US Patent & Trademark Office
Patent Public Search | Text View

United States Patent	12385194
Kind Code	B2
Date of Patent	August 12, 2025
Inventor(s)	Erdtmann; Bernhard et al.

Road finisher with lighting

Abstract

The road finisher comprises a material hopper for receiving paving material, a screed for compacting paving material, and a main control stand which provides an operating location for an operator on the road finisher. The main control stand comprises a floor area. The road finisher comprises a lighting unit. The lighting unit is no more than 140 cm higher with respect to a vertical direction than the floor area of the main control stand. The lighting unit is arranged such that at least 60 percent of the light output emitted by the lighting unit during operation falls onto the floor area of the main control stand.

Inventors: **Erdtmann; Bernhard (Mannheim, DE), Seither; Thomas (Waldsee, DE)**

Applicant: **JOSEPH VOEGELE AG** (Ludwigshafen/Rhein, DE)

Family ID: **1000008750357**

Assignee: **JOSEPH VOEGELE AG (Ludwigshafen/Rhein, DE)**

Appl. No.: **17/492177**

Filed: **October 01, 2021**

Prior Publication Data

Document Identifier	Publication Date
US 20220106745 A1	Apr. 07, 2022

Foreign Application Priority Data

DE	102020125680.9	Oct. 01, 2020

Publication Classification

Int. Cl.: **E01C19/48** (20060101); **E01C23/01** (20060101)

U.S. Cl.:

CPC **E01C19/48** (20130101); **E01C23/01** (20130101); E01C2301/30 (20130101); E01C2301/40 (20130101)

Field of Classification Search

CPC: E01C (19/48); E01C (2301/01); E01C (2301/30); E01C (2301/40)

USPC: 404/101; 404/118; 404/83

References Cited

U.S. PATENT DOCUMENTS

Patent No.	Issued Date	Patentee Name	U.S. Cl.	CPC
8890046	12/2013	Eul	250/205	E01C 19/48
9073460	12/2014	Herzberg	N/A	N/A
9963838	12/2017	Oettinger	N/A	N/A
10087588	12/2017	Buschmann et al.	N/A	N/A
10473637	12/2018	Schoenbach et al.	N/A	N/A
11203284	12/2020	Neisen	N/A	B60Q 1/247
2016/0101722	12/2015	Kopea et al.	N/A	N/A
2017/0198445	12/2016	Oettinger	N/A	E01C 19/48
2017/0254031	12/2016	Buschmann et al.	N/A	N/A
2022/0106745	12/2021	Erdtmann et al.	N/A	N/A

FOREIGN PATENT DOCUMENTS

Patent No.	Application Date	Country	CPC
103031800	12/2012	CN	N/A
203270415	12/2012	CN	N/A
203498730	12/2013	CN	N/A
106414852	12/2016	CN	N/A
107151967	12/2016	CN	N/A
216739147	12/2021	CN	N/A
102015008315	12/2016	DE	N/A
2650437	12/2012	EP	B60K 37/06
3 018 254	12/2015	EP	N/A
2 650 197	12/2016	EP	N/A
3 214 223	12/2016	EP	N/A
3 149 245	12/2017	EP	N/A
2 578 748	12/2017	EP	N/A
2000129621	12/1999	JP	N/A
2013014297	12/2012	JP	N/A
2015/180774	12/2014	WO	N/A
2021/108397	12/2020	WO	N/A

OTHER PUBLICATIONS

Extended European Search Report for EP Patent Application No. 24150483.6-1005, dated Apr. 5, 2024, 7 Pages. cited by applicant

German Search Report Dated Aug. 4, 2021, Application No. 10 2020 125 680.9, Applicant Joseph Voegele Aktiengesellschaft, 6 Pages. cited by applicant
Chinese Search Report (with English Machine Translation) Dated Dec. 19, 2022,Application No. 202111168825.0, 6 Pages. cited by applicant
Chinese Office Action (with English Machine Translation) Dated Dec. 27, 2022,Application No. 202111168825.0, 17 Pages. cited by applicant
Third Office Action for Chinese Patent Application No. 202111168825.0, dated Feb. 2, 2024, 5 Pages (including English Translation). cited by applicant
European Search Report (with English Machine Translation) Dated Mar. 30, 2022, Application No. / Patent No. 21199892.7-1002 / 3988715, Applicant Joseph Voegele AG, 15 Pages. cited by applicant

---

Primary Examiner: Addie; Raymond W

Attorney, Agent or Firm: BROOKS KUSHMAN P.C.

Background/Summary

CROSS-REFERENCE TO RELATED APPLICATIONS

(1) This application claims foreign priority benefits under 35 U.S.C. § 119(a)-(d) to German patent application number DE 102020125680.9, filed Oct. 1, 2020, which is incorporated by reference in its entirety.

TECHNICAL FIELD

(2) The disclosure relates to a road finisher with a main control stand which provides an operating location for an operator on the road finisher.

