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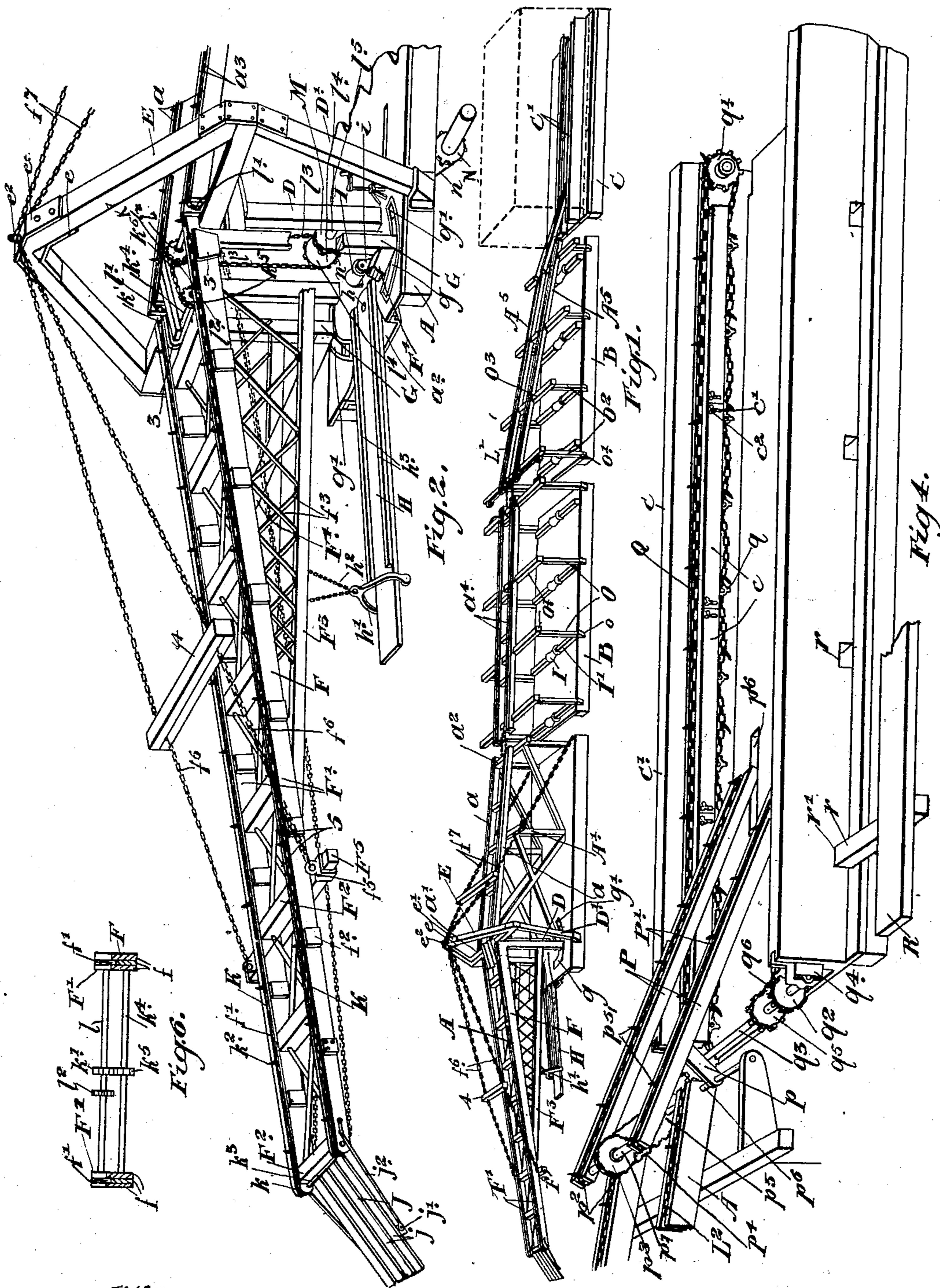
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RAILWAY TRACK LAYING MACHINE.

