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CONVENTION 606756

APPLICATION FOR A STANDARD PATENT

I/We Franz Plasser Bahnbaumaschinen - Industriegesellschaft m.b.H

of Johannesgasse 3,
A-1010 Wien,
AUSTRIA.

hereby apply for the grant of a standard patent for an invention entitled:

A TRAVELLING ON-TRACK MACHINE WITH A PLANING PLOUGH FOR DISTRIBUTING AND SHAPING BEDDING BALLAST

which is described in the accompanying complete specification.

Details of basic application

Number of basic application: A 2768/87

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Address for Service:

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Dated: 12 October 1988

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Attorneys for:
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By:

Our Ref : 109881
POF Code: 1203/1203

MO03732 19/10/88

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DECLARATION FOR A PATENT APPLICATION

▼ INSTRUCTIONS
(a) Insert "Convention" if applicable
(b) Insert FULL name(s) of applicant(s)

In support of the (a) Convention application made by (b)

FRANZ PLASSER BAHNBAUMASCHINEN-INDUSTRIEGESELLSCHAFT m.b.H.

(c) Insert "of addition" if applicable
(d) Insert TITLE of invention

(hereinafter called "applicant(s) for a patent (c) for an invention entitled (d)

"A TRAVELLING ON-TRACK MACHINE WITH A PLANING PLOUGH FOR DISTRIBUTING AND SHAPING BEDDING BALLAST"

(e) Insert FULL name(s) AND address(es) of declarant(s) (See headnote*)

I/~~We~~ (e) JOSEF THEURER, Technischer Leiter 1010 Wien, Johannesgasse 3, Austria

do solemnly and sincerely declare as follows:

~~I am the applicant(s)~~

(or, in the case of an application by a body corporate)

1. I am/~~We are~~ authorized to make this declaration on behalf of the applicant(s).
2. I am/~~We are~~ the actual inventor(s) of the invention.

(or, where the applicant(s) is/are not the actual inventor(s))

2. (f)

(f) Insert FULL name(s) AND address(es) of actual inventor(s)

(g) Recite how applicant(s) derive(s) title from actual inventor(s) (See headnote**)

is/~~are~~ the actual inventor(s) of the invention and the facts upon which the applicant(s) is/~~are~~ entitled to make the application are as follows:

(g) Applicant is the assignee of the actual inventor.

(Note: Paragraphs 3 and 4 apply only to Convention applications)

(h) Insert country, filing date, and basic applicant(s) for the/or EACH basic application

3. The basic application(s) for patent or similar protection on which the application is based is/~~are~~ identified by **country, filing date, and basic applicant(s)** as follows:

(h) Federal Republic of Germany
20 October 1987
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.

4. The basic application(s) referred to in paragraph 3 hereof was/~~were~~ the first application(s) made in a Convention country in respect of the invention the subject of the application.

(k) Insert PLACE of signing

(l) Insert DATE of signing

(m) Signature(s) of declarant(s)

Note: No legalization or other witness required

Declared at (k) Vienna, Austria

Dated (l) 4 October 1988

(m) FRANZ PLASSER
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(Josef Theurer)

To: The Commissioner of Patents

P18/7/78

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A TRAVELLING ON-TRACK MACHINE WITH A PLANING PLOUGH FOR DISTRIBUTING AND SHAPING BEDDING BALLAST

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(56) Prior Art Documents
AU 589474 66340/86 E01B 027/02

(57) Claim

1. A travelling-on track machine for distributing and shaping the bedding ballast of a railway track consisting of sleepers and rails, comprising a machine frame supported by undercarriages and a planing plough formed by vertically adjustable centre plough plates pivotal about a vertical axis and arranged between the rails, the planing plough comprising rail tunnels covering the rails, characterized in that a vertically adjustable scraping and damming wall extending transversely of the longitudinal axis of the machine is associated with the planing plough between the two rail tunnels and immediately behind the centre plough plates and is followed immediately by an arrangement for carrying away ballast flowing over the upper edge of the damming wall.

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Complete Specification for the invention entitled:

A TRAVELLING ON-TRACK MACHINE WITH A PLANING PLOUGH FOR DISTRIBUTING AND SHAPING BEDDING BALLAST

Our Ref : 109881
POF Code: 1203/1203

The following statement is a full description of this invention, including the best method of performing it known to applicant(s):

This invention relates to a travelling on-track machine for distributing and shaping the bedding ballast of a railway track consisting of sleepers and rails, comprising a machine frame supported by undercarriages and a planing plough formed by vertically adjustable centre plough plates pivotal about a vertical axis and arranged between the rails, the planing plough comprising rail tunnels covering the rails.

