Sept. 19, 1961 F. PLASSER ET AL 3,000,328

MOBILE TRACK TAMPING MACHINE

Filed Feb. 24, 1959

FIG. 1

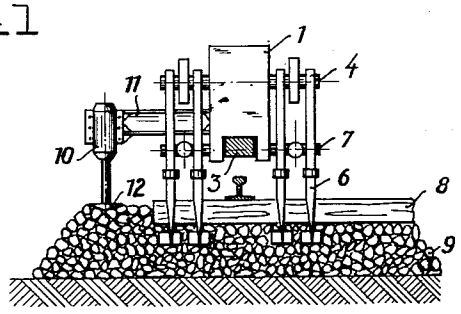
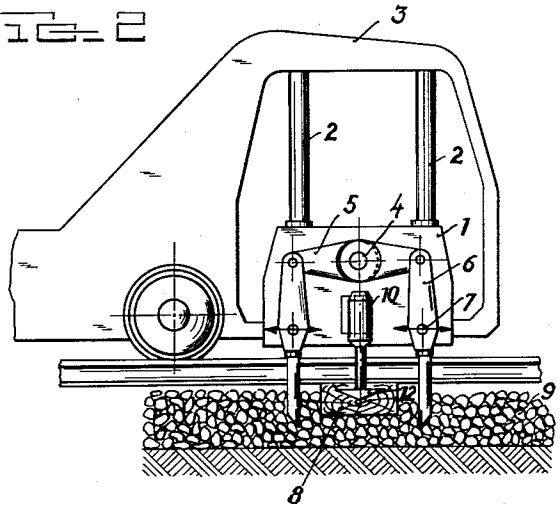


FIG. 2



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MOBILE TRACK TAMPING MACHINE

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3 Claims. (Cl. 104—12)

The present invention relates to railway ballast tamping machines adapted to travel along a railroad track from tie to tie to tamp the ballast under each tie.

In known machines of this type, pairs of tamping tools are mounted on a vertically movable carrier so that the ends of the tools enter into the ballast in the operating position of the carrier. Efficient tamping machines have been built with a plurality of pairs of cooperating tamping tools mounted on separate carriers to tamp the ballast under the ties about each rail. If the tamping pressure in this area is considerable, the ballast tends to be displaced laterally outwardly, the density of the tamped ballast underneath the ties being decreased correspondingly by the ballast which is forced upwardly at the ends of the ties.

In our application Serial No. 691,360, filed October 21, 1957, now Patent No. 2,969,749, dated January 31, 1961, we have proposed to overcome this disadvantage by mounting at least one tamping tool laterally of the machine so that it enters the ballast adjacent the end of the tie when the tamping tool carrier is lowered into its operating position. This additional lateral tamping tool participates in the tamping operation by exerting a pressure on the ballast, which is perpendicular to the tamping pressure of the cooperating pairs of tamping tools.

While such additional tamping tools somewhat prevent lateral displacement of the tamped ballast, they do not obviate the upward escape of the ballast at the tie ends under the lateral pressure of the tamping tools upon the ballast.

It is the primary object of the present invention to eliminate the sideward as well as the upward displacement of tamped ballast.

We accomplish the above object by mounting a horizontal pressure member, such as a plate, on an additional tamping tool which is arranged adjacent the tie end, the horizontal pressure member contacting the ballast surface when the tamping tool carrier is lowered into the tamping position. In this position, the weight of the tamping tool carrier rests on the horizontal pressure member and this alone will normally prevent any ballast from escaping upwardly. In accordance with a preferred embodiment of the invention, however, the tamping tool with its horizontal pressure member may be vibrated to function as a vibratory surface tamper and thus to fulfill the desired purpose with increased efficiency.

According to another preferred embodiment, vertically yielding support means is provided for mounting the additional tamping tool on the tamping tool carrier. This adapts the machine for different ballast heights while enabling the tamping tool carrier to be lowered sufficiently to permit the main tamping tools to carry out an effective tamping operation underneath the ties.

The above and other objects, advantages and features of this invention will be more fully understood with reference to the following detailed description of a preferred embodiment thereof, taken in conjunction with the accompanying drawing wherein

FIG. 1 is a schematic front view of the tamping mechanism and

FIG. 2 is a schematic side view of the forward portion of a mobile track tamping machine incorporating the combination constituting the present invention.

