



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
29.05.2013 Bulletin 2013/22

(51) Int Cl.:
E05D 15/24 (2006.01)

(21) Application number: **12190638.2**

(22) Date of filing: **30.10.2012**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

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(30) Priority: **28.11.2011 SE 1151129**

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(54) **Overhead door track system hanger arrangement**

(57) Overhead door track system hanger arrangement (1) for ceiling mounting of an overhead door track system. The overhead door track system hanger arrangement (1) comprises a first brace (2) having an upper end (3) attached to a ceiling attachment means (4), wherein the first brace (2) has a lower end (5) comprising a first overhead door track system attachment means (6). The overhead door track system hanger arrangement further comprises a second brace (7) having an upper end (8)

attached to the first brace (2), wherein the second brace (7) has a lower end (9) comprising a second overhead door track system attachment means (10). The upper end (3) of the first brace (2) is articulately attached to the ceiling attachment means (4) and the upper end (8) of the second brace (7) is articulately attached to the first brace (2) such that the overhead door track system hanger arrangement (1) is foldable and continuously vertically adjustable.

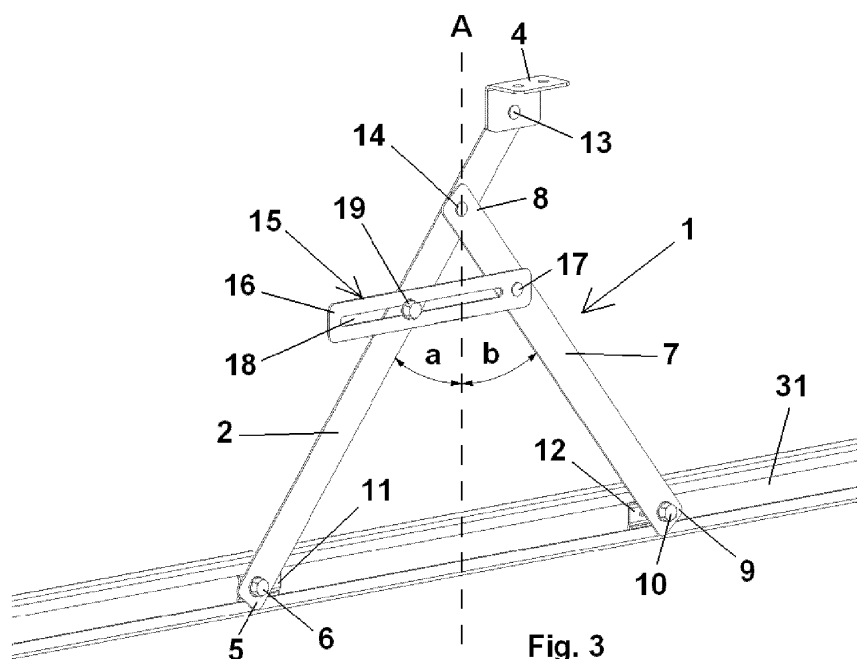


Fig. 3

Description

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention relates to an overhead door track system hanger arrangement for ceiling mounting, an overhead door track system assembly comprising at least one overhead door track system hanger arrangement as well as a method for ceiling mounting of an overhead door track system by means of at least one overhead door track system hanger arrangement.

TECHNICAL BACKGROUND

[0002] One type of garage doors is overhead doors, such as overhead sectional doors and up and over doors. Overhead doors are common in many different types of buildings, such as private and industrial buildings. Overhead sectional doors usually comprise at least two sections hinged together while up and over doors usually comprise only one section. The sides of the sections are equipped with rollers which run in tracks. A track is located at each side of the door. Each track comprises a vertical portion usually affixed to the wall surrounding the door opening of the building and a horizontal portion running from the building wall and inwards the garage room. Optionally, instead of horizontally, the second track portion may run parallel to an inclined ceiling. The tracks may be connected by a distance beam, which stabilizes the track system. The distance beam is usually located at the free ends of the tracks, i.e. at the ends opposite the building walls. Normally, the ceiling height differs from the desired height location of the horizontal track portions, which usually is similar to the height of the door opening. Therefore an overhead door track system hanger is needed in order to install the horizontal track portion at a desired height. The overhead door track system hanger fastens the horizontal track portion to the ceiling

[0003] Conventional overhead door track system hangers typically comprise a horizontal angle bar attached to the ceiling and a vertical angle bar. The upper end of the vertical angle bar is screwed to the horizontal angle bar. When installing the door, the distance beam connecting the tracks of the overhead door is raised to the proper horizontal level for mounting and the vertical angle bar is screwed to the distance beam. Since it is possible to use the hanger for different ceiling heights the vertical angle bar will protrude below the distance beam and consequently the vertical angle bar is preferably cut to a suitable length in relation to the ceiling height. In addition, an oblique strut may be screwed to the upper end of the vertical angle bar as well as to the distance beam. Conventional hangers are complicated and time-consuming to mount, since a large number of operations are necessary. Thus, there is a need for an improved hanger overcoming the drawbacks of conventional overhead door track system hangers.

SUMMARY OF THE INVENTION

[0004] One object of the present invention is to obtain an overhead door track system hanger arrangement which improves the efficiency of mounting of overhead doors. One object of the present invention is to obtain an overhead door track system hanger arrangement having a short installation time. One object of the present invention is to obtain an overhead door track system hanger arrangement reducing the number of operations during installation. One object of the present invention is to obtain an overhead door track system hanger arrangement having low manufacturing cost.

[0005] These and further objects are achieved by an overhead door track system hanger arrangement for ceiling mounting of an overhead door track system, wherein the overhead door track system hanger arrangement comprises a first brace having an upper end attached to a ceiling attachment means, wherein the first brace has a lower end comprising a first overhead door track system attachment means, wherein the overhead door track system hanger arrangement further comprises a second brace having an upper end attached to the first brace, wherein the second brace has a lower end comprising a second overhead door track system attachment means, wherein the upper end of the first brace is articulately attached to the ceiling attachment means and the upper end of the second brace is articulately attached to the first brace such that the overhead door track system hanger arrangement is foldable and continuously vertically adjustable.

[0006] The overhead door track system hanger arrangement according to the present invention improves the efficiency of mounting of overhead doors. The overhead door track system hanger arrangement according to the present invention implies a short installation time. The overhead door track system hanger arrangement according to the present invention reduces the number of operations during installation. The overhead door track system hanger arrangement according to the present invention has low manufacturing cost. The overhead door track system hanger arrangement according to the present invention reduces the number of parts in relation to conventional hangers. The overhead door track system hanger arrangement according to the present invention eliminates the need for cutting of parts of the hanger and for cutting tools during installation. The overhead door track system hanger arrangement according to the present invention is easily adjustable to the ceiling height.

