(No Model.)

2 Sheets—Sheet 1.

# N. A. EVANS.

## RAILWAY TRACK TAMPING MACHINE.

No. 504,063. Patented Aug. 29, 1893.

Fig. 1.

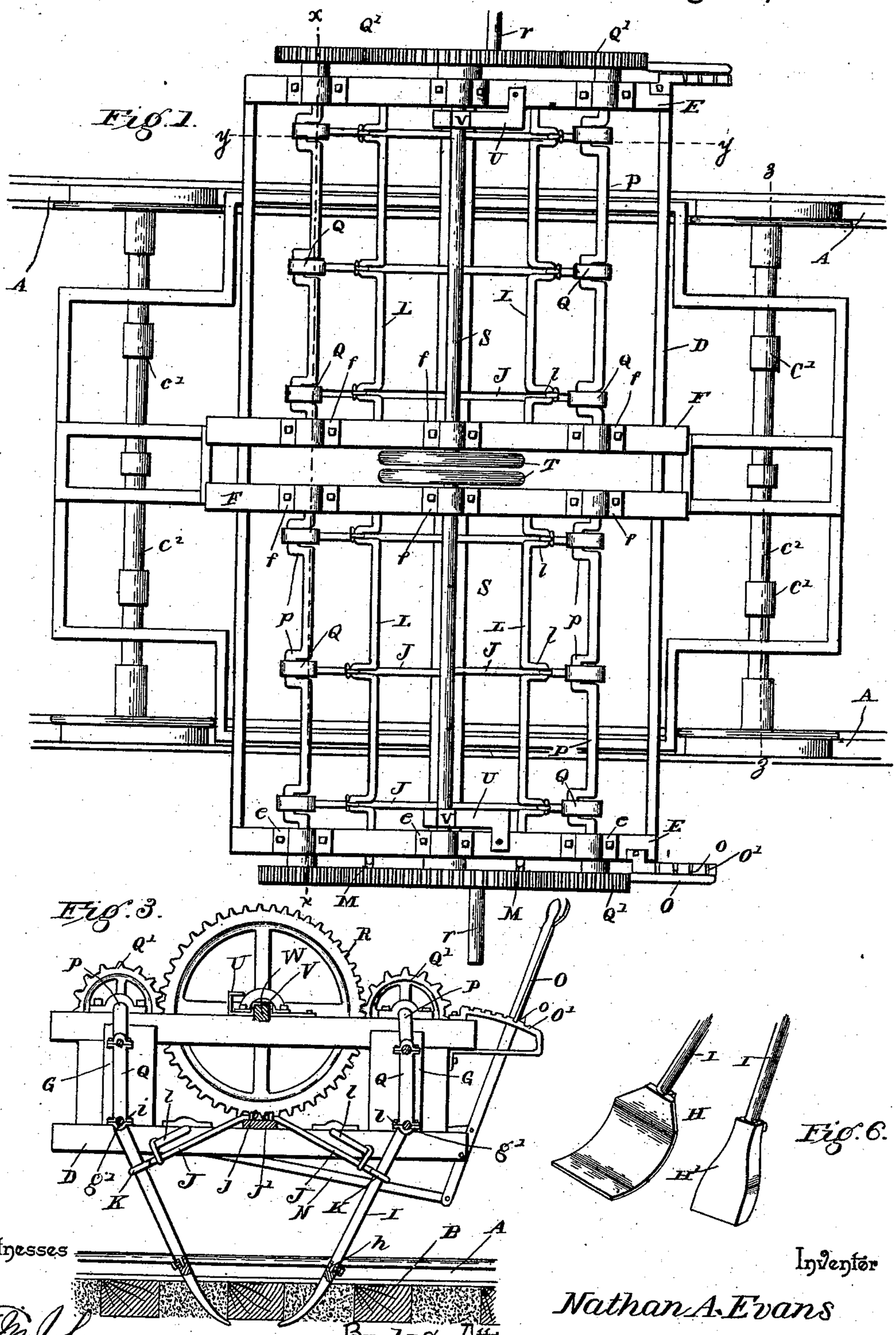


Fig. 3.







Fig. 6.

Witnesses

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(No Model.) 2 Sheets—Sheet 2.

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## RAILWAY TRACK TAMPING MACHINE.

No. 504,063. Patented Aug. 29, 1893.

