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(54) **Anchoring for a motorcyclist protection system**

Verankerung für ein Schutzsystem für einen Motorradfahrer

Ancrage pour système de protection de motocycliste

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(56) References cited:
EP-A1- 1 455 020
EP-A1- 1 650 352
EP-A1- 2 045 414
EP-A2- 0 810 325
EP-A2- 2 108 741
WO-A1-01/06063
WO-A1-2009/132787
WO-A1-2010/089428
FR-A1- 2 745 310

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Description

Object of the Invention

[0001] The present invention relates to an anchoring for a motorcyclist protection system, specifically to an anchoring for fixing motorcyclist protection barriers which enables their implementation on most of the vehicle restraint systems used on the roads.

[0002] The invention is encompassed within the field of road safety, specifically safety barriers and restraint systems.

Background of the Invention

[0003] The great variety of vehicle restraint systems which today abound on the roads creates the need for designing very diverse typologies of motorcyclist protection systems. The restraint systems typically include a restraint barrier, posts and optionally spacers. The existence or not of a spacer between the barrier and the post, and the differences in terms of the type of post and the separation distance between contiguous posts are among the characteristics of the different restraint systems installed on the roads which generate problems at the time of installing protection for motorcyclists and which the present invention intends to solve.

[0004] Furthermore, the known continuous type motorcyclist protection systems need handling of the same for their installation on an existing restraint system, even having to, on occasions, make holes in full execution of the installation.

[0005] Document ES1049601U describes a motorcycle protection device applicable on metal safety barriers. It is a device which needs a particular spacer for its implementation. At the time of installing it, it is necessary to unscrew the barrier-spacer connecting screw to introduce the anchoring arm.

[0006] Document ES1060699U presents a continuous metal system for safety barriers, applicable as protection for motorcyclists, made up of a lower continuous horizontal metal screen supported on the barrier by means of metal arms arranged at regular intervals. As in the above case, it needs a spacer between the post and barrier, and the unscrewing of the screw.

[0007] Document ES1067158U describes an anchoring arm for a motorcyclist protection system applicable on double rail safety barriers. It is a device which needs a specific type of spacer for its implementation.

[0008] Document ES1071633U describes a motorcyclist protection structure applicable to vehicle side impact restraint systems on roads. It includes two different parts between posts which need the existence of a hole in the centre of the barrier, which does not always occur.

[0009] Another drawback of the known anchoring systems is the fatigue problems which can happen as a consequence of the narrowing present on the anchoring part. Tapered anchoring parts are known for example from documents ES1049601U, ES1067158U, ES1069001U and

[0010] EP 2 045 414 and FR 2 745 310 disclose other anchoring systems for protecting motorcyclists.

Description of the Invention

[0011] The present invention solves the existing deficiencies by means of an anchoring according to claim 1, a motorcyclist protection system according to claim 6 and a positioning method for positioning a motorcyclist protection barrier according to claim 8. Preferred embodiments of the invention are defined in the dependent claims.

[0012] A first aspect presents an anchoring for a motorcyclist protection system, comprising a flat bar having three substantially straight sections and two bends made in the same direction, the first bend defining a first inner angle $\beta 1$ between the first and the second section and the second bend defining a second inner angle $\beta 2$ between the second and the third section, a first section being intended to be fixed to a post of a vehicle restraint system, the third section being intended to be coupled with a motorcyclist protection barrier, wherein the planes containing the first and the third section form an angle α of $20° \pm 5°$ and the sum of the inner angles $\beta 1$ and $\beta 2$ is $200° \pm 5°$.

[0013] Advantageously, the anchoring according to the invention does not have narrowings which could give rise to fatigue problems as occurs in other anchorings of the state of the art.

[0014] The first section of the anchoring preferably has at least one hole for its fixing to a post of the restraint system. Since it is not a slotted hole, which is common in the connections by means of known anchorings, it does not generate stress concentration areas and therefore it will not be a source of fatigue problems.

[0015] The third section of the anchoring preferably has a mounting hole for its coupling with a motorcyclist protection barrier.

[0016] The anchoring flat bar is preferably metal, more preferably of steel.

[0017] The anchoring according to the invention is a fundamental part in the motorcyclist protection system, since it accomplishes a double mission: positioning the lower barrier at suitable angle, distance and height, and providing the system with a controlled cushioning. The first objective (positioning) is achieved only with the geometry of the part itself, whereas the cushioning is a combination of the geometry and of the physical-mechanical properties of the material with which said part is made.

[0018] A second inventive aspect presents a fixing system comprising an anchoring according to the first inventive aspect and a support for fixing the anchoring to a post of a restraint system, where the support comprises an open profile flat bar suitable for partially wrapping a section of the post, and fixing means.

[0019] Advantageously, the fixing system according to

the invention adapts to any common metal restraint system of those installed on roads, independent of their height, their distance between posts, type of post, etc.

