

[54] **MOBILE APPARATUS FOR DISTRIBUTING AND SHAPING THE BALLAST OF A RAILROAD BED**[76] Inventors: **Franz Plasser; Josef Theurer**, both of Johannesgasse 3, A-1010 Vienna, Austria[22] Filed: **Jan. 11, 1974**[21] Appl. No.: **432,669****Related U.S. Application Data**

[63] Continuation of Ser. No. 252,414, May 11, 1972, abandoned.

[52] **U.S. Cl.** 37/104; 37/30; 172/782[51] **Int. Cl.** E01b 27/04[58] **Field of Search** 37/104, 105-107, 37/29, 30, 32, 33, 41, 42, 44; 172/666, 668, 670, 782-789[56] **References Cited****UNITED STATES PATENTS**

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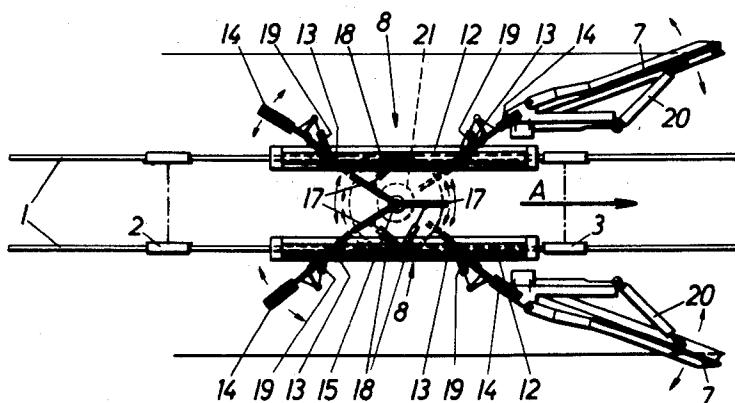
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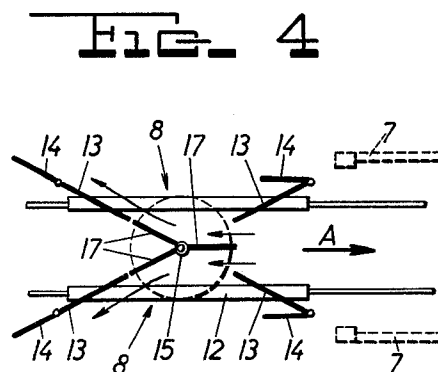
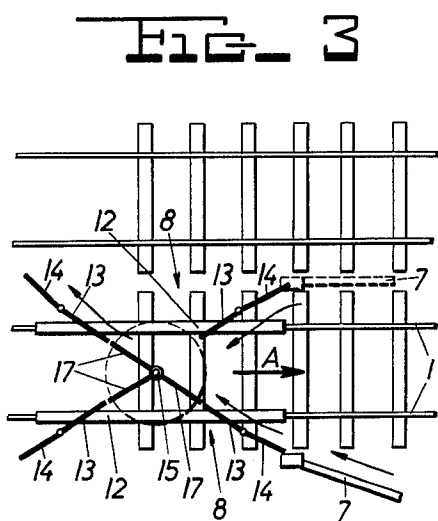
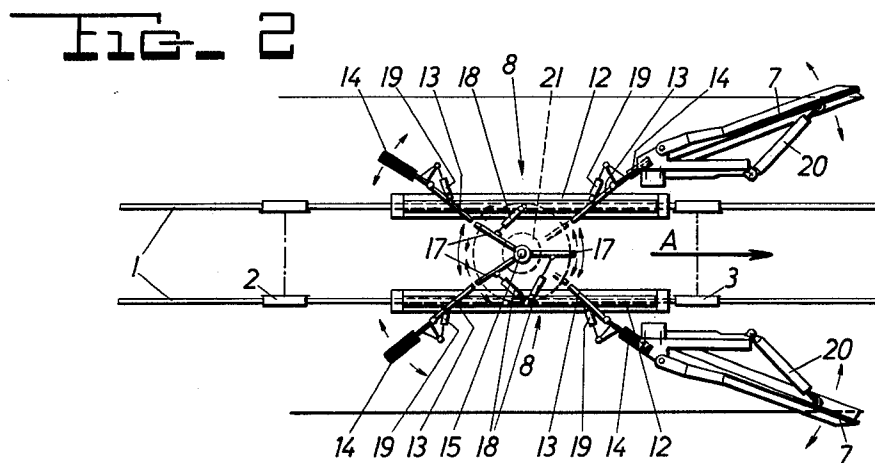
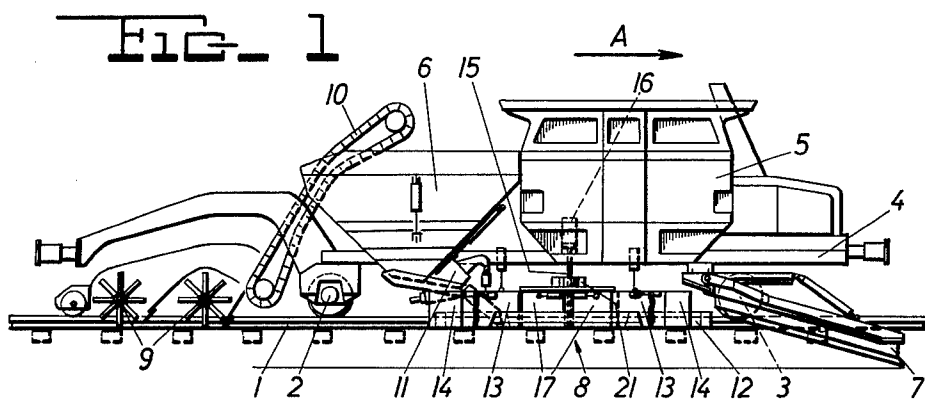
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Primary Examiner—Edgar S. Burr*Assistant Examiner*—E. H. Eickholt*Attorney, Agent, or Firm*—Kurt Kelman[57] **ABSTRACT**

