No. 768,017. PATENTED AUG. 16, 1904.

C. A. MORRIS.

MEANS FOR HOISTING AND TRANSFERRING LOADS.

APPLICATION FILED SEPT. 5, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. III.

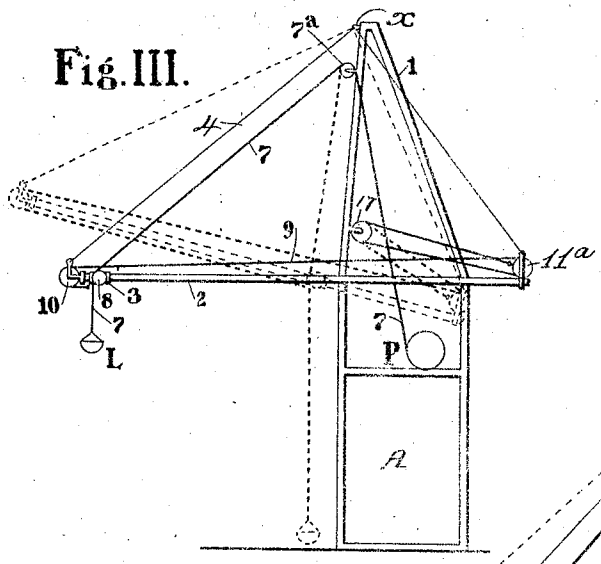
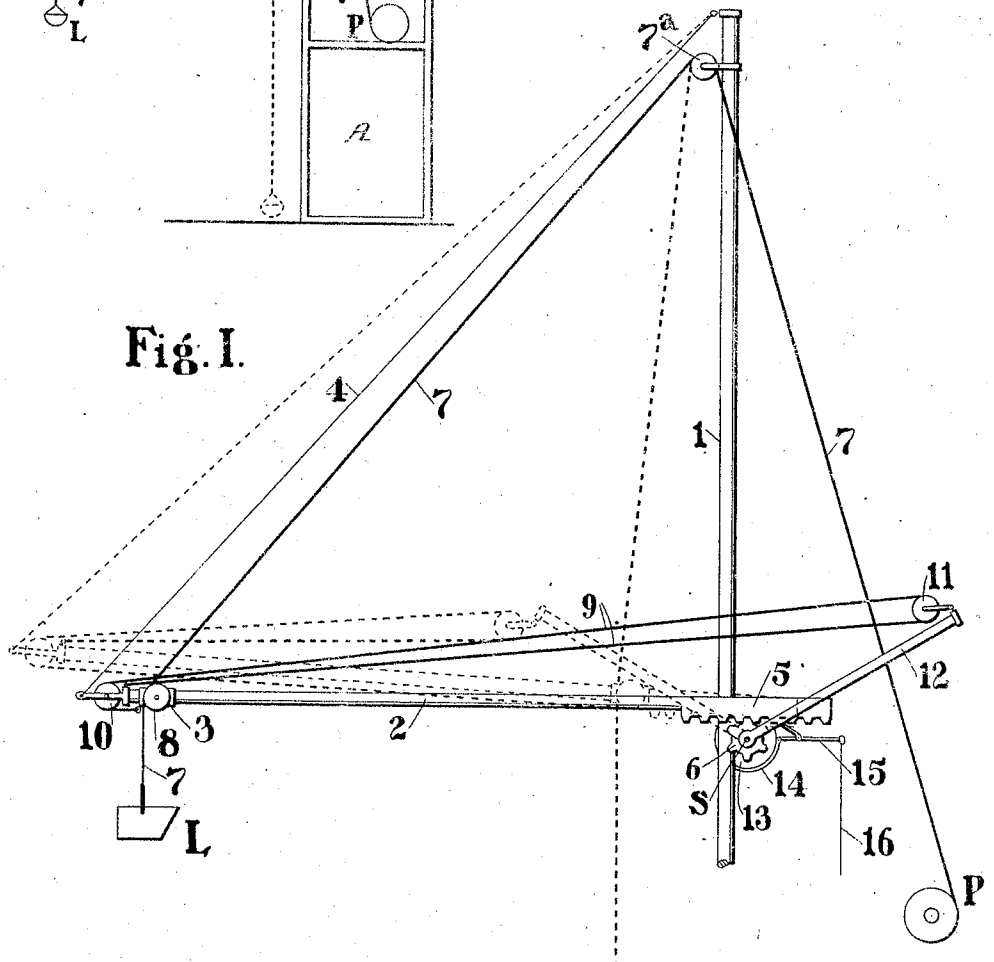


Fig. I.



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NO MODEL. 2 SHEETS—SHEET 2.

Fig. IV.

