

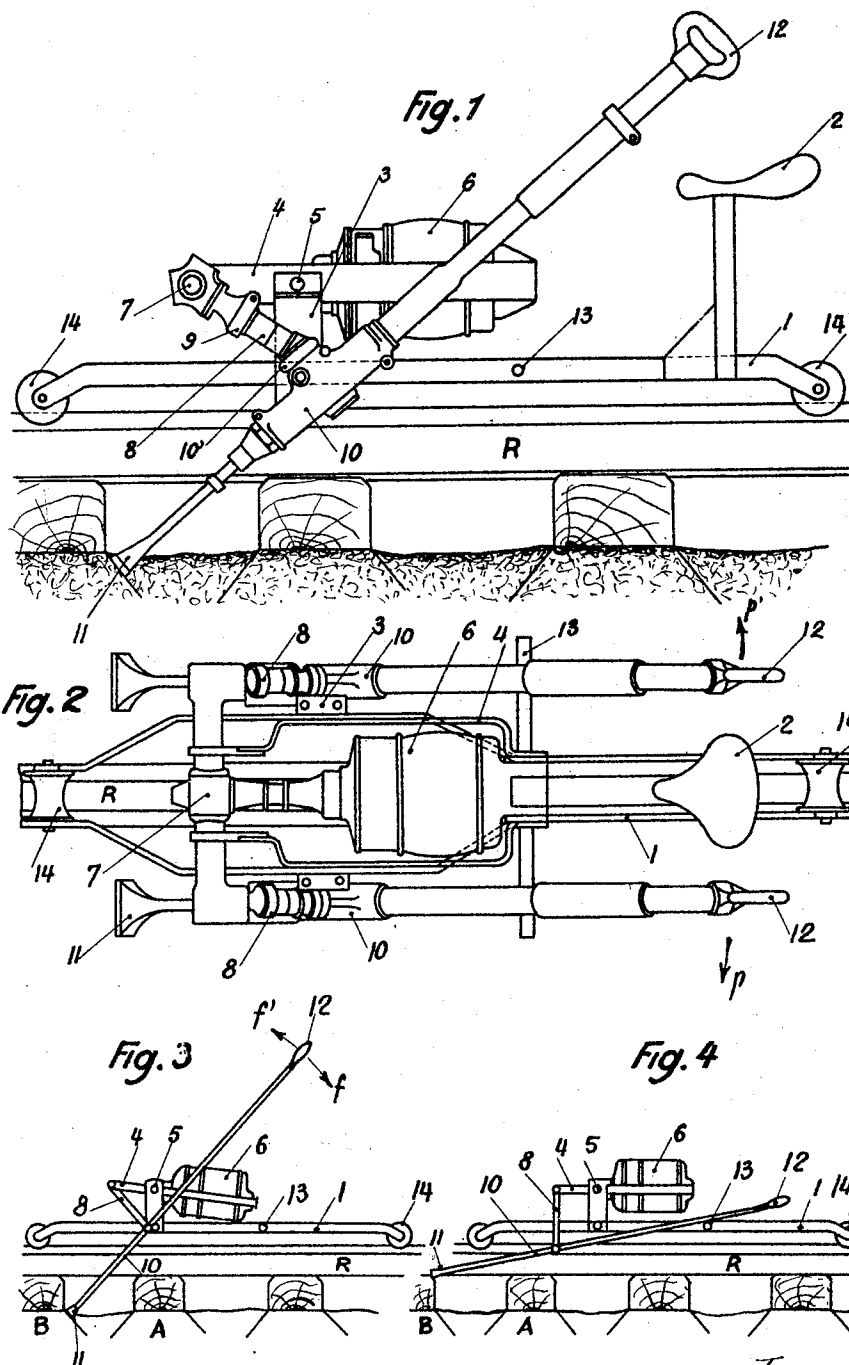
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BALLAST TAMPING MACHINE

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## UNITED STATES PATENT OFFICE

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## BALLAST TAMPING MACHINE

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Ballast tamping machines are known, such as the Collet tamping machines where in the hammers are mechanically controlled through a rotary electric motor. These machines may be mounted on single-rail trucks, the two or four machines carried by each truck being controlled by the same electric motor carried by the truck and the axis of which is vertical. These single-rail trucks are preferably connected two by two so as to prevent them from weighing upon the men who are in charge of the hammers. To allow each hammer to be controlled by a single man, there may be provided a support constituted by a cable secured to the hammer near its centre of gravity and wound over a drum carried by the upper part of the frame. This drum is secured to its stationary shaft through a spring which balances substantially the weight of the hammer. The workman may thus control the hammer without any great effort.

My invention has for its object the execution of an entirely different suspension means allowing the control of two hammers instead of one by one workman.

It has also for its object to render useless or at least optional the connection between the trucks running on the two rails, the equilibrium of each truck being a very steady one.

My invention has for its further object to do away with the winding drum which still requires a certain effort to be made by the workman when lifting the device for passing from one tie to the next, by using the equilibrium obtained through the respective positions of the two tamping drums and of the electric motor, with reference to a rocking shaft, use being made of a freely deformable polygon.

My invention has for its further object to allow the workman to use his legs instead of his arms for moving the trucks from one tie to the next or along the track whereby he may benefit by the inertia due to his own weight when acting on the tamping hammers.

