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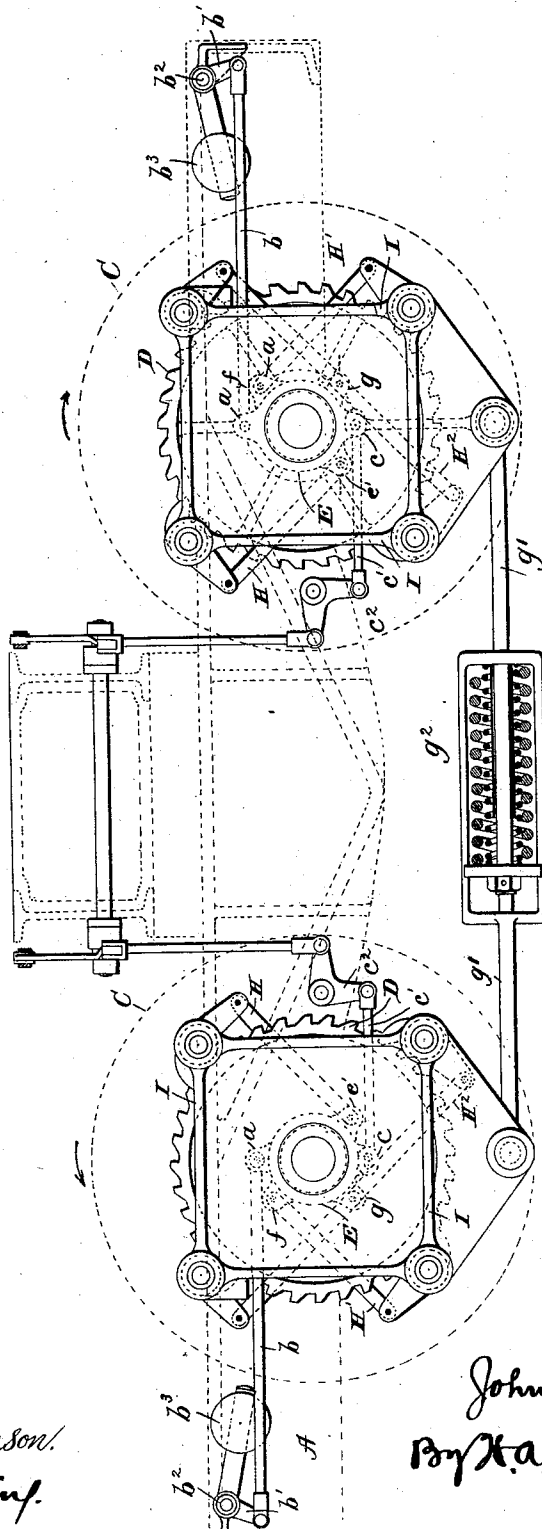
3 Sheets—Sheet 1.

J. R. MORGAN.
OVERHEAD TRAVELING CRANE.

No. 478,804.

Patented July 12, 1892.

Fig. 1.



