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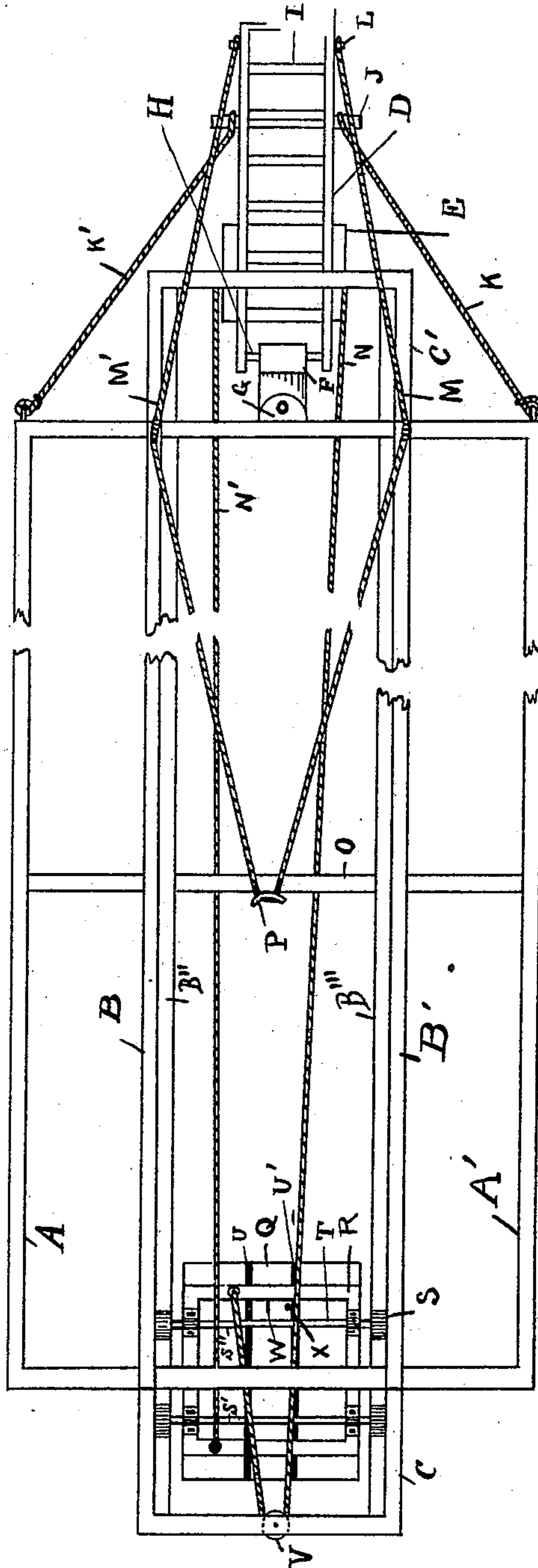
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H. BIRKBY.  
TRACK LAYER.

No. 447,754.

Patented Mar. 10, 1891.

Fig. 1.



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(No Model.)

