

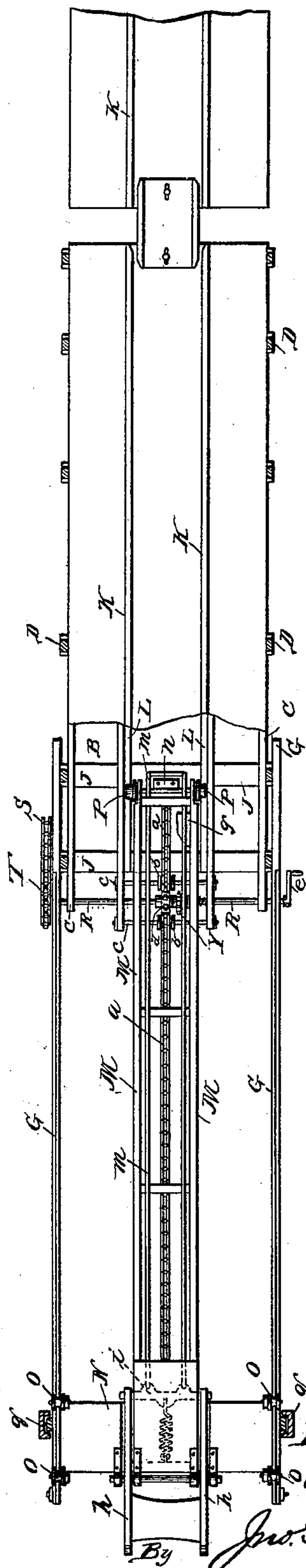
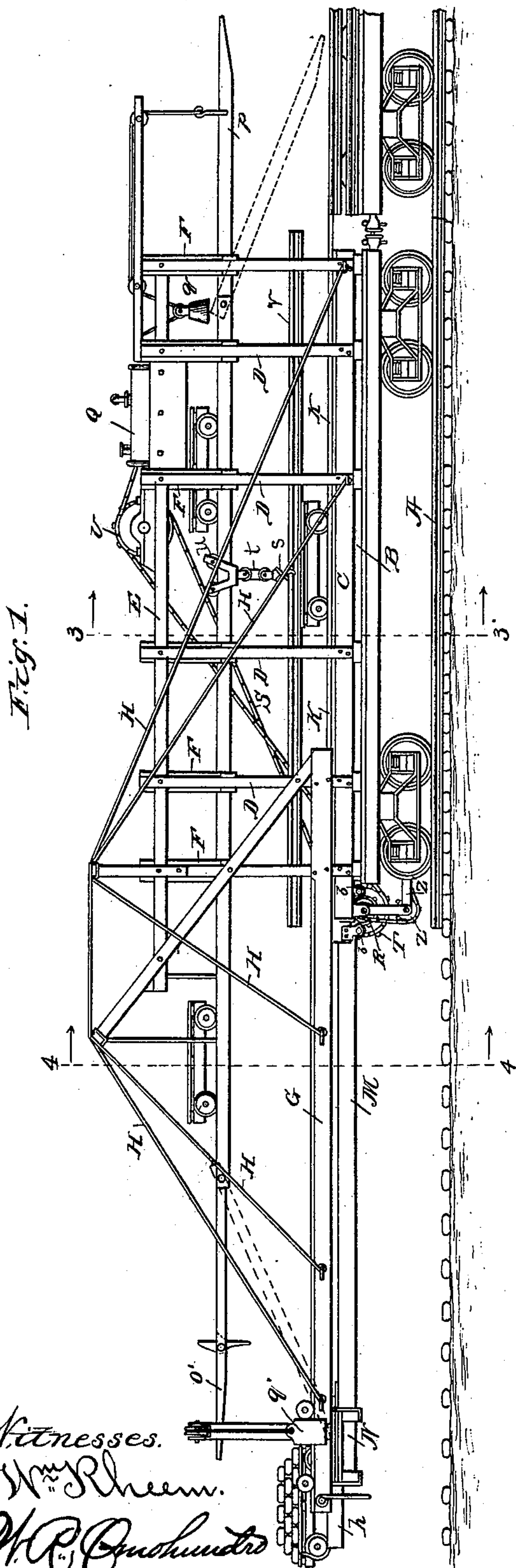
(No Model.)


3 Sheets—Sheet 1.

F. F. VOIGT.
TRACK LAYING MACHINE.

No. 404,996.

Patented June 11, 1889.



