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(71) Applicant (for all designated States except US): **UPM-KYMMENE CORPORATION** [FI/FI]; Eteläesplanadi 2, FI-00130 Helsinki (FI).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **LEHTINEN, Liisa** [FI/FI]; Mustamäenkatu 22 B 6, FI-15610 Lahti (FI).
KINNUNEN, Ari [FI/FI]; Okeroistentie 35, FI-15800

Lahti (FI). **KOKKONEN, Ville** [FI/FI]; Laiivanvarustajankatu 1 D 30, FI-00140 Helsinki (FI). **PUOMIO, Matti** [FI/FI]; Hiihtomäentie 38 A 7, FI-00800 Helsinki (FI).

(74) Agent: **PAPULA OY**; Mechelininkatu 1 a, FI-00180 Helsinki (FI).

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(54) Title: DECORATION ELEMENT AND METHOD FOR MANUFACTURING SAME

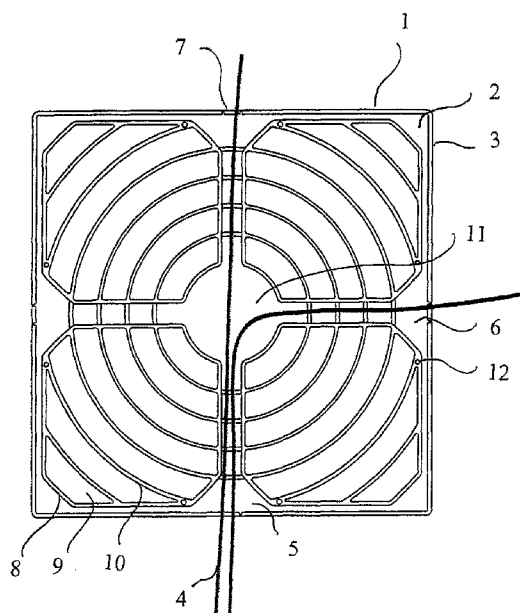


Fig. 1

(57) Abstract: The invention relates to a decoration element (1) comprising a top surface, a base surface (2) and an edge part (3) extending in the direction of height of the element, and to a method for manufacturing it. According to the invention, at least one groove (5,6) for drawing a cable is provided for a cable (4) on the base surface (2) of the decoration element, substantially in the longitudinal and/or cross direction of the element, the groove (5,6) for drawing a cable being arranged to extend through the entire base surface (2), and the decoration element is formed from composite material which includes fibre based and plastic based substances. In addition, the invention relates to the use of the decoration element as a wall, floor and/or ceiling element in interior and/or exterior applications.



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DECORATION ELEMENT AND METHOD FOR MANUFACTURING SAME**FIELD OF THE INVENTION**

5 The invention relates to the decoration element as defined in the preamble of claim 1, to the method for manufacturing the decoration element as defined in the preamble of claim 13, and to the use as defined in claim 19.

10 BACKGROUND OF THE INVENTION

Known from the prior art are different floor, ceiling and wall materials for both interior and exterior use. There exist e.g. wooden, ceramic, stony,
15 and plastic surface materials and those formed from a composite for use as floor, ceiling and wall surfaces. The known surface materials may be used, depending on the material, in interior or exterior locations, e.g. in residential and public spaces, sanitary facilities,
20 balconies, terraces or equivalent places.

The surfaces formed from the known surface materials are mainly so-called fixed solutions in which the surface material is substantially fastened to a base. In addition, there exist different
25 mountable and dismountable solutions especially for forming floor surfaces e.g. in exhibition stands, balconies and terraces.

The purpose of most known surface materials is only to mask the floor or wall surfaces. However,
30 e.g. in homes, workplaces and public spaces there are nowadays many different cables and lines which would need to be hidden or at least gotten out of sight. Conventionally, the cables and lines are provided in separate cable casings which are located on top of the
35 surface materials.

OBJECTIVE OF THE INVENTION

The objective of the invention is to eliminate the drawbacks referred to above and to disclose a new decoration element which, in addition to the surface material properties, has a well-defined operational function. Another objective of the invention is to disclose a method for manufacturing the decoration element and the use of the decoration element.

