

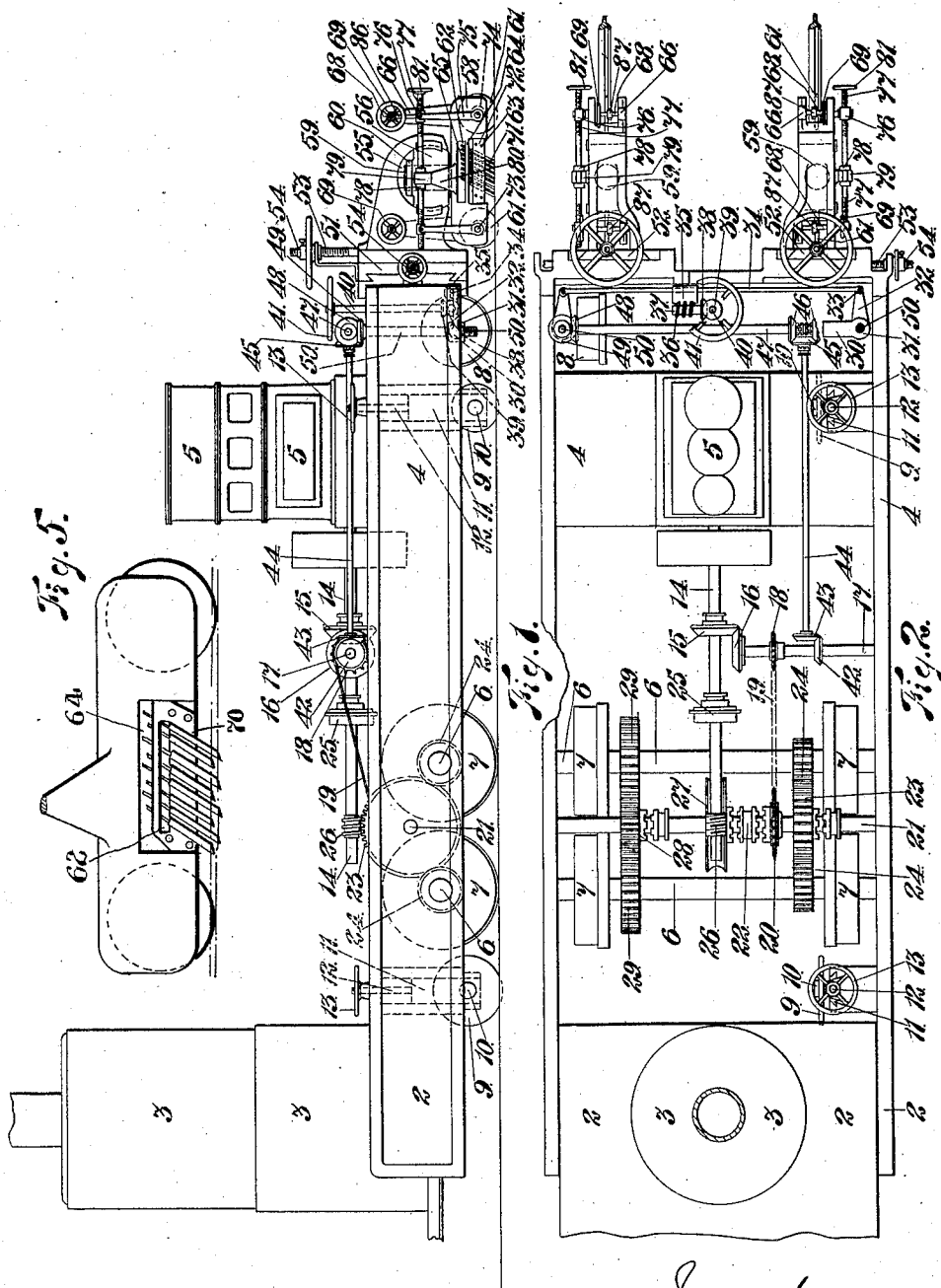
MACHINE FOR PLANING RAILS UPON THEIR TRACKS.

APPLICATION FILED SEPT. 27, 1910.

Patented May 7, 1912.

2 SHEETS—SHEET 1.

1,025,754.