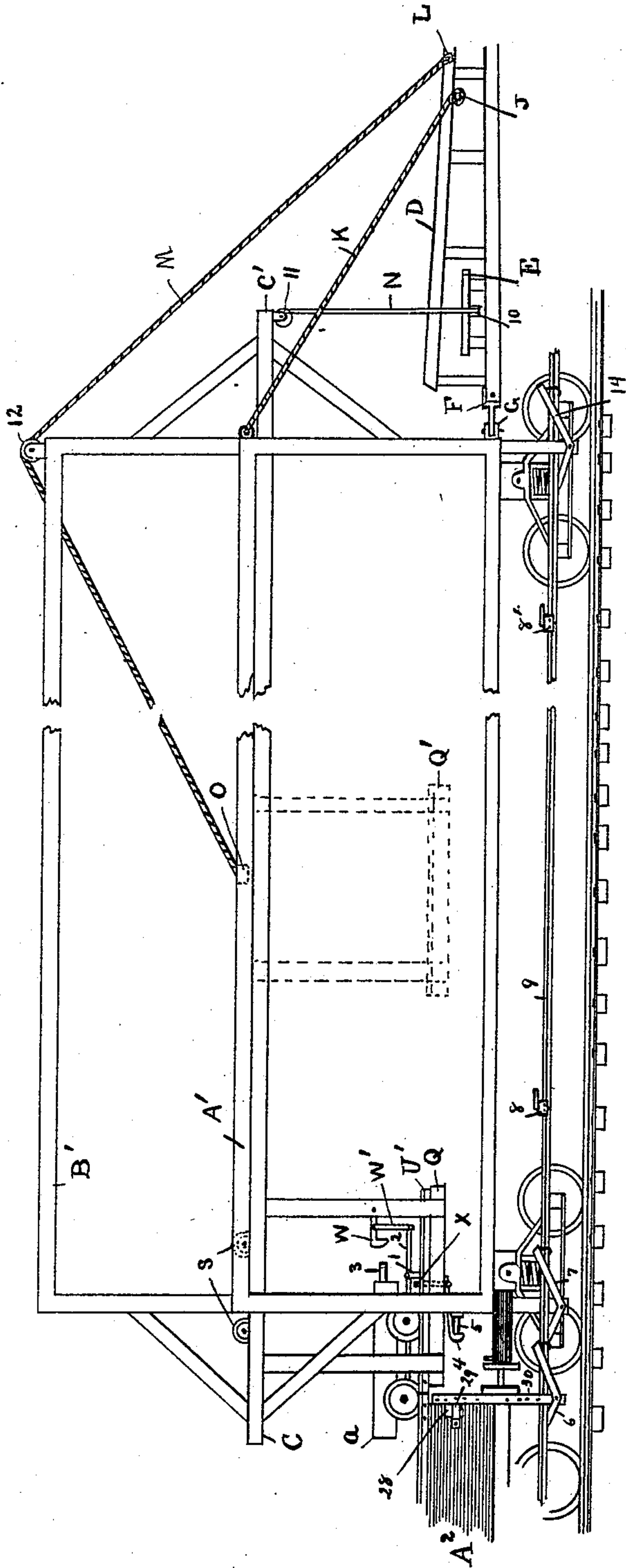
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Fig. 2.



