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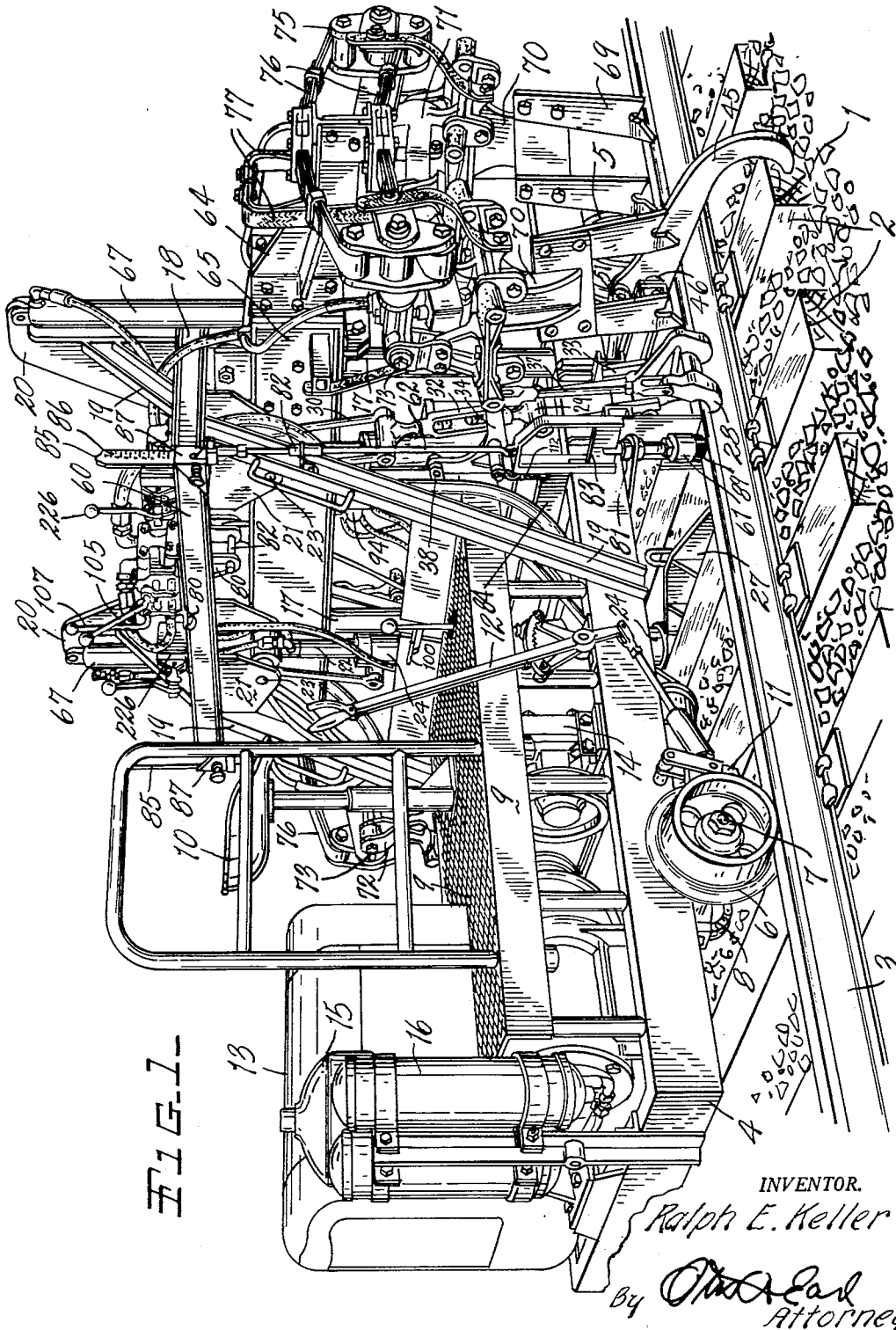
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TIE AND RAIL RAISING AND TAMPING MACHINE

Filed March 18, 1957

6 Sheets-Sheet 1



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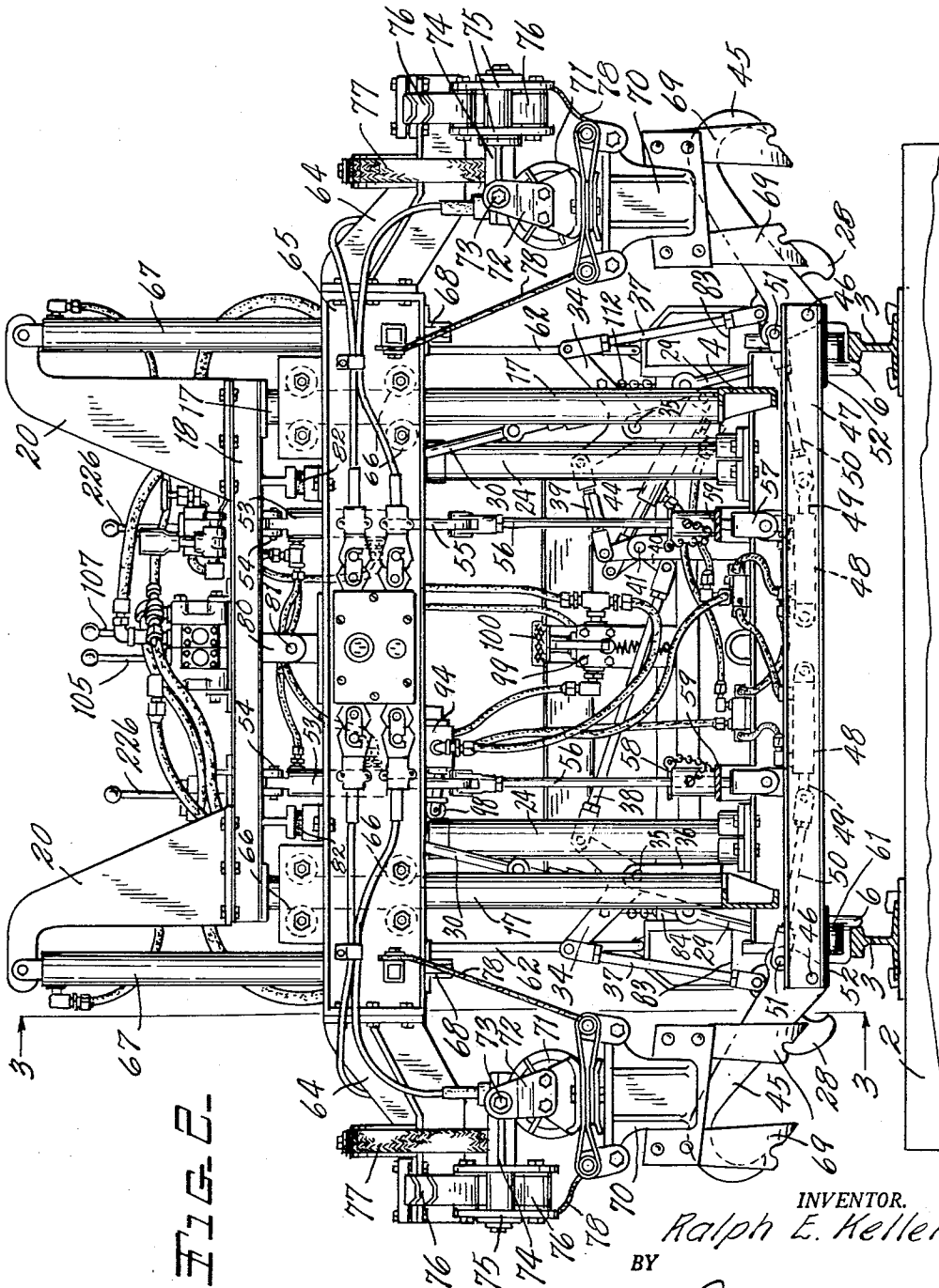
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TIE AND RAIL RAISING AND TAMPING MACHINE