BACKGROUND

(3) From EP 3 214 223 A1, a road finisher for paving a road surface is known which comprises a material hopper located at the front in the paving travel direction for receiving paving material and a screed located at the rear in the paving travel direction for compacting the paving material. A workplace for an operator is provided on a driver's cab of the road finisher. The driver's cab is located at a central and elevated position on the road finisher and comprises a roof to protect the operator from the elements. A control panel with control elements is provided for controlling work components of the road finisher. The control elements may be operated by an operator seated on a driver's seat. A driver's cab lighting is provided to illuminate the driver's cab. The driver's cab lighting is provided at a support beam of the roof and shines from above into the occupational area of the operator in the driver's cab.

(4) The inventors have recognized that this type of driver's cab lighting may have certain drawbacks when used on night construction sites. Due to the positioning and orientation of the driver's cab lighting, workers or other people in the vicinity of the road finisher may be blinded. In addition, passing road users may also be blinded. The operator in the driver's cab is directly illuminated by the driver's cab lighting and is therefore particularly clearly visible from the outside. This may lead to the operator feeling observed and unable to concentrate on his or her tasks in peace. Due to the positioning and orientation of the driver's cab lighting, considerable differences in brightness between the driver's cab and the surroundings of the road finisher may arise. The operator's eyes may adapt to the brightness in the driver's cab, as a result of which the operator's ability to look into darker areas in the vicinity of the road finisher is reduced. This may affect the operator's ability to monitor the paving process. In addition, impairments may arise if the operator cannot clearly see, for example, the movement of people in the region of the road finisher.

(5) EP 2 578 748 B1 discloses a road finisher with an outer control stand provided behind the screed. The outer control stand is operated by a person walking along with the road finisher. A lighting device is integrated into a housing of a control panel of the outer control stand for illuminating a ground region arranged in front of, behind and/or under the outer control stand and to thus enable an obstacle on the ground traveled to be discovered.
(6) EP 3 149 245 B1 describes a screed arrangement for a road finisher at which a work station for an operator is mounted. The work station comprises a floor plate on which the operator may stand. The workplace comprises a lighting unit for illuminating primarily the workplace itself and the outer region of the working width.
(7) A road finisher with a driver's cab platform is known from EP 2 650 197 B **1**. The road finisher comprises an operator's seat which may be pivoted between a first working position and a second working position. In the first working position, the seat is oriented approximately in the direction of travel of the road finisher and is located within a width of the driver's cab platform. In the second working position, on the other hand, the operator's seat is pivoted outward so that it projects beyond a lateral boundary of the driver's cab platform and is oriented at an angle to the direction of travel.
SUMMARY
(8) It is an object of the disclosure to provide improved lighting for a road finisher.
(9) According to an aspect of the disclosure, a road finisher comprising a material hopper for receiving paving material, a screed for compacting paving material, and a main control stand is provided. The main control stand provides an operating location for an operator on the road finisher. The main control stand comprises a floor area. The road finisher comprises a lighting unit. The lighting unit is arranged not more than 140 cm higher with respect to a vertical direction than the floor area of the main control stand. The lighting unit is arranged such that at least 60 percent of the light output emitted by the lighting unit during operation falls onto the floor area of the main control stand.
(10) Due to the mounting height of no more than 140 cm above the floor area of the main control stand, an operator on the main control stand of the road finisher is typically not illuminated from above. In particular on night construction sites, this leads to reduced visibility of the operator from outside the road finisher and therefore to improved ease of use. The mounting height of the lighting unit of no more than 140 cm above the floor area of the main control stand also reduces the likelihood of the operator looking directly into the lighting unit and being blinded as a result. This applies to a standing operator as well as a seated operator. Directly visibility of the lighting unit from outside the road finisher is reduced due to the mounting height of no more than 140 cm above the floor area of the main control stand. This reduces the likelihood of workers or other people, in particular vehicle drivers, in the vicinity of the road finisher being blinded.
(11) The floor area of the main control stand is particularly well illuminated because at least 60 percent of the light output emitted by the lighting unit during operation falls onto the floor area of the main control stand. This makes it easier for the operator to find his way around the main control stand even in the dark. In particular, the likelihood of the operator taking a wrong step is reduced due to the floor area being illuminated. The portion of light emitted onto the floor area of the main control stand is perceived as indirect illumination of the main control stand and therefore has a reduced risk of glare. Diffuse, i.e., non-blinding, illumination of the main control stand may be obtained by reflection of the light emitted onto the floor of the main control stand.
(12) The road finisher preferably comprises a towing vehicle. The material hopper may be arranged at the towing vehicle. The screed may be pulled along behind the towing vehicle.
(13) The main control stand is preferably arranged on the towing vehicle of the road finisher. The main control stand may be arranged in a central and/or elevated position on the towing vehicle of the road finisher. The main control stand may comprise an operating platform.
(14) The main control stand may comprise a roof for protecting the operator from the elements. The