Witnesses

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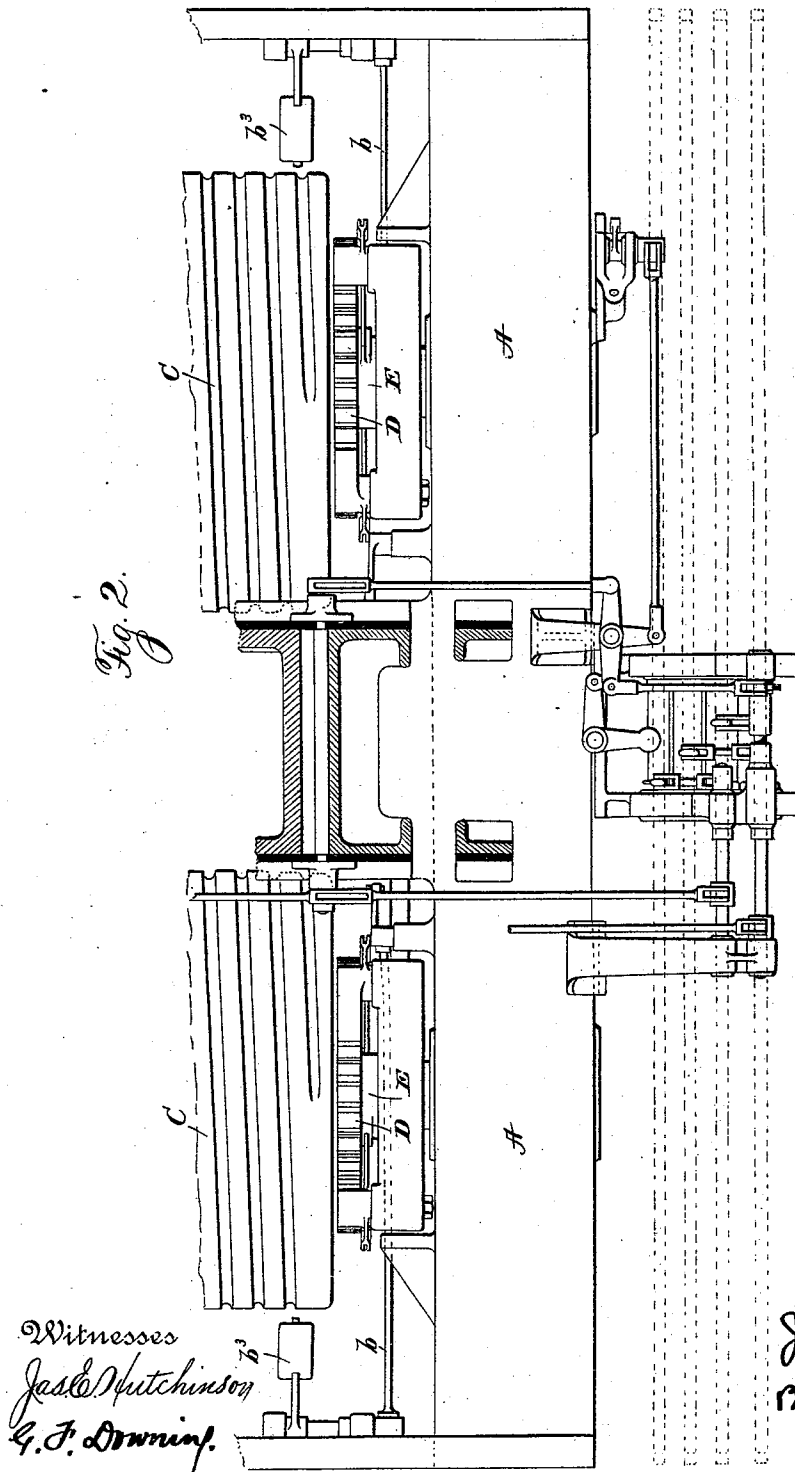
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(No Model.)