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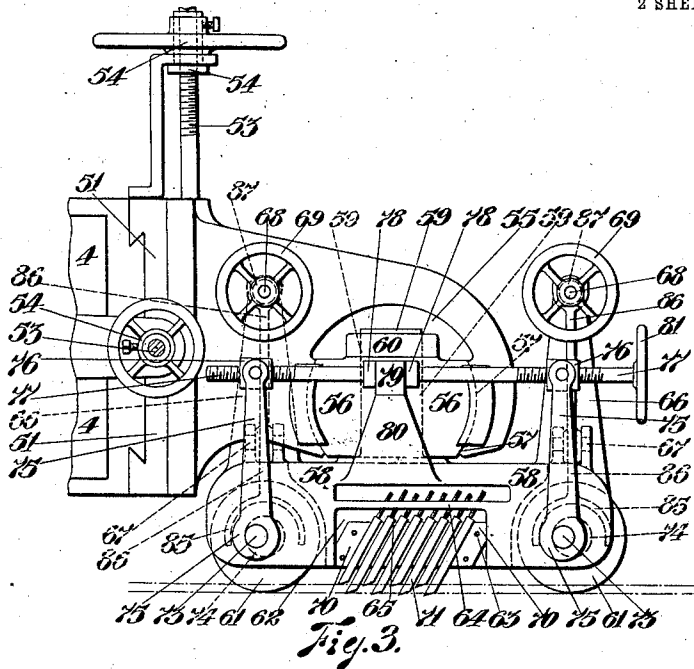


Fig. 3.

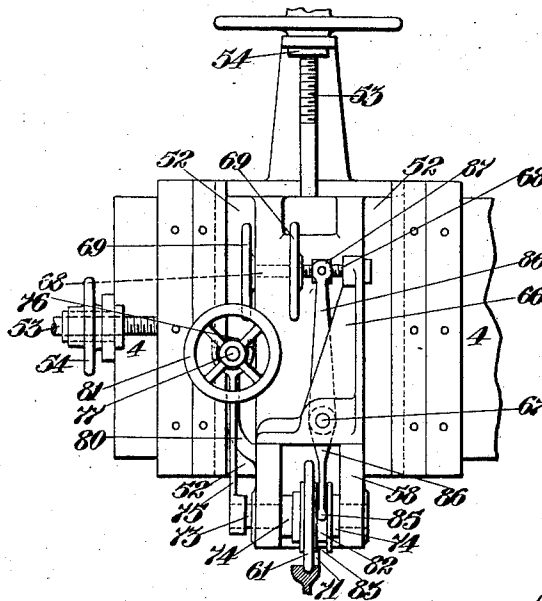


Fig. 4.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR PLANING RAILS UPON THEIR TRACKS.

1,025,754.

Specification of Letters Patent.

Patented May 7, 1912.

Application filed September 27, 1910. Serial No. 584,048.

To all whom it may concern:

Be it known that I, JOHN LITTLE, a subject of the King of Great Britain and Ireland, residing at 9 Nelson road, Camberwell, in the county of Bourke, State of Victoria, Commonwealth of Australia, engineer, have invented a certain new and useful Improved Machine for Planing Rails upon Their Tracks, of which the following is a specification.

This invention relates to the treatment of rail deformities while the rails are in position on the track, moving or traveling machines for which purpose have hitherto been proposed carrying adjustable rotating or reciprocating dressing elements and other mechanical means for effecting the various operations which the machine is adapted to perform.

The object of this invention is to increase the speed at which such machines may travel when operating upon the rails, and to provide a machine by which deformities in either rail may be accurately, positively and speedily eliminated, in one rail at a time or both simultaneously yet still independently of each other. By this invention the rotary or like movement of the dressing elements is dispensed with, the said elements not being driven but dressing the rails by their passage thereover as the machine travels. But in order that this invention may be better understood reference will now be made to the accompanying sheets of drawings which are to be taken as part of this specification and read herewith and from which it has been found desirable to omit divers minor details not affecting the general invention, for clearness, which, as well as various other objects and advantages not already mentioned, will be hereinafter more fully apparent.

Figure 1 is a side elevation of this invention, the machine being ready for the treatment of grooved rails. Fig. 2 is a plan of Fig. 1. Fig. 3 is an enlarged detail view showing the dressing elements and the parts controlling them, part of the tool holder is removed clearly showing the tools or elements. Fig. 4 is an end view of Fig. 3. Fig. 5 is an enlarged detail view showing portion of a carriage with a reversible tool holder.