main control stand may be an open control stand (not closed like a cabin) or a control stand that is closed like a cabin. The main control stand may comprise a fall protection, for example in, the form of a railing.
(15) The lighting unit may comprise one or more light sources that generate visible light. The light sources may be electrical light sources. The light sources may, for example, be LEDs, lightbulbs, or gas discharge lamps. LEDs are preferred because of their low energy consumption and long service life. In particular, the light sources may be in the form of an LED strip which preferably extends along a transverse direction (transverse to the paving travel direction).
(16) That the lighting unit is arranged no more than 140 cm higher with respect to the vertical direction than the floor area of the main control stand may mean in particular that a light exit surface through which the light provided by the lighting unit exits the lighting unit is arranged no more than 140 cm higher than the floor area. That the lighting unit is arranged no more than 140 cm higher with respect to the vertical direction than the floor area of the main control stand may mean in particular that a light-generating light source of the lighting unit is arranged no more than 140 cm higher with respect to the vertical direction than the floor area of the main control stand.
(17) The floor area of the main control stand may be configured at least in part as a metal surface. A comparatively high portion of light is reflected from a metal surface, so that the light emitted by the lighting unit onto the floor area of the main control stand may still contribute to the illumination of the main control stand even after being reflected from the floor area. It would also be conceivable to have the floor area of the main control stand be formed, at least in sections, by a floor mat, such as a rubber mat, which may improve the operator's surefootedness on the main control stand.
(18) As explained, the lighting unit is arranged not more than 140 cm higher with respect to a vertical direction than the floor area of the main control stand. According to some embodiments, the lighting unit is even arranged no more than 130 cm, or no more than 120 cm, or no more than 110 cm, or no more than 100 cm, or no more than 90 cm, or no more than 80 cm, or not more than 70 cm, or not more than 60 cm higher with respect to the vertical direction than the floor area of the main control stand.
(19) As explained, the lighting unit is arranged such that at least 60 percent of the light output emitted by the lighting unit during operation falls onto the floor area of the main control stand. According to some embodiments, the lighting unit is arranged such that even at least 70 percent, or at least 75 percent, or at least 80 percent, or at least 90 percent of the light output emitted by the lighting unit during operation falls onto the floor area of the main control stand.
(20) A main direction of emittance of the lighting unit may be inclined downward with respect to a horizontal plane. A main direction of emittance that is inclined downward with respect to a horizontal plane ensures that the operator on the main control stand is unlikely to be blinded, since the operator under normal conditions will not look into the lighting unit from below along the main direction of emittance if the lighting unit is arranged no more than 140 cm higher than the floor area of the main control stand. The main direction of emittance of the lighting unit may be the direction in which the highest light output is emitted. The main direction of emittance of the lighting unit may be at least substantially arranged centrally in an emittance volume of the lighting unit. The main direction of emittance of the lighting unit is inclined downward with respect to a horizontal plane preferably by at least 10 degrees, or by at least 20 degrees, or by at least 30 degrees, or by at least 40 degrees, or by at least 50 degrees, or by at least 60 degrees, or by at least 70 degrees, or by at least 80 degrees, or by about 90 degrees.
(21) The road finisher may comprise an opaque upper shield which is arranged above the lighting unit and shields the lighting unit at least from a viewing direction from above. The opaque upper cover may prevent the operator from looking directly into the lighting unit from above and being blinded in the process.
(22) The road finisher may comprise an opaque side shield which shields the lighting unit at least

from a horizontal viewing direction. Shielding with respect to a horizontal viewing direction may prevent blinding people or road users in the vicinity of the road finisher. The horizontal viewing direction may be parallel to the paving travel direction of the road finisher. The horizontal viewing direction may be perpendicular to the paving travel direction of the road finisher. The horizontal viewing direction may have a component parallel to the paving travel direction of the road finisher and a component perpendicular to the paving travel direction of the road finisher.

(23) The main control stand may comprise a control panel with control elements for controlling functions of the road finisher. The lighting unit may be mounted beneath the control panel. If the lighting unit is mounted beneath the control panel, the lighting unit is shielded by the control panel towards the top. An operator working at the control panel cannot look directly into the lighting unit. A lighting unit mounted beneath the control panel may provide indirect illumination of the main control stand. The lighting unit may use installation space otherwise unused below the control panel.

(24) The main control stand may comprise a seat for an operator. In particular, an operator seated in the seat may operate control elements of the control panel. An imaginary linear connecting line between an upper end of a backrest of the seat and the lighting unit may run through the control panel or through a structure provided beneath the control panel, such as a holder for the control panel or a panel guide for the control panel. The control panel or the structure provided beneath the control panel may block an operator seated in the seat from having a direct view onto the lighting unit and thereby prevent the operator from being blinded. The upper end of the backrest may be defined by a backrest main body. The upper end of the backrest may be configured as the upper end of a headrest provided optionally.

(25) The lighting unit may be mounted to an underside of a component of the road finisher. For example, the lighting unit may be mounted to an underside of the control panel. Alternatively, the lighting unit may be mounted to an underside of a holder for the control panel or a panel guide for sliding a control panel of the road finisher with respect to a sliding direction. The panel guide may enable, for example, the control panel provided at the main control stand to be slid transversely to the paving travel direction.

(26) The floor area of the main control stand is preferably a walking surface and/or a tread surface and/or a standing surface for an operator of the road finisher.

(27) A luminosity of the lighting unit may be individually adjustable. An adjustable luminosity makes it possible to adjust the lighting to the respective construction site environment or to the preferences of the operator. The luminosity may be set, for example, using the control panel. The luminosity may be effected, for example, by switching on or off individual light sources of the lighting unit or by dimming one or more light sources of the lighting unit.

(28) A light color of the lighting unit may be individually adjustable. An adjustable light color makes it possible to adjust the lighting to the respective construction site environment or to the preferences of the operator. The light color may be set, for example, using the control panel.

