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(54) **ANTI-INTRUSION FENCING**

(57) Anti-intrusion fencing that can be erected especially for use as protection for sites where there is traffic and long routes that require a security device, which fencing is based on plurality of posts between which are wire meshes with a view to it being possible rapidly, safely and reliably to detect any attempt at access by cutting of the wire mesh, the fencing being formed by: a plurality of interlinked wire meshes (2) that incorporate at least one tubular element (3) with a conductor wire (4) therein, concealed amongst the actual wires; a plurality of posts (5); and a plurality of cover bodies (7) closing over the flanges (6) of the profile sections forming the plurality of posts (5). The result is fencing that is simple and quick to erect at low cost and which provides evidence of cutting or vandalism by impact, which generates an alarm at the control centre.

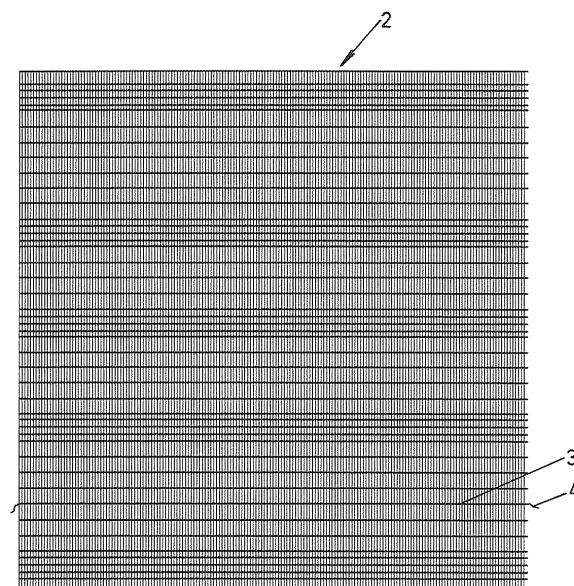


Fig.1

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Description

OBJECT OF THE INVENTION

[0001] The following Utility Model, as expressed in the formulation of the present descriptive specification, refers to an anti-intrusion fencing, which can be erected especially for use as protection for sites where there is traffic and long routes that require a certain level of security, in such a way that the first aim is to produce a fencing which is easy and quick to mount at low cost.

[0002] Another aim of the fencing is for the interlinked wire meshes that form it to have a conductor wire, which may or may not be connected in the mounting of the same, which is fitted into a tubular element, like wires, it being concealed and not being possible to notice, in such a way that upon being connected, when it comes to erecting the fencing, it would provide evidence of cutting or vandalism by impact, which generates an alarm at the control centre.

APPLICATION FIELD

[0003] In the present specification, an anti-intrusion fencing is described, applied and erected especially for use as protection of long perimeter routes, and sites where there is traffic, which should have a certain level of security.

BACKGROUND OF THE INVENTION

[0004] Traditionally, various fencing methods have been used to protect certain precincts, in such a way that of the structural systems used, in those which physical presence is not required, we might consider that which is formed by a wall or greater crown wall topped with a barbed wire, without any kind of added element.

[0005] Considering various fencings which aim to prevent access to certain areas, we might consider that system formed by a pair of fencings, parallel to one another and installed along the entire length of the area to be protected, these fencings being formed by the use of support profiles, between which a metal network is arranged.

[0006] Likewise, in a first embodiment, the support profiles may be topped with, at least, an inclined stretch in their upper portion, various rows of barbed wire being arranged between these inclined stretches.

[0007] In a second practical embodiment, the support profiles may be topped according to two inclined stretches, at both sides, it being possible for various rows of barbed wire to remain between them. In addition, a spiral roll of barbed wire may be placed in their upper central portion between the two inclined stretches, which define a "V" shaped space.

[0008] In this way, stairs or other similar elements may be placed on the barbed wires arranged between the inclined stretches, on those which the support profiles top, with the aim of being able to access the upper portion

of the fencing, by means of fitting some kind of protection elements onto the barbed wires, such as simple cardboard boxes, in order to avoid getting cut and be able to pass over the fencing.

[0009] Equally, it is possible to arrange one or various spiral rolls of barbed wire on the internal face of the first protective fencing, it being possible to arrange these rolls in different ways.

[0010] The barbed wires that form the spiral roll may have different blade forms, which is disadvantageous in that this could result in different levels of injury for those people who try to pass the fencing.