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6 Sheets-Sheet 2



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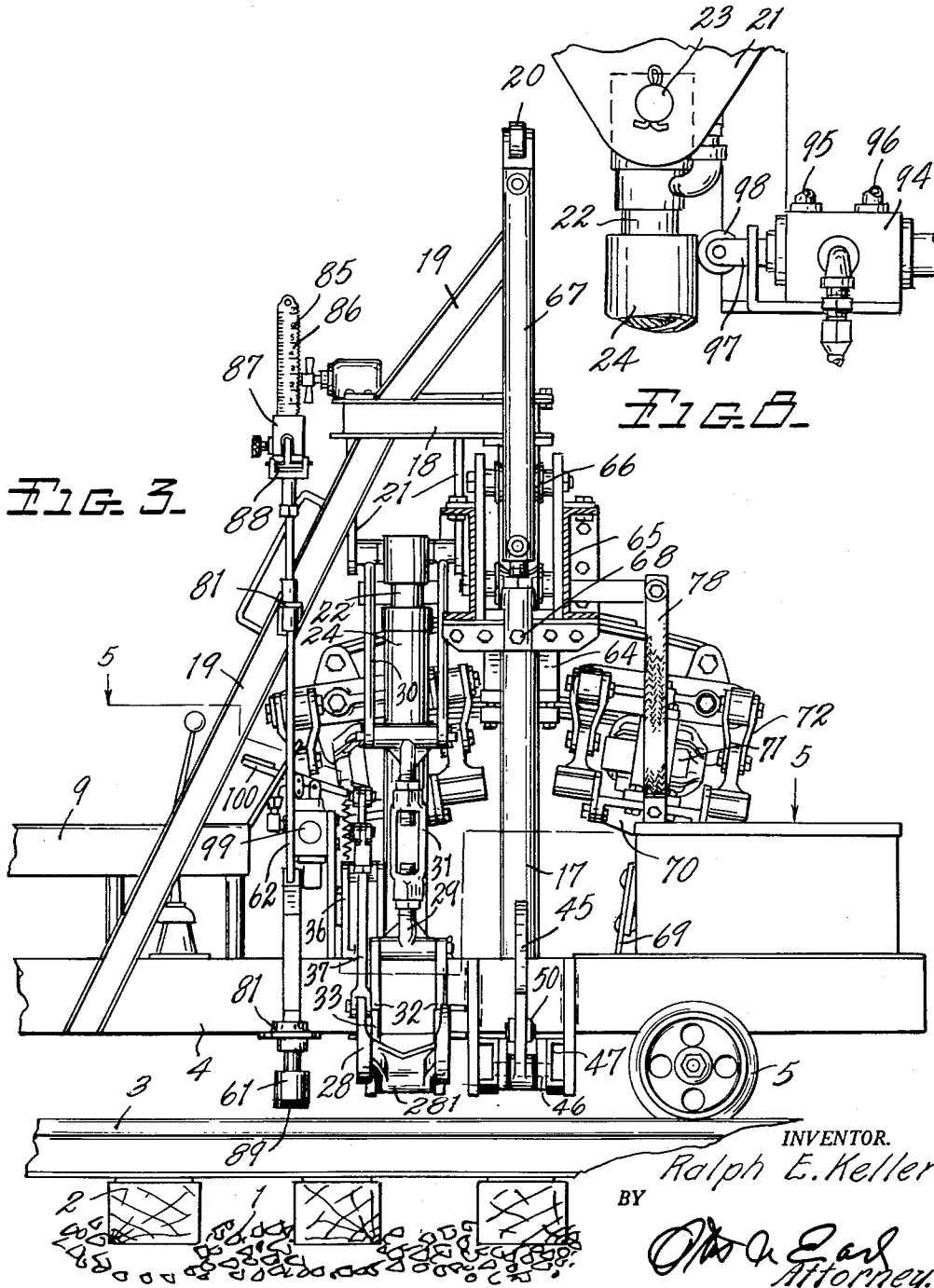
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TIE AND RAIL RAISING AND TAMPING MACHINE

