

(19)



(11)

EP 2 734 686 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:

13.05.2015 Bulletin 2015/20

(51) Int Cl.:

E04G 1/24 (2006.01)

E04G 5/02 (2006.01)

(86) International application number:

PCT/IB2012/053643

(21) Application number: **12759207.9**

(22) Date of filing: **17.07.2012**

(87) International publication number:

WO 2013/011456 (24.01.2013 Gazette 2013/04)

(54) SUPPORTING ELEMENT FOR INCLINED PLANES

TRAGELEMENT FÜR SCHIEFE EBENEN

ÉLÉMENT DE SUPPORT POUR PLANS INCLINÉS

(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**

(30) Priority: **19.07.2011 IT PD20110246**

(43) Date of publication of application:

28.05.2014 Bulletin 2014/22

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Description

[0001] The present invention concerns accessories for the support of the scaffolding to the ground and in particular concerns a new supporting element for scaffolds suited to compensate for the inclination of the supporting surface.

[0002] A supporting element according to the preamble of claim 1 is described in DE 20 2010 004 904 U1.

[0003] There are also well-known scaffolds, namely sets of tubes and linear elements connected to each other and joined in order to form a set of vertical load-bearing elements, of horizontal elements supporting the trampling structures and diagonal elements of stiffening.

[0004] The lower load-bearing vertical elements have, in their lower end, a supporting base on the ground.

[0005] Said supporting base on the ground comprises a plane quadrangular or circular element, suited to rest on the ground on a sufficiently large area, having in the middle a tubular element or other linear element, suited to be inserted and bound to the lower end of each vertical load-bearing element. The weight of the scaffolding is discharged to the ground through said support bases.

[0006] In the preparation of these scaffolds it is necessary that the soil on which lies the basis of support is consistent, stable and levelled.

[0007] When the soil on which the basis of support for scaffolds must be positioned is not levelled, one or more objects of adaptation are currently used, such as wooden wedges, among them appropriately arranged and secured to each other and to the ground with nails, rods and metal stakes.

[0008] These objects of adaptation are unsafe, they can move, crumble, they are an arranged solution for small gradients than an effective, stable and safe solution.

[0009] This problem is particularly felt in the case of scaffolds set up along slopes or ramps, where the gradient is high.

[0010] To overcome all the cited drawbacks, a new supporting element for scaffolds suited to compensate for the inclination of the supporting surface has been studied.

[0011] One purpose of the new supporting element is to provide a horizontal surface for the supporting bases for scaffolds even on non-horizontal ground.

[0012] Another scope of the new supporting element is to provide a horizontal surface for the supporting bases for scaffolds and different possible gradations of slope of the soil.

[0013] Another aim of the new supporting element is to allow its adjustment or change of conformation depending on the slope of the ground of support. Another purpose of the new supporting element is not to change its position or conformation after its laying and the load of the scaffold.

[0014] Another scope of the new supporting element is not to change its position with respect to the ground

after its laying and staging of the scaffold.

[0015] These and other aims, direct and complementary, are reached by the new supporting element or scaffolds as defined in claim 1. Said supporting element is suited to compensate for the inclination of the supporting surface and comprises a lower portion and an upper portion suited to be coupled and to rotate, having their own contact surfaces inclined with respect to the upper surface of the upper portion and to the lower surface of the lower portion. A rotation and union element keeps connected said two portions allowing their reciprocal rotation.

[0016] The lower portion has a lower surface suited to rest to the ground and an upper surface suited to be coupled with the upper portion.

[0017] Said two surfaces of the lower portion are not parallel and they form an angle of preferably 15 degrees.

[0018] Said lower portion can present, between said two upper and lower surfaces, a cylindrical or octagonal shape or any other form.

[0019] The lower surface has, in correspondence to said lower surface, one or more wings or flat edges parallel and in continuity with said lower surface. Each of these wings or flat edges have at least one hole suited to allow the passage of a screw, a dowel or other element for anchoring the lower portion to the ground that bears it.

[0020] The lower portion has a hole, suited for the passage of the rotation and union element.

[0021] The lower portion has on its upper surface teeth or projections that are equally distributed on a concentric circumference with said hole for the rotation and union element.

[0022] The lower portion also presents, on its upper surface a projection or annular wall concentric with said hole.

[0023] The upper portion has a lower surface suited to be coupled with the lower surface and an upper surface suited to support a base of a vertical bearing element of the scaffold.

[0024] Said two surfaces of the upper portion are not parallel but they form an angle of preferably 15 degrees.

[0025] It is preferable that said two surfaces of the upper portion form an angle identical to the angle formed by the lower and upper surfaces of the lower portion.

[0026] Said upper portion can present, between said two upper and lower surfaces, a cylindrical or octagonal shape or any other form.

[0027] On the lower surface of said upper portion there are:

- a hole, suited to serve for the passage of the rotation and union element,
- teeth or projections equally distributed on a concentric circumference with said hole for the rotation and union element,
- a slot or annular seat that is concentric with said hole for the rotation and union element,

and where said teeth or projections and said slot or an-

nular seat in the lower surface of the superior portion are complementary and corresponding to the teeth or projections and to the slot or annular seat that are present on the upper surface of the lower portion.

[0028] On the upper surface of the upper portion there are projections or walls suited to delimit the bearing region of the support base of the scaffold on the upper surface of the upper portion.

[0029] These projections or walls are suitably arranged on the upper surface of the upper portion in a way to be all equidistant from the lower hole and from the centre of the lower teeth or projections of the upper portion.

[0030] On the upper surface of the upper portion there is at least one level positioned in a way to be centred when the upper surface of the upper portion is horizontal.

[0031] Said upper portion presents, on the edge of said lower surface, a projection or orthogonal wall or facing downwards with respect to said lower surface, adapted to cover the edge of the upper surface of the lower portion and to prevent to water, dirty and other foreign materials and / or fluids from entering between the upper and lower portion.

[0032] The teeth or projection complementary to the two upper and lower portions allow the reciprocal positioning between said two upper and lower portion in predetermined positions and prevent, at the same time, the involuntary rotation between said two upper and lower portions.

[0033] The projection or annular wall presents on the upper surface of the lower portion and the slot or annular seat on the lower surface of the upper portion are, when coupled, elements adapted to prevent the slippage of the upper portion on the lower portion.

[0034] The rotation and union element can be constituted by any element adapted to maintain connected to each other the upper portion and the lower portion, and adapted to allow the rotation of the two upper and lower portion around their hole and around the circumference delimited by the teeth or projection of the two portions, and around the projection or wall and the slot or annular seat of the two portions.

[0035] It is also planned that said rotation and union element comprises a circular body with T-section and central hole and a screw.

[0036] Said body houses in the lower portion and backs in a ring-shaped special projection in the hole of said lower portion in correspondence with its upper surface. Said screw passes through said body and is fixed in the lower hole of the upper portion.

[0037] There is an elastic element, for example a spring, interposed between said screw and said body of the rotation and union element or between said body of the rotation and union element and the lower portion.

[0038] It is provided that said upper and lower portions have at least an indicator mark, projection or recess, suited to indicate, when aligned with the corresponding complementary mark, projection or recess, that the lower surface of the lower portion and the upper surface of the

upper portion are parallel.

[0039] There can be further indicator marks, projections or recesses on the lower portion and/ or on the upper portion suited to indicate the inclination between the lower surface of the lower portion and the upper surface of the upper portion.

[0040] It is provided that said upper portion has a hole or housing for a removable lever or grip, so as to facilitate the rotation and the positioning of the upper portion on the lower portion.

[0041] It is provided that the lower portion or the upper portion comprise a screw that when tightened is suited to prevent any mutual rotation between the upper and the lower portion.

[0042] It is provided that the lower portion is provided with holes, seats or other similar elements suited to be coupled with one or more element suited to ensure connection with other lower portions of other supporting elements.

[0043] It is provided that the upper portion has, on its upper surface, one or more projections or walls or one or more seats, pipes or other linear elements suited to be coupled with the vertical bearing element of a structure without the corresponding lower base.

[0044] It is provided that the lower portion has in its lower surface, projections or protrusions suited to prevent said lower portion from slipping on the ground that bears it.

[0045] The preferred solution provides that the two upper and lower surfaces, of both the lower portion and the upper portion, are inclined of 15°. Consequently, the new supporting element for scaffolds is conveniently used on the ground of support with a slope up to thirty degrees.

[0046] A preferred solution comprises, both on the lower portion and on the upper portion sixty teeth or projections equally distributed on a concentric circumference with the rotation and union element. Consequently, the inclination of the upper surface of the upper portion, and the bearing surface of the scaffold, can be adjusted with respect to the lower surface of the lower portion, and the ground support, with intervals for example of a degree each.

[0047] A second preferred solution comprises, for both the lower portion and the upper portion, one hundred and twenty teeth or projections equally distributed on the circumference. Consequently, the inclination of the upper surface of the upper portion, and the bearing surface of the scaffold, can be adjusted with respect to the lower surface of the lower portion, and the ground support, with intervals of half a degree each.