A travelling on-track machine for distributing and profiling bedding ballast is already known from Applicants' AU-PS 463 196. This machine comprises an X-shaped, vertically adjustable centre plough between two on-track undercarriages spaced apart from one another longitudinally of the machine with two rail tunnels extending parallel to one another longitudinally of the machine. Three centre plough plates pivotal about a common vertical axis are arranged at the centre of the X-shaped centre plough. Each rail tunnel is connected to two cross-plates extending obliquely of their longitudinal axis as an extension of the centre plough plates. A side plate pivotal about a vertical axis under the power of a drive is provided at the outer end of each cross-plate of the centre plough. In the working direction of the machine, the centre plough is preceded on each longitudinal side of the machine by a shoulder plough for profiling the shoulders of the ballast bed. Immediately behind the centre plough, a ballast silo with a hydraulically operated filling unit is fixed to the machine frame. A conveyor in the form of a vertical conveyor belt extends between brushes arranged at the rear end of the machine and the top of the ballast silo. When the machine is in use, the ballast at the shoulders is elevated by the two shoulder ploughs towards the centre plough where the ballast is diverted towards one or both sleeper end zones, depending on the position of the centre plough plates. The surplus ballast picked up by the brush is swept onto the vertical conveyor which ejects it

into the ballast silo. Although this ballast plough has been successfully used in practice, the presence of a separate ballast silo with a vertical conveyor belt is not always convenient. In addition, the filling unit has to be controlled by the machine operator for ejecting stored ballast as and when required.

In addition, a ballast plough comprising a plough arrangement between the undercarriages and a brush at the rear end of the machine is known from Applicants' AT-PS 378 795. The brush is immediately preceded by a conveyor belt arrangement circulating transversely of the longitudinal axis of the machine in a horizontal plane. In this way, the surplus ballast picked up by the brush can be swept onto the conveyor belt arrangement and from there can be laterally ejected onto the shoulder region. A ballast silo such as this has also been successfully used in practice, although any sleeper cribs which may have been underfilled cannot be filled after the plough has been used.

Now, the object of the present invention is to provide a travelling on-track machine of the type described at the beginning with which even ballast beds with sleeper cribs filled to very different levels can be uniformly planed without any need for a separate ballast silo.

According to the invention, this object is achieved with a machine of the type described at the beginning in that a vertically adjustable scraping and damming wall extending transversely of the longitudinal axis of the machine is associated with the planing plough between the two rail tunnels and immediately behind the centre plough plates and is followed immediately by an arrangement for carrying away ballast flowing over the upper edge of the damming wall. A combination such as this of a damming wall with pivotal centre plough plates enables ballast to be stored with only minimal extra construction work. With this ballast reserve built up by the transversely extending damming wall, any

underfilled sleeper cribs present can be automatically filled up so that a uniformly ballasted track is present after the use of the machine largely irrespective of the filling level before the treatment. Of particular advantage is the immediately following arrangement of a conveyor for removing ballast flowing over the upper edge of the damming wall, so that, where too much ballast is locally present, it can be immediately ejected laterally, for example onto the ballast shoulder. Accordingly, the ballast plough according to the invention provides for the storage of ballast in exactly dosable amounts with only minimal extra construction work, the fact that surplus ballast is immediately removed ensuring a higher and more economical work rate.

In one preferred embodiment of the invention, the damming wall is connected to the planing plough for common vertical adjustment and extends over the entire region between the rail tunnels. With this damming wall, which forms a unit with the planing plough, the ballast can be uniformly dammed over the entire region between the rails. In addition, the lowering of the ballast plough into its working position is automatically accompanied by correct positioning of the damming wall for the build up of ballast.

In another advantageous embodiment of the invention, the vertical height of the damming wall corresponds to at least twice the height of the rail tunnel and the height of the centre plough plates is greater than that of the damming wall. These vertical dimensions of the damming wall enable a sufficient store of ballast to be built up, although an excessive accumulation or excessive resistance associated with a relatively tall construction of the damming wall is avoided. The relatively tall centre plough plates reliably prevent the ballast which has accumulated from flowing over the upper edge of the plough plates.

In another advantageous embodiment of the invention, the arrangement situated immediately behind the damming wall

In another advantageous embodiment of the invention, the vertical height of the damming wall corresponds to at least twice the height of the rail tunnel and the height of the centre plough plates is greater than that of the damming wall, all heights being measured from the lower edge of the damming wall. These vertical dimensions of the damming wall enable a sufficient store of ballast to be built up, although an excessive accumulation or excessive resistance associated with a relatively tall construction of the damming wall is avoided. The relatively tall centre plough plates reliably prevent the ballast which has accumulated from flowing over the upper edge of the plough plates.