*Fig. 2.*

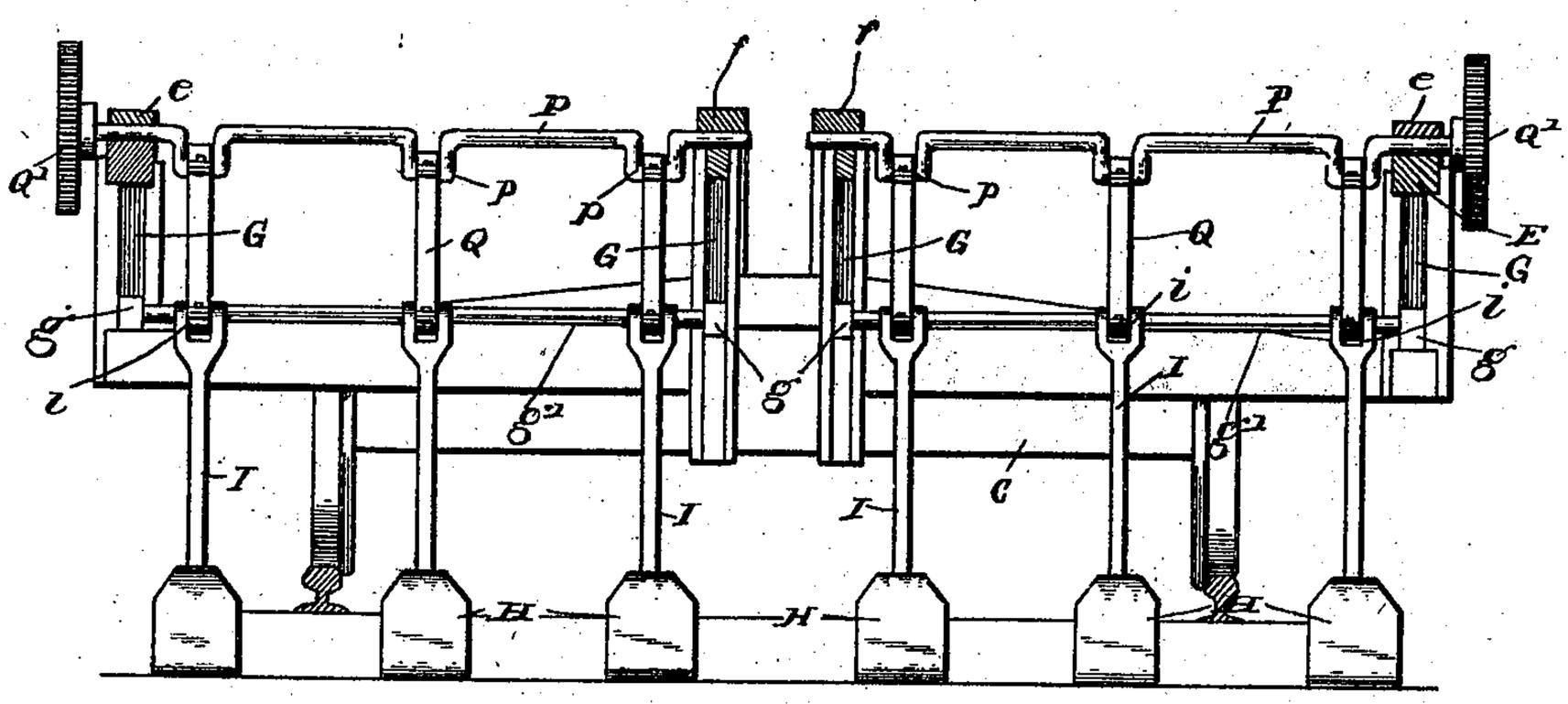



*Fig. 4.*

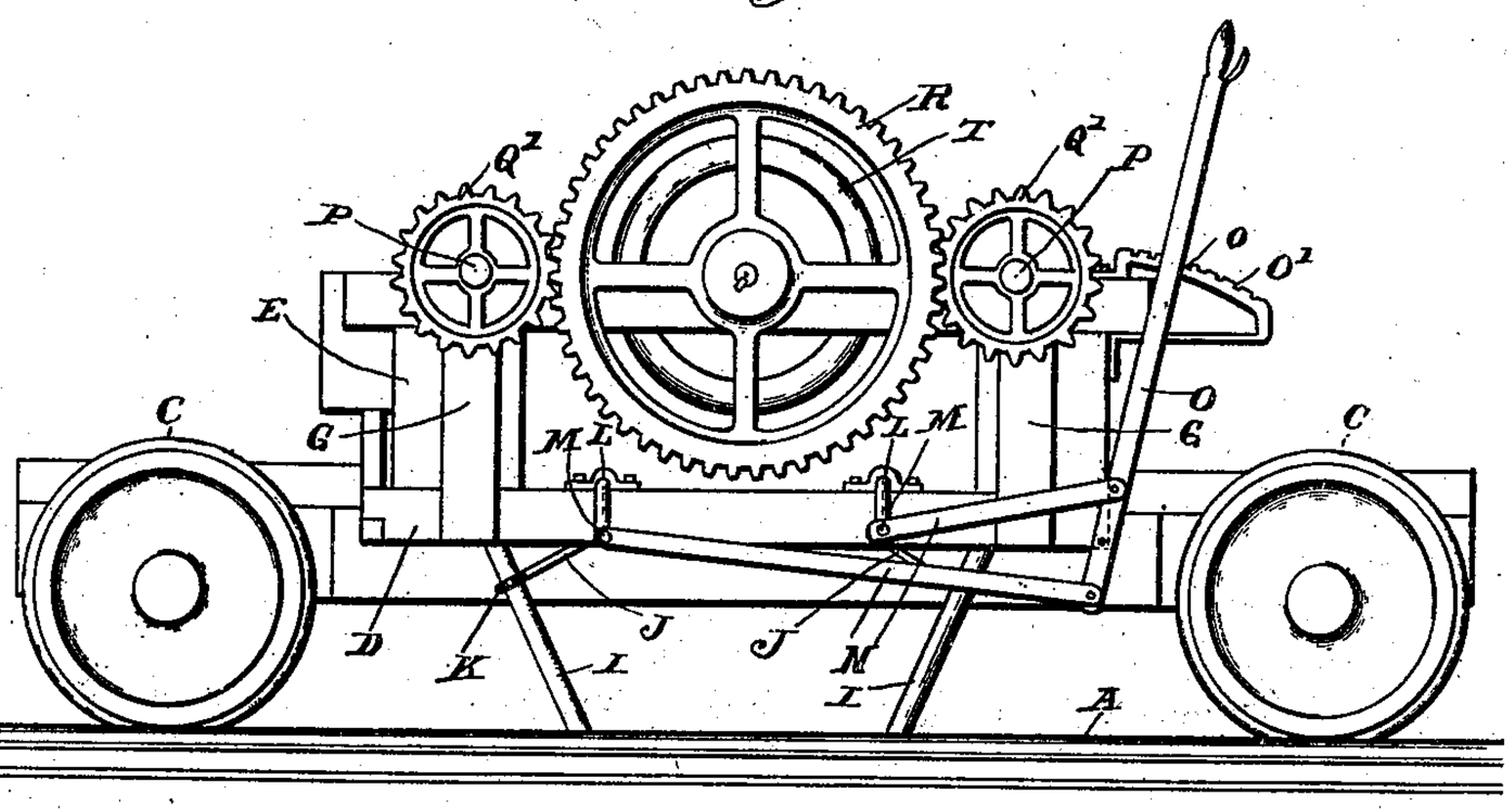
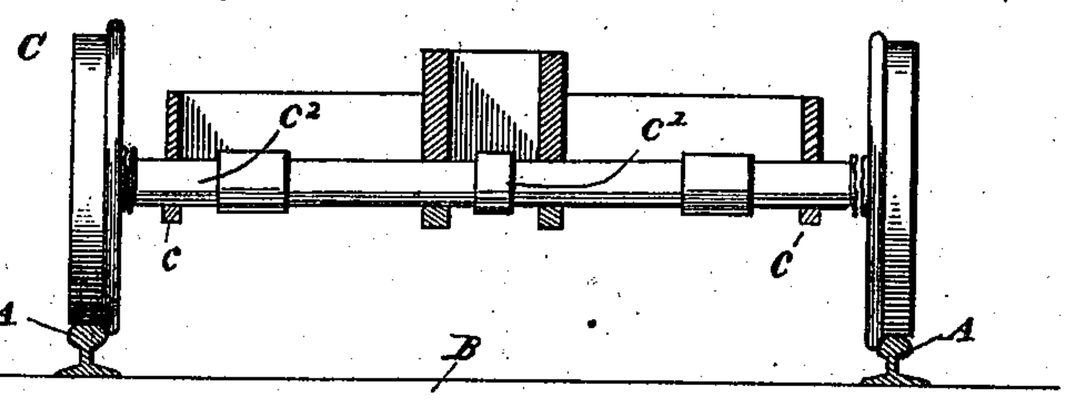



*Fig. 5.*




Witnesses

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# UNITED STATES PATENT OFFICE.