Witnesses. 
Wm. R. Rhem.
H. R. Quinlan

Inventor,
J. F. Wright
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att'y.

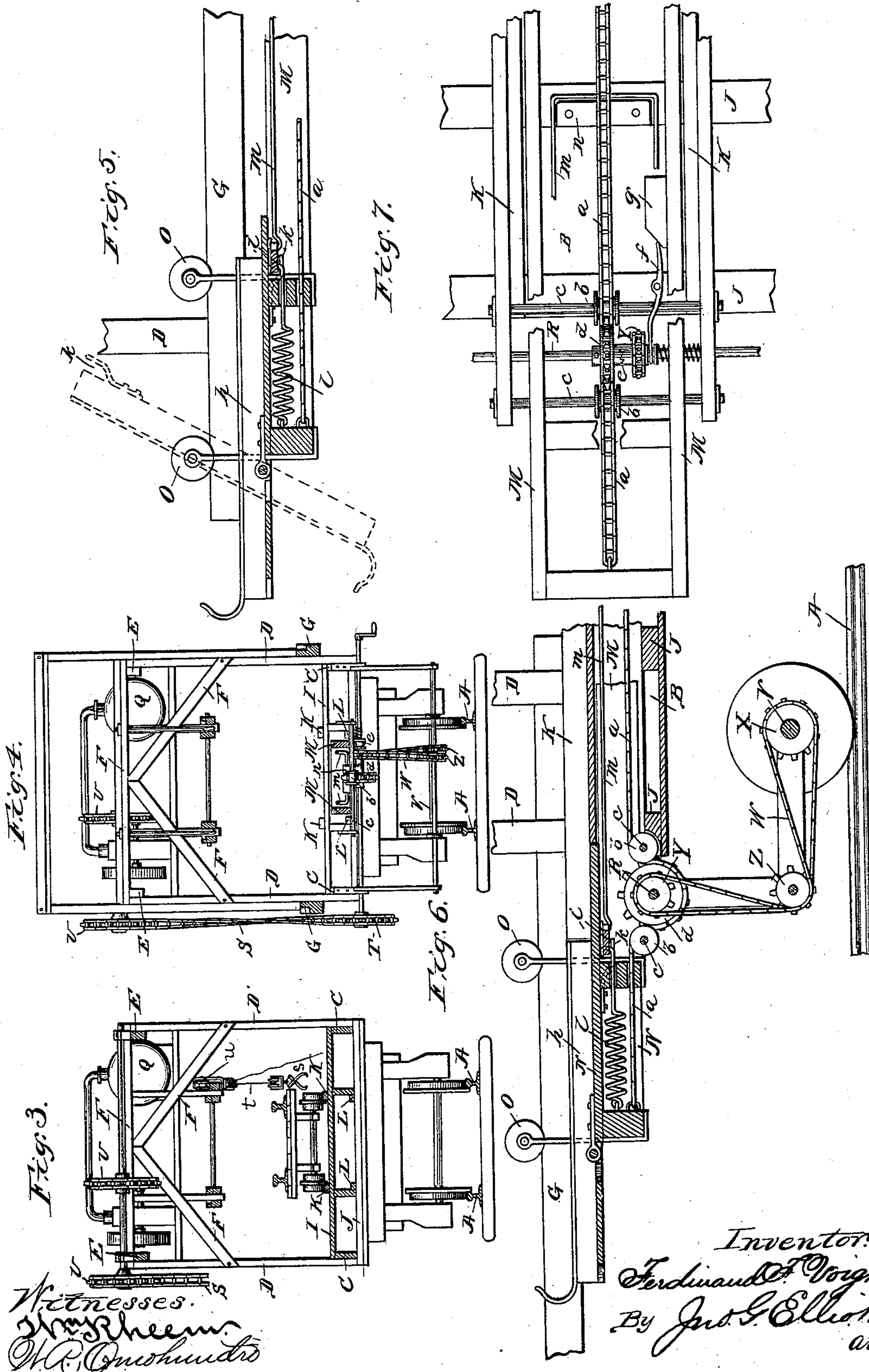
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Patented June 11, 1889.



Witnesses.
J. M. Rheim
W. R. Onoohndro

Inventor:
Ferdinand F. Voigt
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UNITED STATES PATENT OFFICE.

FERDINAND F. VOIGT, OF CHICAGO, ILLINOIS.

TRACK-LAYING MACHINE.

SPECIFICATION forming part of Letters Patent No. 404,996, dated June 11, 1889.

