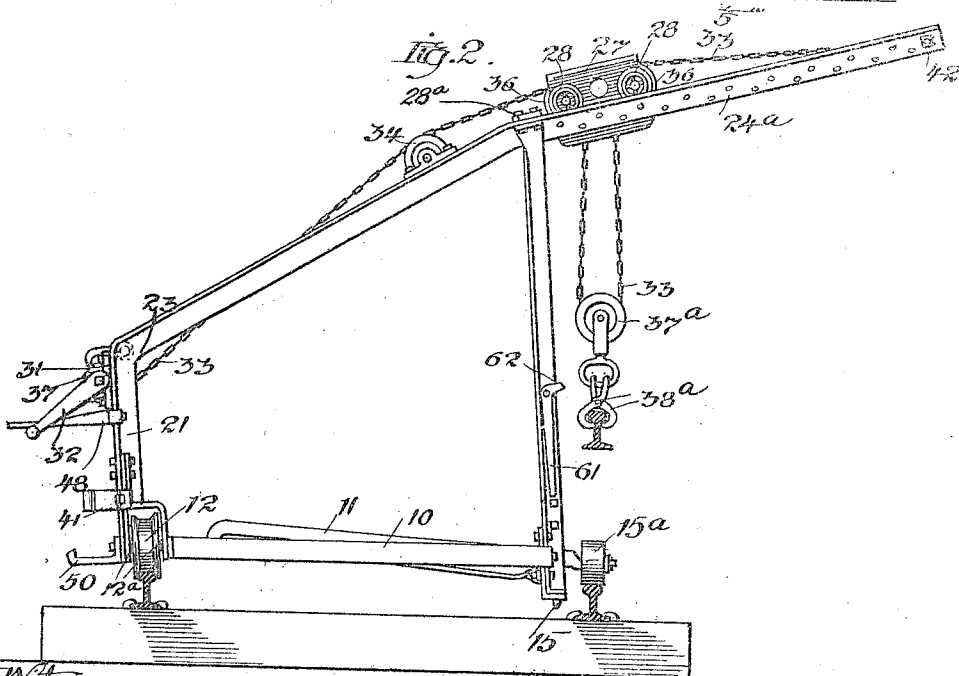
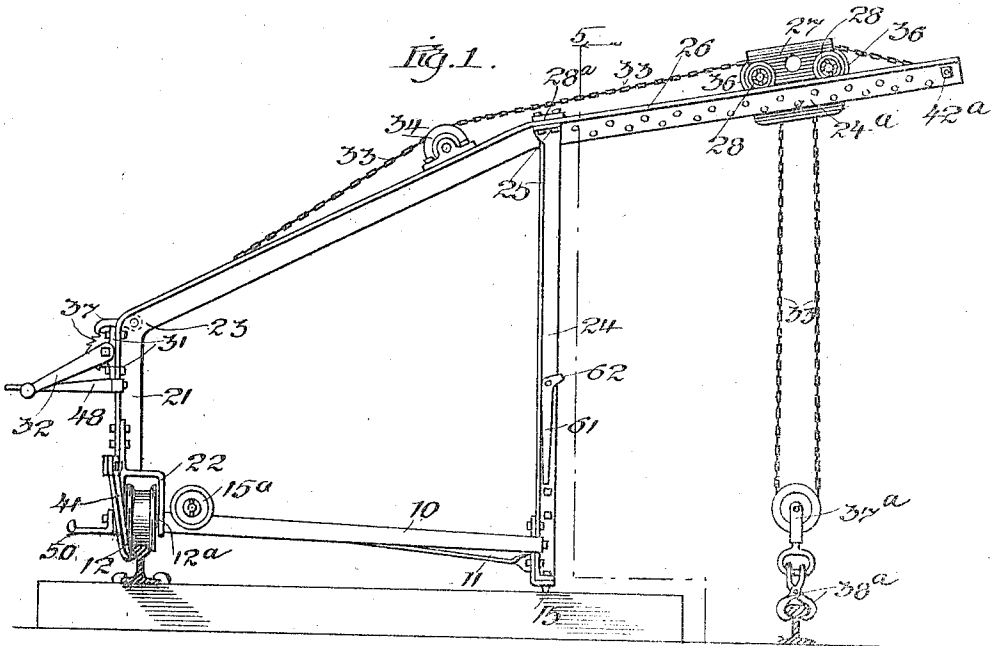


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 RAIL LAYER.  
 APPLICATION FILED OCT. 30, 1913,

1,255,193.