NATHAN A. EVANS, OF SPARTANBURG, SOUTH CAROLINA.

## RAILWAY-TRACK TAMPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 504,063, dated August 29, 1893.

Application filed April 27, 1893. Serial No. 472,081. (No model.)

*To all whom it may concern:*

Be it known that I, NATHAN A. EVANS, a citizen of the United States, residing at Spartanburg, in the county of Spartanburg and State of South Carolina, have invented a new and useful Railway-Track Surfacing and Tamping Machine, of which the following is a specification.

This invention relates to track surfacing and tamping machines for railroads; and it has for its object to provide an improved machine of this character which shall have efficient means for thoroughly surfacing and tamping the road beds of railways between the ties.

To this end the main and primary object of the invention is to construct a machine for surfacing and tamping railway road beds so that sand, gravel and rock can be, with but a slight expenditure of labor, quickly and thoroughly surfaced down flush with the railway and tamped between, around, and under the ties.

With these and many other objects in view which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts, hereinafter more fully described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a top plan view of the machine constructed in accordance with this invention, showing the same in position on the track. Fig. 2 is a central vertical transverse sectional view on the line *x*—*x* of Fig. 1. Fig. 3 is a vertical sectional view on the line *y*—*y* of Fig. 1. Fig. 4 is a side elevation of the machine. Fig. 5 is a detail sectional view on the line *z*—*z* of Fig. 1. Fig. 6 is a detail in perspective of one of the vibrating shovels and one of the tampers.

Referring to the accompanying drawings, A represents a track supported on the ties B, which ties are placed on the road bed in the ordinary manner, and are filled in with sand, gravel, or rock, as the case may be, which filling must necessarily be surfaced down and tamped into the spaces between and under the ties, and to effect this result I employ a traveling machine constructed as hereinafter described.

A truck C, is arranged to travel on the track A, and the truck frame carries the boxes *c*, in which the wheel axles *c'* turn, and said wheel axles are provided with the reduced portions $c^2$, so as to permit the truck frame to have a lateral movement or adjustment in such reduced portions, the wheel axles being longer than the width of the truck frame so as to permit this lateral play or adjustment for the purposes hereinafter described.

Secured to the top of the truck frame between the wheels thereof is the transverse frame D, the ends of which extend beyond the sides of the truck so as to project over the ends of the ties, and supported on each opposite extremity of the transverse frame D, are the upright frame extensions E, which carry upon their upper extremities the bearing boxes *e*, and intermediate of the upright frame extensions E, and secured to the transverse frame D, are the intermediate bearing bars F, which are arranged in close proximity to each other and carry upon their top edges a series of bearing boxes *f*, which are in direct alignment with the corresponding boxes on the top edges of the upright frame extensions E, as clearly illustrated in the drawings.

Arranged at the inside of the opposite upright frame extensions E, and the corresponding sides of the intermediate bearing bars F, in a line directly under the end bearing boxes *e* and *f*, are the vertical pairs of guides G, which accommodate the headed ends *g*, of the vertically reciprocating lifting rods *g'*. The vertically reciprocating lifting rods *g'*, are arranged horizontally and are adapted to be reciprocated up and down as the driving mechanism is in motion as will be hereinafter described, and said lifting rods are arranged in opposite pairs at each side of the center of the truck, or between the intermediate bearing bars and the upright frame extensions E, each pair of lifting rods being adapted to be controlled separately, in order that the machine may be operated independently for each half of the track. Each separate lifting rod *g*, is adapted to carry a set of reciprocating and vibrating surfacing and tamping shovels H. The reciprocating-vibratory shovels H, are slightly curved, so that when they are in movement the same will work under

