

TRAVEL WAY FOR A GUIDED VEHICLE, ESPECIALLY A MAGNETIC LEVITATION RAILWAY

- 5 The present invention relates to a console as well as to a method for the
production of a console according to the introductory clauses of claims 1, 21 and
27.

Similar travel ways are usually designed in form of elevated railroads. Elevated
10 railroads are normally built with girders placed at a distance from each other and
with plates supporting the travel way placed between the girders and reaching
from girder to girder. The girders absorb the static as well as the dynamic forces
and must therefore be sized in accordance with the sizes of the loads they have
to support. Since in many case, especially where magnetic levitation trains are
15 used, the girders must in addition support functional parts of these and since
these allow for only minimal deviations in position because of their function, it is
relatively very difficult to produce the girders together with the bearing elements
for the functional parts in one operation and still maintain these relatively narrow
tolerance margins.

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Since such travel ways are furthermore made to last for a long operating life, it is
extremely difficult to maintain or ensure the relatively narrow tolerances over the
entire operating life of the travel way because of shrinking and creeping
25 processes in the foundation as well as in the actual structure.

EP 0 410 153 A1 discloses a supporting structure for the travel way of a rail-borne vehicle. The required girders are, depending on the example of an embodiment, made of steel or of concrete. Equipment parts are attached to the girder in precise position. Concerning this, the present application proposes that

5 connecting elements with first stop surfaces be provided on the girders. These first stop surfaces correspond to second stop surfaces located at crossheads connected to the equipment parts. Once the fittings together with the first stop surfaces have been attached to the girder, these first stop surfaces are machined down so that the required tolerances for the attachment of the

10 equipment parts are maintained when interaction takes place with the second stop surface of the fastening means of the equipment. In this case the stop surfaces should preferably be machined down in a climate-controlled plant facility under controlled conditions. With this manner of proceeding it is a disadvantage that while the machining of the stop surfaces may be correct with

15 respect to the girder, the production of the true-to-tolerance fastening means appears to be very expensive.

It is therefore the object of the present invention to create the possibility of maintaining the required tolerances not only with respect to the girder but also

20 with respect to the complete travel way in the construction of such a travel way. In addition, consoles and/or add-on parts are to be produced so as to be economical in manufacture while respecting required tolerances for the installation of the functional parts.

25 This object is attained by a console, a travel way and a method according to the characteristics of claims 1, 21 and 27.

A travel way according to the invention is provided with at least one, preferably two webs that are connected at their first end to the girder and at their second

30 end are provided with a receptacle that is essentially perpendicular to the

extension of the webs for the attachment of the add-on part. Thus a console according to the invention is created that is especially advantageous for a machining of the connection interface between console and add-on part or between the girder and the add-on part. While the girders for the travel way and the supporting elements of the functional parts are made in one piece in the known designs, and while changes in position of the girders have a direct effect on the position of the bearing elements of the functional parts and can therefore no longer be corrected, it is the concept of the invention to separate the girder of the travel way and the bearing elements of the functional parts. The invention provides for a console to be installed between them that can be connected to the bearing elements of the functional parts and to the girder for the travel way. If the console and/or the add-on part are made of at least one rolled profile, the console and/or the add-on part can be produced in a very simple and economic manner. The former, very expensive production of the console as a cast piece is no longer applicable. In addition the present invention creates the advantage that danger of destruction to the console because of bubbles in the cast part are eliminated. Nor is the cost-intensive checking of the components then any longer needed. In addition, rolled profiles can be made so as to be much more elastic than cast parts when designed for areas that are not critical for the train operation, and thus are able to compensate much better for thermal expansion in the add-on pieces.

In order to achieve especially good stability of the console, the webs are connected to each other at their first and/or their second end. The connection provides special stability under the mechanical stress put upon these webs, e.g. during their connection with the add-on part.

The connection point between add-on part and console or girder consists of a receptacle constituting a contact surface for the add-on part. This

receptacle is a head plate attached to the web or webs.

It is especially advantageous if a separate head plate is provided on each web. The advantage consists in particular in the fact that a better compensation in
5 alignment is possible at the slope faces of add-on parts that are limited in their length. The separate contact surfaces of the different head plates can then also be machined in different manners. Furthermore a longitudinal expansion due to temperature influences on the add-on parts can better be compensated for when a head plate is provided at every web.