Patented Feb. 5, 1913.  
 3 SHEETS—SHEET 1.



Witnesses:

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 E. C. French

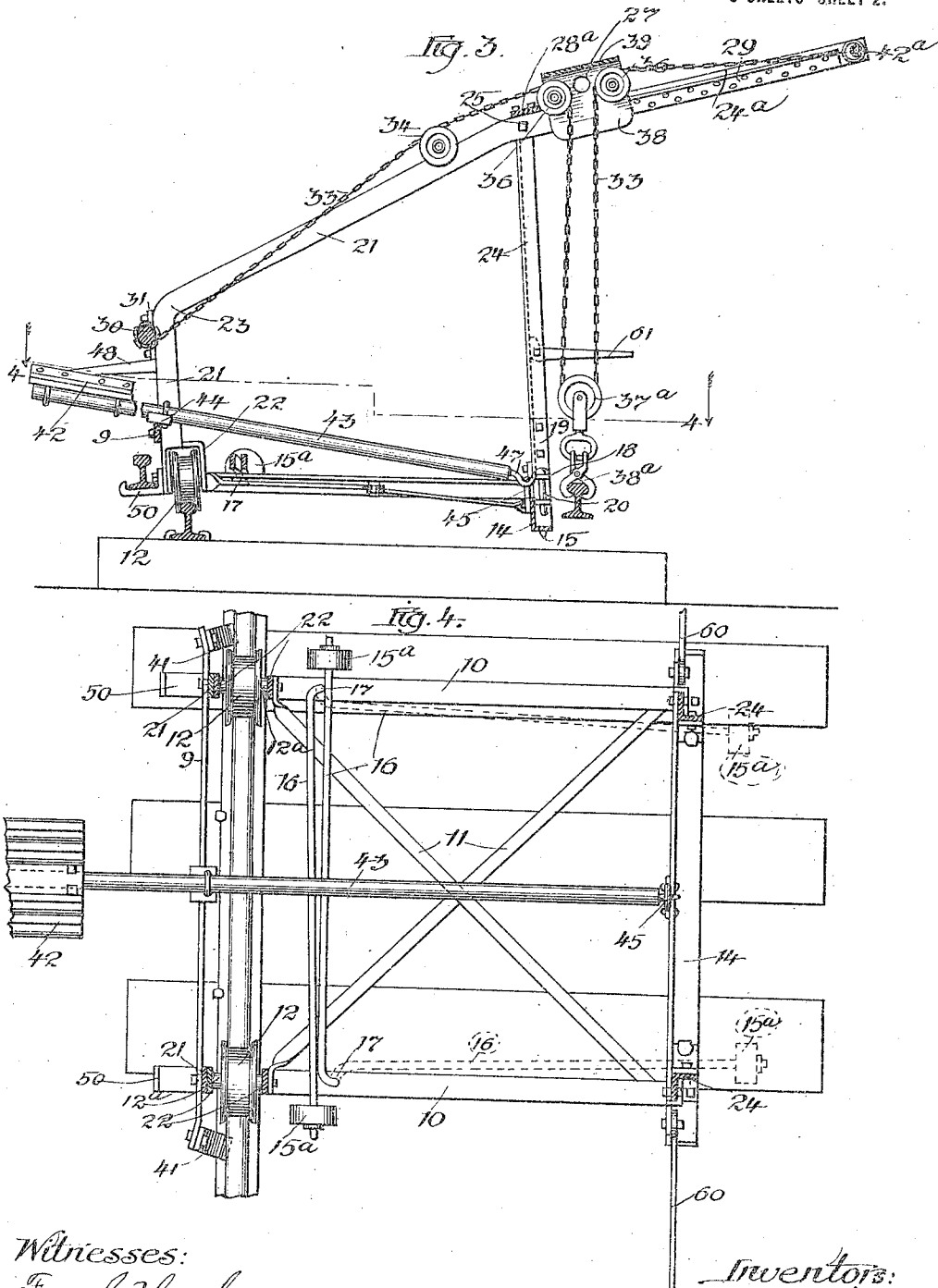
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