No. 676,893. Patented June 25, 1901.

G. F. H. HICKS.

RAILROAD TRACK LAYING APPARATUS.

(Application filed Mar. 26, 1900.)

(No Model.) 7 Sheets—Sheet 1.

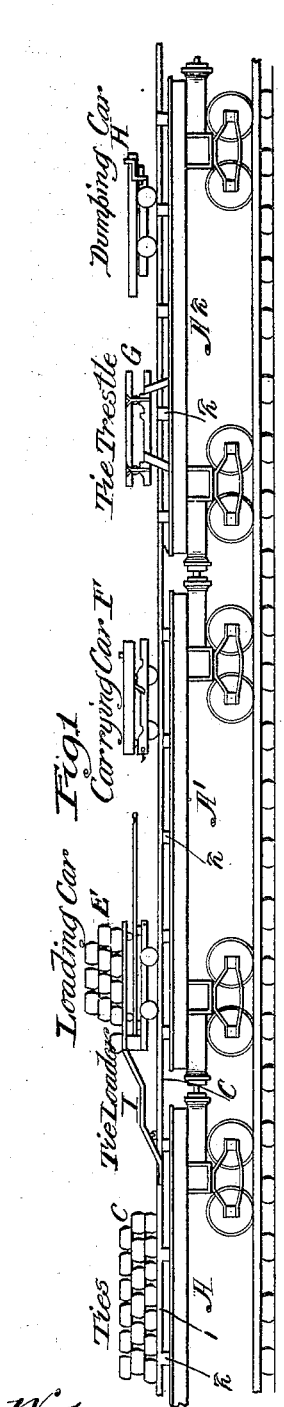


Fig. 1.

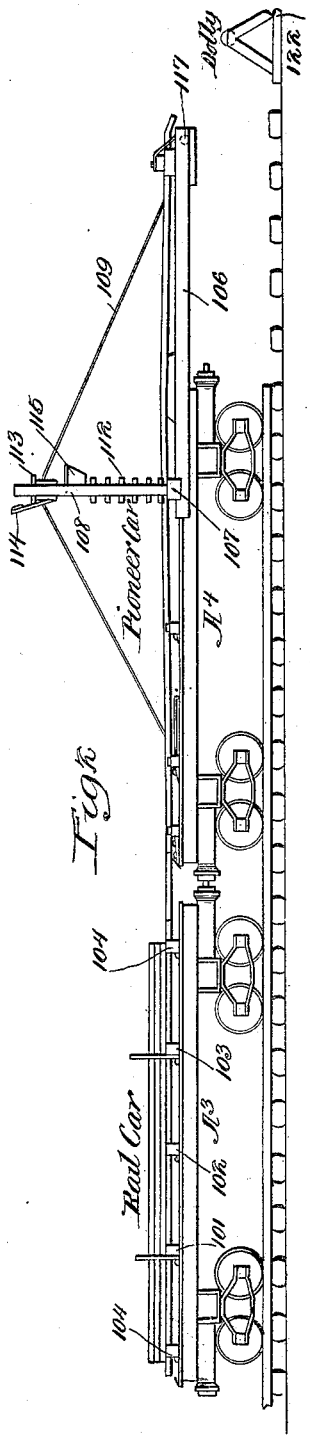


Fig. 2.

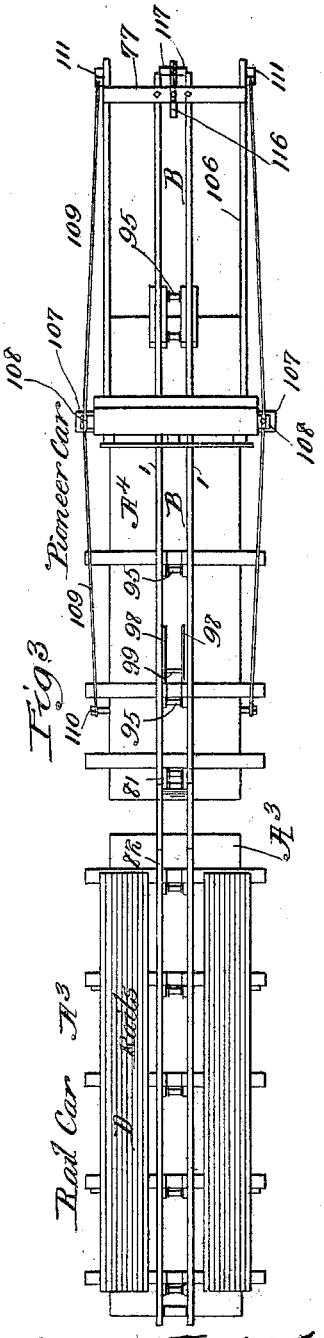


Fig. 3.

Witnesses
Edw. Parrett
H. S. Gaither.

Inventor
George F. H. Hicks
By Elliott & Hopkins
Attys

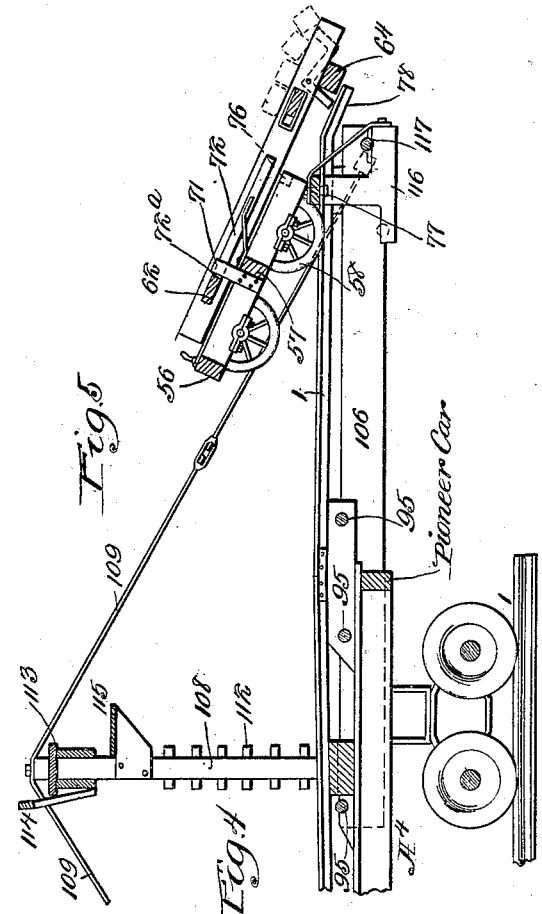
No. 676,893. Patented June 25, 1901.

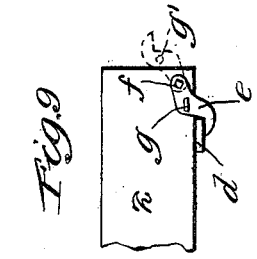
G. F. H. HICKS.

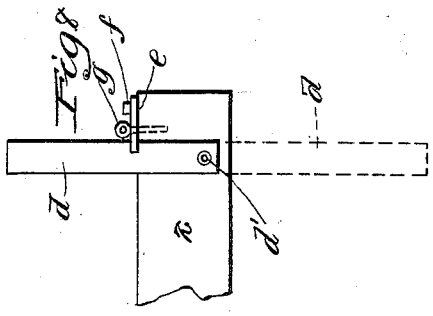
RAILROAD TRACK LAYING APPARATUS.

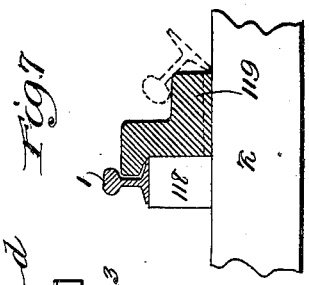
(Application filed Mar. 26, 1900.)

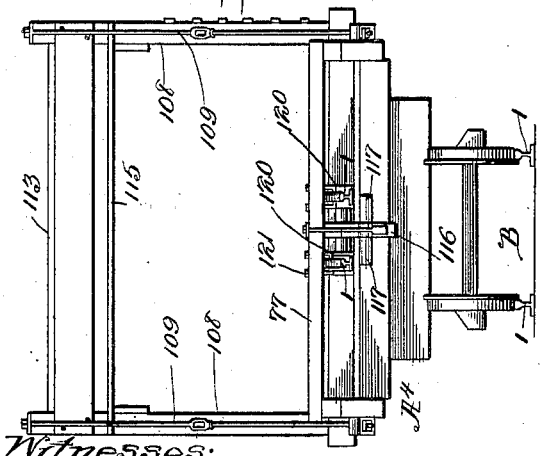
(No Model.) 7 Sheets—Sheet 2.

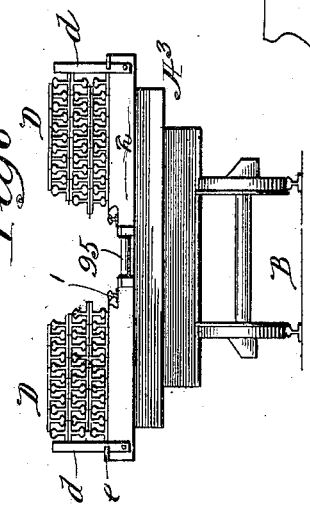












Witnesses:
Edw. Parrett
H. S. Gaither.