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If the head plate has projections as contact surface, the machining of the head plate is especially easy. The contact surface is specially configured for machining treatment in that case.

15 It has shown to be especially advantageous if the head plate is essentially at a right angle to the web. Thereby a particularly good force introduction is made possible. Furthermore machining is easily possible. Assembly of the add-on parts on the head plate or on the console is also facilitated thereby, since accessibility is improved.

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L, T Z or U-shaped configurations have proven to be especially advantageous forms for the connection of head plate to web. As a result especially good placement of the add-on parts on the head plate and at the same time good stability or compensation for temperature-induced changes in length are
25 possible.

To ensure especially stable attachment of the add-on parts, the web and/or the head plate is provided with bores or threads to receive fastening screws and/or transversal power bolts. These fastening

screws and transversal power bolts make reliable attachment of the add-on parts to the console possible.

In order to allow for later treatment, machining down as well as coating,
5 provisions are advantageously provided for the material of the webs and/or of the head plate to be a metal, in particular steel that can be machined down and/or welded.

The solution whereby the distance between two consoles in the longitudinal
10 direction of the travel way is essentially an integral fraction of the length of the add-on part, offers the additional advantage thanks to its modular construction, that the consoles and also the bearing elements can be optionally machined mechanically before as well as after their installation and can easily be
15 exchanged later for repair purposes. Even strict tolerance requirements can be met with relative ease in all spatial axes by this method. Modular construction, in addition to precise and economic manufacture, also makes simple exchange of bearing elements of functional parts that may have been damaged by accident possible.

20 Finally the spatial curve required for the functional plane can be realised advantageously through suitable configuration and/or machining of the console posts. Gradients are nearly polygonal. It is especially advantageous if the module length is an integral multiple of a basic grid, e.g. of a stator package length. With a stator package length of approximately 1 meter, a module length
25 of approximately 3 meters has proven to be advantageous. The different functional surfaces of the add-on part are gathered together in the module.

To be able to compensate for considerable position changes, different consoles can be provided with webs of different lengths. Thereby an enlarged console can
30 be used in case of very wide shifts of the girder from its target position,

so that these consoles may finally fix the add-on part in the desired position. To achieve an especially good stability of the console, the webs can be connected to each other at their first and/or second end. The connection produces great stability with respect to mechanical stress on the webs, e.g. during the
5 connection to the add-on parts.

The connection point between add-on part and console or girder consists of a receptacle that constitutes a contact surface for the add-on art. This receptacle is in particular a head plate attached on the web or webs.
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It is especially advantageous if a separate head plate is provided at each web. The advantage resides in particular in the fact that at the stope faces of add-on parts limited in their lengths, better compensation is possible during alignment. The separate contact surfaces of the different head plates can also be machined
15 in different manners in this case. Furthermore a longitudinal expansion due to temperature influences upon the add-on pieces can better be compensated for if a head plate is provided on every web.

While the console imbedded in concrete during the manufacture of the girder
20 must normally be already built in, an alternative design is provided, whereby the console is screwed to the girder and in particular to a tie rod provided in the girder. The tie rod can be imbedded in the concrete of the girder or can be located in an empty tube and thus unite two consoles on either side of the girder by means of at least one tie rod into one component. In this case an especially
25 simple configuration is obtained that is very easily handled during assembly as well as during possibly necessary disassembly. A threaded rod extending transversally through the girder from one console to the opposite console is especially well suited for this case.

If the webs are provided at their first end with at least one footplate, additional stability of the console is achieved. The footplate can be placed either outside the girder or can rest upon the girder. It may however also be imbedded in the concrete of the girder in a different embodiment, and may thus constitute an
5 additional link between console and girder.

If the footplate is provided with bores, in particular centring bores for the attachment to the tie rod, the attachment and replacement of the console is greatly facilitated. Precise positioning of the console is achieved in that case
10 thanks to the centring bore.

If the distance between two consoles in the longitudinal sense of the travel way is essentially an integral fraction of the length of the add-on part, a console is advantageously installed at the stoep face between two add-on parts. This one
15 console thereby reliably connects the two add-on parts to the girder.

Furthermore, thanks to the web design of the console, longitudinal expansion of the add-on parts that is unavoidable because of temperature influences can easily be compensated for without warping of the support of the add-on part. It is especially advantageous in that case if the first add-on part is connected to the
20 web or to the first head plate and the second add-on part to the second web or second head plate. The two webs or head plates can then compensate for thermal expansion through a movement relative to each other.

