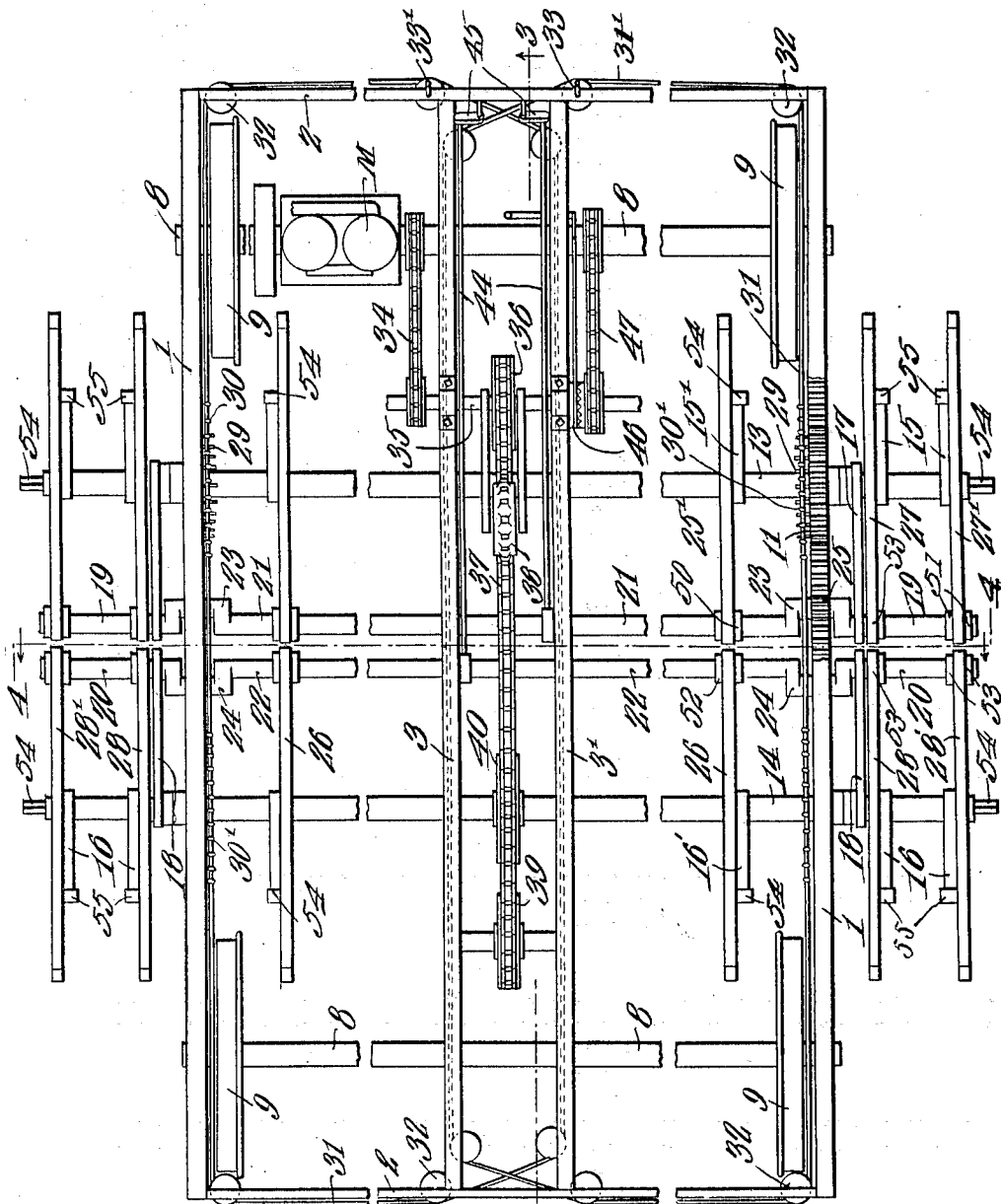


B. W. BISSELL.
 BALLAST TAMPING MACHINE.
 APPLICATION FILED SEPT. 28, 1912.

1,048,797.

