

935,757.

A. F. HART.
TRACK TAMPING IMPLEMENT.
APPLICATION FILED SEPT. 8, 1908.

Patented Oct. 5, 1909.
3 SHEETS—SHEET 1.

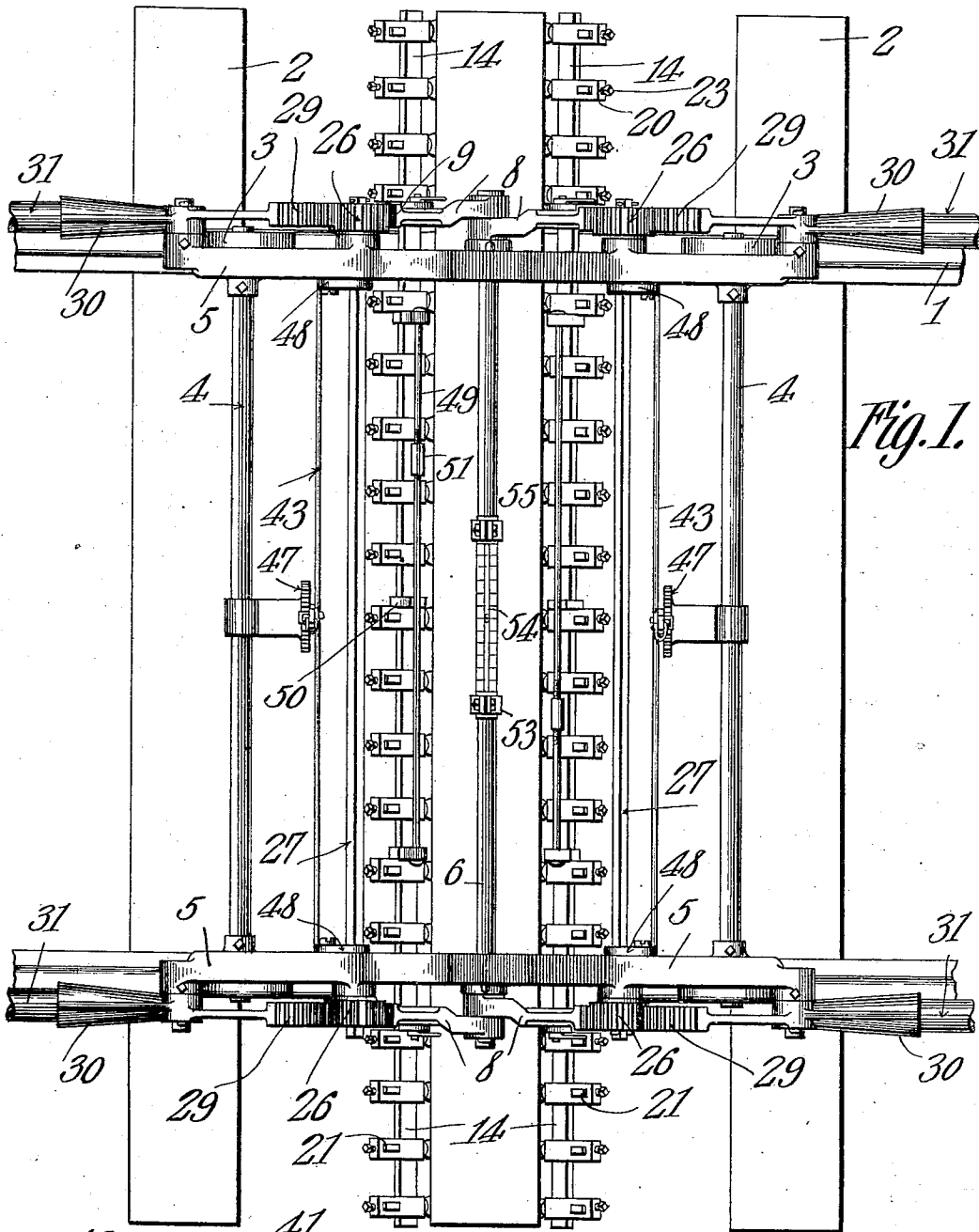


Fig. 1.