A component that is essentially box-shaped in its cross-section and provided
25 with an integrated seating surface, lateral guiding surface and stator attachment has proven to be a good configuration for the add-on part. It is greatly assembly-friendly when the functional parts are attached to the console or the girder.

According to the method of the invention, a number of consoles are made in that a rolled profile having at least in part a cross-section of the console is formed by means of extrusion rolling and in that the roller-extruded profile is then divided into lengths equal to the desired console width. Typically the division is effected
5 by sawing the roller-extruded profile, but other methods such as hot cutting or laser cutting can also be used. The console pieces thus produced can then still be machined, e.g. by deburring the cut edges and smoothing out the cut surfaces.

10 Contrary to the production of the consoles by casting, the consoles produced by the method of the invention are produced without inclusions such as bubbles, and a reproducible uniformly high quality of the consoles can be ensured. Repeated rolling of the roller-extruded profiles can further enhance the quality. Since a plurality of consoles are obtained from the meter long roller-extruded
15 profiles, the production costs become lower than that of individual console production by means of casting.

If two or more individual roller-extruded profiles that may have different cross-sections are connected to each other by welding, a composite roller-extruded
20 profile can be produced with a cross-section that could not be produced by the conventional rolling method or could only be produced at relatively high cost. The meter-long roller-extruded profiles can be welded together by means of a continuous welding seam of uniform quality throughout the length of the roller-extruded profile that favours automation of the welding process. The roller-
25 extruded profile is advantageously cut into the separate consoles after joining together the individual partial cross-sections into the composite cross-section.

In an especially advantageous embodiment the composite roller-extruded profile is made of two symmetrically combined roller-extruded profiles. The two roller-

extruded profiles can therefore be produced with the same rolling machine, and this reduces the developing cost and the production cost of the rolled profiles.

If the two surfaces of two rolled profiles to be connected to each other at these
5 surfaces do not meet each other in a flat plane but if at least one surface meets the other surface at an angle, the welding mass can be distributed over the two surfaces to be connected to each other when welding the surfaces together. This increases the carrying capacity of the welded connection between the two rolled profiles.

10 Additional advantages and embodiments of the invention are described in the following figures:

Fig. 1 shows a travel way according to the invention with a magnetic levitation
15 train,

Fig. 2 shows a girder with consoles,

Fig. 3 is a cross-sectional view of a first embodiment of a rolled profile,

Fig. 4 shows a view in perspective of a roller-extruded profile with the cross-section of the rolled profile of Fig. 3,

20 Fig. 5 shows a cross-section of a second embodiment of a rolled profile,

Fig. 6 shows a cross-section of a welded profile of two profiles shown in Fig. 5

Fig. 7 is a view in perspective of a welded roller-extruded profile with the cross-section of the profile of Fig. 6,

Fig. 8 is a view in perspective of a console obtained by sawing off a piece of the
25 roller-extruded profile of Fig. 7,

Fig. 9 shows the attachment of the console by means of threaded rods,

Fig. 10 shows the attachment of a console in an exploded drawing,

Fig. 11 shows the console attached according to Fig. 10,

Fig. 12 shows a view in perspective of a section of a girder with attached consoles,

Figs. 13 and 14 show alternative designs of the console and

Fig. 15 shows a view in perspective of a connection between an add-on part and
5 a console.

Fig. 1 shows a travel way for a magnetic levitation train 100 in cross-section. The magnetic levitation train 100 reaches around add-on parts 3 attached laterally to a girder 2. The attachment is effected by means of consoles 1 provided on the
10 girder 2. The girder 2 is a precast concrete part that is attached on supports 20 at the erection site. To ensure proper operation of the magnetic levitation train 100 it is important that the add-on parts 3 be placed in a defined position relative to each other and relative to the girder 2. Only this precise relative placement of the add-on parts 3 makes a reliable operation of the magnetic levitation train
15 possible at extremely high speeds. The add-on parts have a seating surface, lateral guiding surfaces and stator packages or their fastening means making it possible to guide the magnetic levitation train 100 and to drive it.

