

(No Model.)

4 Sheets—Sheet 1.

J. R. MORGAN.
OVERHEAD TRAVELING CRANE.

No. 486,117.

Patented Nov. 15, 1892.

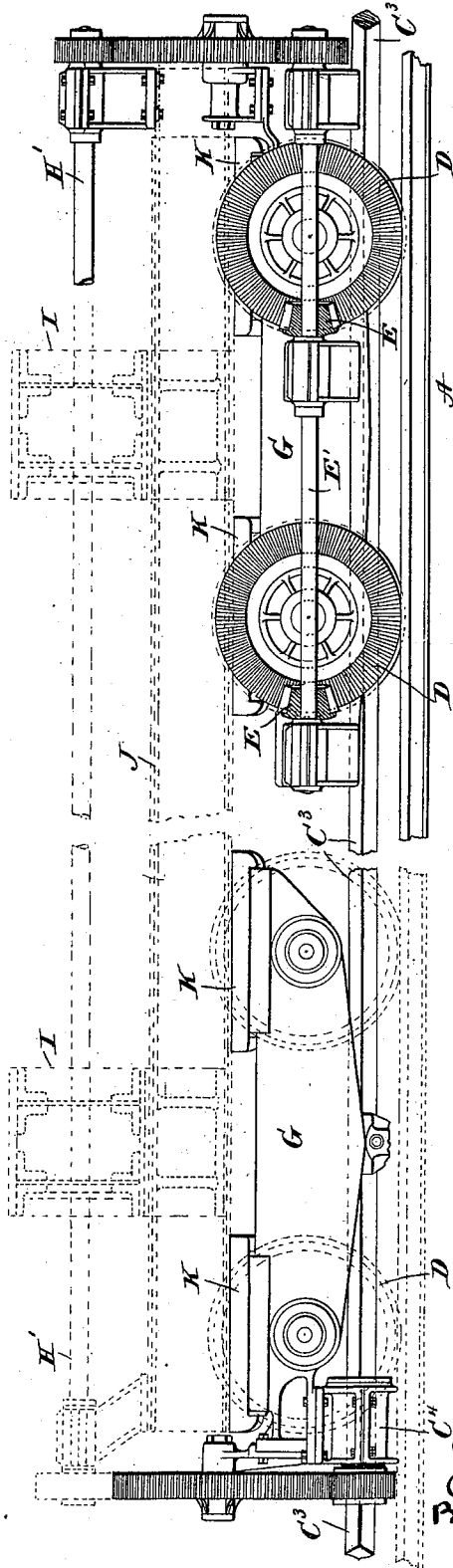


Fig. 1

Witnesses
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G. A. Downing.