[0011] This formation is disadvantageous in that, in addition to not being infallible, when attempts are made to "overcome" the protective fencing described, those who try to do so may suffer significant accidents, mainly as a result of severe cuts.

[0012] Likewise, it is possible to cite utility model document ES 1 066 931, in which a "*Dispositivo de vallado protector*" [protective fencing device] is described, this device being formed by a plurality of posts anchored to the ground, a mesh defined by a rectangular steel wire framework being mounted between them and a plurality of angular plates, mounted in the upper portion of the mesh by one of their wings, their other wing having a small hollow lug in orthogonal position, in addition to a towrope which passes through the openings in the lugs of the angular plates and a "U" profiled guide, joined to the mesh, between posts, which houses a sensor defined by a transducer cable, which houses a fiber optic cable inside it.

[0013] Equally, we might consider document ES 1 068 493, in which a "*vallado anti-intrusión*" [anti-intrusion fence] is described, in such a way that at least one conductor wire is built into the framework of the modules, in a horizontal position, this conductor wire defining a pre-sensor detector for cuts in the framework and/or, in the upper portion, an anti-jump sensor is built into the modules forming the fencing, along the entire length thereof, defined by a pair of profiles, which are hinged together and held in position by a plurality of springs, a first profile being joined to the fence and it being possible for the second profile to rotate relative to both sides of the plane vertical to the rotation axis, both profiles having a plurality of sensors built into them for detecting rotation in the second profile.

[0014] Finally, we might consider document ES 1 068 893 in which a "*valla anti-intrusión*" [anti-intrusion fence] is described, which has a number of "U" profiled posts anchored to the ground, one side of the frame that the two adjacent modules that meet on their core being backed against and attached to it, the fastening screws inside its core being inaccessible from the fencing area.

[0015] Moreover, the profile defining the sides of the frame forming the modules has a generally quadrangular profile with a protrusion coming out of its front face towards the inside of the frame formed.

DESCRIPTION OF THE INVENTION

[0016] In the present specification, an anti-intrusion fencing is described that can be erected especially for use as protection for sites where there is traffic and long routes which require a certain level of security, this fencing being based on a plurality of posts anchored to the ground, between which wire meshes are arranged with the aim of being able to detect any attempt to gain access by means of cutting the wire mesh quickly, safely and reliably, in such a way that the anti-intrusion fencing is formed by:

- A plurality of interlinked wire meshes, which incorporate, at least, a tubular element, in horizontal position, with a conductor wire inside, concealed amongst the actual wires,
- A plurality of posts defined by a "U" section profile, with divergent wings ending in respective flanges towards the outside and,
- A plurality of closing cover bodies over the flanges of the profile sections forming the plurality of posts on which the plurality of wire meshes converge in order to be fastened.

[0017] Since the electric conductor wire is located inside the corresponding tubular element, like a wire, it is not possible to observe it or even know that it exists. Therefore, in the event of an intrusion by means of cutting the wire mesh in order to access the restricted area, the intruder would not be capable of detecting the existence of the alarm conductor wire and upon cutting it, would be detected, the corresponding warning being sent.

[0018] Furthermore, the plurality of electrically welded flat wire meshes with the incorporation of, at least, one tubular element with a conductor wire inside, concealed in the wire framework is not contained within a perimeter frame.

[0019] Moreover, the plurality of posts, amongst which the plurality of interlinked wire meshes are located, are defined by a "U" section profile of divergent wings ending in respective flanges towards the outside.

[0020] In a second practical embodiment of the invention, the plurality of wire meshes with, at least, one tubular element with a conductor wire inside it, concealed in the wire framework, may have a series of "V" shaped protrusions, of differing heights, which provide rigidity.

[0021] Likewise, according to this second practical embodiment of the invention, the plurality of posts, amongst which the plurality of interlinked wire meshes are located, are defined by a "U" section profile of divergent wings ending in respective flanges towards the outside, a series of general "V" shaped cuts being arranged along the length of both wings and flanges of the profile forming the posts.

[0022] In this way, in a first practical embodiment in the mounting of the fencing, the sides of the flat wire meshes converge on respective posts, located on the

flanges on which the wings of the general "U" shaped profiles of divergent wings end and being fixed by means of corresponding cover bodies attached to said flanges.