(Application filed Feb. 12, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses.
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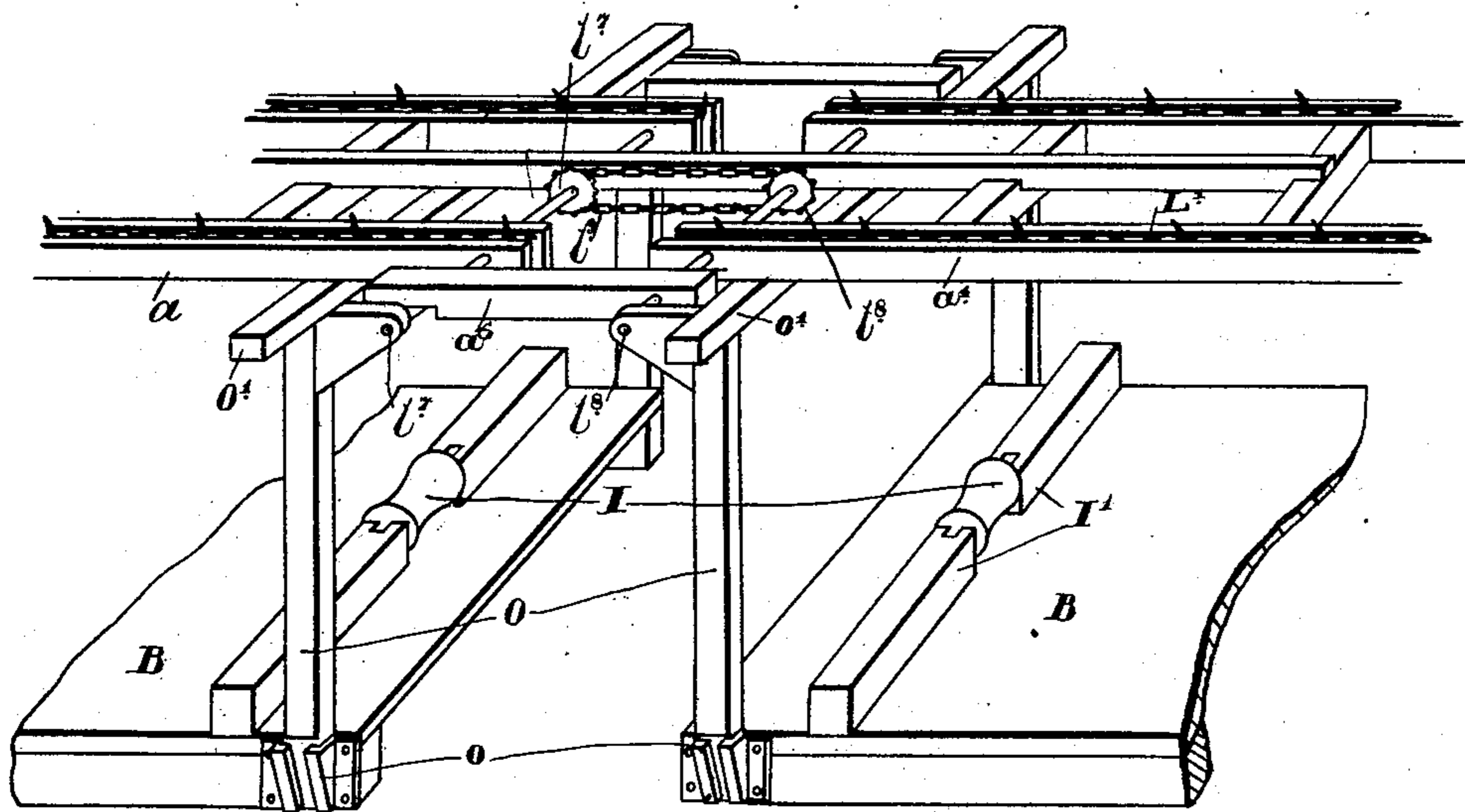


Fig. 3.