SUMMARY OF THE INVENTION

The decoration element, the method for manufacturing it and the use according to the invention are characterized by what has been presented in the claims.

The invention is based on a decoration element comprising a top surface which is preferably a visible surface, a base surface and an edge part extending in the direction of height of the element. The decoration element may be slab-type, elongated and/or two- or three-dimensional or of other shape, depending on the purpose of use. According to the invention, at least one groove for drawing a cable is provided for a cable on the base surface of the decoration element substantially in the longitudinal and/or cross direction of the element, the groove for drawing a cable being arranged to extend through the entire base surface, and the decoration element is formed as a single piece, completely from one composite material which includes fibre based and plastic based substances.

In this connection, by a groove for drawing a cable is meant a groove or the like in which a cable can be located to extend under the decoration element, e.g. under the floor or behind a ceiling or wall

surface. In this connection, by a cable is meant any cable, line, hose, pipe or the like, e.g. an electric cable, water pipe, audio line, optical cable, heating cable, plastic tube or the like. Besides accommodating
5 a cable, the groove for drawing a cable may also be used for other suitable purpose of use.

Preferably, the edge part is provided as a single and preferably even edge part around the entire area of the decoration element, forming an edge which
10 extends in the direction of height of the element, and the edge part is provided to be equally high as the height of the element. In a preferred embodiment, the diameter, i.e. thickness, of the edge part is 1 to 10mm.

15 In one embodiment, the top surface of the decoration element is substantially even.

In one embodiment of the invention, at least one groove for drawing a cable is provided on the base surface of the decoration element in the longitudinal
20 direction of the element. In one embodiment of the invention, at least one groove for drawing a cable is provided on the base surface of the decoration element in the cross direction of the element.

In one embodiment, a groove for drawing a
25 cable is provided substantially in the middle of the base surface of the decoration element. In one embodiment, a groove for drawing a cable is provided substantially on the edge zone of the base surface of the decoration element.

30 In one embodiment of the invention, two grooves for drawing a cable are provided crosswise on the base surface of the decoration element, substantially in the middle of the base surface, so that the first groove for drawing a cable is provided
35 in the longitudinal direction of the element and the second groove for drawing a cable is provided in the

cross direction of the element, and that the first and the second groove for drawing a cable intersect at the centre of the decoration element.

In one embodiment of the invention, a demountable part for a cable is provided on the edge part extending in the direction of height of the element, at the groove for drawing a cable located on the base surface. Preferably, the edge part comprises two demountable parts per each groove for drawing a cable, at a first end of the groove on the edge part and at a second end of the groove on the edge part. In one embodiment, the demountable part can be demounted and removed. In one embodiment, the demountable part can be demounted and fastened again. In one embodiment, the demountable part can be replaced with a separate patch part.

In one embodiment of the invention, a pattern is provided on the base surface, i.e. the base surface is shaped to form a pattern, the pattern comprising grooves and ridges, and the ridges are provided at a distance from each other and grooves are provided between the ridges according to a predetermined pattern. In this connection, by a groove is meant a groove belonging to the pattern, not a groove for drawing a cable. The pattern is provided so as to act as a supporting structure for the decoration element. On the other hand, forming a pattern lightens the decoration element compared with a substantially solid and compact structure of the element, except for the grooves for drawing a cable. Preferably, the pattern is provided on the base surface of the decoration element so that at least one groove for drawing a cable is provided on the base surface at the base of the element to convey the cable under the element.

In one embodiment of the invention, the base surface comprises at least two patterns, between which

a groove for drawing a cable is provided. Preferably, the patterns are similar patterns which may also be mirror images of each other. In one embodiment, the base surface comprises four substantially similar patterns which are provided on each corner so that two grooves for drawing a cable are provided crosswise in the middle of the base surface in the longitudinal and cross direction of the element.

In one embodiment of the invention, the groove for drawing a cable is arranged to extend substantially next to the pattern on the base surface.

In one embodiment of the invention, not more than the height of the edge part extending in the direction of height, i.e. preferably not more than the height of the decoration element, is provided as the height of the pattern on the base surface. In one embodiment, the height of the decoration element is 5 to 50mm and in one embodiment it is 20 to 30mm.

