

Jan. 4, 1949.

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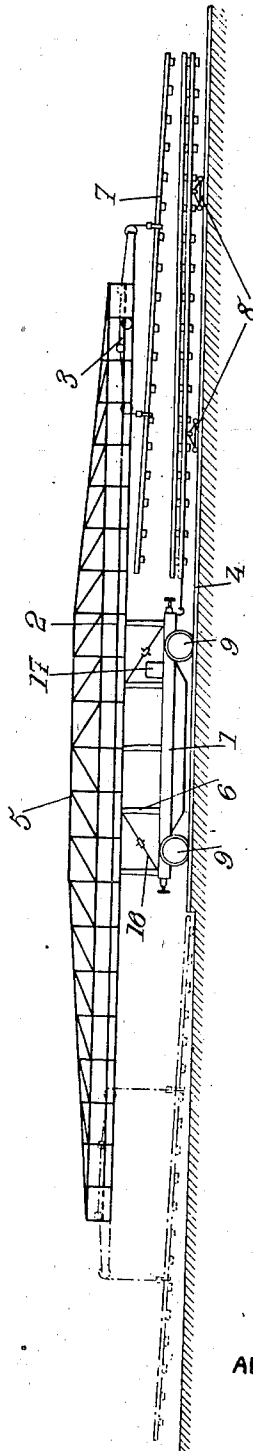
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SYSTEM FOR LAYING OR REMOVING RAILWAY TRACKS

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3 Sheets-Sheet 1

Fig. 1



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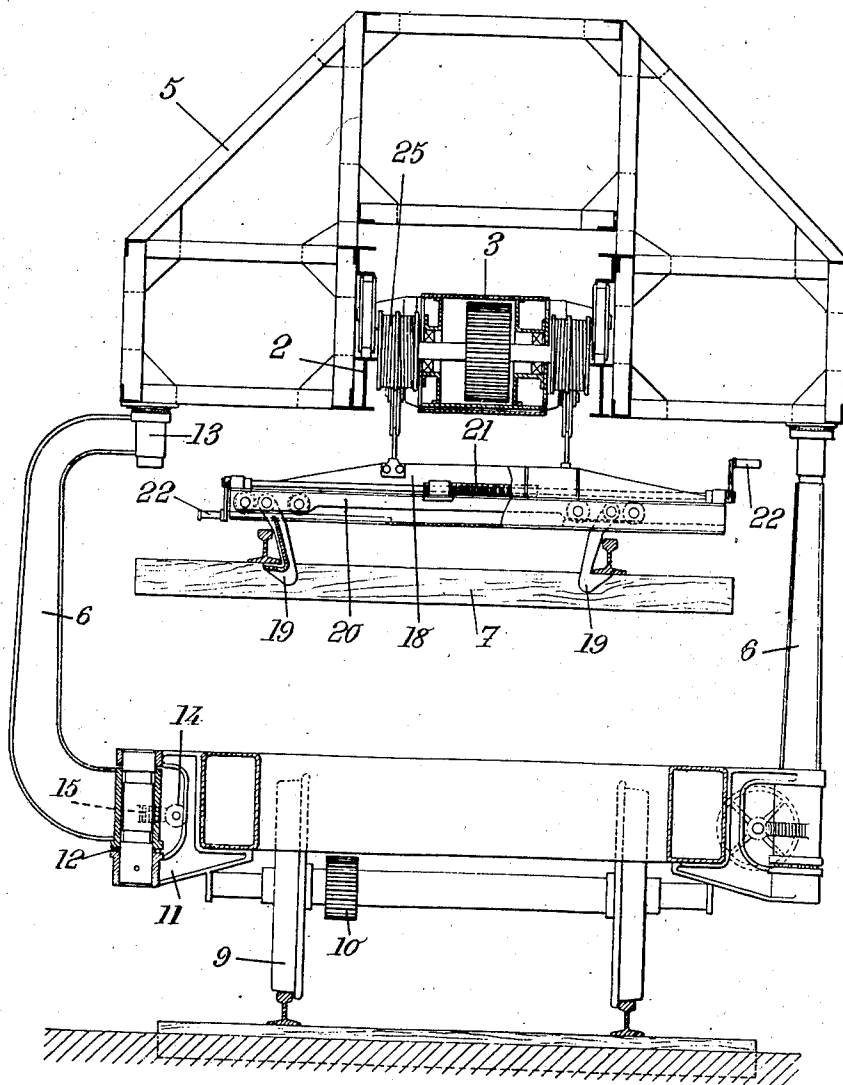
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Fig. 2.



