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ARRANGEMENT FOR MOVING A COVER AND METHOD FOR INSTALLING AN ARRANGEMENT

Abstract

In an arrangement for moving a cover for a vehicle roof and installation method for installing the arrangement, the arrangement has: a guide rail, which extends in a longitudinal direction; an opening lever for raising a rear edge of the cover; a support carriage, which is held such that it can slide in the guide rail in the longitudinal direction; a drive lever, which is rotatably coupled at a first end to the opening lever and has a guide element at a second end. The guide element supported between the support carriage and the guide rail so that a movement of the support carriage in the longitudinal direction is transmitted to the opening lever.

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Background/Summary

[0001] An arrangement for moving a cover for a vehicle roof is set out. In addition, a method for installing an arrangement for moving a cover for a vehicle roof is set out, in particular for installing an arrangement described herein.
[0002] Such arrangements having a cover for a vehicle roof serve, for example, to raise the cover starting from a closure position in order to close a roof opening for opening by means of a deployment mechanism first in the rear region thereof and then to displace it backward into an open position. DE 10 2006 045 632 B3, the content of which is hereby incorporated by reference, describes in this regard, for example, a so-called spoiler roof.
[0003] It is desirable to set out an arrangement for moving a cover for a vehicle roof which enables reliable operation. It is in addition desirable to set out a method for installing an arrangement for moving a cover for a vehicle roof which can be carried out in a reliable manner.
[0004] An arrangement for moving a cover for a vehicle roof is set out. In addition, a method for installing an arrangement for moving a cover for a vehicle roof is set out, in particular a method for installing an arrangement described herein. Advantages, features and further developments of the arrangement consequently also apply to the method and vice versa.
[0005] According to at least one embodiment, the arrangement has a guide rail which extends in a longitudinal direction. The arrangement has a deployment lever. The deployment lever is configured to raise a rear edge of the cover. The arrangement has a bearing carriage. The bearing carriage is retained in the guide rail so as to be able to be displaced in the longitudinal direction. The arrangement has a drive lever. The drive lever is rotatably coupled at a first end to the deployment lever. The drive lever has at a second end a guide element. The guide element is supported between the bearing carriage and the guide rail. It is thereby possible to transmit a movement of the bearing carriage in the longitudinal direction to the deployment lever.
[0006] The drive lever and the bearing carriage cooperate in order to bring about a pivoting of the deployment lever. Consequently, by means of a movement of the bearing carriage and the drive lever, the deployment lever can be pivoted relative to the guide rail in order to raise and lower the rear edge of the cover.
[0007] The bearing carriage has, for example, a connection to a locking element. In a first state, the locking element can be displaced in the longitudinal direction relative to a guide rail. In a second state, the locking element is locked against a movement in the longitudinal direction relative to the guide rail. Consequently, the bearing carriage can be displaced in the first state in the longitudinal direction relative to the guide rail. In the second state, the bearing carriage is locked relative to the guide rail. In the first state, the drive lever can be moved by means of the bearing carriage in order to pivot the deployment lever. In the second state, the deployment lever is locked in the deployed position thereof by means of the drive lever and the bearing carriage and the locking element relative to the guide rail. The bearing carriage and the drive lever are in particular components which are configured separately from each other. During operation, the bearing carriage and the drive lever cooperate as described. In this instance, however, particularly no materially engaging connection is formed between the bearing carriage and the drive lever. The movement of the bearing carriage is transmitted to the drive lever by means of a positive-locking connection and/or a non-positive-locking connection.