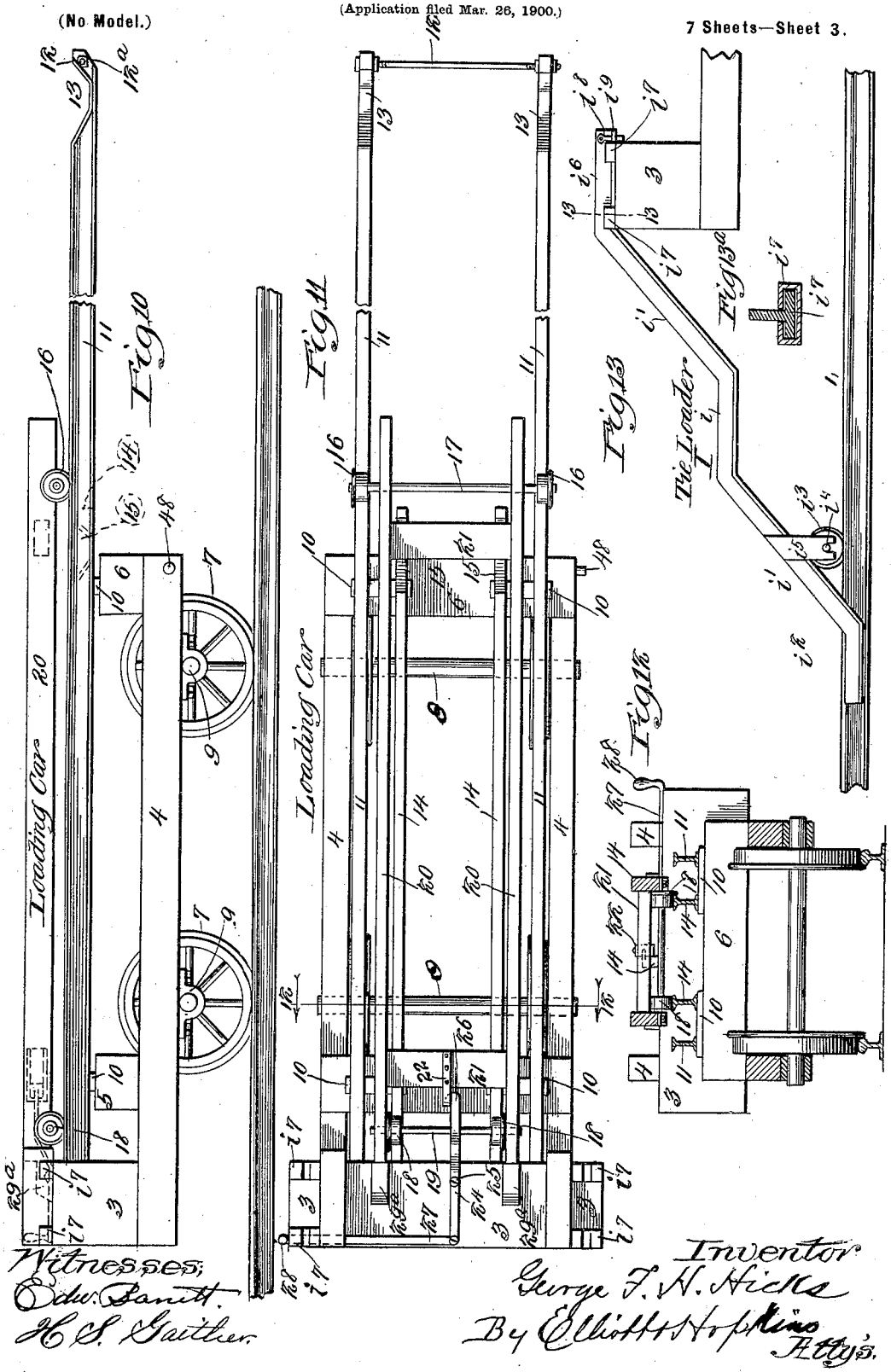
Inventor.
George F. H. Hicks
By Elliott & Hopkins
Atty's.

No. 676,893. Patented June 25, 1901.

G. F. H. HICKS.

RAILROAD TRACK LAYING APPARATUS.

(No Model.) (Application filed Mar. 26, 1900.) 7 Sheets—Sheet 3.

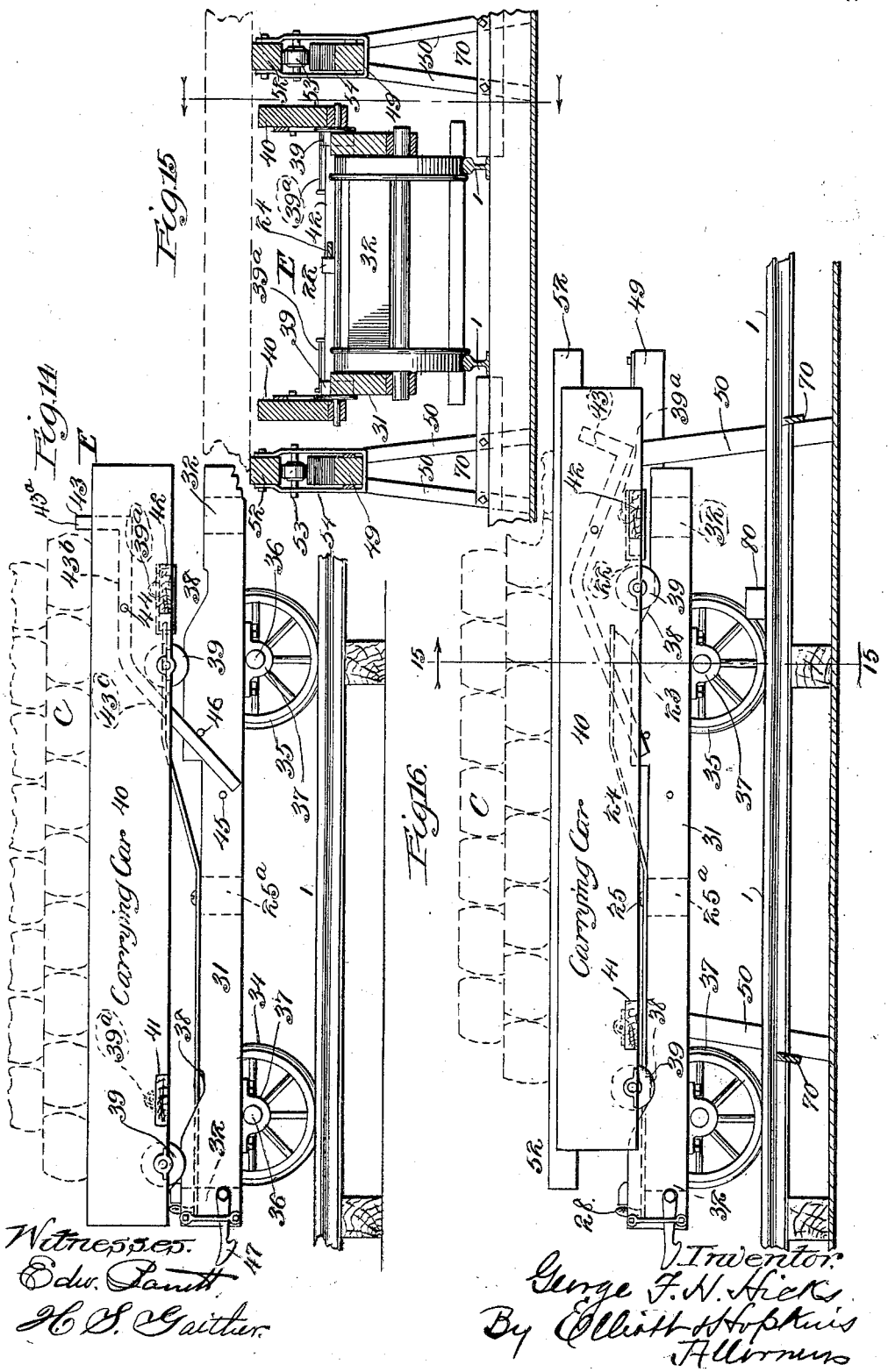


No. 676,893. Patented June 25, 1901.

G. F. H. HICKS.

RAILROAD TRACK LAYING APPARATUS.

(No Model.) (Application filed Mar. 26, 1900.) 7 Sheets—Sheet 4.



Witnesses.
Edw. Pannett
H. S. Gaither.

Inventor.
George F. N. Hicks.
By Elliott & Hopkins
Attorneys

No. 676,893. Patented June 25, 1901.

G. F. H. HICKS.

RAILROAD TRACK LAYING APPARATUS.

(Application filed Mar. 26, 1900.)

(No Model.) 7 Sheets—Sheet 5.

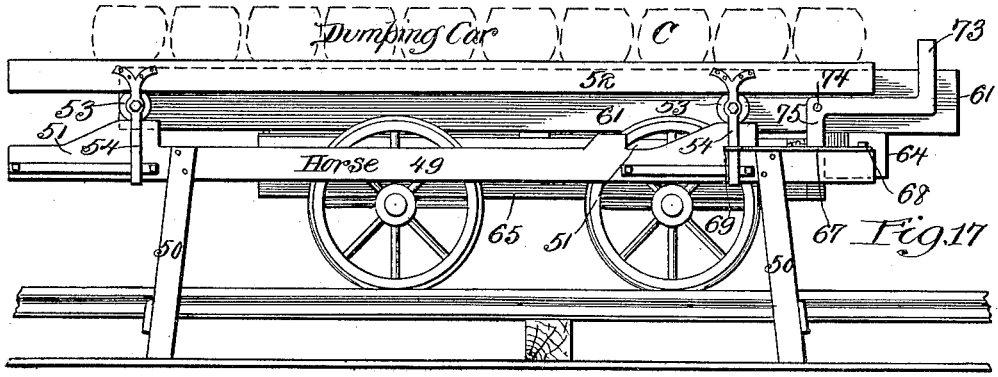


Fig. 17

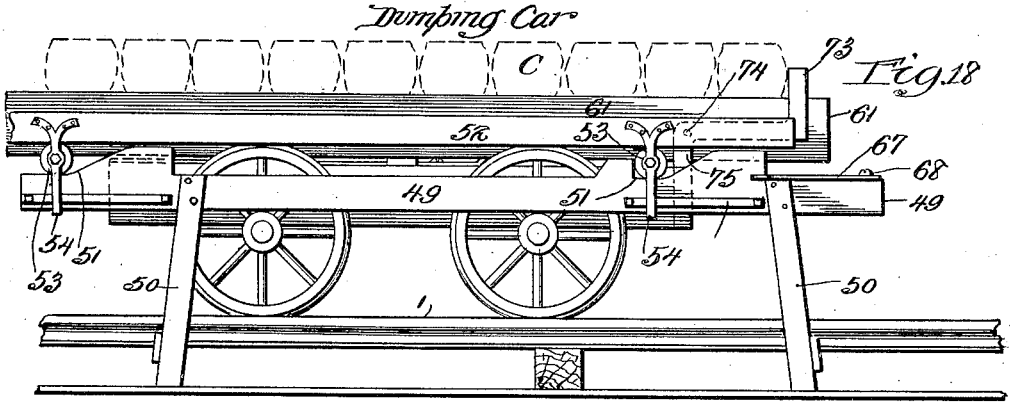
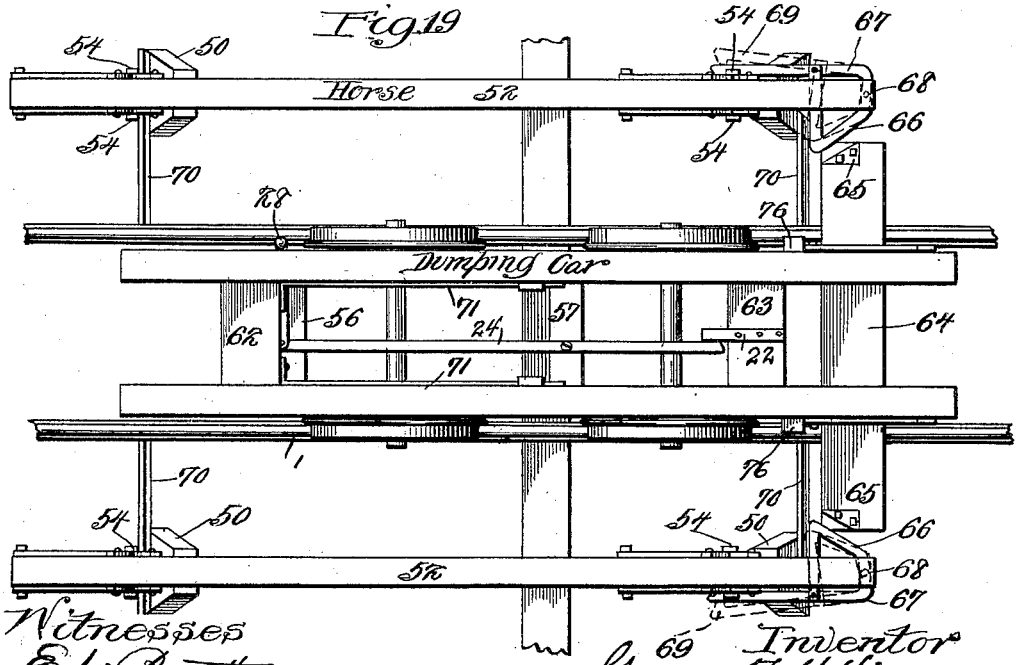