[0048] The characteristics of the new supporting element for scaffolds suited to compensate for the inclination of the supporting surface will be better clarified by the following description with reference to the drawings, enclosed as non-restrictive examples.

[0049] In the enclosed drawing is presented a practical embodiment of the invention, by way of non-restrictive example.

[0050] The new supporting element for scaffolds suited to compensate for the inclination of the supporting surface comprises a lower portion (A), an upper portion (B) and a rotating and union element (C).

[0051] In figures 1a, 1b and 1c are shown respectively a side view, a vertical section and a plan view of the lower portion (A).

[0052] The lower portion (A) has the lateral surface (A3) generically cylindrical and has the lower surface (A1) adapted to the support on the ground, and an upper surface (A2), suited to be coupled with the upper portion (B).

[0053] Said two surfaces (A1, A2) of the lower portion (A) form an angle of approximately 15 degrees.

[0054] Said lower portion (A) has, at the level of said lower surface (A1), a flat edge (A4) parallel to and in continuity with said lower surface (A1), having four holes (A41) suited to allow the passage of a screw, a dowel or other element for anchoring the lower portion (A) to the ground that bears it.

[0055] Said lower portion (A) has a hole (A5) extending between its lower surface (A1) and its upper surface (A2), adapted to the passage of the rotation and union element (C). This hole (A5) has in correspondence to said upper surface (A2), an annular edge (A51) that is such as to reduce the clearance of said hole (A5).

[0056] Said lower portion (A) has on its upper surface (A2) teeth (A6) equally distributed on a concentric circumference with said hole (A5).

[0057] On the upper surface (A2) of the lower portion (A) there is a circular wall or projection (A7), that is orthogonal to said upper surface (A2) and concentric with said hole (A5) adapted to facilitate the coupling and rotation between said lower portion (A) and said upper portion (B).

[0058] In figures 2a, 2b, 2c and 2d are illustrated respectively a side view, a vertical section, a top view and a bottom view of the upper portion (B).

[0059] The upper portion (B) has the lateral surface (B3) generically cylindrical and has a lower surface (B1) suited to be coupled with the lower portion (A) and an upper surface (B2) suited to support a base of a vertical bearing element of a scaffold, scaffolding, stage or grandstand.

[0060] Said two surfaces (B1, B2) of the upper portion (B) are not parallel but they form an angle of approximately 15 degrees, which is identical to the angle formed by the lower surface (A1) and the upper surface (A2) of the lower portion (A).

[0061] On the lower surface (B1) of said upper portion (B) there are a hole (B4) blind, adapted to the passage and / or fixing of the rotation and union element (C), and teeth or projections (B5) equally distributed on a concentric circumference with said hole (B4) for the rotation and union element.

[0062] On said lower surface (B1) of the upper portion (B) there is, also a circular recess or groove (B6) that is concentric with said hole (B4).

[0063] In particular said teeth or projections (B5) and

said circular recess or groove (B6) of the upper portion (B) are complementary and suited to be coupled with said teeth or projections (A6) and said circular wall or projection (A7) of the lower portion (A).

[0064] Said upper portion (B) has, on the edge of said lower surface (B1), a projection or edge (B10) that is orthogonal or in any case facing downwards with respect to said lower surface (B1), suited to cover the edge of the upper surface (A2) of the lower portion (A) and suited to prevent water, dirt and other foreign bodies and/or fluids from penetrating between the upper portion (B) and the lower portion (A).

[0065] On the upper surface (B2) of the upper portion (B) there are projections or walls (B7) suited to delimit the area where the base of the scaffold rests on said upper surface (B2) of the upper portion (B).

[0066] These projections or walls (B7) are suitably arranged on the upper surface (B2) of the lower portion (B) so as to be all equidistant from the lower hole (B4) and from the centre of the lower teeth or projections (B5) of the upper portion (B).

[0067] On the upper surface (B2) of the upper portion (B) there is a level (B8) such as to facilitate the horizontal positioning of the upper surface (B2) of the upper portion (B).

[0068] Said upper surface (B) is provided a hole (B11) or housing for a lever or removable handle so as to facilitate the rotation and the positioning of the upper portion (B) on the lower portion (A).

[0069] Said circular wall or projection (A7) of the lower part (A) and said circular recess or groove (B6) of the upper portion (B) constitute mechanisms or elements adapted to prevent the skidding of said upper portion (B) on said lower portion (A), when the lower portion (A) and the upper portion (B) are coupled.

[0070] The rotation and union element (C), represented in section in figure 3, comprises a circular body (C1) with T-section and central hole and a screw (C2).

[0071] Said body (C1) houses in the lower portion (A) and rests on the annular edge (A51) in the hole (A5) of said lower portion (A) in correspondence with the upper surface (A2). Said screw (C2) crosses said body (C1) and is fixed in the lower hole (B4) of the upper portion (B).

[0072] It is provided an elastic element (C3), in this example a spring, interposed between said body (C1) of the rotation and union element (C) and the lower portion (A), so as to maintain close and adhering the upper portion (B) and the lower portion (A).

[0073] Both the upper portion (B) and the lower portion (A) have at least an indicator mark, projection or recess (A8, B9) to indicate, when aligned with the corresponding indicator mark, projection or recess (B9, A8) of the lower portion (A) or upper (B) complementary, that the lower surface (A1) of the lower portion (A) and the upper surface (B2) of the upper portion (B) are parallel.

[0074] Also further indicator marks, projections or recesses can be provided on the lower portion (A) and/or on the upper portion (B) adapted to indicate the inclination

between the lower surface (A1) of the lower portion (A) and the superior surface (B2) of the superior portion (B).

[0075] When the various parts of the new supporting element for scaffolds are united, they assume a configuration as generically represented in figure 4a, where:

- the superior portion (B) rests centred on the lower portion (A),
- the teeth or projections (B5) of the upper portion (B) are coupled with the teeth or projections (A6) of the lower portion,
- the circular wall or projection (A7) of the lower portion (A) houses in the circular gap or slot (B6) of the upper portion (B),
- the rotation and union element (C) houses in the hole (A5) of the lower portion (A) and its screw (C2) is screwed in the hole (B4) of the upper portion (B),
- the elastic element (C3) of the rotation and union element (C) keeps the upper portion (B) adherent to the lower portion (A).

[0076] In particular figure 4a shows the various assembled parts (A, B, C), where the upper portion (B) is arranged on the lower portion (A), in a way to keep the upper surface (B2) of the upper portion (B) parallel to the lower surface (A1) of the lower portion (A). Such configuration occurs when the supporting surface or ground is horizontal.

[0077] If the supporting surface or ground is not horizontal, as shown in figure 4b, is sufficient to raise the upper portion (B) from the lower portion (A), in a way to free the teeth or projections (B5) of the upper portion from the teeth or projections (B5) of the lower portion, rotate said upper portion (B) around the rotation and union element (C) until its upper surface (B2) is horizontal and finally lower again the upper portion (B) on the lower portion (A), in a way to re-establish the bond between the teeth or projections (B5) of the upper portion (B) and the teeth or projections (A6) of the lower portion (A).

[0078] The position of the upper portion (B) on the lower portion (A) can be any position allowed by the coupling between the teeth or projections (B5) of the upper portion (B) and the teeth or projections (A6) of the lower portion (A).

[0079] For example having thirty-six teeth or projections (B5, A6) on the lower portion (A) and on the upper portion (B), the upper portion (B) can be rotated of positions of ten degrees with respect to the lower portion (A).

[0080] In the laying of the new supporting element for scaffolds, it is laid on the supporting surface or ground, the lower portion (A) is fixed with screws, plugs or other suitable elements, the upper surface (B) is raised until the level indicates that the upper surface (B2) of the upper portion (B) is horizontal, finally the upper portion (B) is lowered, being laid and bound to the lower portion (A).

[0081] At this point the scaffold can be erected as the new supporting element for scaffolds ensures an hori-

zontal and stable surface to the support base of the scaffold.

[0082] In figures 5a and 5b and in figures 6a and 6b is shown a second embodiment of the new supporting element respectively in a perspective view from above, in a perspective view from below, in a plan view from above and in a plan view from below.

[0083] Therefore, with reference to the above description and to the enclosed drawings, the following claims are put forth.

