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Brunninger

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(54) **METHOD FOR TRACK RENEWAL**

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(57) **ABSTRACT**

In a method for renewing a track (**2**) and cleaning a ballast bed (**3**), the old track (**2**) is lifted off the ballast bed in sections as a track panel (**15**), transported forward in a working direction (**4**) and deposited on track panel wagons (**8**). The exposed ballast bed (**3**), forming a renewal gap (**17**), is cleaned by a cleaning machine (**11**), spoil (**32**) accruing in the process is transported forward underneath the track panels (**15**) deposited on the track panel wagons (**8**), and stored in hopper cars (**10**). New rails (**29**), pre-deposited underneath new sleepers (**27**) positioned on sleeper wagons (**14**), are pulled forward into the renewal gap (**17**) by the cleaning machine (**11**) and deposited on the cleaned ballast bed (**3**). The new sleepers (**27**) are laid down on the cleaned
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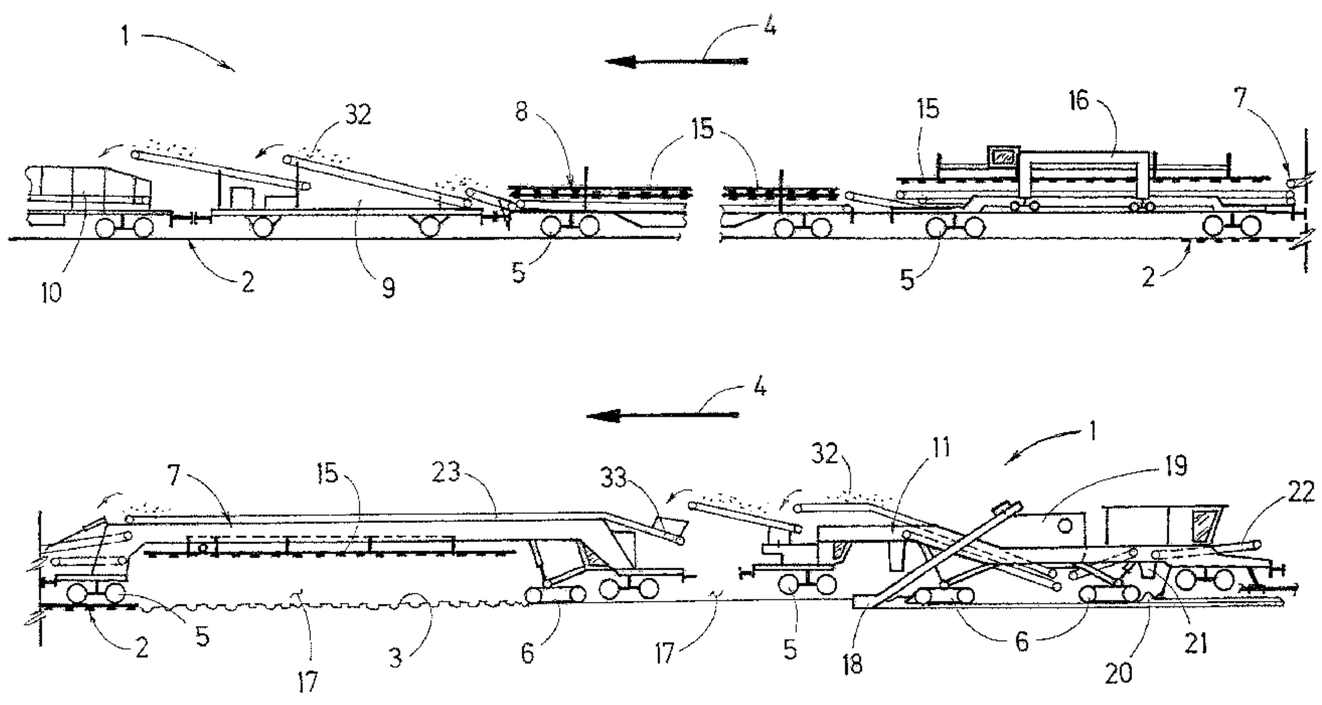

ballast bed and connected to the new rails (**29**) lifted off the ballast bed (**3**).