Fig. 2 shows a section of a girder 2 in a perspective view. A plurality of consoles
20 1 is provided on the girder 2. The girder 2 is made in form of a hollow girder in order to achieve especially good stability. As a result very long spans can be obtained so that the production costs of the travel way may be reduced. The consoles 1 are placed near the upper flanges of the girder 2 and at the ends of the latter. They are placed at a distance L from each other in the longitudinal
25 direction of the girder. The distance L is advantageously selected so that it is an integral fraction of the length of an add-on part 3. This ensures that the add-on parts that are considerably shorter than the girder 2 always abut within the area of a console 1. Thus an exact connection and assignment is possible without additional

components being required. This makes for economical construction of the travel way since no separate connection means are needed for the add-on part 3 among them selves.

- 5 The upper flange of the girder 2 has a width x that is shorter than the width y of the outer surfaces of the consoles. The add-on parts 3 are attached to the outer surfaces of the consoles 1. Accordingly the dimension y is important for the required dimensions for the placement of the add-on part 3. By changing the dimension y the horizontal distance between the add-on parts 3 which is very
10 important for the precise guidance of the magnetic levitation train 100 is changed.

- In producing the console 1, the head plate 4 was made in excess size on the side of the add-on part to be mounted later (Fig. 1). This is removed by grinding
15 after mounting the console 1 on the face of the girder 2 in order to even out manufacturing tolerances of the girder 2 in the transversal direction to the travel way, so that when the add-on part 3 is subsequently attached to the head plate 4, the value of the width of the travel way is reliably maintained.

- 20 Traditionally a console 1 cast as an individual part is used to mount the add-on part 3 on the girder 2. This presents however the problem that the cast part may have inclusions such as e.g. bubbles, and the cast parts must be x-rayed in order to ensure the necessary quality.

- 25 To improve the quality a method is therefore proposed by which the console elements are produced from a rolled profile. Two roller-extruded profiles in the usual length of e.g. 8 to 16 meters are produced and are then welded together. The composite roller-extruded profile is divided into pieces of equal length so that the individual console elements are produced. With this method the
30 production of

the consoles is thus improved over that of the cast parts and better quality can be achieved.

Fig. 3 shows in the upper, hatch-marked drawing the approximately h-shaped cross-sectional profile of a rolled profile 21. To produce the final cross-section of the console, a mirror-symmetrical second rolled profile 21' of the rolled profile 21 is provided and is welded together with the first rolled profile 21. The width b of the console 1 between the surface of the console 1 in contact with the girder 2 and the surface of the console 1 on which the add-on part 3 is placed is produced during rolling of the profile with an excess size $\ddot{u}$, so that the console 1 can be machined down to the desired dimension, e.g. by means of grinding.

Fig. 4 shows an individual roller-extruded profile 21 in perspective. From the drawing it appears that the length of the rolled profile 21 is a multiple of the height h of the console 1 shown in Fig. 8.

Instead of a blunt stoep end 22, 22' at the connecting point of the two rolled profiles 21, 21', an angular stoep end 23, 23' as shown in Fig. 5 can be used. Fig. 4A shows the x-shaped welding seam 25 at the connection point of the two approximately h-shaped rolled profiles 21, 21' that face each other originally and that were welded together at the pointed stoep end 23, 23' of the roller profile shown in Fig. 5.

As represented in Fig. 6 by the black surface, the depth of the welded connection extends over the entire thickness of the side of the roller-extruded profiles 21, 21'. Thereby great stability of the welded connection 25 is achieved.

As shown in Fig. 7, the welding seam extends over the entire length of the individual roller-extruded profiles 21, 21'. Therefore welding of uniform quality can be performed over the entire length of the two roller-extruded profiles 21, 21'.

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After welding together the roller-extruded profiles 21, 21' over their entire length, the obtained, composite profile 24 is cut down to the desired height h of the consoles 1 and is machined. Therefore a plurality of consoles 1 can be produced from two roller-extruded profiles 21, 21' or one profile 24, so that uniform high quality at low manufacturing costs is ensured.

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Following the installation of the add-on part 3 on the head plate 4 of the consoles 1, the load bears down through the magnetic levitation train as it passes over the travel way in the area of the consoles above the add-on part 3 with the stator package in vertical direction upon the head plates. The vertical load on the head plates 4 causes torque to be applied to the footplate 18. The torque is divided into a force component perpendicular to the girder 2 and parallel to the girder 2 in vertical direction by the two bracing rods 10' that press the contact surface of the foot plate 18 against the side of the girder 2. As a result a deformation of the footplate 18 in the area between the webs that connect the footplate 18 to the head plate 4 is substantially avoided, so that no load is affecting the welding seam 25 extending vertically between the webs. For this reason the welding seam 25 is a non-critical component relative to the overall load-bearing capacity of the attachment device.