Patented Dec. 31, 1912.

3 SHEETS-SHEET 1.



Witnesses

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Fig. 1.

by

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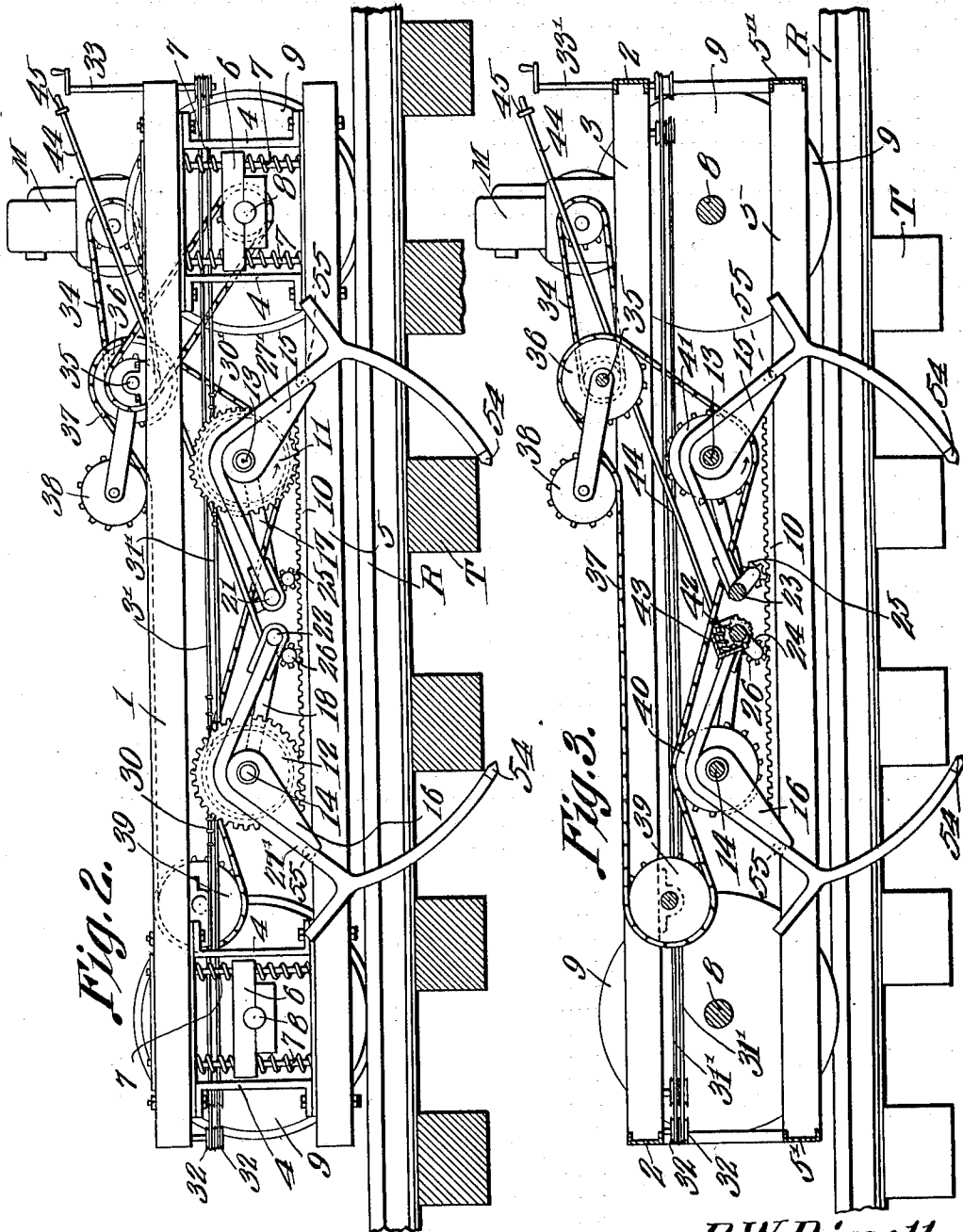
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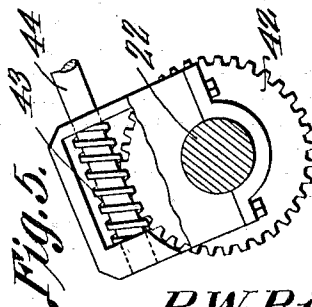
