(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 620 592 A1**

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
11.03.2020 Bulletin 2020/11

(51) Int Cl.:
E04G 21/32 *(2006.01)* ***E04G 5/14*** *(2006.01)*
E04H 17/16 *(2006.01)*

(21) Application number: **18193460.5**

(22) Date of filing: **10.09.2018**

(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
Designated Validation States:
KH MA MD TN

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(54) MESH PANEL AND A SAFETY BARRIER SYSTEM

(57) Mesh panel (1) comprising a main portion (20) in a main plane (AB) defined by first and second directions (a, b), a top portion (10) in a top plane (AC) defined by the first and a third direction (a, c). The main portion (20) comprises a mesh formed by a plurality of first wires (21a) in the first direction (a) and a plurality of second wires (23b) in the second direction (b). At least one of the top portion (10) and the main portion (20) comprises at least one third wire (15), which, if arranged in the top portion (10) has a top portion direction (e) which differs from the first direction (a) and the third direction (c) of the top plane (AC), and which if arranged in the main portion (20) has a main portion direction (f) which differs from the first direction (a) and the second direction (b) of the main plane (AB).

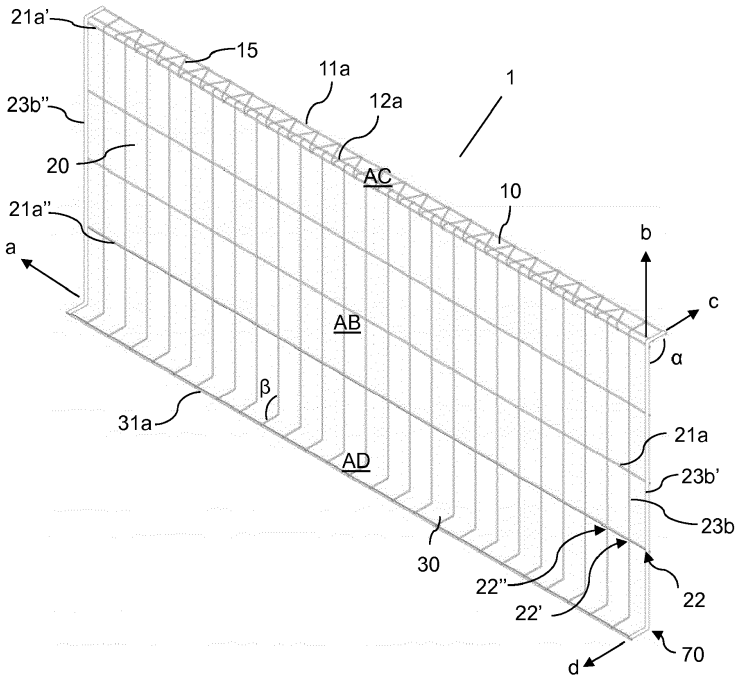


Fig. 1

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Description

Technical field

[0001] The present invention relates generally to mesh panels for use at safety barrier systems used at construction sites as temporary safety fences. The safety barriers are normally mounted like edge protection on flor levels, roofs, scaffoldings etc.

Background art

[0002] Safety barriers are used at for example construction sites as fall protection above ground level, to prevent workers, tools building materials etc. from falling down to the ground or lower floors. Normally, safety barrier systems comprise mesh panels, posts, connector members for connecting the mesh panels to the posts and also foot members for anchoring the posts to a substrate as a concrete floor, wooden floor, a roof or a scaffolding etc. The safety barriers are classed according to test standards for testing their strength and to achieve the highest class, known systems are quite heavy, due to coarse dimensions of the parts. Regarding known mesh panels, these are designed as a Z-like or a C-like fence, with horizontal and vertical wires which are fixed to each other to form a mesh, normally by welding, and which mesh is enclosed by some kind of frame. The main portion of the mesh panel is in a using mode mounted with a vertical extension, and an upper part and a lower part of the mesh panel protrudes either perpendicular or with another angle relative the main portion, such as a section gets a Z-form or a C-form. The mesh is dimensioned with coarse wire dimensions and a certain c/c between the wires to gain high strength and to achieve a high-class mesh panel. Another crucial feature is the weight of an entire mesh panel since they have a length and a height which may be around 2.5 x 1.2 meters. The wire dimensions, the mesh density (number of wires) and the size of the mesh panel drives the weight, which for known low-weight mesh panels in the highest class today is around 20 kg for a mesh panel with dimensions 2.6 x 1.15 meters.

[0003] Known solutions within the field are for example WO 2010108832 A1 and EP 17244148 B1 which discloses safety barrier systems including posts, mesh panels and fastening devices etc. These solutions focus on the complete system and functions as height adjustments, mounting devices, and of course the safety class, but there is no focus on the mesh panels as such and the combination of weight, safety class and cost. Other known solutions are for example mesh panels and complete systems of aluminum, which indeed have low weight and high safety, but if one aluminium post or mesh panel gets a crack or a buckle, the strength is affected severely. Further, the cost for producing safety barriers of aluminium is high. Thus, known prior art for the highest demands on safety have drawbacks as high cost and high weight and because of the high weight, the handling of the mesh panels contributes to a bad working environment on the construction site etc. It is therefore a need of an improved mesh panel for a safety barrier system which fulfil the highest class of safety, has low weight and provides an improved working environment and also has low production cost.