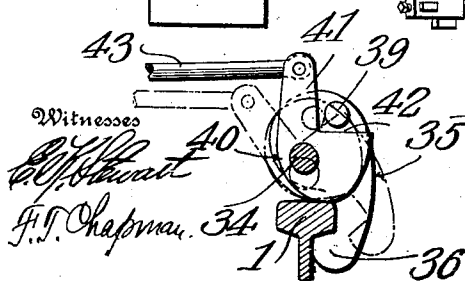


Fig. 11.

Inventor

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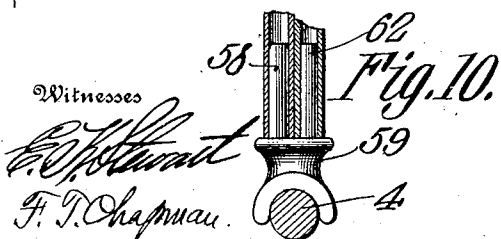
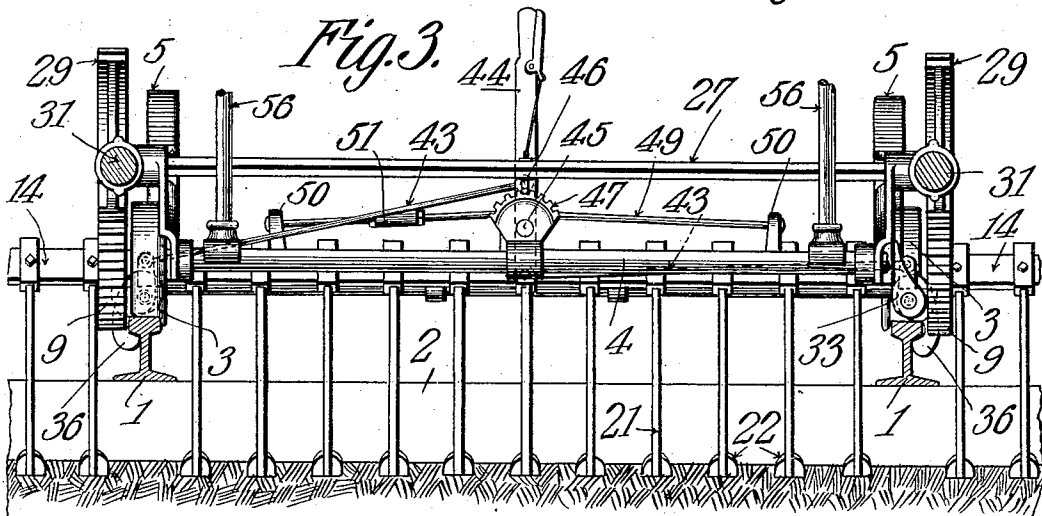
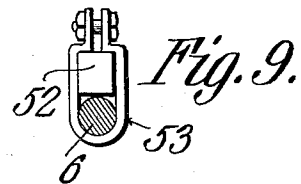
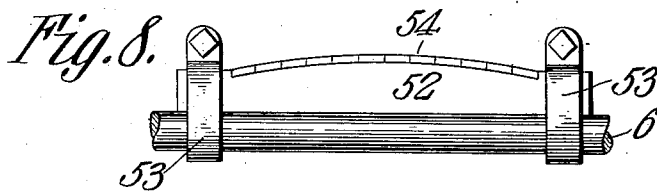
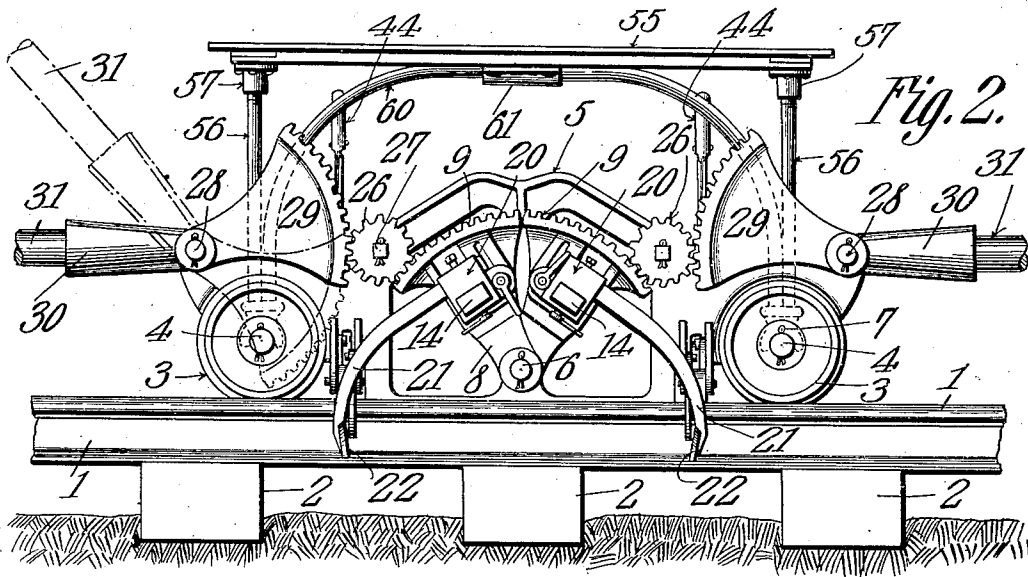
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 3 SHEETS—SHEET 2.



