**CLAIMS**

1. A fast charging system ~~(10) for electrically driven vehicles, in particular electric busses or the like,~~ for forming an electrically conductive connection between a vehicle and a stationary charging station, the fast charging system ~~(10)~~ having a contact device ~~(11, 58, 74)~~, a charging contact device ~~(12, 59, 75),~~ and a positioning device ~~(15)~~,

said contact device or said charging contact device being disposable on ~~a~~ the vehicle,

said charging contact device comprising a charging-contact-element carrier,

said charging-contact-element carrier including a receiving opening formed along a longitudinal axis of the charging-contact-element carrier, the receiving opening having an entrance end and an exit end,

said charging contact device being electrically contacted using the contact device when in a contact position, the contact device located within the receiving opening when in the contact position, ~~said contact device being positioned in a longitudinal and/or transverse direction with respect to the charging contact device as well as being moved to the contact position by means of the positioning device,~~

said ~~charging contact device comprising a~~ charging-contact-element carrier ~~(31)~~ having charging contact elements ~~(18, 76, 77, 78, 79)~~, said charging contact elements each forming a strip-shaped charging contact surface mounted in parallel to the longitudinal axis ~~(50, 51, 52, 53, 60, 61, 62, 63, 81, 82, 83, 84)~~, each strip-shaped charging contact surface having a leading end nearest the entrance end of the receiving opening and a trailing end nearest the exit end of the receiving opening,

said contact device comprising a contact element carrier ~~(14)~~ having contact elements ~~(17, 64, 85)~~ mounted on an exterior of the contact element carrier in at least one plane extending orthogonally to the longitudinal axis when in the contact position,

said contact elements each forming a contact surface ~~(54, 55, 56, 57, 68, 69, 70, 71, 86, 87, 88, 89)~~ which are smaller than the charging contact surfaces,

said contact elements being electrically contacted with the charging contact elements for forming contact pairs in each instance when in the contact position,

said contact pairs including one or more power contacts, a signal contact, and protective-ground contact; and

said contact device configured to be moved to the contact position by the positioning device,

characterized in thatthe charging contact surfaces and the contact surfaces are disposed such in the longitudinal direction with respect to each other that a respective physical contact between the charging contact surfaces and the contact surfaces is formed in a defined order at respective longitudinal ends (72, 73, 93, 94) of the charging contact surfaces wherein, when in the contact position, the fast charging system is configured to transmit high currents between the vehicle and the stationary charging station only when the protective-ground contact and/or the signal contact is formed.

2. The fast charging system according to claim 1,
characterized in that
the contact pairs are formed for power contacts, a signal contact and a protective-ground contact of the fast charging system (10).

32. The fast charging system according to claim 21,
characterized in thatwherein the leading end of the strip-shaped charging contact surfaces associated with the protective-ground contact are closer to the entrance end of the receiving opening than the leading end of the strip-shaped charging contact surfaces associated with the one or more power contacts; and
wherein the leading end of the strip-shaped charging contact surfaces associated with the one or more power contacts are closer to the entrance end of the receiving opening than the leading end of the strip-shaped charging contact surfaces associated with the signal contact.
the charging contact surfaces (50, 51, 52, 53, 60, 61, 62, 63, 81, 82, 83, 84) and/or the contact surfaces (54, 55, 56, 57, 68, 69, 70, 71, 86, 87, 88, 89) are disposed such in the longitudinal direction with respect to each other that first the protective-ground contact, then the power contacts and then the signal contact are formed.

43. The fast charging system according to any one of the preceding claimsto claim 2 or 3, wherein the trailing end of the strip-shaped charging contact surfaces associated with the protective-ground contact are closer to the exit end of the receiving opening than:
the trailing end of the strip-shaped charging contact surfaces associated with the one or more power contacts; and

the trailing end of the strip-shaped charging contact surfaces associated with the signal contact. ~~characterized in that~~

~~the longitudinal ends (93, 94) of the charging contact surface (52, 83) for forming the protective-ground contact each protrude beyond the longitudinal ends (93, 94) of the remaining charging contact surfaces (50, 51, 53, 81, 82, 84) in the longitudinal direction.~~

~~5~~4. The fast charging system according to any one of the preceding claims~~to any one of claims 2 to 4~~, wherein the trailing end of the strip-shaped charging contact surfaces associated with the one or more power contacts are closer to the exit end of the receiving opening than the trailing end of the strip-shaped charging contact surfaces associated with the signal contact.