[0008] The arrangement enables a reliable operation with little structural spatial requirement. As a result of the support of the drive lever along the vertical between the bearing carriage and the guide rail, a play-free bearing within the conventional tolerances is possible. The arrangement can be installed in a simple and reliable manner.
[0009] According to one embodiment, the guide element has a bearing projection at a first end. The bearing projection is arranged in a recess of the bearing carriage. The bearing projection is supported on a base of the recess. In the assembled state, consequently, a reliable retention of the guide element at the first end is possible and the movement of the bearing carriage can be reliably transmitted to the guide element and the drive lever.
[0010] According to another embodiment, the guide element has a protruding projection at a second end. The second end is opposite the first end of the guide element in a longitudinal extent of the guide element. The longitudinal extent corresponds in the assembled and operationally ready state, for example, to the vertical direction or the vertical. The projection protrudes transversely relative to the longitudinal extent. The projection is supported on the guide rail. The projection protrudes along the horizontal or in the transverse direction. Consequently, the projection may enclose the guide rail and be supported on a guide path, which faces the bearing carriage, of the guide rail. The guide element is consequently supported on the guide rail in the vertical direction by means of the projection. The guide element is consequently supported by means of the projection and the bearing projection between the guide rail and the bearing carriage and consequently reliably retained.
[0011] According to at least one embodiment, the guide element has a stop at the second end thereof. The stop is supported on a vertical guide path in the guide rail. Consequently, the guide element is supported and retained in the transverse direction on the guide rail. By means of the stop and the projection, the guide element is consequently supported on the guide rail both in the vertical direction and in the transverse direction.
[0012] According to at least one embodiment, the guide element is at a second end in direct contact with the guide rail. The guide element has, for example, a plastics material member which is supported between the bearing carriage and the guide rail. The plastics material of the plastics material member is in the assembled state in particular in direct contact with the guide rail and slides during operation along the guide rail.
[0013] According to at least one embodiment, the bearing carriage has a protruding region. The protruding region protrudes beside the recess in the vertical direction. The protruding region laterally supports the guide element. In addition, the protruding region serves to enable the guide element to be pushed into the bearing carriage in a reliable manner.
[0014] According to at least one embodiment, the method for installing involves providing a guide rail which extends in a longitudinal direction. A bearing carriage is provided. The bearing carriage is retained in the guide rail so as to be able to be displaced in the longitudinal direction. A deployment lever having a drive lever is provided. The drive lever is rotatably coupled at a first end to the deployment lever. The deployment lever has a guide element at a second end. The guide element is moved in a vertical direction in the direction of the deployment lever. The second end of the guide element and the guide rail are redirected relative to each other in a transverse direction. The transverse direction is in particular orientated transversely relative to the longitudinal direction and the vertical direction and the second end of the guide element faces away from the bearing carriage. A first end of the guide element is inserted into the bearing carriage. The second end of the guide element is pivoted into the guide rail and thereby arranged between the bearing carriage and the guide rail. Consequently, the guide element is supported between the bearing carriage and the guide rail.
[0015] The method enables a preassembly of the deployment lever with the drive lever and, for example, also with a deployment bearing for the deployment lever. The bearing carriage can be installed in the guide rail independently of the deployment lever and the drive lever. The drive lever

can be installed in a simple manner in the guide rail by means of pivoting and insertion into the bearing carriage and pivoting-in and locking. The connection between the drive lever and the locking element can consequently be formed directly in the guide rail. A pre-assembly of the drive lever with a locking element outside the guide rail can be dispensed with. Consequently, a simple assembly with little structural spatial requirement and reliable support and play-free bearing as far as possible is possible.
[0016] According to at least one embodiment, the deployment bearing to which the deployment lever is pivotably secured is inserted into the guide rail. The pushing-in of the deployment bearing is carried out prior to the first end of the guide element being inserted into the bearing carriage.
[0017] According to embodiments, the arrangement is part of a spoiler roof in which at a rear edge of the cover in the opening direction the deployment lever is first rotated in order to raise the rear edge of the cover. The cover is displaced relative to the deployment lever in the opening direction in order to at least partially release a roof opening. The deployment lever is secured in this instance relative to the remaining vehicle roof and not displaced together with the cover in the opening direction. This is different, for example, in so-called externally guided sliding roofs in which the deployment lever is displaced at the rear edge of the cover together with the cover relative to the remaining vehicle roof in the opening direction.
[0018] Other advantages, features and further developments will be appreciated from the following examples explained in connection with the figures. Elements which are identical, similar and have the same effect may be given the same reference numerals in all the figures.

