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(54) Benævnelse: **MASKINE TIL OPTAGELSE OG OPBEVARING AF MINDRE SPORDELE FRA ET SPOR SÅVEL SOM FREMGANGSMÅDE**

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DESCRIPTION

The invention relates to a machine for picking up and storing rail fastenings of a track according to the features cited in the introductory part of claim 1, and to a method of renewing a track according to the features cited in the introductory part of claim 7, 8.

A machine of this type is known from US 4 225 429. With the aid of a crawler track arranged between on-track undercarriages positioned at the ends, the machine is mobile on ribbed sole-plates of the track.

According to US 4 241 663 it is known to lift the rail fastenings from the old sleepers in connection with a track renewal. Since, in addition to this transport of materials, also the old and new sleepers still have to be conveyed, capacity limits may be reached very quickly.

It is the object of the present invention to provide a machine and method of the specified type with which it is possible to transport also larger amounts of rail fastenings without problems.

According to the invention, this object is achieved with a machine of the specified type by means of the features cited in the characterizing part of claim 1, and with a method according to claim 7.

Due to being designed in this manner, the machine can be employed in an advantageous way in connection with a preliminary stage for sleeper exchange in which the old rails are lifted from the sleepers for the purpose of introducing new rails. By being spatially separated from a trailing machine for the track renewal, the machine according to the application can be adapted for particularly high transport performance for rail fastenings. Parallel thereto, it is furthermore possible with the lowered crawler track to advance

the preliminary operations for the subsequent sleeper exchange to such an extent that, with the aid of the devices for guiding the rails, the new rails can be passed on to the following machine in the already raised position.

Additional advantages of the invention become apparent from the dependent claims 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 shows a side view of a machine for picking up rail fastenings,

Fig. 2 shows a simplified top view of the machine,

Figs. 3 and 4 each show a side view of the machine in combination with a track renewal train.

As can be seen in Figs. 1 and 2, a machine 1 for picking up rail fastenings 2 of a track 3 has a machine frame 5 mobile on on-track undercarriages 4. An energy center 7 with a motive drive 8 is provided for the operational forward travel in a working direction 6.

Located between the on-track undercarriages 4 is a rail fastening pickup device 9. This is composed of two conveyor belts 10, each comprising at a lower deflection end 11 a rotatable magnetic drum 12 and, formed by an upper deflection end 13, a discharge end 14. The discharge ends 14 are situated above the machine frame 5, or above a hopper 15 which is positioned at a receiving end 16 of a conveyor belt 17 extending in the longitudinal direction of the machine. The latter has a discharge end 18 situated above the front on-track undercarriage 4 with regard to the working direction 6.

Provided underneath the discharge end 18 is a receiving station 19 for transfer of the rail fastenings 2 from the

conveyor belt 17 to a transport vehicle 20 which is mobile on an attached wagon 21 in the longitudinal direction of the machine.

Arranged between the rail fastening pickup device 9 and the rear on-track undercarriage 4 - with regard to the working direction 6 - is a crawler track 24 vertically adjustable by drives 23. The crawler track 24 comprises two undercarriage parts 25, spaced from one another in the transverse direction of the machine, each of which is equipped with a motive drive 26.

Between the lower deflection end 11 of the rail fastening pickup device 9 and the front on-track undercarriage 4, three devices 29 for guiding rails 30 are provided per longitudinal side of the machine, the devices 29 being adjustable by drives 28 relative to the machine frame 5 and arranged one following the other in the longitudinal direction of the machine. Additionally, devices 29 are also provided at a rear machine end 31.

A distance **a** between the front on-track undercarriage 4 and the lower deflection end 11 of the rail fastening pickup device 9 is greater by at least 50% than a distance b delimited by the lower deflection end 11 and the rear on-track undercarriage 4. A vertically adjustable auxiliary on-track undercarriage 32 is arranged between the lower deflection end 11 of the rail fastening pickup device 9 and the crawler track 24.

As visible in Figs. 3 and 4, a track renewal train 33 is provided behind the machine 1, said train having a front machine end 34 mobile by means of a crawler track 35 on a ballast bed 36. A device 37 for taking up old sleepers 38 is situated in front of the crawler track 35. New sleepers 38 are laid by means of a device 39 following behind in the working direction 6. For the purpose of guiding the new rails 30, adjustable devices 40 are connected to a machine frame 41.