~~characterized in that~~

~~the longitudinal ends (93, 94) of the charging contact surface (50, 51, 81, 82) for forming the power contact each protrude beyond the longitudinal ends (93, 94) of the charging contact surface (53, 84) for forming the signal contact in the longitudinal direction.~~

~~6~~5. The fast charging system according to any one of the preceding claims~~to any one of claims 2 to 5~~:

~~characterized in that~~ wherein the strip-shaped charging contact surfaces associated with the protective-ground contact are longer in length along the longitudinal axis than the strip-shaped charging contact surfaces associated with the one or more power contacts; and

wherein the strip-shaped charging contact surfaces associated with the one or more power contacts are longer in length along the longitudinal axis than the strip-shaped charging contact surfaces associated with the signal contact.

~~the charging contact surface (52, 83) for forming the protective-ground contact is longer than the charging contact surface (50, 51, 81, 82) for forming the power contact, said charging contact surface for forming the power contact being longer than the charging contact surface (53, 84) for forming the signal contact.~~

~~7. The fast charging system according to claim 2,~~

~~characterized in that~~

~~the charging contact surfaces (50, 51, 52, 53, 60, 61, 62, 63) and/or the contact surfaces (54, 55, 56, 57, 68, 69, 70, 71) are disposed such in the longitudinal direction with respect to each~~

~~other that the protective ground contact and a power contact or the signal contact and a power contact can be formed first.~~

~~8~~6. The fast charging system according to any one of the preceding claims, ~~characterized in that~~wherein the charging contact elements ~~(18, 76, 77, 78, 79)~~ are realized as conductor strips ~~(32, 33, 34, 35)~~, said conductor strips ~~being disposed~~mounted parallel to each other ~~and in the direction of a~~and the longitudinal axis ~~of the charging contact element carrier (31)~~.

~~9. The fast charging system according to claim 8,~~
~~characterized in that~~
~~the contact elements (17, 64, 85) are disposed in at least one plane (65, 90) which extends orthogonally to the longitudinal axis when in the contact position.~~

~~10. The fast charging system according to claim 9,~~
~~characterized in that~~
~~the contact elements (17, 64, 85) are disposed in an additional plane (66, 91) which extends orthogonally to the longitudinal axis when in the contact position, said planes (65, 66; 90, 91) being distanced from each other in the direction of the longitudinal axis, contact elements for forming power contacts being disposed in the plane and the additional plane, respectively.~~

~~11~~7. The fast charging system according to any one of the preceding claims, ~~characterized in that~~wherein the contact elements ~~(17, 64, 85)~~ are formed in the shape of bolts.

~~12~~8. The fast charging system according to any one of the preceding claims, ~~characterized in that~~wherein the contact surface ~~(54, 55, 56, 57, 68, 69, 70, 71, 86, 87, 88, 89)~~ is punctiform.

~~13~~9. The fast charging system according to any one of the preceding claims, ~~characterized in that~~wherein the contact device ~~(11, 58, 74)~~ and the charging contact device ~~(12, 59, 75)~~ each comprise a vertical axis ~~(29)~~, said respective vertical axes aligning flush when in the contact position.

~~14~~10. The fast charging system according to claim ~~13~~9, ~~characterized in that~~wherein a guiding device positions the respective vertical axes ~~(29)~~ in a shared alignment when guiding the contact device ~~(11, 58, 74)~~ and the charging contact device ~~(12, 59, 75)~~ together.

~~15. The fast charging system according to any one of the preceding claims, characterized in that~~
~~the fast charging system (10) comprises a guiding device for guiding the contact device (11, 58, 74) or the charging contact device (12, 59, 75) to the contact position, the guiding device being realized such that when guiding the contact device and the charging contact device together, a physical contact between the contact elements (17, 64, 85) and the charging contact elements (18, 76, 77, 78, 79) is prevented before the contact position is attained.~~

~~16~~11. The fast charging system according to any one of the preceding claims, ~~characterized in that~~wherein the contact device ~~(11, 58, 74)~~ is disposed on a vehicle roof and the charging contact device ~~(12, 59, 75)~~ is disposed on ~~a~~ the stationary charging station or vice versa.

~~17. The fast charging system according to any one of the preceding claims, characterized in that~~
~~the charging-contact-element carrier (31) forms a receiving opening (30) for the contact element carrier (14), said contact element carrier being inserted into the receiving opening of the charging-contact-element carrier.~~

~~18. The fast charging system according to any one of claims 1 to 16, characterized in that~~
~~the contact element carrier forms a receiving opening for the charging-contact-element carrier, said charging-contact-element carrier being inserted into the receiving opening of the contact element carrier.~~

~~19~~12. The fast charging system according to any one of the preceding claims~~to claim 17 or 18~~, ~~characterized in that~~wherein the receiving opening ~~(30)~~ forms a guide for the contact element carrier ~~or the charging-contact-element carrier~~ when guiding the contact element carrier ~~(14)~~ and the charging-contact-element carrier ~~(31)~~ together.

