Sept. 11, 1928. 1,684,109

E. E. PETERSON

TRACK TAMPING MACHINE

Filed May 31, 1927 3 Sheets-Sheet 1

Fig. 1

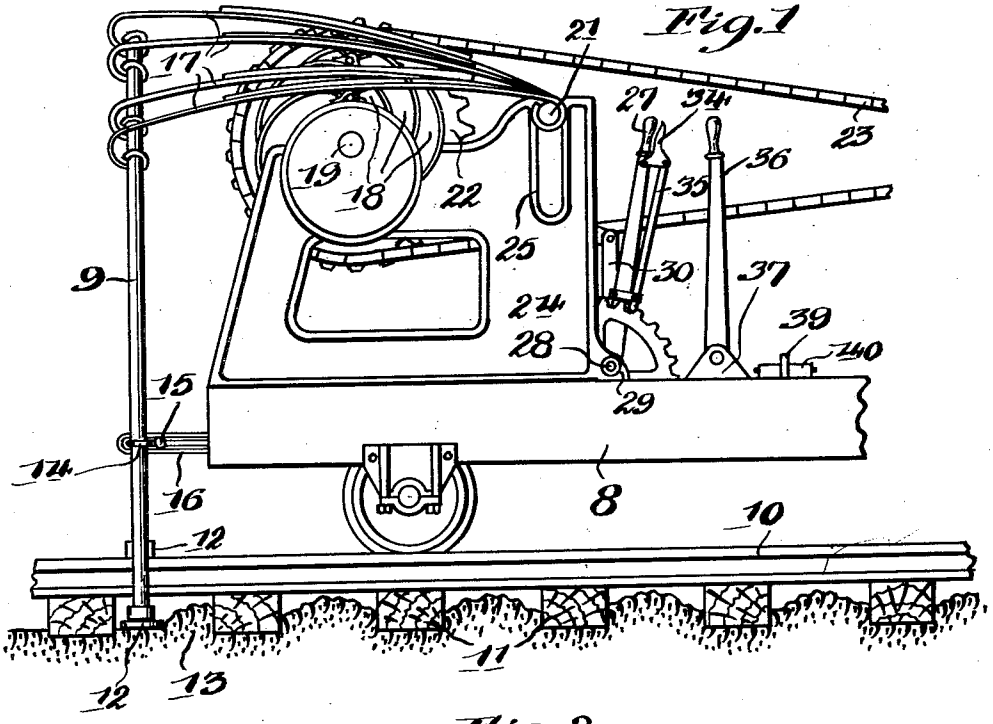
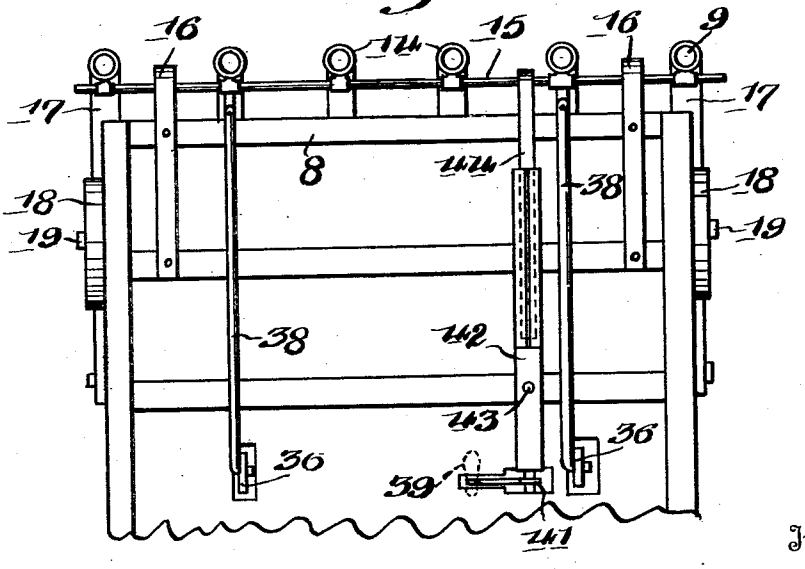