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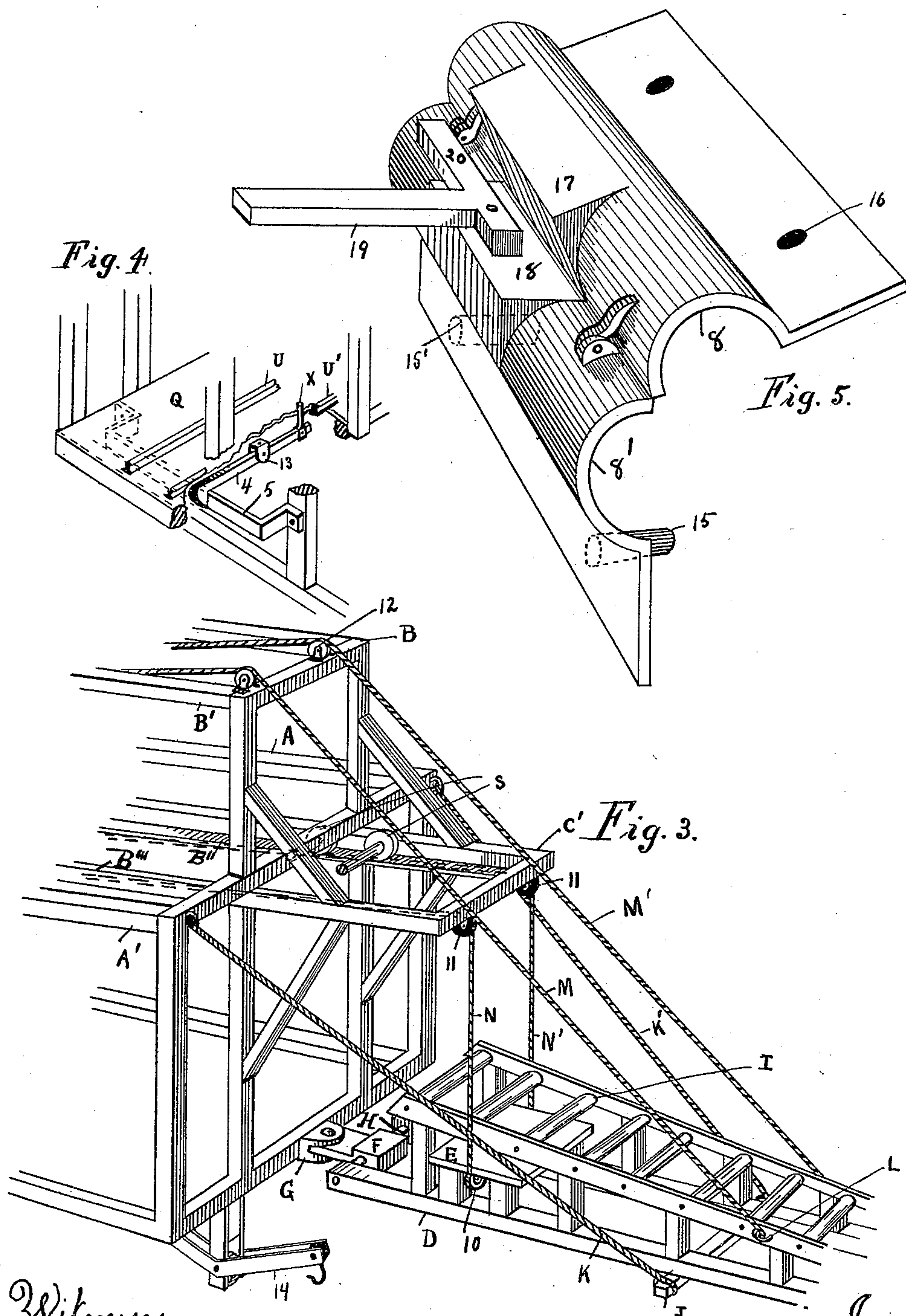
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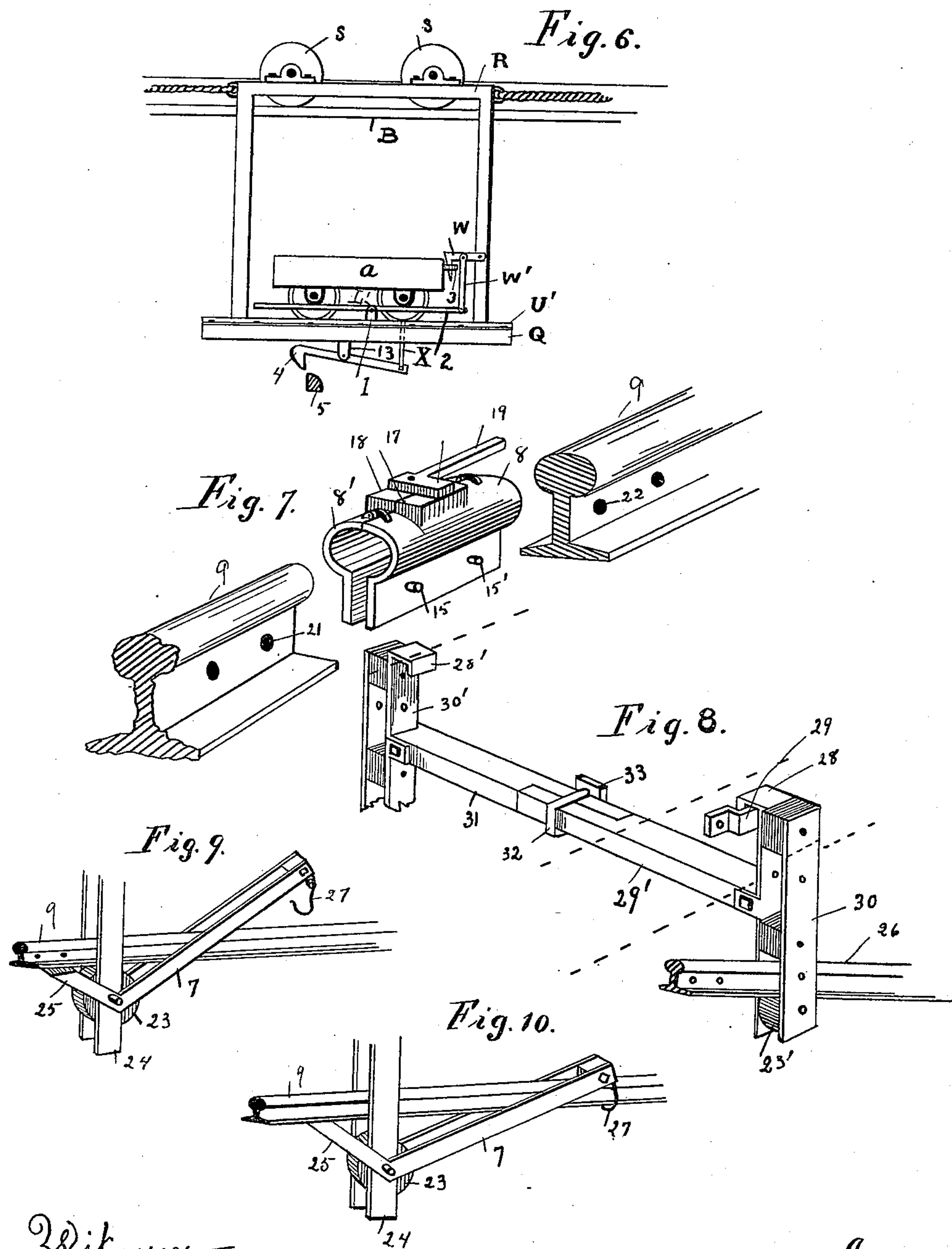
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# UNITED STATES PATENT OFFICE.