Claims

1. Supporting element for inclined planes, comprising:

- a lower portion (A) having a lower surface (A1) suited to rest on the ground, and an upper surface (A2) non parallel to said lower surface (A1) and suited to be coupled with the upper portion (B),
- an upper portion (B) having a lower surface (B1) suited to be coupled with the upper surface (A2) of the lower portion (A), and an upper surface (B2) suited to serve as a supporting surface and non parallel to said lower surface (B1),
- a rotation and union element (C) suited to connect said upper portion (B) to said lower portion (A) and suited to be the rotation axis of said two portions (A, B)

characterized in that said lower portion (A) has, on its upper surface (A2), a circular wall or projection (A7) that is orthogonal to said upper surface (A2) and concentric with said rotation and union element (C), and wherein said upper portion (B) has, on its lower surface (B2), a circular recess or groove (B6) that is concentric with said rotation and union element (C) and complementary to said circular wall or projection (A7) of said lower portion (A), and wherein the upper surface (A2) of said lower portion (A) is provided with teeth (A6) or projections distributed on a circumference that is concentric with said rotation and union element (C), and wherein the lower surface (B2) of said upper portion (B) is provided with teeth (B5) or projections distributed on a circumference that is concentric with said rotation and union element (C) and complementary to said teeth (A6) or projections of said lower portion (A).

2. Supporting element for inclined planes according to claim 1, **characterized in that** the upper surface (B2) of the upper portion (B) is suited to support a base of a vertical bearing element of a scaffold.

3. Supporting element for inclined planes according to claims 1, 2, **characterized in that** the lower portion (A) or the upper portion (B) has, instead of a centre

hole (A5, B4), a pin or projection suited to fit in the hole (B4, A5) in the other portion (B, A) and to serve as the rotation element between said two lower (A) and upper (B) portions.

4. Supporting element for inclined planes according to claims 1, 2, 3, **characterized in that** the inclination between said upper surface (B2) and said lower surface (B1) of the upper portion (B) is equal to the inclination between said upper surface (A2) and said lower surface (A1) of the lower portion (A).
5. Supporting element for inclined planes according to the preceding claims, **characterized in that** said lower portion (A) has, at the level of said lower surface (A1), at least one protrusion or flat edge (A4) parallel to and in continuity with said lower surface (A1), provided with holes (A41) suited to allow the passage of screws, dowels or other elements for anchoring the lower portion (A) to the ground that bears it.
6. Supporting element for inclined planes according to the preceding claims, **characterized in that** said upper portion (B) has, on its upper surface (B2), one or more levels (B8), so that it is centred when the upper surface (B2) of the upper portion (B) is horizontal.
7. Supporting element for inclined planes according to the preceding claims, **characterized in that** both the upper portion (B) and the lower portion (A) are provided with at least one indicator mark, projection or recess (A8, B9) that, when it is aligned with the corresponding indicator mark, projection or recess (B9, A8) on the complementary lower portion (A) or upper portion (B), is suited to signal that the lower surface (A1) of the lower portion (A) and the upper surface (B2) of the upper portion (B) are parallel.
8. Supporting element for inclined planes according to the preceding claims, **characterized in that** on the lower portion (A) and/or on the upper portion (B) there are further indicator marks, projections or recesses suited to indicate the inclination between the lower surface (A1) of the lower portion (A) and the upper surface (B2) of the upper portion (B).
9. Supporting element for inclined planes according to the preceding claims, **characterized in that** said lower portion (A) is provided with a hole (A5) that is orthogonal to its upper surface (A2) and concentric with said teeth (A6) or projections of the lower portion (A), and wherein said upper portion (B) is provided with a hole (B4) that is orthogonal to its lower surface (B1) and concentric with said teeth (B5) or projections of the lower portion (B), and wherein said rotation and union element (C) with a generically T-

shaped longitudinal cross section has the centre pin (C2) that is fixed to one of said two holes (A5, B4) and has its head (C1) slidingly housed in the other hole (B4, A5), and wherein the hole (A5) that houses the head (C1) of said rotation and union element (C) has an annular edge (A51) that is such as to reduce the clearance of said hole (A5) and hold said head (C1) of said rotation and union element (C).

10. Supporting element for inclined planes according to the preceding claims, **characterized in that** said upper portion (B) has, on its upper surface (B2), projections or walls (B7) suited to delimit the area where base of the scaffold rests on said upper surface (B2) of the upper portion (B).
11. Supporting element for inclined planes according to the preceding claims, **characterized in that** said upper portion (B) has, on the edge of said lower surface (B1), a projection or edge (B10) that is orthogonal or in any case facing downwards with respect to said lower surface (B1), is suited to cover the edge of the upper surface (A2) of the lower portion (A) and is suited to prevent water, dirt and other foreign bodies and/or fluids from penetrating between the upper portion (B) and the lower portion (A).
12. Supporting element for inclined planes according to the preceding claims, **characterized in that** said upper portion (B) has a hole or seat suited to house a removable lever or grip, so as to facilitate the rotation and positioning of the upper portion (B) on the lower portion (A).
13. Supporting element for inclined planes according to the preceding claims, **characterized in that** the lower portion (A) or the upper portion (B) comprises a screw that when tightened is suited to prevent any mutual rotation between said upper portion (B) and lower portion (A).
14. Supporting element for inclined planes according to the preceding claims, **characterized in that** the lower portion (A) is provided with holes, seats or other similar elements suited to be coupled with one or more elements suited to ensure connection with other lower portions (A) of other supporting elements.
15. Supporting element for inclined planes according to the preceding claims, **characterized in that** the upper portion (B) has, on its upper surface (B2), one or more projections or walls or one or more seats for linear elements suited to be coupled with the vertical bearing element of a structure without the corresponding lower base.
16. Supporting element for inclined planes according to the preceding claims, **characterized in that** the low-

er surface (A1) of lower portion (A) is provided with projections or protrusions suited to prevent said lower portion (A) from slipping on the ground that bears it.

Patentansprüche

1. Stützelement für geneigte Ebenen, Folgendes umfassend:

- einen unteren Abschnitt (A) mit einer unteren Oberfläche (A1), dazu geeignet, am Boden aufzuliegen, und mit einer oberen Oberfläche (A2), die nicht parallel zur besagten, unteren Oberfläche (A1) steht und geeignet ist, mit dem oberen Abschnitt (B) gekoppelt zu werden,
- einen oberen Abschnitt (B) mit einer unteren Oberfläche (B1), dazu geeignet, mit der oberen Oberfläche (A2) des unteren Abschnitts (A) gekoppelt zu werden, und mit einer oberen Oberfläche (B2), die geeignet ist, als stützende Oberfläche zu dienen und nicht parallel zur besagten, unteren Oberfläche (B1) ist,
- ein Dreh- und Verbindungselement (C), dazu geeignet, den besagten oberen Abschnitt (B) mit dem besagten, unteren Abschnitt (A) zu verbinden und dazu geeignet, die Drehachse der besagten zwei Abschnitte (A, B) zu bilden,

dadurch gekennzeichnet, dass der besagte untere Abschnitt (A) an seiner oberen Oberfläche (A2) eine kreisförmige Wand oder Auskragung (A7) aufweist, die lotrecht zu der besagten, oberen Oberfläche (A2) und konzentrisch zu dem besagten Dreh- und Verbindungselement (C) ist, und wobei der besagte obere Abschnitt (B) an seiner unteren Oberfläche (B2) eine kreisförmige Vertiefung oder Rille (B6) aufweist, die konzentrisch zu dem besagten Dreh- und Verbindungselement (C) und komplementär zu der besagten kreisförmigen Wand oder Auskragung (A7) des besagten unteren Abschnitts (A) ist, und wobei die obere Oberfläche (A2) des besagten unteren Abschnitts (A) mit Zähnen (A6) oder Auskragungen versehen ist, die über einen Umfang verteilt sind, der konzentrisch zu dem besagten Dreh- und Verbindungselement (C) ist, und wobei die untere Oberfläche (B2) des besagten oberen Abschnitts (B) Zähne (B5) oder Auskragungen aufweist, die über einen Umfang verteilt sind, der konzentrisch zu dem besagten Dreh- und Verbindungselement (C) und komplementär zu den besagten Zähnen (A6) oder Auskragungen des besagten unteren Abschnitts (A) ist.

2. Stützelement für geneigte Ebenen gemäß Patentanspruch 1, **dadurch gekennzeichnet, dass** die obere Oberfläche (B2) des oberen Abschnitts (B) dazu

geeignet ist, eine Basis eines senkrechten Tragelements eines Gerüsts zu stützen.

3. Stützelement für geneigte Ebenen gemäß Patentansprüchen 1, 2, **dadurch gekennzeichnet, dass** der untere Abschnitt (A) oder der obere Abschnitt (B) anstelle eines Mittel Lochs (A5, B4) einen Zapfen oder eine Auskragung aufweist, der/die geeignet ist, in das Loch (B4, A5) in dem anderen Abschnitt (B, A) zu passen und als Drehelement zwischen den besagten zwei Abschnitten, dem unteren (A) und dem oberen (B) zu dienen.

4. Stützelement für geneigte Ebenen gemäß Patentansprüchen 1, 2, 3, **dadurch gekennzeichnet, dass** die Neigung zwischen der besagten, oberen Oberfläche (B2) und der besagten, unteren Oberfläche (B1) des oberen Abschnitts (B) gleich der Neigung zwischen der besagten, oberen Oberfläche (A2) und der besagten, unteren Oberfläche (A1) des unteren Abschnitts (A) ist.