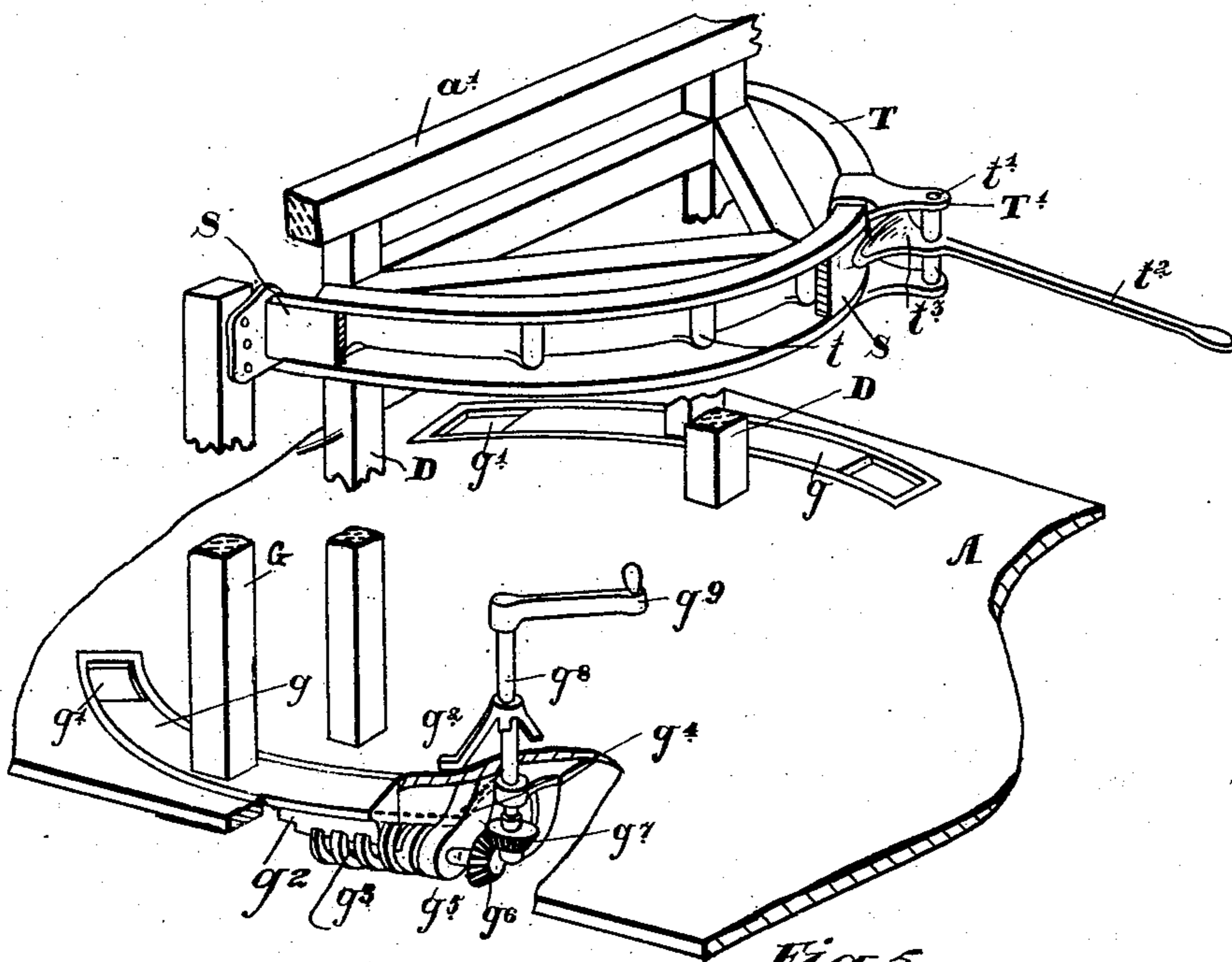


Fig. 5.

Witnesses

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HUGH MANN, OF WINNIPEG, CANADA.

RAILWAY-TRACK-LAYING MACHINE.

SPECIFICATION forming part of Letters Patent No. 694,564, dated March 4, 1902.

Application filed February 12, 1901. Serial No. 47,075. (No model.)

To all whom it may concern:

Be it known that I, HUGH MANN, railroad contractor, of the city of Winnipeg, in the county of Winnipeg, in the Province of Manitoba, Canada, have invented certain new and useful Improvements in Railway-Track-Laying Machines, of which the following is a specification.

My invention relates to improvements in track-laying machines; and the object of the invention is to devise a machine of this class by which the track may be laid more securely than at present and without surface kinks and in a minimum amount of time and with but a minimum amount of labor; and it consists, essentially, of a pilot-car, rail-cars, and tie-cars arranged in succession, the pilot-car being provided with a crane which projects forwardly of the car and is suitably braced and supported and also with a rail-delivery platform extending outwardly underneath the crane from the end of the car and partially supported by such crane, the crane being supplied with ties from the tie-cars by means of overhead carriers and the platform being supplied with rails from the rail-cars from cross-bars on the rail-cars located underneath the tie-carriers, and the parts being otherwise arranged and constructed in detail as hereinafter more particularly explained.