Referring now to the drawing wherein like numerals

refer to like parts, there is shown the forward portion of a mobile track tamping machine with frame **3** supporting guide posts **2** on which the tamping tool carrier **1** is vertically adjustably mounted. Eccenter shaft **4** is mounted on the tamping tool carrier with its axis transverse to the track. Cooperating pairs of tamping tools **6** are centrally linked at **7** with an adjustment mechanism (not shown) which moves the tools of each pair together and apart. This mechanism is immaterial as far as the present invention is concerned and may take any of the many known forms. While this invention is applicable to all types of tamping machines with vertically adjustable tamping tool carriers supporting cooperating pairs of tamping tools and the mechanism for operating these tools forms no part of this invention, efficient machines of this type have been described in our U.S. Patents Nos. 2,876,709, dated March 10, 1959, and 2,915,018, dated December 1, 1959, and, if desired, the lateral end tamping tools with their horizontal pressure member may be incorporated in machines of this type.

As shown, the upper ends of tamping tools **6** are pivoted to support arms **5**, the latter being vibrated by eccenter shaft **4**. The other or lower ends of the tamping tools penetrate into ballast **9** along the longitudinal sides of tie **8** when the tamping tool carrier is lowered into the illustrated operating position, thus tamping or compacting the ballast therebetween and under tie **8** in the range of the rail when the tamping tools are moved together while being vibrated during the tamping operation.

All of the heretofore described features of the illustrated machine are conventional. In accordance with the invention, sideward and upward escape of the tamped ballast at the end of tie **8** is prevented by mounting an additional tamping tool with a horizontal pressure plate **12** on the tamping tool carrier **1**. As shown in the preferred embodiment, the additional tamping tool has the form of a conventional surface tamper including vibratory actuating means **10**. As is well known, vibration may be effected hydraulically, pneumatically, electrically or mechanically, such as by cam means.

Also in accordance with a preferred embodiment, the additional tamping tool is mounted on the tamping tool carrier by means of resilient support webs **11**. The support elements **11** yield in a vertical direction so that the lowering of the tamping tool carrier to a desired tamping depth is not impeded by the contact of pressure plate **12** with the ballast, regardless of the ballast level.

The tamping machine of the present invention operates as follows:

The machine is moved into a position wherein tie **8** is centered between the cooperating tamping tools **6**. In this position, the machine is brought to a halt, the tamping tool carrier **1** is lowered until the tamping tool jaws have reached a desired depth in the ballast. Then, eccenter shaft **4** and the tamping tool adjustment mechanism are operated simultaneously to effect tamping in a known manner. When the tamping tool carrier is lowered into its operating position, the pressure plate **12** automatically makes contact with the ballast surface and presses thereagainst adjacent the tie end. The vertical downward pressure exerted by the pressure plate **12**, which is increased by vibration, counteracts the upward pressure of the ballast in this area, which is caused by the tamping tools **6** compacting the ballast under the tie and thus forcing it laterally outwardly and upwardly.

After the tamping operation at one tie is completed, the tamping tool carrier **1** is lifted along posts **2** and the machine is moved forwardly to the next tie, where the operation is repeated.

While the invention has been described and illustrated in connection with a preferred embodiment, it will be

understood that many modifications and variations may occur to the skilled in the art, particularly after benefiting from the present teaching, without departing from the spirit and scope of the invention, as defined in the appended claims.

What we claim is:

1. A mobile ballast tamping machine adapted to travel along the rails of a railroad track, comprising in combination: a vertically adjustable tamping tool carrier which may be lowered into a tamping position, at least one pair of cooperating tamping tools mounted on the carrier so that each tool of the cooperating pair of tools is positioned alongside the longitudinal sides of a tie to be tamped and in proximity of one of said rails when the carrier has been lowered into the tamping position, an additional tamping tool mounted on the carrier centrally in respect of said pair of cooperating tamping tools and laterally outside the end of said tie, and a horizontal pressure member mounted on said additional tamping tool and arranged to contact the ballast surface when the tamping tool carrier is in said tamping position.

2. The mobile ballast tamping machine of claim 1, comprising a resilient support means for mounting the additional tamping tool on the tamping tool carrier.

3. The mobile ballast tamping machine of claim 1, comprising means for vibrating the additional tamping tool in vertically yieldable relationship thereto.

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