5. Stützelement für geneigte Ebenen gemäß vorstehenden Patentansprüchen, **dadurch gekennzeichnet, dass** der besagte untere Abschnitt (A) auf Höhe der besagten unteren Oberfläche (A1) wenigstens eine Auskragung oder flache Kante (A4) aufweist, die parallel zu und als Fortsetzung der besagten unteren Oberfläche (A1) verläuft und Löcher (A41) für den Durchgang von Schrauben, Dübeln oder anderen Elementen zur Verankerung des unteren Abschnitts (A) am tragenden Grund aufweist.

6. Stützelement für geneigte Ebenen gemäß vorstehenden Patentansprüchen, **dadurch gekennzeichnet, dass** der besagte obere Abschnitt (B) an seiner oberen Oberfläche (B2) eine oder mehrere Ebenen (B8) aufweist, so dass er zentriert ist, wenn die obere Oberfläche (B2) des oberen Abschnitts (B) waagrecht steht.

7. Stützelement für geneigte Ebenen gemäß vorstehenden Patentansprüchen, **dadurch gekennzeichnet, dass** sowohl der obere Abschnitt (B) als auch der untere Abschnitt (A) mit wenigstens einer Anzeigemarkierung, -auskragung oder -vertiefung (A8, B9) versehen sind, die bei Ausrichtung auf die entsprechende Anzeigemarkierung, -auskragung oder -vertiefung (B9, A8) am komplementären unteren Abschnitt (A) oder oberen Abschnitt (B) geeignet ist, anzuzeigen, dass die untere Oberfläche (A1) des unteren Abschnitts (A) und die obere Oberfläche (B2) des oberen Abschnitts (B) parallel sind.

8. Stützelement für geneigte Ebenen gemäß vorstehenden Patentansprüchen, **dadurch gekennzeichnet, dass** am unteren Abschnitt (A) und/oder am oberen Abschnitt (B) weitere Anzeigemarkierungen,

- auskragungen oder -vertiefungen vorhanden sind, die geeignet sind, die Neigung zwischen der unteren Oberfläche (A1) des unteren Abschnitts (A) und der oberen Oberfläche (B2) des oberen Abschnitts (B) anzuzeigen.

9. Stützelement für geneigte Ebenen gemäß vorstehenden Patentansprüchen, **dadurch gekennzeichnet, dass** der besagte untere Abschnitt (A) mit einem Loch (A5) versehen ist, das lotrecht zu seiner oberen Oberfläche (A2) und konzentrisch zu den besagten Zähnen (A6) oder Auskragungen des unteren Abschnitts (A) ist, und wobei der besagte obere Abschnitt (B) mit einem Loch (B4) versehen ist, das lotrecht zu seiner unteren Oberfläche (B1) und konzentrisch zu den besagten Zähnen (B5) oder Auskragungen des unteren Abschnitts (B) ist, und wobei das Dreh- und Verbindungselement (C) mit einem generell T-förmigen Längsquerschnitt den Mittelzapfen (C2) in einem der beiden besagten Löcher (A5, B4) befestigt hat und sein Kopf (C1) gleitend in dem anderen Loch (B4, A5) aufgenommen ist, und wobei das Loch (A5), das den Kopf (C1) des besagten Dreh- und Verbindungselements (C) aufnimmt, eine ringförmige Kante (A51) aufweist, die so beschaffen ist, den Spielraum des besagten Lochs (A5) zu reduzieren und den besagten Kopf (C1) des besagten Dreh- und Verbindungselements (C) zu halten.
10. Stützelement für geneigte Ebenen gemäß vorstehenden Patentansprüchen, **dadurch gekennzeichnet, dass** der besagte obere Abschnitt (B) an seiner oberen Oberfläche (B2) Auskragungen oder Wände (B7) aufweist, die geeignet sind, den Bereich zu begrenzen, in dem die Gerüstbasis auf der besagten oberen Oberfläche (B2) des oberen Abschnitts (B) steht.
11. Stützelement für geneigte Ebenen gemäß vorstehenden Patentansprüchen, **dadurch gekennzeichnet, dass** der besagte obere Abschnitt (B) an der Kante der besagten, unteren Oberfläche (B1) eine Auskragung oder Kante (B10) aufweist, die lotrecht oder jedenfalls bezüglich der besagten unteren Oberfläche (B1) abwärts gerichtet ist und geeignet ist, die Kante der oberen Oberfläche (A2) des unteren Abschnitts (A) zu bedecken, und geeignet ist zu verhindern, dass Wasser, Schmutz oder andere Fremdkörper und/oder Flüssigkeiten zwischen dem oberen Abschnitt (B) und dem unteren Abschnitt (A) eindringen.
12. Stützelement für geneigte Ebenen gemäß vorstehenden Patentansprüchen, **dadurch gekennzeichnet, dass** der besagte obere Abschnitt (B) ein Loch oder eine Aufnahme aufweist, das/die geeignet ist, einen abnehmbaren Hebel oder Griff aufzunehmen,

um die Drehung und Positionierung des oberen Abschnitts (B) oder des unteren Abschnitts (A) zu erleichtern.

13. Stützelement für geneigte Ebenen gemäß vorstehenden Patentansprüchen, **dadurch gekennzeichnet, dass** der untere Abschnitt (A) oder der obere Abschnitt (B) eine Schraube umfasst, die im angezogenen Zustand geeignet ist, jede wechselseitige Drehung zwischen dem besagten oberen Abschnitt (B) und dem besagten unteren Abschnitt (A) zu verhindern.
14. Stützelement für geneigte Ebenen gemäß vorstehenden Patentansprüchen, **dadurch gekennzeichnet, dass** der untere Abschnitt (A) mit Löchern, Aufnahmen oder sonstigen Elementen versehen ist, die dazu geeignet sind, mit einem oder mehreren Elementen gekoppelt zu werden, welche geeignet sind, die Verbindung mit anderen unteren Abschnitten (A) anderer Stützelemente zu sichern.
15. Stützelement für geneigte Ebenen gemäß vorstehenden Patentansprüchen, **dadurch gekennzeichnet, dass** der obere Abschnitt (B) an seiner oberen Oberfläche (B2) eine oder mehrere Auskragungen oder Wände mit einer oder mehreren Aufnahmen für lineare Elemente aufweist, die geeignet sind, mit dem senkrechten Tragelement einer Struktur ohne die entsprechende, untere Basis gekoppelt zu werden.
16. Stützelement für geneigte Ebenen gemäß vorstehenden Patentansprüchen, **dadurch gekennzeichnet, dass** die untere Oberfläche (A1) des unteren Abschnitts (A) mit Auskragungen oder Vorsprüngen versehen ist, die geeignet sind zu verhindern, dass der besagte untere Abschnitt (A) auf dem ihn tragenden Grund verrutscht.

Revendications

1. Élément de support pour plans inclinés, comprenant :
 - une portion inférieure (A) ayant une surface inférieure (A1) indiquée pour se poser au sol et une surface supérieure (A2) non parallèle à ladite surface inférieure (A1) et indiquée pour être accouplée avec la portion supérieure (B),
 - une portion supérieure (B) ayant une surface inférieure (B1) indiquée pour être accouplée avec la surface supérieure (A2) de la portion inférieure (A), et une surface supérieure (B2) indiquée pour servir comme surface de support et non parallèle à ladite surface inférieure (B1),
 - un élément de rotation et d'union (C) indiqué

pour raccorder ladite portion supérieure (B) à ladite portion inférieure (A) et indiqué pour être l'axe de rotation desdites deux portions (A, B)