HENRY BIRKBY, OF CHILLICOTHE, ILLINOIS.

## TRACK-LAYER.

SPECIFICATION forming part of Letters Patent No. 447,754, dated March 10, 1891.

Application filed September 18, 1890. Serial No. 365,349. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY BIRKBY, a citizen of the United States, residing at Chillicothe, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Track-Layers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain new and useful improvements in "track-laying" machines, by means of which a machine is provided being efficient in its working, durable, and practical; and more particularly my invention relates to that class of track-laying machines which are purposed to convey the rails and ties to such a forward position as to keep them entirely in front of the machine and in the desired position for laying.

That my invention may be more fully understood, reference is had to the accompanying drawings, in which—

Figure 1 shows a plan view of a track-laying machine embodying my improvements. Fig. 2 is a plain side view of my improved track-laying machine. Fig. 3 is a perspective view showing the forward parts of my improved track-laying machine. Fig. 4 is a detail view showing the means of securing and detaching a movable car which travels back and forth in the main frame of the machine. Fig. 5 shows a clamp or a securing means for connecting the rails. Fig. 6 is a detail view showing the car or carriage which travels back and forth in the main frame of the machine. Fig. 7 shows the ends of rails and a clamp for securing them together. Fig. 8 is a detail view showing a hanger for carrying and conveying the rails. Fig. 9 is a detail view showing a stopping means or break for engaging the rail. Fig. 10 is a detail view showing the break above referred to when clamped onto the rail.

In Fig. 1, A, B, and C refer to the frame construction of the machine, in which B refers to a central frame provided with suitable braces and cross-braces, and C is merely an extension or continuation of the main or central frame-work B. A A' are side extensions or wings, having suitable uprights, braces, or

cross-braces attached to and carried upon the main frame-work B B'. O refers to a cross-brace for strengthening the central portion. D refers to an extension from the main frame, which may be called a "boom," which is pivotally attached to the pivoted clevis F, which allows it an upward and downward movement, and by means of the pivotal connection of the clevis F with the clamp G the boom D may be moved from side to side, and is pivoted onto the main frame of the machine. The boom D has the journal H, which is carried in a bearing and formed in the clevis F. E refers to a lower frame construction which carries the pulley-wheels. The boom D is provided with a series of rollers I, which have suitable journals bearing in the sides or frame of the boom. J is a cross-piece for the attachment of ropes. At the inner edges of the frame parts B B' we have the track B'' B''', which is purposed to carry the flanged wheels of a suspended car or carriage. The flanged wheels S have the axles S' S'', and journaled onto said axles we have the car or carriage, the main frame of which is represented by the letter Q, which said carriage is rectangular in its general form and provided with a floor at its lower portion or strips, on which is a track formed by the rails U U'. R refers to the top frame-work of the carriage. X and W refer to detail parts, which are better shown in Fig. 6. V is a pulley-wheel pivoted onto the main extension C. K K' refer to ropes attached to the cross-piece J on the boom and secured to the upper portion of the wings of the main frame and purposed to support the boom D. M M' are also ropes attached to the pins L on the boom and carried over the top of the main frame construction and secured at P, which are also purposed to support the boom. The ropes K K', besides acting as a support, are further useful in moving the boom from side to side and for securing it in a given position. The ropes M M', besides being useful as supports for the boom, are also useful in raising and lowering the same and securing it in a desired position. The ropes N N' are attached to the carriage or car, as shown, and, working upon pulleys at the back and forward extension, are useful in carrying the car or carriage upon the tramway, which ex-