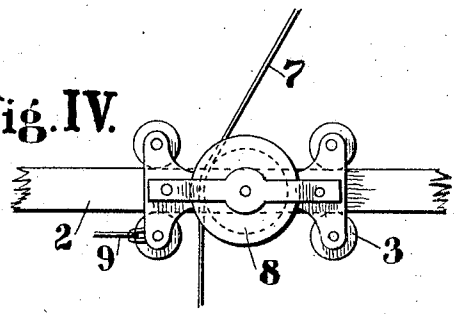
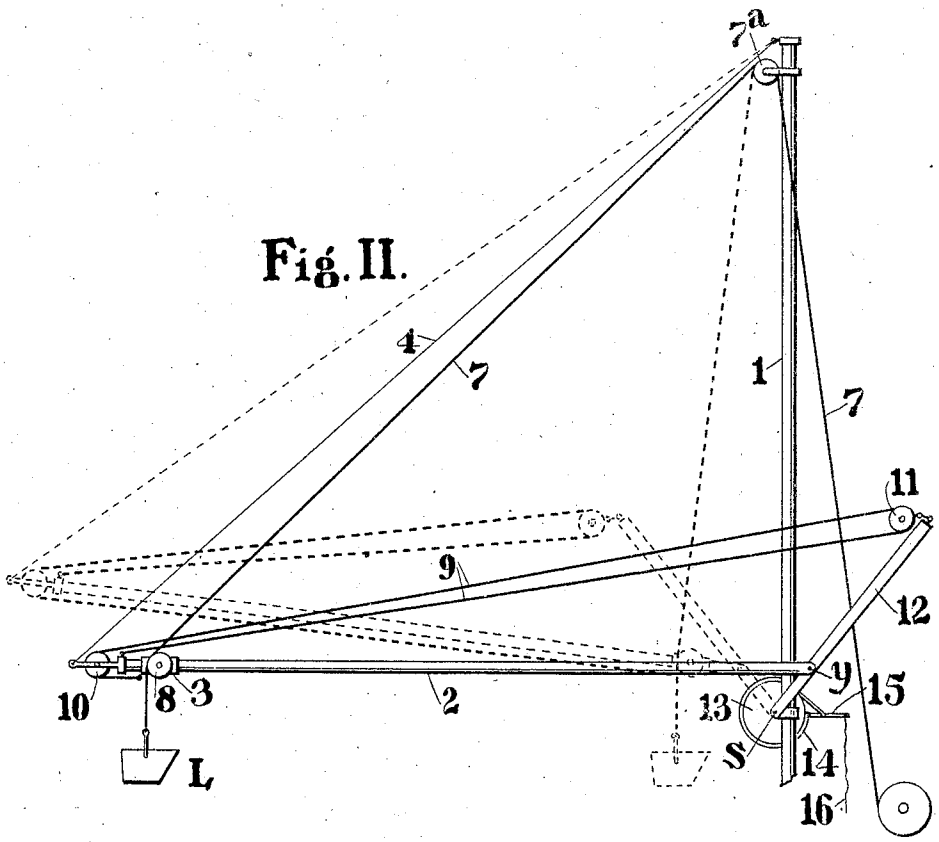


Fig. II.



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UNITED STATES PATENT OFFICE.

CHARLES A. MORRIS, OF GLENRIDGE, NEW JERSEY.

MEANS FOR HOISTING AND TRANSFERRING LOADS.

SPECIFICATION forming part of Letters Patent No. 768,017, dated August 16, 1904.

Application filed September 5, 1903. Serial No. 172,056. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. MORRIS, a citizen of the United States, residing at Glenridge, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Means for Hoisting and Transferring Loads, of which the following is a specification.

This invention relates to the class of devices for hoisting and transferring loads in which a trolley moving along a substantially horizontal track carries the hoisted load to the point of discharge and then returns to the receiving-point; and the object of the present invention is to provide a means whereby the trolley in moving along the track with the load shifts the track-beam longitudinally in such a manner as to store up power utilizable for automatically returning the empty trolley to the proper position to receive the load.

In the accompanying drawings, which illustrate three similar embodiments of the invention, Figure 1 is a side elevation of the device, showing a pinion and rack for shifting the longitudinally-movable track-beam. Fig. 2 is a similar view showing a crank device for shifting the beam. Fig. 3 is a somewhat similar view showing the suspended beam shifted by means of tackle directly connected to the beam. Fig. 4 is a view, on a larger scale, showing a form of trolley that may be used.