[0023] In the second practical embodiment of the invention, when mounting the fencing, the sides of the wire meshes with a series of "V" shaped protrusions converge on respective posts and remain on the flanges on which the divergent wings of the general "U" shaped profiles end, which are provided with a series of general "V" shaped cuts along the length of the same, the "V" shaped protrusions of the wire meshes coinciding with said series of "V" shaped cuts made along the length of its wings, it being fastened by means of corresponding cover bodies fastened to said flanges.

[0024] This gives rise to an anti-intrusion fencing, which, according to two practical embodiment variations, is erected in a quick, rapid and simple way at a low economic cost, which is also highly reliable.

[0025] Moreover, the interlinked wire meshes forming the anti-intrusion fencing have a sensor which may or may not be connected when mounting the same, in such a way that if it is connected it generates an alarm upon cutting or vandalism impact being detected, with the advantage that said provision of evidence cannot be detected, meaning an intruder could not detect it by examining the same.

[0026] In order to complement the description that follows and with the aim of facilitating a better understanding of the invention characteristics, the present descriptive specification is accompanied by a set of plans, the figures contained therein providing a non-limiting example of the invention's most characteristic details.

BRIEF DESCRIPTION OF THE DRAWINGS

[0027]

Figure 1 is a front view of an electrically welded wire mesh, wherein, at least, one tube with an electric conductor wire inside it has been concealed, in such a way that it blends in amongst the wires.

Figure 2 is a side view of a first practical embodiment, wherein the electrically welded wire mesh is flat.

Figure 3 is a side view of an alternative practical embodiment, wherein the electrically welded wire mesh, in a horizontal position, has a series of "V" shaped protrusions which provide rigidity.

Figure 4 represents a stretch of fencing, it being possible to observe how the wire meshes are between corresponding posts anchored to the ground.

Figure 5 is a side elevation of a practical embodiment wherein it is possible to observe how the mesh is between the profile forming the post and the cover body which fastens it.

Figure 6 represents the development of a sheet from which an anchoring post is created for the wire meshes, it being possible to observe the double lines.

Figure 7 is a side elevation view of the formation of

a post, according to the development of the previous sheet.

Figure 8 represents the development of a sheet from which a post is formed, according to an alternative practical embodiment, in which it is possible to observe a series of cuts along the length of both sides. Figure 9 is a side view of a post, according to the second practical embodiment of the previous figure, it being possible to observe the series of cuts made along the length of both sides with a general "V" shaped configuration.

Figure 10 is a section view of a post and the cover body which is fastened onto the flanges with the interposition of the interlinked wire meshes.

DESCRIPTION OF A PREFERRED EMBODIMENT

[0028] In view of the figures mentioned above and in accordance with the numbering adopted, it is possible to observe how the anti-intrusion fencing (1) is formed by: a plurality of interlinked wire meshes (2), which incorporate, at least, a tubular element (3), in horizontal position, with a conductor wire (4) inside, the tubular element (3) being concealed amongst the actual wires, a plurality of posts (5) with a "U" shaped profile with divergent wings ending in respective flanges (6) towards the outside and a plurality of cover bodies (7) closing over the flanges (6) of the profiles forming the plurality of posts (5) on which the plurality of wire meshes (2) converge, in order to be fastened.

[0029] The profiles which define the plurality of posts (4) are obtained from a laminar sheet.

[0030] In this way, the plurality of electrically welded wire meshes (2) with the incorporation of, at least, one tubular element (3) with a conductor wire (4) inside it, concealed in the wire framework, is not contained within a perimeter frame.

[0031] Furthermore, since the conductor wire (4) is inside the corresponding tubular element (3), like a wire, it cannot be detected, making it impossible to know where it is just by looking or even know that the fencing has a sensor element, i.e. the connected conductor wire (4), in such a way that in the event of an intruder cuts the wire mesh (2) with the sensor element to access the restricted zone, it will be detected and the corresponding warning will be sent.

[0032] The wire meshes (2) are also manufactured with the tubular element (3) already incorporated with the conductor wire (4) and when erecting the fencing (1) the conductor wires (4) are either connected or not, as the client so wishes.

[0033] Therefore, it contributes the significant advantage of the conductor wire housed in the tubular element (3) like a wire not being detectable. When intruders attempt to enter by cutting the wire mesh (2) it is not possible to detect the location of the conductor wire or even detect that it exists, in such a way that, upon intrusion, the conductor wire arranged in a strategic place is cut,

which generates an alarm, which in turn makes it possible to know at which point the cut was made.