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Fig. 3.

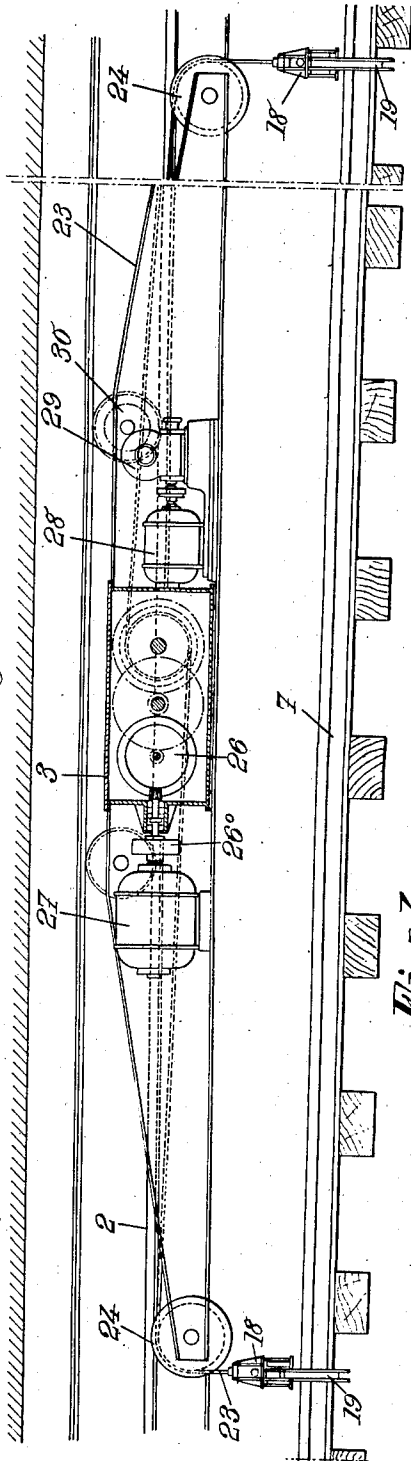
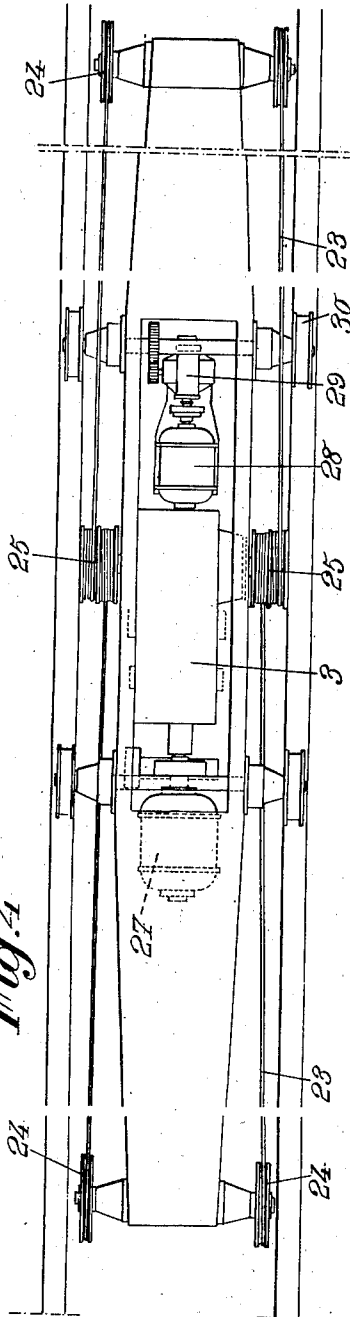


Fig. 4



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UNITED STATES PATENT OFFICE

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SYSTEM FOR LAYING OR REMOVING RAILWAY TRACKS

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6 Claims. (Cl. 104—5)

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The present invention relates to systems for laying and removing railway tracks in fully assembled sections or elements, that is to say sections including both rails and sleepers.

Its chief object is to provide a system of this kind which is better adapted to meet the requirements of practice, than those used for the same purpose up to this time in particular which permits a quicker laying and removal of the track sections while complying with the gauge requirements imposed by railway circulation regulations.