Fig. 2



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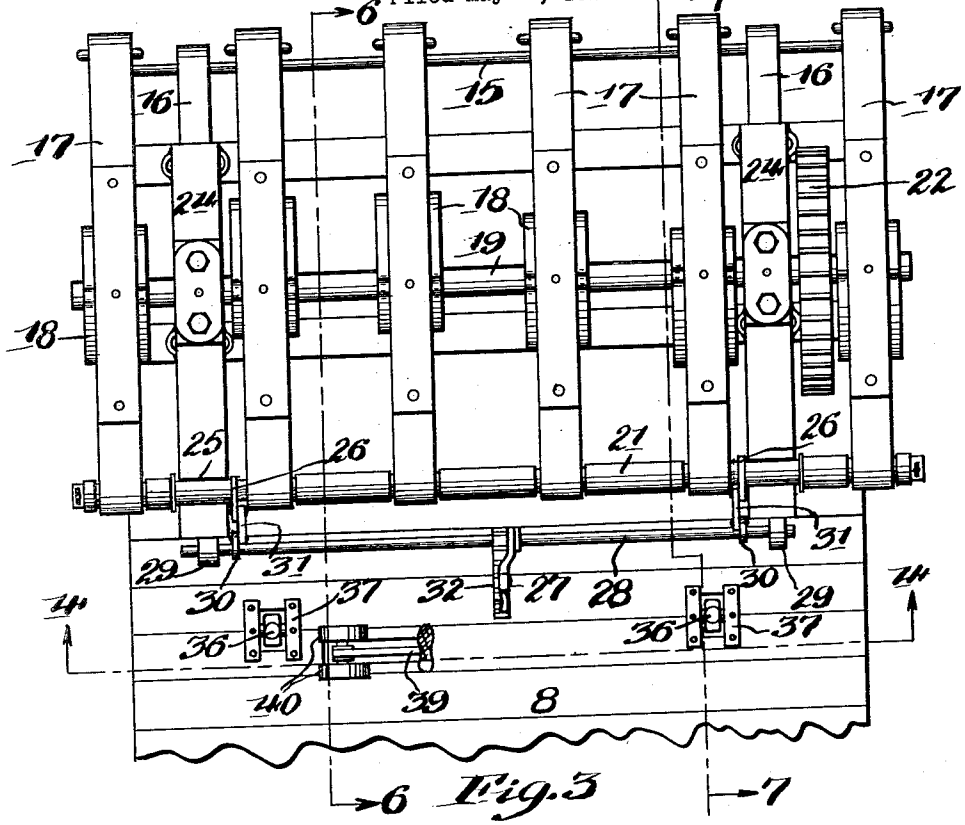