My improved machine comprises a single-rail truck with a seat allowing the workman

sitting on it to put his feet on the ground, two electromechanically controlled hammers balanced by the weight of the motor being disposed on either side of the workman whereby the latter may work sitting and cause the truck to be balanced or to advance through the sole action of his legs.

In accompanying drawings given by way of example:

Figure 1 is a side view of the ballast tamping machine;

Figure 2 is a plan view thereof;

Figures 3 and 4 show diagrammatically the successive positions of the device between one tie and the next.

The machine comprises a single-rail truck 1 with a seat 2 for the workman whose feet rest on the ground and with rollers 14 co-operating with the rail. The truck carries a support 3 for the frame 4 adapted to pivot around the trunnions 5. The frame 4 carries at one end the motor 6 and at the other the arm 7 carrying the hammers. The connecting bar 8 between each hammer and the arm 7 is mounted so as to freely rotate round the axis of the latter. It is provided with devices such as a pivoting joint 9 and a universal joint 10' allowing the hammer 10 to be given any desired direction. The hammer comprises a tool 11 and a control handle 12 of the usual type. The transmission of the movement of the motor to the hammer is provided as usual through shafts carrying bevel wheels which, for sake of simplicity, have not been illustrated.

The truck 1 carries on the other hand a hand-rail 13 the use of which will be disclosed later. Figure 3 shows the truck in its position of use, the tool 11 bearing against the ballast to be tamped. The workman, sitting if desired on the seat 2, acts on the handle 12 in the direction  $f$  or  $f'$  (Figure 3) according as to whether he wishes to raise or to lower the tool. For moving the tool towards or away from the axis of the rail R, he moves the handles 12 apart or together as illustrated by the arrows  $p$ ,  $p'$  (Figure 2). It should be noted that, when the workman urges the tool in the direction  $f'$  during operation, after the

slope of the tool has been chosen, this causes the hammer to bear against the prism formed by the ballast.

When it is required to pass over the tie  
 5 A and to move the tool in front of the tie  
 B (to the left of A in Figure 3), the workman  
 proceeds as follows. With the help of his  
 legs and by pressing if required the tool  
 handle in the direction of the arrow *f*, he  
 10 moves the truck backwards into the posi-  
 tion of Figure 4. When this position is  
 reached, the arm 8 is substantially vertical  
 and the weight of the hammer borne by the  
 hand-rail 13 is balanced by the weight of  
 15 the motor bearing against the hand-rail 13.  
 A comparatively small pressure exerted on  
 the handle 12 will make the hammer rock  
 around the hand-rail and disengage the tie  
 while the balanced motor rocks backwards.  
 20 The workman may now push the truck so as  
 to pass over the tie and bring the hammer  
 into a position such that, by raising the  
 handle 12, he may bring the tool into its  
 new operative position in front of the tie  
 25 B. It is apparent that, owing to the balanc-  
 ing of the hammer by the motor which may  
 be as perfect as desired, the machine may be  
 brought from its operative position in front  
 of a given tie into its operative position  
 30 in front of the next by means of an effort  
 reduced to a minimum to be given out by the  
 workman.

What I claim is:—

1. A ballast tamping machine adapted to  
 35 run over one rail comprising a truck, wheels  
 carrying same and lying in substantially  
 the same vertical plane, two hammers car-  
 ried by the truck on either side of the truck,  
 means for giving them any desired direction  
 40 in space, a motor controlling and balanc-  
 ing the hammers and a seat carried by the  
 truck at a height allowing the feet of the  
 workman seated on it to balance the ma-  
 chine and in a longitudinal position such  
 45 that the hammers are within reach of the  
 workman.

2. A ballast tamping machine comprising  
 a truck, a low seat carried thereby, a frame  
 carried by the truck and adapted to pivot  
 50 around an axis perpendicular to the longi-  
 tudinal axis of the truck, two hammers piv-  
 otally secured to said frame on either side  
 of the truck and a motor carried by the  
 frame and controlling and balancing the  
 55 hammers.

3. A ballast tamping machine compris-  
 ing a truck, a low seat carried thereby, a  
 frame carried by the truck and adapted to  
 pivot around an axis perpendicular to the  
 60 longitudinal axis of the truck, a horizontal  
 shaft carried by the support perpendicularly  
 to the longitudinal axis of the truck, an  
 arm adapted to pivot around each end of  
 the said shaft, a hammer secured through-  
 65 its centre of gravity to each arm, a con-

trol rod for each hammer extending towards  
 the seat and forming a deformable arrange-  
 ment with the corresponding arm and the  
 horizontal shaft and a motor carried by  
 the frame and controlling and balancing 70  
 the hammers.

4. A ballast tamping machine comprising  
 a truck, a low seat carried thereby, a frame  
 carried by the truck and adapted to pivot  
 round an axis perpendicular to the longi- 75  
 tudinal axis of the truck, two hammers piv-  
 otally secured to said frame on either side  
 of the truck, a motor carried by the frame  
 and controlling and balancing the hammers,  
 a control rod for each hammer extending 80  
 in front of the seat and a rest carried by  
 the truck for the said rod.

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

MAURICE COLLET. 85

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