Summary of invention

[0004] An object of the present invention is to solve the above-mentioned problems. This is achieved by a mesh panel for safety barrier systems according to claim 1 and a safety barrier system according to claim 15.

[0005] According to an aspect of the invention, a mesh panel for a safety barrier system used for securing a working surface, is disclosed. The mesh panel comprises a main portion, extending in a main plane defined by a first direction and a second direction. Preferably, these directions are perpendicular to each other and normally the mesh panel is positioned vertically on a substrate as a floor or the like, and in that case the main plane is a substantially vertical plane and the first and second directions may be the horizontal and the vertical directions. The mesh panel further comprising a top portion, which extends in a top plane defined by the first direction and a third direction, which third direction is different from the second direction such as the top plane is angled relative the main plane by an upper bend. The angle between the top plane and main plane is the angle between the second direction and the third direction. Further, the mesh panel comprising a bottom portion, which extends in a bottom plane defined by the first direction and a fourth direction, which fourth direction preferably is different from the second direction. Thus, a section through the mesh panel may look like a Z or a C, where the Z-form is most preferred. The main portion is as understood arranged between the top portion and the bottom portion, and the main portion comprises a plurality of first wires arranged in the first direction and a plurality of second wires arranged in the second direction. Preferably, the first wires are horizontal wires and the second wires are vertical wires, but other directions may be possible. The first and second wires are fixed to each other at maininteractions such as the first and second wires forming a mesh. Preferably, the first and second wires are welded together by spot welding. The plurality of first wires comprises an upper wire and a lower wire, and the plurality of second wires comprises two outer side wires, each arranged at respective outer end of the mesh panel. In the normal use of the mesh panel, the outer side wires typically are a left wire and a right wire arranged as outer side frame wires. The top portion comprises at least one first top portion wire arranged in the first direction, and the bottom portion comprises at least one bottom portion wire arranged in the first direction. The first top portion wire, the bottom portion wire and the outer side wires typically forms an outer frame and the rest of the plurality

of first and second wires forming the mesh arranged within the frame.

[0006] The inventive mesh panel further comprises at least one third wire, wherein at least one of the top portion and the main portion comprises the at least one third wire. If the third wire is arranged in the top portion, it has a top portion wire direction which differs from the first direction and the third direction of the top plane. And if the third wire is arranged in the main portion, it has a main portion wire direction which differs from the first direction and the second direction of the main plane. Further, at least one of the third wire or the plurality of second wires of the main portion, extends past the upper bend and into the adjacent portion. This means that either the third wire or the second (vertical wires) or both, passes over the upper bend and into either the top portion or the main portion depending on where the third wire is positioned. For example if the third wire only is arranged in the top portion, the second (vertical) wires of the main portion extends into the top portion to strengthen the upper bend and utilize the function (strength) of the third wire in the top portion. In the same way, if the third wire is arranged only in the main portion, the second (vertical) wires of the main portion extends into the top portion. The last option is that the third wire is a part of both the top plane and the main plane. In this case both the third wire and the plurality of second (vertical) wires extends over the upper bend and into adjacent portion (top portion and main portion). The term "wire/wires" are to be understood as preferably round wire/wires which normally are used at these applications, but may of course be for example iron bars with different shapes (square, quadratic, pentagonal, hexagonal, octagonal etc.) or the like.

[0007] By such an arrangement, the total strength of the mesh panel is improved since either the top portion or the upper the main portion or both, comprises a framework, constituted by "standard wires" (which normally are arranged at such a mesh panels) and the third wire extending between them. The latter is more or less a diagonal cross bar arranged between the wire/wires of the top portion and wire/wires of the main portion as a zigzag pattern or similar. As the top plane/top portion is angled relative the main portion/main plane, the bend between them is either enclosed by the strengthening third wire or at least the second (vertical) wires, and the total strength of the mesh panel is greatly improved since the strengthening third wire function is transferred over the upper bend into the main plane in all alternatives. The added diagonal (or any other angles) third wire adds total strength to the mesh panel wherein the both the total number of first and second wires as well as their thickness may be reduced. As a result of this the weight is greatly reduced and as a comparison, the weight of the inventive mesh panel for the highest class is reduced from 20 kg (prior art) down to 12 kg with maintained strength, which is a huge improvement compared to known mesh panels. The weight reduction is very important when it comes to working environment as the handling the mesh panels often is carried out by hand.

[0008] According to an embodiment, the top portion comprises a second top portion wire arranged in the first direction, between the first top portion wire and the upper bend. The at least one third wire extends between the top portion wire and the second top portion wire and is fixed to the first top portion wire and the second top portion wire. Further, the plurality of second wires of the main portion extends past the upper bend and into the top portion. According to this embodiment, the third wire only is a part of the upper plane, but the strengthening function of the third wire is transferred to the main plane due to that the vertical second wires of the main portion extends over the upper bend and into the top plane. Preferably, the vertical second wires extend to at least the second top portion wire but may also extend to the first top portion wire.

