

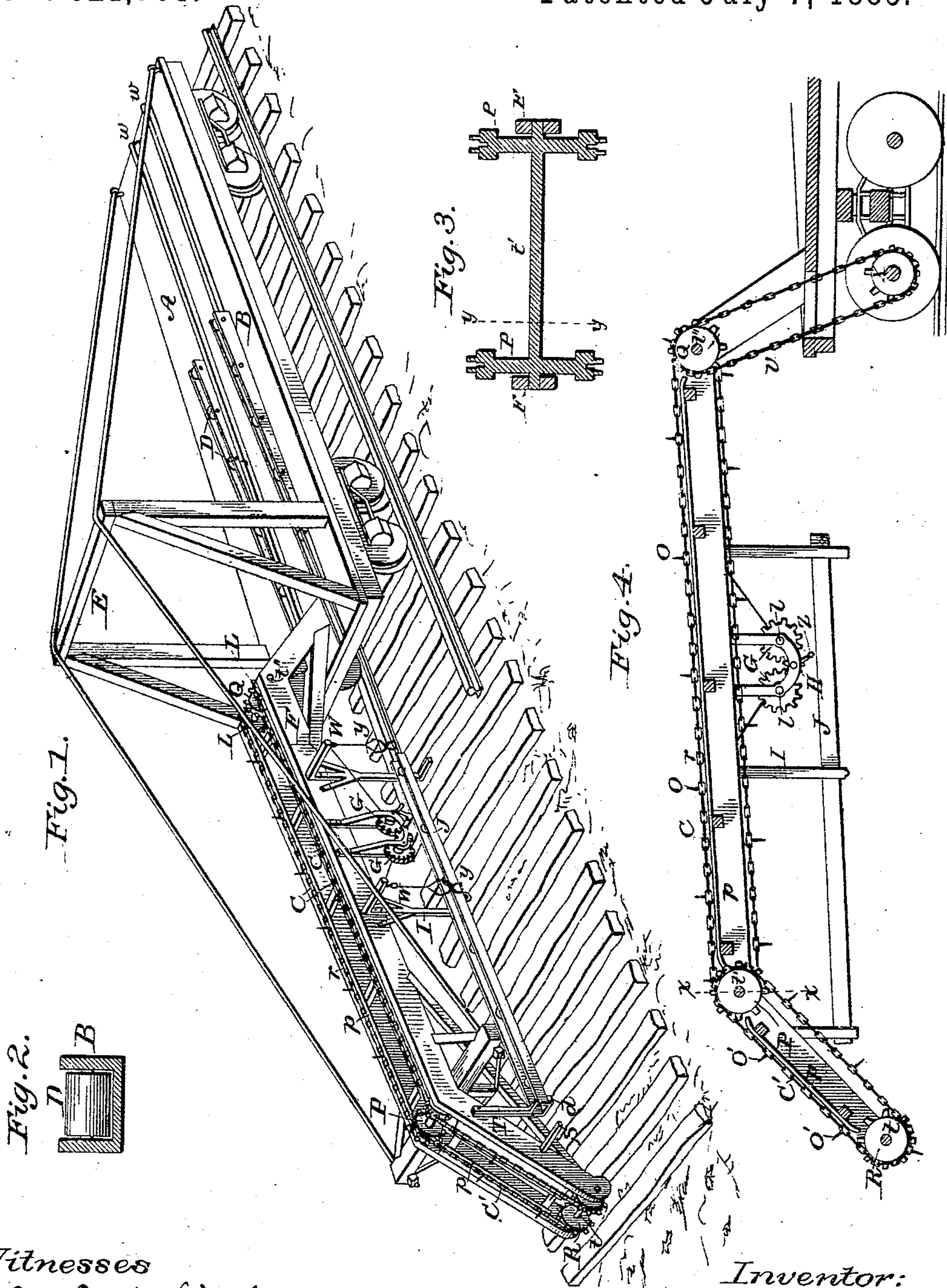
(No Model.)

2 Sheets—Sheet 1.

G. A. SMITH.  
TRACK LAYING DEVICE.

No. 321,765.

Patented July 7, 1885.



Witnesses  
Jas. F. Oufamel  
William W. Dodge

Inventor:  
Geo. A. Smith  
per  
Hazard & Townsend  
his Attys.