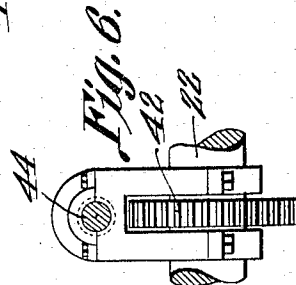
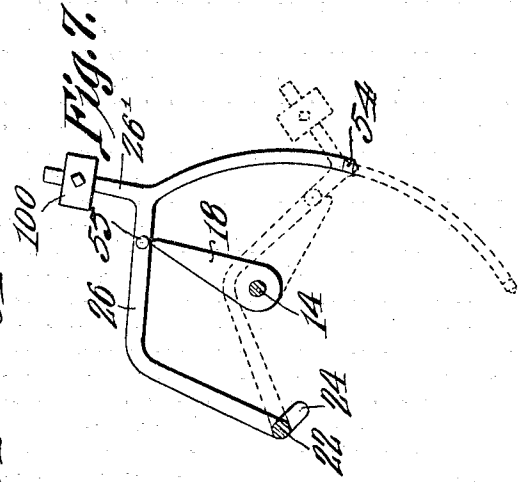
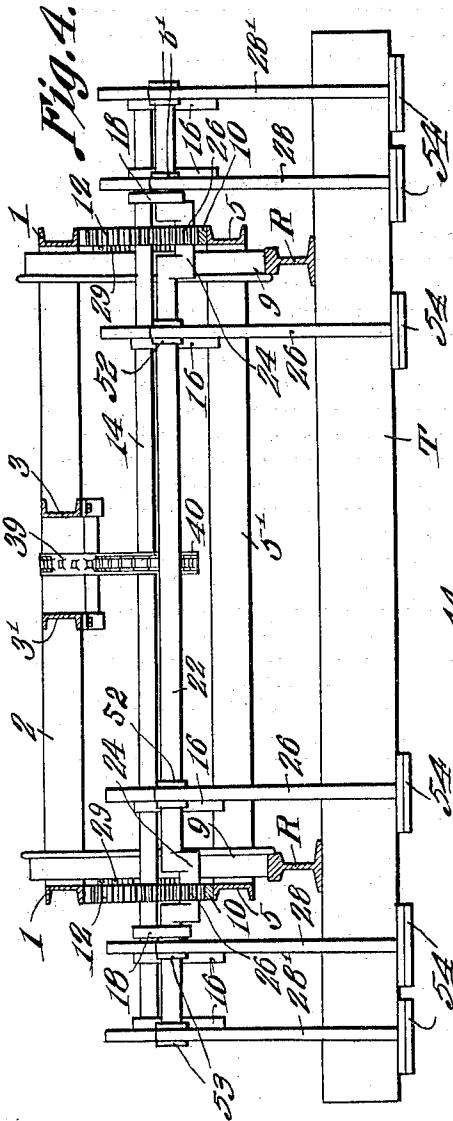
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UNITED STATES PATENT OFFICE.

BENJAMIN WALTER BISSELL, OF PORTLAND, INDIANA.

BALLAST-TAMPING MACHINE.

1,048,797.

Specification of Letters Patent.

Patented Dec. 31, 1912.