(29) The road finisher may comprise a brightness sensor, and a control device of the road finisher may be configured to adjust a luminosity of the lighting unit in dependence of a sensor output by the brightness sensor. For example, the control device of the road finisher may regulate the luminosity of the lighting unit into a predefined range or to a predefined value based on a sensor output by the brightness sensor. It may be achieved by way of the brightness sensor that an appropriate brightness is obtained without any active intervention on the part of the operator.

(30) According to a further aspect, the disclosure relates to a road finisher with a material hopper for receiving paving material, a screed for compacting paving material, and a main control stand. The main control stand comprises a seat for an operator and a control panel with control elements for controlling functions of the road finisher. The road finisher comprises a lighting unit. An imaginary linear connecting line between an upper end of a backrest of the seat for the operator and the lighting unit runs through the control panel or through a structure provided beneath the control

panel.
(31) The control panel or the structure provided beneath the control panel may prevent an operator seated in the seat from looking directly into the lighting unit and being blinded as a result. The control panel or the structure provided beneath the control panel may shield the lighting unit. The control panel or the structure provided beneath the control panel may prevent a region of the main control stand located above the control panel from being illuminated excessively.
(32) The structure provided beneath the control panel may be, for example, a holder for the control panel or a panel guide for the control panel. The panel guide may allow the control panel to be slid relative to a sliding direction which may run in particular transverse to the paving travel direction.
(33) A main direction of emittance of the lighting unit is preferably oriented forward or rearward with respect to a paving travel direction of the road finisher. A main direction of emittance oriented forward means that people disposed behind the road finisher cannot be directly blinded by the lighting unit. A main direction of emittance oriented rearward means that people disposed in front of the road finisher cannot be directly blinded by the lighting unit. That the main direction of emittance of the lighting unit is oriented forward or rearward with respect to the paving travel direction does not preclude that the main direction of emittance may additionally be inclined with respect to a horizontal plane. The main direction of emittance of the lighting unit could also be oriented vertically downward. This also makes it possible to effectively avoid blinding people in the vicinity of the road finisher.
(34) A main direction of emittance of the lighting unit may be inclined downward with respect to a horizontal plane. The main direction of emittance may be inclined with respect to a horizontal plane, for example by at least 10 degrees, or by at least 20 degrees, or by at least 30 degrees, or by at least 40 degrees, or by at least 50 degrees, or by at least 60 degrees, or by at least 70 degrees, or by at least 80 degrees, or by about 90 degrees.
(35) The lighting unit may be mounted at the control panel. The lighting unit may in particular be mounted to an underside of the control panel.
(36) The road finisher may comprise a panel guide for sliding the control panel with respect to a sliding direction. The lighting unit may be mounted to an underside of the panel guide.
(37) According to a further aspect of the disclosure, a road finisher for paving a road surface on a subgrade is provided. The road finisher comprises a material hopper for receiving paving material, a screed for compacting paving material, a main control stand, and a subgrade lighting. The main control stand comprises an operating platform and a seat unit with a seat for an operator. The seat unit is movable between a first position and a second position. In the first position, the seat is disposed at least substantially within a width of the operating platform. The width of the operating platform relates to an extension in a transverse direction of the road finisher perpendicular to the paving travel direction, meaning to the left and the right as seen in the paving travel direction. In the second position, the seat projects laterally beyond the operating platform. The subgrade lighting is mounted to the seat unit. The subgrade lighting is configured to illuminate the subgrade in the second position of the seat unit.
(38) The movability of the seat unit makes it possible to adapt the seating position of an operator to the requirements of the respective paving situation. When the seat unit is disposed in the first position, an operator seated in the seat has good access to control devices on the main control stand. In the first position of the seat unit, the operator in the seat may have a good forward view in the paving travel direction. When the seat unit is disposed in the second position, meaning it projects laterally beyond the operating platform, an operator seated in the seat has an improved view of the subgrade laterally beside the road finisher. The operator may look substantially laterally beside the road finisher directly downward, or downward forward or downward to the rear, and thereby has an improved view of the edge region of the paved road surface.
(39) The illumination of the subgrade with the subgrade lighting makes it easier for the operator to follow processes on the ground when the seat unit is in the second position and thereby enables the

operator to control the paving process in an improved and adapted manner, in particular on night construction sites. Since the subgrade lighting is mounted to the seat unit, it is moved along when the seat unit is moved to the second position. As a result, the subgrade lighting may be optimally positioned for illuminating the subgrade in the field of vision of an operator seated in the seat. When the seat unit is moved back to the first position, the subgrade lighting is moved along and is then relatively well protected against soiling and damage, in particular within the width of the operating platform.

(40) The subgrade lighting is preferably disposed within the width of the operating platform when the seat unit is disposed in the first position. The subgrade lighting is preferably disposed laterally outside the operating platform when the seat unit is in the second position.

(41) The subgrade lighting may be mounted at the underside of the seat unit. The subgrade lighting may illuminate the subgrade directly and efficiently from the underside of the seat unit. Mounting the subgrade lighting to an underside of the seat unit reduces the risk of people in the vicinity of the road finisher or other road users being blinded by the subgrade lighting.