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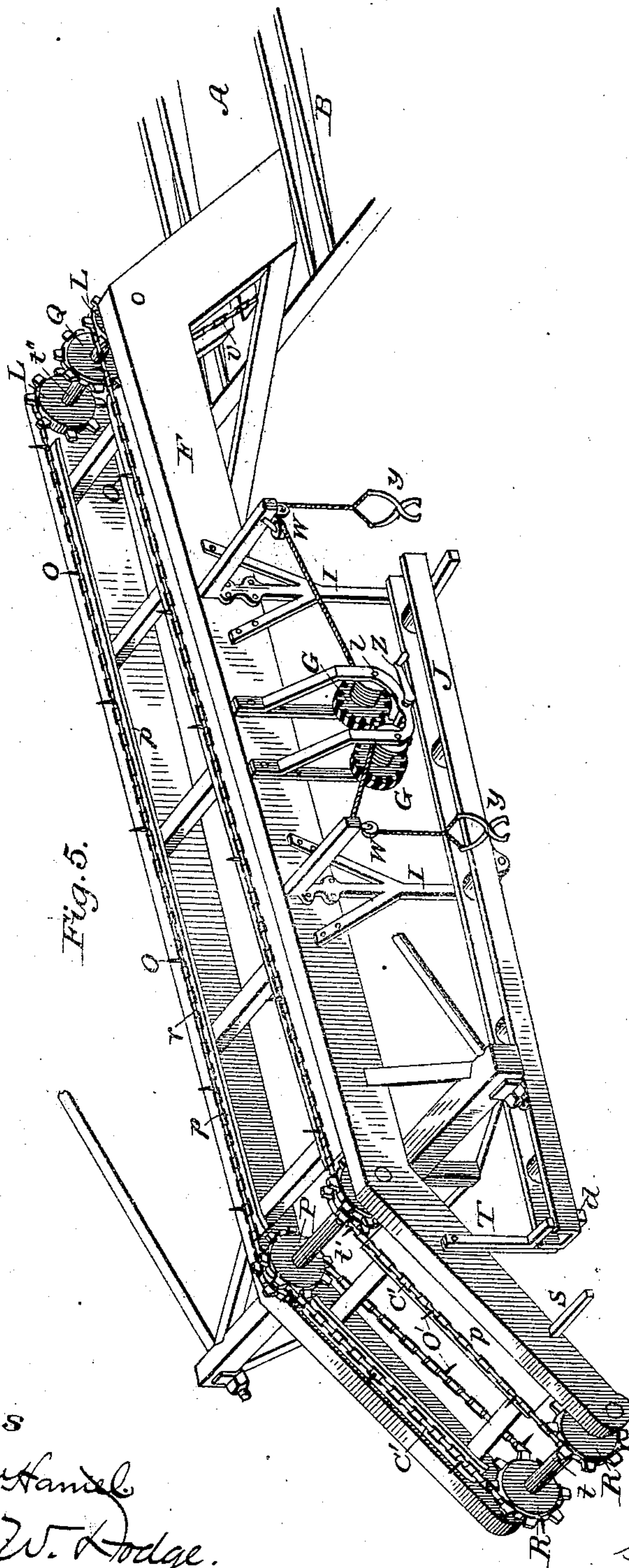


Fig. 5.

Witnesses

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# UNITED STATES PATENT OFFICE.

GEORGE A. SMITH, OF LOS ANGELES, CALIFORNIA.

## TRACK-LAYING DEVICE.

SPECIFICATION forming part of Letters Patent No. 321,765, dated July 7, 1885.

Application filed September 16, 1884. (No model.) Patented in Canada December 22, 1884, No. 20,773.

*To all whom it may concern:*

Be it known that I, GEORGE ALBERT SMITH, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Improvement in Track-Laying Devices, of which the following is a specification.

My invention relates to that class of devices adapted to facilitate the laying of ties and rails upon newly-constructed road-beds. The object of my invention is to project the ties and rails in front of the construction-car, and deposit them upon the road-bed in proper position at regular intervals. A further object of my invention is to cause the motion of the car to furnish motive power to carry the ties forward and place them in position, thus causing the number of ties deposited upon the road-bed to correspond uniformly with the distance passed over. I attain these objects by means of the device described herein and illustrated in the accompanying drawings, in which—

Figure 1 is an isometrical view of my device. Fig. 2 is an end view of the runway J. Fig. 3 is a cross-section of the shaft  $t'$  upon the line  $x x$ , Fig. 4. Fig. 4 is a longitudinal section on the line  $y y$ , Fig. 3, showing the chains and wheels upon one side of the frame as viewed from the inside thereof. Fig. 5 is an enlarged perspective view of the mechanism in front of the car A.