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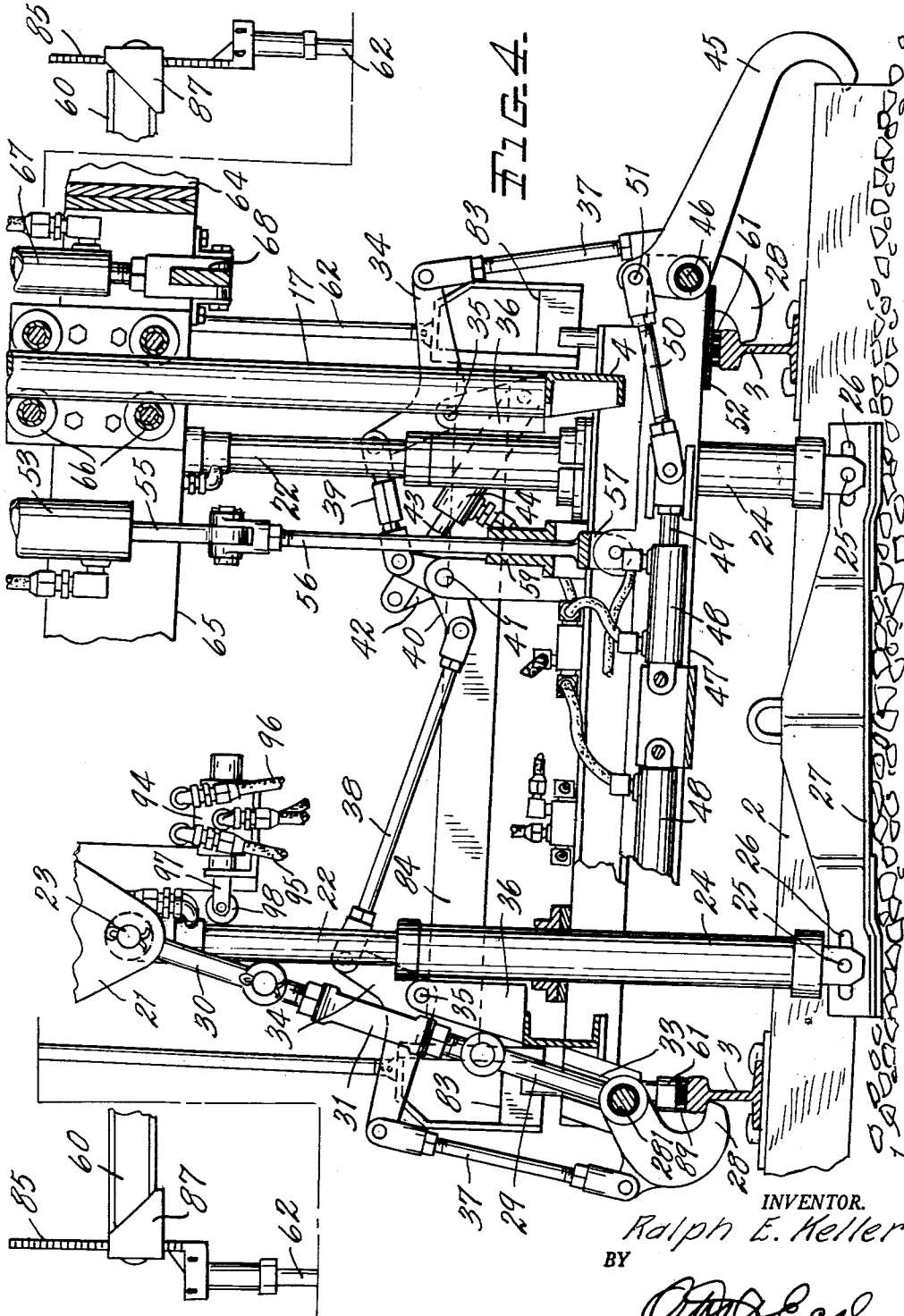
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TIE AND RAIL RAISING AND TAMPING MACHINE

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6 Sheets-Sheet 4



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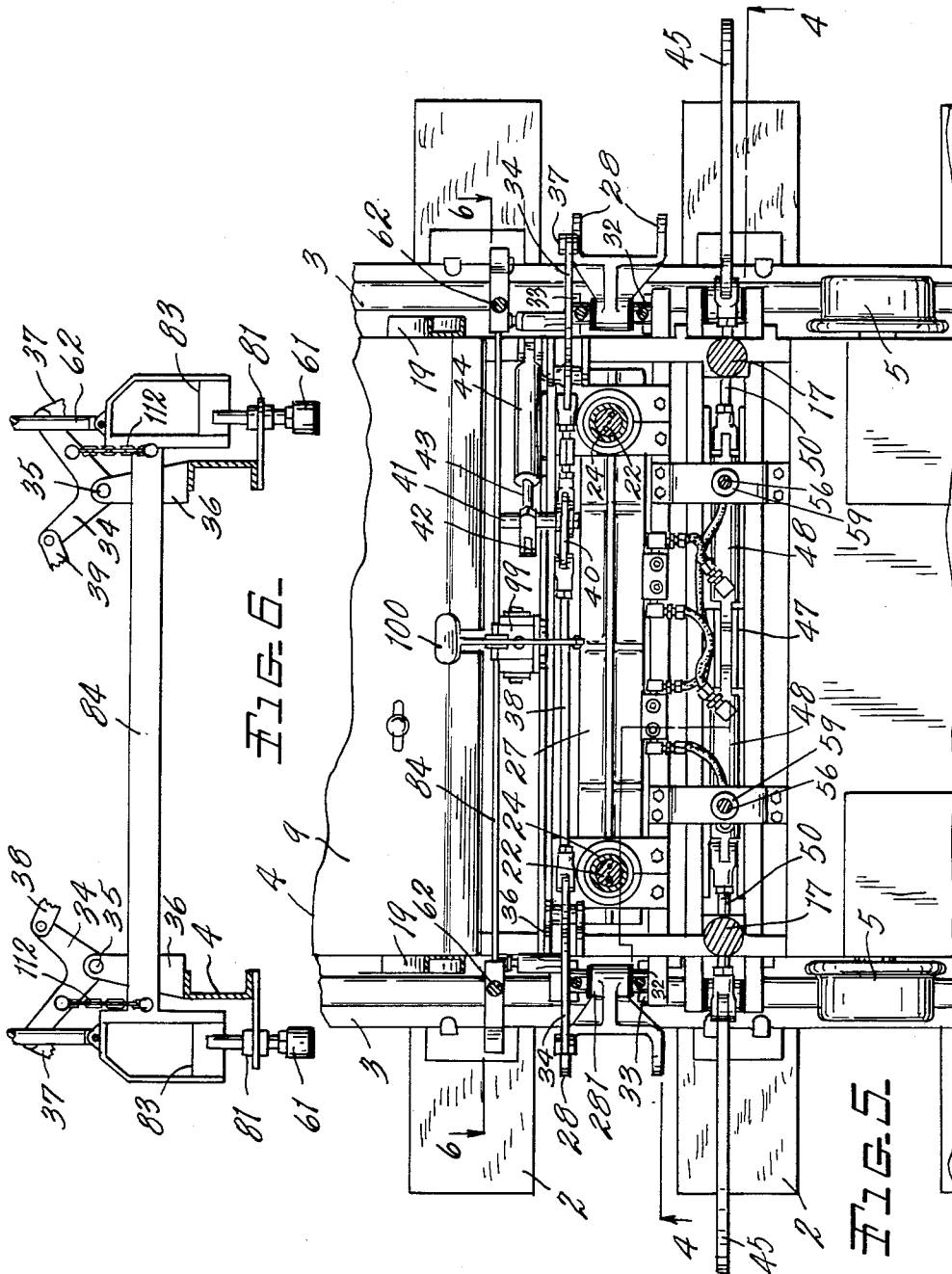
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TIE AND RAIL RAISING AND TAMPING MACHINE

