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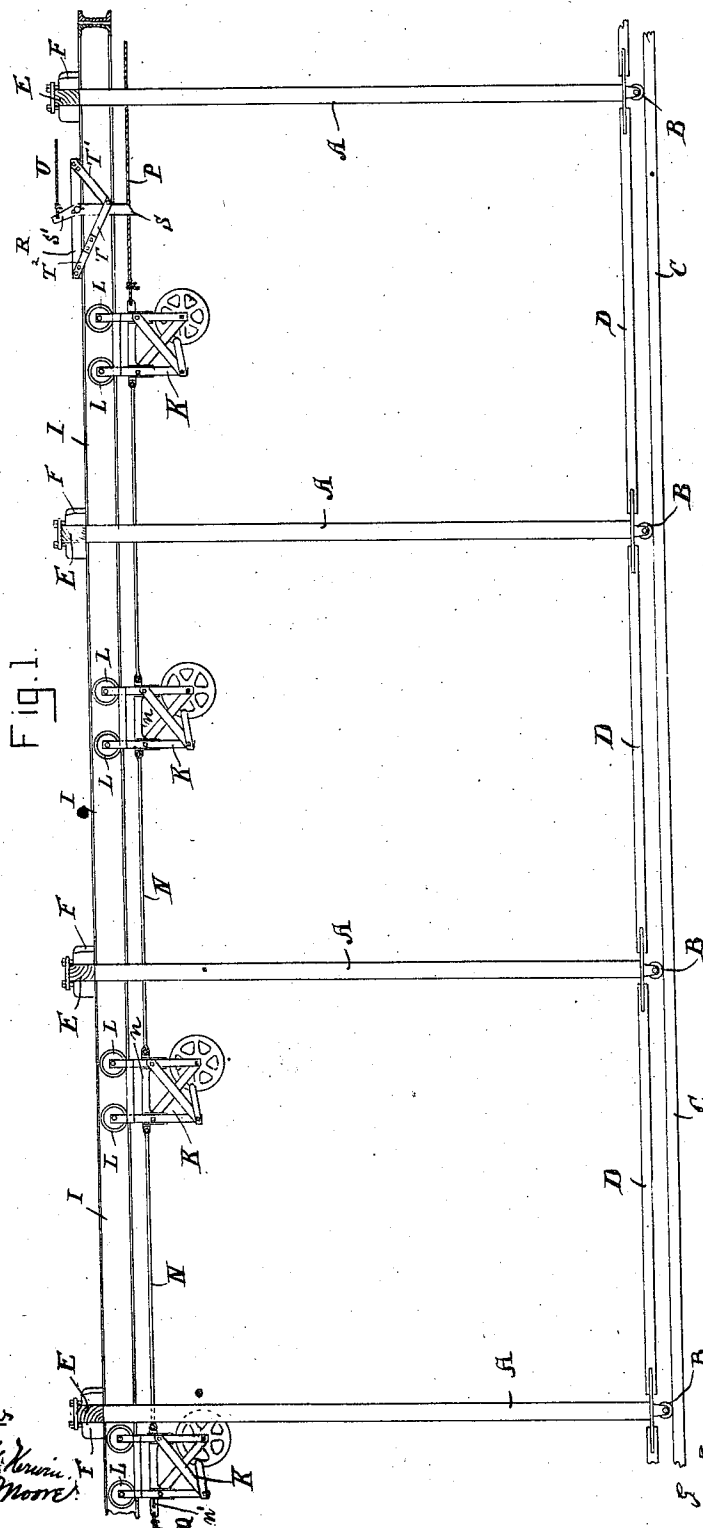
3 Sheets—Sheet 1.

J. N. DREW.

APPARATUS FOR RAISING AND MOVING MATERIAL.

No. 466,601.

Patented Jan. 5, 1892.



Witness
J. N. Drew
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Inventor.
Joseph N. Drew
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(No Model.)