Application filed September 28, 1912. Serial No. 722,907.

To all whom it may concern:

Be it known that I, BENJAMIN W. BISSELL, a citizen of the United States, residing at Portland, in the county of Jay and State of Indiana, have invented a new and useful Ballast-Tamping Machine, of which the following is a specification.

The present invention relates to an improved machine for tamping ballast for rail roads, the primary object of the invention being the provision of a machine of this character provided with a plurality of sets of tamping arms disposed for tamping the ballast below and around rail road ties and upon both sides of each rail, said arms being operated through a power mechanism and having imparted thereto the necessary movements to simulate the manual actions now so necessary in properly tamping the ballast below and around the ties.

A further object of the present invention is the provision of a power propelled machine disposed to ride upon the two rails, and having mechanism for connection with a motor to tamp the ballast below and between the ties both within and exterior of the respective rails, thus insuring the necessary tamping of the ballast at the weight carrying portions of the ties.

A still further object of this invention is the provision of mechanically operated tamping members provided with means for adjusting the relative positions of the members to accommodate various widths of ties and the varying spaces between the ties, the adjustment being under the direct control of the operator of the machine.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings—Figure 1 is a top plan view of the complete machine, the frames and portions being broken away to reduce the width thereof. Fig. 2 is a side elevation of the complete machine mounted upon the rails, with the tamping members in lowermost position. Fig. 3 is a section taken on line 3—3 of Fig. 1. Fig. 4 is a cross section taken on line 4—4 of Fig. 1. Figs. 5 and 6

are detail views of the adjusting means for varying the elevation of the fulcrum of the tamping arms. Fig. 7 is a diagrammatic view illustrating the various movements imparted to each tamping arm.

Referring to the drawings, T designates the railroad ties and R the rails, the present invention being a motor vehicle for movement upon the rails, and carrying mechanism for tamping the ballast alongside of the ties and below the same, such tamping mechanism as will appear in detail being positioned to operate upon the ballast upon both sides of the rail. The main frame consists of the two longitudinal beams 1, connected at the ends by the two cross-beams 2, and carrying the two parallel and intermediate longitudinal beams 3—3'. A lower frame consisting of the outer longitudinal beams 5 and the cross beams 5'—5'', is supported from the main frame by the pairs of brackets 4, and carried adjustably between the respective pairs of beams 1—5 by means of the screws 7 are the axle journal boxes 6. The two axles 8 are mounted to support the main frame, and carry the rail engaging wheels 9. Secured upon the upper face of each of the beams 5, intermediate of their ends are the two rack bars 10, the purpose of which will presently appear.

In describing the tamping members and their actuating mechanism, one set will be described, that is one set for operating upon two ties simultaneously and upon both sides of one rail. Two large toothed wheels 12—13 are mounted upon each rack bar 10, and themselves constitute a journal support for the two parallel shafts 13 and 14. Upon the shaft 13 are keyed the two outer tamping member elevating cranks 15 and the single inner tamping member elevating crank 15', while keyed upon the shaft 14 are the respective tamping member elevating cranks 16 and 16'. In order to properly space the respective shafts 13 and 21 and 14 and 22, the two links 17 and 18 are provided. These links are connected to the respective outer ends 19 and 20 of the tamping member carrying shafts 21 and 22 and also to the respective shafts 13 and 14. Each one of these shafts 21—22, is provided with two intermediate cranks 23 or 24, respectively, one above each bar 10, and upon each crank is placed the respective toothed wheels 25 and 26, which rest at all times in spaced relation to each other upon the toothed bar 10, so

that each wheel 25 or 26, constitutes the axis for its respective shaft 21 or 22. Upon each of the shafts 21 and 22 are placed the fixed collars 50—51 and 52—53 and these constitute means for holding the respective tamping members or arms 25, 27 and 27', and 26, 28 and 28', in position upon their respective shafts, there being three, or any number, of the tamping members to each rail and six, or any number, upon each shaft 21 or 22. The lower ballast engaging ends 54 of the tamping members are constructed to properly engage the ballast between the ties upon their descension and draw the same in toward the tie, the final action of the ends 54 being downwardly and below the tie, all as illustrated in full and dotted lines in Fig. 7.

