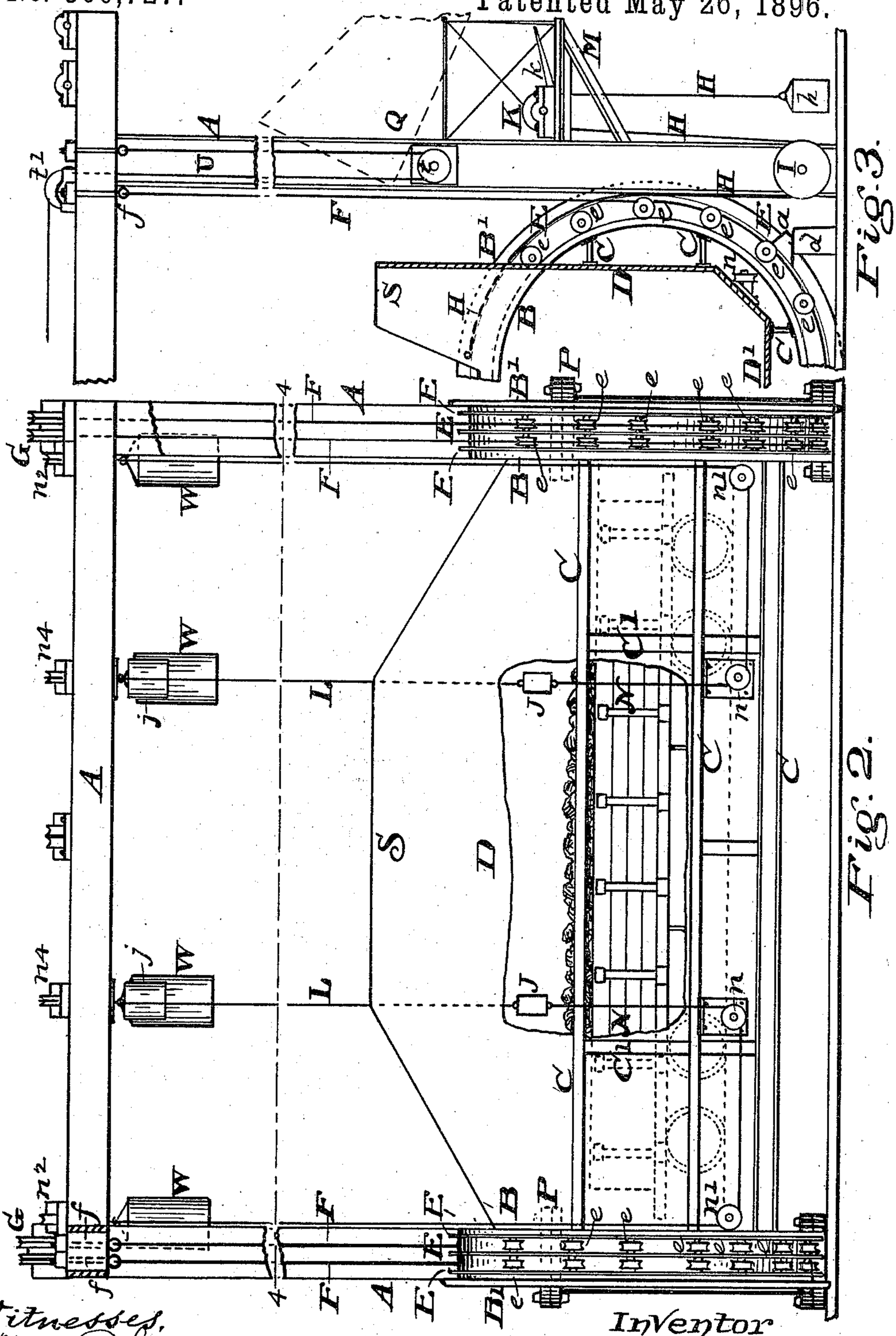

Fig. 3.

Fig. 2.

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(No Model.) 3 Sheets—Sheet 3.