[0007] The above and further objects as well as the above advantages are also achieved by an overhead door track system assembly comprising an overhead door track system and at least one overhead door track system hanger arrangement according to above.

[0008] The above and further objects as well as the above advantages are also achieved by a method for ceiling mounting of an overhead door track system comprising fastening at least one overhead door track system

hanger arrangement according to above to a ceiling by fastening the ceiling attachment means to the ceiling, attaching the first and second overhead door track system attachment means to the overhead door track system and adjusting the height of the overhead door track system hanger arrangement in relation to a ceiling height, whereby the overhead door track system is parallel to the ceiling and/or horizontally aligned.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] Further objects and features of the present invention will appear from the following detailed description of embodiments of the invention, wherein the embodiments will be described in more detail with reference to the accompanying drawings, in which:

Figure 1 is a perspective drawing of an embodiment of the overhead door track system assembly according to the present invention having an overhead door track system hanger arrangement.

Figure 2 is a perspective drawing of an embodiment of the overhead door track system hanger arrangement according to the present invention.

Figure 3 is a perspective drawing of an embodiment of the overhead door track system hanger arrangement according to the present invention attached to an overhead door track system.

Figure 4 is a perspective drawing of the embodiment of the overhead door track system hanger arrangement according to the present invention shown in figure 3 adjusted to a different height.

Figure 5 is a perspective drawing of an embodiment of a slot nut to be comprised in an overhead door track system hanger arrangement according to the present invention.

Figure 6 is a perspective drawing of the embodiment of the overhead door track system hanger arrangement according to the present invention shown in figure 3 premounted to an overhead door track system.

Figure 7 is a perspective drawing of the embodiment of the overhead door track system hanger arrangement according to the present invention shown in figure 1 in a folded position adapted to transport.

[0010] It should be added that the following description of the embodiments is for illustration purposes only and should not be interpreted as limiting the invention exclusively to these embodiments/aspects.

DETAILED DESCRIPTION

[0011] As described above, the present invention relates to an overhead door track system hanger arrangement 1 for ceiling mounting of an overhead door track system, wherein the overhead door track system hanger arrangement 1 comprises a first brace 2 having an upper end 3 attached to a ceiling attachment means 4, wherein the first brace 2 has a lower end 5 comprising a first overhead door track system attachment means 6, wherein the overhead door track system hanger arrangement 1 further comprises a second brace 7 having an upper end 8 attached to the first brace 2, wherein the second brace 7 has a lower end 9 comprising a second overhead door track system attachment means 10, wherein the upper end 3 of the first brace 2 is articulately attached to the ceiling attachment means 4 and the upper end 8 of the second brace 7 is articulately attached to the first brace 2 such that the overhead door track system hanger arrangement 1 is foldable and continuously vertically adjustable. Such embodiments are shown in figures 2-4 and 6-7.

[0012] The articulate attachment of the first brace 2 to the ceiling attachment means 4 and the articulate attachment of the second brace 7 to the first brace 2 imply that the overhead door track system hanger arrangement 1 is foldable from an extended position where the first brace 2 and the second brace 7 are parallel in relation to each other to a folded position where the first brace 2 and the second brace 7 are aligned and coincide. When folding the overhead door track system hanger arrangement 1 from the extended position to the folded position, the overhead door track system hanger arrangement 1 is vertically and continuously, i.e. stepless, adjusted from a maximum to a minimum height. One possible position for an embodiment of an overhead door track system hanger arrangement is illustrated in figure 3. In figure 4, the same embodiment has been folded and vertically adjusted to a lower height than in figure 3.

[0013] When the overhead door track system hanger arrangement is attached to the overhead door track system, the extended position is used in a ceiling having a maximum ceiling height. When the overhead door track system hanger arrangement is attached to the overhead door track system, a first folded position is achieved when the lower ends of the first and second braces are separated and pointing in opposite directions. This first folded position is used in a ceiling having a minimum ceiling height or before installation, such as during transport, of an overhead door track system having a premounted overhead door track system hanger arrangement. This first folded position is shown in figure 6. When the overhead door track system hanger arrangement not is attached to the overhead door track system, a second folded position is achieved when the lower ends of the first and second braces are pointing in the same direction. This second folded position is preferably used during transport and handling of an overhead door track system

hanger arrangement before attachment to an overhead door track system. This second folded position is shown in figure 7. The foldability of the overhead door track system hanger arrangement allows continuous height adjustment of the overhead door track system hanger arrangement and thereby the overhead door track system hanger arrangement may be adapted to any ceiling height within the range from the maximum to the minimum ceiling height defined above. The overhead door track system hanger arrangement is easily adaptable to the ceiling height without any need for adaption of the parts of the overhead door track system hanger arrangement, such as cutting of any part of the overhead door track system hanger arrangement. The overhead door track system hanger arrangement implies efficient assembly and installation and one contributing reason for this is the elimination of the drawback of cutting of the vertical angle bar in conventional overhead door track system hangers. Other reasons are for example the foldability and the full flexibility of the overhead door track system hanger arrangement according to the present invention. The overhead door track system hanger arrangement is readjustable, which implies that the overhead door track system hanger arrangement can be readjusted if the conditions changes over time, if the original installation was incorrect or if the overhead door is to be remounted at a different location having a different ceiling height. The easy adjustment of the overhead door track system hanger arrangement reduces the installation time.

[0014] The overhead door track system hanger arrangement 1 comprises a ceiling attachment means 4 for attachment to a ceiling (see figures 2-4 and 6-7). The lower end 5 of the first brace 2 of the overhead door track system hanger arrangement 1 comprises a first overhead door track system attachment means 6 for attachment to an overhead door track system 31 (see figures 2-5). The lower end 9 of the second brace 7 of the overhead door track system hanger arrangement 1 comprises a second overhead door track system attachment means 10 for attachment to the overhead door track system 31 (see figures 2-5).