2 Claims, 2 Drawing Sheets

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E01B 27/11	(2006.01)
E01B 29/02	(2006.01)
E01B 27/02	(2006.01)
E01B 29/05	(2006.01)

(52) **U.S. Cl.**
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(58) **Field of Classification Search**
USPC 104/2
See application file for complete search history.

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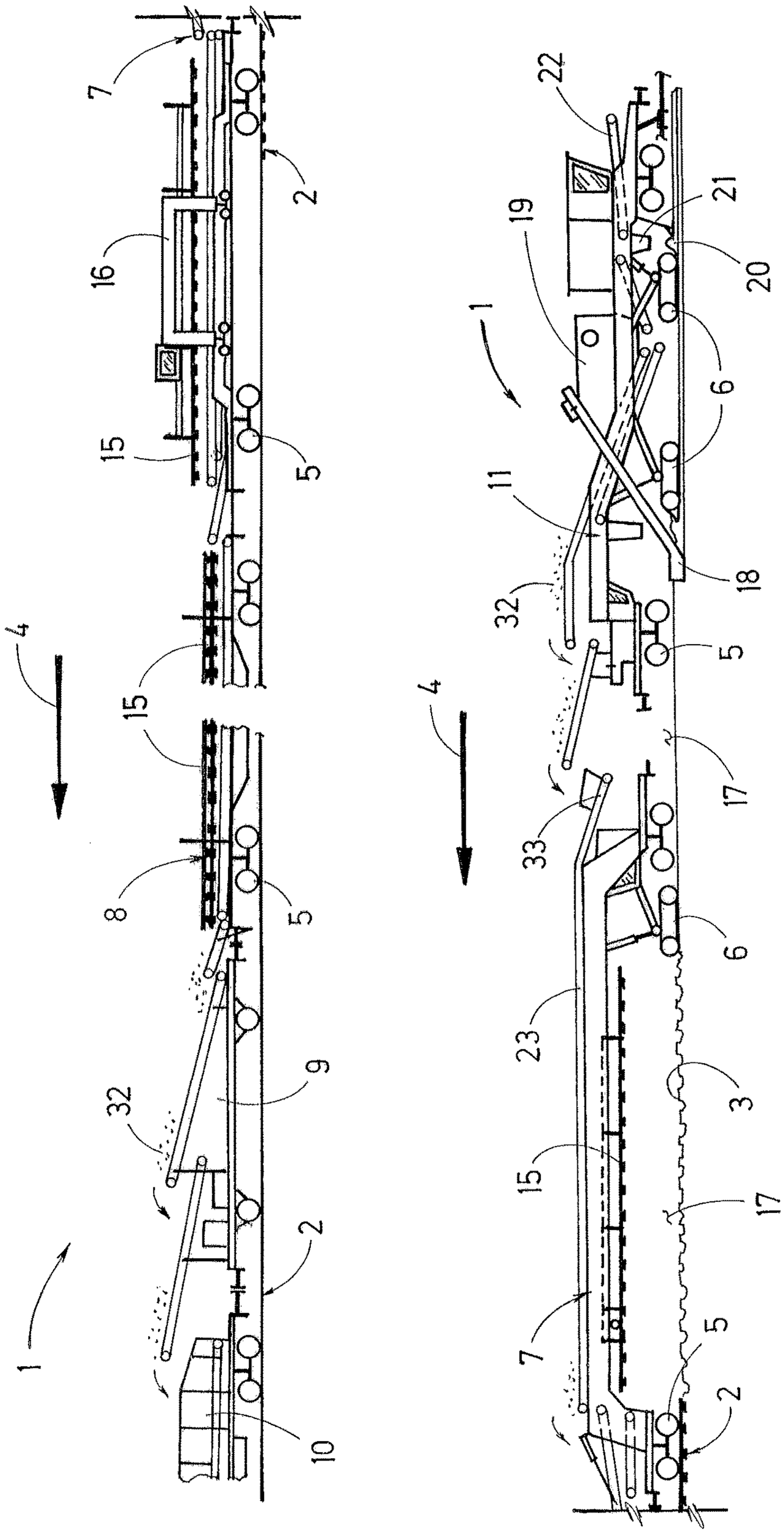
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Fig. 1