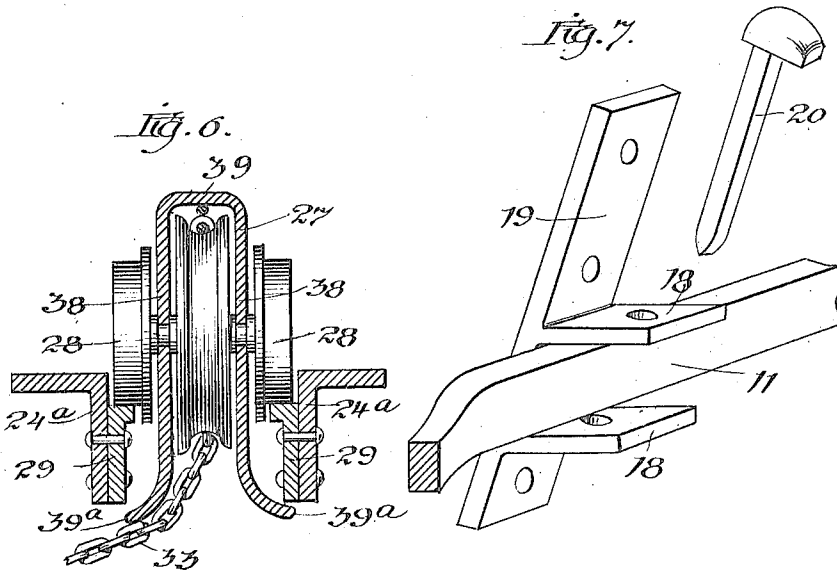
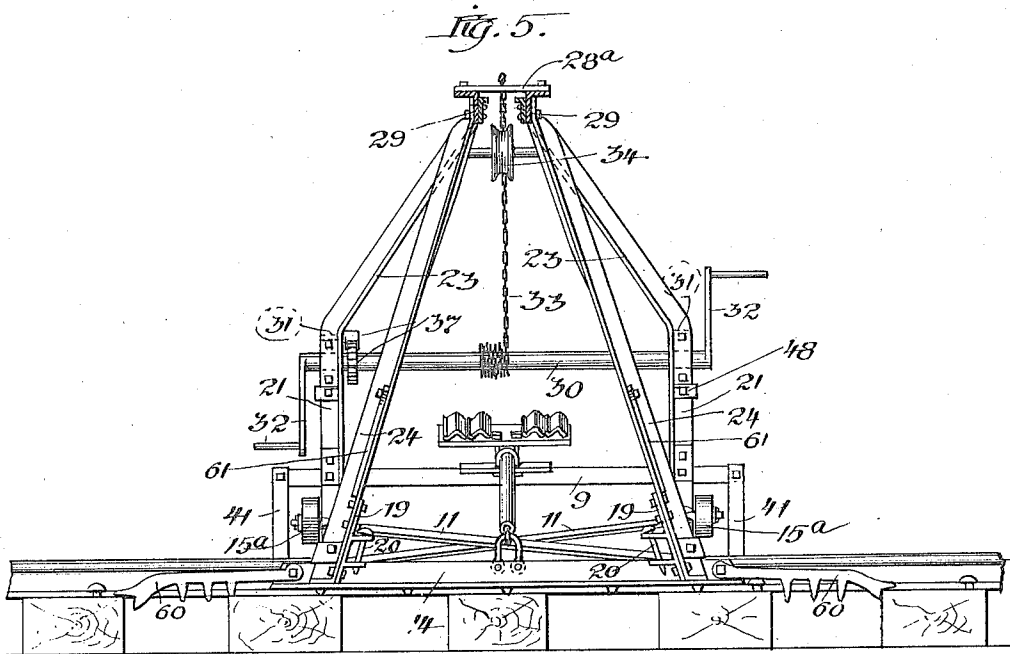
Witnesses:  
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# UNITED STATES PATENT OFFICE.