[0015] In one embodiment of the present invention, the first brace 2 and the second brace 7 form a unit. This is shown in figures 1-4 and 6-7. Since the first brace 2 and the second brace 7 are united forming a unit, the handling of the overhead door track system hanger arrangement 1 and the adjustment of the height of the overhead door track system hanger arrangement 1 is facilitated. For example, installation is easily achieved by one person without the need for assistance or extensive effort, since both the first and the second braces 2, 7 of the overhead door track system hanger arrangement 1 and the tools needed for installation thereof are easily brought by the person when climbing for example a ladder, which reduces the need for stepping down from the ladder in order to fetch further parts. In addition, the number of pieces needed for mounting of the overhead door track system hanger

arrangement is reduced, which simplifies handling of the overhead door track system hanger arrangement 1. Thereby the installation time is further reduced. Consequently, the number of pieces needed for mounting of the overhead door track system assembly as well as the overhead door is reduced.

[0016] In one embodiment, the ceiling attachment means 4, the first brace 2 and the second brace 7 form a unit (see figures 1-4 and 6-7). Thereby, the handling of the overhead door track system hanger arrangement 1 and the adjustment of the height of the overhead door track system hanger arrangement 1 is further facilitated. For example, installation by one person without the need for assistance or extensive effort is further simplified, since the complete overhead door track system hanger arrangement 1 and the tools needed for installation thereof are easily brought by the person when climbing for example a ladder, which eliminates the need for stepping down from the ladder in order to fetch further parts. The installation time is also further reduced. The number of pieces is further decreased and the overhead door track system hanger arrangement 1 is delivered as a one-piece product minimizing assembly and the time needed therefor.

[0017] In one embodiment, the first brace forms an angle (a) in relation to a vertical axis (A) by means of the articulate attachment of the first brace 2 to the ceiling attachment means 4. This is shown in figures 1-4 and in particular in figure 3. Since the first brace 2 is inclined in relation to the vertical axis (A), the continuous height adjustment is facilitated and the overhead door track system hanger arrangement 1 may be easily adjusted in relation to the ceiling height such that the overhead door track system hanger arrangement 1 does not protrude below the overhead door track system 31. Consequently, it is not necessary to cut the first brace 2 of the overhead door track system hanger arrangement 1 in order to achieve that the overhead door track system hanger arrangement 1 does not protrude below the overhead door track system 31. The lower end 5 of the first brace 2 may be attachable to an overhead door track system such that the first brace forms an angle (a) in relation to a vertical axis (A). In one embodiment, the second brace 7 forms an angle (b) in relation to the vertical axis (A) (see figures 2-4 and in particular figure 3). Thereby, the continuous height adjustment is further facilitated and adjustment in relation to the ceiling height is further simplified. The vertical axis is perpendicular to the overhead door track system. The vertical axis is also perpendicular to the cross beam of the overhead door track system.

[0018] In one embodiment, the second brace 7 is attached to the first brace 2 at a distance from the upper end 3 of the first brace 2. This is shown in figures 1-4 and in particular in figure 3. By attaching the second brace 7 to the first brace 2 at a distance from the upper end 3 of the first brace, the attachment points for attaching the first brace 2 to the ceiling attachment means 4 and for attaching the second brace 7 to the first brace 2 are sep-

arated. Thereby, the attachment point for attaching the first brace 2 to the ceiling attachment means 4 only has to involve the first brace 2 and the ceiling attachment means 4 and the attachment point for attaching the second brace 7 to the first brace 2 only has to involve the first brace 2 and the second brace 7. Thus, the attachment of the first brace 2 to the ceiling attachment means 4 as well as the attachment of the second brace 7 to the first brace 2 are simplified and strengthened. In one embodiment, the first brace forms an angle (a) in relation to a vertical axis (A) and the second brace 7 forms an angle (b) in relation to the vertical axis (A) such that the second brace 7 together with the first brace 2 form a minuscule lambda shape (see figures 2-4 and in particular figure 3). The upper end 8 of the second brace 7 may be attached to the first brace 2 at a distance from the upper end 3 of the first brace 2 and the lower end 9 of the second brace 7 may be attachable to the overhead door track system such that the second brace 7, together with the first brace 2, form a minuscule lambda shaped construction.

[0019] In one embodiment, the overhead door track system hanger arrangement 1 is foldable while attached to an overhead door track system. Such embodiments are shown in figures 1-4 and 6-7. Since the overhead door track system hanger arrangement 1 is foldable when attached to an overhead door track system, the height of the overhead door track system hanger arrangement 1 may easily be adjusted when attached to the overhead door track system and optionally also when attached to the ceiling. Thereby, the overhead door track system hanger arrangement 1 may be mounted to the overhead door track system 31 before attachment of the overhead door track system hanger arrangement 1 to the ceiling. After attachment of the overhead door track system hanger arrangement 1 to the ceiling, the height of the overhead door track system hanger arrangement 1 can easily be adapted to the ceiling height such that the overhead door track system 31 is parallel to the ceiling and/or horizontally aligned.

[0020] In one embodiment, each of the first and second overhead door track system attachment means 6, 10 comprises a hole in the lower end of the first and second brace, respectively (see figures 2-7). The hole may receive a screw or a bolt for attachment to the overhead door track system. The screw may be a self-drilling screw.

[0021] In one embodiment, the first and second overhead door track system attachment means 6, 10 are slidably attachable to an overhead door track system. One such embodiment is shown in figures 3-6. Thereby, the first and second overhead door track system attachment means 6, 10 can be slid in the overhead door track system 31. By sliding the overhead door track system attachment means 6, 10 in the overhead door track system 31, the adjustment of the height of the overhead door track system hanger arrangement 1 while attached to the overhead door track system 31 is facilitated.

[0022] In one embodiment, at least one of the first and second overhead door track system attachment means

6, 10 is lockable to the overhead door track system 31 (see figures 3-6). Thereby, the overhead door track system hanger arrangement 1 can be locked in a specific position when the height of the overhead door track system hanger arrangement 1 has been adjusted.

[0023] In one embodiment, the first and second overhead door track system attachment means 6, 10 are lockable to the overhead door track system (see figures 3-6). By locking both the first and the second overhead door track system attachment means 6, 10 to the overhead door track system 31, the locking is improved and the rigidity of the overhead door track system hanger arrangement 1 is increased.

[0024] In one embodiment, the first and/or second overhead door track system attachment means 6, 10 comprises a slot nut 11, 12. This is shown in figures 3-6. The presence of a slot nut 11, 12 in the first and/or second overhead door track system attachment means 6, 10 implies that the first and/or second overhead door track system attachment means 6, 10 is slidable in relation to the overhead door track system 31 and also lockable in relation to the overhead door track system 31. Thereby, the height adjustment of the overhead door track system hanger arrangement 1 is facilitated, in particular when the overhead door track system hanger arrangement 1 is attached to the overhead door track system 31. By providing both the first and the second overhead door track system attachment means 6, 10 with a slot nut 11, 12, the slidability is improved and the lockability, and thus also the rigidity, of the overhead door track system hanger arrangement 1 is increased. Each slot nut 11, 12 may be attached by means of a bolt through a hole in the lower end 5, 9 of the first or second brace 2, 7.