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In the embodiment of Fig. 9 the console 1 is attached by means of the bracing rods 10 and 11 going through the upper flange of the girder 2. The bracing rods 10 and 11 are threaded steel rods connecting the console 1 and its corresponding console 1 on the other side of the girder 2 to each other. For this purpose idle pipes (not shown) can be embedded in the concrete in girder 2, which the

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threaded rods 10 and 11 are put through and the consoles 1 are bolted together. Stop plates 19 can be imbedded in the concrete at the lateral wall 9 of the girder 2 to ensure good support of the console 1 on the girder 2. For adjustment a spacer can be inserted between the impact stop 19 and the console 1.

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Fig. 10 shows a detail of a girder 2. Bracing anchors 10' project from the lateral wall 9. The console 1 with its footplate 18 is installed on the bracing anchor 10'. Centring bores 27 are provided in the footplate 18 to correspond to centring nuts 28. When assembled according to Fig. 11, the console 1 is firmly screwed to the lateral wall 9. By centring the nut 28 in the bore 27 a solid connection between the console 1 and the girder 2 is created.

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The wall thickness of the footplate 18 is reduced at the location of the welding seam. This makes quicker and more reliable welding of the console 1 consisting of roller-extruded profiles possible.

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In an embodiment according to Fig. 12 a console 1 is installed on a girder 2 on either side of the upper flange of the girder 2. The bracing rods 10' connect the two consoles 1 to each other. The consoles 1 are attached to the bracing rods 10' by screwing a nut on the bracing rod 10' made in form of a threaded rod. The consoles 1 are thus pressed against the upper flange of the girder 2 and are clamped together. The console 1 is provided in this case with a footplate 18 which connects the webs 5, 6 to each other and is furthermore provided with bores to receive the bracing rods 10' and the corresponding nuts to screw on the console 1.

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The bracing rods 10' extend preferably between planes in which reinforcing iron 40 is present. Thereby particularly great robustness is achieved. Alternatively,

fibre concrete can also be used for this in order to achieve great robustness of the girder 2 also at the edges.

Fig. 13 shows another example of an embodiment of a console 1. The
 5 embodiment is substantially the same as console 1 of Fig. 12. The webs 5, 6 are however closer together. The head plates 4 are pointing away from each other. Among the advantages of this embodiment is greater accessibility to the fastening elements of the add-on parts 3. The screws going through the bores 15
 10 are more easily accessible from the outside and can thus also be serviced more easily with machine tools. The head plates are asymmetrical in this embodiment.

Centring bores 27 are provided in the footplate 18. Through the interaction of the centring nut for the attachment to the bracing anchors 10' according to Fig. 12, very precise positioning of the console on the girder 2 is thus achieved. In
 15 addition, great strength of the screw connection is obtained.

Fig. 14 shows another embodiment of a console 1. In this case only one single web 5" is attached to the footplate 18. On the other end of the web 5" a single head plate 4" is provided, with bores 15 and 17 for an add-on part 3. In some
 20 embodiments the configuration of the console 1 is sufficient, even if the design with two webs and two head plates is considered at this time to be the most advantageous one.

Fig. 15 shows a detail of a girder 2 with several consoles 1 in a perspective view.
 25 An add-on part 3 is attached to consoles 1. From this drawing it can be seen that the end of the add-on part 3 ends at a head plate of a console 1. The following add-on part that is not yet attached, is screwed to the second head plate of the console 1. Because of the slit design of the head plate 4, a longitudinal expansion of the add-on parts is possible to a limited extent. A stator
 30 package 50 is located

under the add-on part 3. In the embodiment according to the invention the length of the stator package 50 is an integral fraction of the add-on part 3.

The present invention is not limited to the examples of embodiments shown.

- 5 Especially combinations of the different characteristics are possible at any time without falling outside the invention. Different kinds of stope ends are also possible with the present invention for the connection of individual partial cross-sections with each other.