PATRICK H. MADDEN, OF SPARTA, AND FRANK L. PIERCE, OF LA CROSSE, WISCONSIN.

## RAIL-LAYER.

1,255,193.

Specification of Letters Patent.

Patented Feb. 5, 1918.

Application filed October 30, 1913. Serial No. 798,192.

*To all whom it may concern:*

Be it known that we, PATRICK H. MADDEN, a resident of Sparta, in the county of Monroe and State of Wisconsin, and FRANK L. PIERCE, of La Crosse, in the county of La Crosse and State of Wisconsin, have invented certain new and useful Improvements in Rail-Layers, of which the following is a full, clear, and exact description.

The invention relates to rail-layers.

The present invention designs to provide a rail-layer which is peculiarly adapted for manipulation by a small number of operators and which is simple in construction and light in weight so it can be readily and manually manipulated along a rail and into desired position for handling the rail.

The invention further designs to provide an improved track-layer which is simple in construction and is adapted to be quickly removed from the track in event that the track must be cleared for the passage of a train.

The invention further designs to provide an improved track-layer which is adapted to maintain its longitudinal assigned position on the track without special locking or blocking means to prevent its longitudinal movement along the track.

The invention still further designs to provide an improved track-layer in which transverse movement of the rail to the point where the rail is to be laid, is facilitated by the hoist, so that when the rail has been picked up at the side of a track and raised, the hoist will aid the operator or operators in transporting the rail transversely into alinement with the laid rail-sections.

The invention also designs to provide an improved track-layer which is simple in construction, may be produced at a low cost and which is efficient in facilitating the work of laying tracks.

The invention consists in the several novel features hereinafter set forth and more particularly defined by claims at the conclusion hereof.

In the drawings: Figure 1 is a side elevation of a track-layer embodying the invention, being shown in position assumed when a rail is ready to be lifted to be transported laterally onto the ties. Fig. 2 is a similar view showing the parts in position assumed when the layer is adapted to be transported on four carrying-wheels. Fig. 3 is a central vertical transverse section

showing the counter-weight and lever applied to aid the operators in tilting the layer and pushing it along a single rail. Fig. 4 is a horizontal section taken on line 4—4 of Fig. 3. Fig. 5 is a vertical section taken on line 5—5 of Fig. 1. Fig. 6 is a detail section through one of the wheels of the laterally movable truck of the hoisting mechanism. Fig. 7 is a detail perspective of one of the locks for the laterally movable carrying-wheels.