[0020] A system combining all the advantages which the fixing system according to invention has, converting it into a multipurpose system applicable to the vast majority of vehicle restraint systems with a series of added advantages does not currently exist:

- Since two symmetrical parts are used for the fixing of the protection barrier, a differentiation of left hand and right hand parts is not required.
- It is independent of the type of post, being valid for IPN, C profile, tubular, sigma, etc.
- It is independent to whether or not there is a spacer and, if there was, of the type of spacer.
- There is no need to perform any type of action on the installed restraint system for its installation.
- It is sliding and, therefore, adjustable to any height.
- It has successfully passed the tests required by the UNE 135900-2008 standard.
- It does not have anchoring in the centre of the span, therefore it is independent of the distance between posts.
- It is independent of the type of barrier installed.
- The weight of the motorcyclist barrier does not fall on critical areas of the vehicle restraint system, it is the post that secures it.
- It does not re-use screws from the initial restraint system.
- Since the anchoring lacks narrowings and slotted holes, the system has a good response with respect to fatigue problems.

[0021] A third inventive aspect presents a restraint system comprising a post, a restraint barrier fixed directly or with the use of a spacer to the post, a motorcyclist protection barrier and an anchoring according to the first inventive aspect.

[0022] A fourth inventive aspect presents a positioning method for positioning a motorcyclist protection barrier on a road, comprising the following steps:

- providing an anchoring according to the first inventive aspect, and
- fixing the first section of the anchoring to a post of the restraint system, and the motorcyclist protection barrier to the third section of the anchoring, such that the protection barrier is located below the safety barrier.

[0023] The motorcyclist protection barrier must be positioned complying with specific conditions:
The vertical distance (A) between the lower edge of the motorcyclist protection barrier and the roadway must allow an optimum exit of the runoff. In a preferred embodiment said distance shall be 60 $\pm$ 20 mm.

[0024] The transversal distance (B) between a substantially central area of the protection barrier and the post must allow the system to have a minimum course free from any impact in the transversal direction. This course is translated into the time which the system has to cushion the motorcyclist. In a preferred embodiment this distance shall be at least 100 mm.

[0025] The plane distance between barriers (C) is the distance preventing the motorcyclist protection barrier arranged on the lower portion from invading the roadway. In a preferred embodiment this distance is less than or equal to 150 mm.

[0026] The vertical distance between barriers (D) must be sufficient so that the restraint and motorcyclist protection barriers do not collide.

[0027] The motorcyclist protection barrier is fixed on the anchoring with a theoretical vertical positioning angle (a) (without taking into account the deformations which the weight of the system itself induces) of 20° $\pm$ 5° for an optimum behaviour of the system.

Description of the Drawings

[0028] To complement the description which is being made and for the purpose of aiding to better understand the features of the invention according to a preferred practical embodiment thereof, a set of drawings is attached as an integral part of said description in which the following has been depicted with an illustrative and non-limiting character:

Figure 1 shows a side view of an anchoring for a motorcyclist protection system according to the invention.

Figure 2 shows a perspective view of an anchoring for a motorcyclist protection system according to a preferred embodiment of the invention.

Figure 3 shows a side view of the anchoring of Figure 2, with the identification of the three substantially straight sections and the two inner angles $\beta 1$, $\beta 2$ defined by the two bends.

Figure 4 shows an exploded view of the fixing system according to invention.

Figure 5 shows a view of a fixing system according to the invention assembled on a post of the restraint system.

Figure 6 shows a schematic side view of a restraint system according to the invention.

Figures 7A-7C show three restraint systems, different in terms of the type and use of spacer, provided with the fixing system according to invention.

Figures 8A-8E show the possibility of coupling the fixing system according to the invention to any type of post.

Figure 9 shows the behaviour of a system according to the invention during a collision of a motorcyclist.

Preferred Embodiment of the Invention

[0029] The figures show an anchoring (1) for a motorcyclist protection system according to the invention. The anchoring (1) comprises a flat bar having three substantially straight sections (T1, T2, T3), made by means of two folds with a specific angle to provide the motorcyclist barrier with the optimum angle and rigidity. The first section (T1) is intended to be fixed to a post (6) of a vehicle restraint system, whereas the third section (T3) is intended to be coupled with a motorcyclist protection barrier (9). As Figure 1 schematically shows, it is necessary that the angle α formed by the planes containing the first (T1) and the third (T3) section be of 20° $\pm$ 5°, so that the anchoring has a good behaviour in the event of impact of a motorcyclist. Furthermore, the sum of the two inner angles, $\beta 1$ and $\beta 2$, is 200° $\pm$ 5°, $\beta 1$ being the inner angle between the first section (T1) and the second section (T2) and $\beta 2$ the second inner angle between the second section (T2) and the third section (T3). The anchoring (1) is the part responsible for directly supporting the weight of the motorcyclist protection barrier (9) and providing the cushioning property to the system.

[0030] The anchoring of the embodiment also has two holes (3) on its first section (T1) for fixing the anchoring (1) to a post (6), preferably with the use of a suitable support, as well as a mounting hole (4) on its third section (T3) for coupling with the motorcyclist protection barrier (9) by means of suitable fixing means (10).

[0031] The fixing system according to the invention comprises an anchoring (1) according to the first inventive aspect and a support for fixing the anchoring (1) to the post (6).

[0032] In a preferred embodiment (see Figures 4 and 5), the support comprises an open profile flat bar (2) for connecting the anchoring (1) and the protection barrier (9) to the vehicle restraint system, the flat bar (2) being provided with four holes suitable for housing the two screws (5) necessary for completing the assembly. The support can be formed with dimensions suitable to the corresponding post (6). Said support shall be a rigid element which will be connected to the post (6) by means of the tightening generated by the connecting screws (5) to the anchoring (1), which will be housed in the holes made for such on the support and in the holes (3) of the anchoring. This type of connection provides the system with a great speed for assembling it to any post which is already installed, and it provides it with a sliding character, such that the height could be adjusted without any type of problem.