A pair of ballast plows are mounted on the underside of a mobile frame between the undercarriages thereof. Each plow is associated with a respective track rail and an intermediate part is arranged on the frame for closing the space defined between the plows and extending transversely of the track.

7 Claims, 4 Drawing Figures



MOBILE APPARATUS FOR DISTRIBUTING AND SHAPING THE BALLAST OF A RAILROAD BED

This is a continuation of application Ser. No. 252,414 filed May 11, 1972 and now abandoned.

The present invention relates to improvements in a mobile apparatus for distributing and shaping the ballast of a railroad bed whereon there are supported two track rails, and which comprises two undercarriages mounting the frame on the track rails for mobility thereon and a pair of ballast plows mounted on the frame, each plow being associated with a respective track rail. The plows define a space therebetween extending transversely of the track rails.

In known apparatus of this general type, the ballast plows are arranged at one end of the frame. This results in a considerably length of the apparatus, and the plow supports extending from the end of the frame must be quite strong and heavy to provide a proper mounting for the plows during the ballast distributing and shaping operation. Furthermore, this arrangement makes it impossible for the operator to view the ballast distribution from his stand on the frame.

It is the primary object of this invention to provide an apparatus of the indicated type which is not only relatively short but provides a simplified construction while offering an increased variety of ballast distributing and shaping operations.

The above and other objects are accomplished according to the invention by mounting the ballast plows preferably vertically adjustably on the underside of the frame between the undercarriages and arranging an intermediate part on the frame for closing the space between the plows.

This arrangement not only considerably shortens the machine but also enables the ballast plows to be simply mounted on the underside of the frame without subjecting the mounting means to undue stress during operation. Furthermore, the connections between the drive means and the plows for moving the same into the various operating positions are also shortened considerably. In addition, the flow of the ballast may be readily observed from an operating stand mounted on the frame above the plows. Finally, the intermediate part may be so arranged that many different operating positions may be assumed thereby to increase the usefulness of the apparatus substantially.