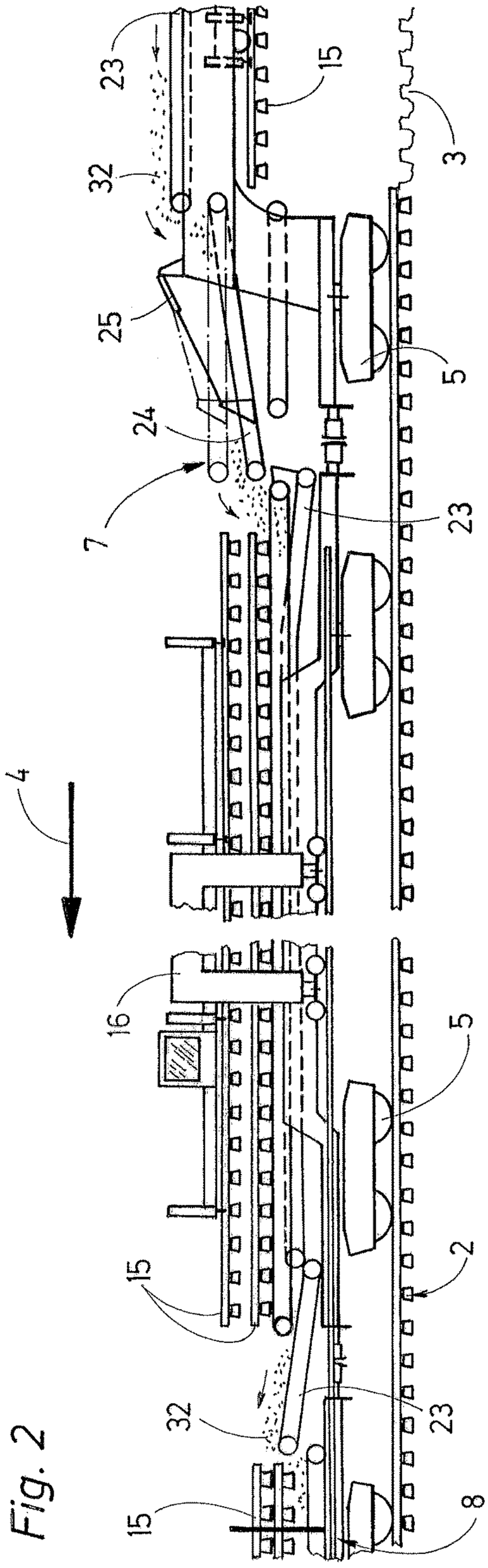
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Fig. 2

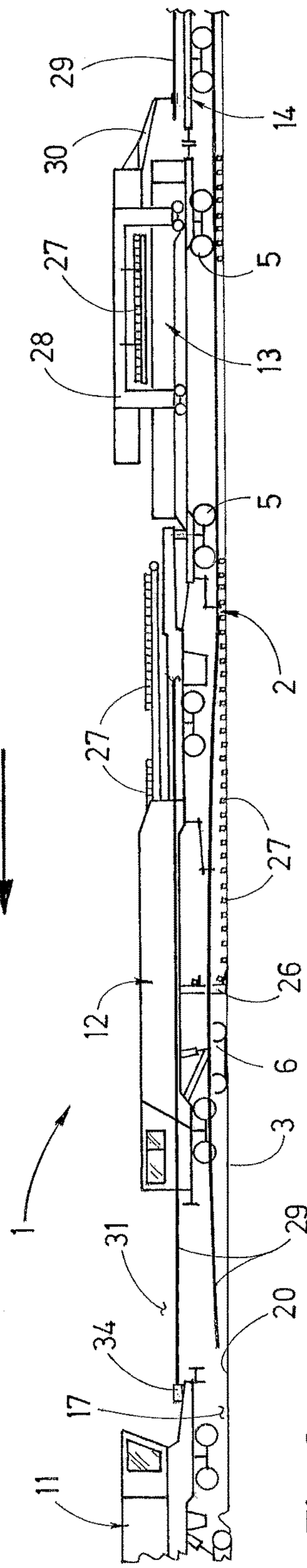
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Fig. 3

