No. 711,728. Patented Oct. 21, 1902.

T. LONG.

CAR DUMPING APPARATUS.

(Application filed July 10, 1900.)

(No Model.) 6 Sheets—Sheet 1.

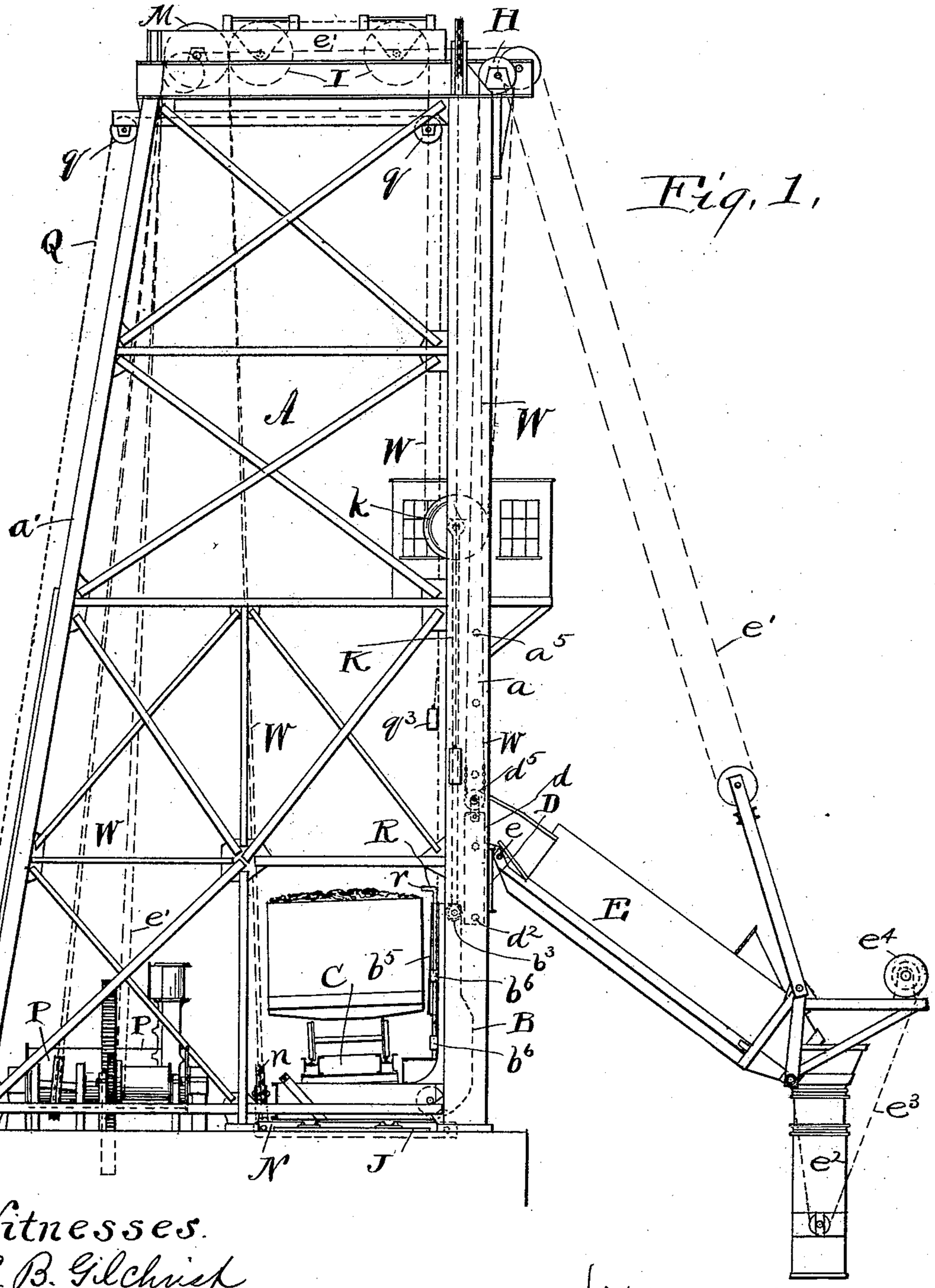

Fig. 1.