In another advantageous embodiment of the invention, the arrangement situated immediately behind the damming wall

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for carrying off ballast is in the form of a transverse conveyor belt which corresponds in length to at least the length of the damming wall and which extends transversely of the longitudinal axis of the machine in its conveying direction, comprises a rotary drive and is arranged beneath the upper edge of the damming wall. This transverse conveyor belt provides for particularly rapid and efficient removal of the surplus ballast because the transverse conveyor belt is advantageously provided beneath the entire length of the damming wall.

In another embodiment of the invention, the ballast transporting arrangement preferably in the form of ~~a~~ the transverse conveyor belt with the immediately preceding planing plough comprising the damming wall is connected to the machine frame between two on-track undercarriages spaced apart from one another. This central arrangement of the planing plough and transverse conveyor belt provides the machine operator with a particularly good view of the planing plough from the operator's cabin. In addition, the plough is automatically centred in relation to the track, even around very tight curves.

In another embodiment of the invention, a brush designed for vertical adjustment under ~~the~~ power of drives is connected to the machine frame immediately behind the planing plough and the ballast transporting arrangement. This following brush enables the work of the plough to be finished off by quickly and completely removing ballast lying on the sleepers and forced through beneath the lower edge of the damming wall.

Another advantageous embodiment of the invention is characterized in that two centre plough plates designed for vertical adjustment under the power of drives and for lateral pivoting about pivots are provided, the pivots being designed for transverse displacement under the power of drives in a guideway of the damming wall extending transversely of

the longitudinal axis of the machine. By pivotal mounting in this way, the centre plough plates can be transversely displaced into another working position for the desired routing of ballast without the damming effect being impaired by the damming wall.

A metal scraping plate provided between the vertically adjustable brush and the transverse conveyor belt and extending transversely of the longitudinal axis of the machine is connected to rollers designed to run on the rails. Through this scraping blade, the ballast picked up by the brush can be completely transported onto the transverse conveyor belt and laterally ejected therefrom together with the ballast flowing over the damming wall. The rollers provide for correct distancing of the lower edge of the scraper plate from the top of the sleepers irrespective of the height of the rails of the track.

Another embodiment of the invention is characterized in that, at one end, the scraping plate is connected to the transverse conveyor belt to pivot about an axis extending transversely of the longitudinal axis of the machine and, at its opposite end, is pivotally connected to a support frame of the brush. By virtue of this special pivotal mounting, the scraping plate may with advantage be pivoted from the in-transit position into the working position together with the brush.

In another possible embodiment of the invention, the damming wall with the centre plough plates is preceded by laterally arranged side plough plates each pivotal about a vertical axis and by a vertically and transversely adjustable shoulder plough. This combination of the damming wall, centre and side plough plates with preceding shoulder ploughs enables the ballast to be repeatedly diverted into the desired position without any difficulty, the damming wall always ensuring a reserve of ballast for filling up any underfilled sleeper cribs.

Finally, in another advantageous embodiment of the invention, the brush is followed by two vertically adjustable brushes spaced apart from one another transversely of the longitudinal axis of the machine for cleaning the rail fastenings. In this way, any ballast stones which may have been displaced through the accumulation of ballast in the region of the damming wall towards the rail fastenings may be quickly and easily removed from the rails.

One example of embodiment of the invention is described in detail in the following with reference to the accompanying drawings, wherein:

Figure 1 is a side elevation of a travelling on-track machine according to the invention for distributing and shaping the bedding ballast of a railway track.

Figure 2 is a diagrammatic plan view of the machine shown in Figure 1.

Figure 3 is a front elevation of the centre plough with centre and side plough plates and a damming wall on the line III-III of Figure 1.

Figure 4 is an enlarged plan view of the centre plough on the line IV-IV of Figure 3.

Figures 5 to 8 are purely diagrammatic illustrations of the damming wall and the following transverse conveyor showing the plough plates and shoulder ploughs in various working positions.

The machine 1 shown in Figure 1 for distributing and shaping the bedding ballast of a track 4 consisting of sleepers 2 and rails 3 is designed to travel on the track through on-track undercarriages 6 connected to the machine frame 5. In the working direction of the machine 1 indicated by an arrow 7, a driver's cabin 8 with a central control panel 9 is provided at the rear end of the machine while a central power supply 10 in the form of a motor with hydraulic pumps is provided at the front end. Immediately behind the front undercarriage 6, there is a centre plough 12 which is