Fig. 3

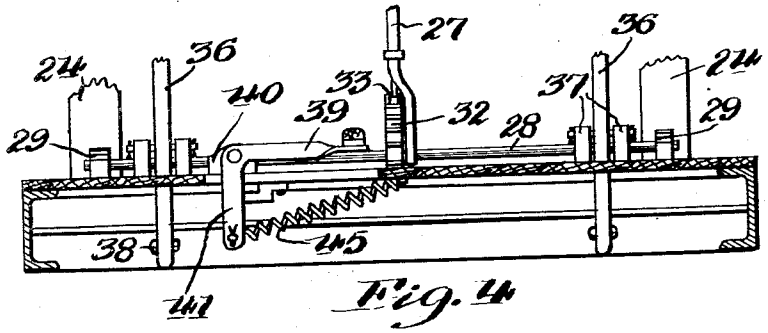

Fig. 4

Fig. 5

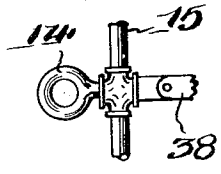

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Fig. 6

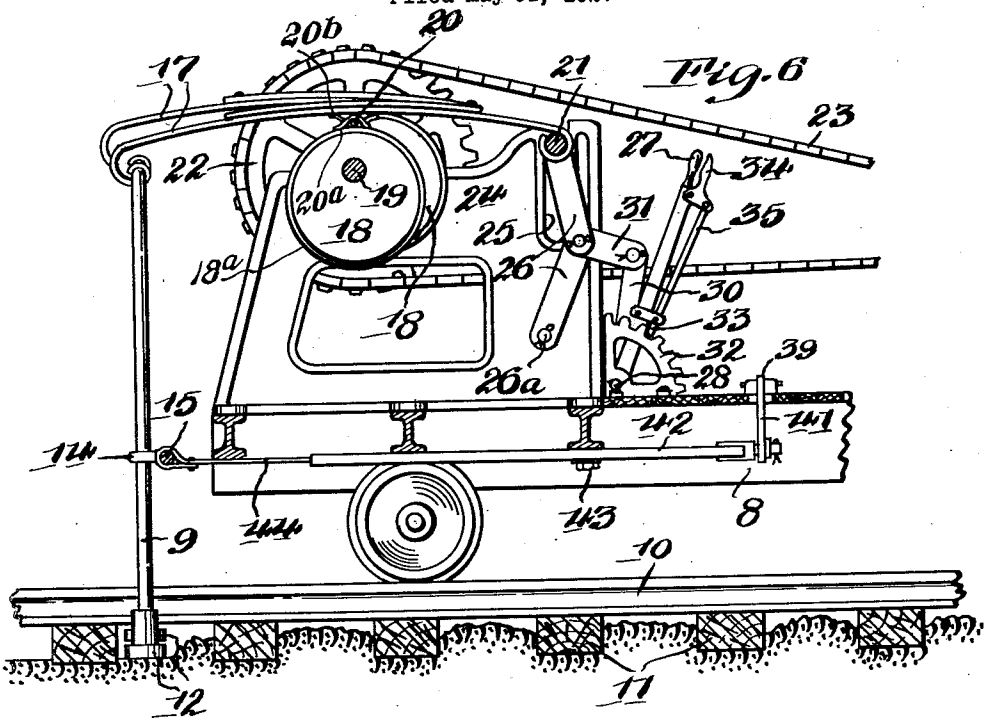
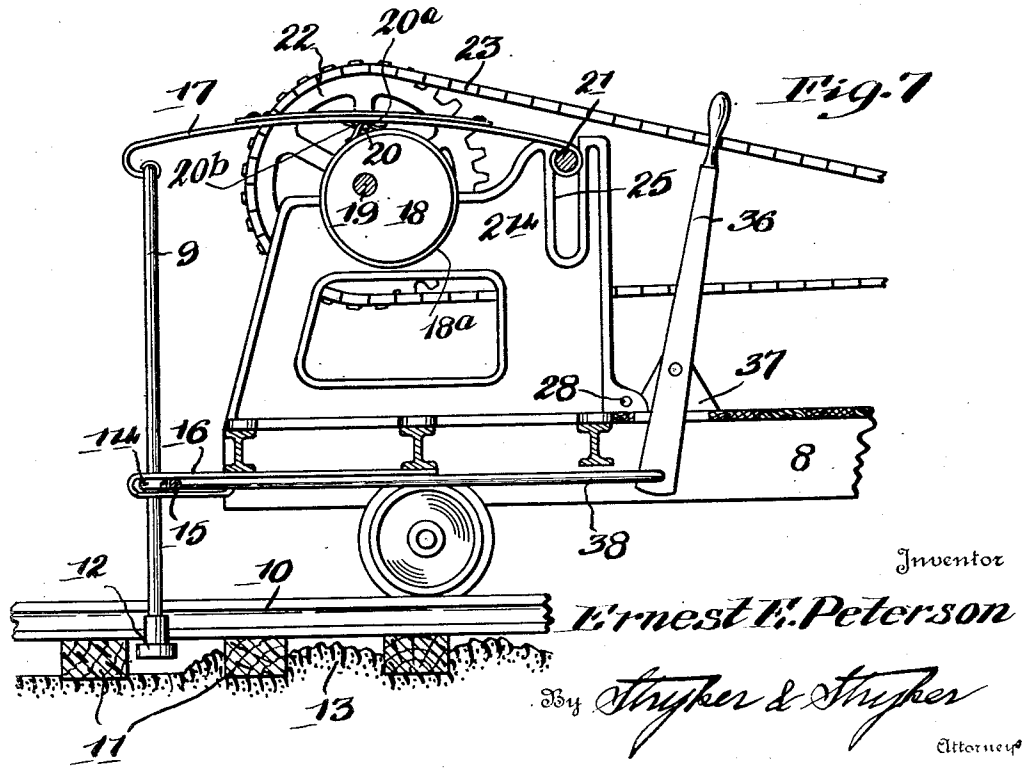