[0009] According to an alternative embodiment compared to nearest above described, the top portion comprises a second top portion wire arranged in the first direction, between the first top portion wire and the upper bend, but the at least one third wire extends from at least one of the first and second top portion wires to at least one of the plurality of first wires (i.e. horizontal) of the main portion. And the third wire is fixed to these wires which it passes. This embodiment discloses two alternatives. The first alternative is where the third wire is fixed to the first (outermost lying) top portion wire and fixed also to the second top portion wire (near the upper bend) and further also fixed to at least one of the plurality of first (horizontal) wires of the main portion, for example the upper wire or a wire below this, etc. The second alternative is where the third wire is fixed to the second top portion wire but not the first top portion wire, i.e. the third wire is fixed only to the second top portion wire (near the upper bend) and further also fixed to at least one of the plurality of first (horizontal) wires of the main portion, as described above. By such an arrangement, the at least one third wire is arranged both in the top plane and the main plane AB and passes the upper bend in a strengthening way. In this case the plurality of second (vertical) wires of the main portion may or may not continue into the top portion, it is optionable.

[0010] According to an embodiment, the plurality of second wires of the main portion passes the upper bend and continue into the top portion.

[0011] According to a preferred embodiment, the at least one third wire extends between the first top portion wire and the upper wire of the main portion and is fixed to the upper wire of the main portion in a point positioned between two adjacent main-interactions of the second wires and the upper wire of the main portion. The third wire is fixed at any point between two interactions, but most preferred is a point near the midpoint of the distance between the interactions. By that, the mesh of the main portion is fixed at the interactions between the first and second wires, and the upper wire of the first wires (normally the upper horizontal wire) is fixed, preferably by

spot welding, to the third wire in points between the interactions of the upper wire and the second wires of the main portion, which means improved strength and a stiff corner/bend between the main portion and the top portion. Known mesh panels without the "framework" must have thicker first and second wires as well as more wires arranged closer to each other, to achieve the same strength, which means heavier mesh panels.

[0012] According to an embodiment, the at least one third wire is fixed to the first top portion wire in a point which aligns with a respective second wire. The top portion extends, as said above, in a top plane which is angled relative to the main plane. In the preferred embodiment, each point for fixed attachment of the third wire to the first top portion wire (which preferably is the outermost wire of the top portion), is arranged at a position which aligns with a respective second wire if seen from the front or the back of the mesh panel. For example, if the first wires are horizontal wires and the second wires are vertical wires, the fixing point of the third wire to the top portion wire aligns with each vertical wire. It is optionable to let the second wires (i.e. vertical wires) extend all the way to the first top portion wire or not.

[0013] According to an embodiment, the plurality of second wires (normally the vertical wires) of the main portion extends to the second top portion wire and each of the second wires is fixed to the second top portion wire. This means that the second wires of the main portion extend into the top plane and thus passing the upper bend between the top portion and the main portion, which adds strength to the mesh panel. In this embodiment, the second wires may end at the second top portion wire, which enables that the "framework" is open between the diagonal third wires of the top portion and the posts of the safety barrier system may be threaded through the top portion mesh. This enables to standard attachments for attaching the mesh panels to the posts.

[0014] According to yet another embodiment, the plurality of second wires of the main portion extends all the way to the first top portion wire and each of the second wires is fixed to the first top portion wire. This option may add strength to the mesh panel and may be an option depending on the attachment between the mesh panels and the posts.

[0015] According to an embodiment, the at least one third wire is a continuous wire which forms a framework-like connection for added strength. The third wire may be many short wires, a number of longer wires or as according to this embodiment, a continuous wire arranged as a zig-zag form or the like. Using a continuous wire or more or less continuous wire is a production-friendly and costefficient solution when producing mesh panels according to the invention.

[0016] According to an embodiment, the bottom portion comprises at least one bottom portion wire arranged in the first direction, and the bottom plane is angled relative the main plane with a second angle, by a lower bend between the bottom portion wire and the lower wire of the main portion. The second angle may be any angle, but preferably an angle around 90°. By arranging the bottom plane in an angle relative the main plane adds overall strength to the mesh panel.

[0017] According to an embodiment, the outer side wires extends between the first top portion wire and the bottom portion wire, in such a way as the outer side wires follows the top plane, the main plane and the bottom plane. By this arrangement, the side wires act a stabilizing side-frames which follows the cross-section of the mesh panel, for example as a Z-form or C-form and connects the outermost top and bottom wires.

[0018] According to an embodiment, the outer side wires are flat iron bars. By replacing the side wires, which normally are round wires, with flat iron bars, the complete mesh panels get more stable which contributes to the overall strength.

[0019] According to an embodiment, the bottom portion wire is a flat iron bar, preferably with a rectangular cross-section with a cross-section height greater than the cross-section width, arranged with the height in second direction. That is, the iron bar arranged as a beam along the outer end of the bottom portion.