In working operations, the machine 1 is moved continuously in the indicated working direction 6, during which the old rails 30 are lifted from the sleepers 38 by the devices 29 and laid down in the middle on the track 3. The rail fastenings 2, including the exposed ribbed sole-plates, are lifted by the two magnetic drums 12 and discharged via the conveyor belt 17 upon the transport vehicle 20. After being filled, the latter is driven onto the attached wagons 21 in order to unload the rail fastenings 2. The quantity of accumulating rail fastenings 2 is dependent upon the track type and may add up to about eight tons per kilometre.

The two undercarriage parts 25 of the crawler track 24 are riding on the old sleepers 38, namely on those portions on which the ribbed sole-plates were laying previously (see Fig. 3). With the aid of the rear devices 29, the new rails 30 are lifted and transferred to the trailing devices 40 of the track renewal train 33 coupled to the machine 1. Said track renewal train 33 travels on the ballast bed 36 by means of the crawler track 35, after the old sleepers 38 have been removed beforehand. Subsequently, the new sleepers 38 are laid down, and the new rails 30 upon these.

In an alternative method represented in Fig. 4, after removal of the rail fastenings 2, the old rails 30 are laid provisionally upon the old sleepers 38, with the rear machine end 31 being supported by means of the rear on-track undercarriage 4 on the old rails 30. These are then lifted by the following track renewal train 33 and replaced with the new rails 30.

Alternatively, however, the new rails 30 can also be laid provisionally upon the old sleepers 38 in front of the said rear on-track undercarriage 4 of the rear machine end 31 already. The new rails 30 are then spread apart for the sleeper renewal and subsequently laid upon the new sleepers 38.

Patentkrav

1. Maskine til optagelse og opbevaring af mindre spordele (2) fra et spor (3), med et højdeindstilleligt bælteunderstel (24), der er placeret mellem to skinneunderstel (4) på en maskinramme (5), såvel som med en optagelsesanordning til mindre spordele (9), k e n d e t e g n e t ved følgende træk:

a) optagelsesanordningen til mindre spordele (9) består af to transportbånd (10), der hver især ved en nedre omstyringsende (11) er forsynet med en roterbar magnettromle (12) og en afkastningsende (14), som er dannet af en øvre omstyringsende (13), og som er positioneret oven over maskinrammen (5),

b) bælteunderstellet (24) er placeret mellem optagelsesanordningen til mindre spordele (9) og et - i forhold til en arbejdsretning (6) - bageste skinneunderstel (4),

c) der mellem den nedre omstyringsende (11) i optagelsesanordningen til mindre spordele (9) og det forreste skinneunderstel (4) for hver maskinlængdeside er tilvejebragt i det mindste to anordninger (29) til føring af skinner (30), der ved hjælp af drivanordninger (28) kan indstilles i forhold til maskinrammen (5) og er placeret efter hinanden i maskinens længderetning.

2. Maskine ifølge krav 1, k e n d e t e g n e t ved, at der ved en bageste maskinende (31) for hver maskinlængdeside er tilvejebragt i det mindste to anordninger (29) til føring af skinner (30), der ved hjælp af drivanordninger (28) kan indstilles i forhold til maskinrammen (5) og er placeret efter hinanden i maskinens længderetning.

3. Maskine ifølge krav 1, k e n d e t e g n e t ved, at en afstand a mellem det forreste skinneunderstel (4) og den nedre omstyringsende (11) på optagelsesanordningen til mindre spordele (9) i det mindste er 50 % større end en

afstand b, der begrænses af den nedre omstyringsende (11) og det bageste skinneunderstel (4).

4. Maskine ifølge et af kravene 1, 2 eller 3, k e n d e t e g n e t ved, at der mellem den nedre omstyringsende (11) på optagelsesanordningen til mindre spordele (9) og bælteunderstellet (24) er placeret et højdeindstilleligt hjælpeskinneunderstel (32).

5. Maskine ifølge et af kravene 1 til 4, k e n d e t e g n e t ved, at der er tilvejebragt et tranpsortbånd (17), som har tilslutning til afkastningsenderne (14) på de to transportbånd (10) på optagelsesanordningen til mindre spordele (9) og forløber i maskinens længderetning, og hvis afkastningsende (18) er tilvejebragt over det forreste skinneunderstel (4).