3 Sheets—Sheet 3.

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Fig. 3

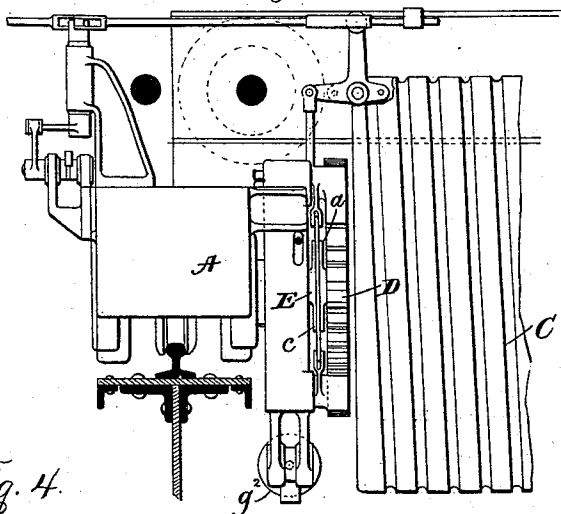


Fig. 4

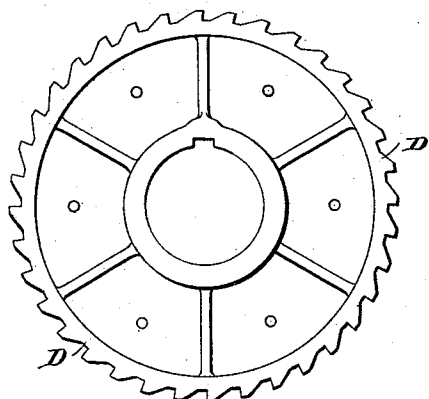


Fig. 5

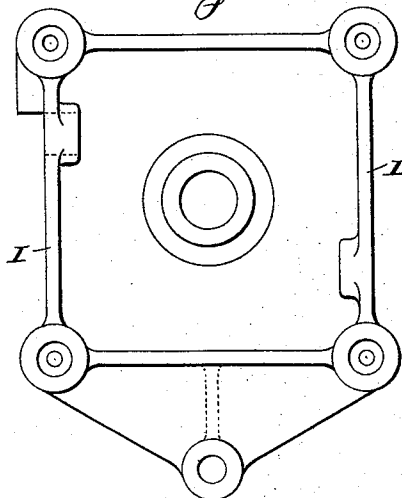


Fig. 6

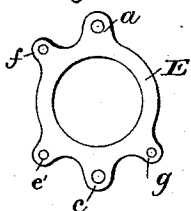


Fig. 7

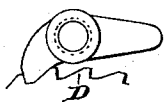
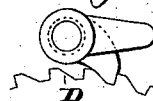


Fig. 8



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN R. MORGAN, OF ALLIANCE, OHIO, ASSIGNOR OF THREE-FOURTHS TO
THOMAS R. MORGAN, SR., THOMAS R. MORGAN, JR., AND WILLIAM H.
MORGAN, OF SAME PLACE.

OVERHEAD TRAVELING CRANE.

SPECIFICATION forming part of Letters Patent No. 478,804, dated July 12, 1892.

Application filed August 10, 1891. Serial No. 402,302. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. MORGAN, of Alliance, in the county of Stark and State of Ohio, have invented certain new and useful
5 Improvements in Overhead Traveling Cranes; 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
10 the same.

My invention relates to an improvement in overhead traveling cranes, and more particularly to devices for sustaining the load carried by the winding-drums. Heretofore the
15 sustaining devices have been located on a shaft or shafts connected by intermediate gearing with the winding-drums. Such an arrangement is objectionable for the reason that if any one of the intermediate wheels
20 should be stripped of its teeth the sustaining device would of course be ineffective; and the object of this invention is to overcome this objection and at the same time provide an automatically-actuated device adapted to
25 positively sustain the load and at the same time yield gently and gradually when first applied.

In the accompanying drawings, Figure 1 is a view in side elevation of a portion of a trolley, showing my improved sustaining device
30 applied thereto; Fig. 2, a plan view of same. Fig. 3 is a view in front elevation. Fig. 4 is a view of the ratchet-wheel. Fig. 5 is a view of the bracket for the pawls. Fig. 6 is a view
35 of the coupling-disk, and Figs. 7 and 8 are views of the pawls.

A represents a trolley-frame mounted on wheels B and provided with one or more drums C, around which the hoisting-chains
40 are adapted to be wound.

This application relates simply to the brakes or devices for sustaining the load carried by the drums, and hence it is not essential to show or describe the devices for moving the trolley on the bridge or the mechanism employed for turning the drums. The
45 winding-drums are mounted in bearings in the sides of the trolley, and each drum is provided at one end with a ratchet-wheel D, rigidly secured thereto or to the trunnion
50 thereof.

The teeth on the ratchet-wheels are constructed and arranged relatively to the pawls, so that the latter ride over the teeth when the drums are turning in the direction for winding the chains thereon, but normally
55 engage the teeth when the drum turns in the opposite direction.