A frame, F, is mounted upon and projects forward from the front of a construction-car, A, and is supported by cables passing over the top of a frame-work, E, built upon the car to sustain them. The frame F inclines downward from the car. It is somewhat longer than the rails to be laid, and is bent downward at its front end so as to approach within a short distance of the grade. Three shafts,  $t t' t''$ , are mounted upon the frame F, one at each end and one at the angle in the frame.

Near each end of the shaft  $t''$ , and just within the beams of the frame, is mounted a toothed wheel, L, over which an endless chain or belt, C, passes. The chains or belts C extend along the frame to wheels P, mounted near the ends of the shaft  $t'$ . The faces of the

wheels P are broader than the wheels L, and have two sets of cogs, and carry, in addition to the chains C, the chains C', which pass downward along the inclined portion of the frame to and around the toothed wheels R, mounted upon the shaft  $t$ . The endless chains or belts C and C' rest upon plates  $p$ , extending along the frame, and are provided with cross-bars  $r$ , upon which the teeth of the wheels act to propel the belt. The purpose of the plates is to sustain the belts when loaded with ties.

Upon the outer face of the belts spikes O O' are rigidly set at intervals corresponding to the distance desired between the ties from center to center.

The shaft  $t''$  has also a toothed wheel, Q, mounted midway between the beams of the frame, and connected by an endless chain, V, with a toothed wheel, X, mounted midway upon the axle of the car-truck.

A tramway,  $w$ , is laid upon the floor of the car and connects with a corresponding tramway upon the cars in the rear.

Upon the floor of the car, on each side of the tramway  $w$  and of the frame F, an inclined runway, B, consisting of a shallow trough having rollers D at intervals along its bottom, is mounted.

Upon each side of the frame F a corresponding runway, J, is suspended by a support, I, upon which it is pivoted. The point at which it is pivoted is nearer to the end next the car than to the front end of the runway, so that the force of gravity will cause the front end to be depressed and rest upon the support  $d$ , as shown in the drawings, where it is retained by the swinging trigger T, which holds the runway J at an angle corresponding with the runway B on the car.

Two axles,  $l l$ , are mounted in a bracket upon the side of the frame F, and are provided with cogged wheels G, which mesh with a pinion, H, to which a crank, Z, is attached, so that by turning the crank the axles will be rotated.

Two pulleys, W W, are suspended from davits projecting from the side of the frame, and a rope passes over each from the axles, respectively. A grapnel,  $y$ , adapted to grapple a rail, is attached to the end of each rope.



A stop, S, is mounted upon the frame so as to project in front of the runway, to stop the rail after it passes the trigger T.

The car A is placed at the head of a train of cars loaded with ties and rails, and having a tramway extending along them to correspond with the tramway on the car A. A small tram-car is provided to run upon the tramway to convey the ties and rails along the train to the car A. A number of rails are placed upon the car A, upon each side of the tramway, and the tram-car, loaded with ties, is placed at the end of the tramway, near the frame F.

The operation of the machine is as follows:

Two men are placed upon the car A, and the train is then pushed forward by a locomotive attached in the rear. The friction upon the front wheels causes them to revolve, thus turning the toothed wheel X, mounted thereon, which propels the endless chains. When the front of the frame has approached to within the length of the frame from the end of the track, the men begin laying the ties upon the endless chain between the spikes O, which, as the chain revolves, push the ties forward until they reach the bend in the frame, where they are pushed over upon the chain C' and rest upon the spikes O', which prevent them from sliding down the incline. As the chains C' move they allow the ties to pass downward until they are dropped off in front of the frame. The wheels Q and X are of such relative sizes that the velocity of the chain will correspond with the velocity of the car, and when the front end of the frame has reached the end of the track the forward tie upon the frame will have reached the end of the frame, and will be dropped upon the ground. As the car advances, the ties are dropped upon the ground at the proper distance apart. When the front wheels of the car near the end of the track, the car is stopped, and a rail is placed upon each of the runways B B and pushed forward off of the car and onto the runway J until it strikes the swinging trigger T and pushes it forward, thus releasing the runway J. The support I is at such a distance from the trigger T that when the rail strikes it the greater portion of the rail lies between the pivot and the car, and the weight of the rail causes the rear of the runway to depress until it rests upon the support I', which is in a horizontal line with the support I, so that the rail assumes a level position. As the rail will not overbalance until it is half off of the car, the runway J need not extend to the car. The grapnels y y are now attached to the rail, which is elevated by rotating the windlass until the rail is raised clear of the edges of the runway, when it swings out beneath the pulleys W W, which are hung directly above the line where the rail should lie when in position. The rail is then lowered until it rests upon the ties, where it may be properly placed and spiked.