- caractérisé en ce que** ladite portion inférieure (A) présente, sur sa surface supérieure (A2), une paroi circulaire ou saillie (A7) qui est perpendiculaire à ladite surface supérieure (A2) et concentrique audit élément de rotation et d'union (C), et où ladite portion supérieure (B) présente, sur sa surface inférieure (B2), une cavité circulaire ou cannelure (B6) qui est concentrique audit élément de rotation et d'union (C) et complémentaire à ladite paroi circulaire ou saillie (A7) de ladite portion inférieure (A), et où la surface supérieure (A2) de ladite portion inférieure (A) est dotée de dents (A6) ou saillies distribuées sur une circonférence qui est concentrique audit élément de rotation et d'union (C), et où la surface inférieure (B2) de ladite portion supérieure (B) est dotée de dents (B5) ou saillies distribuées sur une circonférence qui est concentrique audit élément de rotation et d'union (C) et complémentaire auxdites dents (A6) ou saillies de ladite portion inférieure (A).
2. Elément de support pour plans inclinés selon la revendication 1, **caractérisé en ce que** la surface supérieure (B2) de la portion supérieure (B) est indiquée pour supporter une base d'un élément de soutien d'un échafaudage.
 3. Elément de support pour plans inclinés selon les revendications 1 et 2, **caractérisé en ce que** la portion inférieure (A) ou la portion supérieure (B) présente, au lieu d'un trou central (A5, B4), un pivot ou une saillie indiqué pour s'engager dans le trou (B4, A5) dans l'autre portion (B, A) et pour servir comme l'élément de rotation entre lesdites deux portions inférieure (A) et supérieure (B).
 4. Elément de support pour plans inclinés selon les revendications 1, 2 et 3, **caractérisé en ce que** l'inclinaison entre ladite surface supérieure (B2) et ladite surface inférieure (B1) de la portion supérieure (B) est égale à l'inclinaison entre ladite surface supérieure (A2) et ladite surface inférieure (A1) de la portion inférieure (A).
 5. Elément de support pour plans inclinés selon les revendications précédentes, **caractérisé en ce que** ladite portion inférieure (A) présente, au niveau de ladite surface inférieure (A1), au moins une protrusion ou bord plat (A4) parallèle à ladite surface inférieure (A1) et en continuité avec celle-ci, doté de trous (A41) indiqués pour consentir le passage de vis, chevilles ou autres éléments pour ancrer la portion inférieure (A) au sol qui la soutient.
 6. Elément de support pour plans inclinés selon les revendications précédentes, **caractérisé en ce que** ladite portion supérieure (B) présente, sur sa surface supérieure (B2), un ou plusieurs niveaux (B8), de façon à ce qu'elle soit centrée quand la surface supérieure (B2) de la portion supérieure (B) est horizontale.
 7. Elément de support pour plans inclinés selon les revendications précédentes, **caractérisé en ce que** la portion supérieure (B) et la portion inférieure (A) sont dotées d'au moins un repère indicateur, une saillie ou cavité (A8, B9) qui, quand il est aligné avec le repère indicateur, la saillie ou cavité correspondant (B9, A8) sur la portion inférieure (A) ou portion supérieure (B) complémentaire, est indiqué pour signaler que la surface inférieure (A1) de la portion inférieure (A) et la surface supérieure (B2) de la portion supérieure (B) sont parallèles.
 8. Elément de support pour plans inclinés selon les revendications précédentes, **caractérisé en ce que** sur la portion inférieure (A) et/ou sur la portion supérieure (B) il y a d'autres repères indicateurs, saillies ou cavités aptes à indiquer l'inclinaison entre la surface inférieure (A1) de la portion inférieure (A) et la surface supérieure (B2) de la portion supérieure (B).
 9. Elément de support pour plans inclinés selon les revendications précédentes, **caractérisé en ce que** ladite portion inférieure (A) est dotée d'un trou (A5) qui est perpendiculaire à sa surface supérieure (A2) et concentrique auxdites dents (A6) ou saillies de la portion inférieure (A), et où ladite portion supérieure (B) est dotée d'un trou (B4) qui est perpendiculaire à sa surface inférieure (B1) et concentrique auxdites dents (B5) ou saillies de la portion inférieure (B), et où ledit élément de rotation et d'union (C) avec section transversale longitudinale généralement en forme de T présente un pivot central (C2) qui est fixé à un desdits deux trous (A5, B4) et présente sa tête (C1) logée de manière coulissante dans l'autre trou (B4, A5), et où le trou (A5) qui loge la tête (C1) dudit élément de rotation et d'union (C) présente un bord annulaire (A51) qui est tel à réduire l'espace dudit trou (A5) et à maintenir ladite tête (C1) dudit élément de rotation et d'union (C).
 10. Elément de support pour plans inclinés selon les revendications précédentes, **caractérisé en ce que** ladite portion supérieure (B) présente, sur sa surface supérieure (B2), des saillies ou parois (B7) indiquées pour délimiter la zone où la base de l'échafaudage se pose sur ladite surface supérieure (B2) de la portion supérieure (B).
 11. Elément de support pour plans inclinés selon les re-

vendications précédentes, **caractérisé en ce que** ladite portion supérieure (B) présente, sur le bord de ladite surface inférieure (B1), une saillie ou un bord (B10) qui est perpendiculaire ou en tout cas tourné vers le bas par rapport à ladite surface inférieure (B1), qui est indiqué pour couvrir le bord de la surface supérieure (A2) de la portion inférieure (A) et qui est indiqué pour empêcher que de l'eau, de la saleté et d'autres corps étrangers et/ou des fluides puissent pénétrer entre la portion supérieure (B) et la portion inférieure (A).

12. Élément de support pour plans inclinés selon les revendications précédentes, **caractérisé en ce que** ladite portion supérieure (B) présente un trou ou siège indiqué pour loger un levier ou une poignée amovible, de façon à faciliter la rotation et le positionnement de la portion supérieure (B) sur la portion inférieure (A).
13. Élément pour plans inclinés selon les revendications précédentes, **caractérisé en ce que** la portion inférieure (A) ou la portion supérieure (B) comprend une vis qui, quand elle est serrée, est indiquée pour empêcher toute rotation mutuelle entre ladite portion supérieure (B) et ladite portion inférieure (A).
14. Élément de support pour plans inclinés selon les revendications précédentes, **caractérisé en ce que** la portion inférieure (A) est dotée de trous, sièges ou autres éléments similaires aptes à être accouplés avec un ou plusieurs éléments indiqués pour garantir la connexion avec d'autres portions inférieures (A) d'autres éléments de support.
15. Élément de support pour plans inclinés selon les revendications précédentes, **caractérisé en ce que** la portion supérieure (B) présente, sur sa surface supérieure (B2), une ou plusieurs saillies ou parois ou un ou plusieurs sièges pour éléments linéaires indiqués pour être accouplés avec l'élément de soutien vertical d'une structure sans la base inférieure correspondante.
16. Élément de support pour plans inclinés selon les revendications précédentes, **caractérisé en ce que** la surface inférieure (A1) de la portion inférieure (A) est dotée de saillies ou protrusions indiquées pour empêcher que ladite portion inférieure (A) puisse glisser sur le sol qui la soutient.

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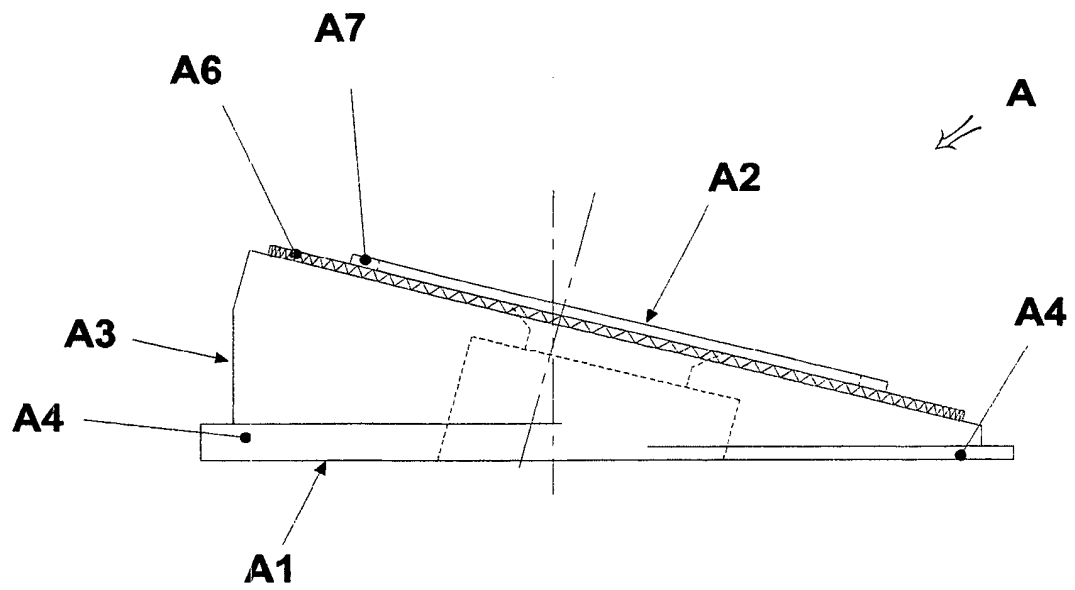