On detailed reference to the drawings it

will be seen that this invention includes a platform having a boiler end 2 above which is a boiler 3 and an engine end 4 above which is a suitable engine 5. Beneath the platform are two main driving axles 6 each having at each end a main driving wheel 7. Beneath the platform are also two steering wheels 8. The driving wheels 7 are wide enough for travel over street roads but have an enlarged portion as shown which is of sufficient width to rest upon the rails.

At one side of the platform and near each end thereof is a guide wheel 9 turning upon a pin 10 protruding from a slide 11 secured above which is a screw 12, lifted or lowered by a hand wheel nut 13. When treating grooved rails the guide wheels move in the rail groove but when treating plain headed rails flanged wheels may be substituted resting upon the rail head. Guide wheels may then also be provided at both sides of the platform.

From the engine 5 extends an engine shaft 14, having thereon a bevel wheel 15 gearing with a bevel wheel 16 upon a first counter shaft 17. Upon the counter shaft is a sprocket wheel 18 driving by a sprocket chain 19, a sprocket wheel 20 loose upon a second counter shaft 21. Controlling the sprocket wheel 20 is a clutch 22. At one end of the counter shaft 21 is a clutch controlled spur wheel 23 turning a pinion 24 upon each driving axle 6. By this gear the machine may travel at a fast rate of speed. Upon the engine shaft 14 is also a friction clutch 25 and a worm 26 the latter turning a worm wheel 27, loose upon the second counter shaft 21 and controlled by the clutch 22. At one end of the said second counter shaft 21 is a clutch controlled pinion 28 turning a spur wheel 29, upon each main driving axle 6. By this gear the machine may travel slowly during dressing operations.

Passing through each steering wheel 8 is an axle 30 having at its outer end a boss 31 in which is a central vertical threaded hole. Integral with the boss is a lever 32 at right angles to said axle and pivoted by a pivot pin 33 to a connecting rod 34. Integral or attached to said connecting rod is a centrally disposed rack 35 engaging with a worm 36 upon a worm shaft 37. Upon one end of the worm shaft 37 is a bevel wheel

38 engaging with a bevel wheel 39 upon a steering column 40. The bevel wheel 39 is capable of vertical movement along the said column. At the top of the steering column
 5 is a control wheel 41. By this gear the machine is steered when off the track. Upon the first counter shaft 17 is also a bevel wheel 42 gearing with a bevel wheel 43 upon one end of a third counter shaft 44 at the other
 10 end of which is a bevel wheel 45. Engaging with the bevel wheel 45 are two bevel wheels 46 loose upon a fourth counter shaft 47 and controlled by a clutch. At each end of the fourth counter shaft 47 is a bevel wheel
 15 48 (for convenience of illustration only one is shown in Fig. 2) engaging with a bevel wheel 49, fast to the top of a screw 50. Each screw 50 passes through its respective boss 31 at the inner end of its steering wheel
 20 axle 30. By this gear the steering wheels are elevated when the machine is on the rails and depressed to the road surface when off them.

Attached to the engine end of the platform are two brackets one above each rail. Each bracket is provided with a horizontal and a vertical slideway in which move a horizontal slide 51 and a vertical slide 52. Secured to each slide is a screw 53 actuated
 30 by a hand wheel nut 54. Each hand wheel nut, it will be seen, comprises an internally threaded sleeve or collar engaging with its screw 53 and locked to the hand wheel by a jam screw or the like, so that by loosening the jam screws and moving the collars
 35 away from the hand wheels the slides may operate of themselves. In each bracket is formed a circular blockway 55 in which is a block 56 having round edges 57 by which it
 40 may rotate in a vertical plane in said blockway. The block in one blockway is allowed a slight lateral movement. Through each block is a vertical hole. Beneath each bracket is a carriage consisting of a frame-
 45 work 58 above which is a vertical pin 59 passing into the hole in the block 56 and retained therein by a collar 60. Supporting each carriage are two guide wheels 61 between which and formed in the framework
 50 58 is a tool box recess 62 from which outstand studs 63. Across the recess 62 of each carriage is a bridge 64 through which pass tool adjusting screws 65. Near each end of each framework are axle holes. Upstand-
 55 ing at each end of each framework 58 is an extension 66. Near the bottom of each extension 66 is a pivot pin 67. At the top of each extension is a screw 68 retained thereto in any well known way and incapable of
 60 longitudinal movement. Each screw 68 is controlled by a hand wheel 69. The extension 66 at the inner end of each framework 58 passes upwardly into the bracket above it, which bracket is holed or recessed to receive it. When treating grooved rails the

guide wheels move in the rail groove but when treating plain headed rails flanged wheels may be used resting upon the rail head.