A preferred embodiment of my invention will be hereinafter described with reference to the accompanying drawings given merely by way of example, and in which:

Fig. 1 is a diagrammatic view showing, in elevation, a system according to my invention for laying and removing a railway track;

Fig. 2 is a transverse section, on a larger scale, of the main portion of my system;

Figs. 3 and 4 represent, respectively in longitudinal section and in top view, a conveyor carriage belonging to this apparatus.

I fit, on a rolling platform 1, a raised runway 2 adapted to act as support for a conveyor carriage 3, said runway overhanging the substructure of the track 4 to be repaired both at the front and at the rear of rolling platform 1.

This runway, which is advantageously mounted in a cantilever girder 5, is supported by two rows of bracket posts 6 bearing upon platform 1.

Apparatus of this kind have already been used for laying and removing railway track sections, or elements, the track section 7 to be moved being picked up at one end of runway 2 by the conveyor carriage 3 (for instance on a train of trucks), then conveyed to the other end of said runway to overhang the substructure of the track ahead of platform 1, and finally laid on the substructure. It will be seen that, in the course of such an operation, track section 7 must be able to move freely between the two rows of bracket posts 6. Now it is a fact that the transverse dimensions admitted for railway sleepers, account being taken of increases due to rechairing, make it necessary, if it is desired to pass track elements as above referred to between said rows of bracket posts, to provide a distance between these rows such that the transverse gauge of the

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apparatus finally happens to be larger than the master gauge admitted for rolling stock.

Various solutions have been proposed for overcoming this difficulty, but these solutions involve a considerable loss of time and a complication of the apparatus.

As a matter of fact, a first type of solution consisted in fitting the bracket posts on the runway only at the place of working, the two rows of bracket posts being then located at a distance from each other sufficient for the passage of track element 7. But the transverse gauge of the apparatus was then greater than the master gauge; this solution, in addition to the loss of time inherent in the mounting of the apparatus, made it necessary to take it wholly to pieces every time a train was to travel on a track adjacent to the one that was being repaired.

According to another type of solution, the distance between the rows of bracket posts was such that the apparatus remained inside the master gauge. But this distance did not make it possible to pass between the rows of posts a track element disposed flatwise and the apparatus had to be designed to permit of inclining the track element when passing it between said rows of bracket posts.

This way of proceeding slowed down the operation of displacing the track element and the mechanism intended to ensure the inclination of said element constituted a supplementary complication of the apparatus.

According to my invention, I give a bent shape (analogous for instance to that of a C) to at least all the bracket posts located on one side of platform 1, and these bracket posts are pivotally mounted about vertical axes.

Thus, when it is desired to perform an operation of laying or removing a track element, these posts are adjusted to have their convexity turned toward the outside, the free space between the two rows of bracket posts thus permitting the passage of the track element.

On the contrary, when the traffic conditions require it (circulation of the apparatus, working performed on a track adjacent to a track open to circulation, etc.) the bracket posts are retracted into a common lateral plane, the whole of the apparatus then remaining inside the master gauge.

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Preferably, the two rows of bracket posts are pivotally mounted.

Platform 1, is mounted on the usual wheels 9 and is preferably fitted with the prescribed parts, such as buffers, brakes, couplings and, advantageously, with a motor and speed reducing gear unit for instance of the electric type (not shown by the drawings), which acts on a toothed wheel 10 keyed on one of the axles, said motor unit giving the apparatus an autonomy for small displacements, in particular for those required for laying or removing track elements along a track section.

Concerning now the mounting of posts 6, it is advantageously carried out as shown by Fig. 2, each post being supported, at its lower part, by a piece 11, for instance of moulded steel, fixed to the edge of platform 1 and forming both a lateral guide (preferably with the interposition of needles) and a footstep, ball bearing 12, and, at its upper part, by a piece 13 of smaller dimensions, fixed to the edge of cantilever girder 5, said piece playing substantially the part of a footstep lateral guide.

I provide a control system for simultaneously pivoting all the bracket posts of the same row. This system may be constituted, for each row of posts, by an endless screw 14 operable by means of a handwheel or the like and cooperating with toothed wheel elements 15 fixed to the base of each bracketpost of the corresponding row.

The system will be advantageously completed by longitudinal balancing stays 16 for the raised portion of the apparatus (which stays serve chiefly when the system is running as an element of a train). And platform 1, is ballasted for instance by mounting at one end of said platform any suitable ballast and at its other end an electric generating set 17 intended to supply current to the various motors and electric systems of the apparatus (lifting motor and conveyor carriage translation motor, translation motor for the whole of the apparatus, and, possibly, hauling winch motor and searchlight for night working).