~~20~~13. The fast charging system according to any one of the preceding claims, ~~characterized in that~~wherein the charging-contact-element carrier ~~(31)~~ is formed as a longitudinal roof-shaped rail which is disposed in a moving direction of the vehicle.

~~21~~14. The fast charging system according to any one of the preceding claims, ~~characterized in that~~wherein the positioning device ~~(15)~~ comprises a pantograph or a rocker by means of which the contact device ~~(11, 58, 74)~~ is positioned in a vertical direction with respect to the charging contact device ~~(12, 59, 75)~~.

~~22. A method for forming an electrically conductive connection between a vehicle and a stationary charging station, in particular for a fast charging system (10) for electrically driven vehicles, such as electric busses or the like, the fast charging system (10) having a contact device (11, 58, 74), a charging contact device (12, 59, 75) and a positioning device (15), said charging contact device being electrically contacted using the contact device when in a contact position, said contact device being positioned in a longitudinal and/or transverse direction with respect to the charging contact device as well as being moved to the contact position by means of the positioning device, said charging contact device comprising a charging-contact-element carrier (31) having charging contact elements (18, 76, 77, 78, 79), said charging contact elements each forming a strip-shaped charging contact surface (50, 51, 52, 53, 60, 61, 62, 63, 81, 82, 83, 84), said contact device comprising a contact element carrier (14) having contact elements (17, 64, 85), said contact elements each forming a contact surface (54, 55, 56, 57, 68, 69, 70, 71, 86, 87, 88, 89) which is smaller than the charging contact surfaces, said contact elements being electrically contacted with the charging contact elements for forming contact pairs in each instance when in the contact position,~~

~~characterized in that~~

~~at least one charging contact surface is contacted with a contact surface at a longitudinal end (72, 73, 93, 94) of the charging contact surface, said charging contact surfaces and the contact surfaces being disposed such in the longitudinal direction with respect to each other that when guiding the charging contact surfaces and the contact surfaces together, first the protective-ground contact, then the power contacts and then the signal contact is formed.~~

15. A fast charging method for forming an electrically conductive connection between a vehicle and a stationary charging station, the method comprising:

(a) providing a contact device, a charging contact device, and a positioning device,

said contact device or said charging contact device being disposable on the vehicle,

said charging contact device comprising a charging-contact-element carrier,

said charging-contact-element carrier including a receiving opening formed along a longitudinal axis of the charging-contact-element carrier, the receiving opening having an entrance end and an exit end,

said charging contact device being electrically contacted using the contact device when in a contact position, the contact device located within the receiving opening when in the contact position,

said charging-contact-element carrier having charging contact elements, said charging contact elements each forming a strip-shaped charging contact surface mounted in parallel to the longitudinal axis, each strip-shaped charging contact surface having a leading end nearest the entrance end of the receiving opening and a trailing end nearest the exit end of the receiving opening,

said contact device comprising a contact element carrier having contact elements mounted on an exterior of the contact element carrier in at least one plane extending orthogonally to the longitudinal axis when in the contact position,

said contact elements each forming a contact surface which are smaller than the charging contact surfaces,

said contact elements being electrically contacted with the charging contact elements for forming contact pairs in each instance when in the contact position, and

said contact pairs including one or more power contacts, a signal contact, and protective-ground contact;

(b) moving the contact position by the positioning device;

(c) moving the contact device or the charging contact device to establish the contact position; and

(d) when the protective-ground contact and/or the signal contact is formed, transmitting high currents between the vehicle and the stationary charging station.

~~23~~16. The method according to claim ~~22~~15, further comprising exiting the contact position by disconnecting the signal contact, then disconnecting the one or more power contacts, and then disconnecting the protective-ground contacts.

~~characterized in that~~

~~when the charging contact surfaces (50, 51, 52, 53, 81, 82, 83, 84) and the contact surfaces (54, 55, 56, 57, 86, 87, 88, 89) are separated, first the signal contact, then the power contact and then the protective-ground contact are disconnected.~~

~~24. The method according to claim 22 or 23,~~

~~characterized in that~~

~~the charging contact surfaces (50, 51, 52, 53, 60, 61, 62, 63, 81, 82, 83, 84) and the contact surfaces (54, 55, 56, 57, 68, 69, 70, 71, 86, 87, 88, 89) are disposed such in the longitudinal direction with respect to each other that a respective physical contact between the charging contact surfaces and the contact surfaces is formed in a defined order at respective longitudinal ends (72, 73, 93, 94) of the charging contact surfaces.~~