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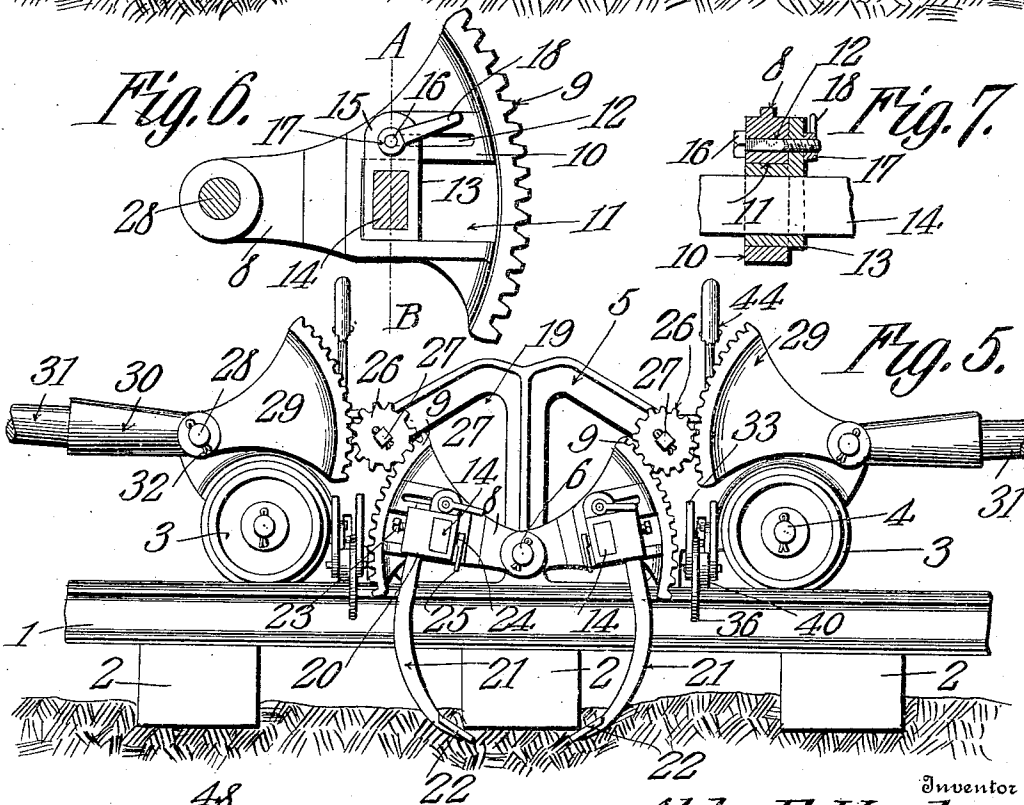
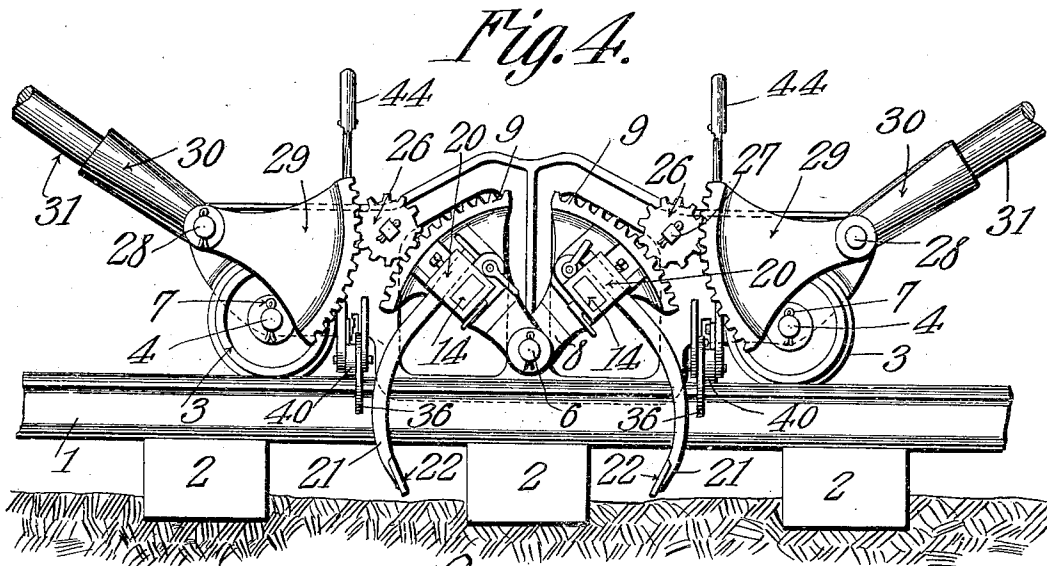
Witnesses