Fig. 18

Fig. 19



Witnesses
Edw. Bennett
H. C. S. Gaither.

Inventor
George F. H. Hicks
By Elliott & Hopkins
Attys

No. 676,893. Patented June 25, 1901.

G. F. H. HICKS.

RAILROAD TRACK LAYING APPARATUS.

(No Model.) (Application filed Mar. 26, 1900.) 7 Sheets—Sheet 6.

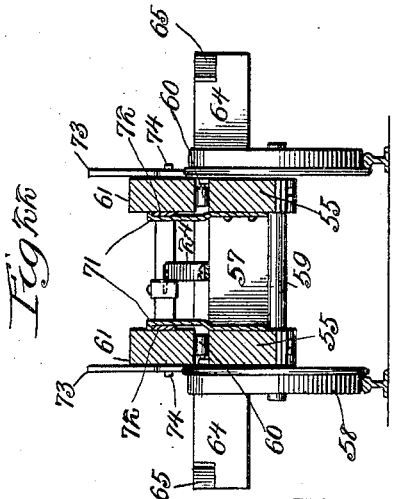


Fig. 5.

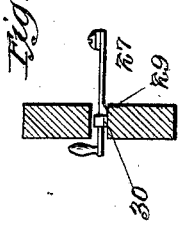


Fig. 3.

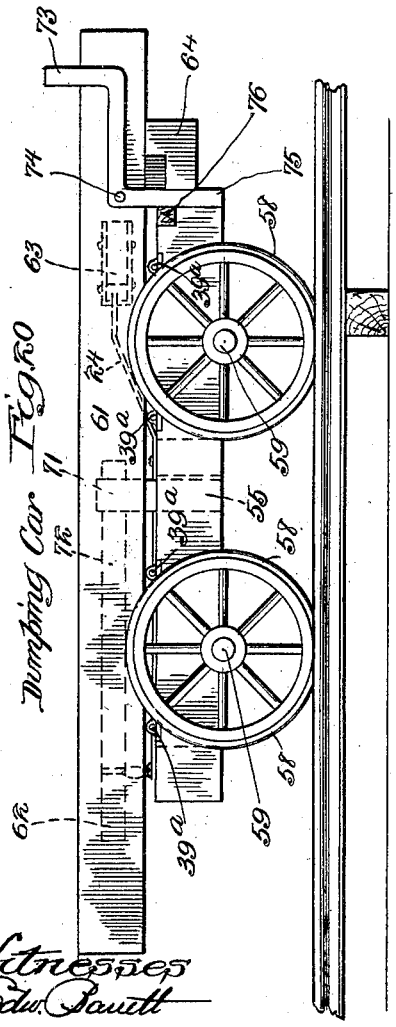


Fig. 6.

Dumping Car.

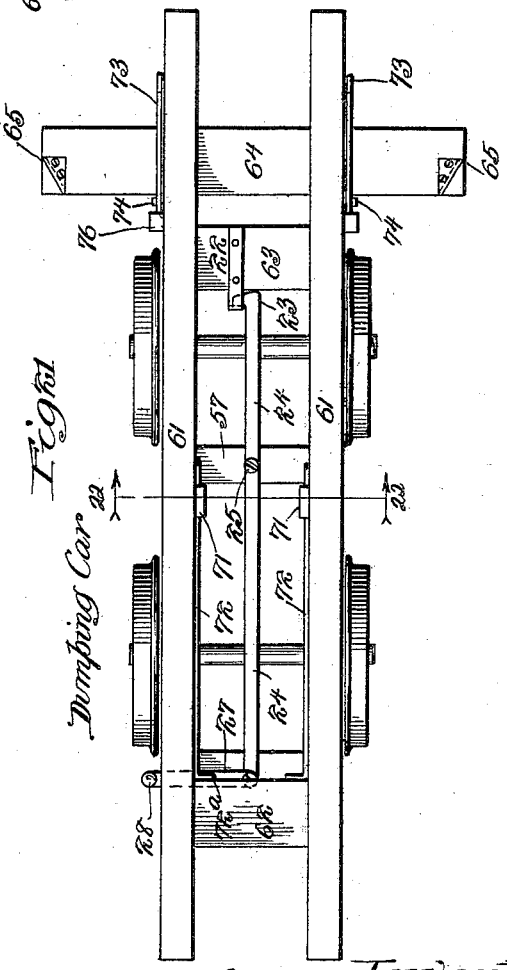


Fig. 4.

Dumping Car.

Witnesses
Edw. Bartlett
H. B. Gaither

Inventor
George F. H. Hicks
By Elliott & Hopkins
Attys.

No. 676,893. Patented June 25, 1901.

G. F. H. HICKS.

RAILROAD TRACK LAYING APPARATUS.

(Application filed Mar. 26, 1900.)

(No Model.) 7 Sheets—Sheet 7.

Fig. 24

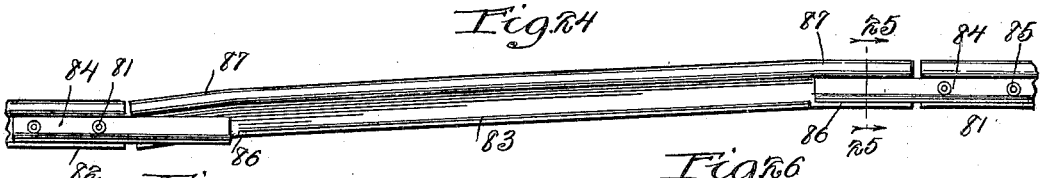


Fig. 25

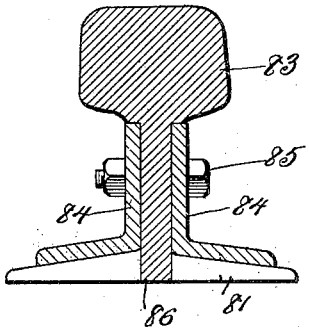


Fig. 26

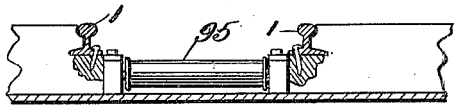


Fig. 27

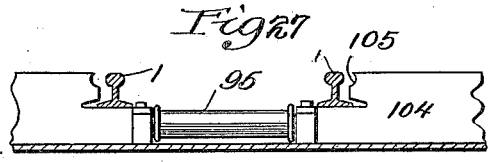


Fig. 28

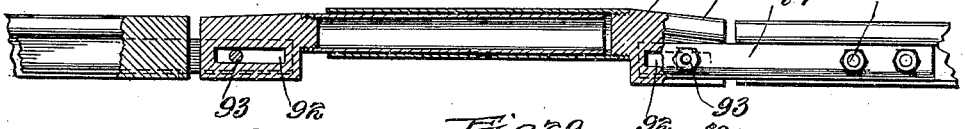


Fig. 29

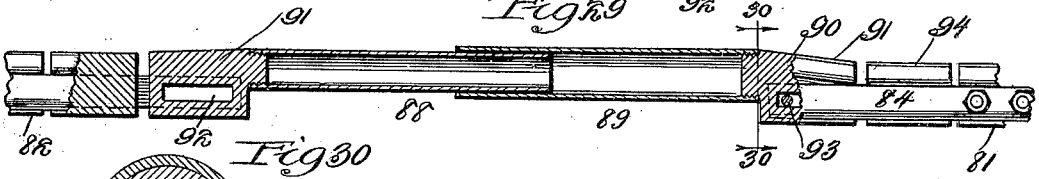


Fig. 30

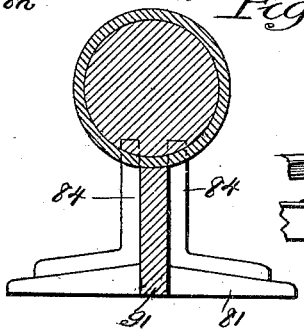


Fig. 31

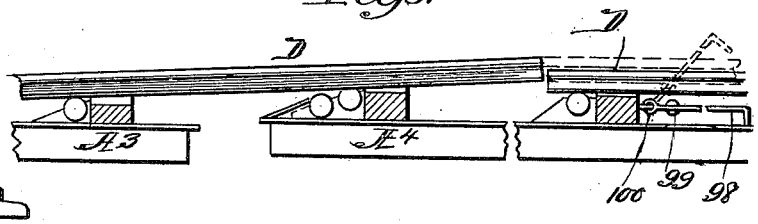
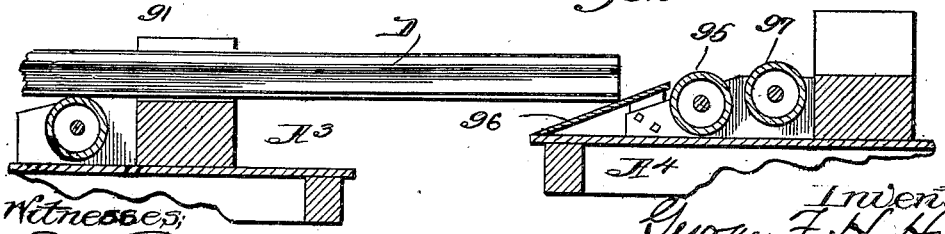


Fig. 32



Witnesses:
Edw. Bassett
H. B. Gaither.