(42) The seat unit may comprise a console carrying the seat. The console may comprise, for example, a plate onto which the seat is mounted. The movability of the seat unit may be provided by the movability of the console. The subgrade lighting may be mounted in particular to the underside of the console.

(43) The seat unit may be pivotable about a vertical axis between the first position and the second position. The seat unit may be slidable between the first position and the second position. Mixed forms are also conceivable in which a motion of the seat unit between the first position and the second position comprises pivoting, in particular about a vertical axis, and a translational motion.

(44) In the first position of the seat unit, the seat may be oriented at least substantially in the paving travel direction of the road finisher. This gives an operator sitting in the seat an optimal view in the paving travel direction.

(45) In the second position of the seat unit, the seat may be pivoted relative to the paving travel direction.

(46) A main direction of emittance of the subgrade lighting is preferably inclined downward with respect to a horizontal direction by at least 30 degrees, or by at least 45 degrees, or by at least 60 degrees, or by at least 80 degrees, or by substantially 90 degrees. Direct and efficient illumination of the subgrade is achieved by the main direction of emittance of the subgrade lighting being inclined downward. In addition, the blinding effect for other road users is reduced.

(47) The road finisher may comprise a control device that is configured to activate the subgrade lighting in an automated manner when the seat unit is moved to the second position. In this case, the operator only needs to move the seat unit to the second position if he wants to see the subgrade at the side of the road finisher. Manual activation of the subgrade lighting is no longer necessary. The control device may detect a motion of the seat unit to the second position and, based thereupon, activate the subgrade lighting in an automated manner.

(48) Alternatively, the subgrade lighting could be activated manually or be activated or deactivated together with the machine lighting.

(49) The main direction of emittance of the subgrade lighting may be adjustable. The main direction of emittance of the subgrade lighting may be adjusted, for example, in an automated manner by way of a control device or manually by the operator.

(50) According to a further aspect, the disclosure relates to a road finisher for paving a road surface on a subgrade. The road finisher comprises a material hopper for receiving paving material, a screed for compacting paving material, a main control stand, a subgrade lighting, and a control device. The main control stand comprises an operating platform and a seat unit with a seat for an operator. The seat unit is movable between a first position and a second position. In the first position, the seat is disposed at least substantially within a width of the operating platform. In the second position, the seat projects laterally beyond the operating platform. The subgrade lighting is

configured to illuminate the subgrade. The control device is configured to activate the subgrade lighting in an automated manner when the seat unit is moved to the second position.
(51) In the second position of the seat unit, an operator seated in the seat has an improved view of the subgrade. It may be assumed that the operator would like to see the subgrade and observe it for better control of the paving process when the seat unit is moved to the second position. As a result of the automated activation of the subgrade lighting when the seat unit is moved to the second position, the observation of the subgrade is automatically facilitated by the illumination of the subgrade when the seat unit is moved to the second position. Manual activation of the subgrade lighting by the operator is not required.
(52) The subgrade lighting may be arranged such that it illuminates the subgrade at a point which may be observed by the operator when he is seated in the seat while the seat unit is in the second position. In particular, the subgrade lighting in the second position of the seat unit may illuminate a work area of the screed.
(53) The subgrade lighting may be mounted, for example, to the seat unit, to a chassis of the road finisher, to a roof of the main control stand, or to another component of the road finisher. The subgrade lighting may be mounted at the side of the road finisher.
(54) The control device is preferably configured to deactivate the subgrade lighting in an automated manner when the seat unit is moved to the first position. Manual deactivation of the subgrade lighting may then be dispensed with.
(55) The road finisher preferably comprises a sensor which is configured to detect a position of the seat unit. The control device may control the subgrade lighting based on an output from the sensor. The sensor may directly detect the position of the seat unit, for example, by detecting a component of the seat unit. Alternatively, indirect detection of the position of the seat unit would also be conceivable, for example, in that the sensor reacts to an actuation of a motion mechanism of the seat unit.
(56) The motion of the seat unit between the first position and the second position may be to pivot about a vertical axis. The motion of the seat unit between the first position and the second position may be a sliding motion (translational motion). Mixed forms are also conceivable in which the motion of the seat unit between the first position and the second position comprises pivoting, in particular about a vertical axis, and a translational motion.
(57) The control device of the road finisher may be configured to adapt an illumination area illuminated by the subgrade lighting in dependence of a paving width of the screed. For example, the control device may adapt the position and/or the size of the illumination area in dependence of the paving width of the screed. The paving width of the screed may be made available to the control device by user input or by the detection of a screed configuration. The illuminated illumination area may be effected for example, by changing a luminosity of a lighting unit of the subgrade lighting or by switching on or off one or more lighting elements of the subgrade lighting.
(58) The main direction of emittance of the subgrade lighting may be adjustable, in particular in dependence of the paving width of the screed. The main direction of emittance of the subgrade lighting may be adjusted, for example, in an automated manner by way of a control device or manually by the operator. The control device may be configured to adjust a luminosity and/or a main direction of emittance of the subgrade lighting in dependence on the paving width of the screed.
(59) Features, embodiments, or advantages described regarding one of the aspects of the disclosure may be transferred to and combined with the other aspects of the disclosure.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

(1) The disclosure shall be further explained hereafter on the basis of embodiments with reference to the figures, where

(2) FIG. **1** shows a schematic side view of a road finisher according to an embodiment;

(3) FIG. **2** shows a schematic perspective view of an occupational region for an operator on the main control stand of a road finisher according to an embodiment;

(4) FIG. **3** shows a schematic sectional view through the main control stand of a road finisher according to an embodiment with a lighting for the main control stand;

(5) FIG. **4** shows a schematic perspective view of a rear area of a road finisher at an angle from above according to an embodiment with a pivotable seat unit and subgrade lighting; and

(6) FIG. **5** shows a schematic perspective view of the rear area of the road finisher shown in FIG. **4** at an angle from below.