E. J. Stewart
F. T. Chapman

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 3 SHEETS—SHEET 3.



Witnesses
E. J. Stewart
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Fig. 12.

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UNITED STATES PATENT OFFICE.

ABLE F. HART, OF HICKORY, NORTH CAROLINA.

TRACK-TAMPING IMPLEMENT.

935,757.

Specification of Letters Patent.

Patented Oct. 5, 1909.

Application filed September 8, 1908. Serial No. 452,025.

To all whom it may concern:

Be it known that I, ABLE F. HART, a citizen of the United States, residing at Hickory, in the county of Catawba and State of North Carolina, have invented a new and useful Track-Tamping Implement, of which the following is a specification.

This invention has reference to improvements in track tamping implements and its object is to provide a means for tamping ballast under the ties of a railroad track more expeditiously and to better effect than can be done by hand.

The operation of tamping ballast under the railroad ties in order to solidify the ballast at this point and to form a firm and unyielding support for the ties is customarily performed by hand with a bar having a flattened end, and called a tamping bar.

By the structure of the present invention the hand operation is simulated but is performed at once along the whole length of a tie on both sides thereof and to this extent the operation is expedited. Furthermore the tamping heads are brought into such relation to the under side of the tie as to operate upon the material to the best advantage.

In accordance with the present invention the tamping implement is mounted upon a truck by means of which it may be transported from place to place upon the track rail, and this truck may be further utilized for the carrying of tools or other implements in addition to the tamping mechanism.

In accordance with the present invention means are provided for locking the tamping implement to the track and the locking means are so constructed as to elevate the truck above the track when the locking means are active in order that movement of the device along the track when being used for tamping is prevented. Provision is also made for the adjustment of the tamping heads to accommodate ties of different thicknesses and widths.

Since it is important that the track should be properly leveled in a lateral direction and the pitch of the track for curves should be accurately determined, the invention contemplates the use of a leveling means whereby the relative altitude of the two rails one to the other may be readily determined.

Since in the tamping operation the tamping blades or teeth are necessarily below the level of the upper faces of the ties, provision

is made for elevating the working ends of the tamping members and for locking the tamping fingers in such elevated position and provision is made whereby the operating levers may be so placed as to be utilizable as handles for lifting the tamping implement as a whole from and onto the two tracks.

The invention will be best understood from a consideration of the following detail description taken in connection with the accompanying drawings forming a part of this specification in which drawings,

Figure 1 is a plan view of the tamping implement shown resting on the track but with the platform omitted. Fig. 2 is a side elevation of the tamping implement on the track, showing the supplemental platform in place and indicating the position of the parts for transportation. Fig. 3 is an end elevation of the structure shown in Fig. 2 with the track and operating handles shown in section. Figs. 4 and 5 are side elevations showing the implement in different operative positions. Figs. 6 to 12 are detail views.