[0025] In one embodiment, the profile of the slot nut 11, 12 is adapted to the profile of the overhead door track system 31 to which the slot nut 11, 12 is attachable. One such embodiment is shown in figure 5. Consequently, the overhead door track system hanger arrangement 1 can be fitted to any overhead door track system 31 by adapting the slot nut 11, 12.

[0026] In one embodiment, the upper end 3 of the first brace 2 is articulately attached to the ceiling attachment means 4 by means of a rivet, a bolt and a nut, a screw, a pin or a cotter. In one embodiment, the upper end 8 of the second brace 7 is articulately attached to the first brace 2 by means of a rivet, a bolt and a nut, a screw, a pin or a cotter. The use of any one of a rivet, a bolt and a nut, a screw, a pin and a cotter is an easy way of achieving articulate attachment. These means are also inexpensive.

[0027] In one embodiment, the upper end 3 of the first brace 2 is articulately attached to the ceiling attachment means 4 by means of a rivet 13. In one embodiment, the upper end 8 of the second brace 7 is articulately attached to the first brace 2 by means of a rivet 14. This is shown in figures 2-4 and 7. The use of a rivet implies good articulate movement and good attachment with minimal risk of separation of the parts attached to each other by the

rivet.

[0028] In one embodiment, the overhead door track system hanger arrangement 1 comprises a locking device 15 locking the second brace 7 in relation to the first brace 2. One such embodiment is shown in figures 3-4 and 6. The locking device 15 implies that the second brace 7 can be locked in relation to the first brace 2 without locking any of the first and second overhead door track system attachment means 6, 10. The height of the overhead door track system hanger arrangement 1 can be locked by means of only the locking device 15. This facilitates the mounting of the overhead door track system hanger arrangement 1. Besides that it is important that the tracks 32, 33 of the overhead door track system 31 are perpendicular to the door 35, it is important that the tracks 32, 33 of the overhead door track system 31 are parallel to each other. To achieve this cross measurement may be performed by measuring the distance from the front corner of one track to the back corner of the other track and compare this with the distance from the back corner of said one track to the front corner of said other track. These distances should be equal. The locking device 15 facilitates the adjustment of the track to achieve that said distances are equal. In particular when two overhead door track system hanger arrangements are used, the locking device 15 facilitates the adjustment of the track to achieve that said distances are equal, since then one overhead door track system hanger arrangement 1 can easily be locked by the locking device 15 while the other one is adjusted. The locking device 15 makes it possible to perform the adjustment in order to obtain parallel tracks by one person.

[0029] In one embodiment, the locking device 15 comprises a cross bar 16 (see figures 3-4 and 6-7). The cross bar 16 ensures the locking of the second brace 7 to the first brace 2 in a simple way.

[0030] In one embodiment, the cross bar 16 is articulately attached to one of the first brace 2 and the second brace 7 and slidably attached and lockable to the other of the first brace 2 and the second brace 7. One such embodiment is shown in figures 3-4 and 6. Thereby, the locking device 15 is easily adjustable when folding and adjusting the height of the overhead door track system hanger arrangement 1. Consequently, the overhead door track system hanger arrangement 1 is easily foldable and vertically adjustable when the locking device 15 not is locked, i.e. when the second brace 7 not is locked in relation to the first brace 2. Locking is possible when desired, e.g. when the overhead door track system hanger arrangement 1 is adjusted to a desired height.

[0031] In one embodiment, the cross bar 16 is attached to the second brace 7 at a distance from the upper end 8 of the second brace 7 (see figures 1-4 and 6-7). This ensures proper locking of the second brace 7 to the first brace 2. Also, the rigidity of the overhead door track system hanger arrangement 1 before attachment and/or locking of the first and second overhead door track system attachment means 6, 10 to the overhead door track

system 31 is improved.

[0032] In one embodiment, the cross bar 16 is articulately attached to one of the first brace 2 and the second brace 7 by means of a rivet, a bolt and a nut, a screw, a pin or a cotter. The cross bar 16 may be articulately attached to one of the first brace 2 and the second brace 7 by means of a rivet 17. In one embodiment, the cross bar 16 is slidably attached to the other of the first brace 2 and the second brace 7 by means of a slit 18 in the cross bar. In one embodiment, the cross bar 16 is lockable to the other of the first brace 2 and the second brace 7 by means of a fastening means 19, such as a screw or a bolt optionally in combination with a nut. The fastening means 19 may be inserted through the slit 18 and fastened to the other of the first brace 2 and the second brace 7. This is shown in figures 3-4. The overhead door track system hanger arrangement 1 may be made of metal, such as steel, such as galvanized steel.

[0033] As described above, the present invention also relates to an overhead door track system assembly 30 comprising an overhead door track system 31 and at least one overhead door track system hanger arrangement 1 according to above. One embodiment of such an overhead door track system assembly is shown in figure 1. The overhead door track system assembly 30 is continuously adjustable to different ceiling heights by means of the at least one overhead door track system hanger arrangement 1, which is foldable and continuously vertically adjustable. The foldability of the overhead door track system hanger arrangement 1 allows continuous height adjustment of the overhead door track system assembly 30 and thereby the overhead door track system assembly 30 may be adapted to any ceiling height within the range from the maximum to the minimum ceiling height described above. By means of the foldable and continuously vertically adjustable overhead door track system hanger arrangement 1, the overhead door track system 31 of the overhead door track system assembly 30 may be mounted parallel to the ceiling and/or horizontally aligned independently of the ceiling height.