In one embodiment of the invention, a removable part which may e.g. be drilled out is provided in the middle of the base surface to provide an opening, the diameter of which may be 1 to 150mm, in the decoration element. In one embodiment, the opening is substantially circular. In one embodiment, this demountable part is dimensioned so that the opening which is formed in the decoration element matches with a part that is to be installed in it. This part may be e.g. a sleeve which may be used e.g. in structures of exhibition stands, or a bar or cable which has a predetermined diameter, or a standard-dimensioned foot of a table or parasol. In one embodiment, an alignment mark may be provided in the middle of the demountable/removable part, e.g. to align the bit of a drill in the correct place. The alignment mark may be formed by a selected manufacturing technique. In one preferred embodiment, a cable

provided under or behind the decoration element in a groove for drawing a cable may be brought out from the underside of the element through an opening formed on its upper side. Preferably, in connection with the
5 formation of the opening, the supporting structures of the base surface are in an important position.

In one embodiment of the invention, a fastening site is provided on the base surface of the decoration element, preferably on the surface of a
10 predetermined ridge in the pattern formed on the base surface, e.g. in the form of a hole, for rubber feet or equivalent materials intended for the balancing of the element, attenuation of sound and/or improvement of the acoustics.

15 Preferably, the decoration element is formed from composite material. Preferably, the composite material is formed from raw stocks which include mainly fibre based, e.g. paper based, material and plastic based material. The composite material is
20 formed from one or more raw stocks or raw stock materials. The raw stock or raw stock material may include any fibre based, e.g. wood fibre based or other fibre based, and/or plastic based substances. In addition, the composite material may include other
25 substances, e.g. additives and/or additional plastic to ameliorate the properties or processability of the composite material. In one embodiment, the composite material includes glue matter which preferably comes from the raw stocks of the composite material.

30 In one embodiment, the raw stock includes fibre based material which substantially consists of lignin free fibres. In a preferred embodiment, the fibre based material includes lignin free fibres in an amount of more than 50 w-% of the material.

35 In one embodiment, the composite material is formed at least partially from recycling material.

In one embodiment, the composite material is formed at least partially from adhesive laminate, in one preferred embodiment from adhesive laminate waste. In one embodiment, the composite material is formed
5 mainly from adhesive laminate waste. In one embodiment, the adhesive laminate waste is formed from adhesive material onto which a layer of glue matter has been provided, and fitted onto the layer of glue matter as a protective sheet is release material that can be easily
10 released at the application site. In one preferred embodiment, the adhesive material and/or release material includes a wood fibre based component and/or a plastic or polymer based or other organic component. Also, the use of different inorganic materials is
15 possible. In one embodiment, the adhesive and/or release material is wood fibre based paper, paperboard or the like, which is preferably lignin free material. In one embodiment, the wood fibre based paper, paperboard or the like includes or is treated with
20 plastic or polymer based material. In one embodiment, the adhesive and/or release material may be formed from substantially plastic or polymer based material. In one embodiment, the release material includes a silicone based component. The release material is preferably
25 siliconized.

In one embodiment, finished adhesive laminate products, waste material from them and/or from their manufacture may be used in the manufacture of the wood-plastic composite. In addition, reject material from
30 production and recycling material from the upgrading step or end use applications may be used. In one embodiment, the adhesive laminate waste comes from adhesive laminate production which produces mainly production reject waste, edge trimming waste cut off
35 from rolls, and roll ends; from the adhesive laminate printing plant which produces mainly roll ends and

adhesive material left over from die-cutting of stickers and labels as well as reject waste; and/or from the adhesive laminate end user customer who pastes the printed stickers and labels or the like on products. The waste coming from the end user is mainly release material, roll ends and waste from the finished product.

In one embodiment, at least one additive is fed to the composite material in connection with its manufacture. E.g. a colouring agent, lubricant, fire retardant, adhesion promoter, anti-mildew compound, antioxidant and uv-stabilizer may be used as additives. Fibrous materials, organic fillers, inorganic fillers, powdery reinforcements, powdery additives, talc, wood fibres, chemical pulp fibres, paper and their combinations may preferably be added to the composite material as the additive.