T. LONG.

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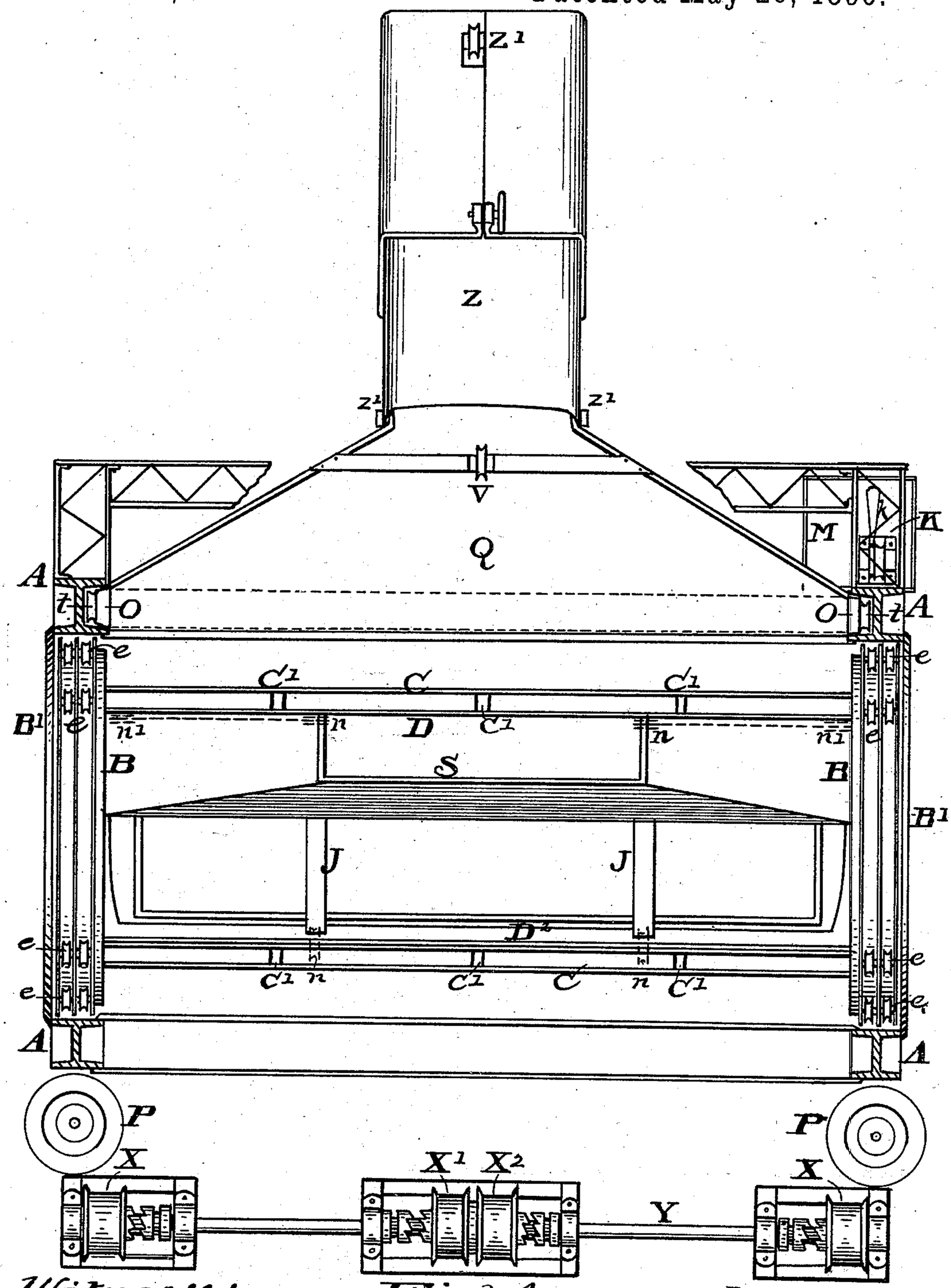

Fig. 4.

Witnesses,
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UNITED STATES PATENT OFFICE.

TIMOTHY LONG, OF CLEVELAND, OHIO.

CAR-UNLOADING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 560,727, dated May 26, 1896.

Application filed December 28, 1895. Serial No. 573,644. (No model.)

To all whom it may concern:

Be it known that I, TIMOTHY LONG, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Car-Unloading Apparatus, of which the following is a specification.

This invention relates to improvements in car-unloading apparatus; and it consists, first, in the car-holding cradle and the application of hydraulic power for raising and turning the cradle for unloading the car; second, in the clamps for holding the car in the cradle while being turned over. These improvements are constructed and adapted to operate substantially as hereinafter described, and pointed out in the claims.