I may provide any complementary ballasting of platform 1 as may seem necessary for the stability of the whole of the apparatus when the charge is applied to the ends of the runway 2, such a ballasting being for instance possibly constituted by means of old rails placed between the platform axles.

Before entering into the description of details concerning conveyor carriage 3, it is pointed out that such an apparatus can easily be incorporated in a train for transporting it from one working place to another. It will suffice, for this purpose, to retract the bracket posts of the two rows, and, preferably, to place, under each of the booms of cantilever girder 5, platforms on which said ends can be supported.

Once the apparatus brought to the working place, it is possible, either, in the case of a single track, to pivot both rows of posts 6 outwardly which gives the maximum space between said rows, or, in the case of a track adjacent to another track on which traffic is going on, to pivot only the bracket posts located on the side opposed to said adjacent track, the space between the two rows being still sufficient to permit passage of the track elements to be displaced; in this case, it will not be necessary to stop the operations or to perform any transformation of the apparatus when a train is being signalled on said adjacent track.

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Such an apparatus has the advantage of including, for circulation in a train, no part that projects outside of the master gauge. At the working place, the pivoting toward the outside of one or both of the two rows of bracket posts causes a temporary increase beyond said gauge but said bracket posts are arranged in such manner as not to project, even in this case, beyond the "obstacle" gauge (a gauge slightly outside of the master gauge).

Concerning now the conveyor carriage 3 and the lifting means belonging thereto, they are made, according to another feature of my invention, in such manner that the direction of track element 7 to be moved along the axis of the platform can be modified inside certain limits and that preferably said element can further be displaced transversely.

This result could be obtained by a suitable mounting of the runway. But it seems preferable to fix said runway 2 to cantilever girder 5 in a direction parallel to the longitudinal axis of the apparatus, and to constitute the device for picking up the track element to be conveyed by two independent transverse bars 18 spaced apart in the longitudinal direction and including each two means, such for instance as hooks 19 adapted to be engaged under the rails of the track element for lifting it. Said hooks are pivoted to the same transverse piece 20 adapted to be displaced parallel to its axis, on either side of a middle position, for instance by means of an endless screw 21, preferably operable at each end by a crank 22.

Advantageously, bars 18 are controlled by a winch having four drums (two on either side) capable of ensuring a good balancing of the suspended element.

For this purpose, for instance, bars 18 are respectively carried, at both ends of conveyor carriage 3, through cables wound, after passing about return pulleys, on the drums 25 of a quadruple winch drive, through speed reducing gear 26 and a control brake 26', by a lifting motor 27, the cables that correspond to one of the transverse bars being wound in a direction opposed to that of the cables corresponding to the other transverse bar, whereby conjugate rotations in the same direction of the four drums of the winch produce a displacement in the same direction of the two transverse bars.

Preferably, the length of these cables is such that those relating to the front transverse bar 23 are shorter than those corresponding to the rear transverse bar, whereby fishing of the track element that is being laid is facilitated.

Finally, this conveyor carriage is completed by providing a translation motor 28 which acts, for instance through an endless screw reducing gear 29, on at least one of the axles on which are keyed the rollers 30 of the transfer carriage.

It will be of interest to provide a double set of control buttons for operating lifting motor 27 and translation motor 28 these sets being grouped in two similar contact boxes mounted in parallel and fixed each at one end of rolling platform 1. Thus, it will be possible for the operator to control the movements of the transverse bars while standing close to them, this both in the case of the lifting of a track element 7 carried by trucks 8 and in the case of said track element being lowered at the other end of cantilever girder 5.

Such a conveyor carriage, with transverse bars movable transversely and independently from each other, permits among other operations, of

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moving transversely the whole of track element 7 in such manner as to bring it into axial position in the free space left between the two rows of bracket posts 6 when only one of these rows is brought into working position (case of Fig. 2), and, eventually, of giving said track element 7 a certain angle with respect to the axis of platform 1 (through transverse displacements in opposed directions of each of the transverse bars 18) which permits, when laying or removing tracks in curves, of placing the lifting hooks 19 in line with track substructure.