[0034] In one embodiment, the overhead door track system 31 comprises at least two tracks 32, 33 and a cross beam 34 connecting the at least two tracks 32, 33. One such embodiment is shown in figure 1. The cross beam 34 supports the tracks 32, 33 and reinforces the overhead door track system 31, particularly in the direction of the cross beam 34, i.e. the horizontal direction perpendicular to the tracks 32, 33. In one embodiment, the overhead door track system hanger arrangement 1 is attached to the cross beam 34. In one embodiment, at least one of the first and second overhead door track system attachment means 6, 10 is attached to the cross beam 34. In one embodiment, the first and second overhead door track system attachment means 6, 10 are attached to the cross beam 34. This is shown in figure 1. By attaching the overhead door track system hanger arrangement 1 to the cross beam 34, the overhead door track system hanger arrangement 1 will be positioned

parallel to the wall surrounding the door opening, i.e. the extension of the overhead door track system hanger arrangement 1 will vary in the horizontal direction parallel to the wall surrounding the door opening when folded. The attachment of the overhead door track system hanger arrangement 1 to the cross beam 34 reduces the impact on the overhead door track system hanger arrangement 1 in the direction of the depth of the overhead door track system hanger arrangement 1, i.e. in the direction perpendicular to the cross beam 34, since the overhead door track system 31 is affixed to the wall surrounding the door opening. Thereby, the strength of the overhead door track system hanger arrangement 1 in the direction of the depth of the overhead door track system hanger arrangement 1 may be decreased. Consequently, the overhead door track system hanger arrangement 1 can be made weaker in that direction, which reduces material and thereby costs.

[0035] In one embodiment, the overhead door track system 31 comprises at least two overhead door track system hanger arrangements 1. One such embodiment is shown in figure 1. By using more than one overhead door track system hanger arrangement 1, the forces and demand on each overhead door track system hanger arrangement 1 is reduced and the overhead door track system assembly 30 is reinforced. By using at least two overhead door track system hanger arrangements 1, the rigidity of the overhead door track system assembly 30 is increased, since the overhead door track system assembly 30 comprises at least two ceiling attachment means 4, affixed to at least two points in the ceiling. In one embodiment having at least two overhead door track system hanger arrangements 1, said at least two overhead door track system hanger arrangements 1 are attached to the cross beam 34. In one embodiment, at least two overhead door track system hanger arrangements 1 are two overhead door track system hanger arrangements 1. This is shown in figure 1.

[0036] The overhead door track system assembly 30 may also comprise an overhead door 35. One such embodiment is shown in figure 1.

[0037] In one embodiment of the overhead door track system hanger arrangement 1, the lower ends 5, 9 of the first and second braces 2, 7 are attachable to a cross beam of the overhead door track system, wherein the cross beam is a supportive beam connecting tracks of the overhead door track system (see figure 1). Thereby, as described above, the overhead door track system hanger arrangement can be made weaker, which reduces material and thereby costs related to both manufacturing and transport.

[0038] In one embodiment, the first brace 2 and the second brace 7 are flat. In one embodiment, the first brace 2 and the second brace 7 are made of flat bars. This is shown in figures 1-7. Thereby, the foldability is facilitated and the strength of the first and second braces 2, 7 is improved in the vertical direction and the horizontal direction of the cross bar to which the overhead door

track system hanger arrangement is attached, i.e. in the direction of the plane of the overhead door track system hanger arrangement. In addition, the amount of material and thereby the costs are reduced.

[0039] As described above, the present invention also relates to a method for ceiling mounting of an overhead door track system 31 comprising fastening at least one overhead door track system hanger arrangement 1 according to above to a ceiling by fastening the ceiling attachment means 4 to the ceiling, attaching the first and second overhead door track system attachment means 6, 10 to the overhead door track system 31 and adjusting the height of the at least one overhead door track system hanger arrangement 1 in relation to a ceiling height, whereby the overhead door track system 31 is parallel to the ceiling and/or horizontally aligned. The order of the steps is not decisive and thus the steps may be performed in a different sequence. The order of the steps is preferably adapted to the specific design of the overhead door track system hanger arrangement 1.

[0040] The mounting of an overhead door track system 31 in a ceiling by means of an overhead door track system hanger arrangement 1, wherein the overhead door track system attachment means 6, 10 are holes in the lower ends 5, 9 of the first and the second braces 2, 7 and no locking device 15 is present may be performed as follows. Fastening the ceiling attachment means 4 to the ceiling, for example by means of at least one screw and possibly at least one wall plug. Raising the overhead door track system 31 to the desired height, usually parallel to the ceiling and/or horizontally aligned. Adjusting the height of the overhead door track system hanger arrangement 1 such that said holes matches the overhead door track system 31 and for example a screw can be guided through each of said holes and affixed to the overhead door track system 31. Thereby, the overhead door track system hanger arrangement is adjusted such that the overhead door track system 31 is parallel to the ceiling and/or horizontally aligned.

[0041] The mounting of an overhead door track system 31 in a ceiling by means of an overhead door track system hanger arrangement 1 comprising slidable overhead door track system attachment means 6, 10, such as slot nuts 11, 12, and a no locking device 15 may be performed as follows. Mounting of the slot nuts 11, 12 at the lower ends 5, 9 of the first and second braces 2, 7. Optionally, the slot nuts 11, 12 are premounted. Insertion of the slot nuts 11, 12 into a profile of the overhead door track system 31. Raising the overhead door track system 31 to a height where the ceiling attachment means 4 abuts the ceiling, for example when the overhead door track system hanger arrangement 1 is in a position having maximum height. Attachment of the ceiling attachment means 4 to the ceiling, such as by means of at least one screw. Adjusting the height of the overhead door track system hanger arrangement 1 to the desired height, e.g. such that the overhead door track system 31 is parallel to the ceiling and/or horizontally aligned. Locking the slot nuts

11, 12.

[0042] The mounting of an overhead door track system 31 in a ceiling by means of an overhead door track system hanger arrangement 1 comprising slidable overhead door track system attachment means 6, 10, such as slot nuts 11, 12, and a locking device 15, such as a cross bar 16, may be performed as follows. Mounting of the slot nuts 11, 12 at the lower ends 5, 9 of the first and second braces 2, 7. Optionally, the slot nuts 11, 12 are premounted. Insertion of the slot nuts 11, 12 into a profile of the overhead door track system 31. Raising the overhead door track system 31 to the desired height, usually parallel to the ceiling and/or horizontally aligned. Adjust the height of the overhead door track system hanger arrangement 1. If the overhead door track system hanger arrangement 1 originally is in a position where the height of the overhead door track system hanger arrangement 1 is maximal, the overhead door track system hanger arrangement 1 will automatically adjust its height by folding when abutting and being pushed against the ceiling. Thereby, the overhead door track system hanger arrangement 1 is adjusted such that the overhead door track system 31 is parallel to the ceiling and/or horizontally aligned. Locking the cross bar 16. Attachment of the ceiling attachment means 4 to the ceiling, such as by means of at least one screw. If desirable or appropriate, unfasten the locking means 15, readjusting the height of the overhead door track system 31, e.g. such that the overhead door track system 31 is parallel to the ceiling and/or horizontally aligned, and relocking the cross bar 16. Locking the slot nuts 11, 12.

