(No Model.) 3 Sheets—Sheet 1.

T. LONG.

CAR UNLOADING APPARATUS.

No. 603,336. Patented May 3, 1898.

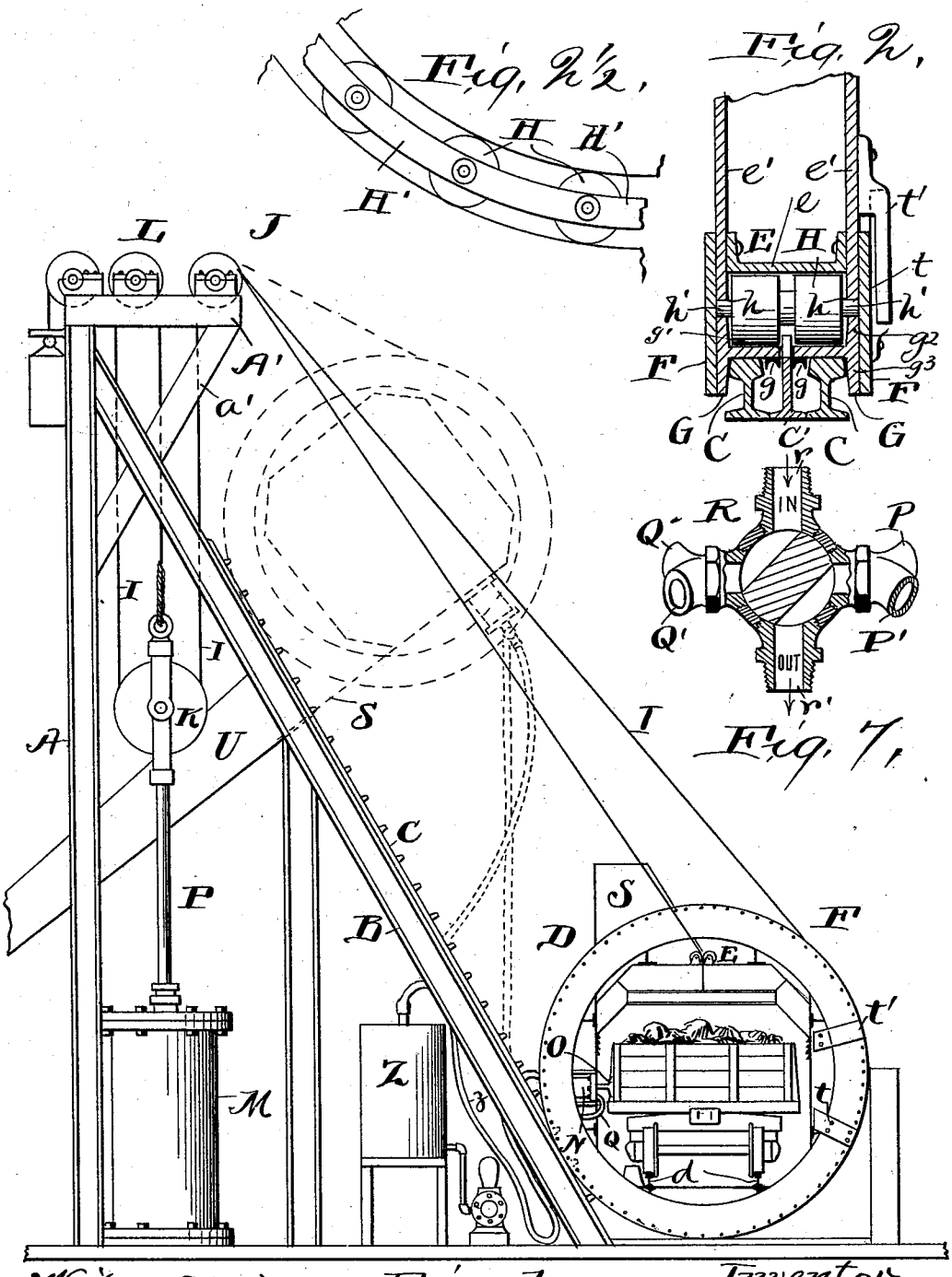


Fig. 1.

Fig. 2½.

Fig. 2.

Fig. 7.