Description

IN THE DRAWINGS
[0019] FIG. **1** shows a schematic illustration of a vehicle according to an exemplary embodiment,
[0020] FIGS. **2** to **5** show in each case schematic illustrations of an arrangement during the installation according to an exemplary embodiment, and
[0021] FIGS. **6** to **13** show in each case a schematic illustration of an arrangement according to an exemplary embodiment.
[0022] FIG. **1** shows a vehicle **100** according to an exemplary embodiment. The vehicle **100** has a vehicle roof **101**. A cover **103** is arranged on the vehicle roof **101**. The cover **103** can, for example, be moved relative to the remaining vehicle roof **101**. Consequently, a roof opening **102** can be either closed or partially released by the cover **103**.
[0023] The vehicle has a windshield **104**. The cover **103** has a front edge **105** which in the operating state faces the windshield **104**. A rear edge **106** of the cover **103** faces away from the windshield **104** in a longitudinal direction X.
[0024] The movement of the cover **103** is produced by means of a deployment mechanism. The deployment mechanism has, for example, a guide rail **107** which is connected to the vehicle roof **101**. A drive cable is, for example, guided in the guide rail **107**. The drive cable is, for example, in contact with an electric drive motor and other components of the deployment mechanism in order to move the cover **103** relative to the remaining vehicle roof **101**. The deployment mechanism has an arrangement **200** which will be explained in greater detail below.
[0025] For example, the arrangement **200** is configured in the manner of a spoiler roof. The arrangement **200** has a deployment lever **110** which is in particular in the form of a rear deployment lever **110**. The rear deployment lever **110** serves to raise and lower the rear edge **106** of the cover **103**. When the cover **103** is displaced in the X direction relative to the remaining vehicle roof **101** into the open position, the rear deployment lever **110** is locked with the guide rail. The cover **103** is displaced relative to the deployment lever **110** in the X direction in order to be displaced into the open position thereof. In this regard, the exemplary embodiment of a spoiler roof differs from the

exemplary embodiment which is shown in FIG. **1**. In FIG. **1**, a so-called externally guided sliding roof is illustrated, in which the deployment lever **110** is displaced at the rear edge **106** of the cover **103** together with the cover **103** relative to the remaining vehicle roof in the opening direction. With this type of sliding roof and with other embodiments of sliding roofs, the arrangement **200** described in this instance and the installation method can also be used correspondingly.

[0026] Location indications or direction indications used, such as rear or front, top or bottom, left or right, refer to a longitudinal vehicle axis and a conventional travel direction of an operationally ready vehicle **100**. The longitudinal vehicle axis may also be referred to as a horizontal axis or X axis in the associated X direction. The transverse vehicle axis may also be referred to as a horizontal axis or Y axis in the associated Y direction. The vertical vehicle axis may also be referred to as a vertical axis or Z axis in the associated Z direction. The vertical direction, the transverse direction and the longitudinal direction are in particular orientated in each case perpendicularly to each other.

[0027] FIG. **2** shows the arrangement **200** before the deployment lever **110** is mounted on the guide rail **107**.

[0028] The deployment lever **110** is coupled to a deployment bearing **140** so that the deployment lever **110** is retained in a pivotable manner. A drive lever **115** is pivotably connected to the deployment lever **110**. In particular, the drive lever **115** is connected to the deployment lever **110** in a central region of the deployment lever **110**. A rotational connection **118** (FIG. **3**) is formed between the deployment lever **110** and the drive lever **115**.

[0029] The drive lever **115** has a first end **116** and a second end **117**. The rotation connection **118** is formed on the first end **116** of the drive lever **115**.

[0030] A guide element **120** is formed at the opposing second end **117** of the drive lever **115**. The guide element **120** is in particular made from a plastics material. At the second end **117** of the drive lever **115**, consequently, a plastics material member **127** is arranged. The plastics material member **127** is, for example, injection-molded on a metal portion of the drive lever **115**. The plastics material member **127** is configured to be retained and guided in the guide rail.

[0031] In a first step, the guide rail **107** and the deployment bearing **140** are provided with the deployment lever **110** mounted thereon separately from each other. In addition, a cover carrier **160** which carries the cover **103** and which acts as an interface for securing the cover **103** is provided. The cover carrier **160** is, for example, guided and supported in the region of the front edge **105** in the guide rail **107**.

[0032] The cover carrier **160** is coupled to a cover slider **111** during the installation. The cover slider **111** is arranged at one end of the deployment lever **110**. By means of the cover slider **111**, the cover **103** is supported by means of the cover carrier **160** on the deployment lever **110** and consequently on the guide rail **107**. By pivoting the deployment lever **110**, the cover carrier **160** can consequently be raised and lowered in the Z direction relative to the guide rail **107**.