DETAILED DESCRIPTION

(7) FIG. **1** shows a road finisher **1** according to an embodiment. Road finisher **1** comprises a towing vehicle **3** on which a material hopper **7** for receiving paving material is provided at the front with respect to a paving travel direction **5** of road finisher **1**. A screed **11** for compacting the paving material is pulled behind towing vehicle **3** by way of traction bars **9**. A main control stand **13** is provided on towing vehicle **3**. Main control stand **13** provides a raised operating location for an operator on road finisher **1**. From main control stand **13**, the operator may see the surroundings of road finisher **1** in all directions. Main control stand **13** comprises a roof **15** or protecting the operator from the elements. Main control stand **13** comprises a floor area **17** on which the operator may stand. Floor area **17** may be configured, for example, as a metal surface, at least in sections. Floor area **17** may also be formed at least in sections by a layering, such as a rubber mat or the like. Main control stand **13** comprises a seat **19** for the operator. In addition, a control panel **21** with control elements for controlling functions of road finisher **1** is provided at main control stand **13**. Control panel **21** may comprise, for example, actuatable buttons or switches. An operator seated on seat **19** may operate the control elements of control panel **21**. In the embodiment shown, an outside control stand **23** is further provided at screed **11**.

(8) As shown in FIG. **2**, main control stand **13** illustrated in the embodiment comprises two seats **19** which are spaced from one another with respect to a horizontal transverse direction **25** that is perpendicular to paving travel direction **5**. Depending on the viewing point preferred for the specific paving situation, the operator may take a seat on one of the two seats **19**. If the operator wishes to observe, for example, a road lane edge which in paving travel direction **5** is on the right-hand side during the paving process, then the operator may advantageously take a seat on seat **19** on the right-hand side. In the embodiment shown, control panel **21** is mounted to a panel guide **27** so as to be slidable. Panel guide **27** extends along transverse direction **25** from seat **19** on the left-hand side to seat **19** on the right-hand side. By sliding control panel **21** along panel guide **27**, control panel **21** may be moved in front of the seat **19** on which the operator is currently seated. Alternatively, it would of course also be conceivable to provide only one seat **19** and to provide control panel **21** in a fixed or slidable manner in front of seat **19**, for example by way of a holder.

(9) FIG. **3** shows a schematic representation of a section (section A-A in FIG. **2**) through main control stand **13** in a viewing direction along transverse direction **25**. As may be seen in FIG. **3**, panel guide **27** extends with respect to paving travel direction **5** in front of seat **19** in transverse direction **25**. In the situation shown in FIG. **3**, control panel **21** is in front of the seat **19** which is not illustrated and is therefore not visible in the figure. Control panel **21** is mounted in guide rails **29** of panel guide **27** so as to be slidable along transverse direction **25**. Control panel **21** is disposed lying substantially on top of panel guide **27**.

(10) As may be seen from FIG. **3**, a lighting unit **31** is mounted underneath panel guide **27**. In the embodiment shown, lighting unit **31** is configured as an LED strip which extends underneath panel