In accordance with a preferred embodiment of the present invention, each ballast plow comprises a base portion bridging the respective track rail and defining a tunnel accommodating the track rail. A pair of transverse plates is mounted on the base portion, preferably extending obliquely thereto, and the transverse plates of each pair are spaced apart in the direction of the track rail, with a respective transverse plate of each pair constituting a transversely aligned pair of transverse plates. Each transverse plate has an outer edge and an inner edge in the space between the plows, and a side plate is linked to the outer edge of each transverse plate and is pivotal about a vertical axis. The intermediate part comprises ballast guiding plates pivotal about a vertical axis, and each guiding plate has an outer edge pivotal into a position wherein the outer edge of a respective guiding plate is in closing contact with the inner edge of an associated side plate.

Depending on the pivotal positioning of the ballast guiding plates, the ballast may be directed from one shoulder of the bed to the other shoulder thereof while

the apparatus advances along the track or, if desired, towards both shoulders. Furthermore, the pivotal positioning of the guiding plates may be so chosen that the ballast is directed from one or both track rails towards the center of the bed, being distributed evenly over the entire center space or, if desired, towards one side thereof. Various other combinations of operating positions are possible with this arrangement.

If the transverse plates extend obliquely in respect of the base portions, the guiding plates may be so pivoted in respect of the transverse plates as to produce an oblique ballast flow path from one shoulder to the other shoulder of the bed without any obstacles in the way of the redistributed ballast.

Further variations may be accomplished by arranging a ballast shoulder plow associated with each of the ballast plows and spaced therefrom in the direction of the track rails and ahead of the plows in the working direction of the apparatus, each ballast shoulder plow being substantially in alignment with the associated ballast plow.

The above and other objects, advantages and features of this invention will become more apparent from the following detailed description of a preferred embodiment thereof, taken in conjunction with the accompanying drawing wherein

FIG. 1 is a side view of a mobile apparatus for distributing and shaping the ballast of a railroad bed.

FIG. 2 is a top view of the apparatus of FIG. 1, and FIGS. 3 and 4 illustrate two of the many operating positions.

Referring now to the drawing, there is shown a frame 4 and two undercarriages 2, 3 mounting the frame of the apparatus on the track rails 1, 1 for mobility thereon. The operating stand 5 and a ballast silo 6 are mounted on frame 4, and a pair of ballast plows 8 are mounted on the underside of the frame between undercarriages 2, 3, each plow 8 being associated with a respective track rail 1. Hydraulic motors are connected to the ballast plows 8 for vertical adjustment thereof.

The working direction of the apparatus is indicated by arrow A, and two ballast shoulder plows 7 are arranged on the machine in front of the ballast plows 8, in the working direction of the apparatus, for shaping the railroad bed shoulders. Two ballast brooms 9 are mounted on the machine at the rear thereof, in the working direction. A ballast conveyor 10 moves excess ballast from the brooms to the silo 6 where the ballast is stored. A hydraulically operable door in the bottom of the silo enables ballast to be delivered to track spots which do not have enough ballast.

As may best be seen in FIG. 2, each ballast plow comprises a base portion 12 bridging the respective track rail 1 and defining a tunnel accommodating the track rail. A pair of transverse plates 13 is mounted on the base portion of each ballast plow, the plates of each pair being spaced apart in the direction of the track rail. Each transverse plate has an outer edge adjacent the shoulder and an inner edge in the center space between the rails. A side plate 14 is linked to the outer edge of each transverse plate 13 and is pivotal about a vertical axis.

In the preferred illustrated embodiment, the transverse plates extend obliquely in respect of the base portions on which they are mounted, the front transverse plates of each pair being insubstantial alignment with the rear transverse plates of the opposite pair.

A vertical pivot pin 15 extends from the underside of frame 4 for pivotally mounting the ballast guiding plates 17 of the intermediate part for pivoting the same about a vertical axis. The pivot pin is arranged substantially centrally of the ends of the base portions 12, 12 5 and therebetween, with the guiding plates radiating from the pivot pin towards the inner edges of the transverse plates so that the outer edges of the guiding plates may be pivoted into a position in closing contact with the inner edge of an associated transverse plate. The 10 pivot pin is illustrated to be constituted by the piston rod of a hydraulic motor 16 so that the intermediate part may also be vertically adjusted.