[0034] When mounting the fencing (1), according to the first practical embodiment, the sides of the wire meshes (2) converge on respective posts, being located on the flanges (5) and being fastened by means of the corresponding cover body screwed through the inside of the area to be protected and not being accessible from the outside.

[0035] Moreover, in a second practical embodiment of the invention, in the plurality of wire meshes (2) with a series of "V" shaped protrusions (8) that provide rigidity at different height, these protrusions (8) correspond to respective general "V" shaped cuts (9) made along the length of both wings and flanges (6) of the profile forming the posts (5).

[0036] Therefore, according to this second practical embodiment, when erecting the fencing (1) the sides of the wire meshes (2) converge on respective posts (5), where respective "V" shaped protrusions (8) of the wire meshes (2), which provide rigidity, coincide with the series of cuts (9), in general "V" shaped cuts, made along the length of both wings and flanges (6) wings and flanges (6).

[0037] In this way, the sides of the interlinked wire meshes (2) are located on the flanges (6) on which the divergent wings of the general "U" shaped profiles end, which form the plurality of posts (5), and are fastened by corresponding cover body (7) means fixed to said flanges (6).

[0038] This gives rise to an anti-intrusion fencing (1), according to two alternative practical embodiments, which is erected quickly, simply and at low economic cost and is also highly reliable. In addition:

- the interlinked wire meshes (2) that form it have a pre-sensor which may or may not be connected in the mounting thereof and
- the sensor element is concealed in the wire framework, it being impossible to know where it is located or even that it exists just by looking.

[0039] Finally, it can be pointed out that, naturally, the alarm system is based in a control centre, supported on a PC, which manages a number of analyzers or control boxes mounted along the length of the fencing, thereby making it possible to know about any cut which may have occurred and the place it was made and act immediately. The energy required by the intrusion alarm system may be obtained by means of photovoltaic cells.

Claims

1. Anti-intrusion fencing, that can be erected especially for use as protection for sites where there is traffic and long routes which require a certain level of security, the fencing being based on a plurality of posts

anchored to the ground, between which wire meshes are arranged with the aim of being able to detect any attempt to gain access by means of cutting the wire mesh rapidly, safely and reliably, **characterized in that** the anti-intrusion fencing (1) is formed by:

- a plurality of interlinked wire meshes (2) which incorporate, at least, a tubular element (3) in horizontal position, with a conductor wire (4) inside it, concealed amongst the actual wires,
- a plurality of posts (5) defined by a "U" shaped section profile of divergent wings ending in respective flanges (6) towards the outside and,
- a plurality of cover bodies (7) closing over the flanges (6) of the profiles forming the plurality of posts (5) on which the plurality of wire meshes (2) converge in order to be fastened.

2. Anti-intrusion fencing, according to claim 1, **characterized in that** the plurality of interlinked wire meshes (2) with, at least, one tubular element (3) with a conductor wire (4) inside it has a series of "V" shaped protrusions (8), which provide rigidity and differ in height.
3. Anti-intrusion fencing, according to claim 1, **characterized in that** the plurality of posts (5) defined by a "U" section profile of divergent wings ending in respective flanges (6) towards the outside along the length of the same has a series of generally "V" shaped cuts (9).
4. Anti-intrusion fencing, according to claim 1, **characterized in that** the sides of the wire meshes (2) converge on respective posts (5) on the flanges (6) being anchored by a cover body (7) put on top.
5. Anti-intrusion fencing according to claims 1, 2 and 3, **characterized in that** the sides of the wire meshes (2) with a series of "V" shaped protrusions (8) that provide rigidity converge on respective posts (5) coinciding with the series of generally "V" shaped cuts (9) made along the length of both wings and flanges (6) of the general "U" shaped section profile of divergent wings forming the same and with a cover body (7) put on top.