guide **27** along panel guide **27** in transverse direction **25**. The LED strip preferably extends at least substantially along the entire extension length of panel guide **27** in transverse direction **25**.
(11) Lighting unit **31** is used to illuminate main control stand **13**. In particular, if road finisher **1** is to be operated at dusk or at night, lighting unit **31** may be switched on to make it easier for the operator to operate road finisher **1** from main control stand **13**. Mounting lighting unit **31** to the underside of panel guide **27** results in a relatively low mounting height of lighting unit **31** above floor area **17** of main control stand **13**. Lighting unit **31** is no more than 140 cm higher with respect to a vertical direction than floor area **17** of main control stand **13**. According to some embodiments, lighting unit **31** is even no more than 130 cm, or no more than 120 cm, or no more than 110 cm, or no more than 100 cm, or no more than 90 cm, or no more than 80 cm, or not more than 70 cm, or not more than 60 cm higher with respect to the vertical direction than floor area **17** of main control stand **13**.
(12) Lighting unit **31** is arranged such that at least 60 percent of the light output emitted by lighting unit **31** during operation falls onto floor area **17** of main control stand **13**. According to some embodiments, lighting unit **31** is arranged such that even at least 70 percent, or at least 75 percent, or at least 80 percent, or at least 90 percent of the light output emitted by lighting unit **31** during operation falls onto floor area **17** of main control stand **13**.
(13) A main direction of emittance **33** of lighting unit **31** is inclined downward with respect to a horizontal plane. Main direction of emittance **33** of lighting unit **31** in the illustrated embodiment is inclined downward by an angle **35** with respect to a horizontal plane. Angle **35** may be, for example, at least 10 degrees, or at least 20 degrees, or at least 30 degrees, or at least 40 degrees, or at least 50 degrees, or at least 60 degrees, or at least 70 degrees, or at least 80 degrees, or approximately 90 degrees. Angle of inclination **35** of main direction of emittance **33** with respect to the horizontal plane may be selected by suitably mounting lighting unit **31**.
(14) An indirect illumination of main control stand **13** from below is created as a result of mounting lighting unit **31** inclined downward with respect to a horizontal plane at a comparatively low height above floor area **17**.
(15) An imaginary linear connecting line **37** between an upper end of a backrest **39** of seat **19** and lighting unit **31** runs through control panel **21** or, as in the present case, through a structure (panel guide **27**) provided underneath control panel **21**. An operator seated on seat **19** may therefore not unintentionally look directly into lighting unit **31**, which could lead to the operator being blinded.
(16) In the embodiment shown, panel guide **27** and control panel **21** themselves represent an opaque upper shield which shields lighting unit **31** from a viewing direction from above. A lateral end plate **41** of panel guide **27** represents an opaque side shield which shields lighting unit **31** from a horizontal viewing direction and thereby prevents people who are in the vicinity of road finisher **1** from being blinded.
(17) The luminosity and/or the light color of lighting unit **31** may preferably be adjusted individually, for example by way of control elements on control panel **21**. Road finisher **1** may comprise a brightness sensor **43** which in the embodiment shown is mounted in the region of seat **19**. A control device **45** of road finisher **1** may be configured to adjust a luminosity of lighting unit **31** in dependence of a sensor output by brightness sensor **43**. For example, control device **45** may actuate lighting unit **31** based on the sensor output in order to regulate the brightness in the region of brightness sensor **43** into a predetermined range or to a predetermined value.
(18) Instead of the LED strip or in addition to the LED strip, lighting unit **31** may also contain other light sources, such as, for example, one or more light bulbs or one or more gas discharge lamps.
(19) As shown in FIG. **2**, seats **19** are each part of a seat unit **51**. In addition to respective seat **19**, seat units **51** comprise a console **53** on which seat **19** is mounted. Console **53** may comprise, for example, a plate which carries seat **19**. Both seat units **51** are shown in a first position in FIG. **2**. In the first position, seat unit **51** may be oriented substantially in paving travel direction **5** of road

finisher **1**. An operator seated on seat **19** looks forward along paving travel direction **5** of road finisher **1**. As shown in FIG. **2**, seat **19** of a seat unit **51** is in the first position of seat unit **51** at least substantially or completely within a width of an operating platform **55** of main control stand **13**. This does not necessarily preclude individual elements of seat **19** from projecting laterally (with respect to transverse direction **25**) beyond operating platform **55**. For example, an armrest of seat **19** could project in part beyond operating platform **55**. However, the main part of seat **19** in the first position of seat unit **51** is disposed within the width of operating platform **55**. In particular, a seat base of seat **19** in the first position of seat unit **51** is disposed within the width of operating platform **55**.

(20) According to embodiments, at least one of seat units **51** is movable from the first position to a second position. FIG. **4** shows a situation in which both seat units **51** have been moved to their second position. In the second position of a seat unit **51**, respective seat **19** projects laterally beyond operating platform **55**. In particular in the second position, at least one third, or at least two thirds, or at least three quarters of the seat base of seat **19** may project laterally with respect to transverse direction **25** beyond operating platform **55** of main control stand **13**. In the second position of seat unit **51**, an operator seated on respective seat **19** has an improved view of the subgrade in the region of road finisher **1** laterally to the side of road finisher **1**.

(21) In the embodiment shown, seat unit **51** is pivoted about a vertical axis between the first position and the second position. Alternatively, seat unit **51** could be slidable between the first position and the second position. Mixed forms are also conceivable in which the motion of seat unit **51** between the first position and the second position comprises pivoting, in particular about a vertical axis, and a translational motion.

(22) According to embodiments, road finisher **1** comprises a subgrade lighting **57**. In the embodiment according to FIG. **4**, subgrade lighting **57** is mounted to the side of the chassis of road finisher **1** and illuminates the subgrade in a work area **59** of screed **11**.

(23) According to embodiments, control device **45** of road finisher **1** is configured to activate subgrade lighting **57** in an automated manner when seat unit **51** is moved to the second position. In this way, it may be ensured that work area **59** of screed **11** is illuminated and may therefore be easily seen when seat unit **51** is in the second position.

(24) Control device **45** may additionally be configured to deactivate subgrade lighting **57** in an automated manner when seat unit **51** is moved to the first position.

(25) Road finisher **1** may comprise a sensor **61** which detects the position of seat unit **51**. Control device **45** may activate or deactivate subgrade lighting **57** based on an output by sensor **61**.

(26) Control device **45** may take into account the output by brightness sensor **43** when controlling subgrade lighting **57**. For example, if brightness sensor **43** detects a brightness below a certain threshold value, control device **45** may control subgrade lighting **57**, as described, based on the position of seat unit **51**. If brightness sensor **43** detects a brightness value above the specific threshold value, control device **45** may deactivate subgrade lighting **57** regardless of the position of seat unit **51** or leave it deactivated.