Application filed September 22, 1888. Serial No. 286,112. (No model.)

To all whom it may concern:

Be it known that I, FERDINAND F. VOIGT, a citizen of the United States, residing in the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Track-Laying Machines, of which the following is a specification.

This invention relates to improvements in track-laying machines in which a car of special construction is advanced by and before the construction-train for handling the ties and rails, upon which it is moved as rapidly as the new panels of track are laid, but is more especially designed as an improvement upon the invention set forth in United States Letters Patent No. 286,564, granted me October 9, A. D. 1883.

The prime object of this invention is to materially improve the construction and operation of such a track-laying machine, and in such manner as to greatly facilitate the handling of the material in the laying of the track, and at the same time reduce the labor, and consequently the expense, of such operation.

Another object is to automatically limit the forward movement of the extensible carrier for the tie-trucks, whereby is avoided all danger of breakage of said carrier or the car-frame by the continued operation of the mechanism employed for extending the carrier.

A further object is to enable the automatic discharge of the ties from the truck on the extensible carrier simultaneously with the stopping of the forward movement of the carrier, whereby handling of the ties prior to their deposit on the ground is dispensed with.

A still further object is to enable the switching of the tie-truck from the extensible carrier while in its extended position, whereby the handling of the ties is greatly facilitated, and, finally, to enable the handling of the rails and their discharge upon the ground independent of the carrier.

I attain these objects by the devices illustrated in the accompanying drawings, in which—

Figure 1 represents a side elevation of a track-laying machine embodying my invention, showing a portion of the forward car of the construction-train; Fig. 2, a plan view thereof; Fig. 3, a transverse vertical section

on the line 3 3 of Fig. 1; Fig. 4, a similar section on the line 4 4 of Fig. 1; Fig. 5, an enlarged central section through the cross-head of the extensible carrier, showing the forward end of the extension-frame and the carrier in its extended position; Fig. 6, a similar section, but showing the inner end of the extension-frame at its conjunction with the car-body and the carrier shown in its normal position; and Fig. 7, a plan view thereof; Fig. 8, a detail plan view similar to Fig. 7, showing the mechanism employed for operating the carrier when an engine upon the machine is alone depended on for power; Fig. 9, a detail sectional view more clearly showing the automatic lock of the tilting track-section and the means for operating the same; and Fig. 10, a detail plan view thereof, showing the lock withdrawn and the track-section ready to tilt upon its pivots; Fig. 11, an enlarged detail of gearing shown in Fig. 8.

Similar letters of reference indicate the same parts in the several figures of the drawings.

The main body of my machine is about thirty feet in length, or nearly equal to that of a panel of track, and in laying the track it is designed to move the machine forward upon each panel as rapidly as laid, prior to and during which movement the ties for the next pair of rails have been laid in position forward of the panel upon which the machine rests, and simultaneous with the forward movement of the machine, or after such movement is completed, a truck-load of ties sufficient for a pair of rails is run onto the carrier and the latter extended so as to discharge this load of ties onto the ground forward of the ties already laid, and while these ties are being laid in position to receive the rails a pair of rails is laid upon the ties already placed immediately forward of the machine and spiked in position, after which the machine is moved forward onto this new panel, the extension-frame drawn back, and the operation repeated.

Referring by letter to the accompanying drawings, A indicates a panel of track previously laid, and B the body of my machine, which, preferably, in the main consists of an ordinary flat car, upon which the superstructure, consisting of the horizontal timbers C, vertical posts D, longitudinal string-

ers E, and transverse braces F, is mounted. Secured to this superstructure and projecting forwardly therefrom is an extension-frame G, supported and stiffened in any suitable manner, but preferably by means of guy rods or ropes H, attached to the superstructure, in which turn-buckles or other devices may be employed for adjusting the length thereof and imparting to the frame the necessary rigidity.

The car is provided with a double floor I J, upon each of which, at the center of the car, is laid a track K L, respectively, while in the space between the floors works an extensible carrier M, consisting of a rectangular frame having a cross-head N, provided with platforms, upon which the workmen stand. This carrier is supported at its forward end upon rollers O, secured to the cross-head thereof and traveling upon the extension-frame G, while its rear end is supported upon wheels P, journaled thereto and working upon the track L on the lower flooring J, so that the said extensible carrier in its normal position is telescoped within the body of the car lying between the floors thereof. The power for operating this extensible frame may be derived either from a stationary engine Q, supported upon the superstructure of the car and connected with a transverse power-shaft R by means of a sprocket-chain S, working over sprocket-wheels T and U, mounted, respectively, on said shaft and the fly-wheel shaft of the engine, or from the axle V of the forward pair of wheels of the truck of the car through the medium of the sprocket-chain W, working over sprocket-wheels X and Y, mounted, respectively, upon said axles and the shaft, to one side of the center thereof, and around idler-sprockets Z, journaled upon an angular frame Z', mounted at its ends, respectively, upon the cross-shaft and axle, by means of which sprockets and idlers the direction of rotation of the cross-shaft is controlled.