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6 Sheets-Sheet 5



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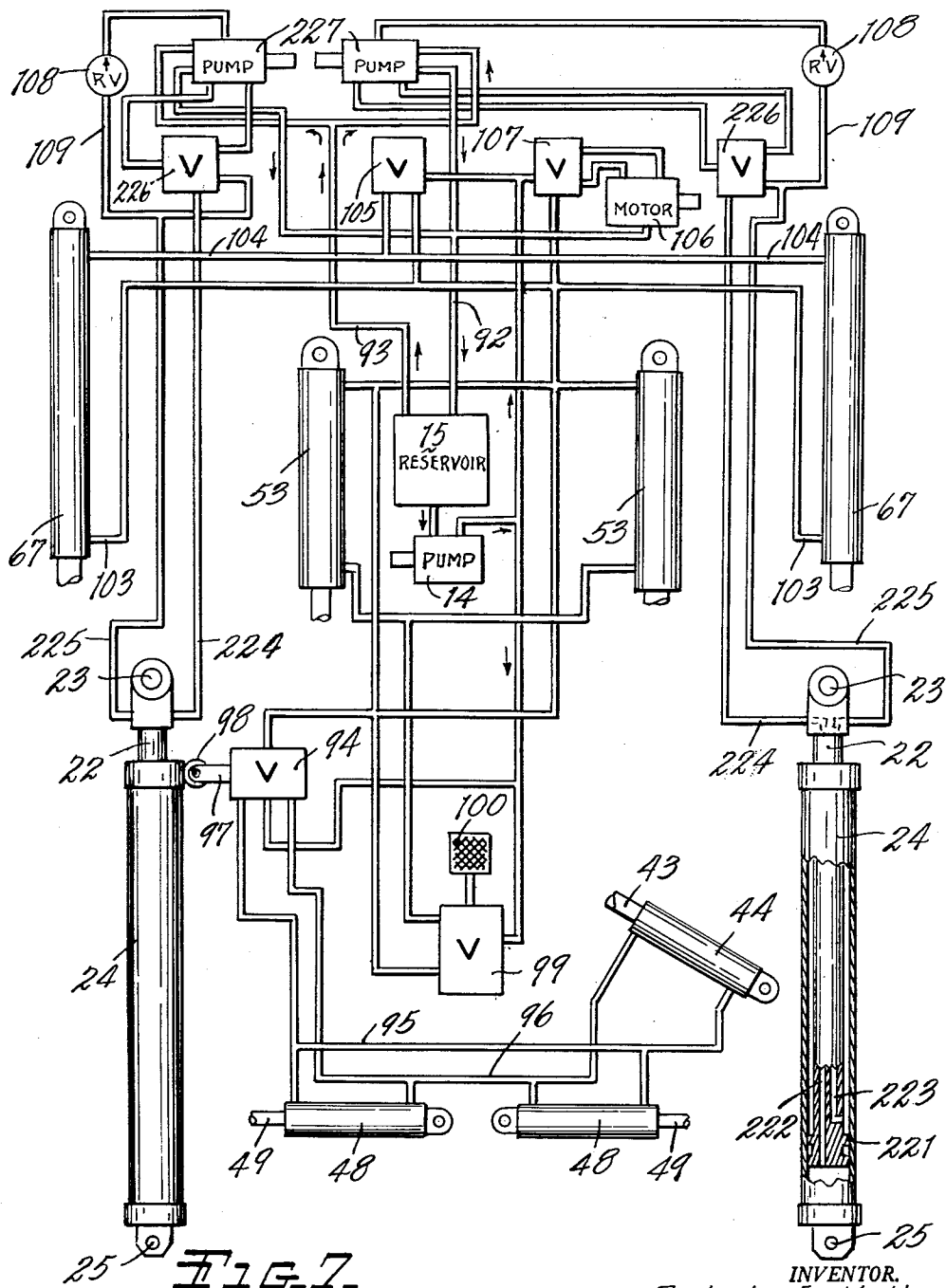
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TIE AND RAIL RAISING AND TAMPING MACHINE

Filed March 18, 1957

6 Sheets-Sheet 6



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2,996,016

TIE AND RAIL RAISING AND TAMPING MACHINE

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17 Claims. (Cl. 104—12)

This invention relates to a machine for raising the rails and ties of a railway track and tamping the ballast while the tie is in raised position.

The main objects of the invention are:

First, to provide a combined rail and tie raising and ballast tamping machine which is of large capacity, efficient in operation and at the same time easily operated.

Second, to provide a machine having these advantages which may be readily adjusted to raise the rails to a predetermined height and raise and support ties in proper relation to the rails while the ballast is tamped into tie supporting relation.

Third, to provide in a machine of the type described means for independently adjusting the rails to a predetermined level or grade or to varying degrees, and simultaneously raising the corresponding ends of the tie to the same degree.

Fourth, to provide in a machine having these advantages means for gauging the rails including a sight gauge which, after the gauges have been properly set, can be easily read or observed to determine when the rails and ties have been raised to a predetermined degree, point or grade.

Fifth, to provide a machine having these advantages in which the rail and tie engaging members are automatically operated in timed sequence with actuation of the jack means.

Sixth, to provide a machine having these several advantages which may be operated by a single operator.

Objects relating to details and economies of the invention will appear from the description to follow. The invention is defined and pointed out in the claims.

A preferred embodiment of the invention is illustrated in the accompanying drawing, in which:

FIG. 1 is a perspective view of a machine embodying the invention in operative relation to a railway track with the rail lifting means in lifting engagement with the rails and the tie lifting means in lifting engagement with a tie, the ballast tamping means being in retracted position.

FIG. 2 is a front elevational view with the front end of the carriage omitted and certain frame parts being shown in section.

FIG. 3 is a fragmentary side elevational view on a line corresponding to line 3—3 of FIG. 2, the tamping unit being omitted in order to more clearly illustrate certain other parts of the machine.