In one embodiment, additional plastic is fed to the composite material in connection with its manufacture. Virgin or recycling plastic may be used as the additional plastic. The composite material may be manufactured with or without additional plastic. In one embodiment, e.g. polyolefin, polypropylene, polyethylene (HDPE, LDPE) or other suitable plastic or their mixture is added to the adhesive laminate waste material as the additional plastic to manufacture the wood composite material.

In one embodiment, the decoration element is substantially slab-type. The slab-type decoration element, i.e. a decoration slab, may be shaped as e.g. a square, rectangle, elongated parallelogram or the like. In one preferred embodiment, the size of the slabs ranges from 10 to 80cm x 10 to 80cm.

The decoration element may be of any size, depending on the purpose of use. The decoration element as specified herein may be one single

decoration element or a subelement, in which case a complete decoration element is formed from at least two subelements. The decoration element may be of any colour. A desired pattern may be provided on the surface of the decoration element. The pattern may be formed in connection with injection moulding of the decoration element or e.g. separately by punching. A complete pattern may be provided on the surface of the decoration element, or a subpattern, in which case the surface pattern on a surface provided from many decoration elements is formed as a combination of many elements. The surface of the decoration element is provided smooth or coarse, depending on the application.

The decoration elements may be assembled to form an ensemble or surface of a desired size. Decoration elements of equal sizes and/or different sizes may be composed in different manners, e.g. side by side, staggeredly and/or one after the other or in other desired or predetermined manner.

The decoration element according to the invention can preferably be machined, e.g. sawed up and drilled, by conventional machining means.

In one embodiment of the invention, the decoration element according to the invention can be used as wall, floor and/or ceiling element in both interior and exterior applications. The decoration element may be used as a floor, wall and ceiling surface in interior spaces e.g. residential spaces, public spaces or industrial spaces, and exterior spaces e.g. façades, covers or the like. Furthermore, the decoration element may be used as terrace, patio and balcony floor or the like. In addition, the decoration element may be used as a lining or coating material and product in different applications. In

addition, the decoration element may be used in exhibition stands e.g. as floor and wall material.

The decoration element according to the invention may be used as a mountable and dismountable structure or fixed structure which may be e.g. fastened to a base. Preferably, no separate substructures are needed under the surface to be assembled by the decoration elements, but it can be assembled directly on the base.

In addition, the invention is based on a method for manufacturing a decoration element wherein the decoration element is formed from raw stock, and the raw stock is shaped into a desired shape to form the decoration element by a forming method based on heat and pressure, so that the decoration element comprises a top surface, a base surface and an edge part extending in the direction of height of the element. According to the invention, the decoration element is formed as one piece, completely from one composite material which includes fibre based and plastic based substances, and at least one groove for drawing a cable is provided for a cable on the base surface of the decoration element, substantially in the longitudinal and/or cross direction of the element, and the groove for drawing a cable is arranged to extend through the entire base surface.

In one embodiment of the invention, the decoration element is formed by any manufacturing method, based on heat and pressure, known per se which may be selected from the group of injection moulding method, pressing method, compression moulding method and their combinations or an equivalent method. Preferably, a mould is used to aid in the manufacture of the decoration element according to the invention. In this case, for example the patterns, designs, fastening sites and/or the like provided on the top

surface and/or base surface of the decoration element have been formed in the mould, so that they are copied on the decoration elements during injection moulding. In one embodiment, the designs or different fastening sites provided on the decoration elements, particularly on the top surface, or the demountable parts e.g. on the base surface may be formed at a later phase, i.e. not e.g. in connection with injection moulding. The manufacturing method may comprise a preprocessing step to process the raw stocks. E.g. a mixing step, agglomerate forming step, granulation step, their combination or the like may be used as the preprocessing step.

Preferably, the decoration element is formed without a finishing.

The decoration element and the manufacture and use according to the invention have many important advantages compared with the prior art.

Thanks to the invention, a decoration element under which different cables or the like can be easily hidden is provided. Cables can be easily drawn under or behind the decoration element according to the invention on floor, wall and ceiling surfaces. In addition, the cables can be easily lifted to the upper side the decoration element structure at a desired point.

The decoration elements according to the invention do not comprise fasteners or projections on their surface or the edge parts to spoil their appearance.