The track-layer is adapted to be moved on either a single rail at one side of a track or upon two rails when the layer is to be transported a considerable distance over a complete track, as frequently occurs in track repair work. For this purpose, the device comprises a truck upon which a derrick and a hoist are supported. The truck forms a base for the derrick and comprises a pair of cross-bars 10 usually formed of angle iron, a side-bar 9, and a pair of diagonal braces 11, all rigidly secured together. A pair of double flanged wheels 12, adapted to travel on a rail and to hold the truck against transverse movement, are journaled upon studs 12<sup>a</sup> at one side of the truck, and a bar 14 rigid with the bars 10 is disposed at the opposite side of the carriage and is usually formed of angle iron. This bar 14 serves as a shoe at one side of the carriage which is adapted to rest upon the ties between the rails of a track or inwardly of the companion rail to that upon which the wheels 12 travel. The shoe is provided with prongs or teeth 15 which are adapted to be forced into the ties to firmly secure the carriage against longitudinal movement when the shoe rests upon the ties. The distance between the shoe and the carrying-wheels is less than the gage of the track, so that the shoe, when wheels 12 are upon one rail, will be disposed inwardly of the point at which the rail is to be laid. As a result of the employment of shoe 14, the truck will, at all times when the shoe is supporting one side thereof, serve to automatically hold the truck and derrick supported thereby, against longitudinal movement, and the necessity of employing special locking means for securing the carriage against longitudinal movement is avoided. Dogs 60 which are pivoted to the ends of the shoe, may be used to further secure the truck against longitudinal movement when there is ice on the track.

At times, for example in repair work, where the rails to be laid or replaced are a considerable distance apart, it is desirable to run the truck on two rails of the track and for this purpose a pair of wheels 15<sup>a</sup> are mounted on the outer ends of arms 16 which have their inner ends pivoted, as at 17, in cross-bars 10, respectively. These pivots permit the wheels 15<sup>a</sup> to be swung outwardly of the shoe 14, as indicated by dotted lines Fig. 4 to cause one side of the truck to be supported on a rail instead of being supported by the shoe. When the layer is being used in handling rails, and the shoe 14 is operative, arms 16 are swung into substantially parallel relation with one side of the carriage, as shown in full lines in Fig. 4, so that they will not interfere with the work of handling the rails.

When the wheels 15<sup>a</sup> are in operative position, each arm 16 is locked to the truck, being held between lugs 18 on a bracket 19 which is rigid with the truck by a pin 20 which is adapted to pass through holes in said lugs.

The improved layer thus comprises carrying-wheels which are adapted to be brought into use and to run on one of the rails when it is desired to push the layer along a track for a considerable distance, the wheels 15<sup>a</sup> being disposed at such an elevation that shoe 14 will be off the ties or roadway when the truck is running on four wheels.

The derrick upon the truck comprises a pair of angle-iron members 21 which have their lower ends secured to the carriage by lugs or brackets 22 which straddle the wheels 12, and which extend upwardly from the corners of the truck and thence transversely converging obliquely upward as at 23. The upper portions of these members are extended to support a track and converge upwardly, being secured at their upper ends, as at 25 to the derrick-members or standards 24. Members 21 extend laterally from standards 24 and project outwardly beyond the shoe 14 as at 24<sup>a</sup>, to support a track or runway for a carriage 27 which is provided with wheels 28 adapted to run on bars 29 secured to the inner faces of members 24<sup>a</sup>. The run-way or track formed by bars 29 is inclined upwardly from the standards 24 to cause carriage 27 to normally run toward the standards by gravity and to assist in moving the load suspended from the carriage toward the standards and into position to be arrested by a stop-plate 28<sup>a</sup>. When the carriage is thus arrested, the grappling-device suspended from the carriage 27 will be in correct position to unload a rail on the ties, where the rail is to be secured.

The hoisting-mechanism comprises a winding-drum 30 which is journaled in bearings

31 which are secured to members 21, and a crank 32 is provided at each end of the drum or windlass, to operate a hoisting chain 33 which is wound around the drum and extends over the guide-pulley 34 which is journaled on bars 21. From the guide-pulley 34 the chain 33 extends to the carriage 27 and over sheaves 36 which are journaled in the carriage, the cable between the sheaves being dropped to form a drop-loop for a pulley-block 37<sup>a</sup> which carries suitable grappling-hooks 38<sup>a</sup> for grasping rails. One end of cable 33 is hitched to a cross-bolt 42<sup>a</sup> at the outer end of bars 24<sup>a</sup>. A pawl and ratchet 37 are usually provided to secure the load against dropping during a hoisting operation.