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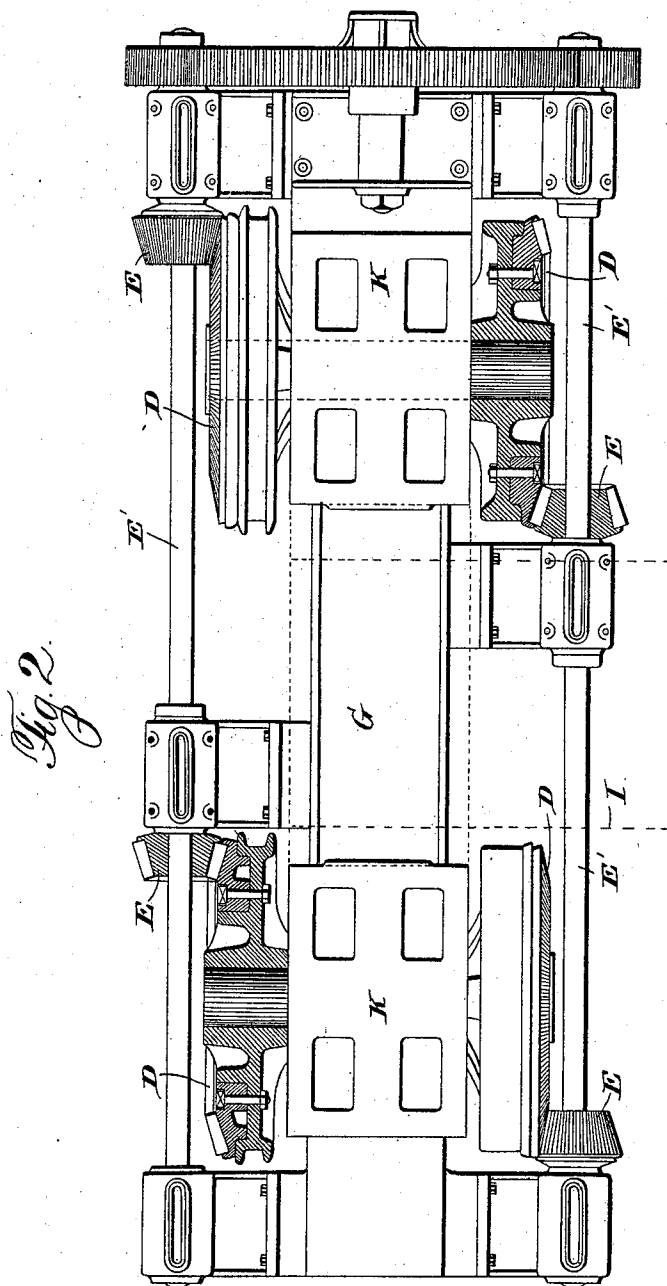
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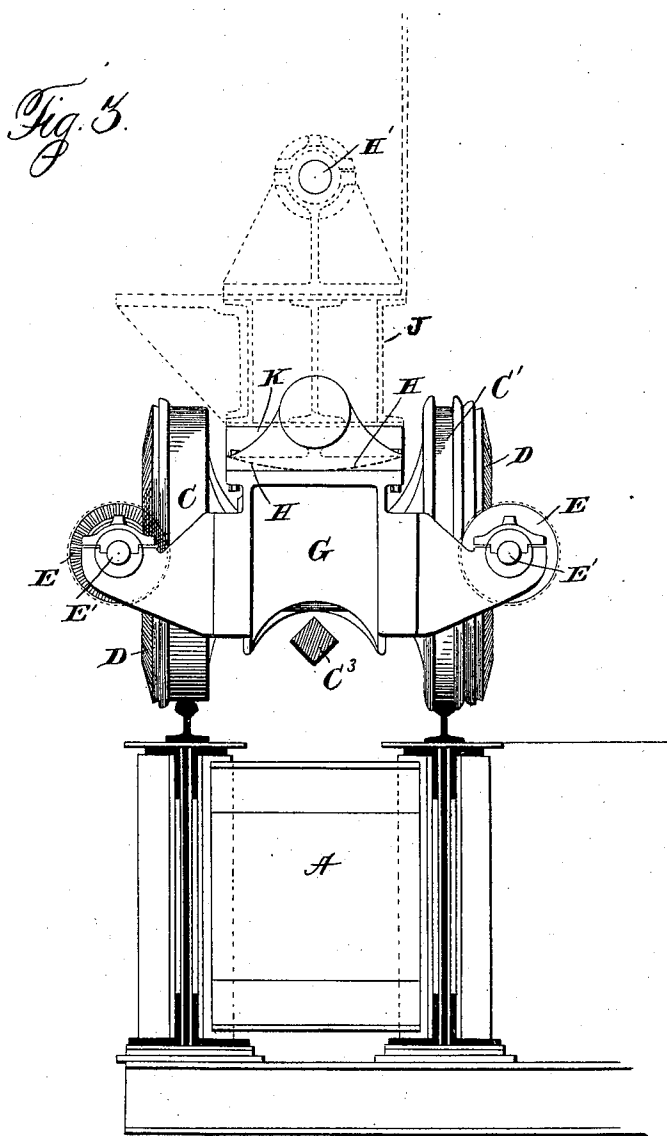