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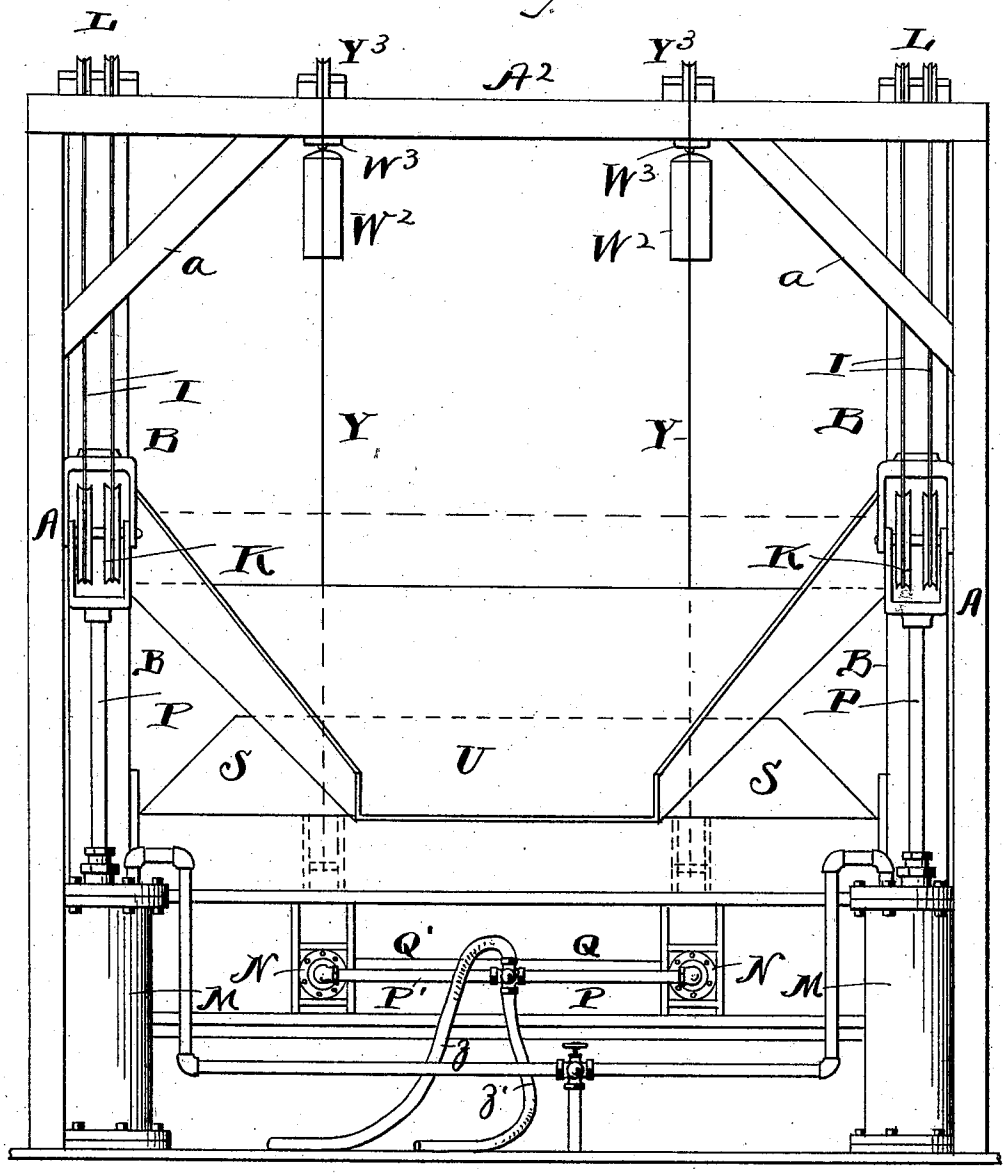
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Fig. 3.



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(No Model.) 3 Sheets—Sheet 3.

T. LONG.

CAR UNLOADING APPARATUS.