The rotary motion of the cross-shaft is converted so as to impart a reciprocating motion to the extensible carrier by attaching to the carrier the ends of a sprocket-chain a, which works over two idler-pulleys b, mounted upon counter-shafts c, journaled in the car-frame at each side of the cross-shaft R and under a sprocket-wheel d, keyed upon the cross-shaft R at the center of length thereof, the chain being held in engagement with this sprocket-wheel by the idler-pulleys, and thus, whenever the shaft is rotated, the extensible carrier will be caused to travel backward or forward, according to the direction in which the shaft is rotated.

I may here observe that either one, but not both, of the means herein shown for operating the carrier may be employed at a time, the mechanism being preferably so constructed that either one of them can be thrown out of gear when desired; and it may be also observed that when the engine is employed the

frame is moved in both directions by the power thereof, but when the power is derived from the axle of the truck the carrier is advanced thereby only, being withdrawn and returned to its normal position by hand-power through the means of a crank-handle e on one or both ends thereof.

The outward or forward movement of the carrier is limited and controlled by having the sprocket-wheel Y loosely mounted on the power-shaft R, and a clutch e between said wheel and the sprocket-wheel d, rigidly mounted on said shaft, or a collar comprising a half-clutch, or in any other suitable manner in which the rotation of the drive-sprocket can be imparted to the power-shaft. This clutch is thrown out of gear by the shifting of the sprocket-wheel Y on the power-shaft, which is accomplished by means of a lever f, pivoted to a stationary portion of the car-frame, one end of which is formed into a yoke working in a groove in the hub of the wheel, as usual, and the opposite free end of which is adapted and arranged to be engaged by an incline or cam g toward the rear end of the carrier whenever the latter is extended to its farthest limit, thus throwing the clutch out of gear and rendering the continued rotation of the sprocket-wheel harmless. This is of course the construction when the power is derived from the car-axle; but when derived from the stationary engine the sprocket-wheel d would preferably be loose on the power-shaft, while a half-clutch Y' would slide thereon, but be caused to rotate therewith by a pin Y², engaging a groove Y³ in the shaft, or by feather-connection, such is commonly used in such devices.

From the foregoing it will be understood that the machine may be equipped with both the mechanism for driving the shaft R from the axle of the machine or from an engine located on the machine, it being only necessary when the engine is used to throw off the sprocket-chain W from the clutch gear-wheel Y, or, when the power is to be taken from the axle of the car, to throw off the belt from the engine; and it will also be understood that either of these means for operating the power-shaft R may be applied to a machine and the other omitted entirely, according to the election of the user, the broad idea of my invention being first to have the carriage and its accompanying mechanism, including the automatic stop therefor and the automatic lock device for the tilting track-section, operated by any means which will cause the carriage to perform its functions, two of such means only being herein shown and described, while in a more limited sense my invention consists in operating the carriage directly from the axle of the machine.

The automatic dumping of the ties when the carrier reaches the limit of its forward movement is accomplished by means of a tilting track-section h, pivoted upon the cross-head of the carrier, constituting a continua-