FIG. 4 is an enlarged fragmentary view partially in section on a line corresponding to broken line 4—4 of FIG. 5, certain parts being omitted in order to more clearly illustrate the relation of other parts.

FIG. 5 is a fragmentary view partially in horizontal section on a line corresponding to the broken line 5—5 of FIG. 3.

FIG. 6 is a fragmentary view partially in section on a line corresponding to line 6—6 of FIG. 5.

FIG. 7 is a diagrammatic view of the hydraulic actuating means for the jack, the rail and tie clamps, and the tamper raising and lowering means, the several mechanisms and controls therefor being conventionally shown except for the jack details illustrated.

FIG. 8 is a fragmentary view illustrating certain details of the jack and rail and tie clamp operating means.

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In the embodiment of my invention illustrated in the accompanying drawing the tamping unit illustrated is essentially that disclosed in the Corwill Jackson application filed September 27, 1955, Serial No. 536,886, Patent No. 2,795,198, issued June 11, 1935, but it is desired to point out that tamping units such as are illustrated in the Jackson Patent 2,482,111 might be used. However, tamping units of this general type are an element or factor of my invention of substantial importance.

Referring to the drawing, 1 represents the ballast of a road bed, 2 the ties and 3 the rails. The carriage designated generally by the numeral 4 is provided with front and rear flanged wheels 5 and 6, the rear wheels 6 being mounted on a driven axle 7. The driving or power means for the axle is generally indicated at 8 but it is not described as it forms no part of the present invention. The operator's platform 9 is supported on the frame 4 in elevated position relative to certain other parts of the machine and is provided with an operator's seat 10.

As the machine is moved from tie to tie in use a brake shoe 11 is provided for one of the wheels 6, the brake being operated by the hand lever 12 positioned at the side of the platform 9 to be manipulated by the operator seated in the seat 10. The mounting of the brake shoe and the operating lever connections may be conventional and are therefore not described in detail. 13 represents an engine and 14 a hydraulic pump operatively associated with the engine. 15 and 16 represent hydraulic tanks. As the details of these parts form no part of the present invention they are not further illustrated or described herein.

The carriage is provided with uprights or standards 17 on which the crosshead or frame cross member 18 is mounted. This cross member 18 constitutes, in addition to a support for certain structural elements, an instrument panel for various control units. The machine comprises means for raising the rails and the ties and for tamping the ballast while the rails and ties are in raised position, this tie and rail raising means being characterized by the fact that one rail and one end of the tie may be raised higher than the other, or, otherwise stated, the rails adjusted to proper grade relative to each other. Sometimes one rail is positioned at a higher grade level than the other such as on curves, for example. Gauging means for this positioning is also provided.

In addition to the standards or uprights the cross member 18 is supported and braced by the inclined frame members 19 which are extended above the cross member to brace and support the upwardly projecting brackets 20. Laterally spaced hydraulic jacks are provided, each comprising the plunger members 22 connected to the hangers 21 by means of the coupling pins 23 and the cylinder members 24 having pin and slot connections 25 and 26 to the elongated jack foot piece 27, which is common to both jacks and is adapted to supportably engage the ballast between adjacent ties as illustrated in FIG. 4.

The pairs of rail engaging hooks 28 are pivotally mounted at 281 on hanger links which in the embodiment illustrated comprise the lower sections 29, upper sections 30, and the adjustable turn buckle sections 31. In the embodiment illustrated these hanger links are supportably engaged with the coupling pins 23. The lower ends 32 of the hanger links are guidingly engaged with the guides 33 which locate the hook pivots 281 above the rails so that the rail engaging hooks may be swung into rail engaging position as shown in FIGS. 1 and 4, or retracted therefrom as shown in FIGS. 2 and 3. The rail engaging hooks are simultaneously operated but the jack rams are independently operated or controlled. The adjusting means for the rail engaging hooks comprise the angled levers 34 which are pivoted at 35 on the frame supported brackets 36. The outer arms of these levers are con-

nected to the hooks by means of the links 37 and their inner arms are connected by the links 38 and 39 to the arms 40 on the rockshaft 41 which also has an arm 42 connected to the plunger 43 of the hydraulic cylinder 44. The operating connections for these cylinders 24 and 41 will be described later.

The tie engaging hooks 45 are pivotally mounted at 46 on the cross bar 47 on which a pair of oppositely facing hydraulic units 48 are mounted, the plunger rods 49 of which are connected by the links 50 to the upwardly projecting ears of the hooks 45 by the pivots 51. The cross bar 47 is provided with insulating rail engaging bumpers 52 adapted to engage the top of the rails when the cross bar is in its lowered position. The cross bar is seated upon the rails by means of hydraulic units, the cylinders 53 of which are pivoted at 54 on the underside of the cross head 18. The plungers 55 of these hydraulic units are connected by the links 56 to the cross head 47 through the couplings 57. Pins 58 are provided for securing the links 56 to the ears or brackets 59 only while the machine is being transported.

An important feature of the applicant's invention is the adjustable gauging means which may be set so that the operator can know when the rails have been lifted to a predetermined point or grade level.

This gauging means includes the sight gauge or level designated generally by the numeral 60 and positioned in front of the seat of the operator, see FIG. 1. This sight gauge is operatively associated with the track engaging members 61.

The gauge rods 62 are guidingly supported by brackets 81 and 82. The rail contacting gauges 61 are provided with sight gauges 83 which are connected by the cross bar 84. These sight gauges are adapted to be used in a well known manner.

The rods 62 are provided with calipered or scaled gauging indicia members 85 having gauging indicia 86 thereon, see FIG. 3. These members 85 are swingably connected to the upper ends of the rods 62 by the couplings 88. The members 85 are provided with racks with which the adjusting members designated generally by the numeral 87 carried by the gauge bar coast.

This arrangement enables the proper positioning of the sight gauge or level relative to the track engaging members so that it will come to a horizontal readable position when the tracks have been raised to the proper height and in predetermined relation to each other.

The rail engaging members 61 are provided with insulating rail contacts 89 and it is desired to point out that all rail engaging parts including the wheels are desirably insulated so that the use of the machine on a particular section of track will not interfere with the electrical signal system that may be associated with the track.

With this arrangement of parts the gauging means properly set the machine is successively positioned in proper relation to the tie to be raised and tamped.