In order that the respective cranks 15—15' and 16—16' may elevate the tamping arms at the proper time, each member is provided with a button or stud 55 which when the arms are in their lowermost position, as shown in Figs. 2 and 3, are engaged by the cranks rotatable with the shafts 13 and 14, and are elevated up to the full line position as shown in Fig. 7, at which time, as the fulcrum of the tamping arms is the shaft 21 or 22, the stud 55 passes beyond the end of its elevating crank, and the tamping arm is released to fall to the dotted line position, Fig. 7. By this action the ballast is properly tamped beside and below the ties, and upon both sides of the rail, and as there are two sets of the arms to each rail, two ties are acted upon simultaneously, but from opposite sides.

Upon the inner face of each toothed wheel 11 and 12, are pins 29, which are spaced equi-distantly apart and for engagement by the respective sets of buttons 30 or 30' carried upon and movable with the respective cables 31—31', there being two of these cables to each machine and disposed about the series of guide pulleys 32, as shown clearly in Fig. 1. These cables are each operable by its crank 33 so that the various pairs of wheels 11 and 12, may be rotated and thus the relative position thereof to the rack bar 10 and to themselves is changed. By this means the disposition of the tamping arms relative to the axles 8, are varied to present the members in the most effective position relatively to the ties.

As is often the case, it is desired to tamp shallower or deeper, and therefore the position of the shafts 21 and 22, as to their height above the rack bar 10, must be changed. In order to accomplish this, a worm gear 42, as clearly shown in Figs. 5 and 6, is keyed upon each shaft 21—22. In mesh with each gear 42 is an operating worm 43, carried by the inclined shaft 44, which is controlled by the crank 45 disposed in ready access to the operator. It will be seen that the rotation of the shaft 44 in one di-

rection will rotate either shaft 21 or 22, and thus change the position of the fulcrums of the tamping arms, moving the fulcrums nearer the center of the machine and down toward the rack bar 10. This movement pulls the tamping arms so that the stud 55 will ride longer upon its elevating crank 15 or 16 and consequently cause the higher elevation of the tamping arms before they are released to fall by gravity. The manipulation of the shaft 44 in the opposite direction will move the shafts away from the center of the machine and move the studs 55 so that they will ride a shorter distance upon the cranks 15 or 16, thus causing the tamping arms to be released sooner for shallower tamping.

* In order that the various mechanisms may be operated from the explosive or other motor M, a drive chain 34 drives the counter shaft 35 from the motor, and fast upon this counter shaft is a sprocket wheel 36, over which is trained the centrally disposed sprocket chain 37, said chain being passed under the idler sprocket wheel 38, and around the adjustably mounted sprocket wheel 39 which is carried by the beams 3—3' and thence over the drive sprocket 40 of the shaft 14 and under the drive sprocket 41 of the shaft 13. By this means motion is transmitted from the motor to the shafts 13 and 14 and consequently to the elevating cranks 15—15' and 16—16' and finally to the tamping arms upon the shafts 21 and 22.

In order to propel the machine upon the rails from the motor M, a clutch 46 is mounted upon the counter shaft 35, and through the chain drive 47 operates the axle 8. It is to be understood that any number of clutches may be employed to operably connect the motor to the tamping mechanism.

As shown in Fig. 6, a weight 100 is adjustably mounted upon the lug 26' of the tamping arms, so that blows of different force may be imparted to the ballast, due to the size of the weight. It is also apparent that any form of device for rotating the shafts 13 and 14 may be provided and still be within the scope of what is claimed.