tion of the track K upon the floor of the machine, when the carrier is withdrawn or telescoped into its normal position, the ends of the tracks being upturned to prevent the truck accidentally running off. This tilting track-section is held in a horizontal position by means of a lock-bar *i*, or some equivalent device, entering sockets *k* in the rear end of said track and yieldingly held there by a spring *l*, which bar will be withdrawn, so as to unlock the section at the moment the carrier reaches the limit of its forward movement, by rods *m*, or their equivalent, moving with the frame and attached at one end to the bar, the opposite or inner end of which engages a fixed portion *n* of the car-frame, and thus causes the lock-bar to be withdrawn. The impetus of the carrier and its sudden stop and release of the lock causes the section to tilt downward and discharge the ties onto the ground, and, if desired, for the insuring of such action the track-section may be pivoted slightly off center. After the ties are dumped and the tilting section returned to its normal horizontal position by the men in the cross-head, a hinged section of overhead track *o'* is brought down to the position shown by dotted lines in Fig. 1, and the truck returned to the rear of the machine on the overhead or return track, the rear end *p* of which is also hinged, so that the truck may be run down the incline onto the flat car next in the rear to be reloaded. Both these hinged sections of track may be returned to their elevated positions by counter-balance-weights *q*, or by springs or in any other manner desired. The rails *r* are placed on a separate truck from the ties, and are run forward onto the machine from the flat car, where they are taken up by tongs or grappling-hooks *s*, attached to chains *t*, forming part of a block-and-tackle arrangement depending from travelers *u*, running on overhead tracks at each side of the truck return-tracks, before mentioned, by means of which the rails may be picked up from the truck, run forward, and let down onto the ties already laid in position to receive them just forward of the machine, there being sufficient room between the carrier and extension-frame of the machine to permit of this.

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

1. The combination, with a track-laying machine provided with a forward extension-frame, of a carrier working on said frame and a gear-connection between the said carrier and the axle of the machine, whereby the forward movement of the machine will cause the carrier to be advanced, substantially as described.

2. The combination, with a track-laying machine provided with a forward extension-frame and a carrier working on said frame, of a power-shaft, a sprocket-wheel mounted thereon, a sprocket-chain secured at its ends, respectively, to the carrier and working

around said wheel, and a sprocket wheel and chain connection between said shaft and the axle of the machine, substantially as described.

3. The combination, with a track-laying machine provided with a forward extension-frame, a carrier working on said frame, and means for advancing and withdrawing said carrier, of an automatic stop device for limiting the movement outwardly of said carrier, substantially as described.

4. The combination, with a track-laying machine provided with a forward extension-frame, and a carrier working on said frame, of a power-shaft, a connection between said shaft and carrier, including a separable clutch device, whereby the rotation of said shaft will operate the carrier, and mechanism attached to said carrier for automatically unshifting the clutch and stopping said carrier, substantially as described.

5. The combination, with a track-laying machine provided with a forward extension-frame, and a carrier working on said frame, of a power-shaft, a sprocket-wheel mounted thereon, a sprocket-chain attached at its ends, respectively, to the carrier and working around said wheel and shaft, a clutch-lever, and a projection or incline on the carrier adapted and arranged to actuate the lever so as to shift the clutch, substantially as described.

6. The combination, with a track-laying machine provided with a forward extension-frame, and a carrier working on said frame, of a power-shaft, a sprocket-wheel mounted thereon, a sprocket-chain attached at its ends, respectively, to the carrier and working around said frame, a clutch connecting said wheel and shaft, a clutch-lever and a projection or incline on the carrier adapted and arranged to actuate the lever so as to shift the clutch, and a connection between said shaft and an axle of the machine for actuating the former, substantially as described.

7. The combination, with a track-laying machine provided with a forward extension-frame, of a carrier, means for advancing and withdrawing the same, a tilting track-section mounted on said carrier, and means for automatically tilting said section, substantially as described.

8. The combination, with a track-laying machine provided with a forward extension-frame, of a carrier working on said frame, means for advancing and withdrawing said frame, a tilting track-section, a lock device therefor, and means for automatically withdrawing said lock when the carrier reaches the limit of its forward movement, substantially as described.

9. The combination, with a track-laying machine provided with a forward extension-frame and a carrier working on said frame, of a tilting track-section on said carrier, a spring-actuated lock device therefor, a rod for operating said device, and a fixed projection on the machine engaging said rod when

the carrier reaches the limit of its forward movement, whereby the lock device will be automatically unlocked, substantially as described.

5 10. The combination, with a track-laying machine provided with a forward extension-frame, a carrier working on said frame, and a tilting track-section on said carrier, of means for advancing and withdrawing said carrier,
10 an automatic stop device for limiting the outward movement of the carrier, and means for automatically and simultaneously tilting said track-section, substantially as described.

15 11. The combination, with a track-laying machine provided with a forward extension-frame and a carrier, of an overhead return-track, hinged end sections on said track

adapted and arranged, respectively, to receive the trucks from the carrier when extended and deliver them at a point to the rear of the machine, substantially as described. 20

12. The combination, with a track-laying machine provided with a forward extension-frame and a carrier working on said frame, of overhead return-tracks having hinged end sections, supplemental tracks parallel therewith, and travelers working on said tracks provided with block and tackle and grappling-hooks for carrying the rails, substantially as described. 25

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