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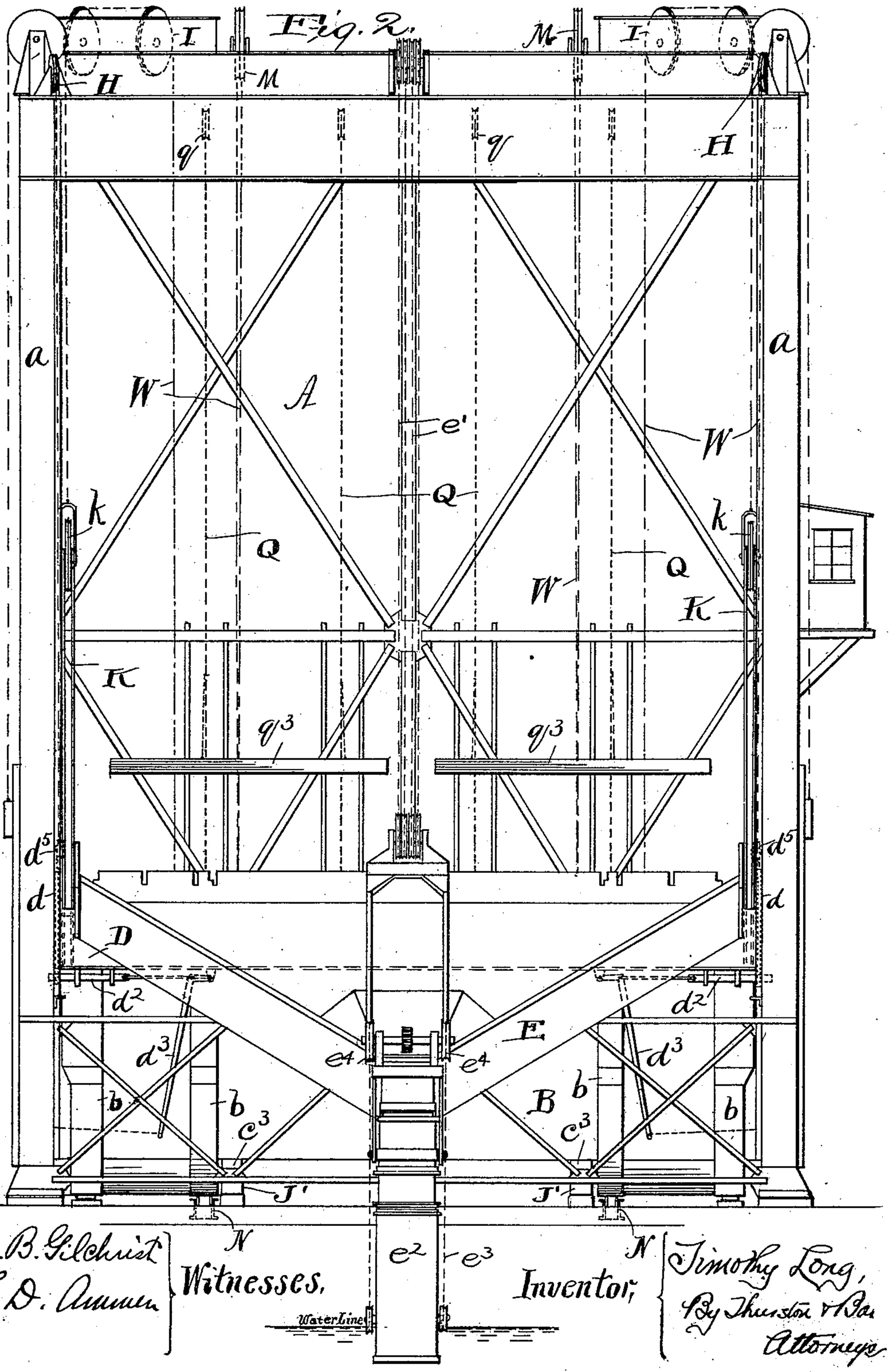
(No Model.) 6 Sheets—Sheet 2.

Fig. 2.



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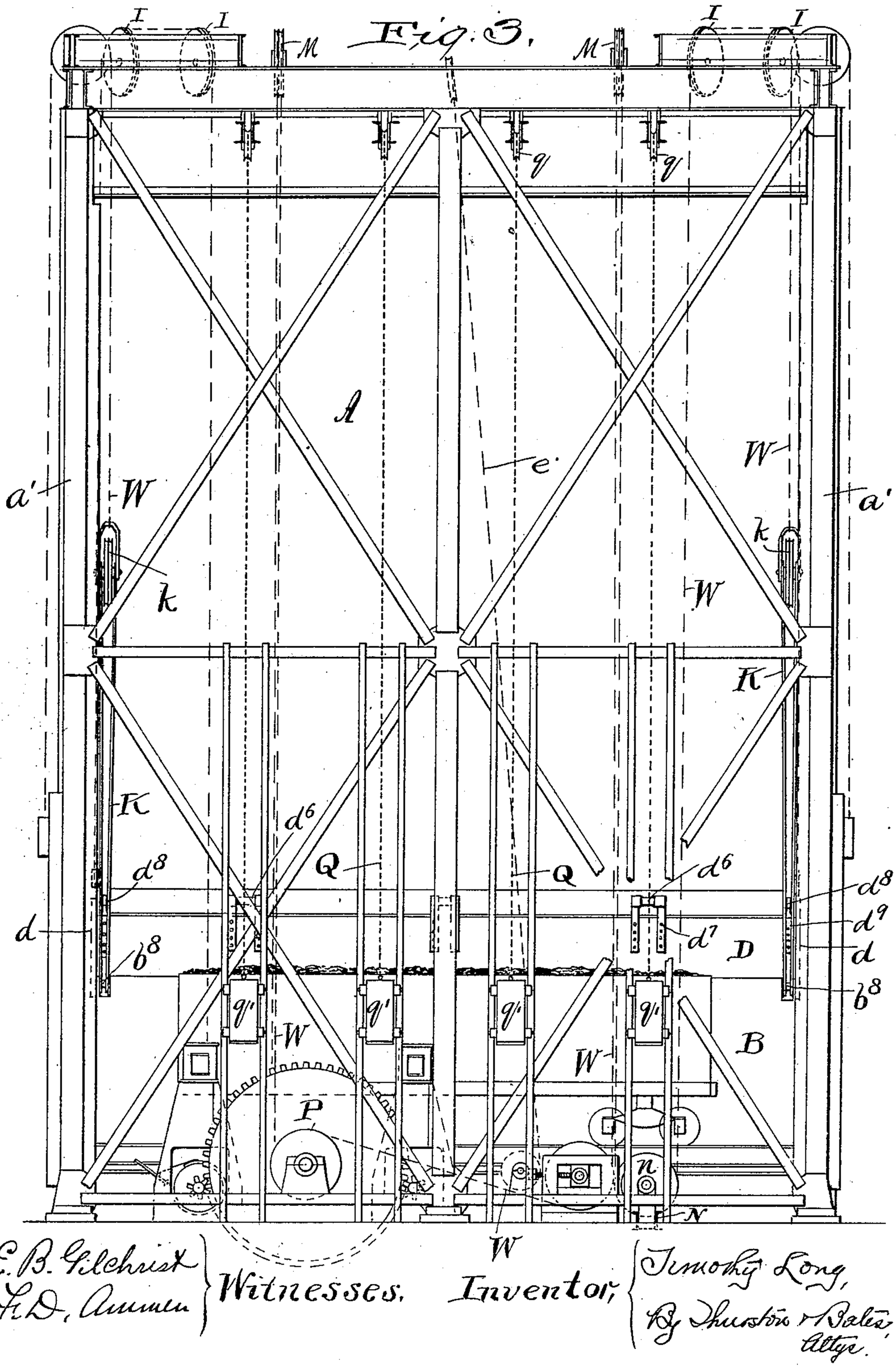
(No Model.) 6 Sheets—Sheet 3.