Figure 1 is a general perspective view showing my improved track-laying machine and some of the various cars which serve to make up the machine in its entirety. Fig. 2 is an enlarged perspective view of the end of the pilot-car, showing the crane and tie-carrier and the rail-delivery platform. Fig. 3 is an enlarged perspective detail showing the connections between the cars for the tie-carriers and also the rail-carriers. Fig. 4 is a perspective detail showing the carriers for the tie-cars. Fig. 5 is a detail of the swinging support for the crane and the means for operating the same. Fig. 6 is a cross-section through the crane and carrier.

In the drawings like letters of reference indicate corresponding parts in each figure.

A is the pilot-car, B the rail and tie supply cars, and C the tie-car.

A' is the frame of the pilot-car, on the top of which are supported the longitudinal tim-

bers a , which rest at one end on the cross-bar a' and at the opposite end on the cross-bar a^2 . The cross-bar a' is supported and secured on the uprights D, which are securely held at the bottom in the frame of the car and are braced by the side diagonal braces D'. At the top of the cross-bar a' I provide the converging bars or beams E E, which are suitably secured at the bottom to the top of the cross-bar and are connected together at the top by the metal straps e and e' , through which extends the central bolt e^2 .

F is the crane, which comprises the side bars F' F', which are supported at the front end of the pilot-car by the uprights G G. The uprights G G are secured at the bottom to the segments g g , which have a limited movement within the segmental slots $g' g'$, suitably held and secured at the top in the floor of the car. The side pieces F' consist of three pieces $f f f$, the central piece being preferably depressed, so as to form a groove f' (see Fig. 6) to carry the carrier-chains, hereinbefore referred to. The said pieces f are made in several lengths, as well as in three thicknesses, and are suitably and preferably connected together longitudinally by plates f^2 . The pieces $f f f$ are also suitably bolted together. The pieces F' F' are connected together by cross-pieces F², located at suitable distances apart from end to end, and by the tie-rods 5.

F³ F³ are struts extending from underneath the side bars F' of the crane to the uprights G, and $f^3 f^3$ are braces extending between the side bars and struts.

F⁴ F⁴ are braces extending from the struts to the bottom of the uprights G G. The inner end of the side bars F are connected to the top of the uprights G by the metal plates 3 3.

F⁵ is a supplemental cross-bar which extends underneath the crane, near the outer end thereof, and is provided with end eye-straps f^5 , from which extend the converging hog-chains f^6 , which are fastened at the inner end around the central bolt e^2 . Intermediate of the length of the hog-chains I provide the separating-bars 4, through the ends of which the chains extend and which serve to keep the hog-chains separated sufficiently at the forward end, so as to permit of the passage of the ties, as will hereinafter appear.

H is the delivery-platform for the rails, which is pivotally connected by the bolt h at the front of the platform of the car and fits in a segmental recess a^2 , the sides of which are designed to limit the swing of the platform. The forward end of the platform is supported by means of a clevis h' , connected by the double chain h^2 to the bottom of the crane at any suitable point.

The platform H is provided with suitable side bars h^3 . Opposite the platform H and extending throughout the length of the train of cars upon each car and at suitable distances apart are located the feed-rollers I for the rails, journaled in suitable sockets or recesses i . Opposite the ends of each of the grooved rollers and at each side are located the cross-bars I' , which are designed to receive the supply of rails.

$f^7 f^7$ are hog-chains, which are connected to the rear end of the pilot-car and to the bolt e^2 at the top of the framework at the front end thereof and which are spread intermediate of their length by the spreading-bars 7 in order to permit of the passage of the ties.

J are the delivery-chute at the end of the crane, which comprise the boards j , which are secured to the end cross-piece F^2 at one end and secured to the cross-bar j' near the opposite end. The chute is supported by means of the side braces j^2 , which are secured to the end of the side piece F and to the ends of the cross-bar j' . This chute delivers the ties from the ends of the crane into proper position on the road-bed, as will hereinafter appear.

K K are endless carrier-chains which run at the top in the grooves f' and pass over the end sprocket k at the forward and suitable end sprockets k' at the opposite end. The carrier-chains are provided with carrier-fingers k^2 , located, preferably, about two feet apart. The sprockets k are secured to the end spindles k^3 and the sprockets k' on the end spindle k^4 . The spindle k^4 is provided with a sprocket k^5 , which is connected by a sprocket-chain k^6 to a sprocket-wheel k^7 on the spindle l , journaled at the end of the longitudinal bars $a a$.