[0033] The anchoring (1) is the deformable element of the system for cushioning the impact of the motorcyclist. The first section (T1) of the anchoring (1) will contact with any of the two facing faces of the support (2) for the connection thereof to a post (6) of a restraint system by means of two screws (5). In a preferred embodiment the anchoring (1) has a_mounting hole (4) on its third section (T3) for adjusting the positioning height of the motorcyclist protection barrier (9).

[0034] Advantageously, the fixing system according to the invention can be arranged on any restraint system, provided or not provided with spacer, as shown in Figures 7A-7C and any type of post, as shown in Figures 8A-8E.

[0035] As seen in Figures 4 and 5, for fixing a motorcyclist protection barrier (9) to a vehicle restraint system by means of the fixing system of the invention, it is sufficient by fixing the flat bar (2) of the support to the post (6) and with the same screws (5), fixing the first section (T1) of the anchoring (1) to the support. The motorcyclist protection barrier (9) will be fixed to the third section (T3) of the anchoring (1), provided preferably with a mounting hole (4) for adjusting the height of the protection barrier (9).

[0036] Figure 9 schematically shows the behaviour of the system and particularly of the anchoring (1), according to the invention in the event of a collision of a motorcyclist against the protection barrier (9). In the initial position A the straight section of the system provided with the anchoring (1) according to a preferred embodiment is shown, with a relative angle and a specific distance with respect to the post (6) of the basic restraint system, necessary for an optimum response with respect to the impact of the motorcyclist. The angle is determined to assure that the transmitted forces do not concentrate on a single shaft, and thus not exceeding the values which the standard considers harmful for humans. The distance is in turn determined by considering a minimum deformation space which cushions the impact and which controls the deceleration.

[0037] In the first phase of deformation, identified as B, the third section (T3) of the anchoring (1) bends in the presence of the force exerted in the impact, without the angles $\beta 1$ and $\beta 2$ suffering any visible variation. The reaction of the system begins to redirect the impacted motorcyclist in the direction of the roadway.

[0038] In the second phase of deformation identified in the figure as C, the angles $\beta 1$ and $\beta 2$ begin to reduce slightly. The lower end of the motorcyclist protection barrier (9) contacts with the post, giving rise to a change in the rotating direction of the barrier (9). It is a desired behaviour to prevent any part of the body of the motorcyclist from breaking through the system.

[0039] The final position D is the maximum deformation position of the anchoring (1) mainly due to the inertia of the body in the last phase of the impact. The anchoring (1) has already performed its function and the motorcyclist has been redirected.

Claims

1. An anchoring (1) for a motorcyclist protection system, comprising a flat bar consisting of three substantially straight sections (T1, T2, T3) and two bends made in the same direction, the first bend defining a first inner angle $\beta 1$ between the first (T1) and

the second (T2) section and the second bend defining a second inner angle β2 between the second (T2) and the third (T3) section, a first section (T1) being intended to be fixed to a post (6) of a vehicle restraint system, the third section (T3) being intended to be coupled with a motorcyclist protection barrier (9), wherein the planes containing the first (T1) and the third (T3) section form an angle α of 20° ± 5° and the sum of the inner angles β1 and β2 is 200° ± 5°.

2. The anchoring (1) for a motorcyclist protection system according to claim 1, wherein the first section (T1) has at least one hole (3) for its fixing to a post (6) of a restraint system.

3. The anchoring (1) for a motorcyclist protection system according to one of the preceding claims, wherein the third section (T3) has a mounting hole (4) for its coupling with a motorcyclist protection barrier (9).

4. The anchoring (1) for a motorcyclist protection system according to one of the preceding claims, **characterised in that** the flat bar is metal, preferably steel.

5. A fixing system comprising an anchoring (1) according to any one of the preceding claims and a support for fixing the anchoring (1) to a post (6) of a restraint system, the support comprising an open profile flat bar (2) suitable for partially wrapping a section of post and fixing means (5).

6. A restraint system comprising a post (6), a restraint barrier (7) fixed directly or with the use of a spacer (8) to the post (6), a motorcyclist protection barrier (9) and an anchoring (1) according to any one of claims 1-4.

7. The restraint system according to claim 6, comprising a support for fixing the anchoring (1) to the post (6), the support comprising an open profile flat bar (2) and fixing means (5) .

8. A positioning method for positioning a motorcyclist protection barrier (9) on a road, comprising the following steps:

- providing an anchoring (1) according to any one of claims 1-4, and
- fixing the first section (T1) of the anchoring (1) to a post (6) of a restraint system and the motorcyclist protection barrier (9) to the third section (T3) of the anchoring (1), such that the protection barrier (9) is located below the restraint barrier (7).

9. The positioning method for positioning a motorcyclist protection barrier (9) according to claim 8, wherein the fixing is performed through a support comprising an open profile flat bar (2) and fixing means (5).

10. The positioning method for positioning a motorcyclist protection barrier (9) according to one of claims 8 or 9, wherein the motorcyclist protection barrier (9) is located at a distance A of 60 ± 20 mm over the roadway.