[0020] According to yet another embodiment, a folded toe plate is arranged at the bottom portion and a lower part of the main portion, such as enclosing the lower bend of the mesh panel. The toe plate prevents tools and other smaller parts to fall through the mesh panel, but it also adds strength to the mesh panel because it is welded to the main portion mesh as well as the bottom portion.

[0021] According to an aspect of the invention, a safety barrier system is disclosed, which safety barrier system comprises a plurality of mesh panels according to any of the previous embodiments, a plurality of safety barrier posts for carrying the mesh panels, a plurality of mesh panel holders arranged for connecting the mesh panels to the safety barrier posts, and a plurality of foot members arranged for attaching the safety barrier posts to a substrate. The safety barrier posts, holders and foot members may be of known art. Such a system provides a safe, cost-effective and easy-handled safety barrier system due to the fact that the mesh panels have very low weight compared to prior art but with upheld strength for providing a high-class safety barrier.

[0022] Further possible features and benefits of this solution will become apparent from the detailed description below.

Brief description of drawings

[0023] The invention is now described, by way of example, with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of a mesh panel according to the invention.

Fig. 2 is a detailed view of a top portion of the mesh

panel of Fig. 1.

Fig 3 is a detailed view of the top portion of the mesh panel of Fig. 1 from another angle.

Fig. 4 is a front view of the mesh panel of Fig. 1.

Detailed description

[0024] Briefly described, an improved mesh panel, designed for high safety and low weight, is disclosed. The mesh panel may have thinner dimensions of the mesh wires as well as a greater distance between them due to that a framework with an extra wire is provided at the upper part of the mesh panel.

[0025] Fig. 1 is a perspective view of a mesh panel 1 according to the invention. The mesh panel 1 comprises a main portion 20, which extends in a main plane AB defined by a first direction a and a second direction b. These directions a, b are preferably perpendicular to each other and the first direction a is, in the normal using mode of the mesh panel, a horizontal direction and the second direction b is a vertical direction. The main plane AB constitutes the main "fence" area when the mesh panel is used as a fence for fall protection. The mesh panel 1 further comprises a top portion 10, which extends in a top plane AC defined by the first direction a and a third direction c, which third direction c preferably is perpendicular to the main plane AB, for example a front direction of the mesh panel 1. A first angle α is defining the angle between the main plane AB and the top plane AC, and the first angle α is as said around 90°, but other angles are possible. The mesh panel 1 further comprises a bottom portion 30, which extends in a bottom plane AD defined by the first direction a and a fourth direction d, which fourth direction d preferably is perpendicular to the main plane AB, for example a back direction of the mesh panel 1. A second angle β is defining the angle between the main plane AB and the bottom plane AD, and the second angle β is as said 90°, but other angles are possible. The main portion 20 is arranged between the top portion 10 and the bottom portion 30.

[0026] The main portion 20 comprises a plurality of first wires 21a which are arranged in the first direction a, that is, in the horizontal direction, and further a plurality of second wires 23b, arranged in the second direction b, which is the vertical direction. The first and second wires 21a, 23b are fixed to each other for example by spot welding at main-interactions 22, 22', 22", and by that forming a mesh which constitutes the protecting fence. The horizontal first wires 21a comprises an upper wire 21a' and a lower wire 21a", and the vertical second wires 23b comprises two outer side wires 23b', 23b" which are arranged at respective outer end of the mesh panel 1, as a left wire and a right wire.

[0027] The top portion 10 comprises a first top portion wire 11a and a second top portion wire 12a arranged in the first direction a, wherein the first top portion wire 11a is arranged at the outer end of the top portion 10. The second top portion wire 12a is arranged near an upper bend 60, which upper bend 60 is the bend between the main plane AB and top plane AC, with the first angle α. The top portion also comprises a third wire 15, which will be further explained below in relation to Fig. 2 and Fig. 3.

[0028] The bottom portion 30 comprises a bottom portion wire 31a arranged in the first direction a, which preferably is a flat iron bar. Between the bottom portion wire 31a and the lower wire 21a" of the main portion 20 is a lower bend 70 arranged, which lower bend 70 thereby is the bend between the main plane AB and bottom plane AD, with the second angle β.

[0029] Fig. 2 and 3 are detailed views of the top portion 10 of the mesh panel 1 seen from different angles. As mentioned above, the top portion 10 comprises at least one third wire 15, which in the most preferred embodiment extends between the first top portion wire 11a and the upper wire 21a' of the main portion 20, and thus passes over the upper bend 60. The third wire 15 is fixed to these wires 11a, 21a', preferably by spot welding, and preferably also fixed to the second top portion wire 12a. The third wire 15 is by this arrangement a part of both the top plane AC and the upper part of the main plane AB and extends over the upper bend 60. The third wire 15 has a top portion wire direction e in the top plane AC which differs from wire directions of the plurality of first wires 21a and the plurality of second wires 23b, i.e. the top portion direction e of the third wire 15 differs from the first direction a and the third direction c of the top plane. In the same way, the third wire 15 has a main portion wire direction f in the main plane AB which differs from the first direction a and the second direction b of the first and second wires 21a, 23b in the main plane AB. As the third wire 15 is a part of the top plane AC and the main plane AB, it aligns with the top plane AC and with the main plane AB.