Fig. 3.



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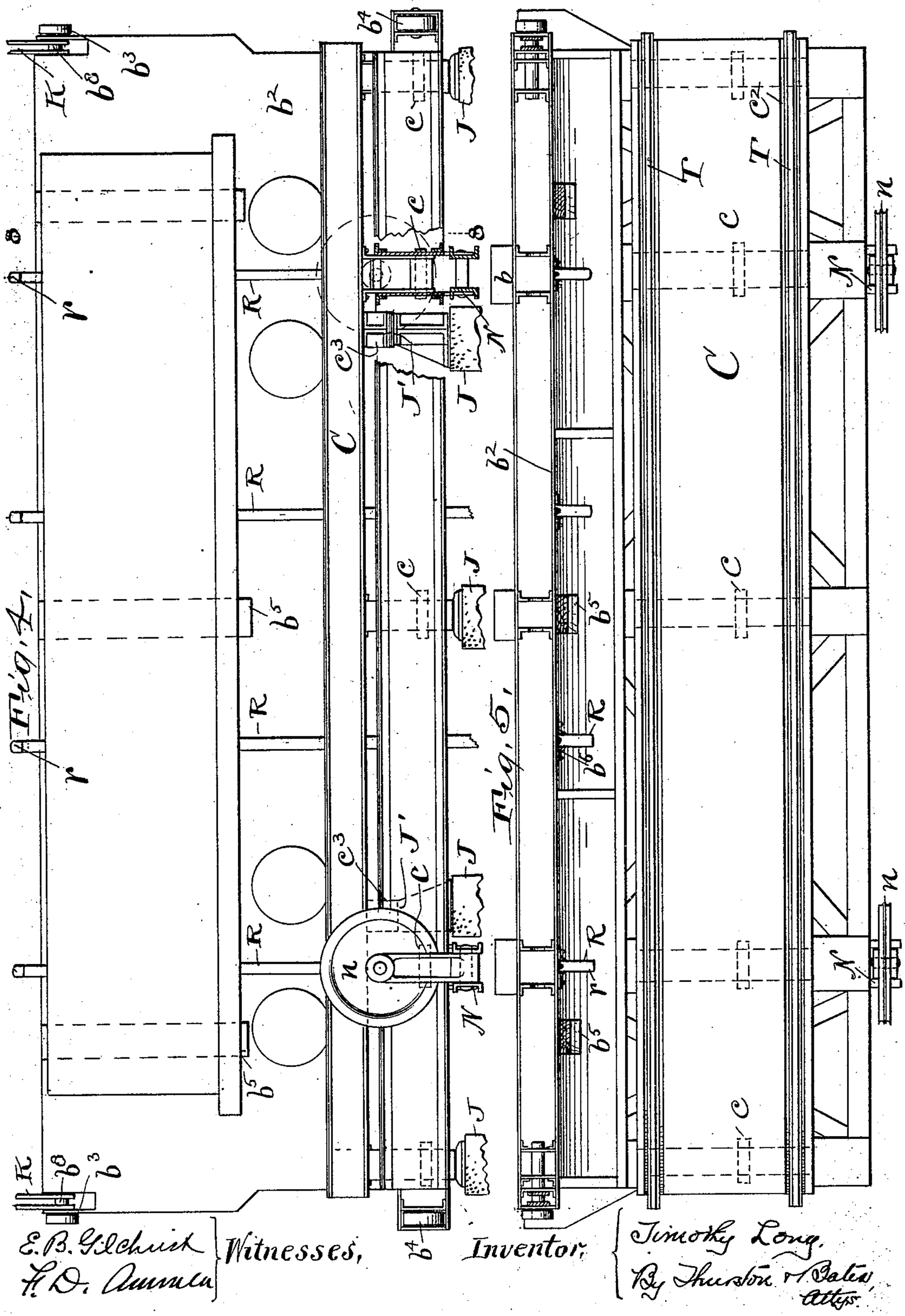
(No Model.) 6 Sheets—Sheet 4.



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(Application filed July 10, 1900.)

(No Model.) 6 Sheets—Sheet 5.