It will be understood that while each tie is individually tamped the raising of the rail above one tie to predetermined position will ordinarily raise adjacent ties, that is, if the spikes hold but the operator can determine at each setting of the machine whether the rails are in proper predetermined position and with this arrangement of parts the rail engaging hooks are actuated to engage the rails, the tie engaging hooks actuated to engage the tie, and the jack actuated to raise the ties to the proper position indicated by the gauge unit and when that position has been reached the tamping unit is actuated to tamp the ballast of the tie with which the hooks are engaged.

The machine is power driven and manipulated to engage the tie to be tamped and the brake set to hold the carriage in that position. As stated, the particular tamping units illustrated are those of the aforesaid Jackson patent. These tamping units are mounted on the downwardly projecting arms 64 on the ends of the cross head

65, which are mounted for vertical sliding movement on the frame uprights or posts 17, the cross head being provided with the pairs of guide rollers 66 engaging the uprights. This cross head is raised and lowered by the hydraulic rams designated generally by the numeral 67, one member of which is connected to the laterally projecting arms on the brackets 20 of the cross head. In the embodiment illustrated it is the plungers that are connected to the cross head at 68.

The tamping units comprise pairs of blades 69 mounted on the supports 70, having vibrating motors 71 mounted thereon, the hangers 72 of these supports being swingably connected at 73 to the laterally projecting arms 74 carried by the links 75 which connect the corresponding ends of the elliptical springs 76 which in turn are mounted on the ends of the arms 64 of the cross head. The straps 77 and 78 limit the swinging movement of the tampers. With the rails and tie elevated to the proper position, the tamping units are lowered to tamp the ballast under and around the tie.

It will be understood that after a tie has been properly positioned and tamped, the tamper is retracted, the tie and rail engaging hooks released, the brake released, and the carriage positioned so that the hooks 28 may be again engaged with the rails in the new position and the hooks 45 with a succeeding tie to be tamped and the operation is repeated.

When the machine is to be moved other than from tie to tie, the tamper cross head is raised and secured to the hanger 80 by means of the coupling pin 81. Bumpers 82 are provided on the cross head 18 to limit the upward movement of the tamper cross head.

In the embodiment illustrated the rail and tie engaging hooks are automatically actuated with the actuation of the jack, that is, when the jack is actuated to thrustingly engage the foot piece thereof with the ballast, the rail and tie engaging hooks are automatically actuated to rail and tie engaging position.

While the operating connection for the various cooperating parts are illustrated in other figures the diagrammatic view of FIG. 7 is presented as more clearly illustrating these operating connections. It will be noted from this FIG. 7, and other figures, that the jack foot piece 27 is actuated by two independently operating jacks, that is, jacks are controlled independently so that the rails and ties may be lifted to different degrees as occasion may require.

In this embodiment the cylinder members of the hydraulic jacks 24 are connected to the foot piece and the plungers are pivotally connected at 23 to the frame brackets 21, as has been described. The reason for that arrangement of the jack parts is that in tamping, ballast may be thrown with considerable force and also the air filled with grit or duct and if the plungers were exposed they might become roughened or coated with grit so as to cause undue wear on the jacks. By connecting the cylinders of the jacks to the foot piece that condition is avoided.

The plungers 22 are provided with suitable heads 221 at their lower longitudinally disposed ends and have a passage 222 opening below the heads 221 and a passage 223 opening above the heads as is shown in section in FIG. 7. The coupling head of the plunger is connected to these passages and the conduits 224 and 225 connect the plungers through the valves 226 to the pumps 227. The valves 226 are manually operated. The pumps 227 are powered through a suitable transmission to the engine 13 and are connected to the reservoir 15 by means of the conduits 92 and 93.

A valve 94 is provided for the hydraulic connections for the rail hook and tie hook actuating rams 48, these connections being shown at 95 and 96 which connections are also connected to the rail hook actuating ram 44. The stem 97 of the valve 94 is provided with a roller 98 which is engaged by the upper end of the jack cylinder

75 which is engaged by the upper end of the jack cylinder

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when the jack cylinder is in retracted position as shown in FIG. 7. When the jack cylinder is forced downwardly the roller 98 slips off the cylinder and the valve opens. This opening of the valve as the jack is actuated powers the rams 44 and 48 and the rail engaging hooks and tie engaging hooks are actuated to engaged position and when the jack members are actuated to retracted position the rail hooks and the tie engaging hooks are automatically disengaged. The foot actuated valve 99 controls the rams for raising and lowering the cross bars 47. A foot pedal being shown at 100.

After the rail and tie have been raised to proper position the tamper unit is operated and this, as has been described, is raised and lowered by the hydraulic units or rams 67, the cylinders of which are, as stated, suspended from the brackets 20. The cylinders are provided with hydraulic connections 103 and 104 which in turn are connected to the valve 105 to the hydraulic source. This valve 105 is manually manipulated to lower and raise the tamper unit. The tamper cross head is desirably raised and lowered three or four times for each tie.

It should be noted that the tamper unit illustrated is not designed to completely tamp the ballast but is designed to tamp the ballast to properly support the ties and rails for final or complete tamping. New ties may be inserted if desired and properly supported for tamping.

The carriage of the embodiment illustrated is hydraulically driven and means include the hydraulic motor 106 which is controlled by the valve 107.

In order to reduce the return pressure on the jacks pressure release valves 108 are provided in the return conduits 109. In the embodiment illustrated the hydraulic pump 14 is provided in addition to the pump 227 and is hydraulically connected to the reservoir 15 and to the actuating rams described.

The gauge members 61 are automatically actuated to and from rail engaging position by the actuating of the rail engaging hooks to and from engaging position, the track gauge members being connected by the chains 112 to the hook actuating levers 34, see FIG. 6. This further adds to the automatic operation of the device.

It should be pointed out that the main functional purpose of the release valves 108 in the hydraulic jack operating mechanism is that of varying upthrust as compared to the down thrust power of the jacks. The down thrust on the foot piece or jack member desirably greatly exceeds the upthrust for the reason that if the jack foot should happen to engage a rail or some other part it would break or distort some portion of the machine. Therefore, the uplift pressure or power is desirably reduced.

With this relation of parts after the machine has been properly positioned relative to a tie, the gauge having been set, the first step is to operate the foot valve control 100. This automatically opens the valve supplying the jack elements and through the connection described the rail clamping and tie hooks are automatically engaged. The operator then manipulates the valves 226 until the rails and ties have been brought to the proper level which is indicated by the sight bubble 80 of the level. The tamper unit is then manipulated as described until the tie has been tamped to hold the rails at the predetermined grade. The jack is then retracted which automatically releases the rail and tie engaging hooks and the machine is moved to the next tie and the operation repeated.