Inventor:
George F. H. Hicks
By Elliott & Hopkins
Attys.

UNITED STATES PATENT OFFICE.

GEORGE F. H. HICKS, OF CHICAGO, ILLINOIS.

RAILROAD-TRACK-LAYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 676,893, dated June 25, 1901.

Application filed March 26, 1900. Serial No. 10,146. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. H. HICKS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Railroad-Track-Laying Apparatus, of which the following is a full, clear, and exact specification.

My invention relates to improvements in railroad-track-laying apparatus designed for promoting the convenience and rapidity of handling both ties and rails in the construction of railroads and in which flat-cars are employed for storing the ties and rails, but provided with special superstructure for subsequently conducting both the ties and the rails to the forward end of the train, from which they are laid in their operative position.

My invention relates more particularly to railroad-track-laying apparatus in which heretofore the rails have been piled or stacked at the center of and entirely across the platform of a flat-car and both the rails and the ties conducted from their point of storage to the forward and laying end of the train of cars by means of tramways arranged at the outside or sides of the flat-cars, projecting beyond said side or sides, and also to other structures in which the rails are piled at the sides of the cars and conducted to the forward end of the train upon trucks arranged on a narrow-gage tramway at the center of the car, while the ties are conducted to the forward end of the car upon trucks running upon broad-gage tramways and substantially broader than the railway-track being laid.

The prime object of my invention is to centralize the devices both for conducting the rails and the ties to the forward end of the train and to a position promoting the rapidity of the discharge of both from the cars, facilitating the laying of the same, and in so doing dispense with broad-gage tramways and the necessary additional superstructure therefor and at the same time facilitate and substantially increase the capacity of a track-laying apparatus for delivering rails and ties to the operative point for laying the same on a railway-bed.

Another object of my invention is to dispense with cars for transporting the rails to the forward end of the train and at the same time provide tramway-cars for the ties of such construction as to reduce the handling of the ties to a minimum from the original piles on the flat-cars until the time they are discharged from the train upon the road-bed, while at the same time providing for increasing the number of men that may be employed upon the flat-cars for transporting the ties from their original piles to the road-bed, and yet furnishing each man with his full share of continuous work in such transportation, whereby ties may be handled upon a train of any length without a corresponding loss of time, as now occurs, and yet every man so employed do a full day's work not otherwise possible in prior modes of construction.

Still further objects are to so centralize the tramways and devices for conducting the ties and rails to the forward end of the train that distortion of the tramways in running a train of cars around a curve shall be reduced to a minimum, to provide means whereby when adjacent sections of tramway are in differing planes, owing to a corresponding position of the flat-cars, there shall be no substantial obstruction resulting therefrom to the delivery of the tram-cars or of the rails from one flat-car to another in conducting them toward the forward end of the train, and in this connection to provide a novel means for joining rail ends upon adjacent cars and at the same time means for connecting rail ends on such cars when the distance between them is or may be substantially varied.

With these ends in view my invention consists in certain features of novelty in the construction, combination, and arrangement of parts by which the said objects and certain other objects hereinafter appearing are attained, all as fully described with reference to the accompanying drawings, and more particularly pointed out in the claims.

In the said drawings, Figure 1 represents a side elevation of a section of a train of flat-cars upon which my invention is mounted and so much thereof as shows the original piling of the ties thereon and the tramway-cars and devices for transporting said ties to the forward end of the train. Fig. 2 is a further section embracing the "pioneer" or for-

ward-end car and an adjacent car upon which the rails are piled. Fig. 3 is a top plan view of the same. Fig. 4 is a front elevation of the pioneer car. Fig. 5 is a longitudinal detail section of the pioneer car enlarged and showing the position of the dumping-car at the moment of dumping the ties upon a railroad-bed. Fig. 6 is an end elevation of a rail-carrying car and more particularly showing the manner of piling the rails thereon, the means preventing their falling off the outer sides, and the devices by means of which said rails are transported to the forward end of the train. Fig. 7 is a transverse section through one of the tramway-rails and also a step-block providing means for transferring rails without lifting them over the tramway-rails to the rollers upon which the rails are conducted to the forward end of the train. Fig. 8 is a side elevation of one of the standards at the side of the car maintaining the rails against displacement. Fig. 9 is a top plan view of the same, illustrating the latch locking said standard in its operative position. Fig. 10 is a side elevation of the loading-car. Fig. 11 is a top plan view of the same. Fig. 12 is a transverse vertical section taken on the line 12 12, Fig. 11. Fig. 13 is a side elevation of an enlarged detail of the tie-loader. Fig. 13ª is a transverse detail on the line 13 13 of Fig. 13. Fig. 14 is a side elevation of the carrying-car. Fig. 15 is a transverse section through the carrying-car and tie-trestle on the line 15 15 of Fig. 16, showing the relative position of these two devices after the carrying-car has discharged its load upon the trestle. Fig. 16 is a side elevation of the same. Fig. 17 is a side elevation of the trestle and the dumping-car in position before the ties upon the trestle are loaded upon the dumping-car. Fig. 18 is a similar view showing the positions of the dumping-car after the ties are loaded upon the dumping-car from the trestle. Fig. 19 is a top plan view of the tie-trestle and dumping-car in the position shown in Fig. 17. Fig. 20 is a side elevation of the dumping-car. Fig. 21 is a top plan view of the same. Fig. 22 is a transverse section of the dumping-car on the line 22 22 of Fig. 21. Fig. 23 is an enlarged detail view of the dumping-car latch shown in Fig. 21. Fig. 24 is a side elevation of the tramway-rails, illustrating the mode of connection thereof between the flat-cars of a railway-train. Fig. 25 is an enlarged transverse section of the same on the line 25 25, Fig. 24. Fig. 26 is a detail transverse section through the tramway-rails, illustrating the position of the rails to their supporting-ties at a point midway of a flat-car. Fig. 27 is a similar view showing the relative position of the tramway-rails at or near the extremity of the flat-car and whereby provision is made for their flexing when the flat-cars are turning a short curve on a railroad. Fig. 28 is a detail sectional view of a modified and extensible form of connection of the tramway-rails between the ends of adjacent flat-cars. Fig. 29 is a similar view of the same in an extended position. Fig. 30 is an enlarged transverse section on the line 30 30, Fig. 29. Fig. 31 is a longitudinal central sectional view through the tramway-track, principally illustrating means for alining railway-rails lying in differing planes in order to make a fish-joint connection thereof; and Fig. 32 is an enlarged similar section illustrating means, principally an incline and rollers in differing planes, for guiding railroad-rails along the tramway and from flat-car to flat-car when said cars are in differing planes owing to unevenness in the railroad-track.

Like signs of reference indicate like parts throughout the several views.

A, A′, A², A³, and A⁴ indicate ordinary railroad flat-cars, on which is removably mounted my track-laying apparatus and which are also utilized for carrying railroad ties and rails to be laid therefrom. As shown in the drawings, A and A′ are cars upon which ties are stored, and A² A³, and sometimes A⁴, cars upon which railroad-rails are stored. Lengthwise and centrally the width of these flat-cars is a tramway-track B, which is made continuous between the cars, as indicated by devices hereinafter particularly described.

On the tie-carrying cars (see Fig. 1) the tramway-rails 1 1 are supported on top of ties 2, laid crosswise of the flat-cars; but on the rail-cars the tramway-rails are let into the body of the ties 2 by cutting out the ties, as shown in Figs. 6, 26, and 27, for purposes hereinafter described in detail. On these tramway-rails are piled transversely of the flat-car ties C, as shown in Fig. 1, and on each side of the tramway-rails, as shown in Figs. 2 and 3, are piled railroad-rails D, but lengthwise of the flat-car, the said rails when so piled being prevented from falling off the sides of the cars by standards *d*, (see Figs. 6, 8, and 9,) pivoted at *d′* at their lower ends to ties 2, so as to swing downwardly out of the way when loading rails onto the car, as indicated in dotted lines in Fig. 8, and locked in their upright position by latch *e*, pivoted to the ties 2 at *f*, and so constructed that when swung against these standards in its upright position it will lock the standards in that position by passing a pin *g* down through a perforation *g′* in the latch and into the tie 2.

E indicates a tie-loading car, F a tie-carrying car, G a tie-trestle, and H a dumping-car, all so designated for convenience because ties are loaded from the pile onto the car E, then transferred to the car F, which carries them to and loads them upon the tie-trestle, whence they are loaded upon the dumping-car, on which they are conveyed to the forward end of my track-laying apparatus, and thence dumped upon the bed of the railway upon which the tracks are being laid.

One of the important objects of my invention is to avoid as nearly as practicable the

lifting and handling of the ties from the time they are taken from the pile C until they are discharged upon the road-bed, and to this end and as one of the means for accomplishing this object I employ a "tie-loader" I, (see Figs. 1 and 13,) consisting of two parallel pieces of angle-iron so bent as to form one or more steps i and inclines i' i', each of which angle-irons have their lower ends bent horizontally and respectively project between and in a plane below the tread of the tramway-rails, as shown at i^2, the lower ends of the angle-irons being each supported on and from the tramway-rails by flange-wheels i^3, running on top of the tramway-rails, which wheels are secured to and connected by a shaft i^4, having its bearing in brackets i^5, bolted or otherwise secured to the angle-irons, as indicated in Fig. 13. The upper ends of the angle-iron tie-loader I have bent portions i^6, the flanges of which are embraced by chairs i^7 i^7, bolted or spiked to an end sill 3 of the tie-loading car, and are locked in their operative position by pins i^8, passing through the flange i^9, projecting beyond the sill 3, so that said pin will embrace the rear sides of chairs i^7 or the end sill 3, as may be. As thus constructed the tie-loader is detachably secured to the loading-car and being mounted upon wheels i^3 is free to travel upon the tramway-rails 1 1 with the loading-car.

In loading the ties from the pile C a man standing on each side of the ties at the loader rolls and principally slides the ties up the tie-loader to the loading-car without having to lift them farther than to pile them on the loading-car, as indicated, and as a result much heavy labor in the transferring of the ties from the pile C to the loading-car E is avoided.