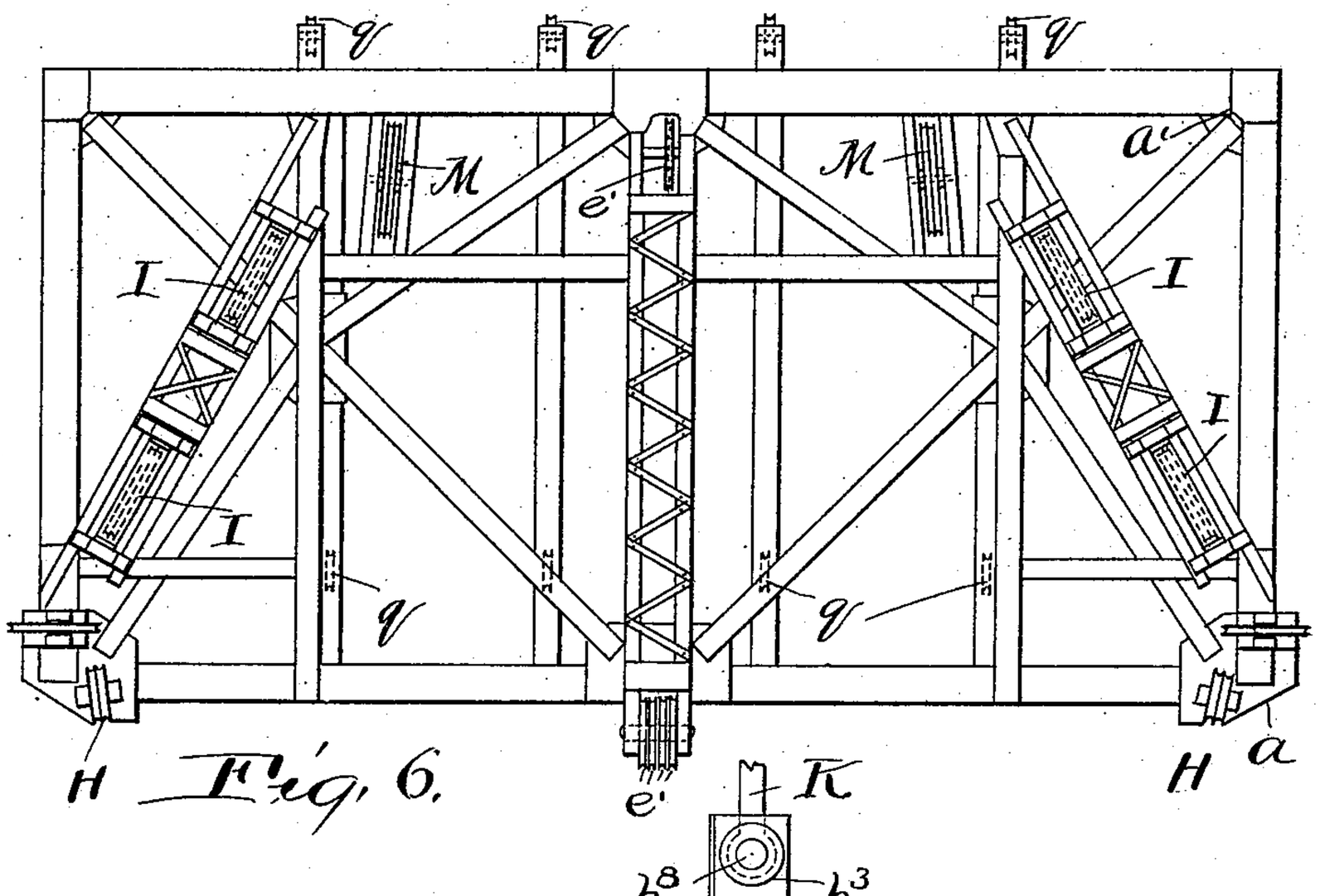

Fig. 6.

Fig. 7.

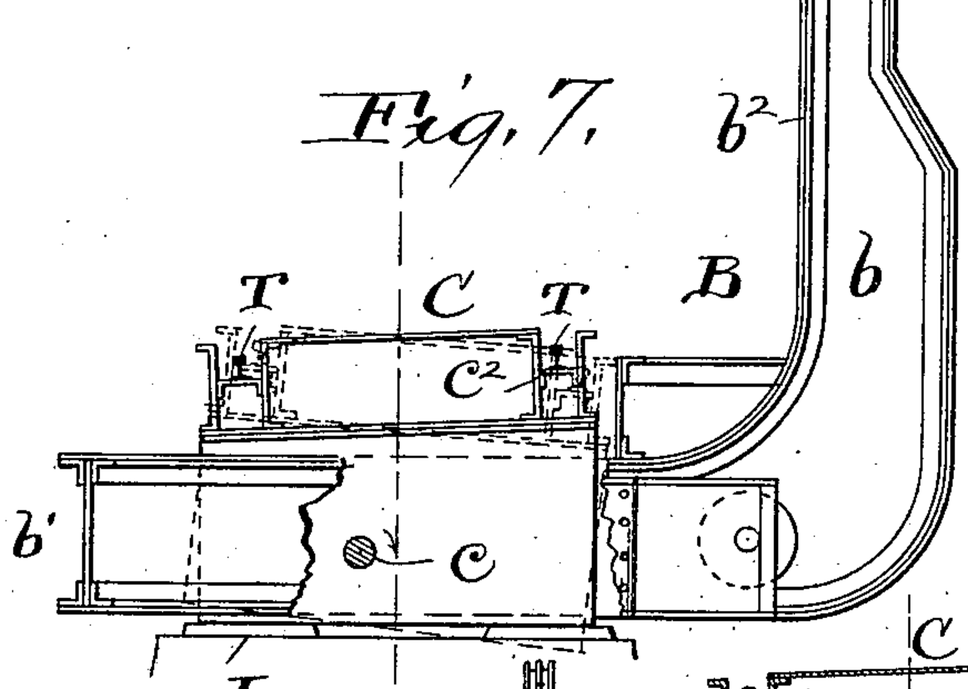

Fig. 8.

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No. 711,728. Patented Oct. 21, 1902.

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CAR DUMPING APPARATUS.

(Application filed July 10, 1900.)