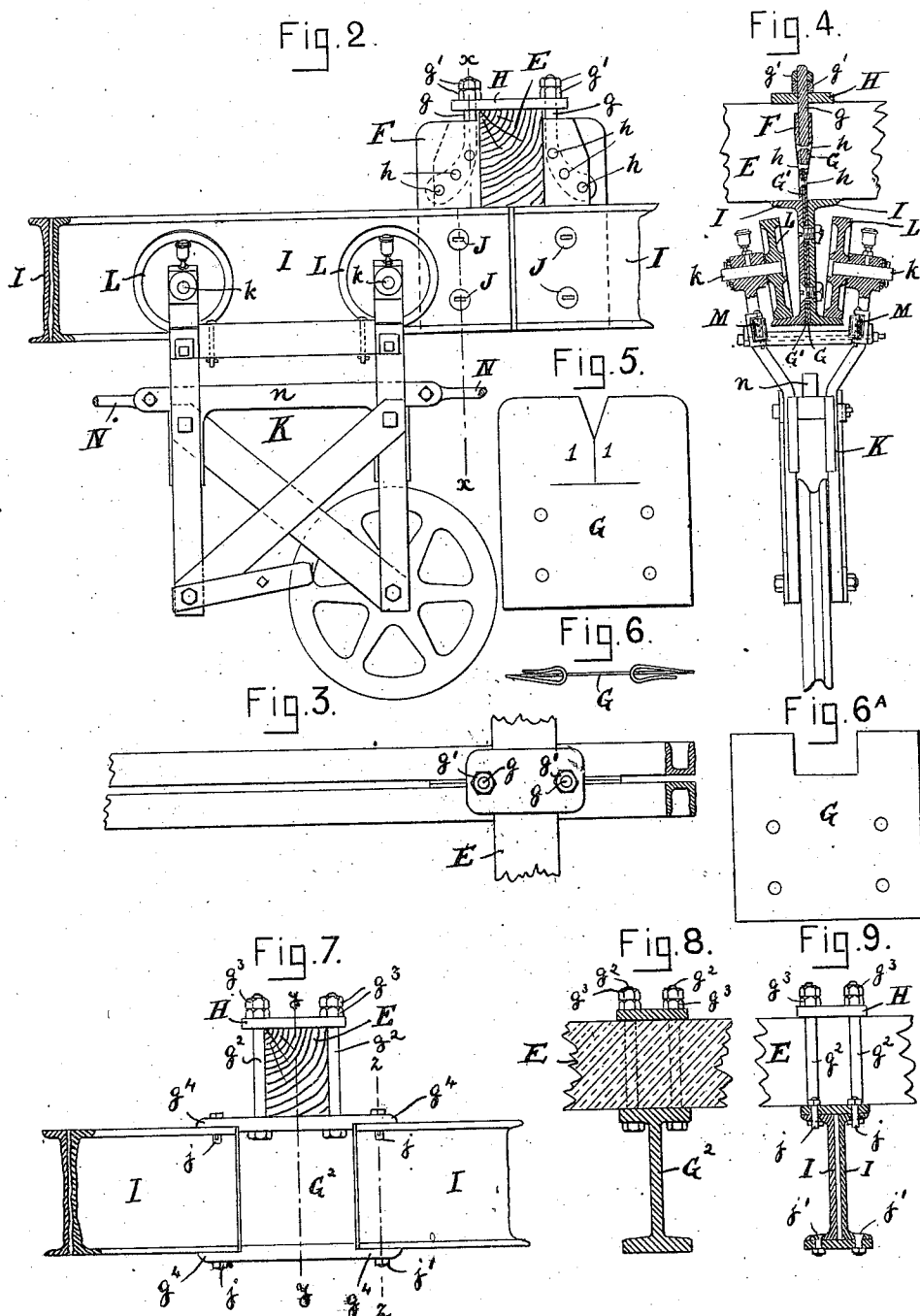
3 Sheets—Sheet 2.

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APPARATUS FOR RAISING AND MOVING MATERIAL.

No. 466,601.

Patented Jan. 5, 1892.



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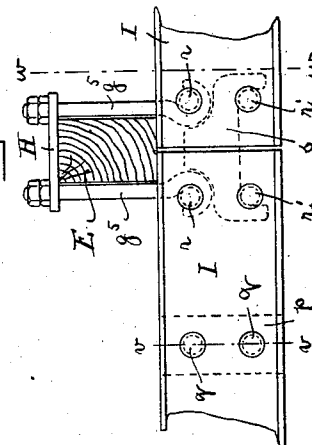
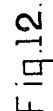
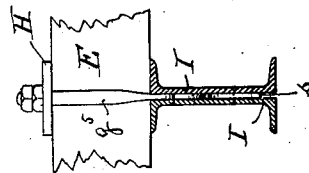
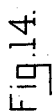
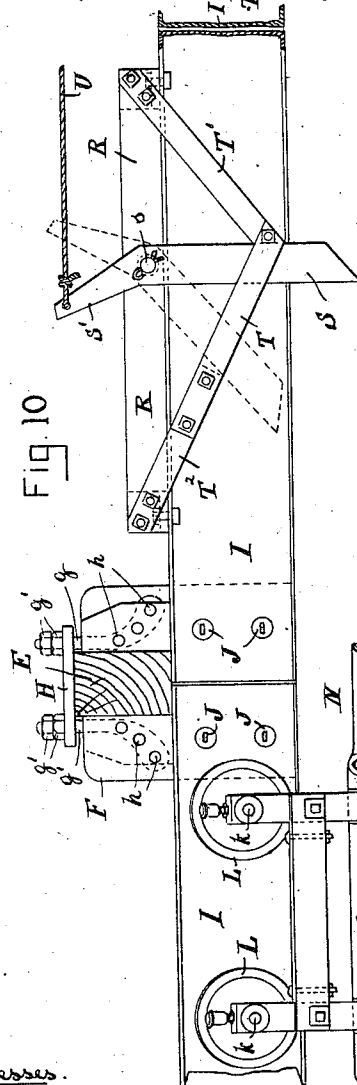
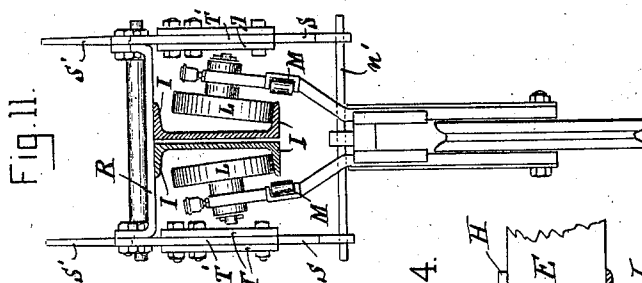
3 Sheets—Sheet 3.