11. The positioning method for positioning a motorcyclist protection barrier (9) according to one of claims 8-10, wherein the motorcyclist protection barrier (9) is located at a distance B of at least 100 mm from the post (6), measured from a substantially central portion of the protection barrier (9).

12. The positioning method for positioning a motorcyclist protection barrier (9) according to one of claims 8-11, wherein the motorcyclist protection barrier (9) is located such that the plane distance (C) between the protection barrier (9) and the restraint barrier (7) is less than or equal to 150 mm.

Patentansprüche

1. Verankerung (1) für ein Motorradfahrerschutzsystem, umfassend einen Flachstab, der aus drei im Wesentlichen geraden Abschnitten (T1, T2, T3) und zwei in derselben Richtung vorgenommenen Biegungen besteht, wobei die erste Biegung einen ersten Innenwinkel β1 zwischen dem ersten (T1) und dem zweiten (T2) Abschnitt bildet und die zweite Biegung einen zweiten Innenwinkel β2 zwischen dem zweiten (T2) und dem dritten (T3) Abschnitt bildet, wobei ein erster Abschnitt (T1) dazu bestimmt ist, an einem Pfosten (6) eines Fahrzeugrückhaltesystems befestigt zu werden, wobei der dritte Abschnitt (T3) dazu bestimmt ist, mit einer Motorradfahrerschutzbarriere (9) verbunden zu werden, wobei die Ebenen, die den ersten (T1) und den dritten (T3) Abschnitt enthalten, einen Winkel α von 20° ± 5° bilden und die Summe der Innenwinkel β1 und β2 200° ± 5° beträgt.

2. Verankerung (1) für ein Motorradfahrerschutzsystem nach Anspruch 1, wobei der erste Abschnitt (T1) mindestens ein Loch (3) für dessen Befestigung an einem Pfosten (6) eines Rückhaltesystems aufweist.

3. Verankerung (1) für ein Motorradfahrerschutzsystem nach einem der vorhergehenden Ansprüche, wobei der dritte Abschnitt (T3) ein Montageloch (4) für dessen Verbindung mit einer Motorradfahrerschutzbarriere (9) aufweist.

4. Verankerung (1) für ein Motorradfahrerschutzsys-

tem nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Flachstab aus Metall, vorzugsweise Stahl, besteht.

5. Befestigungssystem, umfassend eine Verankerung (1) nach einem der vorhergehenden Ansprüche und eine Halterung zum Befestigen der Verankerung (1) an einem Pfosten (6) eines Rückhaltesystems, wobei die Halterung einen Flachstab (2) mit offenem Profil, der für teilweises Umwickeln eines Abschnitts des Pfostens geeignet ist, und Befestigungsmittel (5) umfasst.

6. Rückhaltesystem, umfassend einen Pfosten (6), eine Rückhaltebarriere (7), die direkt oder unter Verwendung eines Abstandshalters (8) an dem Pfosten (6) befestigt ist, eine Motorradfahrerschutzbarriere (9) und eine Verankerung (1) nach einem der Ansprüche 1-4.

7. Rückhaltesystem nach Anspruch 6, umfassend eine Halterung zum Befestigen der Verankerung (1) an dem Pfosten (6), wobei die Halterung einen Flachstab (2) mit offenem Profil und Befestigungsmittel (5) umfasst.

8. Positionierungsverfahren zum Positionieren einer Motorradfahrerschutzbarriere (9) auf einer Straße, umfassend die folgenden Schritte:

- Vorsehen einer Verankerung (1) nach einem der Ansprüche 1-4 und
- Befestigen des ersten Abschnitts (T1) der Verankerung (1) an einem Pfosten (6) eines Rückhaltesystems und der Motorradfahrerschutzbarriere (9) an dem dritten Abschnitt (T3) der Verankerung (1), so dass sich die Schutzbarriere (9) unterhalb der Rückhaltebarriere (7) befindet.

9. Positionierungsverfahren zum Positionieren einer Motorradfahrerschutzbarriere (9) nach Anspruch 8, wobei die Befestigung durch eine Halterung erfolgt, die einen Flachstab (2) mit offenem Profil und Befestigungsmittel (5) umfasst.

10. Positionierungsverfahren zum Positionieren einer Motorradfahrerschutzbarriere (9) nach einem der Ansprüche 8 oder 9, wobei sich die Motorradfahrerschutzbarriere (9) bei einem Abstand A von 60 $\pm$ 20 mm über der Fahrbahn befindet.

11. Positionierungsverfahren zum Positionieren einer Motorradfahrerschutzbarriere (9) nach einem der Ansprüche 8-10, wobei sich die Motorradfahrerschutzbarriere (9) gemessen von einem im Wesentlichen mittleren Abschnitt der Schutzbarriere (9) bei einem Abstand B von mindestens 100 mm von dem Pfosten (6) befindet.

12. Positionierungsverfahren zum Positionieren einer Motorradfahrerschutzbarriere (9) nach einem der Ansprüche 8-11, wobei die Motorradfahrerschutzbarriere (9) so angeordnet ist, dass der Ebenenabstand (C) zwischen der Schutzbarriere (9) und der Rückhaltebarriere (7) kleiner oder gleich 150 mm ist.