Referring to the drawings there are shown two track rails 1 and a number of ties 2. There are also shown two pairs of wheels 3 mounted upon axles 4, one pair of wheels being spaced from the other pair of wheels. The axles are joined by end frames 5. At an intermediate point between the two axles the frames 5, which may be of skeleton form for lightness, are joined by a rod 6, projecting beyond each end frame 5 for a purpose which will hereinafter appear. The two end frames 5 together with the two axles 4 and rod 6 constitute a truck for supporting the tamping implement structure, and by means of which the structure may be transported from point to point upon the track rails. Since the structure should be as rigid as possible the axles 4 and rod 6 are made fast to the end frames 5 by set screws or otherwise and the wheels 3 are made to turn freely on the ends of the axles 4 projecting outside the frames 5 and these wheels may be held to the axles by cotter pins 7 or otherwise.

Mounted upon the ends of the rod 6 where it projects beyond the end frames 5 are segments 8 so mounted as to turn on the rod as an axis. There are two oppositely directed segments 8 on each end of the rod beyond the corresponding end frame 5. The outer wide ends of the segments 8 are formed with rack teeth 9. Each segment 8 is formed

near its wide or toothed end with a thickened portion 10 through which there is formed a slot 11 elongated in a direction radial to the axis of the segment. Along the ties but separated from the slot 11 is another narrow slot 12 parallel with the first named slot 11. Within the slot 11 there is located a block 13 having a passage there-through for a rectangular bar 14 to which reference will presently be made. The block 13 is provided on one side with an ear 15 lying against the thickened portion 10 of the segment coincident with that part pierced by the slot 12. Extending through the said slot 12 is a bolt 16 having a square shank within the slot and having a threaded end passing through a hole in the ear 15. The threaded end of the bolt 16 has the threads of quick pitch, and applied to this threaded end is a nut 17 having a radial handle 18 by means of which the nut may be readily manipulated. There are two rods or bars 14 each supported at the ends by a corresponding one of the segments 8 and these bars extend through openings 19 in the end frames 5 on opposite sides of the vertical plane of the axis of the rod 6. Each bar 14 carries a number of blocks 20 each of which carries a curved finger or arm 21 at the free end of which is formed a blade 22. The arms 21 are adjustable longitudinally on the block 20 and are held in adjusted positions by means of a set screw 23 and the blocks 20 are adjustable in the respective bar 14 and are held in adjusted positions by means of set screws 24 each of which latter however is provided with a manipulating handle 25 similar to the handle 18 so that the set screws 24 may be readily operated without the necessity of the use of a wrench or other tool. Each bar 14 carries a series of substantially equally spaced arms 21, the arms being placed as closely as is necessary to cause the blades 22 to compact the ballast under the ties along the whole length thereof. The teeth 9 of each segment 8 are in mesh with a pinion 26, there being a separate pinion for each segment and the pinions 26 on the same side of the median line of the device are mounted on the respective ends of a square shaft 27, which shaft is journaled for rotation in the end frames 5. By this means the two segments 8 connecting a bar 14 are in mesh with the pinions 26 upon the same square shaft 27 so that the segments and pinions are constrained to move in synchronism.

The end frames 5 are continued away from the median line beyond the wheels 3 for a sufficient distance and there carry studs 28 on which are mounted gear segments 29 meshing with the pinions 26. On the side of the stud 28 remote from the gear teeth the segments 29 are provided with sockets 30 for the reception of manipulating handles or levers 31. The gear segments 29 are secured

on the studs 28 by means of cotter pins 32 or other suitable means for the ready removal of the gear segments with the lever handles 31 when so desired, as will appear hereinafter. At a point between the median line of each frame 5 and each axle 4 the said frame 5 is provided with a pair of spaced ears or brackets 33. Each pair of ears 33 carries a pin 34 on which is pivoted a tooth 35 having a hooked end 36 and a projecting pin 37 extending laterally from its pivoted end eccentric to the axis thereof. Also mounted upon the pin 34 immediately adjacent to the tooth 35 is a cam 40, on one side of which, the side remote from the active face of the cam, there is formed an ear 41, while on the same side of the cam member the latter is flattened or otherwise shaped as indicated at 42 to engage the pin 39 on the tooth 35 when the cam member has been moved to a certain extent for a purpose which will hereinafter appear. The two cam members at the same end of the structure are connected by a respective link 43 to a manipulating lever 44 on the opposite side of the pivot 45 thereof. This lever is provided with a thumb latch 46 of ordinary construction in operative relation to a rack segment 47 mounted upon the respective axle 4 and in turn carrying the pivot of the lever 44.