J. N. DREW.

APPARATUS FOR RAISING AND MOVING MATERIAL.

No. 466,601.

Patented Jan. 5, 1892.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR RAISING AND MOVING MATERIAL.

SPECIFICATION forming part of Letters Patent No. 466,601, dated January 5, 1892.

Application filed July 13, 1891. Serial No. 399,267. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH N. DREW, a citizen of the United States, residing at Malden, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Apparatus for Raising and Moving Material, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to that class of apparatus employed for raising and moving materials from place to place; and the invention consists in certain details of construction, as hereinafter fully described, and pointed out in the claims.

Referring to the accompanying drawings, Figure 1 represents a side elevation of an apparatus for raising and moving materials embodying my invention. Fig. 2 is a side view of a portion of the track and one of the carriers drawn to a larger scale. Fig. 3 is a plan or top view of the same. Fig. 4 is a vertical section taken on line *x x* of Fig. 2. Fig. 5 is a side view of one of the supporting-plates before it is bent into form. Fig. 6 is a plan view of same after it is bent. Fig. 6^a is a side view of the other supporting-plate. Fig. 7 shows a modified arrangement for supporting the track. Fig. 8 is a vertical section taken on line *y y* of Fig. 7. Fig. 9 is a similar section taken on line *z z* of Fig. 7. Fig. 10 is a side view of a portion of the track and counter-buffer. Fig. 11 is a sectional view of the same. Figs. 12 to 14 show a modified means for supporting the channel-irons from the cross-beams, Fig. 12 being a side view. Fig. 13 is a vertical section taken on line *v v* of Fig. 12, and Fig. 14 a vertical section taken on line *w w* of Fig. 12.

The frame-work of the apparatus may be constructed in any suitable manner. In the drawings I have shown it consisting of standards *A A*, provided at their lower ends with small wheels *B B*, that run upon a track *C*. The standards are connected together at their lower ends by stringers *D D*.

Upon the top of each of the standards *A* are secured cross-beams *E*. To the cross-beams *E* are secured hangers *F*, that carry the track. These hangers each consist of two

flat plates of metal *G G'* cut to the form shown in Figs. 5 and 6^a, and placed side by side. The inner ends *l l* of plate *G* are bent over, as shown in Fig. 6, so as to embrace the flattened ends of bolts *g*. The plates *G G'* and bolts are all secured together by rivets *h*. If desired, only one plate *G* may be employed; but I prefer to use two, so as to give additional strength and flexibility. A flat plate *H* is placed over the top of each of the cross-beams *E*, through which plate the bolts *g* pass and are secured by nuts *g'*. On each side of the lower portion of the hangers *F* are secured channel-iron beams *I* by means of bolts *J*. The lower flanges of these channel-iron beams form the tracks upon which travelers *K* run.

The frame of the travelers *K* may be of any desired form of construction, according to the material it is desired to raise and move. The axles *k*, upon which the running-wheels *L* are mounted, are set on an angle equal to the angle of the lower flange of the channel-iron beams *I*, so that the wheels will have a full bearing-surface, and just opposite the edge of said flanges the travelers are provided with anti-friction rollers *M*, (see Fig. 4,) so that should they at any time come into contact with the flange, as in going round a curve, there will not be any friction to retard the speed.