designed for vertical adjustment under the power of drives 11 and which consists essentially of centre and side plough plates 13,14, a scraping and damming wall 15 extending transversely of the longitudinal axis of the machine and two rail tunnels 16 each spanning the rail 3. On each longitudinal side of the machine, the centre plough 12 is preceded by a shoulder plough 17 designed for vertical adjustment through a telescopic guide 18 and a drive 19. The scraping and damming wall 15 is immediately followed by an arrangement 20 for removing ballast flowing over the upper edge of the damming wall 15. The arrangement 20 is in the form of a transverse conveyor belt 23 which extends transversely of the longitudiunal axis of the machine, comprises a rotary drive 21 and is arranged beneath the upper edge 22 of the damming wall 15. The transverse conveyor belt 23 is connected to the machine frame 5 by vertical supports 24. Immediately behind the planing plough 12 and the ballast transporting arrangement 20, a brush 26 designed for vertical adjustment under the power of drives 25 is connected to the machine frame 5. The brush 26 which comprises tubular, radially extending brush elements 27 and extends over the entire length of a sleeper transversely of the longitudinal axis of the machine is mounted on a support frame 28 and designed to be rotated by a drive 29. A scraping plate 30 extending transversely of the longitudinal axis of the machine with rollers 31 designed to run on the rails is provided between the vertically adjustable brush 26 and the transverse conveyor belt 23. A baffle plate 32 is provided between the brush 26 and the damming wall 15 laterally adjacent the scraping plate 30. The brush 26 is followed by two brushes 34 vertically adjustable through drives 33 and spaced apart from one another transversely of the longitudinal axis of the machine for cleaning the rail fastenings.

As shown in Figure 2, two centre plough plates 13 each laterally pivotal in the arrowed direction about a vertically

extending pivot 35 are provided between the two rail tunnels 16. As will be explained in more detail hereinafter with reference to Figure 3, the pivot 35 is mounted for transverse displacement in the arrowed direction in the damming wall 15. Each of the two side plough plates 14 arranged on the outside of each rail tunnel 16 is also designed to pivot laterally in the arrowed direction about a vertically extending pivot 36.

The damming wall 15 comprises a horizontally extending transition section 37 between a vertical section in which the pivots 35 are situated and the upper edge 22 situated above the transverse conveyor belt 23. The rotary drive 21 of the transverse conveyor belt 23 is reversible, so that the ballast can be transported as required in both arrowed transverse directions. At one end, the scraping plate 30 is pivotally connected - about an axis 38 extending transversely of the longitudinal axis of the machine - to the supporting structure of the transverse conveyor belt 21. At its end opposite the axis 38, the scraping plate 30 is pivotally connected to the support frame 28 of the brush 26 by a transverse axis 39. The rollers 31 by which the scraping plate 30 is supported on the rails 3 are designed for vertical adjustment, thus providing for adaptation to different rail levels. Immediately behind the rollers 31, there is an opening 40 for the contact-free passage of the rails 3. The shoulder plough 17 preceding the planing plough 12 comprises another telescopic guide 41 which extends transversely of the longitudinal axis of the machine and in which a drive 42 is mounted for the transverse displacement. A pivoting drive 44 for the lateral pivoting of an elongate shoulder plough plate 45 is fixed to a guide plate 43 connected to the vertical guide 18.

The damming wall 15, which is shown in front elevation on a large scale in Figure 3, comprises two horizontally extending slot-like guideways 46 in which the pivot 35 of the

centre plough plates 13 is mounted for transverse displacement. Through these guideways, the pivot 35 is connected to a guide plate 47 which is mounted for transverse displacement in guides 48 connected to the back of the damming wall. The transverse displacement of the guide plate 47 together with the associated centre plough plate 13 takes place under the power of a transverse displacement drive 49 fixed to the back of the damming wall 15. Another slot-like opening 50 is provided in the damming wall 15 between the two guideways 46. For the pivoting movement of the centre plough plate 13 about the longitudinal axis of the pivot 35, a pivoting drive 51 is connected to the guide plate 47. The lateral end of the damming wall 15 connected to the side plough plate 14 is mounted for vertical displacement in a vertical guide 52 connected to the machine frame 5. A pivoting drive 53 is provided for the lateral pivoting of the side plough plate 14. The transverse conveyor belt 23 can be seen behind the damming wall 15 beneath the upper edge 22 thereof, comprising a longitudinally extending guide plate 54 in its upper section designed for transport of the ballast at either lateral end thereof. At its lower end, the vertical displacement drive 11 fixed to the machine frame 5 is pivotally connected to the outer end of the damming wall 15 which forms a single unit with the centre plough plates 13, the side plough plates 14 and the rail tunnels 16.