The machine is of large capacity and may be very easily operated. Means are commonly provided for facilitating the removal of the machine from the track and replacement thereon but such means is not illustrated as it forms no part of this invention.

The invention has been illustrated and described in a highly practical embodiment thereof. I have not attempted to illustrate or describe certain modifications which might be desirable for certain uses as it is believed that

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this disclosure will enable those skilled in the art to embody or adapt the invention as may be desired.

Having thus described the invention what is claimed as new and desired to secure by Letters Patent is:

1. A machine of the class described including a carriage adapted to travel on the rails of a railway track, uprights on said carriage, a cross head mounted on said uprights, a jack unit comprising laterally spaced hydraulic jacks, one member of each jack being pivotally connected to said cross head, and an elongated ballast engaging jack foot piece with which the other members of said jacks have pivotal thrust engagement, a pair of rail engaging hooks, supporting links therefor pivotally connected to said cross head, said links comprising adjustably connected sections permitting variation of the length thereof including a hydraulic ram, a pair of tie engaging hooks, a cross bar on which said tie engaging hooks are pivotally mounted, hydraulic rams for engaging and disengaging said tie engaging hooks, hydraulic rams on said carriage for raising and lowering said tie hook cross bar, and a source of hydraulic fluid under pressure having valved connections to said jacks and rams, said connection to said jacks including independent manually operated valves, the connections to said rams including a valve operatively associated with one of said jack members to be opened when such jack member is actuated from its retracted position and to be closed when returned to retracted position.

2. In a machine of the class described, the combination with a carriage adapted to supportingly travel on the rails of a railway track, a jack on said carriage operatively associated therewith to apply upward thrust to the carriage, the jack being provided with a ballast engaging foot piece, rail engaging hooks mounted on said carriage for swinging adjustment to and from rail engaging position, tie engaging hooks swingably supported on said carriage for adjustment to and from tie engaging position means for actuating said rail and tie engaging hooks, a rail engaging gauge member carried by said carriage and engageable with each rail of a railway track, a level member connected to said rail engaging gauge member, and a tamper unit mounted on said carriage for vertical adjustment to and from operative position including blades positioned to tamp ballast associated with the tie engaged by said tie-engaging hooks.

3. In a machine of the class described, the combination with a carriage adapted to supportingly travel on the rails of a railway track, a jack on said carriage operatively associated therewith to apply upward thrust to the carriage, the jack being provided with a ballast engaging foot piece, rail engaging hooks mounted on said carriage for swinging adjustment to and from rail engaging position, tie engaging hooks swingably supported on said carriage for adjustment to and from tie engaging position, means for actuating said rail and tie engaging hooks, a rail engaging gauge member carried by said carriage and engageable with each rail of a railway track, a level member adjustably connected to said rail engaging gauge member, and a tamper unit mounted on said carriage for vertical adjustment to and from operative position including blades positioned to tamp ballast associated with the tie engaged by said tie-engaging hooks.

4. In a machine of the class described, the combination with a carriage adapted to supportingly travel on the rails of a railway track, a hydraulic jack on said carriage operatively associated therewith to apply upward thrust to the carriage, the jack being provided with a ballast engaging foot piece, a pair of rail engaging hooks mounted on said carriage for swinging adjustment to and from rail engaging position, tie engaging hooks swingably supported on said carriage for adjustment to and from tie engaging position, means for simultaneously actuating said rail and tie engaging hooks, and a ballast tamping unit mounted on said carriage for adjustment to and from tamping position and provided with blades positioned to tamp ballast

associated with the tie engaged by said tie-engaging hooks.

5. A machine of the class described comprising a carriage adapted to travel on the rails of a railway track, laterally spaced transversely aligned independently operable manually controlled jacks mounted on said carriage, an elongated ballast engaging footpiece disposed transversely of the carriage and with which said jacks have pivotal engagement, rail engaging jaws mounted on said carriage in approximately aligned relation with said jack footpiece, inwardly facing tie engaging hooks swingably mounted on said carriage at one side of said rail engaging jaws and positioned to engage the ends of a tie adjacent said jack footpiece, power means for actuating said rail engaging hooks, power means for actuating said tie hooks said power means being operatively associated with each other and with said jack power control means to be actuated in timed relation to the actuation of said jacks, and a tamper unit mounted on said carriage for vertical adjustment to and from operative position and provided with tampers adapted when in actuated position to tamp ballast associated with the tie supportedly engaged by said tie engaging hooks.

6. A machine of the class described comprising a carriage adapted to travel on the rails of a railway track, laterally spaced transversely aligned independently operable manually controlled jacks mounted on said carriage, an elongated ballast engaging footpiece disposed transversely of the carriage and with which said jacks have pivotal engagement, rail engaging jaws mounted on said carriage in approximately aligned relation with said jack footpiece, inwardly facing tie engaging hooks swingably mounted on said carriage at one side of said rail engaging jaws and positioned to engage the ends of a tie adjacent said jack footpiece, manually controlled power means for actuating said jacks, rail engaging hook and said tie engaging hooks, and a tamper unit mounted on said carriage for vertical adjustment to and from operative position and provided with tampers adapted when in actuated position to tamp ballast associated with the tie supportedly engaged by said tie engaging hooks.

7. A machine of the class described comprising a carriage adapted to travel on the rails of a railway track, laterally spaced transversely aligned independently operable manually controlled jacks mounted on said carriage, an elongated ballast engaging footpiece disposed transversely of the carriage and with which said jacks have pivotal engagement, rail engaging jaws mounted on said carriage in approximately aligned relation with said jack footpiece, tie engaging hooks swingably mounted on said carriage at one side of and adjacent said rail engaging jaws, gauge means comprising a rail engaging member for each rail disposed to engage the rail at the other side of said rail engaging hooks, manually controlled power means for actuating said rail engaging hooks and tie hooks in timed relation to the actuation of said jacks, and a tamper unit mounted on said carriage for vertical adjustment to and from operative position and provided with tampers adapted when in actuated position to tamp ballast associated with the tie which is supportedly engaged by said tie engaging hooks.

8. A machine of the class described comprising a carriage adapted to travel on the rails of a railway track, laterally spaced transversely aligned independently operable manually controlled jacks mounted on said carriage, an elongated ballast engaging footpiece disposed transversely of the carriage and with which said jacks have pivotal engagement, rail engaging jaws mounted on said carriage in approximately aligned relation with said jack footpiece, tie engaging hooks swingably mounted on said carriage at one side of and adjacent said rail engaging jaws, manually controlled power means for actuating said rail engaging hooks and tie hooks in timed relation to the actuation of said jacks, and a tamper unit mounted on said carriage for vertical adjustment to and from operative position and provided with tampers adapted when

in actuated position to tamp ballast associated with the tie which is supportedly engaged by said tie engaging hooks.