I may here state that in the crane F the central piece f is cut away in order to permit of the insertion of the sprocket-wheel, and this is also the case in reference to the longitudinal bars a , which are also composed of three bars $a^3 a^3 a^3$, which are cut away at the end to receive the sprocket-wheels $l' l'$, secured on the spindle l .

l^2 is a sprocket-wheel which is connected by the sprocket-chain l^3 to a sprocket-wheel l^4 , secured on the spindle l^5 , journaled in suitable standard bearings on the floor of the car.

M is a sprocket-wheel secured on the spindle l^5 and connected by a sprocket-chain m to a sprocket-wheel N on the axle of the car.

It will thus be seen that the carrier-chains K derive their movement from the axle of the car, as do also the endless carrier-chains L,

which pass in the central groove formed between the members of the longitudinal cross-bars.

O are uprights secured in suitable sockets o at the sides of the car and supporting at the top the cross-bars O' . The cross-bars, it will be noticed, are located at suitable distances apart and support the longitudinal bars a^4 , which carry the chains L' and are exactly similarly formed to the chains L and are driven by suitable central sprockets l^7 and l^8 , connected by the sprocket-chains l^9 .

O^2 are uprights supported in suitable sockets o' on the sides of the car and provided at the top with the cross-bars O^3 , which support the longitudinal bars A^5 , which in this case are preferably on an incline and provided with sprocket-chains L^2 , connected and driven from the sprocket-chains L' identically the same as such chain is driven from the sprocket-chain L. The lower end of the chains L^2 , however, extend in proximity to the tie-car C. All the three chains L, L' , and L^2 are endless pairs of chains and are provided with carriers in pairs opposite each other.

In order to support the ties upon the tie-cars and remove the same therefrom, I provide the following mechanism: P P are longitudinal bars suitably supported and connected together and extending over the ends of the carrier-chains L^2 , such longitudinal bars P P being held over the carrier-chains by the braces $p p$. The longitudinal bars P P are exactly similarly formed to the bars A^5 , hereinbefore premised, and are provided at the overhanging end with the spindle p' , which carries the side sprocket-wheels $p^2 p^2$ and the central sprocket-wheel p^3 , which is connected by the sprocket-chain p^4 to the sprocket-wheel p^5 , secured on the spindle p^6 , which carries the sprocket-wheels of the chains L^2 .

P' P' are the endless chains which pass over the longitudinal bars P P and over the end sprockets $p^2 p^2$. It will be seen from what has been before premised that these chains P' are driven at the same rate as the chains L^2 and are provided with suitable carrier-fingers p^{51} . The bars P are supported at their inner end in the longitudinal recesses p^{16} in the floor of the car, which serve to hold the inner ends in place and yet permit of them sliding longitudinally as the cars swing in relation to each other in going around a curve.

I provide on each side of the space between the ends of the longitudinal bars a and a^3 the longitudinal supplemental bars a^6 , which are supported on the spindles l^8 of the sprocket-wheels at one end and rest on the spindle l^7 of the sprocket-wheels at the opposite end. These bars serve to bridge over the space between the cars and support the ties as they pass over such space, such ties of course being carried by the central sprocket-chain l^9 , provided with suitable carrier-fingers, as indicated. (See Fig. 3.) I provide similar bars between the ends of the longitudinal bars

and the crane, the spindle of one of the sprocket-wheels extending through one end of the bars and the other end of the bar merely resting on the spindle of the other sprocket-wheel.

The ties are supported on the longitudinal beams C' C' , which are provided at their inner side with the vertically-adjustable sectional bars c c , which are formed in three pieces similarly to the longitudinal bars a and provided with a central groove in a like manner. The bars c c are provided with vertical slots c' and bolts extending therethrough provided with thumb-nuts c^2 . The endless chains Q extend along the central groove of the bars and are supported at the bottom by the sprocket-idlers q . The ends of the chain Q pass around the sprockets q' and q^2 , the sprocket-wheels q^2 being secured on the spindle q^3 , supported in suitable bearings q^4 . A sprocket q^5 is also provided, whereby through the means of a sprocket-chain q^6 motion is conveyed to such sprocket-wheel q^5 from a sprocket on the axle of the car, a platform R extending along each side of the car and is of greater width thereof, being supported on the laterally-extending cross-bars r , fitting in suitable sockets r' in the longitudinal beams C' . These platforms are intended for the passage of the men, and it will be understood that such cars are usually of the same width as the ties, that they permit of the passage of the men outside the path of the ties.