When the tooth 35 is unrestrained then its normal tendency is to gravitate with the hook end 36 lowermost and the parts are so located that under these conditions the hook 36 will engage under the tread of a rail 1, and the cam 40 is moved in the proper direction to cause its active face to engage the tread of the rail and so lift the pin 34 until the tread of the rail is firmly grasped between the hook 36 and the active face of the cam 40. This is done by a proper manipulation of the lever 44 at each end of the structure and the lever is locked in the adjusted position by means of the thumb latch 46 engaging the rack 47. The elevation of the pins 34 is participated in by the entire structure so that the wheels 3 are lifted clear of the tracks 1. Under these conditions the structure is locked fast to the track with the wheels out of engagement with the track.

When the levers 42 are moved in the opposite direction; the active faces of the cams 40 are moved out of engagement with the tread of the wheels so that the pins 34 and the entire structure is permitted to be lowered until the wheels 3 come in engagement with the tread of the track rails. During this operation the hooks 36 have been loosened from engagement with the rail tread and ultimately the flattened portions of the cam members are brought into engagement with the pins 39 on the members 35 and the latter are thereby moved about their pivots until the hooks 36 are moved away from the tread of the rails to such an extent

that the entire structure may be lifted off the rails without interference because of the hooked ends 36 of the members 35.

Mounted upon the frames 5 in operative relation to the square shaft 27 are hooks 48 shaped to engage over the square shaft and thus prevent them from rotation. The purpose of these hooks will appear hereinafter. Each rod 14 is stiffened by means of a truss rod 49 connected to studs 50 on the rod 14; and engaging an intermediate stud 50 at a central portion of the rod. A turnbuckle 51 in the rod 49 serves to regulate the tension of said rod. At a central point on the rod 6 there is mounted a level 52, held at the ends to said rod by means of clips 53. The active portion 54 of the level is curved on an arc the radius of which is one-half the distance between the centers of the treads of the two tracks at standard gage. The purpose of this level will appear hereinafter.

In Fig. 2 there is shown a platform 55 mounted upon legs 56 which for convenience may be made of pipes screwed at the upper ends into sockets 57 fast on the under side of the platform 55. The lower end of each leg 56 receives a pin 58 projecting from a casting or standard 59. The lower side of the casting 59 is shaped to rest on and partially embrace a corresponding part of one of the axles 4. To stiffen the platform 55 and the legs 56, curved braces 60 are provided connected at a central point by a clip 61 to the under side of the platform 55. These braces also engage pins 62 projecting from the casting 59. The platform 55 is thus easily placed upon the tamping implement or removed therefrom at will and is designed to receive tools or any other structures it is desired to transport with the tamping implement to the point of use.

Let it be assumed that the tamping implement has been transported to the point where the tamping is to be performed and that the implement has been properly located with relation to the tie to be acted upon. Now the levers 44 are manipulated to lift the truck away from the rails and at the same time clamp the truck to the rails by the action of the cam member 40 and tooth 35 carried by each pair of ears 33. If it be found necessary, the block 13 is adjusted in the slot 11 to bring the tamping blades 22 into proper relation to the material immediately beneath the tie on to which the tamping is to be done. Now the track is leveled so that the two rails have the same altitude or if it be desirable, as for instance on a curve, then one track is elevated to a greater extent than the other and the degree of elevation becomes apparent upon the level 54 and the level may be graduated to indicate the degree of inclination. As soon as the tamping implement has been properly set then the handles 31, which in the particular in-

strument shown in the drawings are four in number are grasped by four operators and the outer ends are depressed. This will impart a like rotative movement to the four pinions 26, those on the same side of the median line acting in unison, and the segments 8 are moved about the axis of the rod 6 in a direction to bring the tamping blades 22 into engagement with the material immediately beneath a respective tie 2. All the blades 22 on the same side of the tie are brought down in unison against the material and the latter is forced firmly under the tie. The operation may be repeated as often as necessary in order to thoroughly compact the ballast or other material under the tie.