CLAIMS

1. A console for a travelway for a railborne vehicle, the console for
5 connecting a girder with at least one add-on part, to attach the at least one add-on part to the girder by means of the console, to support and/or guide the vehicle, characterized in that:
the console has at least one web for connecting at the first end of the at least one web to the girder; and in that
10 the console has a head plate for the add-on part to screw thereto;
the head plate is substantially perpendicular to the extension of the at least one web;
the head plate is at the second end of the at least one web, to be spaced at a distance from the girder; and in that
15 the head plate constitutes a contact surface for the add-on part .
2. A console according to claim 1, for use for a travelway for a magnetic levitation train.
- 20 3. A console according to claim 1 or 2, wherein the add-on part is a functional part.
4. A console according to any one of the preceding claims, wherein the at least one web comprises two webs.
- 25 5. A console according to any one of the preceding claims, wherein the webs are connected to each other at their first and/or at their second ends.
- 30 6. A console according to any one of the preceding claims, characterized in that the console is made from at least one roller-extruded profile.

7. A console according to any one of the preceding claims, characterized in that the console is made of several roller-extruded profiles that are welded to each other.
- 5 8. A console according to claim 7, wherein the wall thickness of the roller-extruded profiles is reduced, from that of the overall wall thickness, in the area of the welds.
9. A console according to any one of the preceding claims, characterized in
10 that a head plate that is substantially at a right angle relative to the web is provided at every web.
10. A console according to any one of the preceding claims, characterized in that the head plate is provided with projections to serve as contact surfaces.
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11. A console according to any one of the preceding claims, characterized in that the head plate is L, T, Z or U-shaped and is installed on the at least one web.
- 20 12. A console according to any one of the preceding claims, characterized in that the at least one web and/or the head plate are provided with bores or threads to receive fastening screws and/or transversal power bolts for the add-on part.
- 25 13. A console according to any one of the preceding claims, characterized in that the material of the at least one web and/or of the head plate(s) is a metal that can be machined down and/or can be welded.
14. A console according to claim 13, wherein the metal is steel.
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15. A console according to any one of the preceding claims, characterized in that the console is attached to the girder.

16. A console according to claim 15, wherein the console is screwed or clamped to the girder.
- 5 17. A console according to claim 15 or 16, wherein the console is attached to a bracing anchor provided in the girder
18. A console according to any one of the preceding claims, characterized in that the at least one web is provided at its first end with at least one footplate.
- 10 19. A console according to claim 18, characterized in that the footplate is provided with bores for attachment of the console by means of a bracing anchor.
20. A console according to claim 19, wherein the bores are centering bores.
- 15 21. A travel way for a railborne vehicle comprising a girder, a plurality of consoles, the consoles as defined in any one of the preceding claims, and a plurality of add-on parts attached to the girder by means of the consoles to support and/or guide the vehicle, characterized in that:
- 20 the plurality of add-on parts are placed one after the other on the travel way; and in that
- the distance between two consoles in the longitudinal direction of the travel way is essentially an integral fraction of the length of one of the add-on parts.
- 25 22. A travel way according to claim 21, wherein the girder is concrete and the console is imbedded in the concrete of the girder .
23. A travel way according to claim 21 or 22, when dependent on at least
- 30 claim 18, wherein the footplate of the console is embedded in the girder.

24. A travel way according to any one of claims 21 to 23, wherein the stope ends of two adjacent add-on parts are connected to the girder by a single console, wherein a first add-on part is connected to a first web or with a first head plate and the second add-on part is connected with a second web or a second head plate .

25. A travel way according to any one of claims 21 to 24, wherein the add-on parts are essentially box-shaped components in cross-section, with integrated connecting surfaces, lateral guiding surfaces and stator attachments.

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26. A travel way according to any one of claims 21 to 25, wherein the console is installed on a girder made of fibre concrete.

27. A method for the production of consoles, for the attachment of an add-on part to a girder of a rail-borne vehicle travel way, comprising the following steps:

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- producing a roller-extruded profile such that the cross-section of the roller-extruded profile is substantially identical to a partial cross-section of a console being produced; and
- cutting the roller-extruded profile into segments, whereby the length of each partial segment is equal to the height (h) of the console being produced; wherein the consoles are as defined in any one of claims 1 to 20.

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28. A method according to claim 27, characterized in that the roller-extruded profile is double-rolled.

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29. A method according to claim 27 or 28, wherein the roller-extruded profile is produced by hot-rolling a metal blank.