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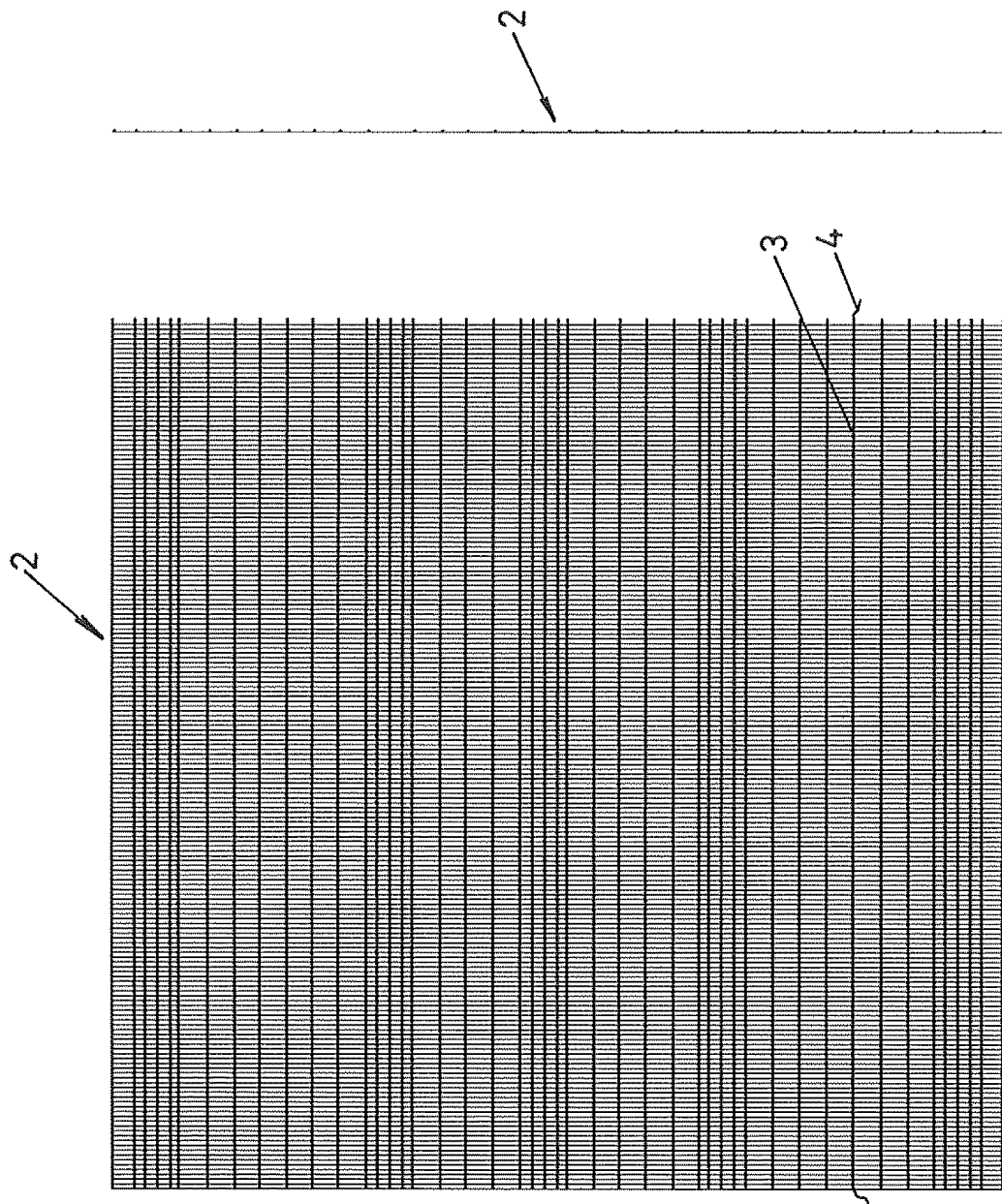