The decoration elements according to the invention are easy to use at home as well as in public spaces as both dismountable and fixed structures.

The decoration element according to the invention need not be finished, e.g. brushed or polished, in connection with the manufacture. In this

way, modification, e.g. opening, of the surface of the element, which weakens the protective effect of the additives, is avoided. The surface is not finished in the decoration element according to the invention so as to remain solid. Without the finishing, bright colours can be preserved in the decoration element. In addition, the decoration elements according to the invention can be easily cleaned.

An industrially applicable decoration element for many purposes in both interior and exterior use is easily achieved by the invention.

LIST OF FIGURES

Fig. 1 presents one decoration element according to the invention as depicted from the lower surface, wherein a cable is arranged to extend through the base surface of the decoration element, and

Fig. 2 presents one solution according to the invention as depicted from the lower surface, wherein a cable is arranged to extend through the base surface of more than one decoration element.

DETAILED DESCRIPTION OF THE INVENTION

In the following, the invention will be described using a detailed example of its embodiments with reference to the accompanying drawings.

Example 1

Decoration slabs (1) according to the invention, presented in Fig. 1, were formed by injection moulding technique from wood composite material which was mainly formed from adhesive laminate waste.

The raw stock, i.e. adhesive laminate waste, was chopped and led jointly with other raw stocks and/or additives to a preprocessing device. The

mixture obtained from the preprocessing device in the form of agglomerates was led to an injection moulding device. It was also possible to feed the desired additives and additional plastic to the injection
5 moulding device. In the injection moulding device, slab-type decoration slabs (1) were manufactured from the raw materials by heat and pressure. Manufacture of the decoration slabs (1) took place by feeding the preprocessed mixture material into moulds which were
10 formed such that the decoration slabs formed therein fulfilled the predetermined criteria and the desired shapes and patterns were formed on the decoration slabs at the same time.

Decoration slabs (1) comprising a top
15 surface, a base surface (2) and an edge part (3) extending in the direction of height of the decoration slab were formed. The size of the decoration slabs (1) was 40 x 40cm, and their thickness, i.e. height, was 28mm. Curved patterns were provided on the top surface
20 of the decoration slabs (1).

On the base surface (2) of the decoration slabs a symmetric pattern (8) was provided consisting of four similar parts, each being provided substantially on the corner parts of the base surface
25 (2), so that crossing grooves (5,6) for drawing a cable were provided in the middle of the base surface between the patterns in the cross and longitudinal direction of the decoration slab. Each subpattern (8) comprised ridges (10) and grooves (9) according to a
30 predetermined model. The highest points of the ridges (10) did not exceed the height of the edge part (3) of the decoration slab. The ridges (10) were meant to be set against a base on which the decoration slabs could be placed. Two hole-type fastening sites (12) for
35 rubber feet were provided on the surface of the ridges (10) in each subpattern. In addition, a substantially

circular removable part (11), i.e. a place for an opening to be bored therein, was left in the middle of the base surface (2) of each decoration slab e.g. for lifting cables (4) from the underside of the
5 decoration slab to its upper side.

On the edge parts (3) of the decoration slabs, in the middle of each edge, by the groove (5,6) for drawing a cable, a demountable part (7) for drawing a cable (4) was provided.

10 In Fig. 1 is presented placement of the cable (4) in the grooves (5,6) for drawing a cable.

Example 2

Decoration slabs according to Fig. 1 and
15 Example 1 were manufactured and assembled to form a floor surface (Fig. 2).

In Fig. 2 is presented placement of the cables in the grooves for drawing a cable so that the cables extend through the base surface of more than
20 one decoration slab.

The decoration element according to the invention is suited in different embodiments for use as most different decoration, floor, wall, ceiling or
25 façade solutions in different applications.

The invention is not limited merely to the examples referred to above; instead, many variations are possible within the scope of the inventive idea defined by the claims.

CLAIMS

1. A decoration element (1) comprising a top surface, a base surface (2) and an edge part (3) extending in the direction of height of the element, characterized in that at least one groove (5,6) for drawing a cable is provided for a cable (4) on the base surface of the decoration element, substantially in the longitudinal and/or cross direction of the element, the groove (5,6) for drawing a cable being arranged to extend through the entire base surface (2), and the decoration element is formed from composite material which includes fibre based and plastic based substances.