tends the full length of the central and main frame construction.

In Fig. 2, C' refers to a forward extension, which corresponds with the extension C at the back, which said extensions are properly braced. U' refers to a rail, which has a corresponding one on other side to form a track, on which is carried the small car *a*. The parts represented by 1, 2, W, and 3 constitute a catch or securing device to hold the car *a* in position, and the parts represented by 4 5 X constitute a securing means for holding the carriage in which the car is carried in position and means of detaching. 10 11 12 refer to pulleys for carrying ropes. 8 8' refer to clamps for binding the rails 9 together. 6 7 are brakes purposed to hold the rails fast in certain position. A refers to the side of a flat car coupled to the track-laying machine. 20 29 refers to a socket which carries, by means of the hook 28, the hanger 30, which will be described more particularly when reference is made to another figure. Q' shows the same carriage dotted in that is represented by the letter Q, only in another position.

In Fig. 3, 14 refers to an arm of the brake before mentioned.

In Fig. 4, 13 refers to a clamp or clevis.

In Fig. 5, 8 8' refer to hinged sections, which together form a clamp, which is provided with pins 15 15', which are purposed to be carried in the holes 16, and which have the raised portions 17 and 18 on the top of the clamp, which, when the clamp is closed together, form a perfectly-flat top. 19 and 20 together form a fastening means for the clamp.

In Fig. 6, L' refers to a clevis or bearing for the bar 2.

In Fig. 7, 21 and 22 refer to holes in the ends of the rails. 15 15' refer to pins in the clamp A.

In Fig. 9, 24 refers to a hanger which carries the small roller 23, on which is carried the rail 9, which rail is stayed in a given position when desired by means of the brake formed by the parts 7 and 25 and the hook 27.

In Fig. 8, 29' and 31 are bars, which are held together by means of the clamp 33 and 32, and said bars carry on their respective ends a frame-work, (shown by 30 30',) which is purposed to carry rollers, as shown by 23', and having the hooks 28 28' for attachment to cars by hooking into sockets, as shown by 29, which together form a hanger purposed to carry rails.

That the workings of the various parts of my improved track-laying machine may be understood I will give a general description of the operation.

It will be seen that the prime object to be attained is the conveying the rails and ties to the forward part and in front of the machine. This is accomplished in this manner: A series of cars, to which an engine is attached, extend backward from the machine, the cars nearest to the machine being loaded with ties and those farthest from the machine with rails, and as ties are first necessary in the lay-

ing of a track we must first place these in position, and it is accomplished by this means: We are first provided with two or more small cars, sometimes called "dumpies," as shown by *a*. These cars are loaded upon the flat cars back of the machine, then run upon the carriage formed by Q R, which said carriage, as before explained, is suspended from and carried upon axles, the ends of which are further provided with flanged wheels, which travel along and upon the track or tramway along the central portion of the main frame construction, and by means of this tramway the carriage is carried back and forth. The small cars or dumpies, before referred to, being first loaded and run upon the carriage itself is moved forward by means of rope connections, until it reaches the forward extremities of the tramway, and is there stopped, being then in a position adjacent and nearly in contact with the boom D. The ties are then taken from the dumpy and laid upon the boom, which having an incline and being provided with the rollers, they immediately move down the boom, and are caught at the end and placed in position, which is a full length of the tie ahead of the machine. When the car is loaded, the carriage is moved backward by means of the operating-ropes attached thereto, and during the passage of the car back the time consumed is occupied in moving the train forward upon the track just laid and temporarily spiked. The complete final spiking or securing of the rails is completed by men working under the frame, which is carried sufficiently high above the track to allow them to work, and by this means it will be seen that no time is lost, and ties are carried into the position desired.