Revendications

1. Un ancrage (1) pour un système de protection de motocycliste, comprenant une barre plate constituée de trois portions sensiblement droites (T1, T2, T3) et de deux coudes réalisés dans le même sens, le premier coude définissant un premier angle intérieur $\beta 1$ entre la première (T1) et la deuxième (T2) portion et le deuxième coude définissant un deuxième angle intérieur $\beta 2$ entre la deuxième (T2) et la troisième (T3) portion, une première portion (T1) étant destinée à être fixée à un poteau (6) d'un système de retenue d'un véhicule, la troisième portion (T3) étant destinée à être reliée à une barrière (9) de protection de motocycliste, les plans contenant la première portion (T1) et la troisième portion (T3) formant un angle α de 20° $\pm$ 5° et la somme des angles intérieurs $\beta 1$ et $\beta 2$ étant de 200° $\pm$ 5°.

2. L'ancrage (1) pour un système de protection de motocyclistes selon la revendication 1, dans lequel la première portion (T1) présente au moins un trou (3) pour sa fixation sur un poteau (6) d'un système de retenue.

3. L'ancrage (1) pour un système de protection de motocyclistes selon l'une des revendications précédentes, dans lequel la troisième portion (T3) présente un trou de montage (4) pour sa liaison avec une barrière (9) de protection de motocycliste.

4. L'ancrage (1) pour un système de protection de motocyclistes selon l'une des revendications précédentes, **caractérisé en ce que** la barre plate est métallique, de préférence en acier.

5. Un système de fixation comprenant un ancrage (1) selon l'une quelconque des revendications précédentes et un support pour fixer l'ancrage (1) à un poteau (6) d'un système de retenue, le support comprenant une barre plate profilée ouverte (2) adaptée pour envelopper partiellement une portion de poteau et des moyens de fixation (5).

6. Un système de retenue comprenant un poteau (6), une barrière de retenue (7) fixée directement ou à l'aide d'une entretoise (8) au poteau (6), une barrière (9) de protection de motocyclistes et un ancrage (1) selon l'une quelconque des revendications 1 à 4.

7. Le système de retenue selon la revendication 6, comprenant un support pour fixer l'ancrage (1) au poteau (6), le support comprenant une barre plate profilée ouverte (2) et des moyens de fixation (5).

8. Un procédé de positionnement pour positionner une barrière de protection (9) pour motocyclistes sur une route, comprenant les étapes suivantes :

   - fournir un ancrage (1) selon l'une quelconque des revendications 1 à 4, et
   - fixer la première portion (T1) de l'ancrage (1) sur un poteau (6) d'un système de retenue et de la barrière (9) de protection du motocycliste sur la troisième portion (T3) de l'ancrage (1), de sorte que la barrière de protection (9) soit située sous la barrière de retenue (7).

9. Le procédé de positionnement pour positionner une barrière (9) de protection de motocyclistes selon la revendication 8, dans lequel la fixation est effectuée à travers un support comprenant une barre plate profilée ouverte (2) et des moyens de fixation (5).

10. Le procédé de positionnement pour positionner une barrière (9) de protection de motocyclistes selon l'une des revendications 8 ou 9, dans lequel la barrière (9) de protection de motocyclistes est située à une distance A de 60 $\pm$ 20 mm sur la chaussée.

11. Le procédé de positionnement pour positionner une barrière (9) de protection de motocyclistes selon l'une des revendications 8 à 10, dans lequel la barrière (9) de protection de motocyclistes est située à une distance B d'au moins 100 mm du poteau (6), mesurée depuis une partie sensiblement centrale de la barrière de protection (9).

12. Le procédé de positionnement pour positionner une barrière (9) de protection de motocyclistes selon l'une des revendications 8 à 11, dans lequel la barrière (9) de protection de motocyclistes est située de telle sorte que la distance plane (C) entre la barrière de protection (9) et la barrière de retenue (7) soit inférieure ou égale à 150 mm.