[0033] A bearing carriage **130** (for example, FIG. **4**) is provided in the guide rail **107**. The bearing carriage **130** is guided in the guide rail **107** so as to be able to be displaced in the longitudinal direction X. The bearing carriage **130** is, for example, part of a longitudinally displaceable rotary bearing. The bearing carriage **130** is, for example, made of plastics material. The bearing carriage **130** is retained and guided in the guide rail so that a movement in the X direction is possible and a movement in the Z direction and in the Y direction is blocked.

[0034] As illustrated, for example, in FIG. **6**, the bearing carriage **130** has a connection **133** to a locking element **150**. For example, the locking element is a twistable rod. The locking element **150** can, for example, be coupled to a drive carriage (not explicitly shown). The drive carriage in turn can, for example, be coupled to a drive of the arrangement **200** in order to pivot the cover **103** and to displace it in the longitudinal direction.

[0035] The locking element **150** can be locked either to the guide rail **107** or to the drive carriage. By means of the locking element **150**, a longitudinal movement of the drive carriage relative to the

guide rail **107** can be transmitted to the bearing carriage **130**. By means of the locking element **150**, a locking action relative to the guide rail **107** is possible so that a longitudinal movement of the bearing carriage **130** relative to the guide rail **107** is blocked.

[0036] FIG. **3** shows the arrangement **200** during assembly when the deployment bearing **140** is coupled to the guide rail **107**. The cover carrier **160** is coupled to the cover slider **111**. The deployment lever **110** is in its deployed position, in which the deployment lever **110** extends substantially in the vertical direction Z. In the operationally ready state, in this position the rear edge **106** of the cover **103** is raised.

[0037] The drive lever **115** is orientated in such a manner that the guide element **120** is not arranged in the guide rail **107**. The drive lever **115** is not yet coupled to the bearing carriage **130**. Firstly, the deployment lever **110** is thus connected to the guide rail **107**. Subsequently, the drive lever **115** is connected to the bearing carriage **130**, as illustrated in FIGS. **4** and **5**.

[0038] The drive lever **115** is pivoted about its rotation axis **112** (FIG. **7**) of the rotary connection **118** so that the guide element **120** moves toward the guide rail **107**.

[0039] In order to introduce the guide element **120** into the guide rail, the second end **117** is redirected in the Y direction relative to the guide rail **107**. Consequently, the guide element **120** is moved in particular away from a guide wall **108**. The deployment lever **110** is consequently redirected in particular at the second end **117** thereof from the rest and operating position thereof so that the guide element **120** can be moved past the guide wall **108** and other projections of the guide rail **107** in the direction of the bearing carriage **130**. Alternatively or additionally, it is also possible to redirect a portion of the guide rail **107**, in particular the portion with the guide wall **108**, in the transverse direction so that the guide element **120** can be moved in the direction of the bearing carriage **130**. The guide wall **108** may also be referred to as a guide web or guide flange.

[0040] The relative redirection of the guide element **120** and the guide rail **107** away from each other is in particular sufficiently large to move a projection **124**, which protrudes in the transverse direction Y, of the guide element **120** past the guide wall **108**. The projection **124** may also be referred to as a bearing web.

[0041] As soon as the projection **124** has been moved past the guide wall **108** (FIG. **5**), the guide element **120** and/or the guide rail **107** move back into the rest and operating position so that the projection **124** is arranged below the guide wall **108**. The projection **124** is then supported in the Z direction on a horizontal guide path **128**, which faces the bearing carriage **130**, of the guide wall **108**. The horizontal guide path **128** extends in the transverse direction Y, in particular in an X-Y plane. The horizontal guide path **128** guides the guide element **120** in the vertical direction Y. The horizontal guide path **128** supports the guide element **120** axially in the vertical direction Z.

[0042] In the Z direction, the position of the guide element **120** is defined in an upward direction by the projection **124** and the guide wall **108**. The projection **124** can slide along the guide wall **108** in the X direction.

[0043] At the second end **117**, the guide element **120** is supported in the transverse direction Y by means of a stop **125** on a vertical guide path **109** of the guide wall **108**. The vertical guide path **109** extends in the vertical direction Z, in particular in an X-Z plane. The vertical guide path **109** guides the guide element **120** horizontally in the transverse direction Y. The vertical guide path **109** supports the guide element **120** axially in the transverse direction Y. The stop **125** protrudes in the Z direction beyond the projection **124** in order to guide the guide element **120** at the second end **122** thereof in the Y and Z direction on the guide rail **107** in a defined manner.