Whatever be the embodiment that is adopted, systems according to my invention have many true advantages, in particular, that of permitting particularly quick track laying or removing operations, fully equipped track elements (for instance a section of a length averaging 18 meters) being fed from the assembly working place on trucks (three or four elements for every group of trucks) and the track laying or removing apparatus moving forward along the track that is being repaired by displacements of a length substantially equal to that of a track element, that of causing no disturbance in circulation along the lateral tracks, that of having an autonomy of circulation which enables the system to perform work on a track in operation and to leave the place by its own means when a train is signalled on said track, and finally that of permitting track laying or removing operation both in curves and in straight lines.

What I claim is:

1. A device for laying and removing railway track elements which comprises, in combination, a rolling platform for use on a railway track, a runway above said platform extending symmetrically to the longitudinal middle plane thereof, a conveyor carriage adapted to cooperate with said runway for displacement therealong, two rows of posts, one along each longitudinal side of said platform, for supporting said runway thereon, at least all the posts located along one side of said platform being pivotally mounted thereon about at least substantially vertical respective axes and being pivotally mounted in said runway each about the same pivot axis as that about which it is pivoted to said platform, said pivotally mounted posts being of bent shape in respective planes passing through said axes with their concave portions turned toward said respective axes, and means supported by said carriage for holding track elements suspended in horizontal position under said carriage between said two rows of posts.

2. A device for laying and removing railway track elements which comprises, in combination, a rolling platform for use on a railway track, a runway above said platform extending symmetrically to the longitudinal middle plane thereof, a conveyor carriage adapted to cooperate with said runway for displacement therealong, two rows of posts, one along each longitudinal side of said platform, for supporting said runway thereon, said posts being pivotally mounted on said platform about at least substantially vertical respective axes and being pivotally mounted in said runway each about the same pivot axis as that about which it is pivoted to said platform, said pivotally mounted posts being of bent shape in respective planes passing through said axes with their concave portions turned toward said respective axes, and means supported by said carriage for holding track elements suspended in horizontal position

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under said carriage between said two rows of posts.

3. A device for laying and removing railway track elements which comprises, in combination, a rolling platform for use on a railway track, a runway above said platform extending symmetrically to the longitudinal middle plane thereof, a conveyor carriage adapted to cooperate with said runway for displacement therealong, two rows of posts, one along each longitudinal side of said platform, for supporting said runway thereon, at least all the posts located along one side of said platform being pivotally mounted thereon about at least substantially vertical respective axes and being pivotally mounted in said runway each about the same pivot axis as that about which it is pivoted to said platform, said pivotally mounted posts being of bent shape in respective planes passing through said axes with their concave portions turned toward respective axes, means supported by said carriage for holding track elements suspended in horizontal position under said carriage between said two rows of posts, and means for simultaneously pivoting all the posts located on the same side of said platform so as to keep the respective planes in which they are bent parallel to one another.

4. A device for laying and removing railway track elements which comprises, in combination, a rolling platform for use on a railway track, a runway above said platform extending symmetrically to the longitudinal middle plane thereof, a conveyor carriage adapted to cooperate with said runway for displacement therealong, two rows of posts one along each longitudinal side of said platform, for supporting said runway thereon, at least all the posts located along one side of said platform being pivotally mounted thereon about at least substantially vertical respective axes and being pivotally mounted in said runway each about the same pivot axis as that about which it is pivoted to said platform, said pivotally mounted posts being of bent shape in respective planes passing through said axes with their concave portions turned toward said respective axes, means supported by said carriage for holding track elements suspended in horizontal position under said carriage between said two rows of posts, and means for adjusting said track element holding means to displace a track element held by said carriage transversely to the carriage axis.

5. A device for laying and removing railway track elements which comprises, in combination, a rolling platform for use on a railway track, a runway above said platform extending symmetrically to the longitudinal middle plane thereof, a conveyor carriage adapted to cooperate with said runway for displacement therealong, two rows of posts, one along each longitudinal side of said platform, for supporting said runway thereon, at least all the posts located along one side of said platform being pivotally mounted thereon about at least substantially vertical respective axes and being pivotally mounted in said runway each about the same pivot axis as that about which it is pivoted to said platform, said pivotally mounted posts being of bent shape in respective planes passing through said axes with their concave portions turned toward said respective axes, two horizontal transverse bars supported by said carriage, one at each end of a track element conveyed by said carriage, means carried by said transverse bars for holding said track element suspended in horizontal position under said carriage between said two rows of posts, and means for in-

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dependently adjusting said transverse bars transversely to the axis of said carriage.

6. A device according to claim 5 including a multiple drum winch on said carriage and cables wound on said winch for supporting said transverse bars.

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