Fig. 1a

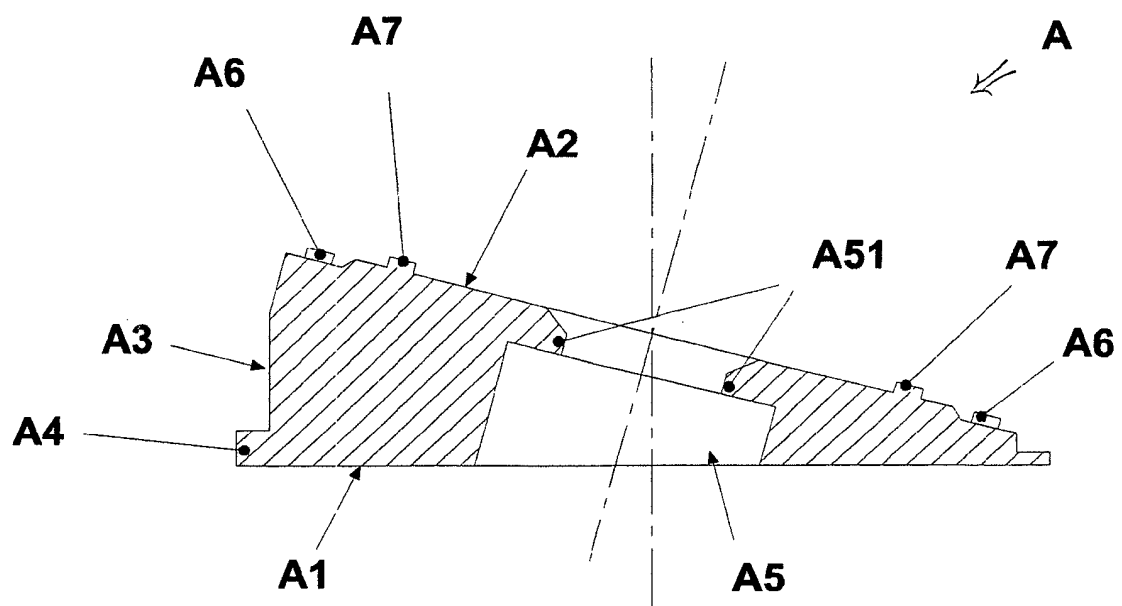


Fig. 1b

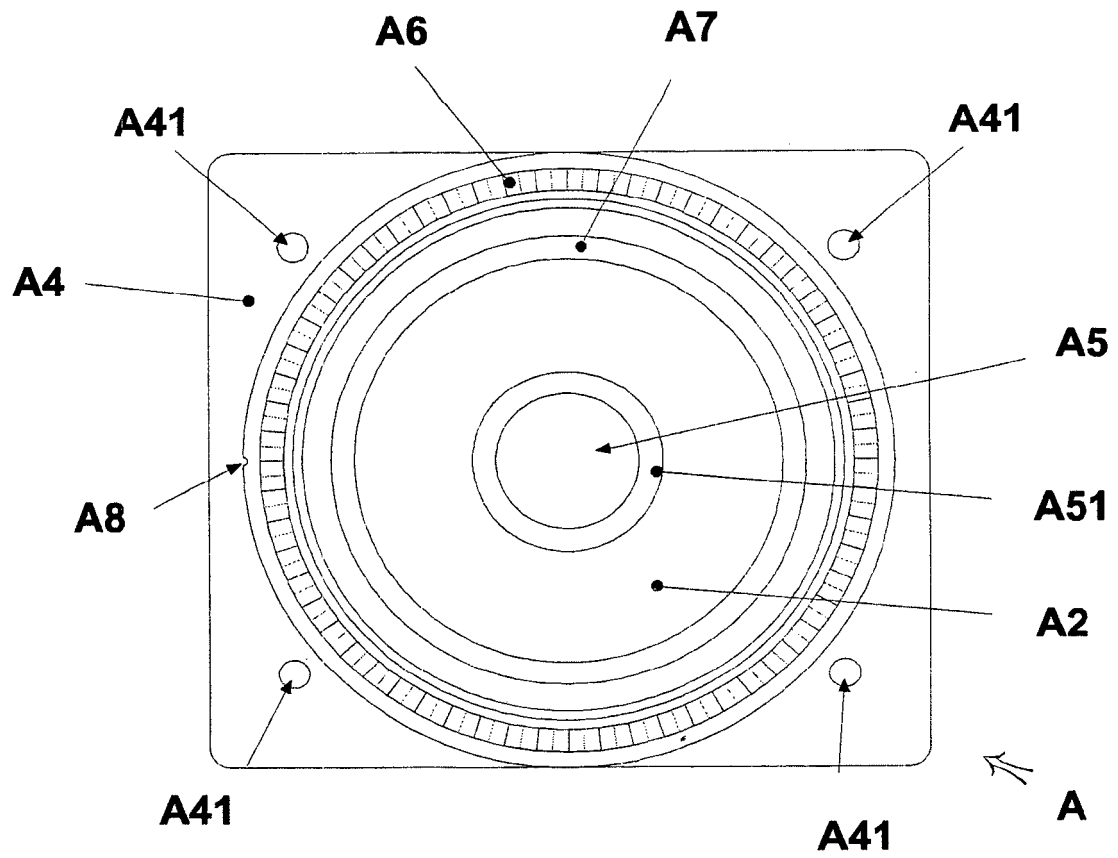


Fig. 1c

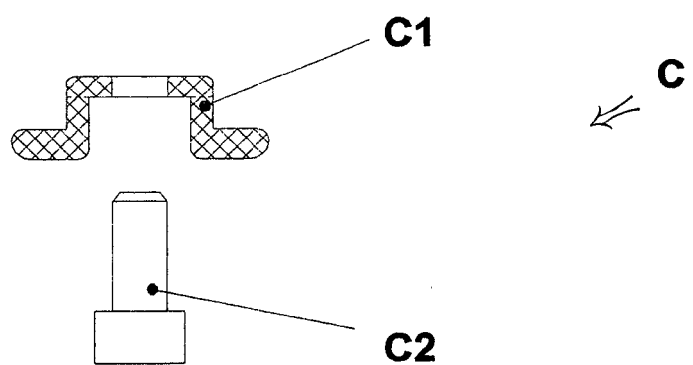


Fig. 3

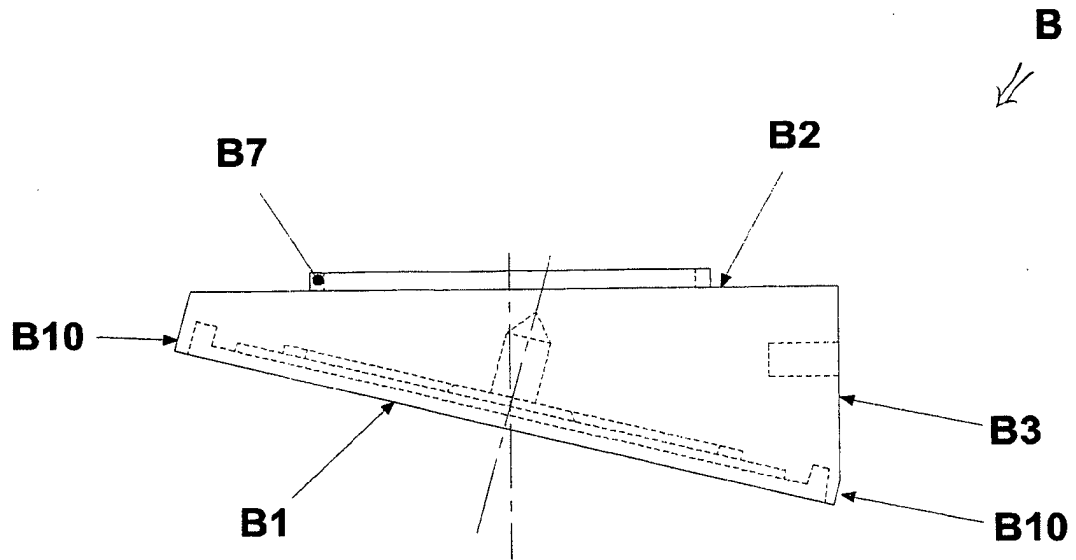


Fig. 2a

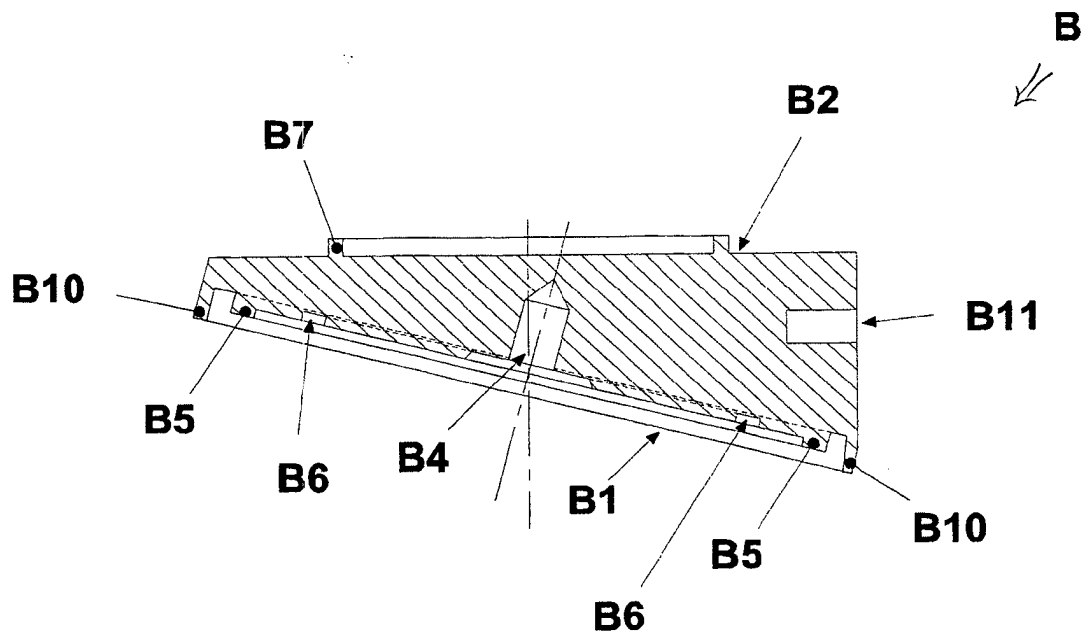