[0044] At an opposing first end **121** of the guide element **120**, a bearing projection **123** of the guide element **120** is introduced into a recess **131** of the bearing carriage **130**. The bearing carriage **130** has a protruding region **132** which protrudes in the Z direction beside the recess **131**. In order to introduce the bearing projection **123**, the bearing projection **123** is guided in the protruding region **132** and thus reaches the recess **131** in a reliable manner. For example, the bearing projection **123** is already in contact with the protruding region **132** when the projection **124** does not yet engage

behind the guide wall **108**. Consequently, the second end **122** can be redirected relative to the guide rail **107** in the transverse direction X, whilst the first end **121** of the guide element **120** is supported on the protruding region **132**.

[0045] The coupling of the guide element **120** with the bearing carriage **130** is configured in such a manner that a movement of the bearing carriage **130** in the longitudinal direction X relative to the guide rail **107** is transmitted to the guide element **120**. Consequently, the guide element **120** and consequently the drive lever **115** can be displaced by the bearing carriage **130** in the longitudinal direction X relative to the guide rail **107**. This displacement of the drive lever **115** in turn leads to a pivoting of the deployment lever **110**.

[0046] At the first end **121**, the guide element **120** is supported on a base **134** (FIG. **7**) of the recess **131** in the Z direction. The base **134** may also be referred to as the lower bearing segment.

[0047] In the Z direction, the guide element **120** is consequently supported in a downward direction on the base **134** of the recess **131** of the bearing carriage **130** and in an upward direction by means of the projection **124** on the guide path **128** of the guide rail **107**. By means of the protruding region **132** and the stop **125**, the guide element **120** is positioned in a defined manner in the transverse direction Y.

[0048] The arrangement **200** can be installed in a simple and reliable manner. The guide rail **107** can be coupled to the bearing carriage **130**. Independently of this, the deployment bearing **140** can be coupled to the deployment lever **110** and the drive lever **115**. Only afterwards are the two sub-assemblies mounted together. The drive lever **115** can be introduced by means of the redirection or the slight resilient deformation into the guide rail **107** and coupled to the bearing carriage **130**. As a result of the projection **124**, the stop **125** and the bearing projection **123**, the drive lever **115** is retained in a reliable and comparatively play-free manner. By means of the engagement of the bearing projection **123** in the recess **131**, a movement of the bearing carriage **130** can further be transmitted to the drive lever **115** in a reliable manner.

[0049] FIGS. **6** to **13** show other views and sectioned illustrations of the arrangement **200**.

[0050] As can be seen in particular in FIGS. **6** and **9**, the plastics material member **127** is supported in a reliable manner in the Z direction between the guide rail **107** on the guide wall **108** and the bearing carriage **130**. The guide element **120** or the plastics material member **127** extends in a longitudinal extent **126** (FIGS. **6** and **7**). In the longitudinal extent **126**, the plastics material member **127** is supported at the first end **121** by means of the bearing carriage **130** on the guide rail **107**. In the longitudinal extent **126**, the plastics material member **127** is supported at the second end **122** by means of the projection **124** and the stop **125** directly on the guide rail **107**.

[0051] The deployment lever **110** has a pin **119** (FIG. **3**) which is guided in a slotted deployment member **141** (FIG. **7**). The pin **119** may also be referred to as a bearing pin. The slotted deployment member **141** is in particular formed in the deployment bearing **140** and serves to pivot the deployment lever **110** as desired during a movement of the drive lever **115** in the longitudinal direction X.

[0052] For example, FIGS. **7**, **8**, **10** and **11** show that the recess **131** and accordingly the bearing projection **123** are formed in order to enable an easy pivoting of the drive lever **115** whilst the deployment lever **110** is being pivoted. Nonetheless the recess **131** is formed in such a manner that the movement forces can be reliably transmitted in the longitudinal direction X.

[0053] As can be seen in particular in FIGS. **12** and **13**, in the operationally ready state the deployment bearing **140** is mounted at a rear end **113** of the guide rail **107**. The drive lever **115** extends forward in the X direction and is retained and guided in the guide rail at the front second end **117** thereof by means of the guide element **120**.