2. The decoration element according to claim 1, characterized in that at least one groove (5) for drawing a cable is provided on the base surface (2) of the decoration element in the longitudinal direction of the element.

3. The decoration element according to claim 1 or 2, characterized in that at least one groove (6) for drawing a cable is provided on the base surface (2) of the decoration element in the cross direction of the element.

4. The decoration element according to any one of claims 1 to 3, characterized in that two grooves (5,6) for drawing a cable are provided crosswise on the base surface (2) of the decoration element, in the middle of the base surface (2), so that the first groove (5) for drawing a cable is provided in the longitudinal direction of the element and the second groove (6) for drawing a cable is provided in the cross direction of the element.

5. The decoration element according to any one of claims 1 to 4, characterized in that a demountable part (7) for a cable (4) is provided on the

edge part (3) extending in the direction of height of the decoration element, in alignment with the groove (5,6) for drawing a cable located on the base surface (2).

5 6. The decoration element according to any one of claims 1 to 5, characterized in that a pattern (8) comprising grooves (9) and ridges (10) is provided on the base surface (2) of the decoration element, and the ridges (10) are provided at a distance
10 from each other and grooves (9) are provided between the ridges according to a predetermined pattern (8).

 7. The decoration element according to any one of claims 1 to 6, characterized in that the base surface (2) of the decoration element comprises at
15 least two patterns (8) between which a groove (5,6) for drawing a cable is provided.

 8. The decoration element according to any one of claims 1 to 7, characterized in that a groove (5,6) for drawing a cable is arranged to extend
20 substantially adjacently to the pattern (8) on the base surface (2) of the decoration element.

 9. The decoration element according to any one of claims 1 to 8, characterized in that the height of the pattern (8) on the base surface (2) of
25 the decoration element does not exceed the height of the edge part (3) extending in the direction of height of the element.

 10. The decoration element according to any one of claims 1 to 9, characterized in that
30 a removable part (11) is provided substantially in the middle of the base surface (2) of the decoration element to have an opening on the decoration element.

 11. The decoration element according to any one of claims 1 to 10, characterized in that
35 a fastening site (12) is provided on the base surface

(2) of the decoration element for balancing and/or attenuation material.

12. The decoration element according to any one of claims 1 to 11, characterized in that
5 the decoration element (1) is formed from composite material which mainly consists of adhesive laminate waste.

13. A method for manufacturing a decoration element, wherein the decoration element is formed from
10 raw stock, and the raw stock is shaped in the desired shape to form the decoration element by a forming method based on heat and pressure, so that the decoration element comprises a top surface, a base surface and an edge part extending in the direction of
15 height of the element, characterized in that the decoration element is formed from composite material which includes fibre based and plastic based substances, and at least one groove for drawing a cable is provided for a cable on the base surface of the
20 decoration element, substantially in the longitudinal and/or cross direction of the element, the groove for drawing a cable being arranged to extend through the entire base surface.

14. The method according to claim 13,
25 characterized in that the decoration element is formed by a manufacturing method selected from the group of pressing, injection moulding, compression moulding and their combinations.

15. The method according to claim 13 or 14,
30 characterized in that a demountable part for a cable is formed on the edge part extending in the direction of height of the decoration element, in alignment with the groove for drawing a cable located on the base surface.

35 16. The method according to any one of claims 13 to 15, characterized in that a pattern

comprising grooves and ridges is formed on the base surface of the decoration element so that the ridges are provided at a distance from each other, and grooves are left between the ridges according to a
5 predetermined pattern.

17. The method according to any one of claims 13 to 16, characterized in that at least one fastening site is formed on the base surface of the decoration element for balancing and/or attenuation
10 material.

18. The method according to any one of claims 13 to 17, characterized in that the decoration element is formed from composite material which includes fibre based and plastic based
15 substances.

19. Use of the decoration element according to any one of claims 1 to 12, characterized in that the decoration element is used as a wall, floor and/or ceiling element.

20. The use according to claim 19, characterized in that the decoration element is used in interior and/or exterior applications.