As before noted, the rails are on cars farther back on the train and must be conveyed forward and in front of the machine. This is accomplished by means of a series of hangers attached two to each car (one at either end) and the rollers in the hangers so adjusted as to give a gradual decline forward and a continuous bearing for the rails in their passage to the forward and front part of the machine. The rails are held together by means of a clamp, which forms a complete and stiff joint, thus making what might be called a "continuous rail" extending from the car of rails which is being unloaded to the forward part of the machine. By this means rails are carried forward into the position desired and ready to be laid, and need only to be detached from the continuous or string of rails by the detachment of the clamp which holds the joints together. Now by the means described we have rails and ties in position to be laid and a track formed.

By reference to Fig. 3 it will be seen how the boom is attached to the main frame and also the means of raising and lowering and of shifting from side to side, and also the detail construction of the same, and from this figure it will be seen that M M' are attached to



the frame of the boom and carried backward over pulleys on the top of the main frame and provided with a suitable attachment at a point P back of the pulley-wheels 12. The ropes 5 K K' are attached to the cross-piece J at one end and secured at the other end of said ropes to the wings extending out from the main frame, and it is shown in this figure the manner of operating the ropes N N', which operate the carriage, moving it back and forward in the tramway. Instead of the ropes N N' being two in number they really are but one continuous rope, which being attached to the carriage, as shown in Fig. 1, and one being 15 carried forward and the other backward and around the pulley V and then forward, both ropes being carried then in the pulley-wheel 11, and thence down and under the rollers of the boom on pulley-wheels, one of which is 20 represented by 10, and a corresponding one on the opposite side of the boom. It will thus be seen how it carries the carriage back and forth, as already described—that is, by pulling down or up on the respective ropes which operate back or forth. By pulling down on the 25 rope N' the carriage is moved forward, and by pulling down on the rope N the carriage is carried backward and can easily be operated by a man standing at the forward end of the 30 machine.

By reference to Fig. 6 the attachment and detachment of the carriage to and from the main frame will be seen. When the car *a* is removed from the carriage, the catch-lever 4 35 catches down and over a plate or bar, as is plainly shown in Fig. 4, with the upwardly-tending rod extending up through or at the side of the rail, the catch-lever having the fulcrum attachment 13 secured to the bottom of the carriage. Now it will be seen that it 40 is impossible for the carriage to move forward. Now by running the car *a* upon the track formed by U U' and in the position shown in Fig. 6 it will be seen that the wheel of the 45 car *a*, contacting with the upwardly-tending rod X, is depressed, thus detaching the catch-lever 4 and allowing the carriage to move forward, making the action automatic; and in order that the car *a* be held firmly in the carriage when it is moving we have provided 50 the lever 2 with the fulcrum-bearing L', the upwardly-tending arm W' with the catch W, attached to the main frame, which catch W engages a loop or socket provided for its reception in the forward part of the car *a*, thus 55 firmly securing the car upon the carriage, and when it is desired to detach the car and remove it from the carriage it is accomplished by merely pressing downward upon the rear 60 end of the lever 2, thus freeing it from its engagement and allowing it to be removed. By reference to Fig. 2 it will be seen that the track extends back to a flat car, which is coupled directly on to the machine.

65 By reference to Fig. 5 it will be seen that the clamp is made in two sections and hinged at the top in such a form that when closed it

provides a case, which fits perfectly over the ends of the rail, and by means of the pins 15, which are adapted to pass through the open- 70 ings in the end of the ties continuing on and openings on the other half of the clamp, the rails are prevented from coming out of the clamp, and the clamp is held together by means of a lever and arm purposed to turn upon a 75 flat surface provided at the upper part of the clamp. In Fig. 6 the clamp is shown closed.