Within each tool box recess 62 is a tool box consisting of a tool bed 70 in which re-
 70 pose tools 71 retained in the said bed by a tool holder 72. Each tool bed is retained within its respective recess 62 and each tool holder to its bed by nuts upon the studs 63 protruding from the recess. The tools 71
 75 it will be apparent dress the relative rail in a series of steps, the first tool removing a small portion, the following one another small portion and so on, the last being a finishing tool. The number and ar-
 80 rangement of the tools will depend upon circumstances as, for example, in the same tool box one series of tools may be treating the groove of a rail and another series the rail lip at the same time, that is of course when
 85 grooved rails are being treated.

In the axle holes aforementioned in each carriage framework 58 is a guide wheel axle 73. Each axle has secured and centrally dis-
 90 posed thereon an eccentric bearing portion 74. Loosely around each bearing portion 74 a guide wheel 61 turns. Attached to the outer end of each axle 73 is a vertical lever
 75 having pivoted to its upper end, a trunnioned nut 76. Passing through the said
 95 nuts 76 of each carriage is a screw 77 prevented from moving longitudinally by collars 78 thereon. Between the collars 78 is a lug 79 protruding from an upward extension 80 of the carriage framework 58. Turn-
 100 ing each screw 77 is a hand wheel 81. By this gear the depth of the cut of the tools is adjusted.

From each guide wheel 61 protrudes a boss 82 provided with an annular recess 83.
 105 Fitting into the said recess is the forked lower end 85 of an intermediately pivoted lever 86. Each lever 86 is pivoted upon one of the aforementioned pins 67. Pivoted to the top end of each lever 86 is a trunnioned
 110 nut 87. Through each of the nuts 87 of each carriage passes the relative screw 68 aforedescribed. The intermediately pivoted lever 86 relative to the inner extension 66 of each framework 58 it is obvious, passes up-
 115 wardly into the bracket above it as does its said extension. The relative screw 68 passes idly through the bracket to permit of its hand wheel 69 being operated from outside thereof.

The cycle of operations with this invention is as follows:—When traveling upon the road the brackets, by the vertical slides 52, are elevated, as also are the guide wheels
 120 9. The machine is steered by the control wheel 41 and when in position on the track the steering wheels 8, by operation of the clutch between the bevel wheels 46, are elevated. The brackets are then depressed by the vertical slides 52 and laterally posi-
 130

tioned by the horizontal slides 51. The guide wheels 9 are also depressed. The machine is then slowly propelled by operating the clutch 22. The depth of the cut of the tools 71 is regulated by operation of the respective hand wheel 81 which causes the relative nuts 76 to move along their screw 77 thereby either raising or lowering the levers 75 and partially turning the respective axles 73. These, on account of the eccentric bearing portions 74 and the guide wheels 61 thereon, cause the respective tools to rise or fall. To laterally adjust the tools 71 as regards the rail beneath them the respective hand wheels 69 are rotated turning the screws 68 along which the nuts 87 then move, throwing the forked lower ends 85 of the intermediately pivoted levers 86 inwardly or outwardly and moving the tools 71 laterally in relation to the wheels 61. These latter are free on the bearing portions 74 of their axles 73. It will be obvious that at curves, for example, the cutting tools may have some distance to travel before reaching the curve at which the platform has arrived, and require to travel that distance without influence from the then turning platform. This is accomplished by slackening the jam screws of the relative hand wheel nuts 54 of the horizontal slides 51 and moving the sleeve or collar of each nut along its respective screw 53 each bracket being then entirely free to move in relation to its slide 51. By the vertical pins 59 a free rotary movement is permitted between the said pins and the blocks 56. In a somewhat similar manner the rise and fall of the platform due to the varying levels of the rails is prevented from influencing the cutting tools by slackening the jam screws of the relative hand wheel nuts 54 of the vertical slides 52 and moving the sleeve or collar of each nut along its respective screw 53, each bracket being then entirely free to move in relation to its slide 52. By the round edges 57 a free movement of the block 56 in the blockway 55 is also permitted.