As shown in Figure 4, a connecting element 55 is guided through the guideway 46 of the damming wall 15, being connected at one end to the guide plate 47 and at its other end to the vertical pivot rod 56. The pivot rod 56 is surrounded by a pivot sleeve 57 which is connected to the centre plough plate 13 and which, in the region of the two connecting elements 55, comprises an opening for their passage. This opening corresponds to a quarter circle, so that the centre plough plate 13 can be freely pivoted through an angle of 90°.

The pivot sleeve 57 is connected substantially centrally to the connecting element 58 which is guided through the horizontal slot-like opening 50 in the damming wall 15. At its end opposite the pivot sleeve 57, the connecting element 58 is connected to the pivoting drive 51. In the region of the connecting element 58, the guide plate 47 comprises a notch 59 so that the connecting element 58 can be freely pivoted through an angle of 90°. The outer end of the damming wall 15 comprises a vertically extending guide block 60 which is mounted for vertical displacement in the U-shaped vertical guide 52 connected to the machine frame 5.

The mode of operation of the machine 1 according to the invention is described in detail in the following:

On reaching the section of track to be ploughed, the planing plough 12 together with the damming wall 15, the centre and side plough plates 13, 14 and the rail tunnels 16 is lowered into the working position by vertical displacement down the vertical guides 52 under the power of the two drives 11. At the same time, the brush 26 is lowered from the in-transit position shown in dash-dot lines into the working position shown in solid lines (Figure 1) under the power of the drives 25. The scraping plate 30 connected to the support frame 28 is automatically lowered together with the rollers 31 until the rollers are on the rails 3. The two brushes 34 for cleaning the rail fastenings are also lowered. The two shoulder ploughs 17 are laterally and vertically adjusted under the power of the drives 19 and 42 until they are in the outer working position shown in dash-dot lines in Figure 2. The two ballast plough plates 45 are then adjusted to the required angle under the power of the two pivoting drives 44. Under the power of the two transverse displacment drives 49, the two centre plough plates 13 are transversely displaced together with the guide plate 47 until the desired position of the two pivots 35 is reached. By activation of the pivoting drives 51 connected to and transversely displaced with

the guide plate 47, the connecting element 58 is pivoted, as hence is the centre plough plate 13, until the plough-like position shown in Figure 2 for example is reached. Finally, under the power of the two pivoting drives 53, the side plough plates 14 are laterally pivoted into the position indicated by a dash-dot line (Figure 2). After the two rotary drives 29 and 21 for the brush 26 and the transverse conveyor belt 23, respectively, have been brought into operation, the machine 1 is ready for use.

In the position of the plough plates 13, 14 and the shoulder ploughs 17 shown in Figure 2, part of the ballast is carried upwards to the required extent from the ballast shoulder towards the damming wall 15 by corresponding angular adjustment of the shoulder ploughs 17. The ballast lying between the rails 3 is diverted towards the sleeper bearing surfaces by the plough-like position of the two centre plough plates 13. The sleeper cribs are thus filled with ballast in the region of the sleeper-bearing surfaces. The surplus ballast is piled up by the transversely positioned damming wall 15, so that a reserve of ballast is built up. With this reserve of ballast, any underfilled sleeper cribs are automatically filled up uniformly with ballast. If only a little ballast is required for this filling process, the surplus ballast flows over the transition section 37 of the damming wall 15 and the upper edge 22 onto the transverse conveyor belt 23 due to the growing accumulation of ballast. From the transverse conveyor belt 23, the surplus ballast is rapidly ejected onto the required side of the ballast shoulder. The ballast lying on the sleepers 2 is swept by the following brush 26 onto the transverse conveyor belt 23 via the scraping plate 30. When the ballast has to be redirected, the position of the centre and side plough plates 13,14 and of the shoulder ploughs 17 can be altered without interrupting the progress of work.

According to the invention, any other type of trans-

porting arrangement, for example a chute extending transversely and obliquely downwards or a transversely extending semicircular channel section with a rotating screw conveyor or the like, may be provided instead of the transverse conveyor belt 23 shown by way of example as the arrangement 20 for removing the surplus ballast. Similarly, the damming wall 15 may be vertically adjusted as required independently of the planing plough 12.

In the illustration of one possible working position of the planing plough 12 shown in Figure 5, the pivots 35 of the centre plough plates 13 are situated in their outermost transverse adjustment position, the two plough plates 13 being pivoted in a position extending transversely of the longitudinal axis of the machine parallel to the damming wall 15. While the left-hand side plough plate 14 (in the working direction) is pivoted frontwards, the other side plough plate 14 is pivoted rearwards. In this way, the ballast can also be transported or rather diverted from the left-hand half of the ballast bed onto the right-hand half, as indicated by the long arrow. The surplus ballast flowing over the damming wall 15, as indicated by the small arrows, may also be ejected by the transverse conveyor belt 23 onto the right-hand ballast shoulder in the arrowed direction.