Fig. 2

Fig. 1

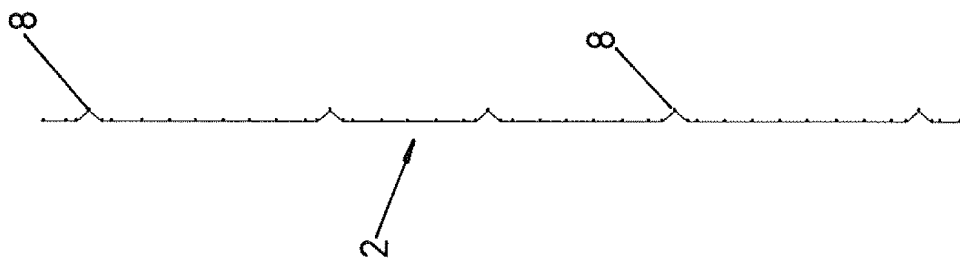


Fig. 3

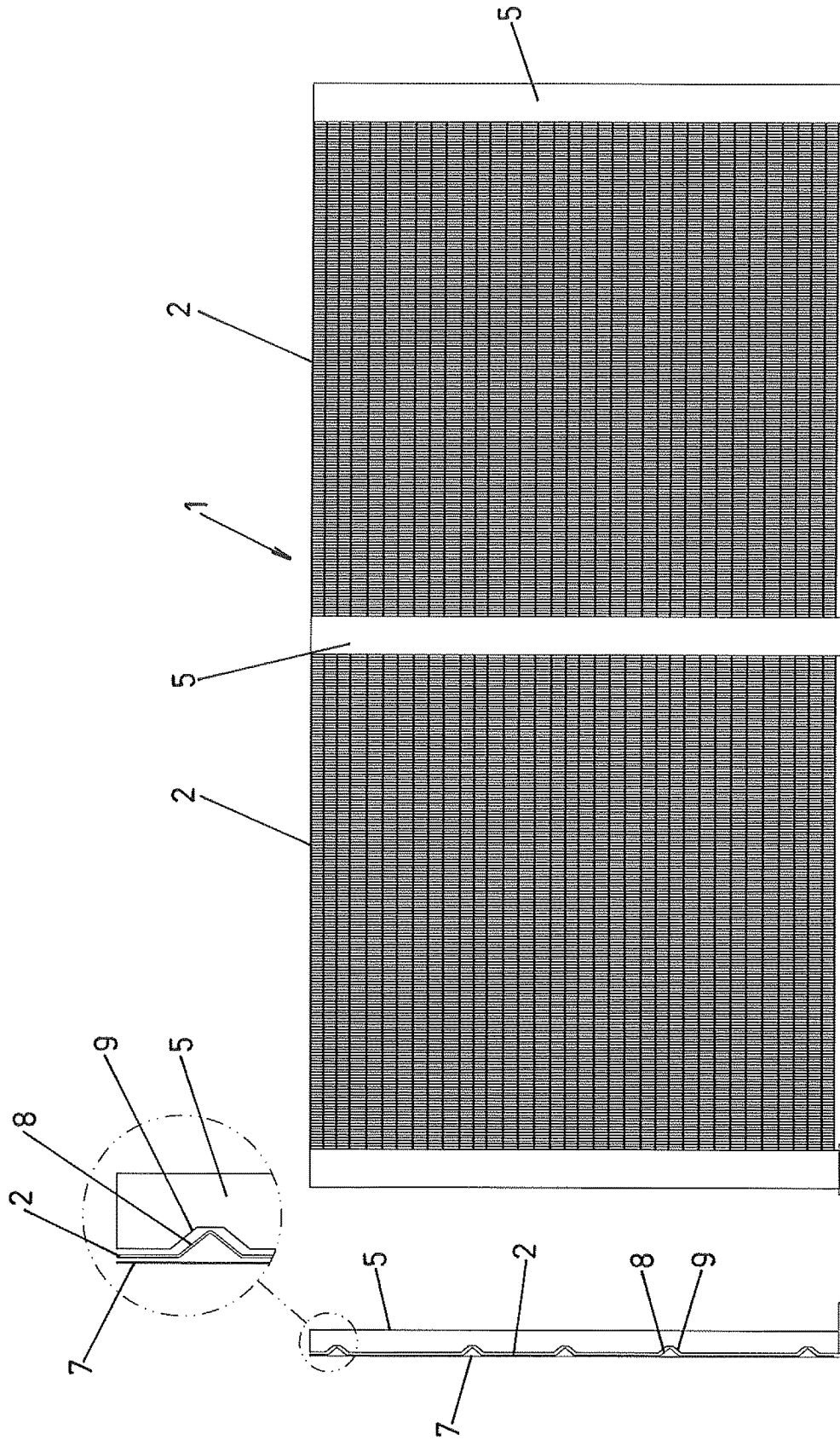


Fig. 4

Fig. 5

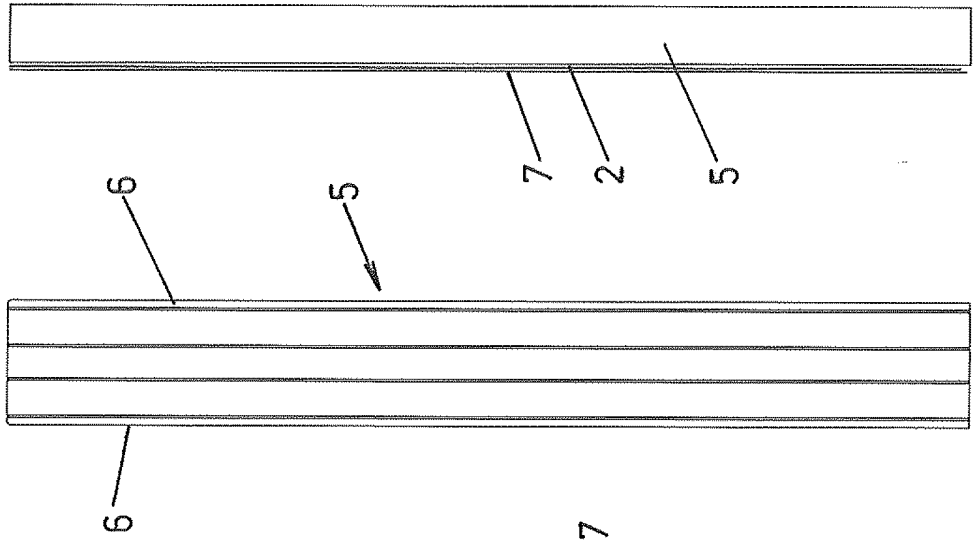


Fig. 7

Fig. 6

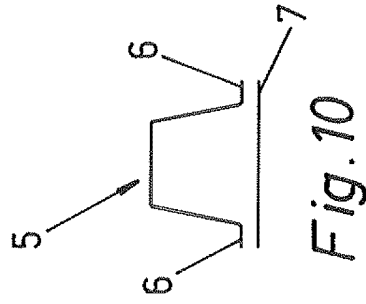


Fig. 10

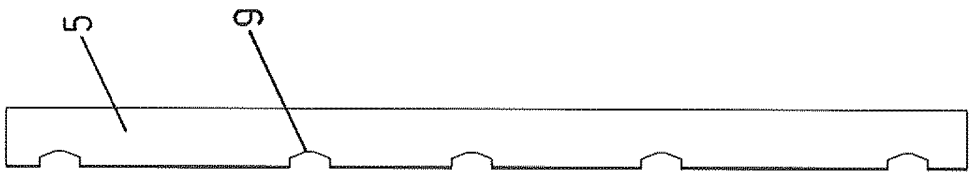


Fig. 9

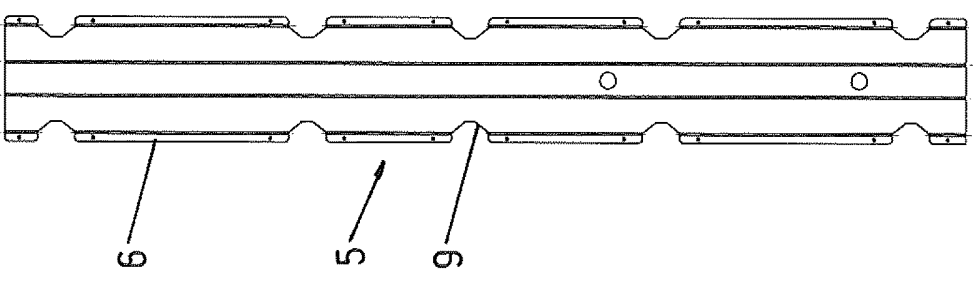


Fig. 8

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES2012/070272

A. CLASSIFICATION OF SUBJECT MATTER

E04H17/04 (2006.01)**G08B13/12** (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

E04H, G08B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, INVENES

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	ES 2358688 T3 (TRAFILERIA E ZINCHERIA CAVATORTA S P A) 12/05/2011, page 2, lines 2 - 19; page 3, lines 17 - 24; lines 45 - 58; figures.	1-5
Y	GB 2311156 A (PELOE ANTHONY WALTER) 17/09/1997, page 1, line 9 - page 2, line 8; figure 1.	1-5
Y	ES 2027444 T3 (HÄBERLE, L) 01/06/1992, column 1, lines 44 - 50; column 2, line 63 - column 3, line 14; column 4, lines 13 - 25; figures.	1-5
Y	GB 1278646 A (SHORROCK DEV) 21/06/1972, page 1, lines 21 - 27; lines 68 - 81.	1-5

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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Date of the actual completion of the international search
18/06/2012Date of mailing of the international search report
(25/06/2012)

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES2012/070272

C (continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of documents, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	FR 2785635 A1 (GANTOIS ETS) 12/05/2000, figures 1 - 2.	1-5

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Information on patent family members

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REFERENCES CITED IN THE DESCRIPTION

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