Figure 1 is an end elevation of the apparatus. Fig. 2 is a front side elevation with the front portion of the trestle-tower removed to show the construction of the end rings of the cradle. Fig. 3 is a sectional view of one corner of the trestle-tower and one of the end rings of the cradle. Fig. 4 is a plan view with the upper portion of the trestle-tower removed, as on the line 4 4 on Fig. 2. Fig. 5 is a cross-section of the chute.

The first subject of this application—the car-holding cradle and the hydraulic power as applied for raising and turning the same with a loaded car—is described as follows:

A represents a trestle-tower composed of angle and T iron beams of a like character to those contained in my Patents Nos. 527,117 and 527,118, dated October 9, 1894.

B B are the two end rings of the car-holding cradle joined by longitudinal floor and side beams C C.

D is a front side wall supported by the front side beams. It extends considerably above the beams and rings and is slanted off at the ends and forms a part of the discharge-spout S. The lower side of said front wall is bent inward and joins the floor D′, upon which is arranged the track-rails for the car.

D^2 is the opposite side wall, which extends up a little above the upper side beam. The walls and floor-beams are braced and strengthened by transverse beams C′ C′. On the rings B B are provided peripheral flanges E E E, and between said flanges are provided sheaves *e e*.

B′ B′ are wide outside flange-plates attached to the outsides of the rings, which form guide-flanges like those on car-wheels, and are provided for guides in the movements of the rings in their upward and downward travel against the trestle-posts.

The means for raising and turning the cradle is described as follows: F F are cables having one of their ends secured by strong eyebolts *f f* to the top front corners of the tower just inside of the corner-posts. The cables pass down under the end rings, under the sheaves *e e*, and thence upward to and over large sheaves G G on the top rear corners of the tower. Thence the cables pass down and through sheaves on the ends of the piston-rods R R of the hydraulic-power cylinders P P. Thence the cables pass up again and have their ends secured by eyebolts *g g* to the top of the tower. By the use of the sheaves *e e* in the end rings the cradle moves upward without turning, this being provided for raising the car to any required height before turning.

When it is desired to turn the cradle for dumping the car, means as follows are provided:

On one corner of the tower is attached a raised platform M, upon which an operator may stand and upon the floor of which is provided a sheave K, having a brake-lever *k*, to be managed by the operator.

H is a rope attached to the top side of the ring B and passes down to and under a sheave I in the bottom of the corner-post of the tower. Thence the rope passes up and over the sheave K on the platform. Thence it passes down and has a weight *h*, attached to the end, which is provided for keeping the rope taut. (See Fig. 3.) Now when the operator wishes to turn the cradle and car over, when it has arrived at the desired height, he presses upon the brake-lever *k* and holds the sheave from turning and the rope tight. This then holds the cradle as the hoisting goes on and makes it turn over and bring the spout onto the apron. When the cradle is again lowered, it is done by slacking away on the cables F F. This returns the cradle and car to their original position at the bottom of the tower, and for insuring the exact position, so that the

track-rails accurately meet, blocks *d d* are fixed on the dock, so that blocks or projections *a a* on the rings B B serve as stops for adjusting the cradle to position.

The second subject of this application—the means for clamping the car in the cradle—is described as follows:

J J are cross-bars over the car, which are suspended by ropes L L, attached to their middle, and which pass up to and over sheaves *l l* at the top of the tower and are provided with counterbalance-weights *j j*. The ropes are of just sufficient length that when the car is down the weights will catch against plates on the cross-beams of the tower and pull up the cross-bars J J away from the car. The means for holding these cross-bars forcibly down onto the car is as follows:

N N are cables attached to the under side at the ends of the cross-bars J J, and on the front side of the cradle, as seen in Fig. 2, the cables pass down to sheaves *n n*, attached to the outside of the wall D and in the angle under the lower side beam C. Thence the cables pass to other sheaves *n' n'* near to the end rings B B. Thence they pass up to and over sheaves n^2 n^2 at the top front corners of the tower, thence back to and over sheaves n^3 n^3 at the back top corners of the tower. To the ends of the said cables are attached heavy weights W W. The object of so arranging these cables at the ends of the cradle is to keep the way clear in front for the turning over of the spout S in the operations of unloading cars. The cables N N at the rear side of the cradle pass down to sheaves *n n* (seen at the left of the car in Fig. 1) like those at the front. Thence these cables pass directly up to sheaves n^4 n^4 at the top of the tower, thence back and over sheaves n^5 n^5, and are provided with weights W W, the same as the front cables.