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Fig. 5,

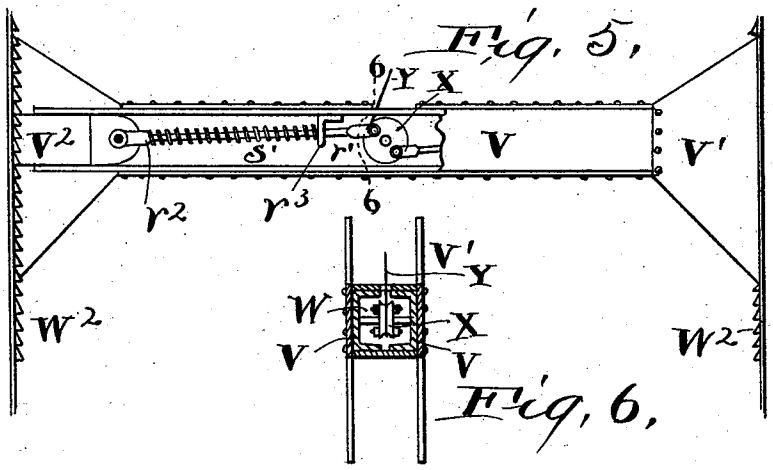
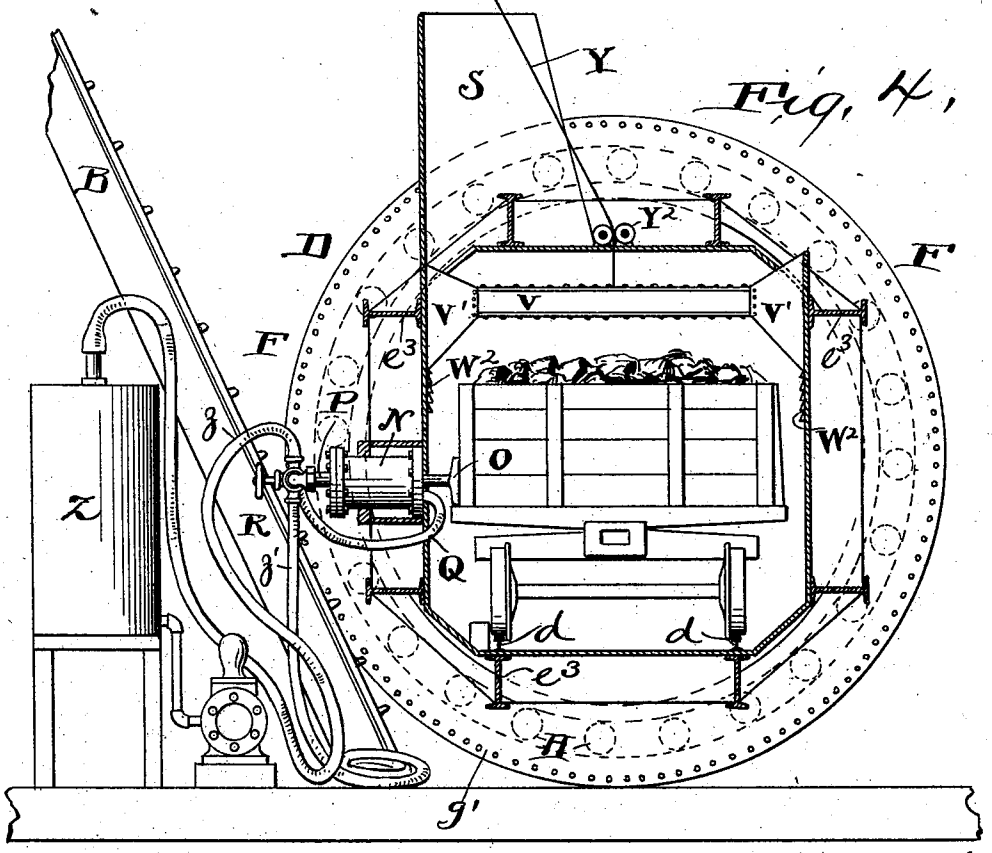


Fig. 6,

Fig. 4,



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UNITED STATES PATENT OFFICE.

TIMOTHY LONG, OF CLEVELAND, OHIO.

CAR-UNLOADING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 603,336, dated May 3, 1898.

Application filed February 11, 1896. Serial No. 578,865. (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.

My invention relates to the class of car-unloading apparatus which includes a car-holding frame or cradle, means for holding the car therein, and means for lifting and tipping the cradle.