[0030] The third wire 15 is fixed to the upper wire 21a' of the main portion 20 in a point p_1 positioned between two adjacent main-interactions 22, 22', 22". The third wire 15 may be fixed at any point between two interactions, but most preferred is that the point p_1 is positioned at the midpoint of the distance between the interactions. As said above, the third wire 15 also is fixed to the first and second top portion wires 11a, 12a, and most preferred, the third wire 15 is fixed to the first top portion wire 11a in a point p_2 which aligns with a respective second wire 23b, as seen in Fig. 3.

[0031] It is to be understood that the third wire 15 may have all kinds of angles compared to the two main directions of the first and second wires 21a, 23b and any kind of patterns as a straight third wire 15 going the shortest way between fixing points, a sinus-wave third wire 15 between the fixing points etc. And further, the fixing point of the third wire 15 may be at any point p_2 of the first top portion wire 11a, and/or at any point of the second top portion wire 12a and at any point p_1 of the upper wire 21a' of the main portion 20, to enabling the "framework

function" to the mesh panel. It is also to be understood that the third wire 15 may be many short wire parts, a number of longer wire parts fitted together or a long continuous wire extending over the complete width of the mesh panel 1.

[0032] Fig. 4 is a front view of the mesh panel 1, where the top portion 10 is facing the viewer and the bottom portion 30 facing away from the viewer. The main portion 20 is as told arranged between the top portion 10 and bottom portion 30 and is substantially extending vertical in the normal use as a "fence". The plurality of first wires 21a are arranged in the first direction a, i.e. in the horizontal direction, and the plurality of second wires 23b are arranged in the second direction b, i.e. the vertical direction and forming the main mesh. On respective sides of the main mesh (right and left in the figure) are the two outer side wires 23b', 23b" arranged. the outer side wires 23b', 23b" extends between the first top portion wire 11a and the bottom portion wire 31a, in such a way as the outer side wires 23b', 23b" follows the top plane AC, the main plane AB and the bottom plane AD. The outer side wires 23b', 23b" are preferably flat iron bars.

[0033] A folded toe plate 50 is arranged at the bottom portion 30 and a lower part of the main portion 20, such as enclosing the lower bend 70, which in the figure can be seen as an area without mesh at the lower part of the main portion 20, but in fact, the mesh wires 21a, 23b are arranged all the way behind the toe plate 50. The toe plate 50 prevents tools and other smaller parts to fall through the mesh panel 1, but it also adds strength to the mesh panel 1.

[0034] Although the description above contains a plurality of specificities, these should not be construed as limiting the scope of the concept described herein but as merely providing illustrations of some exemplifying embodiments of the described concept. It will be appreciated that the scope of the presently described concept fully encompasses other embodiments which may become obvious to those skilled in the art, and that the scope of the presently described concept is accordingly not to be limited. Reference to an element in the singular is not intended to mean "one and only one" unless explicitly so stated, but rather "one or more." All structural and functional equivalents to the elements of the above-described embodiments that are known to those of ordinary skill in the art are expressly incorporated herein and are intended to be encompassed hereby.

Claims

1. A mesh panel (1) for a safety barrier system, preferably for securing a working surface, the mesh panel (1) comprising:

   a main portion (20), extending in a main plane (AB) defined by a first direction (a) and a second direction (b), which directions (a, b) preferably are perpendicular to each other,

   a top portion (10), extending in a top plane (AC), defined by the first direction (a) and a third direction (c), which third direction (c) is different from the second direction (b) such as the top plane (AC) is angled relative the main plane (AB) by an upper bend (60) with a first angle (α) between the second direction (b) and third direction (c),

   a bottom portion (30), extending in a bottom plane (AD) defined by the first direction (a) and a fourth direction (d),

   wherein the main portion (20) is arranged between the top portion (10) and the bottom portion (30), and which main portion (20) comprises a plurality of first wires (21a) arranged in the first direction (a) and a plurality of second wires (23b) arranged in the second direction (b), and the first and second wires (21a, 23b) are fixed to each other at main-interactions (22, 22', 22", ...) such as the first and second wires (21a, 23b) forming a mesh, and the plurality of first wires (21a) comprises an upper wire (21a') and a lower wire (21a"), and the plurality of second wires (23b) comprises two outer side wires (23b', 23b") each arranged at a respective outer end of the mesh panel (1), and the top portion (10) comprises at least one first top portion wire (11a) arranged in the first direction (a),

   characterized in that

   at least one of the top portion (10) and the main portion (20) comprises at least one third wire (15), which third wire (15), if arranged in the top portion (10) has a top portion direction (e) which differs from the first direction (a) and the third direction (c) of the top plane (AC), and which third wire (15) if arranged in the main portion (20) has a main portion direction (f) which differs from the first direction (a) and the second direction (b) of the main plane (AB), and at least one of the third wire (15) or the plurality of second wires (23b) of the main portion (20), extends past the upper bend (60) and into the adjacent portion (10, 20).