The frame of carriage 27 is formed of a single sheet or piece of metal arched at its top, as at 39, to extend over the sheaves and bent to form sides 38 in which the journals for the wheels 28 and sheaves 36 are held. The lower edges of the sheet forming the carriage-frame are flared outwardly as at 39<sup>a</sup> to permit the cable and pulley-block to be swung longitudinally of the track, and to guide the cable so that it may be used to pull or drag a rail longitudinally of the track.

Hooks 41 are suitably pivoted to bar 9 and are adapted to hook under the head of the rail on which the flanged wheels 12 are resting to prevent the load from tipping or overbalancing the derrick about the shoe 14 as a fulcrum.

When the layer is secured in position by the shoe and the ties and is secured against tipping by hooks 41, the grappling-device 38<sup>a</sup> and block 37<sup>a</sup> may be taken to a rail a considerable distance to the side of the track and by operating the drum 30 to pull the chain 33, the rail will be dragged toward the derrick and transported transversely into position to deposit the rail at the proper point on the ties. Furthermore, if the rail to be laid is not at a point laterally of where it is to be laid on the ties, the grappling device can be hitched to the rail which can be dragged longitudinally to the place where it is to be laid, by operating the cable.

The improved layer thus exemplifies apparatus which is adapted to transport a rail longitudinally or laterally without shifting the hoisting-device carried by the derrick. By dispensing with longitudinally movable carriages, great simplicity in construction is attained and the necessity of frequently moving the derrick or hoisting mechanism during the operation of laying a rail, is avoided. It is only necessary to place the derrick in such position that when the rail is suspended by the grappling-device, it will be deposited in the proper line when the cable is paid out and this results either

when the rail is transported transversely or longitudinally.

Bars 29 which form a track or runway for carriage 27 are extended outwardly sufficiently to permit the carriage to suspend the grappling device, so that a rail may be picked up at the side of the ties and so that it may be raised above the ends of the ties before being moved transversely by the carriage. By this means, the rail may be picked up and raised before being moved inwardly without striking the ends of the ties at the side of the track where the rail is to be laid.

Arms 48 are bolted to the frame members 21 respectively and extend to one side of and outwardly from the derrick. These arms serve as means for tilting the derrick-frame and truck. By forcing the outer ends of the arms 48 downwardly, the derrick may be readily tilted, the flanged wheels 12 acting as a pivot or fulcrum. These arms 48 serve as tilting-means for the derrick and the truck when the shoe 14 is to be lifted off the ground so that the derrick can be moved longitudinally of the track, the wheels 12 traveling entirely on one rail while the shoe is suspended or off the ground. In other words, these arms 48 are used to tilt the derrick laterally to lift the shoe off the ground and then the derrick may be quickly moved on one rail. In this manner, the entire derrick may be quickly moved longitudinally to another position where it will be in place for picking up another rail, the shoe serving to automatically secure the derrick against longitudinal movement when the levers are released and the shoe is on the ties or roadway between the rails. In practice, two operators are usually employed at that side of the derrick where the windlass is located and a third operator manipulates the grappling-device. To facilitate the tilting of the derrick to lift the shoe 14 off the ties and to aid the operators in holding the shoe above the ground while the derrick is being rolled on a single rail, a counter-weight 42 is secured to one end of a lever or bar 43 which is provided at one end with a hook 47 adapted to engage a loop 45 on shoe 14 which is rigidly secured to the frame. Lever 43 is provided with a shoe 44 to bear on bar 9, so that the force of the counter-weight will be applied to aid the operators in tilting the derrick to lift the shoe off the ties. Hook 47 and loop 45 permit the outer end of lever 43 to be swung longitudinally of the track for the convenience of an operator. Counter-weight 42 may be in the form of a plate upon which spikes, fish-plates or other weights may be placed to act upon lever 43 and serve as counter-balancing means.