The loading-car E consists in part of a base-frame composed of side sills 4, connected together by the end sills 3, before referred to, and the sills 5 6, mounted upon track-wheels 7 7 in pairs, connected by shafts 9 9, journaled in bearings 9^a 9^a, of ordinary construction, bolted to the side sills. On the sills 5 6, which lie in a plane below the sill 3, are plates 10, upon which rest rails 11 11, which rails are about double the length of the car between the inner side of the sill 3 and the outer side of the sill 6, which rails are connected at their forward and projecting ends by a rod 12, next which they are provided with a depression 13 13, as clearly shown in Figs. 10 and 11. Inside and parallel with this trackway 11 is another shorter narrow trackway formed by rails 14 14, likewise resting upon the plates 10 and projecting slightly beyond the sill 6, which rails 14 have recesses 15 15, corresponding with the recesses 13 in the trackway 11. Running upon the trackway 11 are flanged wheels 16 16, connected by an axle 17, and upon the rails 14 are similar wheels 18 18, connected by an axle 19, the distance between the wheels 16 18 corresponding with the distance between the depressions 13 15. The wheels 16 18 support a sliding frame composed of side bars 20 20 and cross-bars 21 21, rigidly secured together, the wheels 16 projecting beyond the side bars and running upon the rails 11 11. A number of differing thicknesses of plates 10 may be used to raise or lower the rails 11 14 to unload either directly upon the carrying or dumping car, which is lower, as may be desired. This sliding frame is the support for ties when loaded from the pile C upon the loading-car, at which time the sliding frame is shown in the position it appears in Figs. 1 and 11; but to unload the ties from the loading-car to and upon the carrying-car it is run forward until the wheels 16 and 18, respectively, drop into the recesses 13 and 15, as hereinafter explained. In order to hold the sliding frame positively in the position shown in Figs. 1 and 11 and prevent its being accidentally moved forward upon the rails 11 and 14, a plate or bar 22 (see Figs. 11 and 19) is bolted to the rearward sill 21 and provided with an upturned or loop end 23, projecting rearwardly of the end sill 21, forming the locking device of a latch consisting of a bar 24, (see Figs. 21 and 22,) pivoted at 25 to the sill 3, having its forward end provided with a hook 26 (see Fig. 11) and its rear end pivotally connected with a sliding lever 27, extending at a right angle thereto and projected beyond the side of the car, where it terminates in a knob or handle 28, which when pulled outwardly swings the latch 24 upon its pivot and disconnects its hook from the keeper 23. To prevent the lever 27 from being accidentally pulled out and the latch disconnected, the lever (see Fig. 23) is provided on its under side with a lug 29, which when the lever is in its normal position engages with a stop 30 in such a manner that the lever must be slightly lifted to disengage the lug 29 from the stop 30 before the lever can be pulled outwardly to disconnect the latch from its keeper, the weight of the lever 27 being sufficient to prevent the accidental disconnection of the lever from the lug. The sliding frame is limited in its rearward movement by stops 29^a, fixed on the sill 3 and against which the ends of the side rails 20 (see Figs. 10 and 11) abut.

Next the loading-car, as shown in Fig. 1, is the carrying-car F, so called because designed to receive the ties from the loading-car and carry them either to the tie-trestle G or the dumping-car H, as may be. This carrying-car, as shown in Figs. 14 to 16, inclusive, consists of a frame composed of side sills 31 31 and end sills 32 32, rigidly connected together and mounted upon two pairs of wheels 34 35, each pair being connected by axles 36, journaled in suitable blocks 37, secured to the side sills 31. The side sills 31 are provided at a short distance from each end with recesses 38 38, and running on these side sills are two pairs of small wheels 39 39, secured in an ordinary manner upon the inside of a slidable frame composed of side bars 40 40 and end bars 41 42. The slidable frame

is provided with a locking device consisting of a loop or keeper 22 on the sill 24, engaged by a hook 23, (not shown,) but similar to that on the corresponding part in the loading-car, which hook is on the end of a lever 24, pivoted at 25 on a cross-sill 25^a of the rigid tramway-frame, which said lever extends to the rear end of the car, at which point it is pivoted to a hand-lever 28, projecting beyond the car in the same manner as shown in Fig. 11. In other words, the latch device for the slidable frame on the carrying-car is similar to that on the loading-car in all respects save that the lever 24 is longer, and said latch device is operated and locked against accidental displacement precisely the same as the device shown on the loading-car in Fig. 11.

In order to prevent the ties piled on the sliding frame of the carrying-car from rolling off its forward end during the operation of said car, I provide vibrating standards 43, Figs. 14 to 16, which have a vertical portion 43^a, a right-angle bend thereto, 43^b, and an oblique portion 43^c, which standards, there preferably being two, are each pivoted at 44 through their right-angle bend portion to the respective side sills 40 of the slidable frame, the oblique portion extending downwardly and confined between two pins 45 46 on the side bars 31 of the rigid frame when the sliding frame is in an elevated position, with its rollers 39 on the upper edge of the bars 31, and for receiving ties from the loading-car and conducting them to the tie-trestle G, hereinafter described, in which upright position the standard 43 is locked by the pins 45 46 until the latch is unlocked by the operation of the hand-lever 28.

In operating the loading and carrying cars the ties are transferred up the tie-loader I and piled upon the loading-car E and the carrying-car pushed up to the loading-car, or vice versa, as may be, until the coupling-hook 47 on the rear end of the carrying-car, as in Figs. 1 and 14, engages the pin 48 on the loading-car, (see Fig. 11,) and thus couples the two cars together against movement. The ends of the rails 11 11 are beveled on the under side of their forward ends at 12^a, (see Fig. 10,) and the carrying-car has rollers 39^a in boxes secured to the cross-bars 41 42, which the inclines 12^a on the rails strike, and are lifted when for any reason the loading-car is in a lower plane than the carrying-car. The trackway 11 11 being narrower than the sliding frame of the carrying-car passes between the side bars 40 thereof and is of such a length that it projects well toward the forward end of the carrying-car, and while in this position the sliding frame of the loading-car is pushed forward on its double trackway until its wheels drop into the depressions 13 15 of these respective trackways, and the distance between the top of the sliding frame of the carrying-car when in its elevated position is such relative to the depressed sliding frame of the loading-car that the ties then rest upon the sliding frame of the carrying-car, which is then uncoupled from the loading-car and run forward to the tie-trestle, now to be described.

The tie-trestle consists of two horses, each comprising the usual side rails 49 49 and standards or legs 50. The side rails, however, Figs. 1, 17, 18, and 19, are provided with depressed portions or recesses 51 51, and on each of those side rails is a slidable beam 52 52, mounted upon rollers 53 53, the rollers being journaled between downwardly-projecting straps 54 54, of which there are two, embracing each rail at both of its ends, as shown in Fig. 19, or, in other words, there are four pairs of these straps, which, for purposes hereinafter described, project down below the lower edge of the side rail 49 of each horse. When in position to receive ties from the carrying-car, the slidable frame of the tie-trestle is in the elevated position shown in Figs. 1 and 17, and while in this position the carrying-car after receiving its load of ties from the loading-car is moved forward between the horses of the trestle, and then after the latch of the carrying-car is unhooked the front wheels 35 of the car striking against a block 80 stop the car, while the momentum of the unhooked sliding frame carries it ahead on the fixed frame thereof until its wheels enter the depressions 38 38, as shown in Fig. 16, in which position the ties will then rest on the slidable bars 52 52 of the tie-trestle and in position to be transferred therefrom to the dumping-car, now to be described in connection with other details of the tie-trestle coöperating therewith.

The dumping-car (see Figs. 17 to 22, inclusive) consists of a frame composed of side bars 55 55, one end bar 56, (see Fig. 5,) and a central cross-bar 57, the end of the side bars forward of this cross-bar 57 being open, the said frame being mounted upon two pairs of tramway-wheels 58 58 on axles 59, journaled to or in the side bars 55. Mounted upon rollers or small wheels 60 running on the upper edge of these side bars, and which are without depressions, as in the tram-cars before described, is a slidable frame composed of side bars 61 of substantially greater length than the side bars of the car proper, connected by cross-bars 62 63, to the bar 63 of which is secured the latch-keeper 22, engaged by the hook 23 on the lever 24, pivoted to the cross-bar 57 at 25, and having pivoted to its rear end a hand-lever 27, projecting at a right angle thereto and beyond the side of the car and terminating in the handle 28, which locking device is similar in all respects to that shown in Figs. 11 and 23 and is designed for locking the slidable frame against accidental forward movement on the carrying-frame and to release the same when it is desirable to dump the ties therefrom.

On the under side and toward the forward ends of the side bars 61 is secured a transverse beam 64, which projects down below the upper edges of the side bars 55 of the car and

substantially beyond the sides thereof, which bar has secured near its outer ends angular plates 65 65, adapted to engage inclined faces 66 on latches 67, pivoted at 68 on the forward end of the horses of the tie-trestle, and swing the same upon their pivots, as will now be described. The latches 67 have a rearwardly-projecting arm, on which is a hook 69, (clearly indicated by dotted lines in Figs. 18 and 19,) which hook is adapted to engage the strips 54 and lock the slidable bars 52 52 in their elevated position, as shown in Fig. 17, the latches being thrown out of engagement with the straps by the striking of the inclined plates 65 on the beam 64 against the inner inclined face of the latch, as indicated in Fig. 19, when the dumping-car is pushed to a position between the horses constituting the trestle. About the time or just after the striking of the beam 64 against the latch at 66 the standards 73 strike the ties on the tie-trestle. The result of the impact is to force the sliding bars to travel rearwardly until the wheels 53 descend into the pockets or recesses 51 in the side bars 49 of the tie-trestle, thereby depositing the ties on the side rail 61 of the dumping-car.

The horses forming the tie-trestle are braced and made removably rigid in their operative position, as in Fig. 19, by bars 70, of which there is one at both ends of each horse, which bars are bolted or otherwise rigidly secured to the legs of the horses and abut against the tramway-track, but may be clipped thereto.

The side rails 61 of the sliding frame of the dumping-car are prevented from lateral movement on the side rails 55 of the car proper by plates 71, as shown in Figs. 19, 21, and 22, bolted at their lower ends to the inner sides of the side rails 55 and engaging with bars 72 72 on the side bars 61 by overlapping the upper edges of said bars 72 72 or by a dovetail or any other connection as may be that will allow the sliding frame to move freely, but without lateral displacement. The sliding frame is also provided with standards 73 73, pivoted to the rails 61 thereof at 74 at the juncture between a horizontal and upwardly-extending portion thereof and a downwardly-projecting arm 75, which downwardly-projecting arm is held in a vertical position and the standard proper in an upright position by a stop 76, Figs. 20, 21, and 22, when the sliding frame is in its normal position, receiving ties from the tie-trestle and conducting them to the forward end of the train, which arm, however, is automatically released and the standards caused to swing downwardly upon their pivots when the sliding frame moves forward in the act of dumping the ties from the forward end of the train upon the road-bed, as shown in Fig. 5.