The operation of placing the rail upon the other side of the frame is the same, and may

be conducted at the same time, as the machinery upon each side of the frame for handling the rails is separate from the other, and may be operated independently. Both sides of the frame are provided with corresponding machinery. After the rail is spiked sufficiently secure the train moves forward, and the operation just described is repeated, and so on until the track is completed, the train moving the length of a rail each time it advances.

If the friction of the front wheels of the truck is not sufficient to propel the machinery and carry the ties forward, both axles of the front truck may be connected by means of an endless chain and toothed wheels attached to the axles.

As the greater part of the frame is high above the ground, sufficient room is given to allow the men to work beneath it in leveling and placing the ties and rails.

The weight of the ties upon the inclined chains C' assists in propelling the chains.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a track-laying device, a frame projecting from the front of a construction-car, and provided with endless chains adapted to be connected with and propelled by the car-truck, substantially as set forth, such chains having projections upon them, whereby ties, when laid upon them, will be carried forward by the motion of the chains and be deposited upon the ground in front of the frame.

2. The track-laying device consisting, substantially as shown, of a construction-car having a frame projecting in front thereof, and provided with tie-carrying endless chains extending along it and connected by gearing, substantially as shown, with the axle of the car, whereby the rotation of the car-wheels is caused to propel the chains to carry forward the ties.

3. In combination with a construction-car, a frame extending forward therefrom and bent downward toward the road-bed at its forward end, carrying-chains extending from the rear end of the frame to the bend thereof, separate carrying-chains extending from the bend down to the lower front end of the frame, and a chain-wheel shaft located at the bend, carrying and common to both sets of chains, substantially as shown, whereby the first set of chains is caused to deliver to the second, and both sets are caused to move in unison.

4. In a track-laying device, the following elements: the shafts  $t$   $t'$   $t''$ , having the toothed wheels L, P, R, and Q, the endless chains C and C', having the spikes or projections O O', the wheels and axle of the construction-car, the toothed wheel X on such axle, and the endless chain V, all being in combination substantially as shown and described.

5. In a track-laying device, tie-bearing endless chains trained upon wheels mounted on a frame projecting in front of a construction-car, and being connected by means of gearing, sub-



stantially as shown, with the axle of the car, whereby the rotation of the car-wheels actuates the chains to carry the ties forward, substantially as set forth.

5 6. In a track-laying machine, the device for handling the rails, consisting, substantially as shown, of the inclined runway having rollers along its bottom, one part of the runway being mounted upon the car, and the other part  
10 being separate therefrom and pivoted near its middle length to a support in front of the car, whereby the rail may be slid down the incline from off the car and then be brought to a horizontal position before the grapnels for lifting  
15 and placing it are attached.

7. In a track-laying machine, a runway having three supports attached to a frame projecting from the front of a construction-car, the two supports nearest the car being on a  
20 level with each other, and the other support being lower than they, such runway being pivoted to the middle support at a point between its center of gravity and the car, and engaging with a swinging trigger mounted

above its forward end, substantially as set forth, 25 the middle support being placed more than half the length of a rail from the car, all being in combination substantially as set forth.

8. In a track-laying machine, and mounted upon a frame, as shown, two sets of tie-carry- 30 ing endless chains, C and C', having the projecting spikes O O', such chains being geared together upon a common shaft, and being mounted upon toothed wheels, all being in combination substantially as shown, the forward set of chains, C', being inclined downward, whereby the weight of the ties upon the  
35 same tends to propel the chains.

9. In combination with a supporting frame, a runway pivoted at or near its mid-length to 40 said frame, substantially as shown, whereby a rail may be changed from an inclined to a horizontal position preparatory to being lowered to the road-bed.

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Witnesses:

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