It is essentially important that the crane F is provided with means for swinging it, so that the ties may be laid on a curved road-bed, and in order to effect this I support, as hereinbefore premised, the uprights G upon the segments g , which are suitably supported in the segmental slots g' . (See Fig. 5.)

In order to provide for the swing of the crane, I provide at the bottom of one of the segmental pieces g a rack g^2 , attached to or forming part of the segmental piece. g^3 is a worm, the spindles of which are supported in suitable bearing-brackets g^4 on the platform of the car. The spindle g^5 of the worm is provided with a bevel-pinion g^6 , which is engaged by the bevel-pinion g^7 on the end of the vertical spindle g^8 , which is preferably operated by a crank-handle g^9 . It will thus be seen that by manipulating the handle g^9 the swing of the crane over to the one side or the other may be effected very simply.

In order to provide a supplemental means for holding the crane rigidly in any position in which it may be swung or placed, I provide at the top the semicircular band S , which is suitably secured at the top of the uprights G . I also provide on the stationary portion of the frame a coacting semicircular band T , formed substantially U -shaped in cross-section and provided with friction-rollers t , upon which the band S swings. Upon the stationary semicircular portion T , I also provide the brackets T' , in the outer ends of which is secured the vertical spindle t' , on which is piv-

oted the clamping-lever t^2 , having the enlarged cam-shaped end t^3 , whereby by the manipulation of the lever the semicircular band S may be held in any desired position, and consequently the crane to which it is attached. The ties on the tie-cars, of which there may be any number, are supported on the longitudinal beams C' . The men at the front end of the car pass the ties onto the endless chain L^2 , whence they are carried on over the chains L L and out by the chains K , where they pass over the end of the crane and onto the delivery-chute J . The speed of the chain is preferably regulated so as to be equal to the speed of the train, and therefore the ties are laid at equal distances apart and in practice at two feet apart, as the carriers on the train are so placed. The rails on the rail-feeding rollers I are carried forward at the same time over such rollers and delivered from the platform H and preferably placed on the ties in the manner which it is not necessary here to describe. As soon as the first ties are taken from the longitudinal beams C the men who take the end of the ties as they proceed along to the rear end of the car first pass the ties upon the supplemental chain P' . When they have proceeded still farther back toward the rear, they can raise the sectional side bars C , so as to bring the carrier-fingers above the level of the beam C' , where such beams are free of the ties, and then can place the next block or upright ties or rows of ties upon the carrier-chains Q , which carry them forward to the carrier-chains P' , thence to the carrier-chains L^2 , and so until the end of the car is reached, when practically the same system of feed is provided from car to car, so that the endless chains extend from the rearmost car to the end of the crane on the front end of the pilot-car, thus saving an immense amount of handling and providing a quick and rapid means of supplying the ties to the proper construction-point.

The rails, as hereinbefore premised, are also carried underneath the ties systematically by the rollers and delivered to the proper construction-point also.

What I claim as my invention is—

1. A track-laying machine comprising a pilot-car, an inclined crane suitably supported at the front end and extending forwardly of the same over the road-bed, and endless carrier-chains extending from end to end of the crane and provided with carrier-fingers designed to convey the ties to the road-bed and the delivery-chute comprising the longitudinal boards secured to the end cross-piece of the crane and connected together at the lower end by a cross-piece and the side bracing-bars secured to the end of such cross-piece and to the end of the side bars of the crane as and for the purpose specified.

2. A track-laying machine comprising a pilot-car, an inclined crane suitably supported at the front end and extending forwardly of the same over the road-bed and endless

carrier-chains extending from end to end of the crane and provided with carrier-fingers designed to convey the ties to the road-bed and the track-delivery platform located underneath the crane and supported at the inner end on the end of the pilot-car and means for supporting it at the outer end from the crane as and for the purpose specified.

3. A track-laying machine comprising a pilot-car, an inclined crane suitably supported at the front end and extending forwardly of the same over the road-bed, and endless carrier-chains extending from end to end of the crane and provided with carrier-fingers designed to convey the ties to the road-bed, a suitably-elevated frame on the pilot-car and carrier-chains on such frame for conveying the ties from the rear of the pilot-car to the carrier-chains of the cranes and the rail-car-rying rollers located in the center of the floor of the car and extending longitudinally on a line with each other, and the rail-delivery platform at the forward end of the car as and for the purpose specified.