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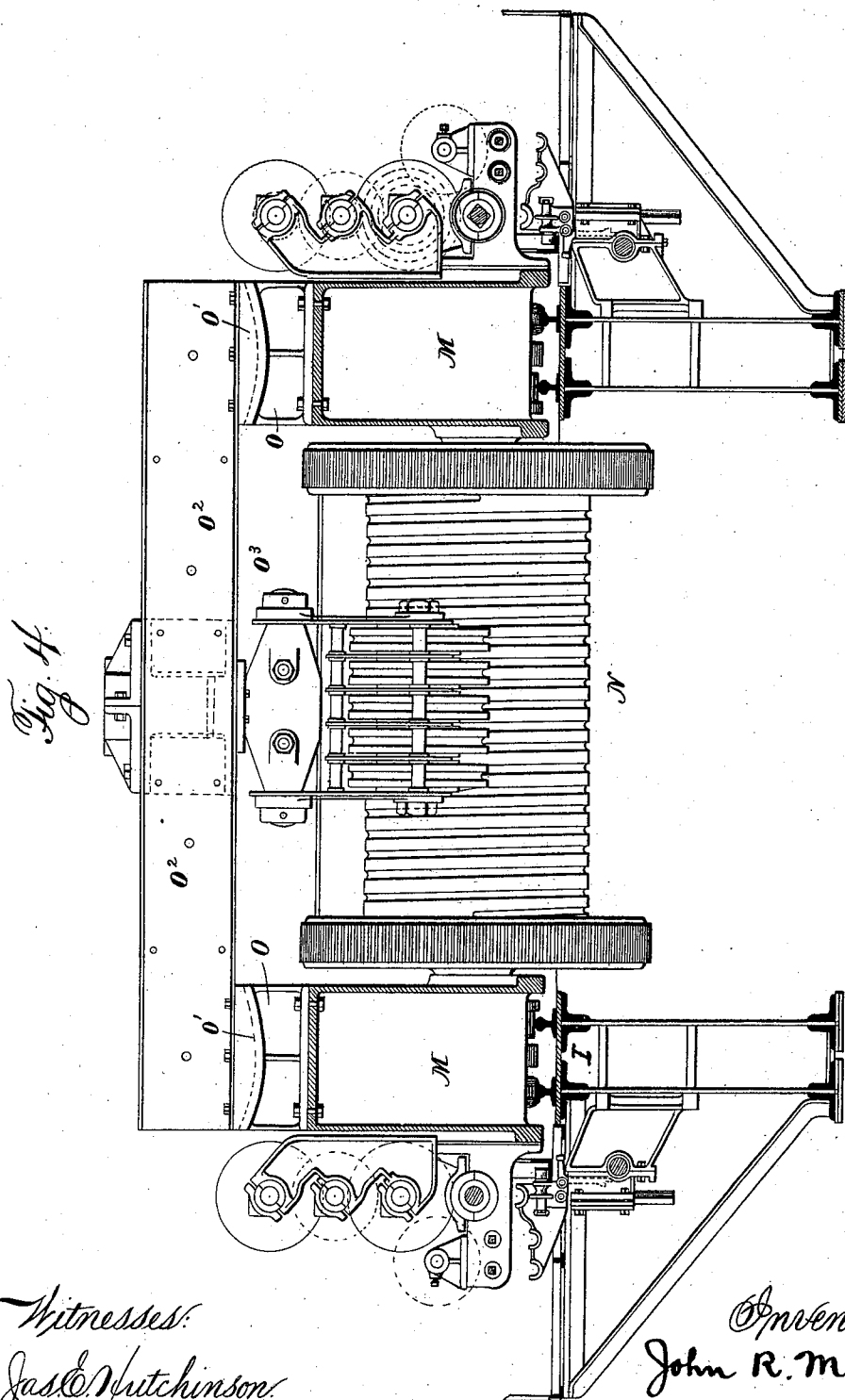
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UNITED STATES PATENT OFFICE.