Fig. 7



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Patented Sept. 11, 1928. 1,684,109

UNITED STATES PATENT OFFICE.

ERNEST E. PETERSON, OF SOUTH HIBBING, MINNESOTA.

TRACK-TAMPING MACHINE.

Application filed May 31, 1927. Serial No. 195,282.

This invention relates to a machine for tamping railway road beds and particularly to such a machine which is adapted for use in connection with track raising and shifting machines, such as those described and claimed in United States Patents No. 1,264,376, dated April 30, 1918 and No. 1,592,153, dated July 13, 1926.

It is my object to minimize the hand work and time required to firmly and uniformly tamp railway road beds by providing a novel and efficient machine, adapted to rapidly perform this class of work.

This invention also includes certain other novel features of construction, which will be more fully pointed out in the following specification and claims.

In the drawings, which illustrate the best form of my device at present known to me, Figure 1 is a side elevation of my improved machine, mounted on a railway car; Fig. 2 is a bottom plan view of the same; Fig. 3 is a top plan view of the machine; Fig. 4 is a section taken on the line 4—4 of Fig. 3; Fig. 5 is a detail showing one of the guides for the tamping bars; Fig. 6 is a section taken on the line 6—6 of Fig. 3 and Fig. 7 is a section taken on the line 7—7 of Fig. 3.

I prefer to mount my improved machine upon a railway car, indicated by the numeral 8, in such a position that tamping bars 9 extend downward at one end of the car. This car 8 may be provided with means for clamping it upon the rails 10 and with means for raising said rails, together with the attached ties 11, such as the means described in my patents above referred to. On the lower end of each of the tamping bars 9 is a head 12 for operating upon the road bed 13 between the ties 11. The embodiment illustrated has six vertical tamping bars 9, each of which is guided for substantially vertical movement in a bearing 14 (Figs. 2, 5 and 6). The several bearings 14 are mounted upon a transverse member 15, which is in turn guided for forward, rearward and lateral movement in horizontal supports 16 on the car 8. As best shown in Figs. 2 and 7, these supports 16 are rigidly secured to the frame of the car 8 and have a looped form so as to extend above and below the transverse member 15. At their upper ends, the tamping bars 9 are severally connected to spring arms 17, which are adapted to be given oscillating movement by eccentrics 18, all mounted upon an operating shaft 19 and connected to the arms 17 by pivot pins 20. As best shown in Figs. 6 and 7, suitable bearings 20^a and 20^b are secured respectively to bands 18^a upon the eccentrics 18 and to the adjacent surfaces of the arms 17. The pins 20 are inserted through the bearings 20^a and 20^b to connect the arms 17 to the bands 18^a. Forming a fulcrum for the several arms 17 is a shaft 21, around which, one end of each arm 17 is bent. The shaft 19 is arranged to be driven by a sprocket wheel 22 and a chain 23 operatively connects said sprocket wheel with a suitable source of power (not shown).

At each side of the car, the shaft 19 has a suitable journal support in a standard 24. A guideway 25 formed in the standard 24 affords means for permitting substantially vertical movement of the shaft 21, and means are provided for positively raising and lowering this shaft in its guides, together with the connected ends of the arms 17, so that the tamping bars may be raised and lowered independently of the action of the eccentrics 18. As illustrated, the means for raising and lowering the shaft 21 consist of a pair of toggle members 26, adjacent to the inner face of each of the standards 24, and a hand lever 27 connected in a suitable manner to said toggle members. The lower end of each pair of the toggle members 26 has a pivotal connection with the adjacent standard 24, consisting of a pivot pin 26^a. The lever 27 is fixed centrally upon a shaft 28, having bearings 29 in the machine frame. Fast on the shaft 29, near each of the bearings 29, is an arm 30, which is connected by a link 31 with the toggle members 26. A toothed quadrant 32 is mounted adjacent the lever 27 and a dog 33 for engaging the quadrant is pivoted upon the lever 27 and operable by a lever 34 and link rod 35 of common type. Thus, the lever 34 may be operated to retain the lever 27 in any desired angular position.