2. Mesh panel according to claim 1, wherein the top portion (10) comprises a second top portion wire (12a) arranged in the first direction (a) between the first top portion wire (11a) and the upper bend (60), and the at least one third wire (15) extends between the top portion wire (11a) and the second top portion wire (12a) and is fixed to the first top portion wire (11a) and the second top portion wire (12a), and the plurality of second wires (23b) of the main portion (20) extends past the upper bend (60) and into the top portion (10).

3. Mesh panel according to claim 1, wherein the top portion (10) comprises a second top portion wire (12a) arranged in the first direction (a) between the

first top portion wire (11a) and the upper bend (60), and wherein the at least one third wire (15) extends from at least one of the first and second top portion wires (11a, 12a) to at least one of the plurality of first wires (21a, 21a', 21a") of the main portion (20), and is fixed to these wires (11a, 12a, 21a, 21a', 21a"), and by that the at least one third wire (15) is arranged both in the top plane (AC) and the main plane (AB).

4. Mesh panel according to claim 3, wherein the plurality of second wires (23b) of the main portion (20) extends past the upper bend (60) and into the top portion (10).

5. Mesh panel according to claim 3 or 4, wherein the at least one third wire (15) extends between the first top portion wire (11a) and the upper wire (21a') of the main portion (20) and is fixed to the upper wire (21a') in a point (pi) positioned between two adjacent main-interactions (22, 22', 22", ...) of the second wires (23b) and the upper wire (21a') of the main portion (20).

6. Mesh panel according to claim 5, wherein the at least one third wire (15) is fixed to the first top portion wire (11a) in a point (p_2) which is in line with a respective second wire (23b).

7. Mesh panel according to any of claims 2 - 6, wherein the plurality of second wires (23b) of the main portion (20) extends to the second top portion wire (12a) and each of the second wires (23b) is fixed to the second top portion wire (12a).

8. Mesh panel according to any of the preceding claims, wherein the plurality of second wires (23b) of the main portion (20) extends to the first top portion wire (11a) and each of the second wires (23b) is fixed to the first top portion wire (11a).

9. Mesh panel according to any of the preceding claims, wherein the at least one third wire (15) is a continuous wire.

10. Mesh panel according to any of the preceding claims, wherein the bottom portion (30) comprises at least one bottom portion wire (31a) arranged in the first direction (a), and the bottom plane (AD) is angled relative the main plane (AB) with a second angle (β), by a lower bend (70) between the bottom portion wire (31a) and the lower wire (21a") of the main portion (20), wherein the second angle (β) is the angle between the second direction (b) of the main plane (AB) and the fourth direction (d) of the bottom plane (AD).

11. Mesh panel according to 10, wherein the outer side wires (23b', 23b") extends between the first top portion wire (11a) and the bottom portion wire (31a), in such a way as the outer side wires (23b', 23b") follows the top plane (AC), the main plane (AB) and the bottom plane (AD).

12. Mesh panel according to any of the preceding claims, wherein the outer side wires (23b', 23b") are flat iron bars.

13. Mesh panel according to any of claims 10 - 12, wherein the bottom portion wire (31a) is a flat iron bar.

14. Mesh panel according to any of claims 10 - 13, wherein a folded toe plate (50) is arranged at the bottom portion (30) and a lower part of the main portion (20), such as enclosing the lower bend (70).

15. A safety barrier system, comprising:

a plurality of mesh panels (1) according to any of claims 1 - 14,
a plurality of safety barrier posts for carrying the mesh panels (1),
a plurality of mesh panel holders arranged for connecting the mesh panels (1) to the safety barrier posts,
a plurality of foot members arranged for attaching the safety barrier posts to a substrate.