What is claimed is:

1. A ballast tamping machine, including a frame, a shaft journaled therein, a crank carried by said shaft, another shaft mounted parallel to the first shaft, a tamping arm pivoted at one end upon the second shaft and having its body resting above the first shaft adjacent to the crank, means carried by the crank for engaging the tamping arm to elevate the same, and means for rotating the first shaft.

2. A ballast tamping machine, including a wheeled frame, two rotary shafts, coöperable means carried by the two shafts and the frame for adjustably supporting the

shafts relatively to each other and to the frame, two relatively stationary shafts mounted in the frame between and in parallel with the rotary shafts, a tamping arm having one end pivoted to each of the relatively stationary shafts and projecting over and upon one of the rotary shafts, and a crank carried by each rotary shaft, one to each tamping arm, whereby the rotation of the rotary shafts elevate and release the tamping arms while the relatively rotary shafts limit the fall of said arms.

3. A ballast tamping machine, including a wheeled frame, two rotary shafts, coöperable means carried by the two shafts and the frame for adjustably supporting the shafts relatively to each other and to the frames, two shafts, each having an eccentric support relatively to the frame and mounted between and in parallel to the rotary shafts, a tamping arm having one end pivoted to each of the last shafts the body portions thereof projecting over and upon the rotary shafts, means for adjusting the eccentricity of the last two shafts to regulate the relative position of the tamping arms to the rotary shafts, and a crank carried by each rotary shaft, one to each tamping arm, whereby the rotation of the rotary shafts elevate and release the tamping arms while the relatively rotary shafts limit the fall of said arms.

4. A ballast tamping machine, including a wheeled frame, two rotary shafts, coöperable means carried by the two shafts and the frame for adjustably supporting the shafts relatively to each other and to the frame, two relatively stationary shafts mounted in the frame between and in parallel with the rotary shafts, a tamping arm having one end pivoted to each of the relatively stationary shafts and projecting over and upon one of the rotary shafts, a crank carried by each of the rotary shafts, one to each tamping arm, whereby the rotation of the rotary shafts elevate and release the tamping arms while the relatively rotary shafts limit the fall of said arms, and manually operable means for engaging one of the coöperable means of the two shafts for varying the positions of said rotary shafts relatively to each other.

5. A ballast tamping machine, including

a wheeled frame, two rotary shafts, coöperable means carried by the two shafts and the frame for adjustably supporting the shafts relatively to each other and to the frame, two shafts, each having an eccentric support relatively to the frame and mounted between and in parallel to the rotary shafts, a tamping arm having one end pivoted to each of the last shafts, the body portions thereof projecting over and upon the rotary shafts, means for adjusting the eccentricity of the last two shafts to regulate the relative position of the tamping arms to the rotary shafts, a crank carried by each rotary shaft, one to each tamping arm, whereby the rotation of the rotary shafts elevate and release the tamping arms while the relatively rotary shafts limit the fall of said arms, and manually operable means for engaging one of the coöperable means of the two shafts for varying the positions of said rotary shafts relatively to each other.

6. A railroad ballast tamping machine, including a wheeled truck, a motor, two rack bars carried by the truck, two toothed wheels mounted upon each rack bar, means for rotating said wheels to vary the positions thereof upon the rack bars, two driven shafts journaled in the respective alined pairs of toothed wheels, means for operably connecting said shaft for rotation in unison and with the motor, a plurality of cranks carried by each driven shaft, two tamping member carrying shafts, each being provided with a crank disposed above its respective rack bar, a toothed journaling wheel for each crank meshing with the toothed bar, a plurality of swingingly mounted tamping members carried by each of the last two shafts, means for spacing the shafts connecting the last with the first two shafts, and means carried by each tamping member and in the path to be engaged by the respective cranks of the first shaft and whereby the tamping members are elevated.

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

BENJAMIN WALTER BISSELL.

Witnesses:

JACOB R. JONES,
DONALD G. EMERSON.