4. The combination with the crane and elevated frame on the pilot-car and the carrier conveying-chain suitably driven, of the rail-delivery rollers located on the floor of the car beneath the carrier-chains and the delivery-platform located on a line with the same and extending over and connected to the end of the pilot-car as and for the purpose specified.

5. The combination with the pilot-car having the rail-delivery rollers suitably secured thereon in the center of the car, of the rail-delivery platform suitably secured to the end of the car on a line with the delivery-rollers and means for supporting the outer end thereof as and for the purpose specified.

6. In a track-laying machine, the combination with the pilot-car provided with uprights at one end secured at the bottom to the frame of the floor and the cross-bar spanning the top and provided with lower braces and upper converging bars or beams having a central bolt extending through the converging-point, of the crane supported at the inner end on the upright bars and suitably braced thereto and the endless carrier-chains passing over the side bars of the crane-frame and means for supporting the outer end of the crane from the pilot-car as and for the purpose specified.

7. In a track-laying machine, the combination with the pilot-car provided with uprights at one end secured at the bottom to the frame of the floor and the cross-bar spanning the top and provided with lower braces and upper converging bars or beams having a central bolt extending through the converging-point, of the crane supported at the inner end on the upright bars and suitably braced thereto and the endless carrier-chains passing over the side bars of the crane-frame, the supplemental cross-bar extending underneath the outer end of the crane, the hog-chains connected to the ends thereof and to the central

bolt of the converging beams and the supplemental hog-chains connected to the bolt at the converging ends of the beams and to the rear ends of the pilot-car as and for the purpose specified.

8. In a track-laying machine, the combination with the pilot-car provided with uprights at one end secured at the bottom to the frame of the floor and the cross-bar spanning the top and provided with lower braces and upper converging bars or beams having a central bolt extending through the converging-point, of the crane supported at the inner end on the upright bars and suitably braced thereto and the endless carrier-chains passing over the side bars of the crane-frame, the supplemental cross-bar extending underneath the outer end of the crane, the hog-chains connected to the ends thereof and to the central bolt of the converging beams and the supplemental hog-chains connected to the bolt at the converging ends of the beams and to the rear ends of the pilot-car and the spreading-bars for separating the ends of the hog-chains as and for the purpose specified.

9. The combination with the elevated longitudinal bars and frames supporting the same on the pilot-car and the carrier-chains, of the delivery-crane extending forwardly of the pilot-car and supported on a suitable frame and suitably braced and a pivotal connection on such frame to the forward end of the pilot-car whereby a limited swing of the crane is provided for as and for the purpose specified.

10. The combination with the elevated longitudinal bars and frames supporting the same on the pilot-car and the carrier-chains, of the delivery-crane extending forwardly of the pilot-car and supported on a suitable frame and suitably braced, the uprights forming the end of the frame, the arc-shaped base-pieces to which such uprights are secured at the bottom, the segmental slots in which such arc-shaped pieces are supported and have movement and means for swinging the segmental pieces in their slots, so as to swing the crane as and for the purpose specified.

11. The combination with the elevated longitudinal bars and frames supporting the same on the pilot-car, and the carrier-chains, of the delivery-crane extending forwardly of the pilot-car and supported on a suitable frame and suitably braced, the uprights forming the end of the frame, the arc-shaped base-pieces to which such uprights are secured at the bottom, the segmental slots in which such arc-shaped pieces are supported and have movement, the toothed rack attached to or secured to one of the segmental pieces, the worm meshing therewith and having the spindles suitably journaled and means for imparting a rotary motion to the worm as and for the purpose specified.

12. The combination with the elevated longitudinal bars and frames supporting the same on the pilot-car, and the carrier-chains,

of the delivery-crane extending forwardly of the pilot-car and supported on a suitable frame and suitably braced, the uprights forming the end of the frame, the arc-shaped base-
 5 pieces to which such uprights are secured at the bottom, the segmental slots in which such arc-shaped pieces are supported and have movement, the toothed rack attached to or secured to one of the segmental pieces, the
 10 worm meshing therewith and having the spindles suitably journaled, the stationary semicircular bracket secured to the stationary portion of the elevated frame and provided with friction-rollers, the band secured to the up-
 15 rights forming the inner end of the crane and passing around and having a bearing on the rollers in the semicircular stationary track or frame and the clamping-levers suitably supported on the stationary portion of the frame
 20 and designed to have the end brought in contact with the semicircular bar as and for the purpose specified.