It is to be noted that the two sets of tamping blades on opposite sides of the tie are independently movable so that the tamping may be regulated as desired on opposite sides of the tie. The operation is continued as long as necessary by repeated movements up and down of the handles 31 and when the tamping under any particular tie has been completed then the tamping blades are elevated by the movement of the handles 31 toward the vertical position, after which the device may be unclamped from the rail and moved to the next tie and the machine be reclamped to the rails and the tamping operation be repeated in the manner already described. Whenever it becomes necessary to adjust the distances between the tamping blades and their general relation to the rod 6, this adjustment is greatly facilitated by the handled nuts 17 since these latter are so constructed that the nut may be quickly loosened by a small movement of the handle 18 and as quickly clamped in place again. By loosening the nut 17 on the block 13 carried by each segment 8 at the opposite ends of a rod 14 the latter may be readily adjusted with relation to the axis of the segments 8 and quickly clamped in place.

Now let it be assumed that the operation of tamping at any particular point has been accomplished and that it is desirable to move the whole structure for a considerable distance. Under these circumstances the levers 31 are moved toward the upright position to the full extent of their movement and this will elevate the arms 21 until the blades 22 are above the upper edges of the ties 2. The hooks or latches 48 are now brought into engagement with the square shafts 27 and the latter are thereby locked against further rotative movement. The cotter pins 32 are now removed from the studs 28 and the segments 29 together with the lever handles 31 may be removed from the studs 28 and then replaced upon the studs with the gear teeth in engagement with the pinions 26 but with the handles 31 substantially horizontal. If the tamping blades 22 have not been sufficiently elevated by the first movement of the

levers 31 toward the vertical position, then these levers may be again moved from the horizontal toward the vertical position until the tamping blades 22 have been sufficiently
 5 elevated after which the hooks 48 which have been removed from the square shafts for this last named movement are again placed in engagement with the square shafts and the latter are locked against further
 10 rotative movement. The segments 29 may be once more removed from the studs 28 and again replaced with the lever handles 31 in the horizontal or substantially horizontal position, and then the cotter pins 32 may be
 15 replaced in the studs 28 thus securing the segments 29 on said studs. The levers 44 are manipulated to such an extent as to carry the tooth members 35 well away from the rail tread. The platform 55 is now placed
 20 upon the truck of the device and whatever is to be transported is loaded upon the platform. The entire structure may now be attached to a hand car or other propelling means and drawn to any desired place of
 25 use or housing, or if the distance to be traveled is not too great then the device may be pushed to the point of use.

It sometimes becomes necessary to lift the structure from the track and either place it
 30 on another track or place the structure in a suitable house. For this purpose the levers 31 when in the substantially horizontal position where they are locked by the hooks 48 engaging the square shafts 27 are utilized
 35 as handles for the lifting of the entire structure off the track and if necessary the carrying of the structure for any desired distance free from either the track or the ground.

It will be understood of course that the invention is not confined to the details of construction or the proportions of parts shown in the drawings and various changes in the structure may be made so long as salient features of the invention are retained.

45 What is claimed is:—

1. A tamping implement having two series of tamping blades, each series being arranged for operation on a respective side of a single tie, the blades of each series being positively
 50 connected for simultaneous action and the two series being capable of independent or simultaneous movement at will.

2. A tamping implement having two series of tamping blades, each series being arranged
 55 for operation on a respective side of a single tie, the blades of each series being connected for simultaneous action and the two series being capable of independent or simultaneous movement at will, spaced means for operating each series of blades, and means for connecting the operating means of a series
 60 of blades for synchronous movement.

3. In a tamping implement, a series of tamping blades, a common support therefor,
 65 pivotal carriers for the support, and means

for permitting the adjustment of the common support to or from the axis of the pivot.

4. In a tamping implement, a series of tamping blades, a supporting bar common to said blades, pivotal carriers for the bar each
 70 having a radial slot, and a block on each carrier receiving the bar and adjustable in the slot therein to or from the axis of the carrier.

5. In a tamping implement, a series of
 75 tamping blades, a supporting bar for said blades, a pivotal carrier for each end of the bar and having a radial slot and another slot parallel thereto, a block on said carrier within the radial slot and sustaining the res-
 80 pective end of the bar, and a clamp bolt extending through the second named slot in the carrier and engaging the block.