Fig. 2b

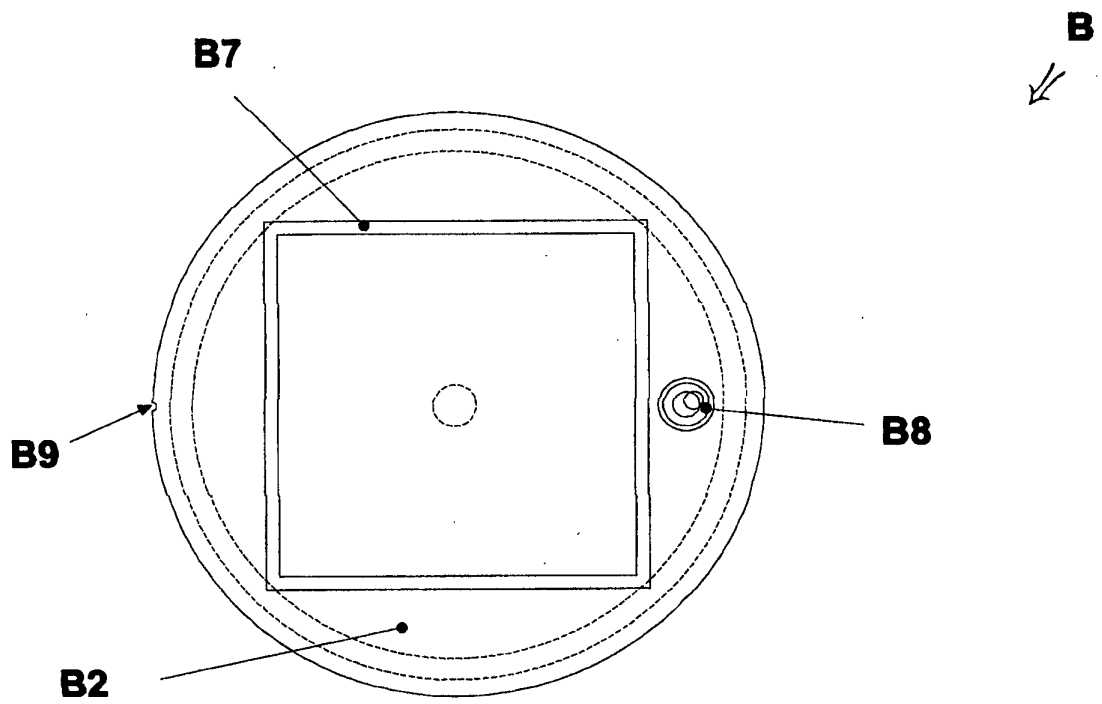


Fig. 2c

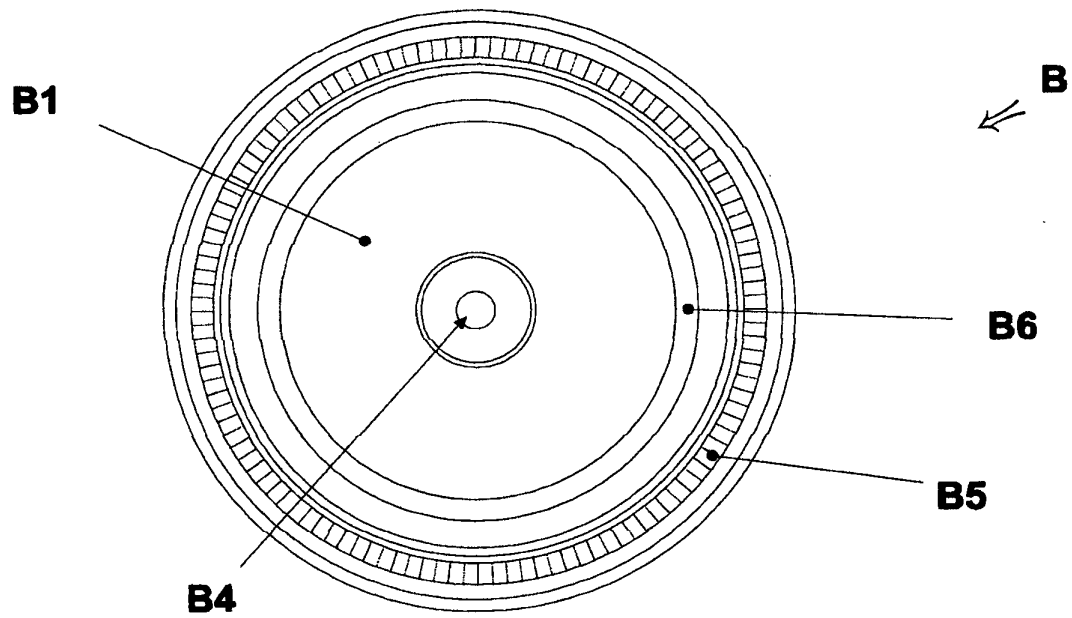


Fig. 2d

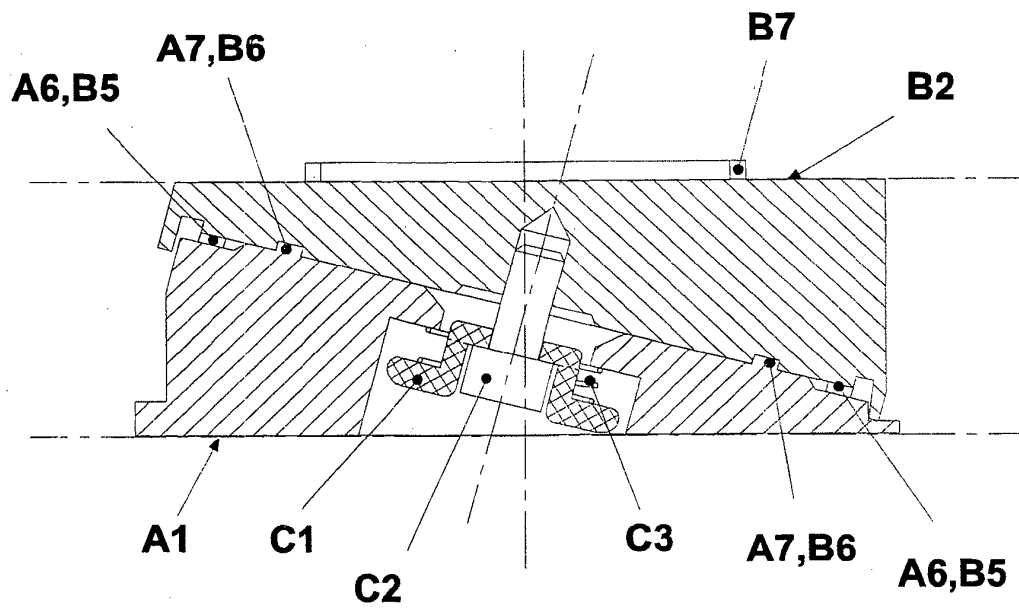


Fig. 4a

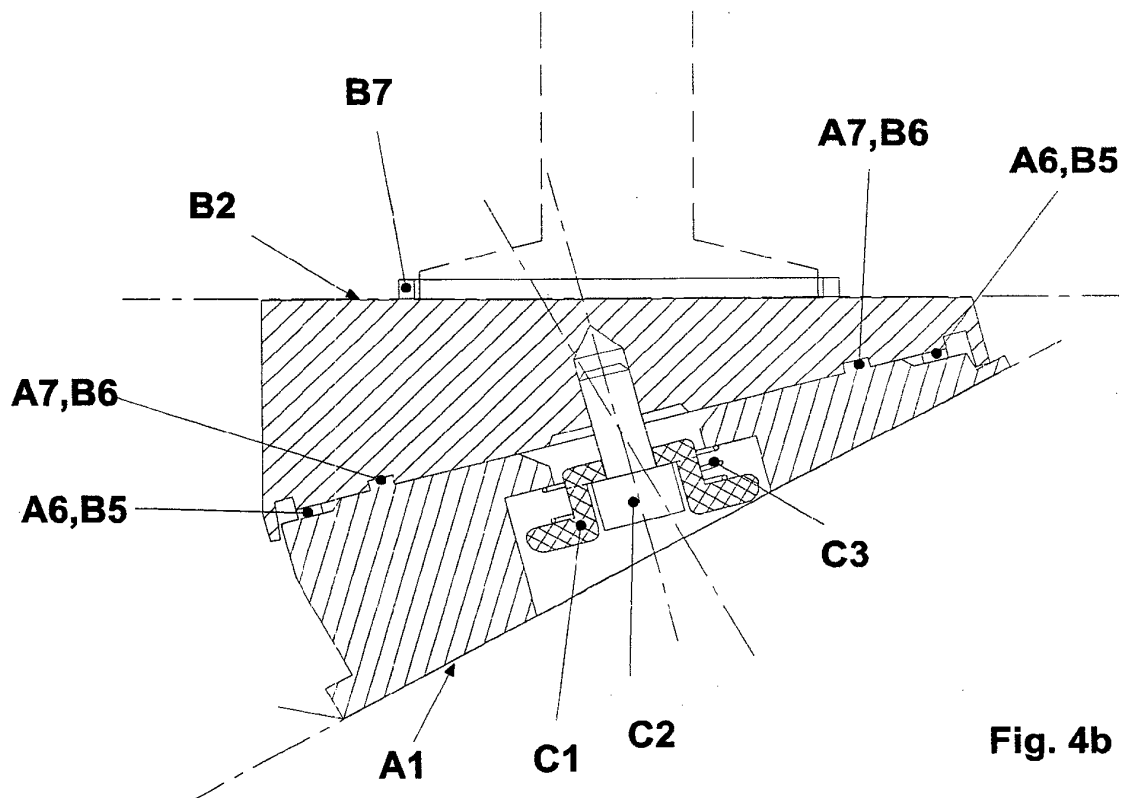


Fig. 4b

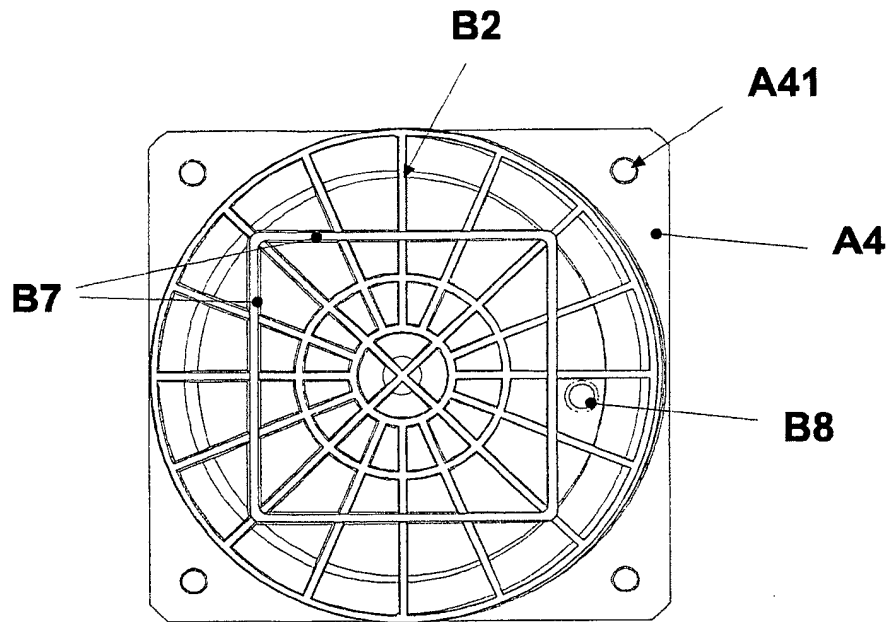