The present invention consists in the described mechanism for supporting, raising, and turning the car-holding cradle, whereby the cradle and the car therein remain in an upright position until they have nearly reached the desired elevation, after which they are turned over while they are being further raised, and also in the mechanism for holding the car in the cradle, all of which will be hereinafter described, and pointed out definitely in the claims.

In the accompanying drawings, Figure 1 is an end elevation of the apparatus. Fig. 2 is a detailed section of a portion of the end rings of the car-holding device, showing, among other things, the friction-rollers interposed between the two rings. Fig. $2\frac{1}{2}$ is an end view of a portion of the end rings of the car-holding device, showing a modified manner of applying said friction-rollers between said rings. Fig. 3 is a front elevation of the apparatus. Fig. 4 is a transverse sectional view of the apparatus. Fig. 5 is a detached view of the top clamp for the car, partly in section. Fig. 6 is a cross-section of the same on line 6 6 of Fig. 5. Fig. 7 is a cross-section of the four-way cock.

The apparatus includes a framework of some sort for supporting the movable parts of the apparatus and the sheaves over which the various cables pass. This framework is commonly called a "trestle-tower," and in the form in which this part of the apparatus is shown in the drawings it includes vertical front posts A, inclined rear beams B, horizontal beams A' A^2, and braces a a', all suitably connnected together to form a rigid structure. The precise construction of this trestle-tower is not, however, an essential feature of the invention and may be varied at will.

Track-rails C C may be attached to the outer face of the inclined beams B, and the outer rings G G, which support the car-holding cradle, travel on these tracks while the cradle is being elevated and turned over.

D represents a car-holding frame or cradle of similar construction to those shown in my prior patents, Nos. 527,117 and 527,118, dated October 9, 1894—that is to say, they consist of end rings E and as many intermediate rings or bands (not shown) as are desirable, which rings are connected together by longitudinal beams e^3, and the car-tracks d are secured to the floor of this cradle. Embracing the end rings E of this car-holding frame are external rings G. The rings E may be constructed of cylindrical channel-irons e and end plates e', as shown in Fig. 2. The outer rings G are preferably provided on each side with the internal flanges g^2 and the external flanges g^3, to which may be secured annular guide-plates F F. Spaced friction-rollers H are interposed between the rings E and G.

The car-holding cradle is supported upon these rollers, which in turn are supported upon the rings G, while the rings G G bear against and are supported by the tracks C. These rollers may be spaced by any suitable means—as, for example, that shown in Fig. 2, wherein each roller has two trunnions h', which enter notches h in the peripheries of the plates e'. As shown in Fig. $2\frac{1}{2}$, these roller-trunnions are journaled in the independent ring-like sections H'.

From the foregoing description it is apparent that the rings G may rotate around the rings E or, in other words, the car-holding frame may rotate within the rings G. In point of fact, when the rings G are rotated as they move in contact with the tracks C the car-holding cradle does not rotate, but remains upright until it has reached approximately the desired elevation, whereupon stop-arms t, secured to the rings G, engage with other stop-arms t', secured to the rings E, which engagement compels the car-holding cradle to rotate with the rings G. The elevation and rotation of the rings G are effected by means of cables I, which pass partly around

the rings G, lying in the external annular grooves g therein, thence up to and over a sheave J on the top of the trestle-tower, thence down under a sheave K, mounted in the upper end of the hydraulic piston-rod, over the sheave L and down to the end of said piston-rod P, with which it is connected. This mechanism for taking in and paying out the cables may be varied as desired.

Between the two rails C is a third rail C', having teeth c, which are adapted to enter holes g' in the face of the rings G. When the car-holding device is being elevated, these teeth cause the rings G to rotate, although, as before stated, the car-holding cradle itself remains upright until the two stop-arms t t' come in contact with each other.

U represents the chute, which is attached to the trestle-tower at the proper elevation, and into this chute the contents of the car are discharged through the spout S, which forms part of the car-holding cradle when said cradle is inverted.

A side support for the car while it is being turned over is provided consisting of hydraulic cylinders N, fixed to the side beams of the car-holding cradle, having their piston-rods protruding through the side wall toward the car-body.