30. A method according to any one of claims 27 to 29, further comprising drilling one or more holes into a bottom plate of the console once the segments have been cut off, to attach the console to a girder.

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31. A method according to any one of claims 27 to 30, characterized in that the profile is a composite profile formed by welding at least two individual roller-extruded profiles together and in that this welding takes place before the roller-extruded profile is divided into segments.
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32. A method according to claim 31, characterized in that the composite profile comprises two roller-extruded profiles abutting symmetrically against each other.
- 10 33. A method according to claim 31 or 32, characterized in that at least one of two surfaces that are connected to each other by a welded seam are made angular towards their facing surfaces before welding, tapering to a blunt angle, so that at least one wedge-shaped welding seam is produced in welding.
- 15 34. A method according to any one of claims 31 to 33, characterized in that the welding seam extends in a direction of the console in which only little load is applied after attachment of the console to a travel way girder and the installation of an add-on part on the console .
- 20 35. A method according to any one of claims 27 to 34, characterized in that the roller-extruded profiles are mostly h-shaped.
36. A method according to any one of claims 27 to 35, characterized in that the width (b) of the console between a surface of the console in contact with a
25 girder and a surface of the console in contact with an add-on part is made with an excess dimension (ü) so that the console may then be machined down to the desired dimension.
37. A method according to any one of claims 27 to 36, characterized in that
30 the connection point at the console is machined mechanically before and/or after the attachment on the girder and/or on the add-on part .

38. A method according to any one of claims 27 to 37, characterized in that the material of which the console is made can be reduced by machining.

39. A method according to claim 38, wherein the material of which the
5 console is made can be reduced by grinding or drilling.

(12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES
PATENTWESENS (PCT) VERÖFFENTLICHTE INTERNATIONALE ANMELDUNG

(19) Weltorganisation für geistiges Eigentum
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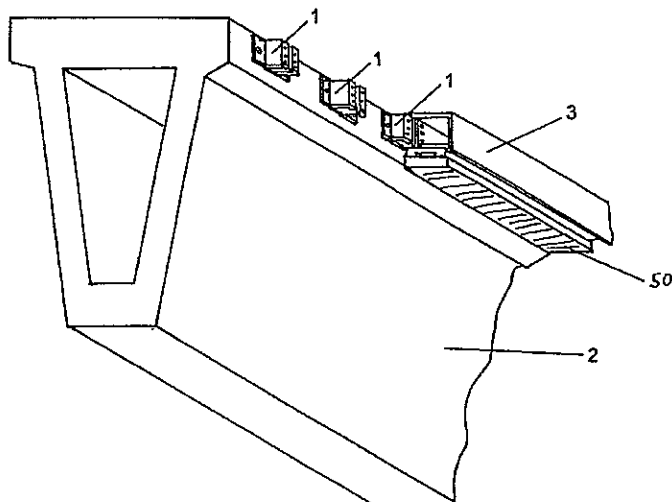
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(54) Title: **TRAVEL WAY FOR A GUIDED VEHICLE, ESPECIALLY A MAGNETIC LEVITATION RAILWAY**

(54) Bezeichnung: **FAHRWEG FÜR EIN SPUHRGEBUNDENES FAHRZEUG, INSBESONDERE EINE MAGNETISCHWEBEBAHN**



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(57) Abstract: The invention relates to a travel way for a guided vehicle, especially a magnetic levitation railway. The travel way is provided with a console (1) for connecting a support (2) to at least one add-on piece (3) (functional piece) which is mounted on the support (2) by means of the console (1). The add-on piece is used for guiding the vehicle. The console (1) is provided with at least one, preferably two, web/s (5, 6) which is/are connected to the support (2) at the first end thereof. The second end of the web/s is provided with a receptacle that is arranged in an essentially vertical manner in relation to the extension of the webs (5, 6). The receptacle serves for fixing the add-on piece (3). The console (1) and/or the add-on piece (3) is/are produced from at least one rolled steel section.

(57) Zusammenfassung: Ein Fahrweg für ein spurgebundenes Fahrzeug, insbesondere eine Magnetschwebbahn, weist eine Konsole (1) zur Verbindung eines Trägers (2) mit wenigstens einem an dem Träger (2) mittels der Konsole (1) befestigten Anbauteil (3) (Funktionsteil) zum Führen

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