6. In a tamping implement, a series of
 85 tamping blades, a supporting bar for said blades, a pivotal carrier for each end of the bar and having a radial slot and another slot parallel thereto, a block on said carrier within the radial slot and sustaining the res-
 90 pective end of the bar, a clamp bolt extending through the second named slot in the carrier and engaging the block, and a handled nut on said bolt.

7. In a tamping implement, a series of
 95 tamping blades, a supporting bar for said blades, a segmental gear and means thereon for supporting the bar at each end thereof, and an operating segmental gear and interposed idler pinion for each of the first
 100 named segmental gears.

8. In a tamping implement, a series of
 105 tamping blades, a supporting bar for said blades, a segmental gear and means thereon for supporting the bar at each end thereof, an operating segmental gear and interposed
 110 idler pinions for each of the first named segmental gears, and a connecting shaft for the idler pinions.

9. In a tamping implement, a series of
 115 tamping blades, a supporting bar for said blades, a segmental gear and means thereon for supporting the bar at each end thereof, an operating segmental gear and interposed
 120 idler pinions for each of the first named segmental gears, a connecting shaft for the idler pinions, and means for locking the operating means against action at will.

10. In a tamping implement, a series of
 125 tamping blades, a supporting bar for said blades, a segmental gear and means thereon for supporting the said bar at each end thereof, an operating segmental gear and interposed idler pinions for each of the first named segmental gears, a connecting shaft for the idler pinions, and means for locking
 130 the pinions against action at will.

11. In a tamping implement, a series of
 135 tamping blades, a supporting bar for said blades, a segmental gear and means thereon for supporting the bar at each end thereof,

an operating segmental gear and interposed idler pinions for each of the first named segmental gears, a polygonal connecting shaft for the idler pinions, and latches for engaging said shaft and thereby latching the operating means against action at will.

12. In a tamping implement for railway ties, a wheeled truck, tamping means carried thereby, and clamps for locking the truck to the rails, said clamps at the same time lifting the truck from the track.

13. In a tamping implement for railway ties, a wheeled truck, tamping means carried thereby, and clamps for locking the truck to the rails, each clamp comprising a member carried by the truck and adapted to engage under the tread of the rail and a cam member adapted to engage the top of the tread of the rail and move the first named member into active relation to the rail.

14. In a tamping implement for railway ties, a wheeled truck, tamping means carried thereby, and clamps for locking the truck to the rail, each clamp comprising a member carried by the truck adapted to engage under the tread of the rail and a cam member adapted to engage the top of the tread of the rail and move the first named member into active relation to the rail, and at the same time elevate the truck wheels out of engagement with the rails.

15. In a tamping implement for railway ties, a wheeled truck, tamping means carried thereby, and clamps for locking the truck to the rails, each clamp comprising a pendent hook adapted to engage under the tread of the rail, and a cam member adapted to engage the top of the tread of the rail and move the hooked member into active relation to the rail.

16. In a tamping implement for railway ties, a wheeled truck, tamping means carried thereby, and clamps for locking the truck to the rails, each clamp comprising a pendent

hooked member provided with a projection eccentric to its pivot support, and a cam member adapted to engage the top of the tread of the rail and move the first named member into active relation to the rail when the said cam member is moved in one direction and to engage the projection on the pendent member when the said cam member is moved in the other direction to carry the pendent member away from operative relation to the rail.

17. In a tamping implement for railway ties, a wheeled truck, tamping means carried thereby, and clamps for locking the truck to the rails, each comprising a member carried by the truck and adapted to engage under the tread of the rail and another member adapted to engage the top of the tread of the rail and move the first named member into active relation to the rail when the second member is moved in one direction and to move the first named member laterally away from the rail when the said second named member is moved in the other direction.

18. In a tamping implement for railway ties, a supporting truck, tamping means carried thereby, and a level extending in a direction lateral to the travel of the truck along the track, said level being curved on an arc the radius of which is substantially one-half the distance between the centers of the rail tread.

19. In an implement for operating on the road beds of railways, a level curved on a radius substantially one-half the distance between the centers of the rail treads.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ABLE F. HART.

Witnesses:

H. L. ABERNETHY,
W. C. KEUER.