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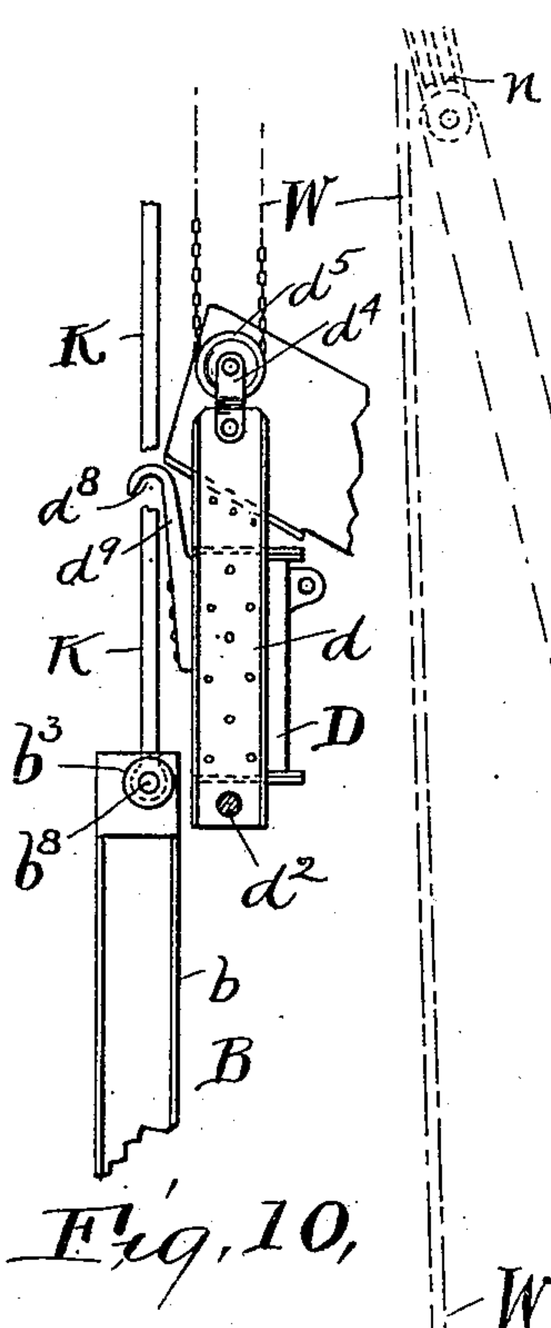
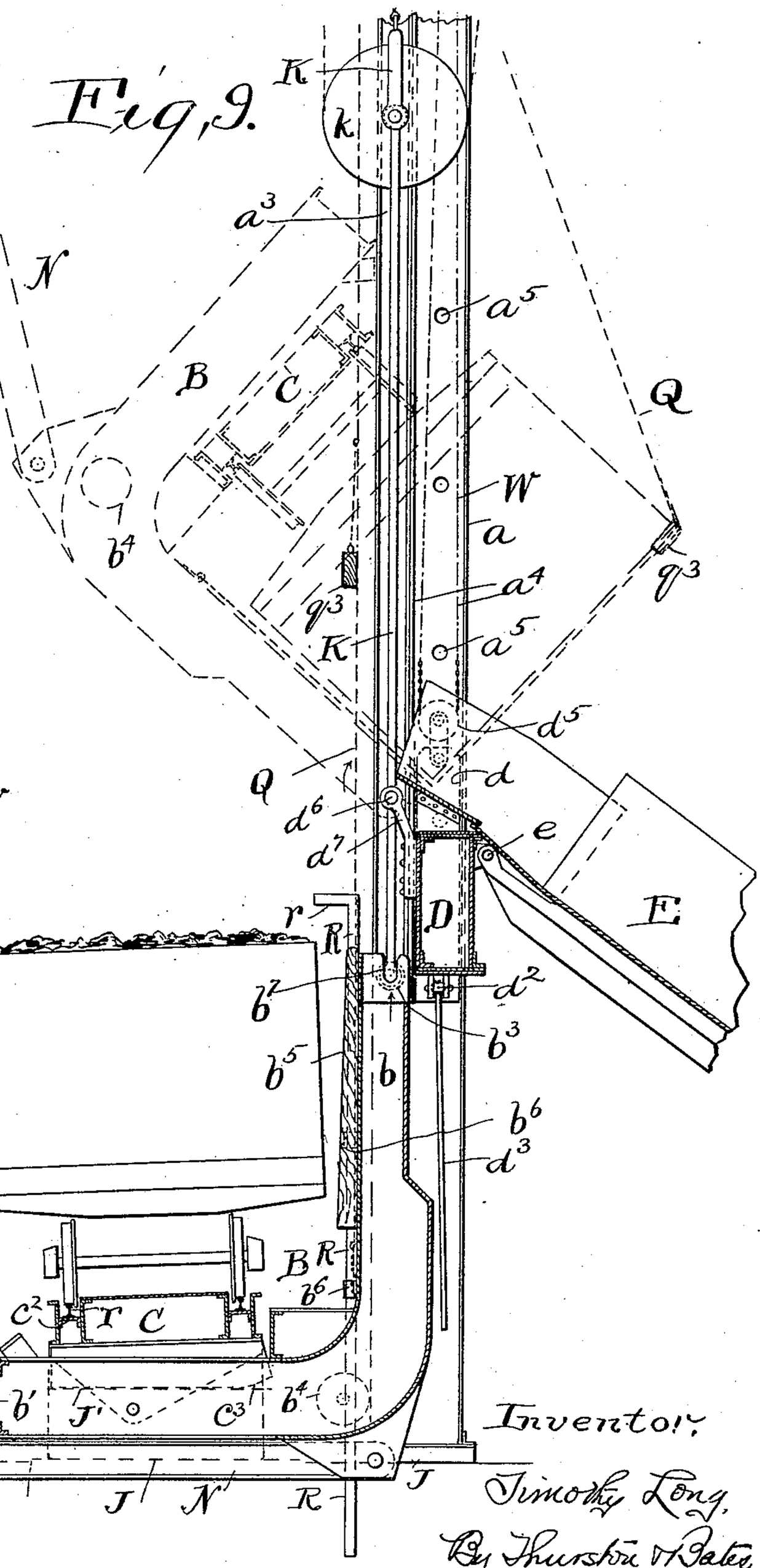


Fig. 10.