As shown in Figure 6, the two centre plough plates 13 are situated in a position parallel to the longitudinal axis of the machine. Both side plough plates 14 are pivoted to the front. In this way, the tamping zone or rather the sleeper bearing surfaces can be ploughed in, as indicated by the two long arrows, the region for the line cables being left free. The centre plough plates 13 form a kind of counter wall to the side plough plates 14, so that the ballast coming from the ballast shoulders is diverted solely into the tamping zone of the track. Surplus ballast flowing over the upper edge of the damming wall 15 in the direction indicated by the small arrows is again ejected by the transverse

conveyor belt 23 onto the ballast shoulder in one of the two possible transporting directions.

In Figure 7, the centre plough plates 13 are positioned as in Figure 5 while the two side plough plates 14 are pivoted frontwards. In this position, the storage effect of the planing plough 12 is fully utilized, the ballast being used for uniformly filling the entire sleeper crib region with ballast. The surplus ballast may flow off onto the conveyor belt 23 throughout the entire region of the damming wall 15 (in the direction indicated by the small arrows).

In Figure 8, the two centre plough plates 13 are pivoted towards one another to form a V or plough while the two side plough plates are pivoted rearwards. In this way, the track can be so to speak ploughed out from the middle to the left and right (as indicated by the long arrows), i.e. the ballast is diverted onto the two ballast shoulders from the region between the rails. The surplus ballast is again able to flow off onto the transverse conveyor belt 23 in the region between the pivot 35 of the centre plough plate 13 and the pivot 36 of the side plough plate 14 (in the direction indicated by the small arrows).

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A travelling-on track machine for distributing and shaping the bedding ballast of a railway track consisting of sleepers and rails, comprising a machine frame supported by undercarriages and a planing plough formed by vertically adjustable centre plough plates pivotal about a vertical axis and arranged between the rails, the planing plough comprising rail tunnels covering the rails, characterized in that a vertically adjustable scraping and damming wall extending transversely of the longitudinal axis of the machine is associated with the planing plough between the two rail tunnels and immediately behind the centre plough plates and is followed immediately by an arrangement for carrying away ballast flowing over the upper edge of the damming wall.

2. A machine as claimed in claim 1, characterized in that the damming wall is connected to the planing plough for common vertical adjustment and extends over the entire region between the rails tunnels.

~~3. A machine as claimed in claim 1 or 2, characterized~~ in that the vertical height of the damming wall corresponds to at least twice the height of the rail tunnel and the height of the centre plough plates is greater than that of the damming wall.

4. A machine as claimed in claim 1, 2 or 3, characterized in that the arrangement situated immediately behind the damming wall for carrying off ballast is in the form of a transverse conveyor belt which corresponds in length to at least the length of the damming wall and which extends transversely of the longitudinal axis of the machine in its conveying direction, comprises a rotary drive and is arranged beneath the upper edge of the damming ~~wall.~~

3. A machine as claimed in claim 1 or 2, characterized in that the vertical height of the damming wall corresponds to at least twice the height of the rail tunnel and the height of the centre plough plates is greater than that of the damming wall, all heights being measured from the lower edge of the damming wall.

4. A machine as claimed in claim 1, 2 or 3, characterized in that the arrangement situated immediately behind the damming wall for carrying off ballast is in the form of a transverse conveyor belt which corresponds in length to at least the length of the damming wall and which extends transversely of the longitudinal axis of the machine in its conveying direction, comprises a rotary drive and is arranged beneath the upper edge of the damming wall.

5. A machine as claimed in any one of claims 1 to 4, characterized in that the ballast transporting arrangement with the immediately preceding planing plough comprising the damming wall is connected to the machine frame between two on-track undercarriages spaced apart from one another.

6. A machine as claimed in any one of claims 1 to 5, characterized in that a brush designed for vertical adjustment under power of drives is connected to the machine frame immediately behind the planing plough and the ballast transporting arrangement.

7. A machine as claimed in any one of claims 1 to 6, characterized in that two centre plough plates designed for vertical adjustment under the power of drives and for lateral pivoting about pivots are provided, the pivots being designed for transverse displacement under the power of drives in a guideway of the damming wall extending transversely of the longitudinal axis of the machine.

8. A machine as claimed in any one of claims 1 to 7, characterized in that a metal scraping plate provided between the vertically adjustable brush and the transverse conveyor

belt to pivot and extending transversely of the longitudinal axis of the machine is connected to rollers designed to run on the rails.