METHOD FOR TRACK RENEWAL

CROSS REFERENCE TO RELATED APPLICATIONS

This application is the National Stage of PCT/EP2016/000024 filed on Jan. 8, 2016, which claims priority under 35 U.S.C. § 119 of Austrian Application No. A 55/2015 filed on Feb. 6, 2015, the disclosures of which are incorporated by reference. The international application under PCT article 21(2) was not published in English.

The invention relates to a method for renewing a track and cleaning a ballast bed.

According to AT 368 217, a method for rehabilitation of a track subgrade is known in which, by means of a bridge-like first track maintenance vehicle, a track panel is lifted off a ballast bed and temporarily removed in the longitudinal direction of the track. In the renewal gap thus created, the old ballast bed is excavated by means of a second vehicle. Thereafter—again by means of the first vehicle—a formation protection layer as well as new ballast is introduced into the renewal gap. Upon this new bedding, the old track panel is laid or reinstalled, the panel having been stored on the first vehicle, suspended from the frame of the same, during the bedding rehabilitation process.

A track maintenance machine for partial renewal of a track is known from CH 657 649, said machine consisting of a carrying beam supported at its ends on two on-track undercarriages. This beam is placed above a track panel to be removed, which is lifted up and fixed to the beam. Then the machine is moved on crawler tracks along the track renewal gap, during which the old ballast bed is removed by means of a clearing chain provided at the end of the beam, and new ballast is brought in. Upon the latter, the old track panel is subsequently laid down again.

It is the object of the present invention to provide a method of the kind mentioned at the beginning with which a simplified complete track renewal is possible.

According to the invention, this object is achieved with a method of the specified kind by way of the features cited in the characterizing part of the main claim.

A method of this kind offers the advantage that a complete track renewal is possible which includes transporting away the old rails and, taking place parallel thereto, bringing on new rails. In an advantageous way, this renders unnecessary two additional track closures required for a removal of the old rails and a delivery of new rails which, as a rule, are pre-deposited laterally next to the track to be renewed.

Additional advantages of the invention become apparent from the dependent claim and the drawing description.

The invention will be described in more detail below with reference to an embodiment represented in the drawing in which FIG. **1** is a schematic side view (shown in two parts for reasons of space) of the front section of an installation for track renewal and ballast cleaning, FIG. **2** is an enlarged detail view of a part of the installation, and FIG. **3** is a schematic side view of the rear section of the installation.

An installation **1**, visible in the drawings, serves for renewal of a track **2** and for cleaning of a ballast bed **3** and consists essentially of a number of track maintenance vehicles, arranged one following the other in the longitudinal direction of the track, which are mobile in a working direction **4** on on-track undercarriages **5** and, in part, additionally on crawler tracks **6**. The front section of the installation **1**, shown in FIG. **1**, is dedicated to dismantling the old track **2** and is composed of a panel removing machine **7** and several track panel wagons **8** preceding the same in the working direction **4**. Located at the front end of the installation **1** is a loading wagon **9** to which hopper cars **10** are coupled. An independently mobile ballast bed cleaning machine **11** follows the panel removing machine **7**.

The rear section of the installation **1**, visible in FIG. **3**, serves for laying a new track **2** and includes a sleeper laying machine **12**, following the cleaning machine **11** in the working direction **4**, to which a motor wagon **13** as well as a number of sleeper wagons **14** are coupled.