[0054] For assembly, the drive lever **115** is pressed resiliently in the Y direction into the guide rail **107** so that the guide element **120** snap-fits into the guide rail **107**. For assembly, either the guide rail **107**, the drive lever **115** or both are temporarily resiliently deformed in order to bring about the engagement of the projection **124** behind the guide wall **108**.

[0055] On the whole, the arrangement **200** can be mounted in a reliable and simple manner and requires comparatively little structural space.

LIST OF REFERENCE NUMERALS

[0056] **100** Vehicle [0057] **101** Vehicle roof [0058] **102** Roof opening [0059] **103** Cover [0060] **104** Windshield [0061] **105** Front edge [0062] **106** Rear edge [0063] **107** Guide rail [0064] **108** Guide wall [0065] **109** Vertical guide path [0066] **110** Deployment lever [0067] **111** Cover slider [0068] **112** Rotation axis [0069] **113** End of the guide rail [0070] **115** Drive lever [0071] **116** First end [0072] **117** Second end [0073] **118** Rotary connection [0074] **119** Pin [0075] **120** Guide element [0076] **121** First end of the guide element [0077] **122** Second end of the guide element [0078] **123** Bearing projection [0079] **124** Projection [0080] **125** Stop [0081] **126** Longitudinal extent [0082] **127** Plastics material member [0083] **128** Horizontal guide path [0084] **130** Bearing carriage [0085] **131** Recess [0086] **132** Protruding region [0087] **133** Connection [0088] **134** Base [0089] **140** Deployment bearing [0090] **141** Slotted deployment member [0091] **150** Locking element [0092] **160** Cover carrier [0093] **200** Arrangement [0094] X Longitudinal direction [0095] Y Transverse direction [0096] Z Vertical direction

Claims

1. An arrangement for moving a cover for a vehicle roof, having: a guide rail which extends in a longitudinal direction, a deployment lever for raising a rear edge of the cover, a bearing carriage which is retained in the guide rail so as to be able to be displaced in the longitudinal direction, a drive lever which is rotatably coupled at a first end to the deployment lever and which has at a second end a guide element, wherein the guide element is supported between the bearing carriage and the guide rail in order to transmit a movement of the bearing carriage in the longitudinal direction to the deployment lever.

2. The arrangement according to claim 1, wherein the guide element has at a first end a bearing projection which is arranged in a recess of the bearing carriage and which is supported on a base of the recess.

3. The arrangement according to claim 1, wherein the guide element has at a second end a protruding projection, wherein the second end is opposite the first end in a longitudinal extent of the guide element, and wherein the projection protrudes transversely relative to the longitudinal extent and is supported on the guide rail.

4. The arrangement according to claim 1, wherein the guide element has at the second end thereof a stop which is supported on a vertical guide path of the guide rail.

5. The arrangement according to claim 1, wherein the guide element at the second end thereof is in direct contact with the guide rail.

6. The arrangement according to claim 1, wherein the guide element has a plastics material member which is supported between the bearing carriage and the guide rail.

7. The arrangement according to claim 1, wherein the bearing carriage has a connection to a locking element which in a first state can be displaced in the longitudinal direction relative to a guide rail and in a second state is locked against a movement in the longitudinal direction relative to the guide rail.

8. The arrangement according to claim 1, wherein the bearing carriage has a protruding region which laterally supports the guide element.

9. A method for installing an arrangement for moving a cover for a vehicle roof, comprising: providing a guide rail which extends in a longitudinal direction, providing a bearing carriage which is retained in the guide rail so as to be able to be displaced in the longitudinal direction, providing a deployment lever having a drive lever which is rotatably coupled at a first end to the deployment lever and which has at a second end a guide element, moving the guide element in a vertical direction in the direction of the deployment lever, wherein the vertical direction is orientated

transversely relative to the longitudinal direction, redirecting a second end of the guide element and of the guide rail in a transverse direction relative to each other, wherein the second end of the guide element faces away from the bearing carriage, wherein the transverse direction is orientated transversely relative to the longitudinal direction and the vertical direction, inserting a first end of the guide element into the bearing carriage, and pivoting the second end of the guide element into the guide rail, and thereby arranging the guide element between the bearing carriage and the guide rail so that the guide element is supported between the bearing carriage and the guide rail.

10. The method according to claim 9, comprising: inserting a deployment bearing with the deployment lever into the guide rail before inserting the first end of the guide element into the bearing carriage.