Loosely mounted on the trunnion of each drum, and adjacent to the ratchet-wheel D, are the coupling-disks E. Each disk is provided with five projections *a*, *c*, *e'*, *f*, and *g*, each having a perforation for the attachment of connecting-rods. As the sustaining
60 devices are the same on both drums, a description of one will suffice for both. To the upper projection *a* is attached one end of the connecting-rod *b*, the opposite end of said rod being connected to the crank *b'* on shaft *b*², the latter being journaled in bearings carried by trolley-frame A and carrying a weight
65 *b*³, the tendency of which is to hold the coupling-disk in the position shown in Fig. 1 and the pawls in contact with the ratchet-wheels. At a point on disk E diametrically opposite projection *a* is the projection *c*, to which rod
70 *c'* is secured, the opposite end of rod *c'* being connected to bell-crank lever *c*², which latter is in turn connected to the mechanism, to be hereinafter described, for shifting the disk E and releasing the pawls from engagement
75 with the ratchet-wheel.

H is a rod connecting projection *e'* on disk E with the tail of a pawl. H' is a rod connecting projection *f* with the tail of another pawl, and H² is a rod somewhat longer than
80 the other rods, connecting two diametrically-opposite pawls with the projection *g*. The four pawls thus referred to are all pivotally secured on the bracket I, which latter is simply a square plate loosely mounted centrally
85 on the trunnion of the drum or on a bearing concentric with the axis of the trunnion. The pawls are located at the four corners, and the coupling up of two of them by the rod H² necessitates the employment of one pawl having its tooth-engaging end or lip located between the axis of the pawl and the rod H², while the remaining pawls all have their axes between the tooth-engaging ends or lips and their respective actuating-rods.
90
95
100

From the foregoing it will be seen that the weight b^3 holds all the pawls in contact with the teeth on the ratchet-wheel, and as the ratchet-wheel revolves with the drum it follows that the drum cannot revolve in a direction to unwind the chain thereon without first shifting the coupling-disk in a direction to disengage the pawls and elevate the weight b^3 . As the teeth of the wheel pass the pawl while the chain is being wound on the drum the coupling-disk and weight are vibrated.

The bracket carrying the pawls is, as before stated, loosely mounted on an axis concentric with the axis of the drum. In order to prevent the brackets from rotating with the drum while the pawls are sustaining a load, and at the same time to permit it to move or yield slightly when the pawls are first brought into action, the two brackets are connected by rods g' , which latter are joined by a spring-coupling g^2 , constructed to permit the bracket to turn slightly, and thus gently and gradually absorb the shock. The two drums revolve in the direction indicated by the arrows for winding—that is to say, they revolve in opposite directions. This necessitates the employment of one right and one left ratchet-wheel. This precise arrangement of parts could be employed on one drum, and when so employed the rod g' could be coupled up to a spring-coupling attached to the trolley-frame or to a part or projection carried by the trolley-frame. In this class of cranes the movable parts are thrown into and out of action by a series of angular rods, (shown in dotted lines in Fig. 2,) these angular rods being journaled in bearings on the bridge and connected by levers with levers or operating-handles in the cage, whereby the rods can be turned and impart movement to sleeves carried by the trolley and closely fitting the angular rods, whereby they are caused to turn with said rods, but are free to slide thereon as the trolley moves back and forth thereon. These sleeves are connected by levers to the clutches, brakes, &c., on the trolley and actuate said parts, and one of them is connected by means of a series of levers to the bell-crank-levers c^2 . It will be seen that as the bell-crank lever c^2 is moved in a direction to force rod c' inwardly the coupling-disk is turned in a direction to elevate the weight and disengage all the pawls from the teeth of the ratchet-wheel, thus leaving the drum or drums free to revolve in a direction to unwind the chain. By moving the coupling-disk back to the position shown in Fig. 1 the pawls are again thrown into engagement with the teeth of the wheels, and are consequently in position to sustain the load, and as the sustaining device acts directly on the drum, or rather on parts rigidly secured to the drum, it follows that its function is not interfered with in the event of a break-down of the drum-actuated gearing. It is evident that many slight changes might be resorted to in relative arrangement of parts without departing from the spirit of my in-

vention, and hence I would have it understood that I do not confine myself to the exact construction and arrangement of parts herein shown and described; but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a winding-drum and a ratchet-wheel connected with the drum so as to move therewith, of a pawl mounted on a yielding support for engaging said wheel, means connected with said pawl for yieldingly holding it in contact with the wheel, and means for moving said pawl out of contact with the wheel, substantially as set forth.