The method of track renewal according to the invention starts with the removal of the old track **2** in sections, in which a track panel **15** is in each case lifted off the ballast bed **3** by means of the panel removing machine **7**, thus creating a renewal gap **17**, and is transported towards the front in the working direction **4** with the aid of a gantry crane **16** (FIG. **1**), where the track panel **15** is deposited on one of the track panel wagons **8** riding on the old track **2**. During this, the front end of the panel removing machine **7** is supported via on-track undercarriages **5** on the old track **2** while the rear end of the machine **7** rests in the renewal gap **17** on the now exposed ballast bed **3** via a crawler track **6** lowered for this purpose.

The cleaning machine **11**, following in the renewal gap **17** and also moving on lowered crawler tracks **6**, takes up the ballast bed **3** by means of a clearing chain **18** and cleans it in a screening plant **19**. The cleaned ballast **20** is discharged right away again via a chute **21** and graded behind the rear crawler track **6**. Additionally, there is also the alternative possibility to introduce new ballast, as needed, by way of a conveyor belt **22** via the chute **21** into the renewal gap **17**, and to grade the same.

As can be seen in FIGS. **1** and **2**, the spoil **32** accruing in the screening plant **19** is transported forward in the working direction **4** of the installation **1** via a conveyor belt road **23** underneath the track panels **15** deposited on the track panel wagons **8**, where it is discharged via the loading wagon **9** (FIG. **1**) into the hopper cars **10** for storage. In order to enable a removed track panel **15** to be shifted forward without obstruction on the panel removing machine **7** for being placed on the first track panel wagon **8**, a conveyor belt **24** of the conveyor belt road **23** is designed to be vertically pivotable by means of a drive **25**. While the track panel **15** is shifted forward through the region of said conveyor belt **24**, the transporting of the spoil is briefly interrupted.

The forward motions of the panel removing machine **7** and the trailing cleaning machine **11** must be coordinated with one another in such a manner that a continuous transfer of the spoil **32** to a rear end **33** of the conveyor belt road **23** is possible.

In the rear section of the installation **1**, shown in FIG. **3**, the independently mobile sleeper laying machine **12** follows the cleaning machine **11** at a certain distance and, during this, is supported at its front end by a crawler track **6** in the renewal gap **17** on the new or cleaned ballast **20**. Upon the latter, new sleepers **27** which are brought on in layers with the aid of a gantry crane **28** are continuously laid down by means of a sleeper laying device **26**. The new sleepers **27** are stored on sleeper wagons **14** (not shown in detail) arranged at the rear end of the installation **1**, wherein additionally new rails **29** are also stored underneath the new sleepers **27**.

On the sleeper wagons **14**, these new rails **29** are gripped in pairs by means of a gripping device **30** with the aid of the gantry crane **28** and transported forward in the working direction **4** up to a front transfer position **31**. In this position, the free ends of the new rails **29** are received by suitable rail tongs **34**—fastened to the cleaning machine **11**—and pulled

forward into the renewal gap **17** and then temporarily deposited on the cleaned ballast **20** of the ballast bed **3**. After the new sleepers have been placed, the pre-deposited new rails **29** are lifted from the ballast bed **3**, spread onto the new sleepers **27** and connected to the same to form the renewed track **2**.

The invention claimed is:

1. A method for renewing a track and cleaning a ballast bed (**3**), comprising the following steps:

a) lifting an old track off the ballast bed in sections as a track panel is, transported forward in a working direction and deposited on track panel wagons,

b) cleaning the exposed ballast bed, forming a renewal gap, by a cleaning machine, spoil accruing in the process is transported forward underneath the track panels deposited on the track panel wagons (**8**), and stored in hopper cars,

c) pulling new rails, pre-deposited underneath new sleepers positioned on sleeper wagons, forward into the renewal gap by the cleaning machine and deposited on the cleaned ballast bed, and

d) laying down the new sleepers on the cleaned ballast bed and connected to the new rails lifted off the ballast bed.

2. The method according to claim **1** wherein, by means of a gantry crane provided for transport of the new sleepers in the working direction, the new rails are pulled in pairs into a front transfer position for being received by the cleaning machine.

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