Fig. 6a

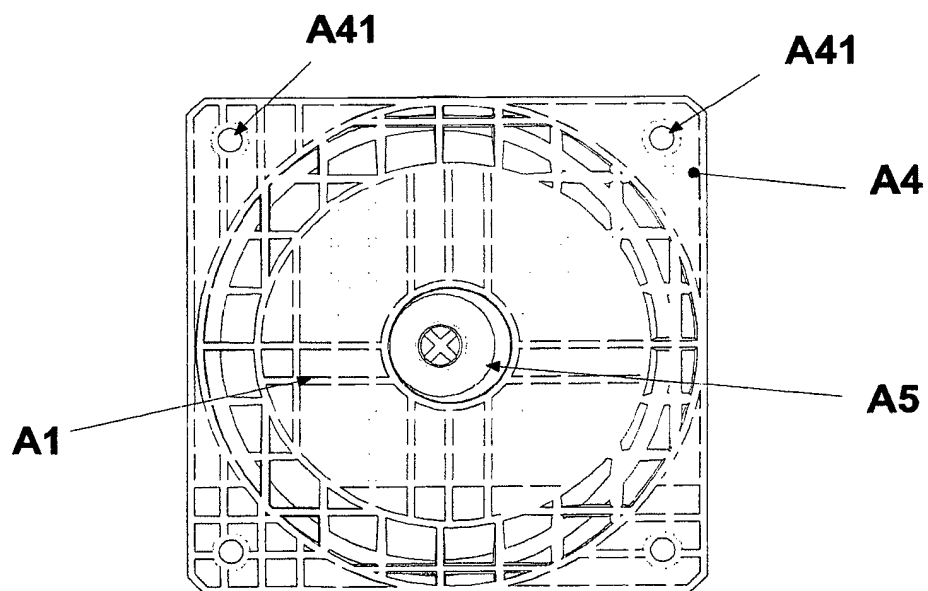


Fig. 6b

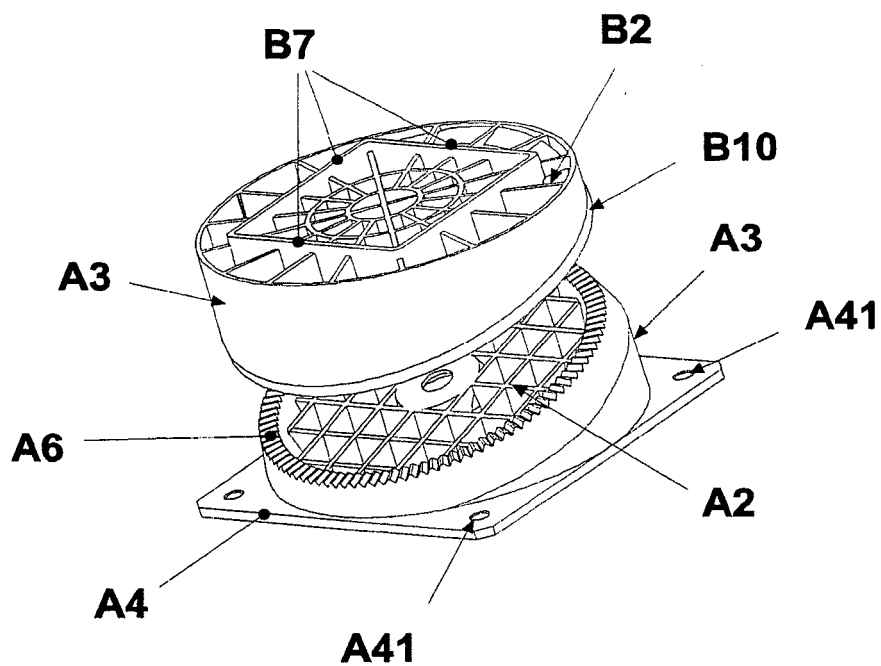


Fig. 5a

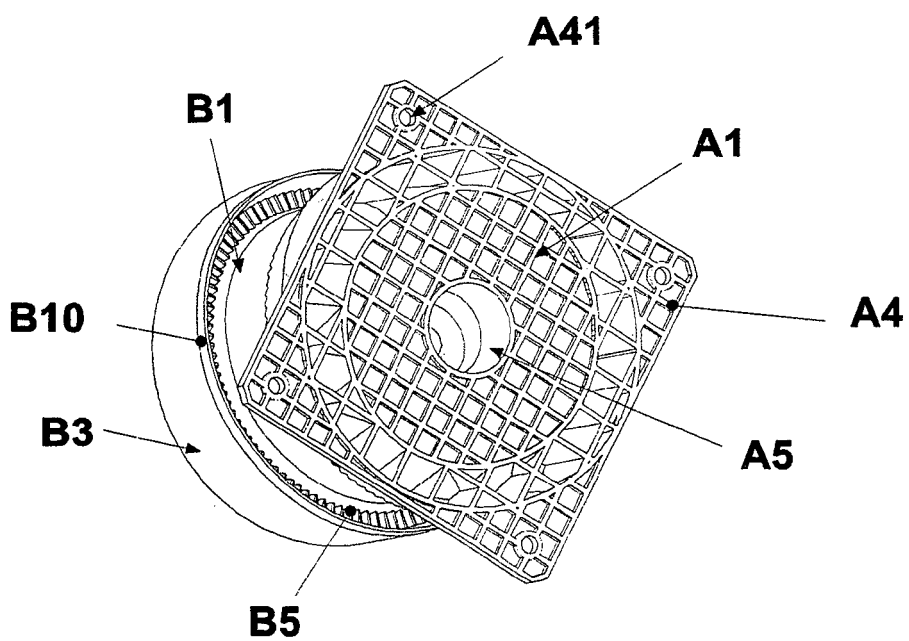


Fig. 5b

REFERENCES CITED IN THE DESCRIPTION

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