9. A machine as claimed in claim 8, characterized in that, at one end, the scraping plate is connected to the transverse conveyor belt to pivot about an axis extending transversely of the longitudinal axis of the machine and, at its opposite end, is pivotally connected to a support frame of the brush.

10. A machine as claimed in any one of claims 1 to 9, characterized in that the damming wall with the centre plough plates is preceded by laterally arranged side plough plates each pivotal about a vertical axis and by a vertically and transversely adjustable shoulder plough.

11. A machine as claimed in any one of claims 1 to 10, characterized in that the brush is followed by two vertically adjustable brushes spaced apart from one another transversely of the longitudinal axis of the machine for cleaning the rail fastenings.

12. A travelling on track machine for distributing and shaping the bedding ballast of a railway track, substantially as hereinbefore described with reference to what is shown in the accompanying drawings.

DATED: 30 October, 1990
PHILLIPS ORMONDE & FITZPATRICK
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Fig. 1

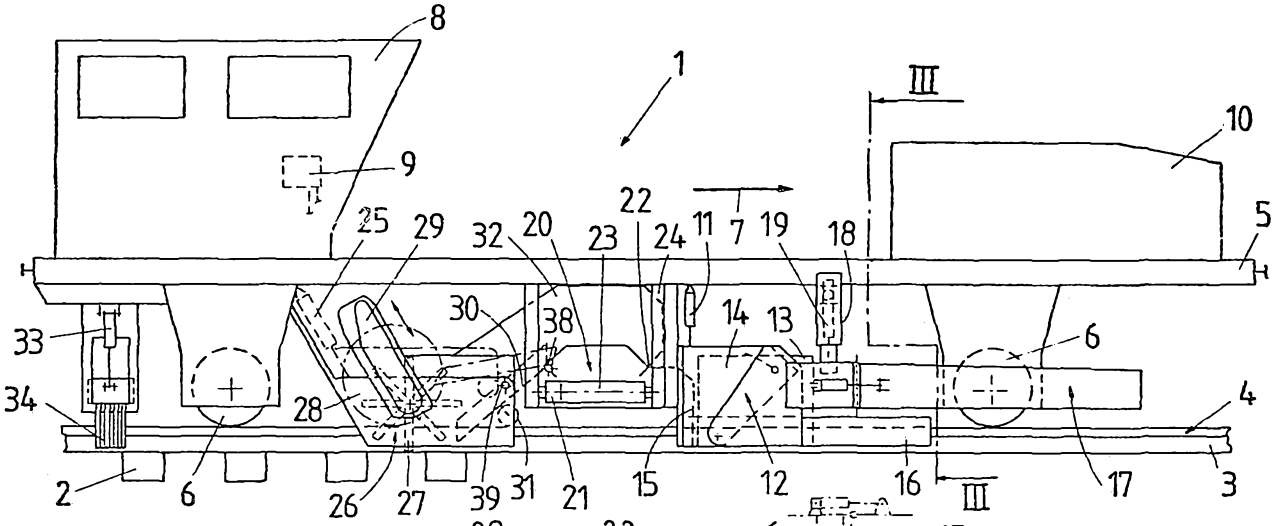

Fig. 2

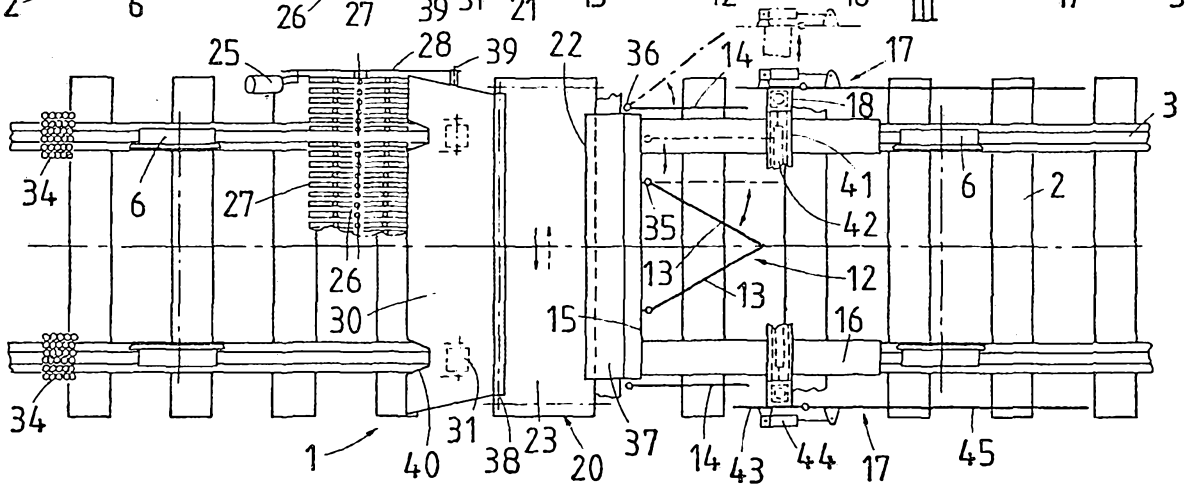

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Fig. 3

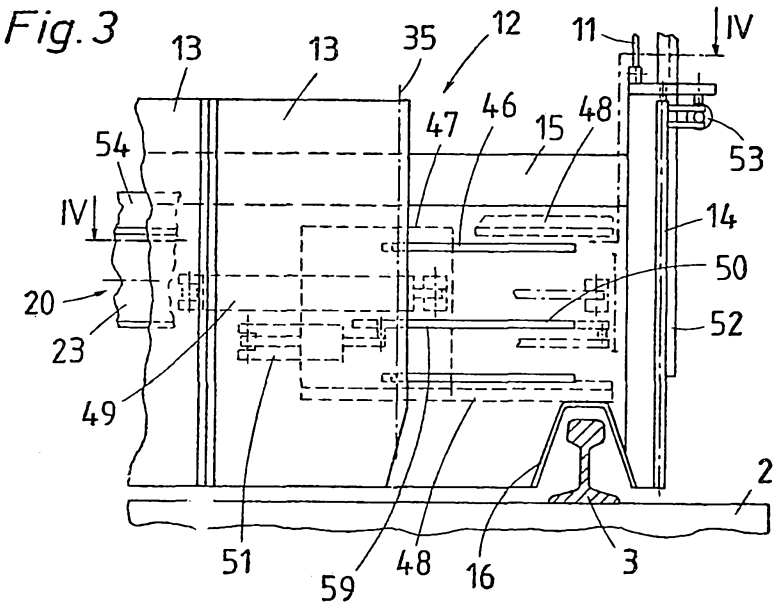

Fig. 4

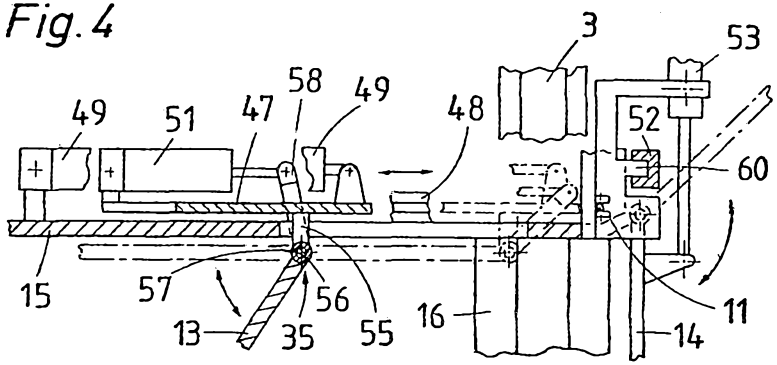

Fig. 5

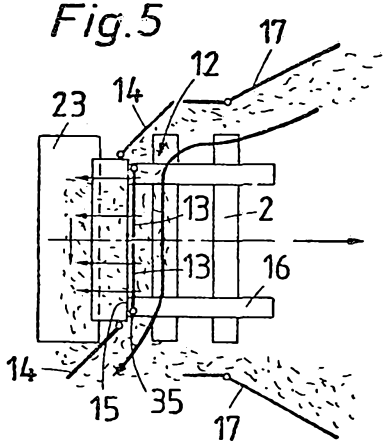

Fig. 6

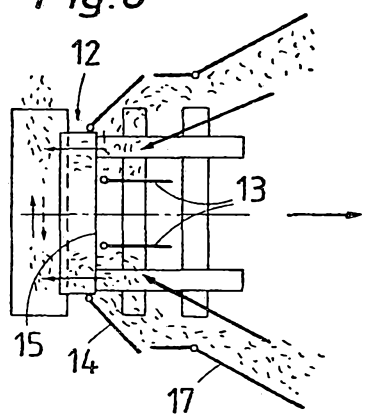

Fig. 7

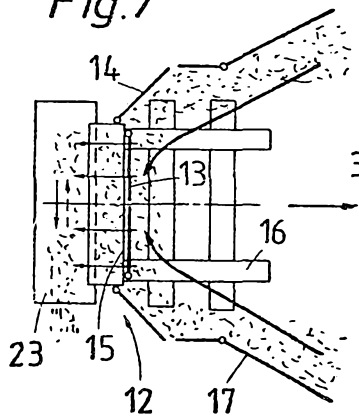

Fig. 8