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. 486,117, dated November 15, 1892.

Application filed July 27, 1891. Serial No. 400,794. (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 the
10 same.

My invention relates to an improvement in overhead traveling cranes.

In overhead traveling cranes consisting, essentially, of a bridge mounted on wheels, the
15 latter running on tracks placed lengthwise the shops, and a trolley mounted on the bridge and adapted to travel lengthwise the bridge the tracks on which the bridge travels are usually placed adjacent to the side walls of
20 the building, so as to bring the entire floor-space of the shop or foundry within reach of the lifting-chains carried by the trolley. The length of the bridge depends upon the width of the building; but in all cases the bridge is
25 supported solely at its ends and is of such length that there is a slight deflection of the girders and the beam supporting the main chain-blocks when the crane is sustaining its maximum load, and as the movement of the
30 parts on the trolley are imparted by parts carried by the girders or bridge it follows that any deflection of the bridge would naturally cause parts to bind and also cause the trucks carrying the bridge to tilt inwardly.

35 The object of this invention is to provide means for compensating for the deflection of the bridge and beam on the trolley for supporting the main-chain blocks; and it consists in the parts and combinations of parts, as will
40 be more fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in end elevation, partly in section, showing the trucks supporting one end of the
45 bridge. Fig. 2 is a plan view of one of the trucks, partly in section. Fig. 3 is an end view; and Fig. 4 is a transverse section of the bridge, showing the trolley in elevation.

A represents a trackway for the trucks, on
50 which one end of the bridge rests, the oppo-

site ends of the bridge resting on trucks mounted on a similarly-constructed trackway. (Not shown.) Each trackway consists of parallel rails suitably secured to supports
located ordinarily near the side walls of the
55 building, and the bridge is preferably supported on two trucks at each end, each truck having four wheels arranged in pairs, as shown. One wheel of each pair, and preferably the outer wheels, is provided with two
60 flanges adapted to closely embrace the sides of the tread of the rail and absolutely prevent one end of the bridge from moving faster than the other end and also prevent lateral
movement of the trucks. The other wheels
55 can have flat treads, and hence if the rails are slightly out of line will not affect the movement of the bridge. Located in a line passing between the rails of one trackway is an
angular shaft C³, which latter is rotated by
70 any suitable power and imparts motion to the movable parts on the bridge by means of a sleeve C⁴, carried by one of the trucks. This sleeve is free to slide on the shaft C³, but is
75 provided with a bore corresponding in cross-section to a cross-section of the angular shaft, and hence it follows that when the angular shaft is rotating the sleeve is also in motion. Rigidly secured to the sleeve is a toothed
80 wheel, which latter by means of suitable gearing (not necessary to be described here) imparts motion to the mechanism for driving the bridge and trolley.

The wheels C C' of one truck at each end of the bridge are provided on their outer faces
85 with bevel-wheels D, which latter mesh with bevel-pinions E, secured to shafts E'. These shafts E' of the driving-trucks at the opposite end of the bridge are coupled up so as to move in unison, and thereby impart uniform
90 movement to both ends of the bridge.

As before stated, each end of the bridge is supported on two trucks. Each truck consists of a truck-frame G and four wheels arranged in pairs, as described, and each truck
95 is provided near its ends, and preferably at points over the axles of the wheels, with bed-plates H, each having a rounded concave upper surface, the said concave surfaces being concentric with the axis of the
100

first driving-shaft H', which latter is carried on the bridge and is provided with spur-wheels, and through the aid of intervening spur-wheels impart motion to the shafts E'.

5 The bridge consists, primarily, of two girders I, (see Fig. 4,) rigidly secured together at their ends by end girders or beams J. To the under side of the end girders J, at each end of the bridge, are secured four bearing-

10 blocks K, having convex bearing-surfaces which are adapted to rest or bear in the corresponding concave bearing-surfaces of the bed-plates H on the trucks G. These bearings or blocks overlap the ends of the bed-

15 plates H and are provided on their under sides with curved or convex surfaces, which latter snugly fit the curved faces of the bed-plates. While I have shown four bed-plates and four blocks supporting each end of

20 the bridge, it is evident that I can increase or decrease the number as necessity demands. The end girders or beams J rigidly connect the two girders or sides of the bridge, and the blocks or bearings thereon rest on the

25 bed-plates, and as the blocks overlap the bed-plates and as the bed-plates and blocks are curved it follows that displacement of the bridge is impossible under ordinary conditions. The connection, however, between the

30 trucks and girders is a loose connection, and hence it follows that the bridge is free to deflect under the strain of a load without tilting the trucks and without straining the gearing connecting the angular driving-shaft

35 and the movable parts on the trucks. The bridge is also provided with a double set of tracks, on which the trolley M moves. The rails are preferably arranged in pairs on top of and lengthwise the girders, and the truck