The member 15 may be moved to carry the tamper guides 14 forwardly and rearwardly relative to the car by means of a pair of levers 36. These levers are pivoted upon suitable brackets 37 and connected to the member 15 near opposite ends thereof by rods 38. Means for imparting lateral movement to the member 15 and guides 14 for the tamping members is provided, being illustrated in Figs. 2, 3, 4 and 6. Thus, a pedal or foot lever 39 is pivoted upon the

floor of the car upon brackets 40 and has a downwardly projecting arm 41, arranged to operate a lever 42. The lever 42 is pivoted upon the car frame by a bolt 43 and connected by a telescoping link 44 with the member 15 carrying the bearings 14. The spring 45 (Fig. 4) resiliently draws the arm 41 and adjacent end of the lever 42 toward one end of its movement, the pedal 39 being operable to move the lever 42 against the action of the spring 45. The link 44 is slidable within a suitable socket in the lever 42 to permit movement of the member 15 forward and rearward of the car when actuated by the levers 36.

Operation.

When the car 8 is to be moved along the tracks 10, the tamping members must be elevated to clear the obstruction afforded by the ties 11. Thus, the lever 27 is moved to the right from the position shown in Fig. 6 to draw the shaft 21 downward in the guides 25. This, as will be readily understood, raises the bars 9 by tilting the spring arms 17 about the pins 20. When the road bed is to be tamped between the ties, the car 8 is stopped with the several tamping heads 12 in registry with the space between ties. Now the lever 27 is operated to lower the several tamping rods 9 to the desired extent and power is applied to the chain 23 to rotate the shaft 19. The eccentrics 18 rotate within their encircling bands 18^a and the latter bands, through the pins 20 and bearings 20^a and 20^b, impart oscillating movement to the arms 17. These arms in turn, impart reciprocating movement to the tamping bars 9 and cause the tamping heads 12 to impinge against the road bed. Without moving the car, the tamping members may be shifted from side to side and forward or rearward between a pair of the ties by operating one or both of the levers 36 and pedal 39. The hand levers 36 may be operated independently of each other, so that the angle of the member 15 relative to the track may be changed to conform to the ties and thus tamp as close as desired to the ties, irrespective of whether or not their edges are at right angles with the track. When the pedal 39 is depressed, the lever 42 is operated to swing the member 15 longitudinally toward one side of the car and thus operate the tamping members upon the entire surface of the road bed between the ties. When the entire surface of the road bed between a pair of the ties has been tamped, the car is moved and the operation repeated between the adjacent or succeeding pair of ties.

I prefer to secure the eccentrics 18 at different angular positions upon the shaft 19, so that operation of the several tamping members is successive and not simultaneous. Thus, where six tamping members are provided, the eccentrics are located at angles of 60 degrees apart upon the shaft 19. By making the arms 17 resilient, the shock incident to the impinging of the heads 12 against the ground is minimized and breakage of parts of the machine is prevented when operating in hard or rocky ground. I prefer to construct the arms 17 from resilient bands of steel, adapted to bend and relieve strains. It will be noted that a tamping member is mounted outside of the rail at each side, as shown in Figs. 1 and 3, so as to tamp the bed throughout the length of the ties.

My improved machine requires but a single operator to manipulate the several levers. Nevertheless, in operation, the time required to tamp the road bed is unusually short. Further, where the present invention is mounted upon a car which also carries track raising and shifting mechanism, such as that described in my Patent No. 1,592,153, no hand labor is required to raise the ties during the tamping operation.