(27) A main direction of emittance of subgrade lighting **57** may preferably be inclined downward with respect to a horizontal direction by at least 30 degrees, or by at least 45 degrees, or by at least 60 degrees, or by at least 80 degrees, or by substantially 90 degrees.

(28) The main direction of emittance of subgrade lighting **57** may be adjustable. The main direction of emittance of subgrade lighting **57** may be adjusted, for example, in an automated manner by way of control device **45** or manually by the operator. Control device **45** may be configured to adapt an illumination area illuminated by subgrade lighting **57** in dependence of a paving width of the screed. For example, control device **45** may adapt the position and/or the size of the illumination area in dependence of the paving width of the screed. The paving width of the screed may be made available to control device **45** by user input or by detection of a screed configuration. The illuminated illumination area may be effected for example, by changing a luminosity of a lighting

unit of subgrade lighting **57** or by switching on or off one or more lighting elements of subgrade lighting **57**.
(29) FIG. **5** shows an alternative embodiment in which subgrade lighting **57** is mounted to seat unit **51**. In particular, subgrade lighting **57** is mounted underneath console **53** of seat unit **51**. In the second position of seat unit **51**, subgrade lighting **57** may illuminate work area **59** of screed **11** particularly efficiently due to its positioning. In the illustrated embodiment, console **53** of seat unit **51** comprises a shield **63** which shields subgrade lighting **57** from a horizontal viewing direction, in the embodiment shown from the front with respect to paving travel direction **5**. In this way, blinding people in the vicinity of road paver **1** or other road users may be prevented particularly efficiently.
(30) As described, subgrade lighting **57** may be controlled in an automated manner based on the position of seat unit **51**. However, this is not absolutely necessary. Alternatively, for example, a switch for activating or deactivating subgrade lighting **57** could be provided.
(31) Features relating to the illumination of main control stand **13** by lighting unit **31** have been described. In addition, features relating to the illumination of the subgrade in the region of road finisher **1** by subgrade lighting **57** have been described. Lighting unit **31** and subgrade lighting **57** could be provided together on a road finisher **1**. However, it is also conceivable to provide only lighting unit **31** for illuminating main control stand **13** or, alternatively, subgrade lighting **57** for illuminating the subgrade.

Claims

1. A road finisher comprising: a material hopper for receiving paving material; a screed for compacting paving material; and a main control stand providing an operating location for an operator on the road finisher, wherein the main control stand comprises a floor area, wherein the road finisher comprises a lighting unit, wherein the lighting unit is arranged no more than 140 cm higher with respect to a vertical direction than the floor area of the main control stand, and wherein the lighting unit is arranged such that at least 60 percent of the light output emitted by the lighting unit during operation falls onto the floor area of the main control stand.
2. The road finisher according to claim 1, wherein a main direction of emittance of the lighting unit is inclined downward with respect to a horizontal plane by at least 10 degrees.
3. The road finisher according to claim 1, further comprising an opaque upper shield which is arranged above the lighting unit and shields the lighting unit at least from a viewing direction from above.
4. The road finisher according to claim 1, further comprising an opaque side shield which shields the lighting unit at least from a horizontal viewing direction.
5. The road finisher according to claim 1, further comprising a towing vehicle, wherein the screed is connected to the towing vehicle to be pulled along behind the towing vehicle, and wherein the main control stand is arranged on the towing vehicle, wherein the main control stand further comprises a control panel with control elements for controlling functions of the road finisher and the lighting unit is mounted beneath the control panel.
6. The road finisher according to claim 5, wherein the main control stand further comprises a seat for an operator, and an imaginary linear connecting line between an upper end of a backrest of the seat and the lighting unit runs through the control panel or through a structure provided beneath the control panel.
7. The road finisher according to claim 1, wherein the lighting unit is mounted to an underside of a component of the road finisher.
8. The road finisher according to claim 1, wherein the floor area of the main control stand is a walking surface and/or a tread surface and/or a standing surface for an operator of the road finisher.
9. The road finisher according to claim 1, wherein a luminosity and/or a light color of the lighting

unit is adjustable individually.
10. The road finisher according to claim 1, further comprising a brightness sensor, wherein a control device of the road finisher is configured to adjust a luminosity of the lighting unit in dependence on a sensor output by the brightness sensor.
11. The road finisher of claim 1, further comprising a towing vehicle, wherein the screed is connected to the towing vehicle to be pulled along behind the towing vehicle, and wherein the main control stand is arranged on the towing vehicle.
12. A road finisher comprising: a material hopper for receiving paving material; a screed for compacting paving material; a main control stand with a seat for an operator and with a control panel with control elements for controlling functions of the road finisher, the seat having a backrest with an upper end; and a lighting unit, wherein an imaginary linear connecting line between the upper end of the backrest and the lighting unit runs through the control panel or through a structure provided beneath the control panel; and wherein a main direction of emittance of the lighting unit is inclined downward with respect to a horizontal plane.
13. The road finisher according to claim 12, wherein a main direction of emittance of the lighting unit is oriented forward or rearward with respect to a paving travel direction of the road finisher.
14. The road finisher according to claim 12, wherein the lighting unit is mounted to the control panel.
15. The road finisher according to claim 12, further comprising a panel guide for sliding the control panel with respect to a sliding direction, the lighting unit mounted to an underside of the panel guide.