Drive means consisting of hydraulic motors 18 are connected to each of the guiding plates 17 for pivoting 15 these plates into desired positions, the entire arrangement being rotatable in a horizontal plane by 180°. Adjustment of the side plates 14 and shoulder plows 7 is also effected by hydraulic motors 19 and 20, respectively. The rotation of the entire intermediate part by 20 180° is effected by an electro-motor 21 mounted adjacent the pivot pin 15. This enables the intermediate part to be reversed if the working direction A is reversed.

While FIGS. 2 and 4 illustrate one of the three guid- 25 ing plates 17 pivoted into a position parallel to the track rails to direct the flow of ballast during the advance of the apparatus first from the shoulders towards the center and then towards the shoulders again, FIG. 3 shows the front guiding plate 17 adjusted to have its 30 outer edge in closing contact with the front transverse plate 13 of the right plow 8. In this adjustment, the ballast flows from the right shoulder plow 7 along the side plate 14, transverse plate 13, guiding plate 17 diametrically across the track towards the other shoulder, 35 guided by another guiding plate 17 and the rear transverse and side plates 13, 14. Since two adjacent tracks are mounted on the railroad bed illustrated in FIG. 3, the second shoulder plow 7, shown in broken lines, has been lifted off the bed so as to be inoperative. Thus, 40 only the side plate 14 and transverse plate 13 cause flow of the ballast at the left track rail inwardly.

In the adjustment of FIG. 4, the centrally arranged ballast is evenly distributed towards both shoulders, 45 both shoulder plows being lifted into inoperative position and the two front side plates also pivoted back into an inoperative position parallel to the track rails.

Obviously, a great variety of intermediate pivotal positions of the side plates and guiding plates are possible 50 to take into account any desired distribution and shaping of the ballast.

We claim:

1. A mobile apparatus for distributing and shaping the ballast of a railroad bed whereon there are supported two track rails, comprising

1. a frame,
2. two undercarriages mounting the frame on the track rails for mobility thereon,

3. two ballast plows mounted on the underside of the frame between the undercarriages,

- a. each plow being associated with a respective one of the track rails and comprising
- b. two transverse plates spaced apart in the direction of the associated track rail,
- c. the two transverse plates of each plow extending obliquely to the associated rail,
- d. opposite ones of the transverse plates of the two plows extending in common planes,
- e. the planes wherein the opposite transverse plates of the plows extend intersecting in a vertical line of intersection intermediate the two track rails, and
- f. the transverse plates defining a transverse space therebetween extending longitudinally of the track rails,

4. an intermediate ballast guiding part comprising a plurality of ballast guiding plates pivotal about the vertical line of intersection, and

5. means for pivoting the ballast guiding plates to close the transverse space between selected ones of the transverse plates of the plows.

2. The mobile apparatus of claim 1, further comprising means for vertically adjustably mounting the ballast plows on the underside of the frame.

3. The mobile apparatus of claim 1, wherein each of the ballast plows comprises a base portion bridging the associated track rail and defining a tunnel accommodating the associated track rail, each of the transverse plates being mounted on the base portion.

4. The mobile apparatus of claim 1, wherein the pivoting means comprises a pivot pin extending from the underside of the frame for pivotally mounting the guiding plates for pivoting about the vertical line of intersection, the length of the guiding plates corresponding to the distance between the pivot pin and the transverse plates.

5. The mobile apparatus of claim 4, wherein each of the ballast plows comprises a base portion bridging the associated track rail and defining a tunnel accommodating the associated track rail, each of the transverse plates being mounted on the base portion, and the pivot pin being arranged substantially centrally of the ends of the base portions and therebetween.

6. The mobile apparatus of claim 1, wherein the intermediate ballast guiding part comprises three of the ballast guiding plates, one of the guiding plates being pivotal selectively into closing contact with a respective one of a pair of transversely aligned ones of the transverse plates of the plows, and two of the guiding plates being pivotal selectively into closing contact with the other pair of transversely aligned transverse plates of the plows.

7. The mobile apparatus of claim 6, wherein the guiding plates and the pivoting means are rotatable in a horizontal plane by 180°.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 3,877,160

DATED : Apr. 15, 1975

INVENTOR(S) : Franz Plasser et al

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In the title page, insert:--

[30] Foreign Application Priority Data

May 24, 1971 Austria A 4477/71

Signed and Sealed this

sixteenth Day of September 1975

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents and Trademarks