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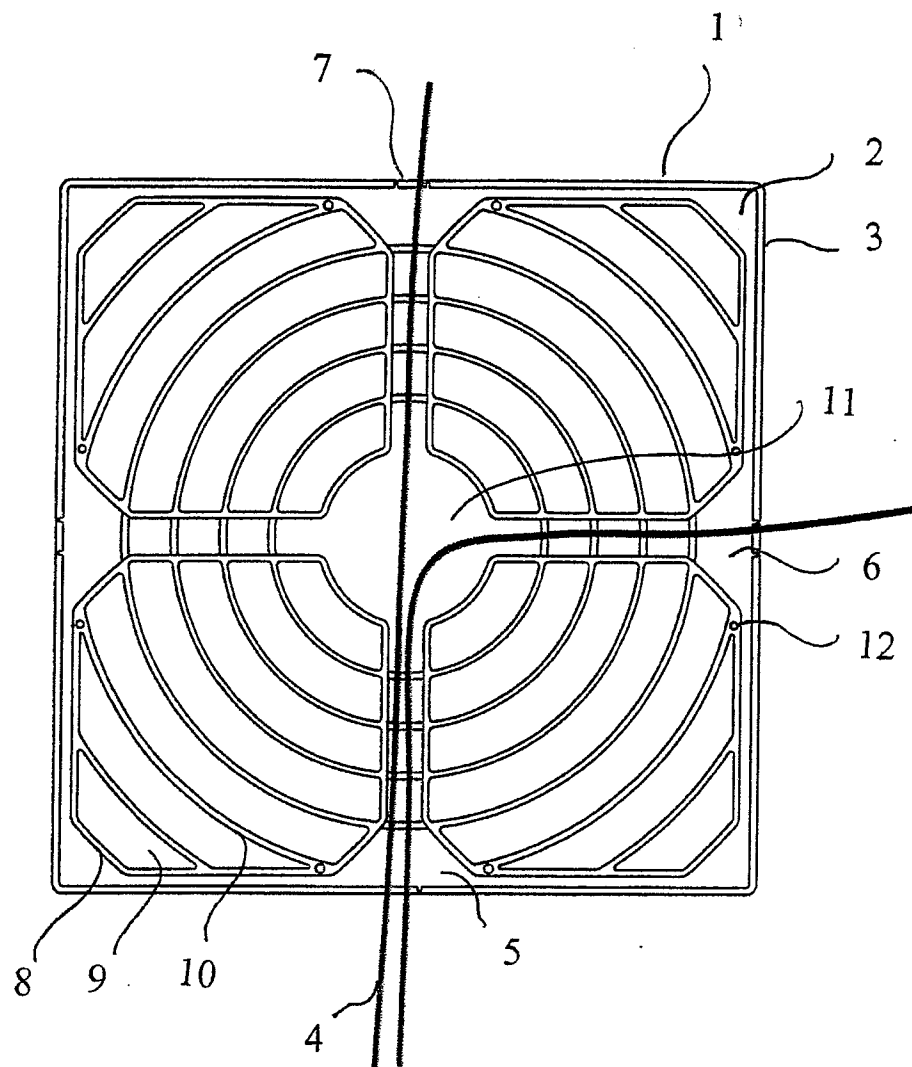