13. The combination with the crane and the elevated longitudinal bars and conveyer-chains of the pilot-car suitably supported and driven, of the rail-cars provided with the longitudinal elevated bars and conveyer-chains and suitable conveying means between the cars from the ends of one longitudinal set of
 25 bars to the end of the other longitudinal set of bars as and for the purpose specified.

14. The combination with the crane and the elevated longitudinal bars and conveyer-chains of the pilot-car suitably supported and driven, of the rail-cars provided with the longitudinal elevated bars and conveyer-chains and suitable conveying means between the cars from the ends of one longitudinal set of
 30 bars to the other longitudinal set of bars, the rearmost rail-car having the inclined longitudinal bars and conveying-chains, and conveying means for feeding the ties from the tie-car onto the inclined conveying-chains as and for the purpose specified.

15. The combination with the longitudinal bars and the conveying-chains suitably elevated and supported and the end sprocket-wheels and spindles thereof and means for driving the same, of the single sprocket-wheel
 40 secured on the center of the end spindles and the carrier-chains connecting the same as and for the purpose specified.

16. The combination with the longitudinal bars and the conveying-chains suitably elevated and supported and the end sprocket-wheels and spindles thereof and means for driving the same, of the single sprocket-wheel secured on the center of the end spindles and the carrier-chain connecting the same and
 55 the projecting pieces extending from the spindle of one set of sprocket-wheels on the end of the car to the spindles of the sprocket-wheels on the end of the adjacent car as and for the purpose specified.

17. The combination with the rail-car and the inclined longitudinal pieces on the end of the same and the carrier-chains carried on

suitable end sprocket-wheels having the spindles thereof suitably journaled in the ends, of the frame, of the tie-car having longitudinal
 70 bars and the supplemental longitudinal pieces extending upwardly from beneath the level of the longitudinal bars of the tie-car to a point above the level of the inclined longitudinal bars on the rail-car and conveyer-chains on such longitudinal pieces and means
 75 for driving such chains from a sprocket-wheel on the spindle of the sprockets of the carrier-chains on the rail-car as and for the purpose specified.

18. In a device of the class described, the combination with the tie-car and the longitudinal supporting-timbers for the ties on the tie-car, of the sectional longitudinal pieces and means for vertically adjusting the same
 85 and the conveying-chains passing over the longitudinal sectional pieces and means for driving the same as and for the purpose specified.

19. In a device of the class described, the combination with the pilot-car and a central
 90 rail-delivery, of a platform suitably pivoted to the end of the car so as to swing laterally and means for limiting its movement and means for supporting the outer ends of the same as and for the purpose specified.

20. In a device of the class described, the combination with the pilot-car and a crane pivotally swung at the front end thereof upon a suitable frame, of the rail-delivery platform pivoted in the front of the car and means for
 100 limiting its movement and means for supporting the outer end of such platform from the crane as and for the purpose specified.

21. In a device of the class described, the combination with the pilot-car and a crane
 105 pivotally swung at the front end thereof upon a suitable frame, of a rail-delivery platform pivoted in the front of the car and means for limiting its movement and the clevis and chain for supporting the outer end of the rail-
 110 delivery platform as and for the purpose specified.

22. The combination with the longitudinal bars and frame supporting the same on the pilot-car and the carrier-chains, of the delivery-crane extending forwardly of the pilot-car and supported on a suitable frame and suitably braced, the uprights forming the end of the frame, the pivotal connection between
 115 such frame and the car at the front end of such car and clamping means on the pivotal end of the crane for holding it in any position to which it may be swung as and for the purpose specified.

23. The combination with the longitudinal
 125 bars and frame supporting the same on the pilot-car and the carrier-chains, of the delivery-crane extending forwardly of the pilot-car and supported on a suitable frame and suitably braced, the uprights forming the end
 130 of the frame, the pivotal connection between such frame and the car at the front end of such car, the stationary elevated frame, the stationary semicircular brackets secured thereto

and provided with friction-rollers, the band
secured to the uprights forming the inner end
of the crane and passing around and having
a bearing on the rollers in the semicircular
5 stationary track or frame and the clamping-
levers suitably supported on the stationary por-
tion of the frame and designed to have the end
brought in contact with the semicircular ad-
justable bar as and for the purpose specified.
10 24. A rail-carrying car for track-laying ma-

chines having a platform provided with rail-
supporting cross-bars located on opposite
sides thereof, and a plurality of rail-convey-
ing rollers having their ends journaled in said
cross-bars, substantially as described.

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Witnesses:

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