Fig. 9.



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Inventor:
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UNITED STATES PATENT OFFICE.

TIMOTHY LONG, OF CLEVELAND, OHIO, ASSIGNOR TO THE BROWNING ENGINEERING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

CAR-DUMPING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 711,728, dated October 21, 1902.

Application filed July 10, 1900. Serial No. 23,075. (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 a certain new and useful Improvement in Car-Dumping Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The object of the invention is to provide a highly efficient apparatus for raising and tilting loaded vehicles whereby the material in said vehicles may be transferred bodily into other receptacles, and especially into the holds of vessels, whether said vessels be high or low.

The invention consists in the construction and combination of parts hereinafter described, and pointed out definitely in the claims.

In the drawings, Figure 1 is an end elevation of the apparatus. Fig. 2 is a front elevation thereof. Fig. 3 is a rear elevation. Fig. 4 is a rear elevation, partly in section, of the cradle on which the car is supported. Fig. 5 is a plan view of said cradle. Fig. 6 is a plan view of the trestle-tower. Fig. 7 is an end view of the cradle, partly broken away. Fig. 8 is a transverse sectional end view of the cradle, partly broken away, the section being taken on the line 8 8 of Fig. 4. Fig. 9 is a transverse sectional end view of the cradle and the front part of the trestle-tower, showing in dotted lines the cradle in dumping position; and Fig. 10 is an end view of the beam which carries the chute and of a part of the cradle.

This apparatus, like previous apparatuses designed for a similar purpose, includes a trestle-tower A, which may be of any suitable construction. This tower consists of four corner-posts *a a a' a'* and suitable beams, braces, &c., connecting them, so as to make a strong rigid structure. The two front posts *a a*, which are vertical, are not connected together directly except at their upper and lower ends, wherefore the front of the tower is open to permit the apparatus to operate as described. Within the tower is a vertically-movable cradle B, capable of supporting a loaded car. The specific construction of this cradle is not material. It must have a strong horizontal portion, on which the load is for most part supported, and a front side, which supports a considerable part of the weight of the car when the platform is tilted. As shown, the cradle consists of a plurality of L-shaped angle-iron ribs *b*, which extend horizontally across the cradle and substantially vertically at the front side thereof, and suitable longitudinally-extended beams *b'*, which connect the ribs *b*. The floor and front side of the cradle are preferably completed and closed by sheet-metal plates b^2, as shown. Guide-rollers b^3 are mounted on the ends of the front side of the cradle near the top thereof, and these rollers enter and are guided by the vertical grooves a^3 in the inner faces of the two front corner-posts *a*. Other guide-rollers b^4 are mounted on the ends of the cradle at the lower front corner thereof, and these rollers ride against the rear faces of said corner-posts. These rollers serve to guide the front side of the cradle in its upward movement, but permit it to be tilted, as will be presently described. The cradle supports a rocking platform C, which is eccentrically pivoted to the cradle on longitudinal horizontal pivots *c*, which are secured to the ribs *b*. These pivots are below the platform and behind the vertical line of its center of gravity, wherefore the tendency of the platform is to tilt forward. When the cradle and platform are in position for the cars to run onto the tracks T T, secured to channels c^2 on the top of this tilting platform, the said platform C (or rather transverse ribs c^3 on the under side thereof) rest upon fixed transverse beams J' J', which are secured to parts J J of the foundation of the tower, whereby said platform is held in a substantially horizontal position, or at least is prevented from tilting forward, as it would otherwise do because of the non-central position of the pivoting-shaft.

A vertically-adjustable chute E is located on the front side of the tower, and into this the load of the car is dumped. This chute delivers the load into the hatchways of a boat or into any other receptacle provided to receive it. This chute is pivotally connected

to the front side of a vertically-movable horizontal beam D, which extends between the two front corner-posts *a a*. It has, preferably, on its ends guide-blocks *d d*, which enter and are guided by vertical grooves a^4 in the inner faces of the said front corner-posts. This beam also carries at its ends sliding bolts d^2, which are adapted to enter holes a^5 in said front corner-posts, whereby to hold the beam from vertical movements, and these bolts may be operated by levers d^3.