After the dumping-car has received its ties from the tie-trestle it is pushed forward on the tramway-track until its forward wheels 58 strike a cross-beam 77, Fig. 5, at the end of the tramway-track, beyond which cross-beam the ends of the rails of the tramway-track are bent downwardly, as shown at 78, and form a stop for the beam, preventing the car from being pushed backward by the back pressure of the unloading ties. Just prior to the tie-car reaching the beam 77 the latch locking it to the car proper is released by raising and pulling outwardly the knob 28, and as a result of this releasing of the sliding frame the striking of the car-wheels against the beam 77 causes the sliding frame to slide forward and beyond its center of gravity on the car-frame, and as a result tip the rear end of the car-frame upwardly and the forward end of the sliding frame downwardly and dump the ties upon the road-bed. The standards being released from their stops 76 swing downwardly by gravity and out of the path of the ties just after this tipping of the car caused by striking the cross-beam 77, projected in the pathway of the car-wheel. The operation of these tie loading, carrying, sustaining, and dumping devices as a whole and in practice is as follows: Two men standing on either side of a pile of ties next the loader take hold of the end of the ties, slide or roll them up the tie-loader I onto the sliding frame of the loading-car E, which sliding frame at this time is in the elevated position shown in Fig. 10, and after the car is fully or partly loaded the loading-car E is either run up to the carrying-car F, or vice versa, or they may approach each other at the same time, and until the cars approach close enough together for the hook 47, which is a gravity-latch, to hook upon the pin 48, at which time the rails 11 are projected between the side rails of the loading-car to about the forward end thereof and in such a position that when the sliding frame of the loading-car is pushed forward until its rollers 16 and 18 enter their respective depressions 13 15 in the rails 11 14 and deposit the ties upon the sliding frame of the carrying-car F, which frame at that moment is in the elevated position shown in Fig. 14. In practice the hook 23 of the latch device maintaining the sliding frame of the loading-car against an accidental forward movement is released just before the cars strike each other in making the coupling, and as a result the momentum automatically carries the sliding frame forward until the wheels 16 18 of its double trackway enter their respective depressions to deposit the load of ties on the carrying-car. As soon as the load is so deposited the loading-car is returned to the pile of ties C and its sliding frame pushed back to its original elevated position, when it is ready to receive another load of ties. In the meantime the carrying-car F is pushed by the men at the rear along the tramway-track until it enters between the horses of the tie-trestle, immediately before which the attendant takes hold of the knob 28 of the latch device and unlocks the sliding frame of the carrying-car from its base-frame, which is the car proper. Just before the carrying-car F reaches the

proper point to deliver its load of ties upon the tie-trestle the forward wheels 35 of the carrying-car, as shown in Fig. 16, strike the block 80, laid across the tramway, and as a result the momentum causes the sliding frame 40 to move forward from the position shown in Fig. 14 on the rails 31 of the car proper until its rollers 39 enter their respective depressions 38 38, which results in depositing the load of ties on the carrying-car F upon the tie-trestle G, and in this connection it should be observed that in the initial forward movement of the sliding frame the arm 43^c of the standard 43 is released from the pin 45, and as the wheels 39 descend into the recesses 38 the pins 46, by sustaining the arm 43^c, cause the standard 43 to sink below the ties, as shown by dotted lines in Fig. 16. With the ties thus deposited upon the tie-trestle and with the sliding frame of the tie-trestle in the elevated position shown in Figs. 1 and 17, the dumping-car, with its sliding frame in the position shown in Fig. 20, is run back between the horses of the tie-trestle, its sliding frame in the meantime being locked by the latch devices 22 23, &c., before described and as shown in Fig. 21, and with its standards 73 in the upright position shown in Fig. 20 and there held by the stop 76. As soon as the incline-stops 65 65 on the beam 64 strike the incline-faces 66 of the latch on the tie-trestle the latch is disengaged from the straps 54, and thereupon the standards 73 on the dumping-car, striking the ties on the horses, bodily push the sliding frame of the horses backward until the wheels 53 enter the depressions 51, and thereby causing a deposit of its load of ties upon the dumping-car. The dumping-car is then moved out from the tie-trestle, the frame of the tie-trestle elevated in its first position, ready to receive another load, and the dumping-car pushed to the forward end of the tramway-track, and immediately before reaching said end the hook 23 of the locking-latch is thrown out of its keeper and the car pushed forward strikes the stop or beam 77, and by its momentum the sliding frame moves past its center of gravity on the dumping-car proper and dumps its load, the standards 73 immediately being lowered out of the way by gravity, as shown in Fig. 5.

It should here be observed that the forward movement of the sliding frame of the dumping-car is limited and stopped by means of upright bars 71, bolted to the rigid frame of the car engaging a cross-bar 62 on the sliding frame, but preferably against a right-angle bend 72^a on the rear end of the bar 72.

From the foregoing it will be seen that I have provided a series of tie-transporting devices of such character that the labor of transporting the ties from the flat cars upon which they are stored is reduced to a minimum, since there is practically no bodily lifting of the ties from the time they are taken from the pile C until dumped on the road-bed, and such little lifting as there is is confined to the two men at the pile C, whose work in this regard is so lightened by the use of the tie-loader I that they are able to do a continuous full day's work, when under prior methods of handling ties the men can only work in relays of but a few hours at best.

The construction and arrangement of the several tie-transporting devices provide for the rapid handling of ties without fatigue upon long trains of flat-cars with a minimum number of men and in such manner that each is able to do a full day's work, it being estimated, for example, that in trains of ordinary length and especially when taking ties from well toward the rear end thereof—and they are always stored rearwardly of the rails—the use of a single car from the pile of ties C to the forward and dumping end of the train will require the attendant to travel twenty miles per day in an ordinary day's work, and as a result of this it has heretofore been customary to employ two or more sets of men for pushing said car, as well as a frequent change of men handling the ties at the pile. By my construction and arrangement of tie-transporting devices, however, two men at the pile C to roll the ties down to two men loading and three pushers at each car will handle and deliver upon the road-bed about twice as many ties in a day and with less fatigue than double the number of men could otherwise do, and the item of men alone is of the greatest importance, especially when working where laborers are not readily obtainable and where the cost of labor is high, and, furthermore, by reducing the number of men to a minimum they may be employed continuously at the same thing, and therefore become expert and quicker at their particular work than is otherwise possible.

In arranging the several tie-transporting devices upon the train the tie-trestle is arranged at such distance from the forward end of the train that the dumping-car may take the ties therefrom as fast as supplied from the carrying-car and as needed at the road-bed, and owing to the fact that both the loading-car and the carrying-car are readily and conveniently pushed along the track no time is lost in transferring the load of ties from the loading-car to the carrying-car, or if the carrying-car is not at hand when the loading-car is loaded it may be pushed forward to meet it, while in the meantime the two men handling the pile of ties may be rolling down and arranging ties from the pile, ready to supply the loading-car on its return.

In track-laying machines heretofore employed the length of train, and hence the storage of ties and rails thereon at hand for immediate use, has been substantially limited as compared with what may be by my invention, for it is neither economy as to time and labor to have to transport a single tie-car, for example, from toward the rear end of a very long train, and much valuable time has been lost in substituting loaded for empty cars or

cutting out empty cars forward of the unloaded ties in a long train, and this not only because of its stopping the operation of the apparatus, but that the engine is frequently required to back several miles to a siding with the empty cars and for bringing loaded ones forward to the train, whereas by my invention the distribution of the force and devices for handling the ties is such that they may be handled to advantage not only on very long trains, but even shorter trains still of too great length for practical use under the old methods.

Another feature of my invention is that it is adapted both for trains of ordinary length and ordinary quickness in track-laying as well as for very rapid track-laying from trains of great length—as, for example, when great rapidity is not essential or desirable the loading-car E may be omitted and the ties be loaded directly upon the carrying-car F and be automatically unloaded upon the tie-trestle, or, on the other hand, the tie-trestle G and carrying-car may be omitted and the loading-car discharge its load directly upon the dumping-car—and to this end the several cars may be constructed in the first place with reference to their comparative width as to permit all this without any change in the system excepting to remove for the time being the cars it is desirable to dispense with.

In Figs. 24, 25, 28, 29, and 30 I have illustrated in detail devices connecting the tramway-rails between adjacent flat-cars and in such manner that the tread of the opposing ends of the tramway-rails on the respective flat-cars and the tread of the connecting rails or joints may be maintained in the same plane at all times and particularly when owing to irregularities in the road-bed the adjacent flat-cars and their tramway-rails are in differing planes. To these ends 81 81 indicate, for example, the ends of the tramway-rails on car A^4, (see Fig. 3,) 82 the ends of the tramway-rails on car A^3, and 83 a piece of a rail a little shorter but substantially corresponding to the distance between the ends of the rails 81 and 82 when the flat-cars are jammed together at their couplings. Bolted at both sides and in pairs to the rails 81 82 are, respectively, angle-bars 84 by bolts 85, the angle-bars being of such width as to fit between the flange and tread of the rail ends 81 and of such a length as to project about half the length of the angle-bar beyond the end of the rail end 81 and along the rail-section 83, which rail-section for a corresponding length has its web cut away at each end and on both sides, as indicated at 86, so that it may be dropped between and its ends rest upon said angle-bars and in such a manner that it is free to move longitudinally and lock on said angle-bars, whence it is therefore readily removable when desired. Both ends of the rail-section immediately over the angle-bars are bent downwardly, as indicated at 87 87, so that however much difference there may be in the plane of the rail ends 81 82 the tread of the rail-section will always remain substantially in a plane with the tread of said rail ends, and by this means the tramway-cars have a continuous tread upon which to pass from one flat-car to another instead of an abutment being otherwise formed, either by the end of the rail or the rail-section, while on the other hand, the devices employed constitute a simple, durable, and perfect connection, avoiding this objection; but instead of bending the rail ends the free ends of the angle-bars may be bent down to accomplish this result.