Fig. 1

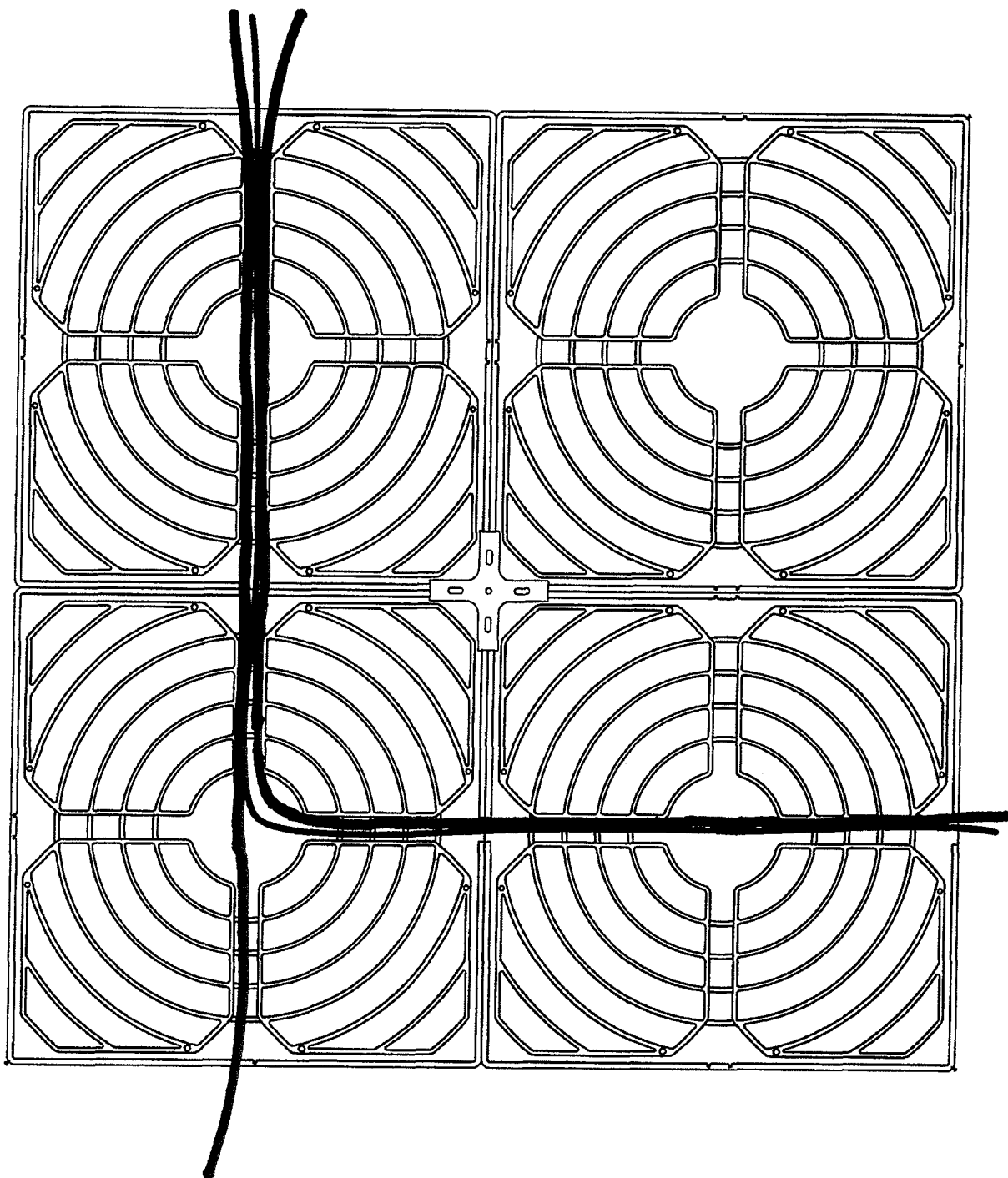


Fig. 2

INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI2010/050153

A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

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)

IPC: E04F, F24D, H02G

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

FI, SE, NO, DK

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

EPO-Internal, WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	DE 2432273 A1 (VOLLMANN & HOELLFRITSCH) 22 January 1976 (22.01.1976) page 7; figs 1 and 2	1-20
Y	WO 2008046955 A1 (UPM KYMMENE OYJ et al.) 24 April 2008 (24.04.2008) page 8, lines 30-33; page 10, line 31 – page 11, line 2	1-20
Y	GB 2248077 A (CHOI LEW MEW) 25 March 1992 (25.03.1992) page 7, lines 13-15 and 20-24; page 9, lines 11-14; figs 1-3	10
Y	US 2005246984 A1 (COLOSIMO SAM et al.) 10 November 2005 (10.11.2005) chapter [000018]; fig 2	11, 17

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

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

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Name and mailing address of the ISA/FI
National Board of Patents and Registration of Finland
P.O. Box 1160, FI-00101 HELSINKI, Finland

Facsimile No. +358 9 6939 5328

Authorized officer

Susanna Rajakoski

Telephone No. +358 9 6939 500

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