The cradle is lifted and tilted by cables W W, which are located at its ends, which cables also operate to raise the beam D and chute E. Each cable W is doubled, and the loop passes under a sheave d^5, mounted in a yoke d^4, secured to the end of the beam D. This is a form of connection between the beam and both strands of the cable which permits said strands to automatically equalize themselves, whereby the strain is the same on both. The two strands of the cable go up to and over sheaves H H on the top of the tower, then down under sheaves *k k*, mounted in straps K, which are pivoted to the front corners of the cradle on axes coincident with the axes of the rollers b^3, then up to and over sheaves I I on the top of the tower, then down under sheaves *n n*, mounted in the rear end of a bar N, which bar is pivoted to the front side of the cradle and passes rearward under the same, and, finally, each cable goes up to and over sheaves M on the top of the tower and then down to a winding-drum P. A similar arrangement of sheaves, cable, &c., is found at each end of the cradle. When the winding up of the cable is begun, the beam D, if it is not bolted to the corner-posts, will first be raised because it is lighter than the cradle. When the beam D and also the chute E, which is connected with it, have been raised as high as desired, the bolts d^2 will be shot, whereby to connect said beam with the posts *a a*. The continued winding up of the cables lifts the cradle and its load bodily. When the cradle is first lifted, the tilting platform C, being lifted from the beams J J′, is allowed to rock forward on its supporting-pivots *c* and does so rock until the top edge of the car G, which is on said platform, moves against the front side of the cradle or against abutment-beams b^5, secured thereto. Suitable clamping devices are provided, and they assist in holding the car upon the platform. These clamping devices are vertically-movable bars R, having their upper ends *r* bent over the top of the car. These bars are free to move up and down in guide-straps b^6 on the inner face of the front of the cradle; but just before the cradle in its downward movement comes to rest the lower ends of these bars strike the foundation and are lifted out of contact with the car. When the cradle is lifted, these bars R fall by gravity until their upper ends engage with the upper edge of the car. The principal work of holding the car on the tracks after the cradle has been raised and tilted is performed by a plurality of cables or chains Q, which are attached to the front side of the cradle and pass up in the open front of said tower over sheaves *q q*, mounted at the top thereof, and then down at the rear side of said tower, there being attached to these depending ends counterbalancing-weights *q′* of sufficient size to prevent the car from falling out of the cradle and to assist in lifting the cradle. The winding up of the cables W, and consequent lifting of the cradle in a horizontal position, continues until the further vertical movement of the front side of the cradle is prevented. This result comes from the engagement of the notches b^7 in the upper ends of the cradle-ribs *b* with pins d^6, secured to brackets d^7 on the rear side of the beam D. These notches are in line with the axes of the wheels b^3 on the ends of the cradle B. Pins b^8 are also attached to the cradle in the same axial line, and they engage with notches d^8 in the under sides of arms d^9, secured to beam D. As the cables are still further taken in the rear end of the cradle is lifted and the cradle turns upon said pins b^8 and d^6 as pivots until the cradle and the car which it carries are tilted and take the position substantially as shown in dotted lines in Fig. 9. The cables or chains Q will obviously be brought into engagement with the top of the car, whose rear edge will engage with horizontal beams q^3, secured to said cables, and the car is thereby held upon the tracks. The described tilting of the cradle is facilitated because of the transverse bars N, which are pivoted to its front side and have fastened to their rear ends the yoke *n′*, in which the sheaves *n* are mounted. When the car is tipped into the position shown by dotted lines in Fig. 9, its load falls out into the chute E, which is always in position to receive it, because the cradle tips on an axis carried by beam D. When the lifting-cables are paid out, the cradle swings back to its upright position, turning upon said pins b^8 and d^6 as pivots, and the further paying out of the cable permits said cradle and the car to move down. As it nears the foundation the clamp-bars R are lifted out of engagement with the car, as described. Then the ribs c^3, having beveled front ends on the lower side of the tilting platform, strike the ribs J′, which extend upward from the foundation, which causes the platform to move into a substantially horizontal position, as shown in Fig. 9, at which time the car may be rolled off and another car rolled on in its place.

The chute E is pivoted to the beam D at *e*, and its angle may be changed by taking in or paying out its cable at *e′*. The chute preferably has a telescopic extension e^2, which may be adjusted by its own cable and drum e^3 e^4, respectively.

Having described my invention, I claim—

1. In a car-dumping apparatus, the combination of a cradle, means for holding a car thereon, bars passing transversely under the

cradle and pivoted thereto at their front ends, sheaves carried by the rear ends of said bars, cables passing under said sheaves for lifting the rear side of the cradle, means for lifting the front side thereof, and mechanism which stops the upward movement of said front side and serves as a pivot on which the cradle may turn as the rear side thereof is still further lifted, substantially as specified.

2. In a car-dumping apparatus, the combination of a tower, a cradle, cables for lifting said cradle, cables passing over elevated sheaves and connected at their front ends with the cradle and having counterweights suspended from their rear ends, bars passing transversely under the cradle and pivoted at their front ends to said cradle, sheaves carried by the rear ends of said bars around which said lifting-cables pass, sheaves carried by the front side of the cradle under which said lifting-cables pass, and mechanism which stops the upward movement of the front side of said cradle and serves as a pivot on which the cradle may turn as the rear side is still further lifted, substantially as specified.

3. In a car-dumping apparatus, the combination of a tower, a horizontal beam vertically movable in the front side thereof, a chute connected with said beam, a cradle, mechanism for holding a car thereon, means for lifting the front and the rear sides of the cradle, and notched plates and pins adapted for engagement and carried by the front side of the cradle and the rear side of said beam, substantially as specified.

4. In a car-dumping apparatus, the combination of a tower, a horizontal beam vertically movable in the front side thereof, means for locking the beam to said tower, a chute connected with said beam, a cradle, means for holding a car thereon, sheaves carried by the front side of said cradle, sheaves carried by the rear side of said cradle, and lifting-cables connected with said beam passing over elevated sheaves under the sheaves on the front side of the cradle over other elevated sheaves and under the sheaves on the rear side of the cradle, and thence upward, means for taking in and paying out said lifting-cables, and mechanism which stops the upward movement of the front side of the cradle and acts as a pivot therefor, substantially a specified.

5. In a car-dumping apparatus, the combination of a tower, a horizontal beam vertically movable along the front side thereof, a chute connected with said beam, a cradle, and mechanism dependently connecting with the beam the front side of the cradle and the rear side of the cradle and adapted to raise all of said points of connection, means for locking the beam to the tower, and means for pivotally locking the front side of the cradle to the beam, substantially as described.