Instead of employing the rail-section 83 (shown in Fig. 24) as a connection between the tramway-rails of adjacent flat-cars, an extensible device, such as shown in Figs. 28, 29, and 30, may be substituted therefor, particularly when the distance between the rail ends 81 82 is substantially greater than that for which the rail-section 83 is employed, or, on the other hand, when this distance is shorter by reason of flat-cars of differing lengths or greater lengths being used, as frequently happens, by reason of which there is a greater or less distance between the rail ends 81 82 than the rail-section 83 is designed to bridge, as will be readily understood when bearing in mind that the tramway-rails laid on the flat-cars are always of the same length.

The telescope-coupling referred to consists of two tubes 88 89, the former of which fits within the other, the outer ends of which tubes are screwed or otherwise secured to castings 90, each provided with treads 91, inclining downwardly toward the rail ends 81 82, which castings are without flanges and project between the angle bars or plates 84 84 in the same manner that the rail-section 83 projects between its corresponding angle-bars, which angle-bars are bolted to the rail ends 81 82 by bolts 85 85, as before described. The lower or web portion of the castings 91 is provided with longitudinal slits 92, in which work bolts 93, passed through the angle-bars 84, whereby said castings may have a longitudinal movement and also a vibratory movement, limited only by the tread thereof, which, as before stated, rests upon the angle-irons, and as a result such connection may have and does have a very considerable extensible power, and, furthermore, is rendered extensible and flexible to such a degree that it is adapted to maintain a continuity between the rail ends 81 82 over a distance between them and around curves where the rail-section 83 would not, and, furthermore, provides when kept with the rest of my track-laying paraphernalia a quick and convenient means of connection under circumstances when the rail-section 83 would not serve that purpose, and besides avoids, as is desirable, the necessity of keeping in stock rail-sections 83 of differing lengths. As a means, however, of lengthening the connection between both the rail-section 83 and the telescoping section rel-

ative to the rail ends 81 82 the angle-bars 84 may be lengthened, as indicated in the right of Fig. 29, and a short rail-section 94, from which the flanges have been removed, be dropped between the angle-bars and the ends of the castings 90 or rail-section 83 and the rail end 81, and as it requires but a few of such pieces to meet all necessities for them they are a desirable addition to these rail-end connections.

Turning now to the handling of the rails for a railroad, which, as shown in Fig. 6, are piled at each side of the tramway-track, it will be seen that between the rails of the tramway and at required intervals (see Figs. 3, 6, and 27) there are rollers 95, upon which rails from the rail pile D are transferred to the forward end of the train and delivered upon the ties previously laid on the road-bed, which rails are entirely handled by men with cant-hooks, and as a result of which and the rollers require no bodily lifting whatever. It frequently happens, however, that adjacent flat-cars, over which these rails are transported, are in differing planes, as indicated in Fig. 32, for example, by flat-car A^3 and the flat or pioneer car A^4, Fig. 2, and as a result unless some means were provided the rails would have to be bodily lifted; but this is avoided by placing at the rear side of the rollers of the forward car an incline 96, up which the rail is deflected to and upon the roller 95, and to meet any further necessity of deflecting the rail in its upward direction there may be employed a further roller 97, the axis of which is in a plane somewhat higher than the roller 95, the roller 97 being used, however, principally when and where the forward and further rollers of which are in a plane above the roller 95. If it were not for this incline plane or wedge 96, the end of the rail being transported to the forward end of the car would when the flat-cars are in differing planes abut against the rollers to their injury and also to the delay in delivering the rail and destroy that desirable continuity of delivery and handling which is necessary both as a saving of time and for reducing the strain upon the men handling them.

In the laying of trackways it is frequently necessary or at least desirable to join two of the rails before their delivery from the car, so that they are delivered upon the ties in pairs already connected together by their fish-plates; but much valuable time is frequently lost in wedging up or lifting the two rail ends in necessary alinement for the fish-plate, for as heretofore accomplished this has been done when the adjacent cars are in differing planes by wedging up or lifting the rail through grappling-hooks. My invention, however, provides for a very simple device overcoming this objection, and consists, as shown in Figs. 3 and 31, of two bars 98 98, rigidly connected together by a cross-bar 99, which may consist of a roller, which bars 98 form levers pivoted, and thereby fulcrumed, to eyebolts 100, driven into or otherwise secured to one of the cross-ties of the tramway-track. With this device when two rail ends to be joined by a fish-plate are brought to a position shown in full lines in Fig. 31 and with the rail end at the right in a lower plane than the opposing rail end, but resting on the roller 99, said right-hand rail end may be by lifting the levers raised sufficiently to insert and bolt the fish-plate to its operative position, as I have frequently done in practice to great advantage.

Curves on railways when first laid, and particularly in a mountainous country, are very sharp, and much difficulty has heretofore been experienced in devising means by which a track-laying machine may round and lay trackway on these curves without forcing the tramway-track out of jointure for the free travel of the tramway-cars along its length, and particularly across the jointure between two of the flat-cars on which it is supported. To this end, however, in addition to the forms of connection between the rail ends 81 82 I have devised a still further means by which the track may be flexed, and have discovered that when, for example, five cross-ties are used to a flat-car for the tramway-track, as shown in Figs. 1, 2, and 3, by spiking the tramway-rails close up to but the three central ties, (see Fig. 26,) which for convenience I will designate as ties 101 102 103, and then cutting out both of the end ties 104 104, as shown in Fig. 27 at 105, so as to leave a space between these free end portions of the tramway-rails and these end ties when the rails are in their straight and normal position, said rails are allowed to flex on turning a curve, and this flexure, in addition to that of the tramway-rail connection between the cars themselves, is sufficient to enable my track-laying apparatus to turn the sharpest curves ever used without throwing the rails of the tramway out of perfect alinement. The tram-rails on the rail-cars are depressed in their ties, as shown, to avoid lifting the stored rails in getting them upon their transporting-rollers. In this connection it should be noted that as the tram-rails on the tie-cars are not so depressed the flexing of the extremities of these rails, however, is provided for by spiking the end ties outside only and at a point removed from the rails, which also permits, when occasion requires, the forcing of the rail extremities to one side or the other, and thus avoiding a bodily shifting of the rail for such temporary requisite.

The car A^4, which is the forward car, and termed the "pioneer-car," because at the advancing end of the train, has secured thereon in the usual manner sills 106, connected by a cross-beam 107, which projects beyond the sides of said frame and has secured at each projecting end vertical standards 108, over and from which guy rods or ropes 109 are secured, respectively, to bolts 110, Fig. 3, at the sides and toward the rear end of the flat-car

A^4, the other ends of said ropes being likewise attached to bolts 111 at the forward ends of said frame 106, and by this means said frame in its projected position beyond the car is suspended from the car, and as a result provides means for the delivery of both ties and rails at a convenient distance for laying beyond the forward end of the car A^4. One of the standards 108 is provided with steps 112 for ascending by a lookout-man, where a seat 113, back 114, and foot-rest 115 are located for his convenience that he may be comfortably situated and in position to signal to the engineer at the rear of the train the movement of the train, and, if desired, to give orders to the men working below, both on the cars and the road-bed. The forward ends of the sills, as before described, are connected by a cross bar or bars 77, at the center of length of which and midway between the tramway-rails is a depending hanger 116, in which is rigidly secured a fixed axle, (not shown,) on each end of which, free to revolve, are rollers 117, and which support the rails after they pass beyond the end of the flat-car A^4, Fig. 3, and in using which the rail is pushed or drawn along until it clears the last roller 95, which, as shown, may be slightly beyond the end of the flat-car, when the rollers 117 operates as a fulcrum on which the rail may be shifted until its rear end is about in vertical line with the end of the last rail in place on the road-bed, when the rail is lifted off the free ends of said rollers to its place upon said ties. By having the rollers 117 revolve on a fixed axis and independent of each other they are less liable to wear, and when two rails are being drawn off at the same time their independence of action prevents the movement of one rail thereon interfering with that of the other. As a means for supporting the rails beyond the rollers 95 and at or near their extremities, I employ yokes 120, (see Fig. 4,) the free ends of which pass through the sill 77 and are secured thereto by nuts 121, so that the ends of the tramway-rails projecting beyond the flat-car A^4 are practically suspended in and supported by said yokes.

By reference to Figs. 1 and 31 it will be seen that the ties supporting the tramway-track are higher at points on the pioneer-car A^4 than on the adjacent car A^3, and by an examination of Fig. 4 at about a point where the rollers 95 at the forward end of the car are journaled there is a rise in the trackway. In other words, while the drawings are on too small a scale to fully show without great exaggeration the elevation and inclination of the tie-trackway, the tie-trackway is substantially above the rail-tramway and there is sufficient downward inclination between the rollers 95 and the forward end of the tie-trackway to cause the tie-cars to run alone to the end of the trackway and deliver the load without the aid of the pushers.

The purpose of elevating the tie-trackway above the rail-tramway on the pioneer-car, and particularly above the forward end of the flat-car, is to provide space in which to manipulate the rails in delivering them from the pioneer-car without obstruction from the plane of the tie-tramway, for otherwise the tie-tramway would necessarily be so near the plane of the rollers 95 and also the roller 117 at the extremity of the car that when handling it upon the latter rollers the rear end of the rail, and particularly of two rails previously jointed upon the flat-cars, would project above and strike against the tie-tramway, thus interfering with its convenient manipulation of the rail or rails with reference to the upward and downward inclination of the tie-trackway. It may also prevent the cars running away from the attendants and dumping the ties accidentally upon the road-bed, to the possible injury of the workmen. In Fig. 2 at the right hand thereof is shown a trestle 122, commonly called a "dolly," which may be employed in some instances, especially when two jointed rails are being drawn from the car to lower or raise the rail upon it. This elevation of the tramway-track is accomplished by sills 118, (see Fig. 7,) supported on top of the cross-ties 2, and as a result of which bottom rails piled on the cross-ties of the pioneer-car, as is frequently done, are below the treads of the tramway-rails, and as it is desirable to avoid bodily lifting said rails and to handle them entirely by rolling them over with grappling-hooks upon the rollers 95 to convey them off a train it is found that by employing a step-block 119, with one or more steps corresponding in height to the distance between the base of the rail and the under side of its tread, said rails may be rolled up said steps and onto said rollers 95 quickly, conveniently, and with the least possible exertion by the same devices which are used in the hands of said men to conduct them along said rollers 95 to their delivery at the forward end of the train.

There are important advantages of my track-laying apparatus as a whole that should not be overlooked, due to the combining of the tie-transporting tramway with the means that are employed for transporting the rails from the piles to the delivery end of the train, the employment of a narrow-gage tramway, the location of both the tie and rail tramways at the center of width of the train, and the reduction of the tie-tramway to a narrow gage.