In track repairing, it is frequently necessary to clear the track for the passage of a train and it is important that this can be

done quickly. One of the important advantages of the skeleton construction employed in the layer, is that it can be made of sufficient strength to perform its work without being made so heavy that it cannot be easily manipulated. A lifting-lever 61 is pivoted to each of the standards 24 so that it will hang downward normally and is provided with an abutment 62 for engaging the standard when the lever is lifted to a horizontal position. If it is desired to lift the layer bodily off the track, or to reverse it, the tilting arms 48 at one side and the pivoted levers 61 at the other side may be used to lift the layer. By means of these arms, the derrick may be quickly moved from the track. The derrick may also be quickly removed from the track by the employment of either levers 48 or 61 alone to tilt the derrick until it falls to one side of the track.

In relaying rails on the tracks, a switch-point is usually used to fill the gap between the rails to permit a train to pass, and in order to insure that such a point will always be available, brackets 50 are secured to members 21 to carry such a switch-point or rail for making temporary connections. The brackets for this switch-rail extend outwardly from the truck, so that the rail thereon will be disposed to act as a counter-weight and to assist counter-weight 42 and the operators in tilting the derrick. In this manner, besides having the switch-point always available for making a temporary connection, it is utilized to counter-balance the machine and to facilitate tilting.

In operation when a rail laid outwardly of the track is to be picked up and placed in position on the ties, the parts will be in position shown in Fig. 1, the grappling-device 38<sup>a</sup> having been placed on the rail. The windlass will then be operated to take up cable 33 to lift the rail off the ground. As the cable is wound up, the load and the taking up of the chain, aided by the inclined elevated track upon which carriage 27 travels, will cause the carriage to move inwardly upon its track, until it is arrested by stop 28, and then the rail will be suspended over the line upon which the rail is to be laid on the ties. In this manner, the operation of the cable automatically effects transverse movement of the load into the correct position to unload the rail at the desired point on the ties. After the grappling device has been moved inwardly with the rail, the cable will be unwound and the grappling device will be lowered to lay the rail on the ties. If necessary, the grappling device may be connected to a rail a considerable distance outside of the ties and in that event, the rail will be dragged by the hoisting-device until it is suspended beneath the carriage 27 and in position to be raised by the cable. If the rail to be picked up is dis-

posed longitudinally of the place where it is to be laid, the grappling-device may be connected to it by swinging it longitudinally of the track and then dragging the rail until it is suspended beneath the carriage 27. When the grappling-device is connected to the rail off the ties, the operator will connect the grappling-device to the rail and in doing so, the cable will move the carriage 27 to the outer end of the overhead track in position to be arrested by stop 42<sup>a</sup>.

The invention thus exemplifies an improved track-layer which is adapted to be handled by a comparatively few operators. It also exemplifies a layer which is adapted to be easily and quickly tilted and then moved longitudinally to position the derrick for handling a load and which will automatically hold itself against longitudinal movement when one side of the derrick is supported on the shoe. The device in its entirety, is simple in construction and is adapted to drag a rail longitudinally or transversely of the track and to hoist and lower it into position by means of a single windlass or drum. The carriage can be quickly converted into a four wheeled carriage, so that the layer can be pushed over a complete track, when it is to be transported from place to place or when the rail is to be transported a considerable distance and over a completed track.

The invention is not to be understood as restricted to the details set forth, since these may be modified within the scope of the appended claims without departing from the spirit and scope of the invention.

Having thus described the invention, what we claim as new and desire to secure by Letters Patent, is:

1. In a rail layer, the combination of a truck, means for supporting said truck tiltably on one rail of a two-rail track, said means adapted to run on said rail, supporting means at the other side of the truck adapted to rest on the roadway between said track rails, and a derrick embodying a rail-hoist and mounted upon said truck, said truck and derrick being manually tiltable transversely to permit the same to be shifted on one rail.

2. In a rail-layer, the combination of a truck, wheels at one side thereof adapted to travel on one of two rails of a track, supporting means on the other side of the truck disposed between the rails, means whereby the truck may be tilted, wheels adjustably connected to the truck and adapted to run on the rail on the other side of the track, and hoisting mechanism mounted on said truck.