[0043] A person skilled in the art can readily find further suitable variants of the method of mounting of an overhead door track system in a ceiling by means of an overhead door track system hanger arrangement according to the present invention. The skilled person can easily find appropriate ways of performing the method of mounting considering the particular embodiment of the overhead door track system hanger arrangement of the present invention and also taking into account the design of the ceiling in which the overhead door track system is to be mounted, the available tools and the number of available persons for performing the mounting.

[0044] As used herein, overhead door includes overhead sectional doors, up and over doors and similar ceiling mounted and track guided doors.

[0045] By a ceiling is herein meant a ceiling, an underside of a roof, a roof beam, a rafter or any other element in which it is suitable to hang an overhead door track system.

[0046] The foregoing has described the principles, preferred embodiments and modes of operation of the present invention. However, the description should be regarded as illustrative rather than restrictive, and the invention should not be limited to the particular embodiments discussed above. The different features of the various embodiments of the invention can be combined in other combinations than those explicitly described. It

should therefore be appreciated that variations may be made in those embodiments by those skilled in the art without departing from the scope of the present invention as defined by the following claims.

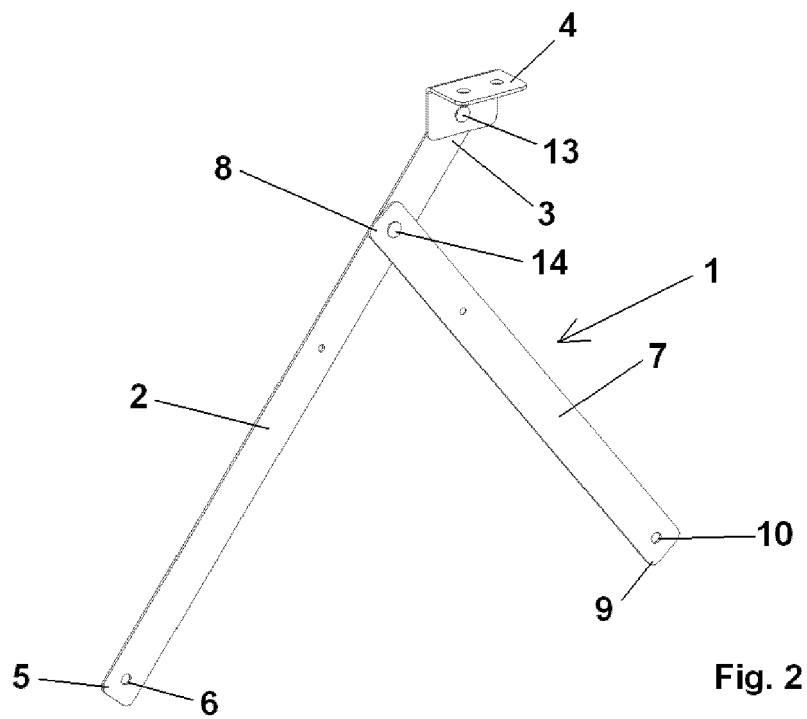
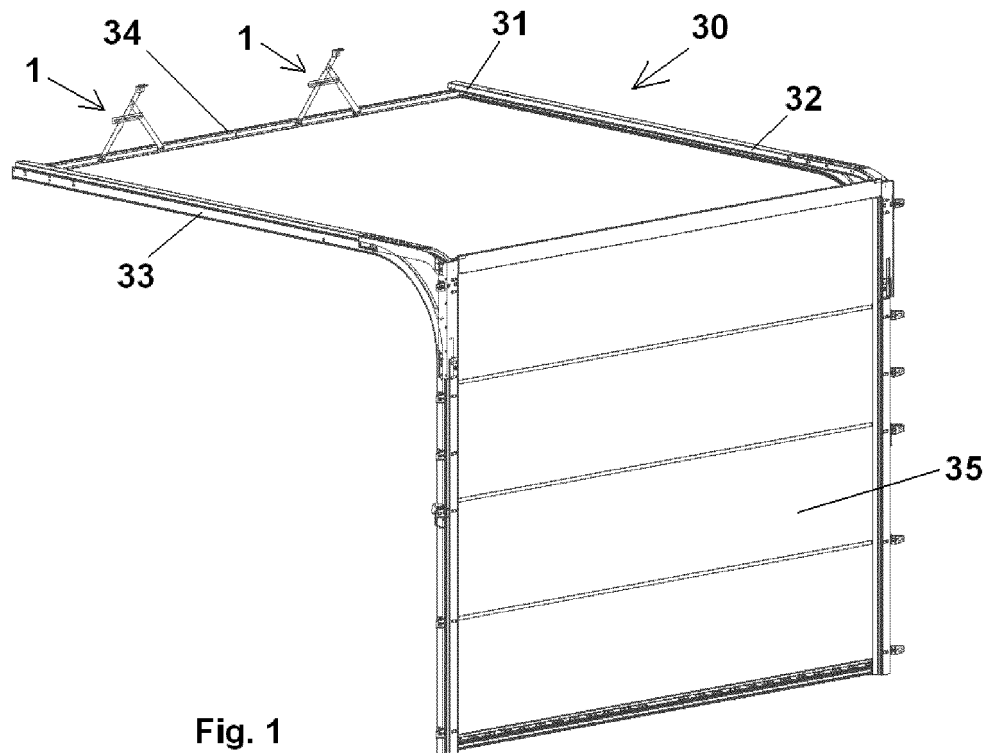
Claims