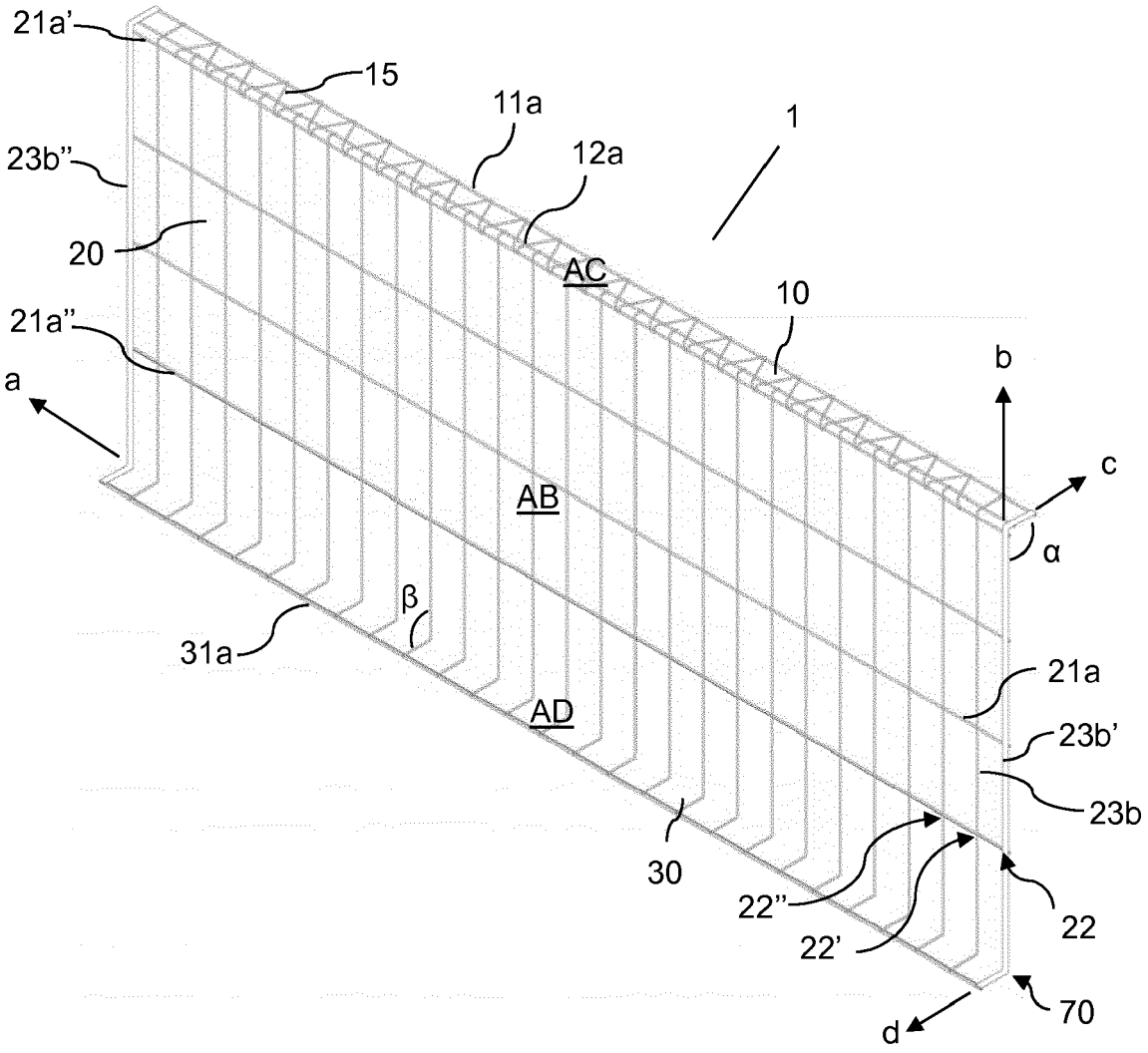

21a'
15
11a
1
23b''
12a
20
AC
10
21a''
b
a
c
AB
α
β
31a
21a
AD
23b'
23b
30
22''
22
22'
70
d