6. In a car-dumping apparatus, the combination of a tower having front corner-posts which are only connected together directly at their upper and lower ends, which corner-posts have vertical grooves on their proximate faces, a cradle, means for holding a car thereon, rollers mounted on the ends of the front side of the cradle near the top thereof which rollers move in the grooves in the corner-posts, other rollers mounted on the ends of the front side of the cradle near the bottom thereof which rollers engage with the rear faces of said corner-posts, means for lifting the front and rear sides of the cradle, and mechanism which stops the upward movement of the front side and acts as a pivot upon which the same may turn while the rear side is still further lifted, substantially as specified.

7. In a car-dumping apparatus, a cradle, and means for holding a car thereon, bars passing transversely under said cradle and pivoted at their front ends to said cradle, sheaves carried by the rear ends of said bars and sheaves carried by the front side of the cradle, lifting-cables engaging with said sheaves, and mechanism adapted to stop the upward movement of the front side of the cradle and serve as a pivot upon which the same may turn while the rear side is being still further lifted, substantially as specified.

8. In a car-dumping apparatus, the combination of a cradle having a bottom and a front side, a tilting platform pivoted to the bottom of said cradle on a pivot which is behind the center of gravity of said platform, devices engaging with said platform when the cradle is lowered to restore the platform to a substantially horizontal position, means for lifting the front and rear side of said cradle whereby the platform is allowed to tilt and the car thereon to lean against the front side of the cradle, cables secured to the front side of the cradle passing over elevated sheaves and having counterweights on their rear ends, and mechanism carried by the front side of the cradle and some then immovable part of the apparatus on the front side of the tower, which mechanism is adapted to engage and to stop the upward movement of the front side of the cradle and to serve as a pivot upon which the cradle will turn as the rear side is still further lifted, substantially as specified.

9. In a car-dumping apparatus, the combination of a cradle, a tilting platform pivoted thereto on an axis behind the center of gravity of the platform, fixed transverse ribs below the cradle, and shoes having beveled front ends secured to the lower side of the platform and adapted to engage with said ribs when the cradle is lowered, and means for raising said cradle, and means for holding the car upon the platform, substantially as specified.

10. In a car-dumping apparatus, the combination of a cradle having a bottom and front side, means for holding a car thereon, straps pivoted to the corners of the front side of the cradle, sheaves mounted in the upper ends

of said straps, transverse bars passing under the cradle and pivoted thereto at their front ends, sheaves carried by the rear ends of said bars, means for guiding the front side of said cradle, coöperating horizontal pins and notched plates which are secured to the front side of the cradle and to a fixed part of the apparatus, which pins and notched plates are adapted to engage and stop the upward movement of the front side of the cradle and to serve as pivots upon which the cradle may turn, continuous lifting-cables each of which passes from above under the sheaves mounted on said straps and from above under the sheaves carried by said transverse bars, and means for taking in and paying out said cables, substantially as specified.

11. In a car-dumping apparatus, a tower, in combination with a cradle mounted for movement within the same, a bar pivoted to the lower portion of the cradle, and means for lifting the bar to move the cradle, substantially as specified.

12. In a dumping apparatus, a tower, in combination with a cradle mounted for movement within the same, sheaves journaled in the upper portion of the tower, sheaves secured to the upper portion of the cradle, bars pivoted to the lower portion of the cradle, sheaves carried by said bars, cables passing over said sheaves, and means for hauling in on the cables to move the cradle, substantially as specified.

13. In an unloading mechanism for vehicles, a tower, a cradle for the vehicle mounted for movement within the tower, a bar pivoted to the lower portion of the cradle and carrying a sheave, a cable passing over said sheave, and means for lifting on the cable to move the cradle.

14. In an unloading mechanism for vehicles, a tower, a cradle for the vehicle mounted for movement within the tower, a bar pivoted to the lower portion of the cradle and projecting across the bottom of the same, a cable extending from the upper part of the tower and connected with said bar, and means for lifting on the cable to move the cradle.

15. In an unloading mechanism for vehicles, a tower, an L-shaped cradle for the vehicle mounted for movement within the tower, a bar pivoted at one end to the cradle near the angle of the L, and means for lifting on the other end of the bar to tilt the cradle.

16. In an unloading mechanism for vehicles, a tower, a cradle having abutment-beams mounted for movement within said tower, a tilting platform for the vehicle mounted within said cradle in such a manner that when the cradle is moved toward its unloading position the vehicle will be thrown by gravity against the abutment-beams, a bar pivoted to the lower portion of the cradle and projecting across the bottom of the same, a cable extending from the upper part of the frame and connected with said bar, and means for hauling in on said cable to move the cradle.

17. In an unloading mechanism for vehicles, a tower, a lifting platform and an adjustable beam in said tower, and a cable for lifting either the platform or the beam.

18. In an unloading mechanism for vehicles, a tower, a tilting cradle for the vehicle mounted for movement within the tower, a vertically-adjustable beam in the tower, a chute adjustable with the beam, and a cable for lifting either the cradle or the beam and chute.

19. In an unloading mechanism for vehicles, a tower, a tilting cradle for the vehicle mounted for movement within the tower, a vertically-adjustable beam in the tower, a chute adjustable with the beam, a cable passing around a sheave connected with the cradle and around another connected with the beam, means for securing the beam in its adjusted positions, and means for hauling in on the cable to lift the cradle when the beam is secured, and for lifting the beam for adjustment when it is not secured.

20. In a device of the character described, a tower, a beam mounted for vertical adjustment in said tower, sliding bolts on said beam adapted to enter holes in the tower for holding the beam in its adjusted positions, means for withdrawing the bolts, cables connected with the beam, and means for hauling in on the cable to lift the beam.

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

TIMOTHY LONG.

Witnesses:
F. D. AMMEN,
ALBERT H. BATES.