O represents a beam attached to said piston-rods within the car-holding frame, and this beam, when said rods are forced out of their cylinders, presses against the car-body and forms, when the cradle is turned over, a support for the same. At the same time it affords some protection to the sides of the car-body from being broken or injured by the heavy load which lies upon the side while the car-holding cradle is being turned over for the purpose of dumping the load from the car.

The front ends of both pistons N are connected with pipes P P', both of which are connected with a four-way valve R. The rear ends of both pistons N are connected with two pipes Q Q', both of which are connected to the same valve. A flexible pipe Z' connects this valve to the pressure-tank Z, and another flexible pipe Z', connected with said valve, serves as the exhaust-pipe. The manipulation of this valve causes both cylinders to simultaneously receive the fluid under pressure in their front ends and to discharge it from their rear ends, or vice versa, through the described pipes.

Transverse top clamps are provided for holding the car down onto the tracks in the cradle, which clamps consist of a hollow cross-beam V, which may be made of channel-irons connected by top and bottom plates, as shown. On each end of these cross-beams are two guide-plates V', attached to the sides of the beam, which plates engage with opposite sides of the vertical rack-bars W^2. Ratchet-blocks V^2 are movable in and out of the ends of the beam V, and they engage with the fixed ratchet-bars W^2. These blocks are moved toward and from said rack-bars by means of connecting-rods r', which are connected to a small groove-wheel X on opposite sides of its axis. This wheel is mounted within the beam V. A coil-spring S' surrounds each of these connecting-rods r' and thrusts endwise against a shoulder r^2 near its outer end and against a fixed bracket r^3, through which it passes, the force of these springs being exerted in the direction which will cause the engagement of the ratchet-blocks with the racks. A cable Y is secured to the wheel X and, passing partly around it, extends upward over a sheave Y^3 on the top of the trestle-tower, the free ends of said cables having the weights W' attached to them. When the car-holding cradle is at its lowest point, these weights come in contact with fixed horizontal brackets W^3, by means of which the wheel X is caused to revolve part of a revolution, thereby withdrawing the ratchet-blocks from contact with the racks and preventing the farther downward movement of the beam V. When the cradle begins to move upward, it moves the car up against the beam, and the ratchet-blocks automatically engage with the racks, and thereby the car is held down upon the tracks.

Having described my invention, I claim—

1. In car-unloading apparatus, the combination of a car-holding cradle, and means for holding a car therein, with the rings G G within which the cradle is loosely mounted, mechanism for simultaneously raising and turning said rings, and stop-arms on the cradle and rings respectively, adapted to engage with each other, substantially as and for the purpose specified.

2. In car-unloading apparatus, the combination of a car-holding cradle and means for holding a car therein, with rings G G in which the cradle is loosely mounted, cables for simultaneously raising and turning said rings, whereby the cradle is raised without being turned, and mechanism for connecting the rings and cradle at the proper time, whereby the subsequent turning of the rings will correspondingly turn the cradle, substantially as and for the purpose specified.

3. In car-unloading apparatus, the combination of inclined beams, the rings G G adapted to ride thereon, and mechanism for rolling the rings up said beams, with a car-holding cradle loosely mounted in said rings, means for holding the car in the cradle, and stop-arms on said rings and cradle respectively, substantially as and for the purpose specified.

4. In car-unloading apparatus, the combination of the car-holding cradle provided with end rings E E, the outer rings G G having annular flange-plates F F embracing the rings E, spaced friction-rollers H interposed between said outer and inner rings, cables for raising and turning said outer rings, and stop-arms on the outer and inner rings respectively, substantially as and for the purpose specified.

5. In car-unloading apparatus, the combination of the car-holding cradle, and the vertical ratchet-bars W^2 secured therein, with the beams V, outwardly-movable ratchet-blocks V^2 mounted in the ends of said beams, and adapted to engage with the ratchet-bars, the wheel X journaled in the middle of the beam, spring-actuated rods r' connecting said ratchet-blocks with the wheel X on opposite sides of its axis, a rope Y attached to and wound on said wheel, and passing up over a sheave at the top of the trestle-tower, a weight attached to the free end of said rope, and a bracket W^3, substantially as and for the purpose specified.

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