Fig. 1

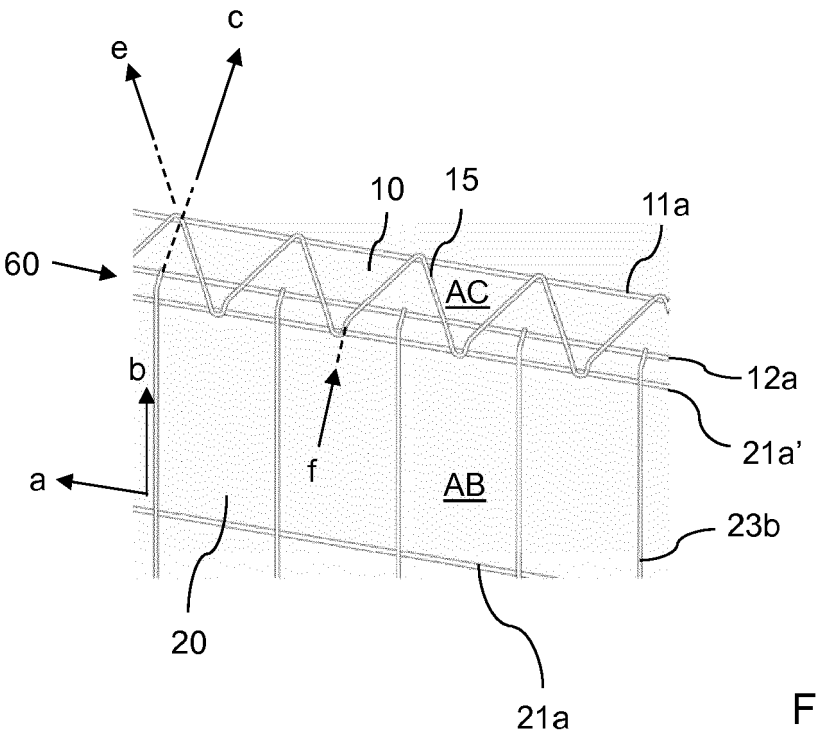

c
e
10
15
11a
60
AC
12a
b
21a'
a
f
AB
23b
20
21a

Fig. 2

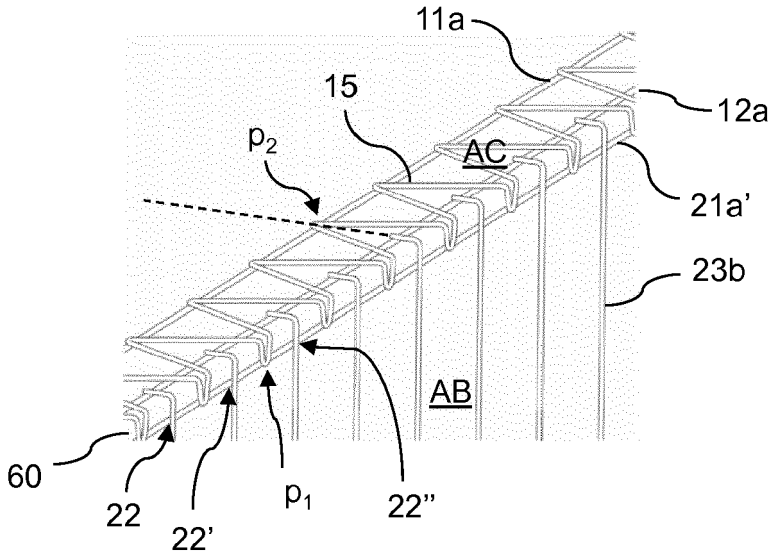

11a
15
12a
p_2
AC
21a'
23b
AB
60
22
22'
p_1
22"

Fig. 3

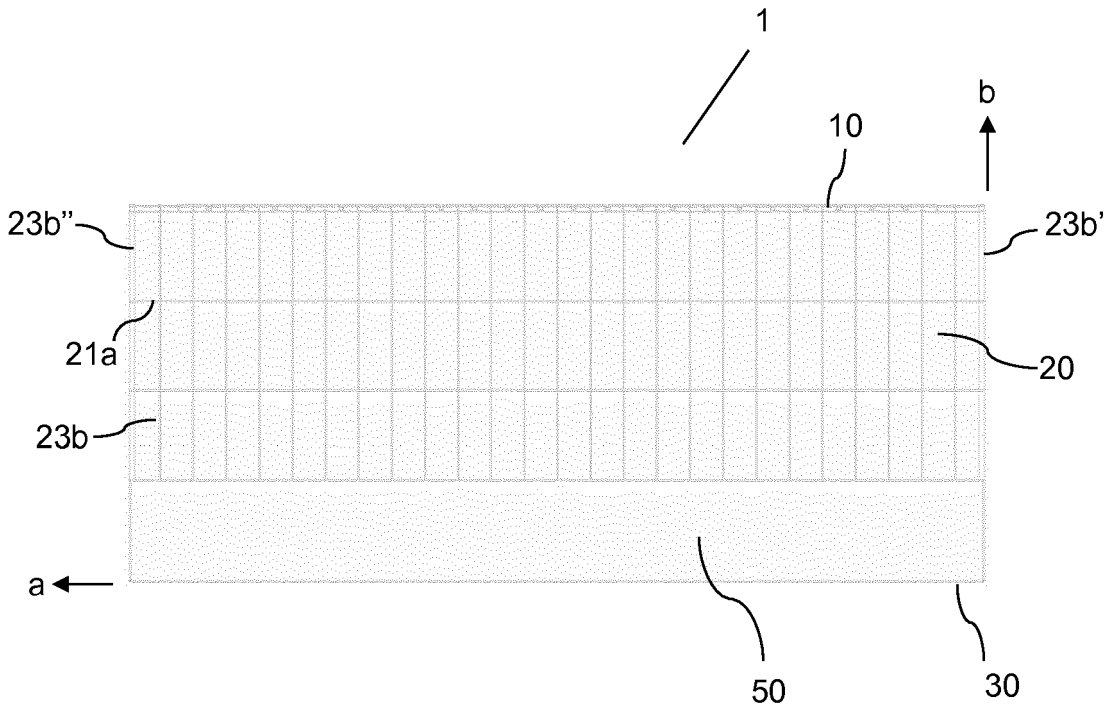


Fig. 4

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EUROPEAN SEARCH REPORT

Application Number
EP 18 19 3460

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	EP 1 467 045 A2 (SGB SERVICES LTD [GB]) 13 October 2004 (2004-10-13)	1,8-15	INV. E04G21/32 E04G5/14 E04H17/16
A	* paragraph [0014] - paragraph [0017]; figures 1-3 *	2-7	

Y	DE 712 392 C (KARL PURSCHE) 17 October 1941 (1941-10-17)	1,8-15	
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TECHNICAL FIELDS SEARCHED (IPC)

E04G
E04H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	4 February 2019	Baumgärtel, Tim

CATEGORY OF CITED DOCUMENTS

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04-02-2019

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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