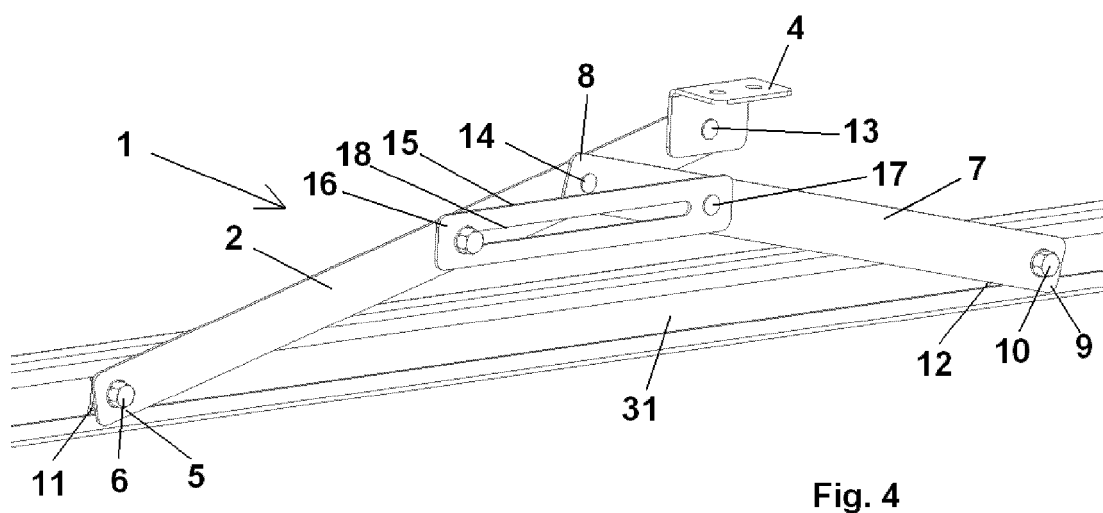
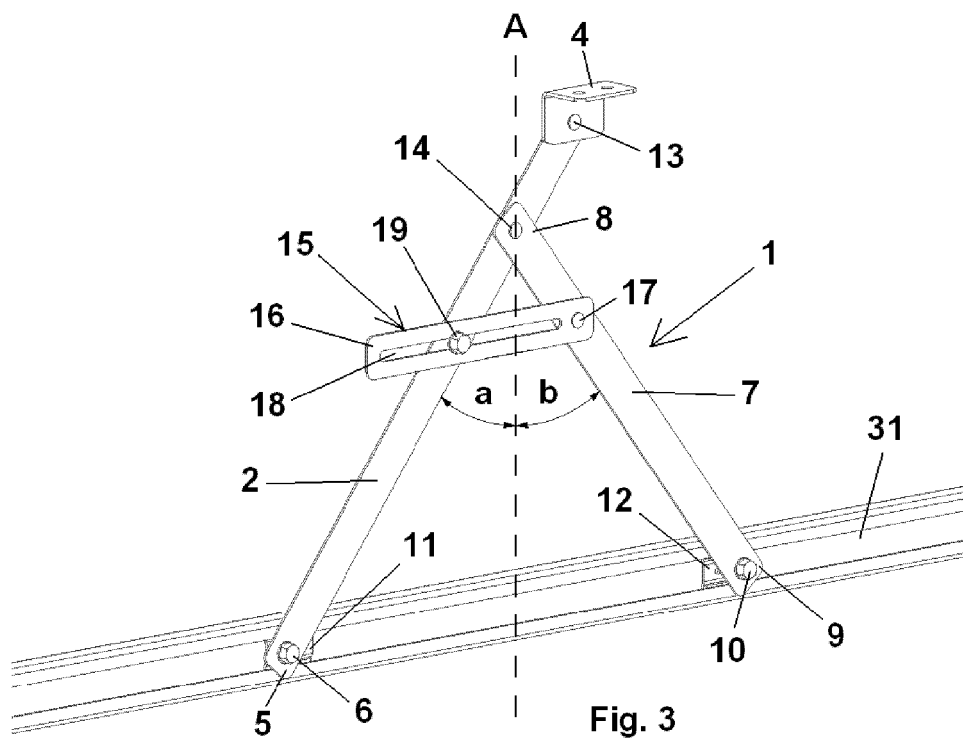
1. Overhead door track system hanger arrangement (1) for ceiling mounting of an overhead door track system, wherein the overhead door track system hanger arrangement (1) comprises a first brace (2) having an upper end (3) attached to a ceiling attachment means (4), wherein the first brace (2) has a lower end (5) comprising a first overhead door track system attachment means (6), wherein the overhead door track system hanger arrangement (1) further comprises a second brace (7) having an upper end (8) attached to the first brace (2), wherein the second brace (7) has a lower end (9) comprising a second overhead door track system attachment means (10) **characterized in that** the upper end (3) of the first brace (2) is articulately attached to the ceiling attachment means (4) and the upper end (8) of the second brace (7) is articulately attached to the first brace (2) such that the overhead door track system hanger arrangement (1) is foldable and continuously vertically adjustable.
2. Overhead door track system hanger arrangement according to claim 1, wherein the first brace (2) and the second brace (7) form a unit.
3. Overhead door track system hanger arrangement according to claim 1 or 2, wherein the first brace forms an angle (a) in relation to a vertical axis (A) by means of the articulate attachment of the first brace (2) to the ceiling attachment means (4).
4. Overhead door track system hanger arrangement according to any one of the preceding claims, wherein the second brace (7) is attached to the first brace (2) at a distance from the upper end (3) of the first brace (2).
5. Overhead door track system hanger arrangement according to any one of the preceding claims, wherein the overhead door track system hanger arrangement (1) is foldable while attached to an overhead door track system.
6. Overhead door track system hanger arrangement according to claim 5, wherein the first and second overhead door track system attachment means (6, 10) are slidably attachable to an overhead door track system.
7. Overhead door track system hanger arrangement