The third subject of this application is the vertical adjusting of the apron and chute, described as follows:

A vertically-adjustable longitudinal beam O, (seen best in Fig. 4,) reaching across the front of the trestle-frame and guided between the flanges of the front posts A A, is provided, to which an apron Q is hinged and supported. To the ends of the said beam are attached sheaves *t t*.

U U are cables having one end secured by eyebolts to the top of the tower and which pass down and under the sheaves *t t*, thence up and over sheaves *t' t'* at the top of the tower, thence back and over sheaves t^2 t^2 at the back of the tower, and thence down to drums X X on the shaft Y, to which power is to be applied for raising the apron and chute.

To the end of the apron, which is slanted off to the middle, is attached a telescopic chute Z, adapted to be extended and lowered into the hatchways of boats, as represented in Fig. 1. The chute is provided with perforated lugs *z z* at the under corners, in which a rod or bolts may be inserted for making a joint, on which the chute is turned for turning the end down. The upper corners of the chute also have perforated lugs *z' z'*, which may be coupled with like perforated lugs on the apron. Now by removing the rod or bolts from the under lugs and placing them in the upper lugs the chute may be turned upright. To the apron is attached a sheave V, to which a rope V' is attached and passed back and forth from said sheave to a sheave on the top of the tower, thence back and over a sheave at the rear side of the tower, and thence down to a drum X', as a means for adjusting the position of the chute. To the lower end of the chute Z is also attached a sheave Z', to which is attached a rope Z^2, which passes from thence to a sheave on the top corner of the tower, thence back to a sheave at the rear side of the tower, and thence down to a drum X^2 on the shaft Y, by which means the sliding end of the chute may be extended and adjusted. The upper side of the sliding extension of the chute is split, and near the upper end of the slit are attached two lugs, through which is inserted a hand-screw, which forms a clamp by which the extension is clamped onto the other part for retaining it in position when adjusted.

The combined weight of the weights W W W W is such that they more than counterbalance the weight of the car and its load, so that they serve to hold the car onto the track-rails when the cradle is turned over, and they also assist in the lifting of the cradle and car in their upward movements.

Having described my invention, what I claim is—

1. In a car-unloading apparatus, the combination with the car-holding cradle having vertical movements, of the annular flanges E E E, sheaves *e e*, journaled between said flanges and attached to the end rings of said cradle; the cables F F, secured at the top of the tower and passing down under the sheaves *e e*, thence up again and over sheaves G G at the top of the tower, thence down again and connected with suitable power adapted for elevating the cradle and car substantially as described.

2. In a car-unloading apparatus, the combination with the car-holding cradle having vertical movements, and having the annular flanges E E E, and the sheaves *e e*, and means substantially as described for elevating the cradle and car, of the rope H attached to the top of ring B and passed down under a sheave I at the foot of the tower-post, thence up to and over the sheave K on the platform M, and having weight *h* on the end, sheave K provided with brake-lever *k*, and adapted for holding the cradle and causing it to turn over in its upward movement, for dumping the contents of the car, substantially as described.

3. The combination with the car-holding cradle, of the clamping-beams J J, suspended by ropes L L from the top of the trestle-tower, the ropes passing over sheaves *l l* and having

stop-weights *j j;* ropes N N attached to the ends of the beams J J, and passing down under the sheaves *n n n' n'*, thence up and over sheaves n^2 n^2, at the top of the trestle-tower, thence back and over sheaves n^3 n^3, and having heavy weights W W W W attached to their ends, and adapted for holding the car onto its tracks when the cradle is turned over, and by their combined weight assist in the elevating of the cradle and car, substantially as described and for the purpose specified.

4. The combination with the cross-beam O and apron Q supported thereon, and adapted to move vertically in the guide-flanges of the corner-posts of the trestle-tower; of the sheaves *t t* attached to the ends of the beam O, cables U U attached to the top of the said corner-posts, and passing down under the sheaves *t t*, thence up again and over sheaves *t' t'* at the top of the tower, thence back and over sheaves t^2 t^2, and down to drums X X on the shaft Y, where power is to be applied for elevating the apron for adjustment at desired elevations, substantially as described.

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