6. Maskine ifølge krav 5, k e n d e t e g n e t ved, at der under afkastningsenden (18) er tilvejebragt en overtagelsesstation (19) til en overdragelse af de mindre spordele (2) fra transportbåndet (17) til et transportkøretøj (20), der kan bevæges i længderetningen på tilsluttede jernbanevogne (21).

7. Fremgangsmåde til fornyelse af et spor (3) med en maskine, der er forsynet med skinneunderstel (4) og et bælteunderstel (24), hvor skinner (30) og sveller (38) fornys under en kontinuerlig fremadgående arbejdskørsel, og mindre spordele (2) frigøres og samles i en beholder, inden de gamle skinner (30) fjernes fra svellerne (38), k e n d e t e g n e t ved, at de gamle skinner (30) inden fjernelsen af de mindre spordele (2), der udføres ved hjælp af en magnettromle (12), løftes op fra svellerne (38), og at de nye skinner (30) efter fjernelsen af de mindre spordele (2) anbringes midlertidigt på de gamle sveller (38) og løftes op igen til udskiftning af svellerne (38).

8. Fremgangsmåde til fornyelse af et spor (3) med en maskine, der er forsynet med skinneunderstel (4) og et bælteunderstel (24), hvor skinner (30) og sveller (38) fornys under en kontinuerlig fremadgående arbejdskørsel, og mindre spordele (2) frigøres og indsamles, inden de gamle skinner (30) fjernes fra svellerne (38), k e n d e t e g n e t ved, at de gamle skinner (30) inden fjernelsen af de mindre spordele (2), der udføres ved hjælp af en magnettromle (12), løftes op fra svellerne (38), og at de nye skinner (30) parallelt med dette løftes op fra sporet (3) og anbringes på dette efter indsættelsen af de nye sveller (38).