the ties so as to fill in or thoroughly tamp the material around and under such ties, and as illustrated in Fig. 6 of the drawings, the shovels may be substituted for by the tamper blocks H′, which are of the same approximate shape as the shovels, but only slightly thicker or heavier so as to tamp rock and heavy material, and in both constructions, the shovels and tampers are provided with the attaching sockets *h*, which are adapted to detachably engage one end of the stems or handles I. The stems or handles I, which carry the shovels and tampers H and H′, carry at their upper ends the fork bearings *i*, which loosely embrace the vertically reciprocating lifting rods *g*′. The shovels are guided in their reciprocating movement and are given a vibration or swing by the adjustable angularly set guide arms J. The guide arms J, are loosely attached at *j*, at their inner ends to an intermediate attachment bar *j*′, and being disposed downwardly and at an angle from both sides of said bar, terminate at their outer ends in the guide eyes K, through which the shovel stems or handles loosely reciprocate. Now it will be apparent that as each opposite pair of lifting rods is simultaneously reciprocated, the shovels carried thereby will work in sets, simultaneously, on both sides of a single tie so that the shovels will surface down the material in the spaces in which they work, and will fill in or tamp the material under and around such ties, the work being advanced from tie to tie as will be readily apparent. In order to dispose the end pair of shovels, on the outside of each rail, so that they will do their work from the outside of the rails to the end of the tie and vice versa, the truck frame can be moved laterally to accommodate itself to the work of such outer set of shovels the truck frame being moved laterally on the wheel axles by hand.

In some railways, and at different points of the work, the rail ties may be wide apart or close together, and in order to adjust the swing or vibration of the surfacing and tamping shovels to such variations in the width of the spaces between the ties, I employ the adjusting rock shafts L. The adjusting rock shafts L are journaled at each side of the center of the transverse frame D, in opposite pairs directly over each set of guide arms J, and each of the adjusting rock shafts L, are provided with the rock arms *l*, which are loosely connected to the said guide arms. The outer extremities of the rock shafts L, terminate in cranks M, which are loosely engaged by the adjusting arms N. The adjusting arms N, are connected at one end to the cranks of the rock shafts, and at their other ends loosely to an adjusting lever O. There is an adjusting lever O, arranged at each side or end of the transverse frame D, and the same carry a pawl or dog *o*, engaging a toothed segment *o*′, which construction provides means for simultaneously adjusting the opposite sets of guide arms to the same angle, in order to regulate the vibration or swing of the surfacing and tamping shovels.

Journaled in the aligned bearing boxes on the frames E, and the bars F, near the ends thereof, are the opposite independent pairs of multiple crank shafts P. The multiple crank shafts of each opposite independent pair are provided with a series of cranks *p*, which are disposed over the connection of each shovel or tamper to the vertically reciprocating lifting rods, and have attached thereto the upper ends of the connecting links Q, the lower ends of which loosely embrace the vertically reciprocating lifting rod between the forked bearings, *i*, of the stems I, thus preventing the latter from lateral play on the vertically reciprocating rods.

To each end of each of the multiple crank shafts P, is secured a cog wheel Q′, which meshes with the intermediate drive spur wheels R. The intermediate drive spur wheels R, are disposed between each opposite pair of cog wheels so as to independently and simultaneously move each opposite set of surfacing and tamping shovels, and such wheels carry the operating crank handles *r*, and are secured to the outer ends of the separate drive shafts S, journaled in the intermediate set of bearings *e* and *f*, and carrying at their inner adjacent ends the heavy balance wheels T. Now it will be readily seen that the opposite sets of shovels are so arranged as to thoroughly surface and tamp the road bed around the ties from each side of the center of the track, the lateral play of the truck frame assisting to insure every portion of the bed being operated upon. It will be observed that each opposite spur wheel R, causes the pair of crank shafts driven thereby to turn in the same direction so that the opposite independent sets of shovels will be simultaneously lifted and forced downward onto the material.

In moving the machine from tie to tie it is necessary to turn the crank shafts so as to lift the shovels above the top of the ties, and the same are held in such position by means of the pivoted lock bars U. The pivoted lock bars U, are pivoted at one end to the top of the extension frames E, and are provided with the squared loops V, adapted to embrace the squared portions W, formed on the shafts S, near one end thereof.

From the foregoing it is thought that the construction, operation and the many advantages of the herein described machine will be readily apparent to those skilled in the art, and I will have it understood that changes in the form, proportion and the minor details of construction, as embraced within the scope of the appended claims, may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. In a machine of the class described, a

truck frame, parallel multiple crank shafts journaled on top of the frame, gearing for said crank shafts, and separate sets of surfacing and tamping shovels guided to move at an angle within the frame and connected at their upper ends with said multiple crank shafts, substantially as set forth.