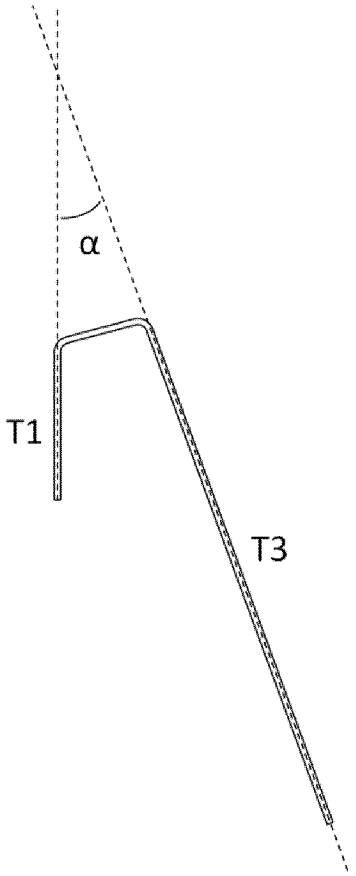

FIG. 1

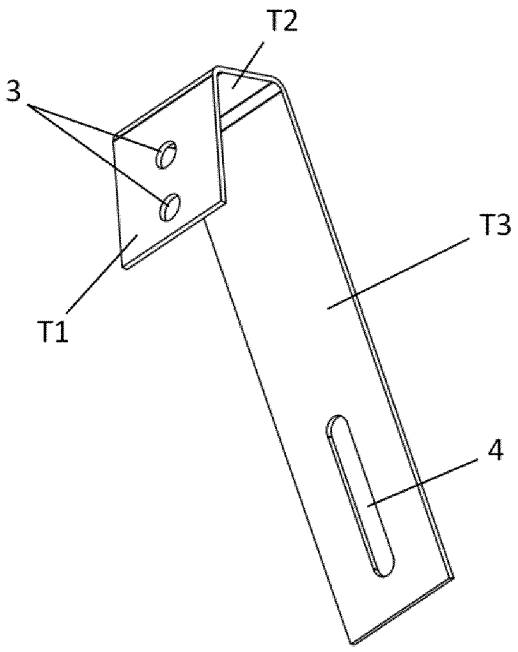

FIG. 2

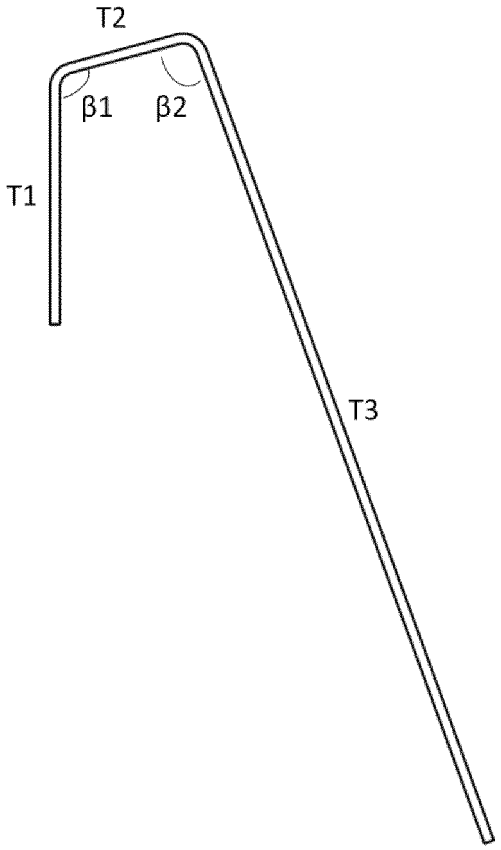

FIG. 3

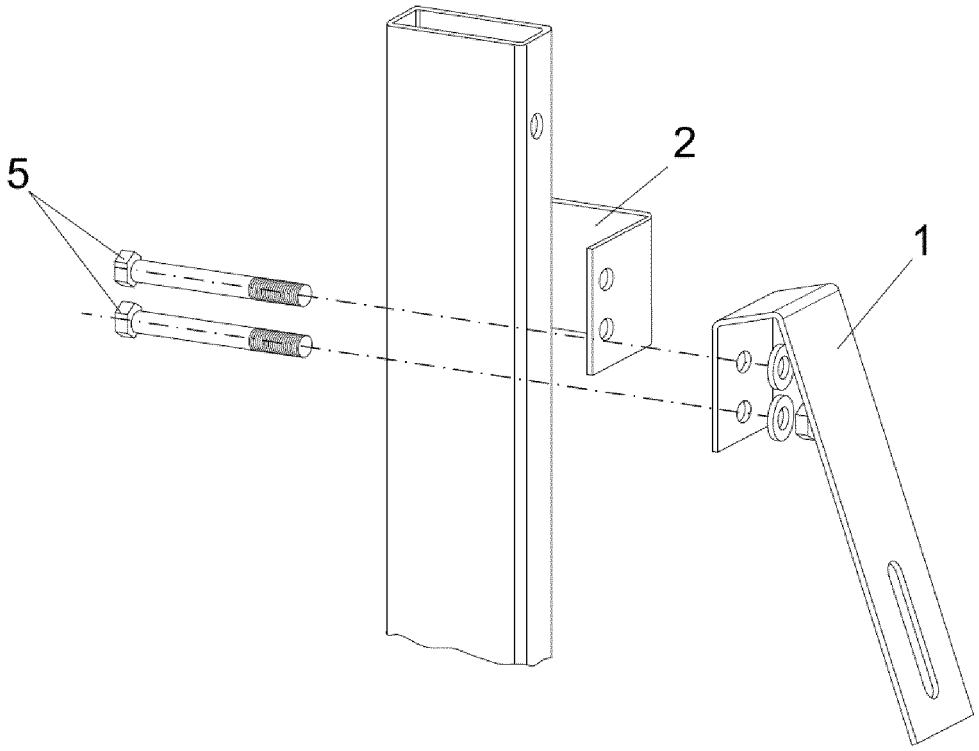

FIG. 4

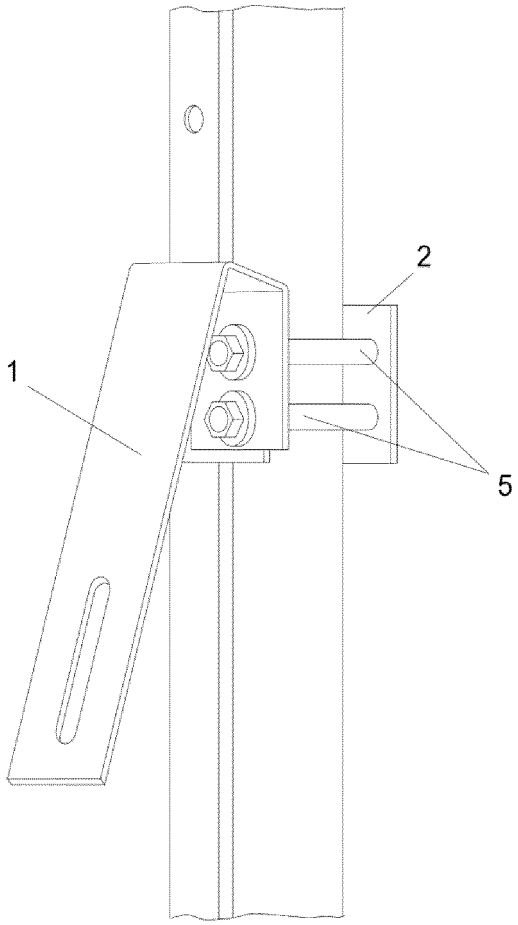