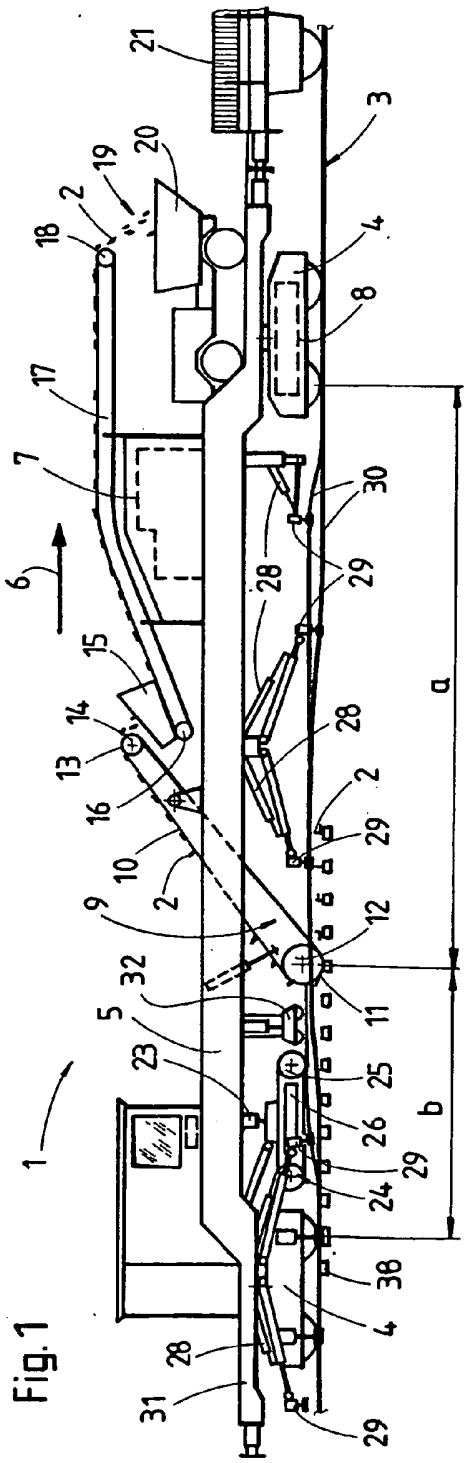


Fig.1

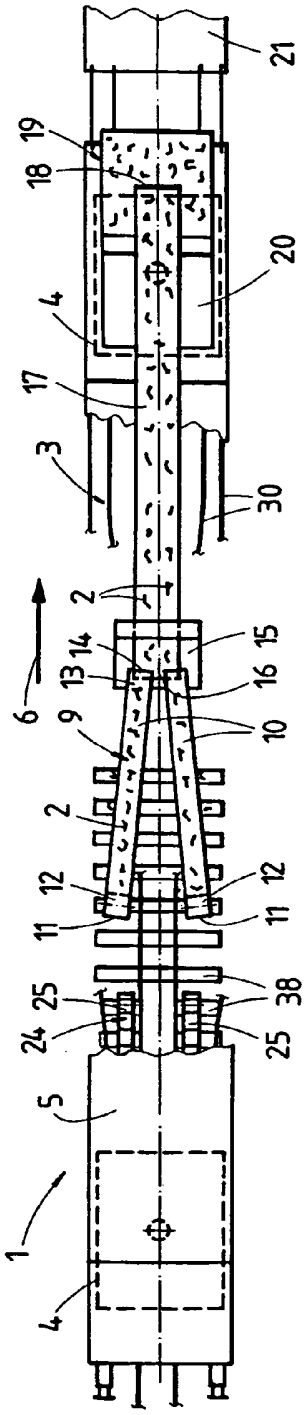


Fig.2

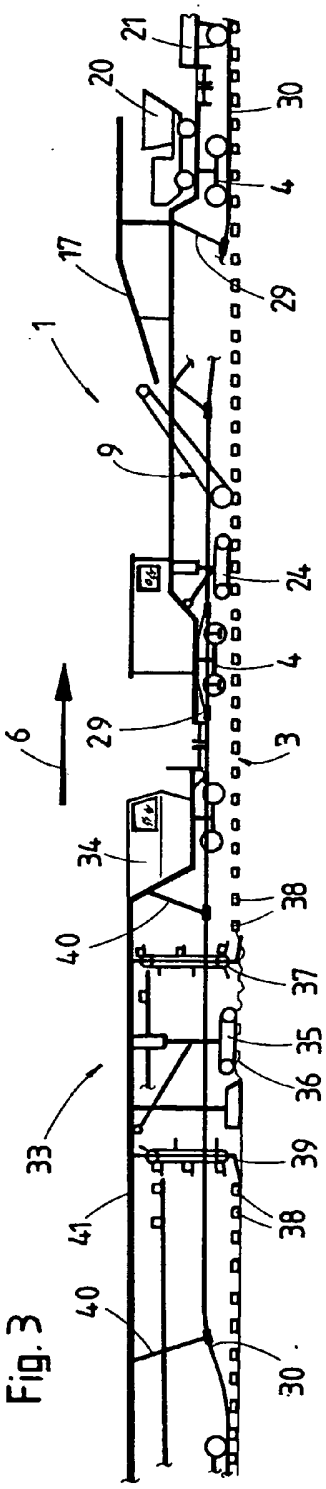

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Fig. 3

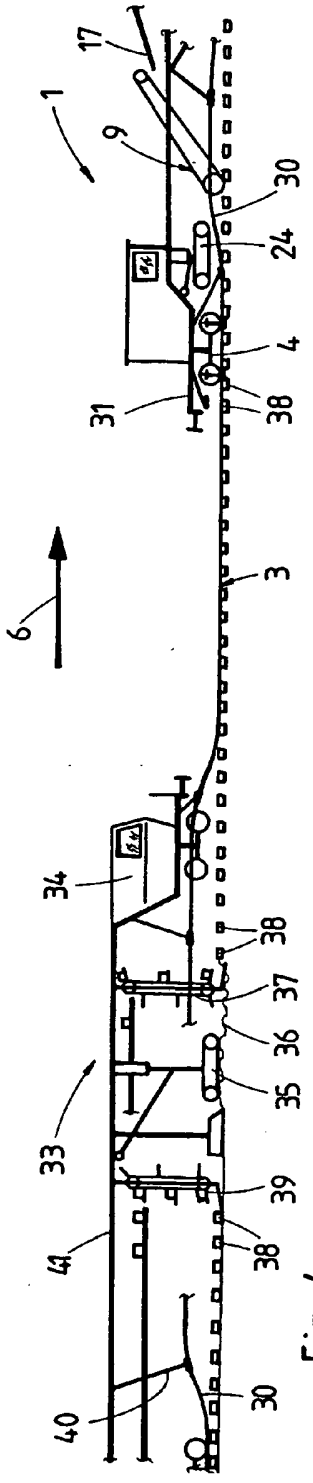

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Fig. 4