In Fig. 8 it will be seen that the hanger is made in two sections and provided with a clamp, so that the hanger may be widened or 80 narrowed to accommodate itself to the different widths of cars, and it will further be seen that the frame-works shown by 30 30' are provided with a series of holes for the insertion of pins to secure blocks or provide jour- 85 nal-bearings for the necessary rollers, so that the rollers may be placed in different positions in the frame-work, or may be placed in the position of the blocks, or, rather, inter- 90 changed with blocks. The different adjustment of the rollers will be seen necessary when we consider that a general decline of bearings must be provided, on which the continuous or clamped rails are to travel, so as to 95 give them a movement forward caused by gravitation, in order to obviate the necessity of external force. Ropes or other stays must be attached to the hanger and carried back- 100 ward and secured, in order to stay them in a given position and to resist the force that tends to carry them forward when the rollers are at a point below the cross-piece; but if the rollers are situated above the cross-piece the ropes must have directly the opposite at- 105 tachment.

In Figs. 9 and 10 we have shown the brake, which is useful in staying the rail in a given position. Now by means of this brake, which is formed of the parts 7 and 25, with a sur- 110 face for contacting with the bottom of the rail and the hook 27 to hook under the bottom of the rail, the staying process is effected. Ordinarily the rail simply bears lightly upon the arm 25, which does not stop its passage; but when the arm 7 is depressed 115 the flattened surface of the arm 25 bears heavily upon the under surface of the rail, and by hooking the part 27 under the rail this firm bearing is continued and the rail stayed in the desired position. 120

The particular features of my improvement in track-laying machines consist in the means of carrying the ties and rails forward to a position where they are to be laid, and these means are embodied, essentially, in the car- 125 riage, which moves back and forward in the tramway, the boom for conveying the ties forward, and the clamp, hangers, and brake, which provide the means of carrying the rails forward and retarding their progress. 130

The machine itself may be made of any suitable material and any form to suit the application in which it is desired to be used, and the boom at the forward extremity may



be of any length, but is usually made of a corresponding length with the main frame of the machine.

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

1. In a track-laying machine, a frame-work carried upon trucks for passage on railway-tracks, provided with a tramway running throughout its entire length, a carriage suspended upon axes provided with wheels which travel upon tracks which form the tramway, ropes for moving the carriage back and forth, and a boom pivotally attached at its rear extremity, the upper part of the frame-work of which has a gradual decline forward, and provided with a series of rollers journaled into the sides of the frame-work, all substantially as described and set forth.

2. In a track-laying machine having the main frame-work B B' A A' C C' and necessary uprights and cross-ties with the tramway formed by the frame-pieces B B', the carriage suspended upon axes which have flanged wheels, and having the ropes N N' operating the carriage which bears upon the tramway, and the boom D, pivoted at G and provided with the ropes K K' M M' for raising, lowering, and shifting from side to side, and having the rollers I journaled into the main frame-work, all substantially as described and set forth.

3. In combination with a track-laying machine having a tramway running through its entire length, the carriage having the general frame construction Q R suspended upon axes S' S'', which axes bear the wheels S S, with the bottom of the carriage provided with the track formed by the rails U U', upon which

the car or dumpy *a* is carried, the car or dumpy being engaged and released by means of the lever 2, the arm W', and the catch W, working together, all substantially as described and set forth.

4. In combination with a track-laying machine, the hanger formed of the parts 30 29' 30' 31 and tied together in the center by means of the clamp 32 33 and carrying on their respective ends the frame-works 30 30', which frame-works are made in two pieces, respectively, with blocks and rollers as separating means, and provided with a series of perforations for the insertion of pins useful in pivoting the blocks or as journals for the rollers, all substantially as described and set forth.

5. In combination with a track-laying machine, a clamp formed of the two sections 8 8' and hinged at the top, and with the section 8' provided with the pins 15 15', and the section 8 provided with the openings 16 16', having the raised surfaces 17 18, and the lever formed of the parts 19 20 for clamping and securing the rails together, all substantially as described and set forth.

6. In combination with a track-laying machine, the brake formed by the parts 7 25, pivoted on the journal of the roller 23, which is carried in the frame 24, the brake being provided with the hook 27, all substantially as described and set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY BIRKBY.

Witnesses:

JOHN H. RICE,  
D. M. CRUMLY.