FIG. 5

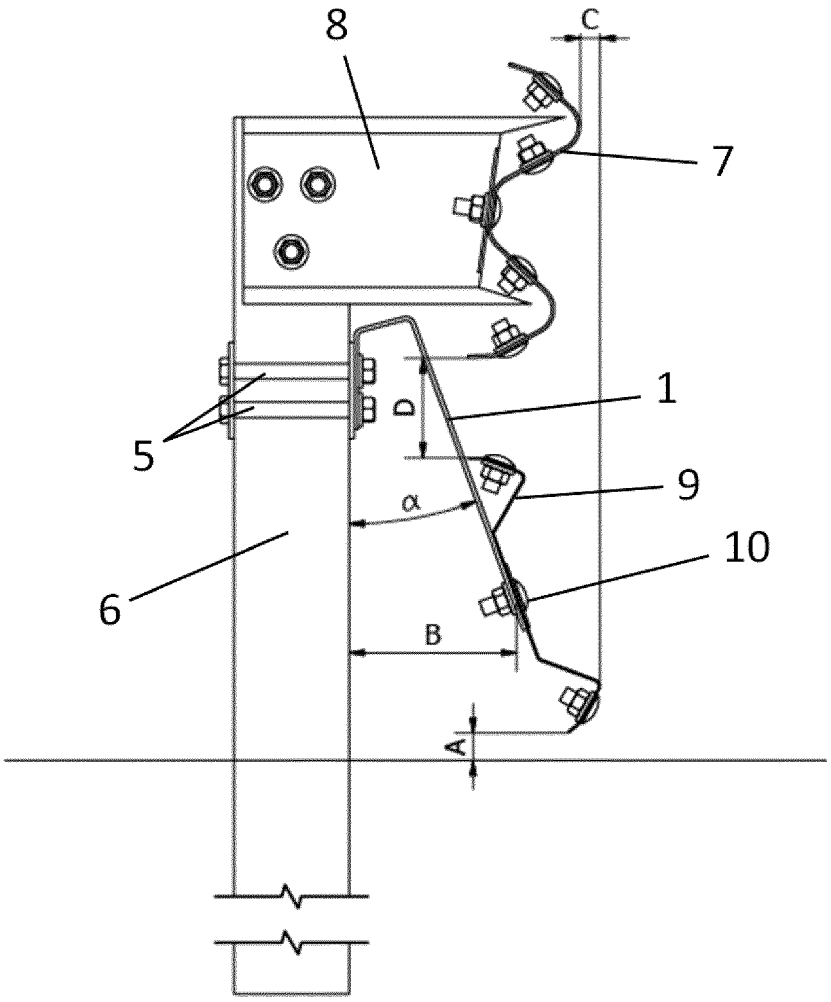

FIG. 6

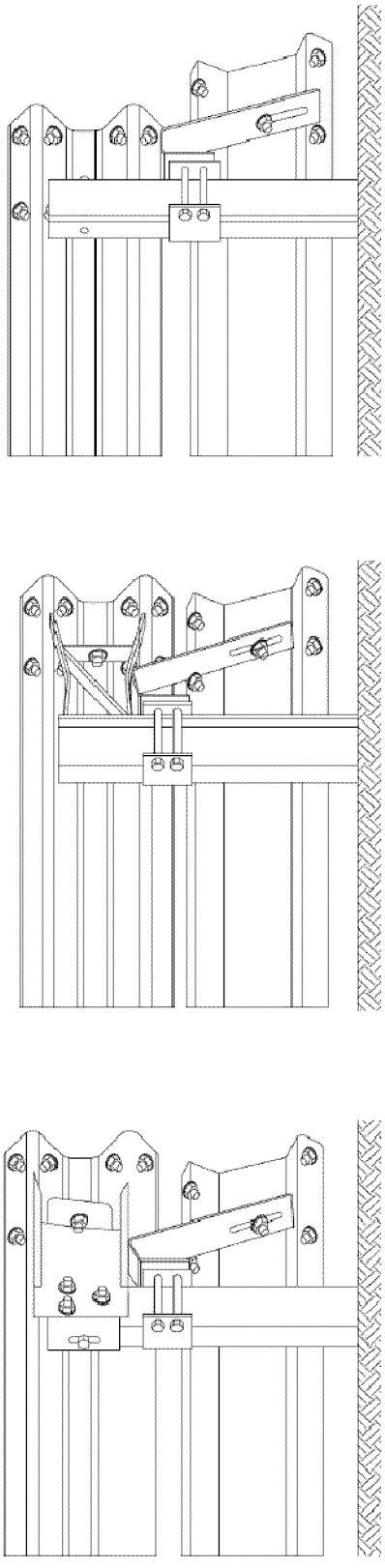

FIG. 7A-7C

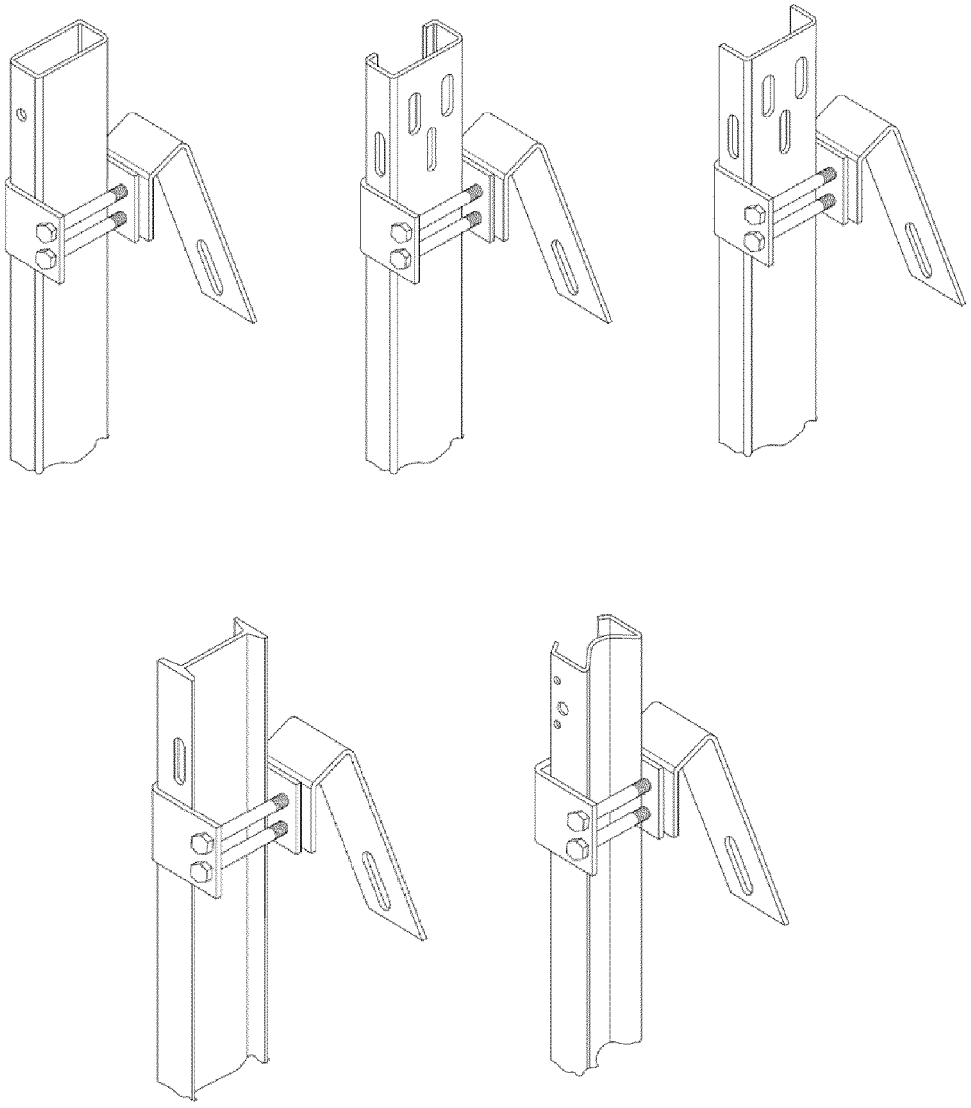

FIG. 8A-8E

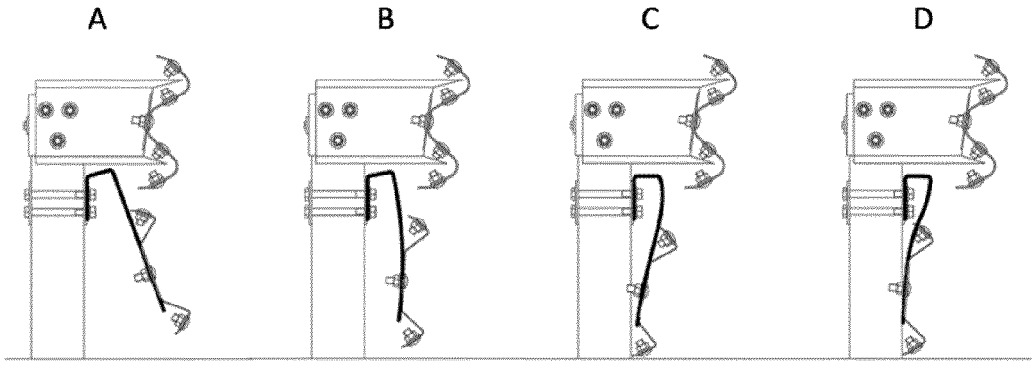

FIG. 9

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- ES 1049601 U **[0005] [0009]**
- ES 1060699 U **[0006]**
- ES 1067158 U **[0007] [0009]**
- ES 1071633 U **[0008]**
- ES 1069001 U **[0009]**
- EP 2045414 A **[0010]**
- FR 2745310 **[0010]**