3. In a rail-layer, the combination of a truck provided with means at one side movably to support it upon a rail, supporting means at the other side of the truck

adapted to rest upon the roadway and formed to impede longitudinal movement of the truck, means whereby the truck may be tilted transversely to raise the supporting means off the roadway and to permit longitudinal movement of the truck upon the rail, carrying wheels adjustably connected to the truck and adapted to run upon an opposite rail and to hold said supporting means raised, and hoisting mechanism mounted on the truck.

4. In a rail-layer, the combination of a truck, wheels at one side thereof movably to support it on a rail at one side of a track, supporting means for the other side of the truck adapted to rest upon the roadway inwardly of the line of the rail at the other side of the track, means whereby the truck may be tilted transversely to lift said supporting means off the roadway to permit longitudinal movement of the truck upon one rail, carrying wheels movably connected to the truck and adapted to be adjusted to run upon the other rail and to hold said supporting means raised, and hoisting mechanism mounted on said truck.

5. In a rail layer, the combination of a truck, means for supporting said truck tiltably on one rail of a two-rail track, said means adapted to run on said rail, supporting means at the other side of the truck adapted to rest on the roadway between said track rails, a derrick embodying a rail-hoist and mounted upon said truck, said truck and derrick being manually tiltable transversely to permit the same to be shifted on one rail, and counter-balancing means to facilitate said tilting and shifting of said truck and derrick.

6. In a rail-layer, the combination of a truck provided with means at one side movably to support it upon a rail, supporting means at the other side of the truck adapted to rest upon the roadway and formed to impede longitudinal movement of the truck, means whereby the truck may be tilted transversely to raise the supporting means off the roadway and to permit longitudinal movement of the truck upon the rail, counterbalancing means for the truck to facilitate the tilting operation and the longitudinal movement on a single rail, carrying wheels adjustably connected to the truck and adapted to run upon an opposite rail and to hold said supporting means raised, and hoisting mechanism mounted on the truck.

7. In a rail-layer, the combination of a tiltable truck, wheels at one side thereof movably to support it on a rail, supporting means for the other side of the truck disposed to rest on the roadway between the rails of a track, wheels adjustably connected to the truck and adapted to travel upon a rail on the other side, a tilting arm projecting outwardly from one side of the

truck whereby the truck may be tilted transversely so that it will be supported solely at one side, and hoisting mechanism mounted on said truck.

5 8. In a rail-layer, the combination of a truck, wheels at one side of the truck movably to support it on a rail at one side of a track, a shoe fixed to the other side of the truck and disposed to rest upon the road-  
10 way between the rails of the track, wheels movably connected to the truck at the same side as the shoe for traveling upon a rail at the other side of the track, and hoisting mechanism mounted on said truck.

15 9. In a rail-layer, the combination of a truck, means for supporting the same on a track, a derrick on said truck comprising bars secured to one side of the truck, extending upwardly therefrom and bent and  
20 converging toward the other side, a transversely extending upwardly and outwardly inclined elevated track on the derrick forming an extension of said bars, a carriage on said track, and a rail hoist on the derrick  
25 and connected to said carriage.

10. In a rail-layer, the combination of a

truck, means for supporting the same on a track, a derrick on said truck comprising bars secured to one side of the truck extending upwardly therefrom and bent and con- 30  
verging toward the other side and upwardly converging standards at the latter side, a transversely extending upwardly and out-  
wardly inclined elevated track on the der- 35  
rick, a carriage on the elevated track, and a rail hoist on the derrick and connected to said carriage.

11. In a rail layer, the combination of a truck, wheels at one side thereof adapted to travel on one of two rails of a track, sup- 40  
porting means on the other side of the truck disposed between the rails, means whereby the truck may be tilted, a wheel adjustably connected to the truck and adapted to run  
45 on the rail on the other side of the track, and hoisting mechanism mounted on said truck.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."