Fig. 5 shows a portion of a carriage provided with a reversible tool box. This carriage is constructed similarly to the carriage described above with the exception that the bridge 64 is carried on the tool bed 70, which can thus be taken out of the recess 62 and replaced in a reverse position. By means of this arrangement the machine is able to plane the rails while traveling in either direction.

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

1. In a machine for dressing rails while in position on the track, a platform, means connected thereto for planing the rails by passing over them with the travel of said platform, means for automatically prevent-

ing the rise and fall of the platform due to varying levels of the rail from influencing said planing means, means for automatically preventing the lateral movement of the platform when passing around curves from influencing said planing means, and means for propelling said platform.

2. In a machine for dressing rails while in position on the track, a movable platform, a carriage pivotally and slidably connected to said platform, and dressing means carried by said carriage.

3. In a machine for dressing rails while in position on the track, a movable platform, a carriage connected thereto, means for automatically adjusting said carriage to varying levels of the rails, and dressing means carried by said carriage.

4. In a machine for dressing rails while in position on the track, a movable platform, a carriage connected thereto, means for automatically adjusting said carriage laterally when the machine is passing around curves, and dressing means carried by said carriage.

5. In a machine for dressing rails while in position on the track, a movable platform, a bracket connected to said platform above each rail, a carriage connected to each bracket, and dressing means carried by each carriage.

6. In a machine for dressing rails while in position on the track, a movable platform, a bracket slidably connected to said platform above each rail, a carriage pivotally connected to each bracket, and dressing means carried by each carriage.

7. In a machine for dressing rails while in position on the track, a movable platform, a vertically adjustable bracket connected thereto above each rail, a carriage pivotally connected to each bracket about a horizontal axis thereof, and dressing means carried by each carriage.

8. In a machine for dressing rails while in position on the track, a movable platform, a laterally adjustable bracket connected thereto above each rail, a carriage pivotally connected to each bracket about a vertical axis thereof, and dressing means carried by each carriage.

9. In a machine for dressing rails while in position on the track, a movable platform, dressing elements for each rail connected thereto, means for automatically adjusting said elements to varying levels of the rails, means for automatically adjusting said elements laterally when the machine is passing around curves, means for vertically adjusting said elements in relation to the rail surfaces, and means for laterally adjusting said elements in relation to their rails.

10. In a machine for dressing rails while in position on the track, a bracket, a circular blockway in said bracket, a block in said blockway, a carriage below said block, a

pin above said carriage and passing into said block, and dressing elements carried by said carriage.

11. In a machine for dressing rails while in position on the track, a carriage, an axle at each end of said carriage, an eccentric bearing portion secured upon each axle, a guide wheel loosely turning around each eccentric portion, a lever attached to each axle, and means for operating said lever.

12. In a machine for dressing rails while in position on the track, a carriage, an upward extension from said carriage, an axle at each end of said carriage, an eccentric bearing portion secured upon each axle, a guide wheel loosely turning around each eccentric portion, a lever attached to each axle, a nut pivoted at the top of each lever, a screw passing through said nuts, collars upon said screw, a lug upon said upward extension and against which said collars bear, and a hand wheel upon said screw.

13. In a machine for dressing rails while in position on the track, a carriage, an upward extension near each end thereof, an axle at each end of said carriage, a guide wheel upon each axle, a grooved boss protruding from said guide wheel, a pivoted

lever engaging with said boss, and means for operating said lever.

14. In a machine for dressing rails while in position on the track, a carriage, an axle at each end thereof, a guide wheel upon each axle, a grooved boss protruding from each guide wheel, an upward extension near each end of said carriage, a pivot pin near the bottom of each extension, a lever pivoted on each pivot pin, a fork at the lower end of each lever engaging with said grooved boss, a nut pivoted at the top of each lever, a screw passing through each nut and retained in said upward extension, and means for rotating said screw.

15. In a machine for dressing rails while in position on the track, a movable platform, a carriage connected thereto, a reversible tool box carried by said carriage, and angularly disposed cutting tools carried by said carriage.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

JOHN LITTLE.

Witnesses:

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CECIL W. LE PLASTEUR.