9. A machine of the class described comprising a carriage adapted to travel on the rails of a railway track, laterally spaced uprights on said carriage, a crosshead mounted on said uprights, a jack unit comprising laterally spaced hydraulic jacks, one member of each being pivotally connected to said crosshead, an elongated ballast engaging footpiece with which the other members of said jacks have pivotal thrust engagement, a pair of rail engaging hooks, supporting links therefor pivotally connected from said crosshead to depend therefrom, said links comprising adjustably connected sections permitting variations of the length thereof, guide members on said carriage with which the lower ends of said links are slidably engaged, means for actuating said hooks to and from rail engaging position comprising levers pivotally mounted on said carriage, links connecting said levers to said hooks, an actuating lever pivotally mounted on said carriage, links connecting said levers to said hooks to said actuating lever, and a hydraulic ram for actuating said actuating lever.

10. A machine of the class described comprising a carriage adapted to travel on the rails of a railway track, laterally spaced uprights on said carriage, a crosshead mounted on said uprights, a jack unit comprising a laterally spaced hydraulic jacks, one member of each being pivotally connected to said crosshead, an elongated ballast engaging footpiece with which the other members of said jacks have pivotal thrust engagement, a pair of rail engaging hooks, supporting links therefor pivotally connected from said crosshead to depend therefrom, said links comprising adjustably connected sections permitting variations of the links thereof, guide members on said carriage with which the lower ends of said links are slidably engaged, and means for simultaneously actuating said hooks to and from rail engaging position.

11. A machine of the class described comprising a carriage adapted to travel on the rails of a railway track, laterally spaced uprights on said carriage, a crosshead mounted on said uprights, a ballast engaging jack unit connected to said crosshead, a pair of rail engaging hooks, supporting links therefor pivotally connected from said crosshead to depend therefrom, guide members on said carriage with which the lower ends of said links are slidably engaged, means for actuating said hooks to and from rail engaging position comprising levers pivotally mounted on said carriage, links connecting said lever to said hooks, an actuating lever pivotally mounted on said carriage, links connecting said levers connected to said hooks to said actuating lever, and a hydraulic ram for actuating said actuating lever.

12. A machine of the class described comprising a carriage adapted to travel on the rails of a railway track, uprights on said carriage, a crosshead mounted on said uprights, a hydraulic jack, one member of which is mounted on said crosshead and the other of which is provided with a ballast-engaging footpiece, a pair of rail engaging hooks supportedly connected to said crosshead, means for simultaneously actuating said rail-engaging hooks to and from rail engaging position, a cross bar mounted on said carriage for vertical reciprocating movement, manually controlled power means on said carriage for raising and lowering said cross bar, a pair of tie-engaging hooks pivotally mounted on said cross bar for vertical swinging movement to and from tie-engaging position, manually controlled power means mounted on said cross bar for actuating said tie-engaging hooks to and from tie-engaging position, and a tamper unit mounted on said carriage for vertical adjustment to and from ballast tamping position and provided with tampers adapted when in actuated position to tamp the ballast around

the tie supportedly engaged by said tie-engaging hooks.

13. A machine of the class described comprising a carriage adapted to travel on the rails of a railway track, a hydraulic jack mounted on said carriage and provided with a ballast engaging footpiece, a pair of rail-engaging hooks mounted on said carriage, means for simultaneously actuating said rail-engaging hooks to and from rail-engaging position, a cross bar mounted on said carriage for vertical adjustment, a pair of tie-engaging hooks pivotally mounted on said cross bar for vertical swinging movement to and from engaging position with the ends of a tie, means on said cross bar for simultaneously actuating said tie-engaging hooks to and from tie-engaging position, and a tamper unit mounted on said carriage for vertical adjustment to and from operative position and including blades positioned to tamp ballast associated with the tie engaged by the said tie-engaging hooks.

14. A machine of the class described including a carriage adapted to travel on the rails of a railway track, a jack unit including an elongated ballast engaging foot piece, jack members connected to said foot piece on opposite sides of the center thereof and provided with independent manually controlled actuating means, rail engaging hooks mounted on said carriage, means for simultaneously actuating said rail engaging hooks to and from rail engaging position, tie engaging hooks, a cross bar mounted on said carriage for vertical adjustment and on which said tie engaging hooks are pivotally mounted to project laterally from the carriage for engagement with the ends of a tie adjacent said jack foot piece, means carried by said cross bar for simultaneously actuating said tie engaging hooks to and from tie engaging position and in timed relation to said jack actuating means, and manually controlled means on said carriage for raising and lowering said cross bar and actuating said hooks in timed relation.

15. A machine of the class described including a carriage adapted to travel on the rails of a railway track, a jack unit mounted on said carriage, rail engaging hooks mounted on said carriage, means for simultaneously actuating said rail engaging hooks to and from rail engaging position, tie engaging hooks, a cross bar mounted on said carriage for vertical adjustment and on which said tie engaging hooks are pivotally mounted to project laterally from the carriage for engagement with the ends of a tie adjacent said jack foot piece, means carried by

said cross bar for simultaneously actuating said tie engaging hooks to and from tie engaging position and in timed relation to said jack actuating means, and manually controlled means on said carriage for raising and lowering said cross bar and actuating said hooks in timed relation.

16. A machine of the class described including a carriage adapted to travel on the rails of a railway track, a cross bar mounted on said carriage for vertical adjustment thereon, manually controlled power means on said carriage for raising and lowering said cross bar, tie engaging hooks pivotally mounted on said cross bar to project endwise therefrom for engagement with the ends of a tie when actuated, means for actuating said hooks to and from tie engaging position comprising oppositely facing manually controlled hydraulic units mounted on said cross bar, and links connecting said hydraulic units to said tie engaging hooks.

17. A machine of the class described including a carriage adapted to travel on the rails of a railway track, a cross bar mounted on said carriage for vertical adjustment thereon, manually controlled power means on said carriage for raising and lowering said cross bar, tie engaging hooks pivotally mounted on said cross bar to project endwise therefrom for engagement with the ends of a tie when actuated, and manually controlled powered means for actuating said hooks to and from tie engaging position.

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