By the employment of a narrow-gage-tramway track at the center of the train and the location of the rail-tramway between the tracks thereof much valuable space for storing ties and rails, and therefore increasing the capacity of the cars, is provided for and all outrigging at the sides of the cars entirely dispensed with.

A more important advantage from the employment of a narrow-gage tramway at the center of width of the flat-cars and the ar-

rangement of the tie-tramway therein is that such tramways are subject to the least possible distortion when the train is traveling around a curve and also extension at all times, and as a result it requires, as has been shown and described, but a very few simple devices for maintaining a continuous tramway in the straightest possible line consistent with the movement of the flat-cars and enables the employment of devices preventing any obstruction to the movement of the tie-cars and the rails along the tramway when the adjacent flat-cars are in differing planes. Furthermore, such a tramway is cheaper in construction, is much quicker mounted upon and dismounted from the cars, and avoids the necessity of a large number of parts and pieces and also cumbersome parts, such as tram-cars, timbers, and other devices necessary for use in track-laying machines in which either or both the tie-tramway or the rail-tramway is laid upon any other point upon the cars, and especially if either is arranged at and beyond the sides thereof, as has heretofore been the common practice.

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

1. In a railway-track-laying apparatus the combination with the flat-cars thereof, of a narrow-gage-tramway track supported at substantially the center of width of said flat-cars and a railroad-rail tramway located between the rails of said tramway-track, substantially as set forth.

2. In a railway-track-laying apparatus the combination with the tramway thereof, of a loading-car and a tie-loader consisting of angle-irons bent to form one or more steps and supported from the trackway and the loading-car, substantially as set forth.

3. In a track-laying apparatus the combination with the tramway and the loading-car, a tie-loading device provided with one or more steps, one end of which tie-loading device is supported from the tramway-rails and the other end detachably secured to and supported from the loading-car, substantially as described.

4. The combination with a track-laying apparatus, of a tramway, a tie-loading car running upon said tramway, a duplex tramway mounted upon the fixed frame of said car, one member of which projects approximately half its length forward of said car, said tramway being provided with depressions therein and a sliding frame provided with a forward and rearward set of wheels mounted upon said tramways the distance between said set of wheels corresponding with the distance between said recesses whereby when said sliding frame is moved forward said wheels will enter said recesses and depress the sliding frame, substantially as described.

5. The combination with a track-laying apparatus, of a tramway, a tie-loading car running upon said tramway, a duplex tramway mounted upon the fixed frame of said car, one member of which projects approximately half its length forward of said car, said tramways being provided with depressions therein and a sliding frame provided with a forward and rearward set of wheels mounted upon said tramways, the distance between said set of wheels corresponding with the distance between said recesses whereby when said sliding frame is moved forward said wheels will enter said recesses and depress the sliding frame, and stop devices against which the side beams of said sliding frame abut and are limited in their rearward movement, substantially as described.

6. In a track-laying apparatus the combination with the tramway thereof, of one or more tram-cars each provided with a tie-supporting sliding frame, a latch device toward one end of said car locking said frame against accidental movement, means toward the other end of said car operating said latch device from the side of the car, and means maintaining said frame non-detachable from the car, substantially as described.

7. In a track-laying apparatus the combination of the tramway thereof and one or more tram-cars traveling thereon, with a sliding frame supported on said car, a latch device for locking said frame and car together toward their forward ends and a lever projecting from the side of the car toward the rear end thereof for operating said latch, and a stop limiting the movement of the sliding frame and preventing its detachment from the car, substantially as described.

8. The combination in a track-laying apparatus and with the fixed frame of a tramway-car, of a tie-supporting frame slidable on said fixed frame, a latch for locking said sliding frame against accidental movement, a lever connected with said latch and projecting to or beyond the side of the car, a lug 29 on said lever and a stop 30 adapted to engage said lug, substantially as described.

9. In a track-laying apparatus the combination with the fixed frame of a tie-carrying car, a slidable frame mounted thereon, means connecting said two frames whereby the slidable frame may be raised and lowered, standards pivoted to the slidable frame and detachably connected with the fixed frame of the car and means for automatically releasing said standards when the slidable frame is shifted from its upper to its lower position, substantially as described.

10. In a track-laying apparatus the combination with a tie-carrying car, a slidable frame mounted thereon, devices for automatically raising and lowering said slidable frame, a tie-holding standard pivoted to the slidable frame and provided with a depending arm detachably connected with the fixed frame of the car and released therefrom by the forward movement of the slidable frame on the fixed frame and means for automatically raising said depending arm and lowering said

standard below its operative position for holding ties on the sliding frame, substantially as described.

11. In a track-laying apparatus the combination with a loading-car having mounted thereon a trackway projecting forwardly beyond its frame, the under side of the forward end of said trackway being inclined, of a carrying-car provided with a sliding frame having rollers adapted to engage and lift the beveled ends of said projecting rails, substantially as described.

12. In a track-laying apparatus, a tie-supporting trestle embracing in combination two horses arranged upon opposite sides of the tramway-track having bars provided with recesses, a slidable frame supported by said bars, means for raising and lowering said slidable frame on said bars, latches at the forward ends of said bars locking the slidable frame in its operative position, a dumping-car and means for connecting said dumping-car with the latches and throwing them out of engagement, substantially as described.

13. In a track-laying apparatus a tie-trestle provided with bars having depressions therein and forming a trackway, a slidable frame mounted thereon and forming the support for ties, a latch device for locking the slidable frame in its elevated position in combination with a dumping-car also having a tie-supporting slidable frame, said slidable frame being provided with means adapted to engage and throw said latches out of engagement, substantially as described.

14. In a track-laying apparatus a tie-trestle provided with bars having depressions therein and forming a trackway, a slidable frame mounted thereon and forming the support for ties, a latch device for locking the slidable frame in its elevated position in combination with a dumping-car also having a tie-supporting slidable frame, a bar secured to said slidable frame and adapted to simultaneously actuate and disengage said latches, substantially as described.

15. In a track-laying apparatus a dumping-car having a rigid wheel-frame, a sliding frame mounted thereon for supporting ties, standards pivoted to said sliding frame and provided with a depending arm adapted to engage the rigid frame or stops thereon, whereby the standard is maintained in an upright position during said engagement but released when the sliding frame makes its forward movement, substantially as described.

16. In a railway-track-laying apparatus a rigid wheel-frame, a sliding frame of greater length mounted thereon, the angle-plate 71 and bars 72 locking said frames against lateral and vertical displacement and adapted to limit the forward movement of the sliding frame, pivoted standards therefor which are automatically disengaged from the ties when the sliding frame moves forward upon the rigid frame and means secured to the tramway of said car whereby the wheel-frame is stopped at the forward end of the tramway and the momentum of the sliding frame causes it to move forward to a position that the gravity thereof will elevate the rear ends, depress the forward ends of both the sliding frame and the wheel-frame, and dump the load of ties upon the road-bed, substantially as described.

17. In a track-laying apparatus the pioneer-car comprising in combination an ordinary flat-car, a trussed framework provided with side sills projecting forwardly beyond said car, a narrow-gage-tramway track at the center of width of said cars, elevated above said sills and a tramway for rails between said trackways but in a plane substantially below the rails thereof whereby ties may be delivered over the upper tramway upon the road-bed without the tie-tramway obstructing the delivery of railroad-rails from their tramway to said road-bed, substantially as described.

18. In a track-laying apparatus a pioneer-car comprising in combination an ordinary flat-car, a trussed extension projecting forwardly beyond the same provided with side sills, a narrow-gage tie-tramway at the center of width and extending the length of said car and extension but elevated above the side sills of the latter, a rail-tramway consisting of rollers arranged in a plane with or below said sills and duplex rollers upon a rigid axle secured at or near the outer end of said sills and having independent actions and free outer ends which rollers form supports for rails after they have cleared the end of the flat-car and providing means for the delivery of said rails to their operative position on the ties of the road-bed, substantially as described.

19. In a tramway for track-laying apparatus the combination with the rails upon adjacent cars, of angle-irons bolted in pairs to the opposing ends of said rails and projecting beyond the same, of a track connection having a tread and its extremities, a web or flange respectively projecting between and supported by said angle-irons whereby said connection may move longitudinally and vibrate upon said angle-irons, substantially as described.

20. In a tramway for track-laying apparatus the combination with the rails upon adjacent cars, of angle-irons bolted in pairs to the opposing ends of said rails and projecting beyond the same, of a track connection having a tread and its extremities, a web or flange respectively projecting between and supported by said angle-irons whereby said connection may move longitudinally and vibrate upon said angle-irons, said track connection having its extremities bent downwardly at an angle with reference to its tread between said extremities whereby the tread between the rail connection and the flat-car rails is maintained in a continuous and uninterrupted plane, substantially as described.

21. In a tramway for track-laying apparatus the combination with the rails upon ad-

jacent cars, of angle-irons bolted in pairs thereto and projecting beyond the ends of the same, of a trackway connection between the opposing ends of said rails provided with a downwardly-inclined tread at its extremities and with a flange projecting between said angle-irons, the body of said connection having a telescoping construction providing for the contractibility and expansibility thereof and a continuation of the connection between the car-rails, substantially as described.

22. In a track-laying apparatus the combination with a railroad-rail tramway consisting of rollers, with an incline plane or wedge at the rear of the rear roller on each of said cars, the upper end of which incline is in a plane below the top of said rollers, substantially as described.

23. In a track-laying apparatus the combination with the flat-cars thereof, of a railroad-rail tramway mounted thereon and consisting of a number of rollers arranged transversely at intervals of the length of said cars with the end roller or rollers in a plane below the plane of the other rollers, substantially as described.

24. In a track-laying apparatus a tramway having in combination rail-supporting ties and rails, said ties being cut away to depress the tread of the rails to the surface of said ties whereby railway-rails may be lowered without obstruction over and upon the rail-tramway between the tracks of the tie-tramway, substantially as described.

25. In a track-laying apparatus the combination with the tramway thereof, of step-blocks corresponding in height substantially to half the height of a railroad-rail whereby said rail may be engaged with and rolled up said step and over the tramway-rail without bodily lifting the same, substantially as described.

26. In a track-laying apparatus the combination with the tramway thereof, of a rail-lifter comprising one or more levers pivoted at one end to the ties of said tramway and provided with a cross-bar or roller upon which railroad-rails to be lifted are supported and elevated to aline two rails for the attachment of their fish-joint, substantially as described.

GEORGE F. H. HICKS.

Witnesses:
EDNA B. JOHNSON,
JNO. G. ELLIOTT.