2. In a machine of the class described, a truck frame, opposite pairs of multiple crank shafts journaled on top of the frame, separate gearing for each pair of crank shafts, suitably arranged guides disposed within the frame under the crank shafts, and opposite independent sets of reciprocating and vibrating surfacing and tamping shovels mounted to move within said guides and connected with the cranks of said crank shafts, substantially as set forth.

3. In a machine of the class described, the wheel axles having reduced portions, a laterally adjustable truck frame supported on said axles and adapted to have a lateral play in said reduced portions, a supplemental transverse frame supported on the truck frame between the wheels, opposite sets of surfacing and tamping shovels, and separate operating devices arranged on the transverse frame and connected with the opposite sets of shovels to reciprocate the same, substantially as set forth.

4. In a machine of the class described, a truck frame, a supplemental transverse frame supported on and extended beyond the opposite sides of the truck frame, opposite vertical pairs of guides arranged at opposite sides of the center of the transverse frame, reciprocating lifting rods having their ends moving in said guides, shovels connected to the lifting rods, and means for reciprocating each opposite pair of lifting rods, substantially as set forth.

5. In a machine of the class described, the laterally adjustable truck frame, a transverse frame secured on the truck frame between the wheels and extended beyond the sides thereof, vertical guides arranged on the transverse frame, vertically reciprocating lifting rods having headed ends moving in said guides, shovel stems attached to said rods and having surfacing and tamping shovels at one end, adjustable angularly set shovel guides arranged on the transverse frame and embracing said shovel stems, and means for reciprocating said rods, substantially as set forth.

6. In a machine of the class described, a movable frame, guides arranged on the frame, a vertically reciprocating lifting rod having its ends moving in said stationary guides, reciprocating and vibrating surfacing and tamping shovels having stems or handles loosely attached to the lifting rod, a multiple crank shaft suitably supported and driven, and links connecting the cranks of said shaft to the lifting rod, substantially as set forth.

7. In a machine of the class described, the truck frame, a transverse frame supported on the truck frame and having upright extension frames at its opposite extremities, intermediate adjacent bearing bars disposed between the upright extensions, opposite vertical pairs of stationary guides arranged on the upright extensions and said bearing bars, opposite pairs of vertically reciprocating lifting rods having their ends moving in said guides, sets of reciprocating and vibrating shovels attached to each lifting rod, adjustable shovel guides suitably arranged to dispose the shovels at an angle, opposite pairs of multiple crank shafts journaled on top of the upright extensions and the central bearing bars, links connecting the cranks of each crank shaft with the lifting rod directly thereunder, and gearing for each pair of crank shafts, substantially as set forth.

8. In a machine of the class described, the truck frame, vertically reciprocating lifting rods guided for movement on the frame, shovel stems having forked bearings at one end loosely embracing said lifting rods and carrying at their other ends detachable shovels or tampers, angularly set shovel guides loosely attached at their inner ends to the frames and terminating at their other ends in guide eyes embracing the shovel stems to dispose the same at an angle, means for adjusting the angle or pitch of said shovel guides, separate pairs of multiple crank shafts journaled on the frame, and links attached to the cranks of said crank shaft and to the lifting rods between the forked bearing of each shovel stem, substantially as set forth.

9. In a machine of the class described, the truck frame, the reciprocating-vibratory shovel carrying stems or handles, angularly set guide arms embracing said stem and loosely secured at one end to the frame, separate adjusting rock shafts journaled over the guide arms and having rock arms loosely connected to said guide arms and terminating at their outer extremities in cranks, adjustable levers arranged at opposite sides of the truck frame, and adjusting arms connected at one end to said levers and at their other ends to the cranks of said rock shafts, substantially as set forth.

10. In a machine of the class described, the truck frame, a supplemental transverse frame mounted on the truck frame between the wheels, vertically reciprocating lifting rods guided in the frame, angularly moving sets of surfacing and tamping shovels attached to the lifting rods, separate pairs of multiple crank shafts journaled on the transverse frame and connected to the lifting rods, said shafts carrying cog wheels at their outer ends, separate drive shafts intermediately mounted on the frame and carrying at one extremity drive spur wheels arranged between and meshing with each opposite pair of cog wheels, and at their other inner adjacent extremities balance wheels, substantially as set forth.

11. The combination with a drive shaft having a squared portion, and a lock bar pivoted at one end to a suitable point of attachment and having a squared loop adapted to engage the squared portion of the drive shaft, substantially as set forth.

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

NATHAN A. EVANS.

Witnesses:
J. H. SIGGERS,
H. M. SIGGERS.