Referring primarily to Fig. 1, 1 designates an upright mast or spar, and 2 a track-beam on which runs a trolley 3. The beam 2 is connected at its outer end with the top of the mast by a guy 4, and at its inner end it has a rack 5, which gears with a pinion 6 on a shaft *s*, rotatively mounted in bearings on the mast. P designates the power, which may be an ordinary hoisting-drum, and from this drum a hoisting-rope 7 extends up to and over a guide-sheave 7^a near the top of the mast and thence down and over a sheave 8 on the trolley to the load L to be hoisted and transferred. From the trolley a rope 9 extends out and about a sheave 10 at the end of the track-beam and thence back to and about a sheave 11, carried by an arm 12, fixed on the same shaft with the pinion 6. From the sheave 11 the rope 9 extends out and is secured to the beam. Thus the rope 9 forms a tackle with one movable sheave or pulley; but the invention is not restricted to this tackle. The rope 9 might be secured directly to the arm 12 in cases where tackle was not required. On the same shaft *s* with the pinion is secured a brake-wheel 13, over which is a strap 14, adapted to be set by a lever 15 through the medium of an operating-rope 16.

The operation is as follows: The hoisting-rope 7 is lowered and the load L coupled on. The brake is set and the hoisting-drum set in motion to hoist the load. When the load is elevated to the proper height—say as indicated in Fig. 1—the brake is released and the action of the load through the trolley moves the latter in along the beam to the position seen in dotted lines. In this movement the trolley and load, acting through the rope 9, rotates the pinion 6, drives the beam 2 outward, and puts it in a state of unstable equilibrium. When the load is discharged, the return of the beam to its normal position acts through the rack and pinion and rope 9 to return the empty or unloaded trolley to the outer end of the beam. To prevent a too rapid return of the trolley, the brake may be employed to retard the rotation of the pinion.

In the construction seen in Fig. 2 the operation is substantially the same. In this construction the rack and pinion are omitted and the beam 2 is pivotally connected at *y* with the arm 12 at a suitable distance from the shaft *s*, to which the arm is secured. Thus when the trolley moves in with its load the heel of the beam moves outward in an arc of a circle.

In the construction seen in Fig. 3 the beam 2 is hung above its center by guys 4 to a suitable structure A, which takes the place of the mast 1 of the principal views, and said beam may swing about the point *x*, where the guys are attached to the structure. The trolley-rope 9 extends from the trolley to and about the sheave 10, thence to the inner end of the beam and about a sheave 11^a on the beam, thence to and about a sheave 17 on the structure, and thence back to the inner end of the beam. This forms a tackle through which the trolley swings the beam.

In all of these constructions the power for returning the empty trolley is stored by putting the beam in a condition of unstable equilibrium, and it is the end thrust of the beam in seeking to return to its normal position that returns the unloaded or empty trolley.

Obviously any form of support may be used for the suspended track-beam and any suitable form of brake and trolley may be employed.

Having thus described my invention, I claim—

1. Means for the purpose specified, comprising a support, a track-beam suspended on said support and movable endwise to place it in unstable equilibrium, a trolley movable along said beam, means for moving said trolley with its load along said beam to the discharging-point, and means whereby the trolley and load, in their movement, shifts the suspended beam longitudinally into a position of unstable equilibrium, substantially as and for the purpose set forth.

2. Means for the purpose specified, comprising a support, a track-beam suspended on said support and movable endwise to place it in unstable equilibrium, a trolley movable along said beam, means for moving the trolley with its load along said beam to the discharging-point, means whereby the trolley and load, in their movement, shifts the suspended beam into a position of unstable equilibrium, and a brake which regulates the movement of said beam, substantially as and for the purpose set forth.

3. Means for the purpose specified, comprising a support, a suspended track-beam movable endwise to place it in unstable equilibrium, a trolley movable along said beam, means for hoisting the load and moving it and the trolley to the discharging-point, a rack and pinion for moving the track-beam longitudinally, means between the trolley and the pinion for moving the said beam endwise when the trolley and load move to the discharging-point, and a brake controlling the movement of said pinion.

4. Means for the purpose specified, comprising a support for a track-beam, the said beam suspended on said support, a trolley 3 movable along said beam and having a sheave 8, a hoisting device P, a guide-sheave 7^a at the upper part of the support, a rope 7 from said hoisting device extending over the sheaves 7^a and 8 to receive the load, a shaft s on the support, a pinion on said shaft gearing with a rack on the beam, the said rack, an arm 12 on the shaft s, means connecting said arm with the trolley whereby the movement inward of the trolley with its load rotates said pinion to move the beam outward longitudinally, and a brake to control the movement of said beam.

In witness whereof I have hereunto signed my name, this 6th day of August, 1903, in the presence of two subscribing witnesses.

CHARLES A. MORRIS.

Witnesses:
BENJAMIN H. HOLT,
WILLIAM J. FIRTH.