40 of the trolley M is provided on each side with wheels arranged in pairs, adapted to travel on the rails. The trolley is moved by suitable devices (which form no part of the present invention) from one end of the bridge to the

45 other, and is provided with one or more winding-drums N, around which the lifting-chain is wound and to which it is secured, and is also provided on its opposite sides with the blocks O, provided with concave or curved

50 seats for the reception of the convex or curved faces of the block O', secured to the beam O², which latter carries the main-chain block O³. This beam sustains a part of the load and is bound to be deflected, owing to the shock,

55 and by providing it and the truck of the trolley with compensating bearings, whereby the beam can give without tilting the truck, the trolley frame or truck is relieved of all lateral strain due to the deflection of the

60 beam, and by providing compensating bearings between the bridge and bridge-supporting trucks the bridge can give without tilting the trucks. Hence under all conditions the weight is equally supported on all wheels of

65 the trolley and bridge trucks.

I make no claim in this application to the gearing for driving the trucks, as the same is

claimed in application, Serial No. 404,321, filed August 31, 1891.

It is evident that numerous slight changes 70 and alterations might be resorted to in the relative arrangement of parts shown and described without departing from the spirit of my invention. Hence I would have it understood that I do not strictly confine myself to 75 the 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. In an overhead traveling crane, the com- 80 bination, with tracks and trucks thereon, the latter having curved seats, of a bridge provided at its ends with curved bearings resting loosely on the curved seats on the trucks and free to slide on said curved seats and a 85 movable trolley on the bridge.

2. The combination, with trackways, each consisting of parallel rails, and trucks mounted on said trackways, of a bridge the ends of which rest loosely on said trucks and free to 90 slide thereon to allow the bridge to give or yield under a load, substantially as set forth.

3. The combination, with trackways, each consisting of parallel rails, and trucks mounted on said trackways, of a bridge loosely 95 mounted at its ends on the trucks and adapted to have a sliding movement on said trucks, as described, and a movable trolley carried by the bridge, substantially as set forth.

4. The combination, with trackways and 100 trucks thereon, each truck having curved seats, of a bridge provided at its ends with bearing-blocks shaped to conform to the curvature of the seats and resting loosely thereon and a movable trolley on the bridge. 105

5. In an overhead crane, the combination, with a traveling trolley, the latter having curved seats, of a chain-block beam provided at its ends with curved bearings resting loosely 110 on the curved seats of the trolley and free to slide on said curved seats.

6. The combination, with a movable bridge and a movable trolley thereon, the said trolley being provided on its opposite sides with curved seats, of a chain-block beam having 115 curved bearing-blocks conforming in shape to the curved seats and loosely resting thereon.

7. The combination, with trackways, each consisting of parallel rails, and trucks mounted on said trackways, of a bridge the ends of 120 which rest loosely on the trucks, double trackways on the bridge, a trolley on said double trackways, and a chain-block beam loosely resting on the trolley, substantially as set forth.

8. The combination, with trackways, each 125 consisting of parallel rails, and trucks mounted on said tracks and provided with curved seats, of a bridge provided at its ends with curved bearing-blocks, which latter rest on the curved seats of the truck, a movable trolley 130 on the bridge, and a chain-block beam loosely supported on the trolley.

9. The combination, with two trackways, each consisting of parallel rails, and an an-

5 gular driving-shaft located in a plane passing between the rails of one of said trackways, of trucks on said trackways, a bridge on said trucks, a sleeve carried by one of said trucks and provided with a bore corresponding in shape with the cross-section of the angular shaft, and a gear-wheel carried by said shaft for transmitting the motion thereof to the movable parts on the bridge.

10 10. The combination, with two trackways, each consisting of parallel rails, and an angular driving-shaft located in a plane passing between the rails of one of the trackways, of

trucks on the trackways, a bridge loosely mounted at its ends on said trucks, and means 15 for transmitting the motion of the angular driving-shaft to the movable parts on the bridge.

In testimony whereof I have signed this specification in the presence of two subscrib- 20 ing witnesses.

JOHN R. MORGAN.

Witnesses:

T. R. MORGAN, Sr.,

F. E. DUSSEL.