2. The combination, with a winding-drum and a ratchet-wheel connected with the drum so as to move therewith, of a bracket, a yielding device for preventing said bracket from rotating, a pawl carried by said bracket and adapted to engage the ratchet-wheel, means connected with said pawl for yieldingly holding it in contact with the wheel, and means for moving said pawl out of contact with the wheel, substantially as set forth.

3. The combination, with a drum and ratchet-wheel connected thereto so as to move therewith, of a yielding bracket, a series of pawls carried by said bracket and normally engaging the teeth of the ratchet-wheel, and means for moving said pawls out of contact with the teeth.

4. The combination, with a drum and a ratchet-wheel rigidly secured thereto, of a yielding bracket carrying a series of pawls, means for holding the pawls in engagement with the teeth of the ratchet-wheel, and means for simultaneously disengaging said pawls and teeth, substantially as set forth.

5. The combination, with a drum and a ratchet-wheel rigidly secured thereto, of a bracket carrying a series of pawls adapted to normally rest in contact with the teeth of the ratchet-wheel, a coupling-disk, rods connecting the coupling-disk with the several pawls, means for moving the coupling-disk in one direction, and a weight and connecting devices for moving said disk in the opposite direction, substantially as set forth.

6. The combination, with a drum and a ratchet-wheel, of a movable coupling-disk, a yielding bracket, pawls mounted on the bracket and engaging the ratchet-wheel, and rods connecting the pawls and coupling-disk, substantially as set forth.

7. The combination, with a drum and a ratchet-wheel rigidly secured thereto, of a movable coupling-disk, a yielding bracket, pawls mounted on the bracket and engaging the ratchet-wheel, rods connecting the coupling-disk and pawls, a weight, and devices connecting the weight and coupling-disk, substantially as set forth.

8. The combination, with a drum and a ratchet-wheel rigidly secured thereto, of a movable coupling-disk, a movable bracket, spring devices connected with the bracket for per-

mitting the latter to yield or partly turn on its axis, pawls carried by the bracket, rods connecting the coupling-disk and pawls, and means for moving the disk, substantially as set forth.

9. The combination, with a drum and a ratchet-wheel connected to the drum so as to turn therewith, of a coupling-disk and a bracket, both mounted on bearings concentric with the axis of the ratchet-wheel, a spring-coupling for limiting the movement of the bracket, pawls carried by the bracket, rods connecting the coupling-disk and pawls, a weight and devices connecting the same with the coupling-disk, and means for moving the coupling-disk against the action of the weight.

10. The combination, with two drums and a ratchet-wheel on each, of movable brackets, a spring-coupling connecting the brackets for limiting their movements, pawls carried by each bracket, means for yieldingly holding said pawls in contact with their respective ratchet-wheels, and means for disengaging the pawls from the ratchet-wheels, substantially as set forth.

11. The combination, with a drum and a ratchet-wheel, of a series of pawls for engaging the teeth of said wheel, a coupling-disk, rods connecting the disk and pawls, and a weight and devices connecting same with the coupling-disk for yieldingly holding the pawls in contact with the ratchet-wheel, substantially as set forth.

12. The combination, with a drum and a ratchet wheel, of a yielding device carrying a series of pawls for engaging the ratchet-wheel, the coupling-disk, rods connecting the several pawls with the coupling-disk, a weight, a rod connecting the weight with the coupling-disk, and rods and levers connected to said coupling-disk for moving the same in opposition to the weight, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOHN R. MORGAN.

Witnesses:

T. R. MORGAN, Sr.,
F. E. DUSSEL.