Positioning zone for a travel path for inserting current collector contacts vertically into the busbars of the travel path

The present invention relates to a positioning zone for a travel path, the travel path having at least one guide rail and the guide rail being used to guide a current collector trolley, provided with current collector contacts, of a current collector system arranged on a vehicle which can be moved along the travel path, and the travel path has at least one travel path busbar and the current collector trolley can be moved horizontally and vertically to the travel path in the positioning zone by a positioning device of the current collector system.

WO 2010/054852 A2 discloses a current collector system and a travel path for container stacking cranes. Arranged on the container stacking crane is a respective current collector system which has a telescopic arm, on the free end of which a current collector trolley is mounted in a vertically displaceable manner. The telescopic arm is advanced horizontally relative to the busbar arrangement by an electrical, hydraulic or pneumatic drive until stops of the current collector trolley strike against a baffle plate of the positioning zone of the travel path. The current collector trolley is delivered vertically to the busbars mechanically via an entry ramp, a respective entry ramp being arranged at each end of the busbar arrangement. Here, disadvantages are that a particular amount of space is required for the vertical delivery and introduction of the current collector trolley with its current collector contacts into the travel path and that the crane has not yet been supplied with electrical energy in the region of the entry ramp. The fact that the crane cannot lower or raise any containers without a supply of electrical energy via the busbars means that containers cannot be set down in the region of the entry ramp or the baffle plate has to be configured with a projection with respect to the container.

Also in the power supply system known from WO 2012/130630 A9, the current collector trolley is firstly positioned horizontally and vertically to the travel path guide and to the travel path busbars, after which the crane is then moved in the direction of the travel path and the current collector trolley is thereby introduced horizontally with its rollers into the travel path guides and the current collector contacts are inserted horizontally into the travel path busbars. If the current collector trolley of the system known from WO 2012/130630 A9 is still in the positioning zone, the current collector contacts have not yet been inserted into the travel path busbars, as a result of which, in this system as well containers cannot be set down in the positioning zone. Such systems are also know from CN 101 993 005 A and CN 201 864 480 U.

Claims

1. Positioning zone (EB) for a travel path (1), wherein the travel path (1) has at least one guide rail (2, 3) and the guide rail (2, 3) is used to guide a current collector trolley (11), provided with current collector contacts (12), of a current collector system (10) arranged on a vehicle which can move along the travel path (1), and the travel path (1) has at least one travel path busbar (5), wherein the positioning zone (EB) is that zone in which the current collector trolley (11) is moved horizontally and vertically to the travel path (1) by a positioning device of the current collector system (10), characterised in that at least one further busbar (5') is arranged in the region of the positioning zone (EB) or at least one travel path busbar (5) extends and/or is extended by its end (5c) into the positioning zone (EB) and that the further busbar (5') or at least the region (5e) of the travel path busbar (5) extending in the positioning zone (EB) is configured for vertically inserting the current collector contacts (12) of the current collector trolley (11).

2. Positioning zone (EB) according to Claim 1, characterised in that the further busbar (5') or the travel path busbar (5) extends over at least 50 %, preferably over at least 75 %, more preferably over at least 75-100 % of the longitudinal extent (EB_L) of the positioning zone (EB).

3. Positioning zone (EB) according to Claim 1 or 2, characterised in that arranged in the positioning zone (EB) is a baffle plate (7) against which the current collector trolley (11) can be moved horizontally.

4. Positioning zone (EB) according to Claim 1, characterised in that at least one further guide rail (4) for vertical alignment and/or as a vertical stop for the current collector trolley (12) is arranged above and/or below the further busbar (5') or the end (5e) of the busbar.

5. Positioning zone (EB) according to Claim 4, characterised in that the further guide rail (4) extends by its end (4b) into the region (TB) of the travel path (1).

6. Positioning zone (EB) according to any one of the preceding claims, characterised in that the further busbar (5') is connected to the busbar (5) of the travel path (1) by a busbar connector (V).

7. Positioning zone (EB) according to any one of the preceding claims, characterised in that the guide rails (2, 3) of the travel path (1) terminate with their ends (2e, 3e) under the further guide rail (4).

8. Positioning zone (EB) according to any one of the preceding claims, characterised in that the travel path (1) is a current supply travel path of a crane, in particular of a container stacking crane (RTG).

9. Positioning zone (EB) according to any one of the preceding claims, characterised in that the vehicle can be supplied with electrical energy in the positioning zone (EB) by the further busbar (5') or by the travel path busbar (5) which extends and/or is extended into the positioning zone (EB) in particular beyond at least one guide rail (2, 3) of the travel path (1).

10. Positioning zone (EB) according to any one of the preceding claims, characterised in that the lower guide rail (2) of the travel path (1) extends and/or is extended into the positioning zone (EB), in particular over at least 50-100 % of the longitudinal extent (EB_L) of the positioning zone (EB).

11. Travel path (1) with a positioning zone (EB) according to any one of the preceding claims.

12. Travel path (1) according to Claim 11, characterised in that the travel path busbar (5) has a plurality of busbars which are arranged parallel to one another, are isolated from one another and are arranged in a housing or on a support.

13. Method for contacting the current collector contacts of a current collector system in the region of the positioning zone (EB) according to any one of the preceding claims, characterised in that the vehicle is firstly positioned in front of the positioning zone (EB) so that the current collector trolley (11) is then moved horizontally and vertically by the positioning device, arranged on the vehicle, of the current collector system (10), so that in the positioning zone (EB), the current collector contacts (12) are inserted vertically into the further busbars (5') or into the end regions (5e) of the travel path busbars (5) projecting into the positioning zone (EB) and an electrical contact is established between the busbars (5', 5e) and the current collector contacts (12).

14. Crane system with a travel path according to Claim 11 or 12, characterised in that the current collector system (10) has a drive (14) which drives a rigid chain arrangement (S), by which a telescopic arm (13, 13a, 13b) can be retracted and extended horizontally and the current collector trolley (11) can be raised in the direction of the busbars (5', 5e) which are arranged in the positioning zone (EB).