The travelers *K* are connected together by means of rods or tension members *N*, secured to a bar *n* on each of the traveler frames, so as to form a train of travelers that are moved in one direction by a rope or cable *P* and in the opposite direction by a rope or cable *Q*, (see Fig. 1,) both of which are operated by any suitable mechanism. The bar of the last traveler at its rear end is formed with a slot to receive a bar *n'*, (see Figs. 1, 10, and 11,) so that when the train has reached the end of its journey the bar *n'* will come into contact with a counter-buffer and be stopped at the required place, as hereinafter described.

At suitable intervals to the top of the channel-iron beams *I* are secured metal frames *R*, to each of which is secured a counter-buffer *S* by means of a bolt *s*, upon which it is free to turn. The lower end of the counter-buffer *S* works between

guide-plates T, and when down has a bearing against the end of a brace T', and when raised it has a bearing against the end of the brace T², as shown in dotted lines. (See Fig. 10.)

5 The braces T' T² are both secured at their upper ends to the frame R. To one of the upper-arms S' of the counter-buffer is secured a rope U, by which the counter-buffer is raised or lowered into position. When raised, 10 as shown in dotted lines in Fig. 10, the train of travelers is free to pass; but when lowered, as shown in full lines, the bar n' at the end of the last traveler will come in contact therewith and the train be stopped.

15 In the connections between the stringers D and standards A and also between the channel-iron beams I and the hangers F a small amount of slackness or play is allowed, so that the whole construction will adapt itself 20 to the required position when passing round curves.

In Figs. 7, 8, and 9 I have shown a modified form of the hangers for carrying the channel-iron beams or tracks. G² is a short piece 25 of metal of I form having projecting ends g⁴. This piece of metal is secured to the beam E by means of bolts g², passing through a plate H, arranged on the top of the beam E, where they are secured by nuts g³. The ends of the 30 channel-iron beams I are inserted between the projecting ends g⁴ of the hangers G², and are retained in place at their upper ends by cutters and pins j and at their lower ends by countersunk headed bolts j'. (See Fig. 9.)

35 In Figs. 12 to 14 I have shown another modification of the means for supporting the channel-iron beams I from the cross-beams E. In this case each pair of the channel-iron beams I is rigidly connected together, plates p being 40 interposed between them at suitable intervals to keep them the proper distance apart, the beams and plates being secured together by rivets q, and near the ends of the beams I are secured bolts or rivets r. g⁵ are bolts the 45 lower ends of which are flattened and bent into the form of a hook, as shown in dotted lines in Fig. 12. These hooks are passed under the bolts or rivets r, and a plate s of about the form shown is placed between the beams 50 I and to the rear of hooks, the plate being held in place by bolts or rivets r' passing under the same. The upper ends of the bolts g⁵ pass through the plate H, and are secured by nuts, as before described.

55 What I claim as my invention is—

1. In an apparatus for raising and moving material, a track consisting of two channel-iron beams supported at suitable intervals by hangers secured between said channel-iron

beams and carried by cross-beams, whereby 60 the lower flanges of said channel-iron beams form the track for the travelers to run upon, substantially as set forth.

2. In an apparatus for raising and moving material, a track consisting of two channel- 65 iron beams supported from overhead cross-beams carried by suitable frame-work, in combination with a train of carriers suspended from and adapted to travel upon the lower flanges of said channel-iron beams, substan- 70 tially as set forth.

3. In an apparatus for moving and raising material, a track consisting of two channel-iron beams supported from overhead cross- 75 beams, in combination with a traveler having running-wheels L, adapted to be suspended from and travel upon the lower flanges of said channel-iron beams, said traveler having anti- 80 friction wheels M, arranged on a line with the edges of said lower flanges of said track, substantially as and for the purpose set forth.

4. In an apparatus for raising and moving material, the combination of a track consist- 85 ing of two channel-iron beams supported at intervals by hangers secured to cross-beams on a movable frame with a train of travelers adapted to run upon the lower flanges of said channel-iron beams and having running and 90 anti-friction wheels, said travelers being connected one to another by a rod or tension member, all arranged and operated substantially as set forth.

5. In an apparatus for raising and moving material, the counter-buffer S, in combination 95 with a track consisting of two channel-iron beams, said buffer being mounted in a metal frame secured on the top of said track, substantially as set forth.

6. In an apparatus for raising and moving material, a track consisting of two channel- 100 iron beams I, connected together at their ends by bolts or rivets r, bolts g⁵, having hooked ends for passing under said rivets, the plate H, through which the upper ends of the bolts pass, nuts for securing same, the plate s inter- 105 posed between the channel-iron beams and between the hooks, and bolts or rivets r' for retaining said plate s in place, substantially as and for the purposes set forth.

In testimony whereof I have signed my 110 name to this specification, in the presence of two subscribing witnesses, on this 1st day of July, A. D. 1891.

JOSEPH N. DREW.

Witnesses:

L. W. HOWES,
EDWIN PLANTA.