Having described my invention what I claim as new and desire to protect by Letters Patent is:

1. In a machine for tamping a railway road bed between ties, adapted to be mounted on a railway car, a power driven shaft on said car, a series of pivoted arms projecting substantially horizontally from an end of said car, means operatively connecting said arms to said shaft for imparting oscillating movement to said arms and a series of tamping members severally connected to said arms and extending downward therefrom beyond the end of said car, said members being arranged to be actuated thereby to tamp the road bed between ties of the track.

2. In a machine for tamping a railway road bed between ties, a power driven shaft, a series of arms extending transversely of said shaft, adjacent thereto, a pivotal support for one end of each of said arms, means connected to said shaft for imparting oscillating movement to said arms, a series of tamping members severally connected to said arms and arranged to be actuated thereby to tamp the road bed between the ties and means for raising and lowering said pivotal support to adjust the tamping positions of said arms between the ties.

3. In a machine for tamping a railway road bed between ties, a power driven shaft, a series of pivoted spring arms extending transversely of said shaft, adjacent thereto, means connected to said shaft for imparting oscillating movement to said arms and a series of tamping members severally connected to said arms and arranged to be actuated thereby to tamp the road bed between the ties.

4. In a machine for tamping a railway road bed between ties, a horizontal, power driven shaft, a laterally movable shaft extending in parallel relation to said power shaft, a series of arms extending transversely of said shafts and pivotally supported on said laterally movable shaft, means connected to said power shaft for imparting oscillating movement to said arms in vertical planes, a series of upright tamping members severally connected to said arms and arranged to be actuated thereby to tamp the road bed between the ties and means for adjusting the position of said laterally movable shaft whereby said members may be extended downward between the ties and raised independently of the means for oscillating said arms.

5. In a track tamping machine, a power driven shaft, a series of eccentrics mounted at different angular positions on said shaft, a series of arms, operatively connected with said eccentrics, a pivotal support for each of said arms, a series of substantially vertical tamping members operatively connected to said arms and means for changing the positions of said support to raise and lower said tamping members.

6. In a track tamping machine, a power driven shaft, a series of eccentrics mounted at different angular positions on said shaft, a series of arms, operatively connected with said eccentrics, a pivotal support for each arm, a series of substantially upright tamping members operatively connected to said arms, guides for the lower ends of said tamping members and means for positively operating said guides to move said tamping members longitudinally and transversely relative to the track and independently of the movement of said arms.

7. In a track tamping machine, a power driven shaft, a series of eccentrics mounted at different angular positions on said shaft, a series of spring arms, operatively connected with said eccentrics, a movable support connecting said arms, said arms being pivoted upon said support, a series of substantially vertical tamping members operatively connected to said arms, a guide for the lower ends of said tamping members, means for positively operating said guide to move said tamping members longitudinally and transversely relative to the track and independently of the movement of said spring arms and means for actuating said movable support to adjust the elevation of said tamping members.

8. In a track tamping machine, a series of substantially upright tamping members, arranged to be extended between the ties of a track, power driven means for imparting reciprocating movement to said members, guides for vertical movement of said members, means for connecting said guides together, guides for horizontal movement of said connecting member and means for operating said connecting member laterally and longitudinally in said last mentioned guides.

9. In a track tamping machine, a series of substantially upright tamping members, arranged to be extended between the ties of the track, power driven means for imparting reciprocating movement to said members, guides for vertical movement of said members, guides for horizontal movement of the lower ends of said members, means for shifting said last mentioned guides transversely of the track and means for actuating the lower ends of said members substantially horizontally and longitudinally of the track between the ties.

10. In a track tamping machine, a series of substantially upright tamping members, arranged to be extended between the ties of said track, power driven means for imparting reciprocating movement to said members, guides for vertical movement of said members, a bar connecting said members together, guides for horizontal movement of said bar, a lever operatively connected to said bar for moving the same longitudinally in said guides and a pair of levers operatively connected to said bar for moving the same transversely and for changing the angle thereof relative to the ties.

In testimony whereof, I have hereunto signed my name to this specification.

ERNEST E. PETERSON.