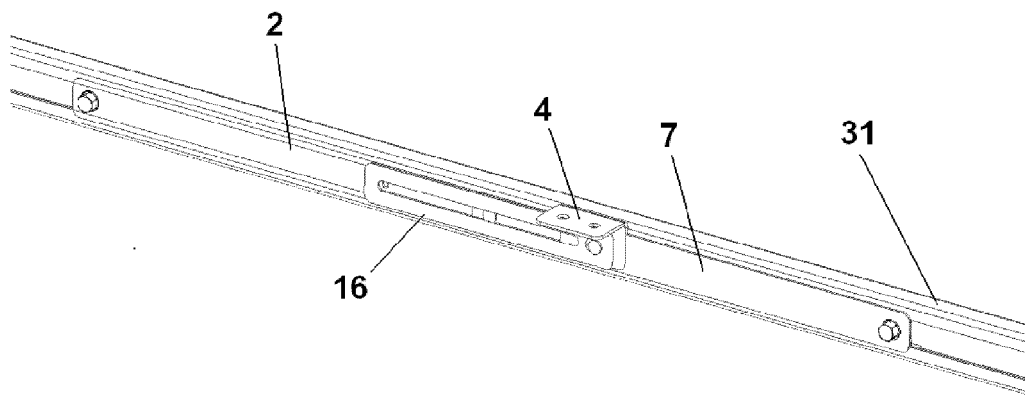
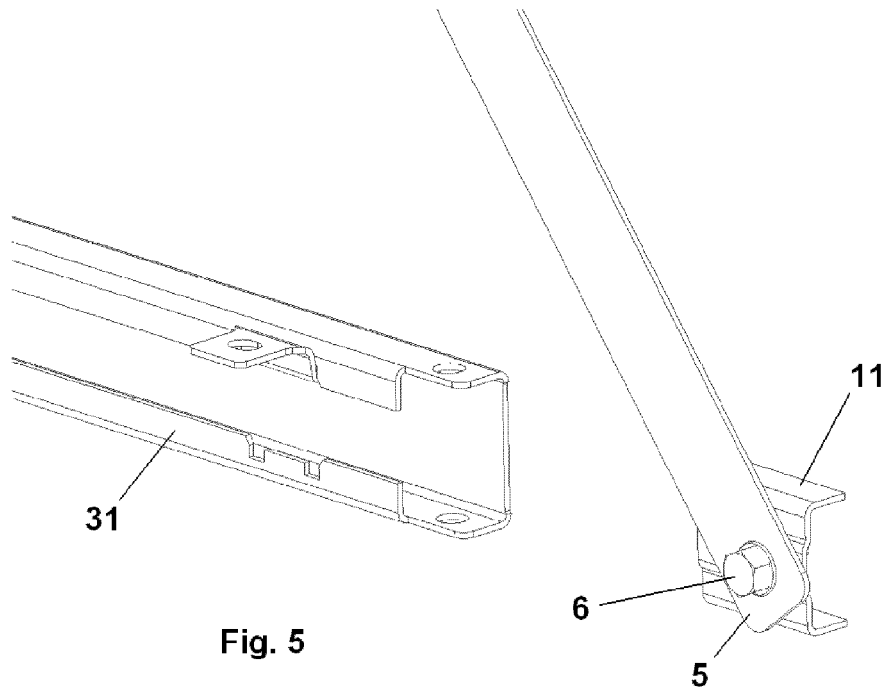
according to any one of the preceding claims, wherein at least one of the first and second overhead door track system attachment means (6, 10) is lockable to the overhead door track system.

8. Overhead door track system hanger arrangement according to claim 7, wherein the first and second overhead door track system attachment means (6, 10) are lockable to the overhead door track system. 5
9. Overhead door track system hanger arrangement according to claim 8, wherein the first and/or second overhead door track system attachment means (6, 10) comprises a slot nut (11, 12). 10
10. Overhead door track system hanger arrangement according to any one of the preceding claims, wherein the upper end of the first brace is articulately attached to the ceiling attachment means by means of a rivet, a bolt and a nut, a screw, a pin or a cotter, such as a rivet (13). 15 20
11. Overhead door track system hanger arrangement according to any one of the preceding claims, wherein the upper end of the second brace is articulately attached to the first brace by means of a rivet, a bolt and a nut, a screw, a pin or a cotter, such as a rivet (14). 25
12. Overhead door track system hanger arrangement according to any one of the preceding claims, comprising a locking device (15) locking the second brace (7) in relation to the first brace (2). 30
13. Overhead door track system hanger arrangement according to claim 12, wherein the locking device (15) comprises a cross bar (16). 35
14. Overhead door track system hanger arrangement according to claim 13, wherein the cross bar (16) is articulately attached to one of the first brace (2) and the second brace (7) and slidably attached and lockable to the other of the first brace (2) and the second brace (7). 40 45
15. Overhead door track system hanger arrangement according to claim 14, wherein the cross bar (16) is attached to the second brace (7) at a distance from the upper end (8) of the second brace (7). 50
16. Overhead door track system assembly (30) comprising an overhead door track system (31) and an overhead door track system hanger arrangement (1) according to any one of the preceding claims. 55
17. Method for ceiling mounting of an overhead door track system comprising fastening at least one overhead door track system hanger arrangement accord-

ing to any one of claims 1-15 to a ceiling by fastening the ceiling attachment means to the ceiling, attaching the first and second overhead door track system attachment means to the overhead door track system and adjusting the height of the at least one overhead door track system hanger arrangement in relation to a ceiling height, whereby the overhead door track system is parallel to the ceiling and/or horizontally aligned.







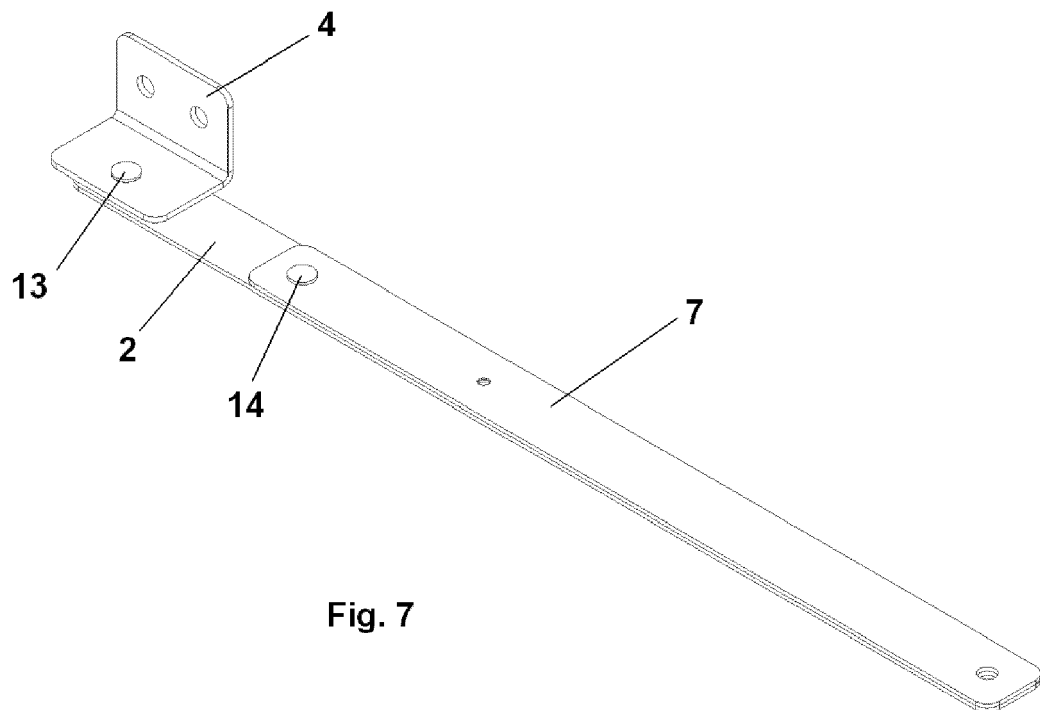


Fig. 7