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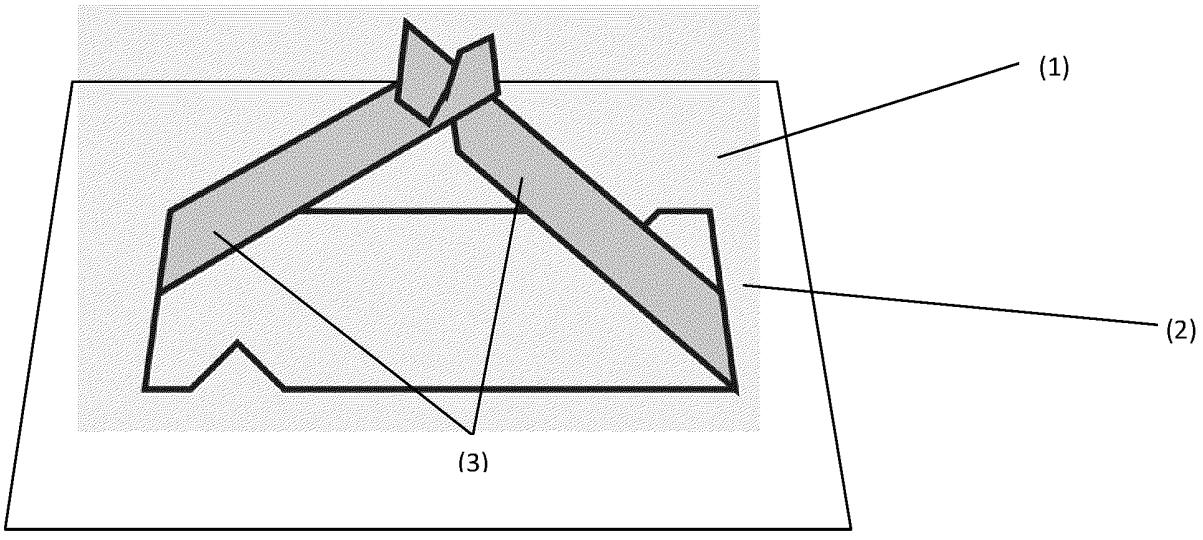
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(54) **CARDBOARD SHEET FOR PACKAGING**

(57) The present invention concerns a sheet of cardboard (1) for packaging which includes elements (2) which, when installed, each create three-dimensional structures suitable for giving softness to said packaging material. This sheet allows it to be transported by occupying a relatively modest volume, and then becomes a cardboard having three-dimensional structures suitable for the packaging when it is used.

Fig. 4



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Description

Technical Field

[0001] The present invention falls within the packaging sector, in particular, of materials suitable for making packaging and, even more particularly, of cardboard suitable for packaging.

State of the Art

[0002] In a world in which the buying and selling of goods via the Web is increasing considerably year after year, the packaging of goods appears to be an increasingly important and continually expanding practice, considering the large quantity of materials that are delivered to homes by the companies that sell them via the Web.

[0003] The materials that are most used to make packaging are cardboard, expanded polystyrene and their combinations, sometimes added with wood chips. A further material that is commonly used are the so-called "thousand bubbles", i.e. structures made of plastic material including a multiplicity of so-called bubbles of plastic material containing air which allow the impact of the package containing the packaged material to be cushioned.

[0004] As regards cardboard for packaging, cardboards made up of a plurality of layers of paper and/or with additional materials have been known for decades. Among the cartons made with only layers of paper, the cartons made from two parallel layers of more or less thin paper or cardboard interspersed with a layer of corrugated paper inside them which gives softness to the structure are well known. These cartons can also be arranged to create multilayers, increasing the protection they offer to the materials inside the packaging.

[0005] All the packaging systems listed above, such as cardboard with corrugated layers, thousand bubbles, polystyrene, etc. they suffer from the problem of taking up a lot of space and therefore their transport is particularly expensive.

[0006] This problem of size and therefore of transport is particularly felt today as part of the world population pays particular attention to sustainability or the reduction of energy dissipated in processes and the recycling of materials. Therefore, the fact of being able to transport, with the same means of transport used, for example the volume of trucks or containers, much larger quantities of packaging materials will turn out to be a process well aimed at sustainability.

[0007] Therefore, the packaging materials available today give rise to high transport costs and processes that are currently not very sustainable in terms of energy consumption used for their transport.

[0008] Patent document DE20112080U1 discloses a sheet of cardboard for packaging comprising elements suitable for providing three-dimensionality.

Summary of the invention

[0009] The problem addressed by the present invention is therefore that of providing an improved packaging material that allows the problems mentioned above to be solved with reference to the prior art.

[0010] In particular, the problem addressed by the present invention is to make available a packaging material with a reduced volume in order to reduce transport costs (for the same volume of medium, load many more packaging materials) and have therefore a more sustainable process.

[0011] These problems are solved by the sheet of cardboard (1) for packaging of the present invention, as outlined in the attached claims, the definitions of which are an integral part of the present description.

[0012] In particular, the invention has as its object a sheet of cardboard (1) for packaging which can be transported occupying a very modest volume, for example, even in reels, and which when installed, by means of three-dimensional structures present on of it, gives the necessary softness characteristics to packaging materials.

[0013] Another object is the process for the production of this sheet of cardbord (1) for packaging and the use of the same.

[0014] Further characteristics and advantages of the sheet of cardboard (1) for packaging will appear from the description of the examples of embodiment of the invention, provided as an indication of the invention.

Brief description of the figures

[0015] The series of Figures 1, 2, 3, 4 show the cardboard sheet (1) of the invention, in particular, in the first phase in which it is flat (fig. 1), in the lifting phase of the tongues (3) (fig. 2), and in the crossing and interlocking phase of the two tongues (3) to form a three-dimensional structure, in particular, to form an "x"-shaped structure when observed from above. Therefore Figs. 1, 2, 3, 4 are sequential figures of the procedure for creating the three-dimensional structure of the cardboard sheet (1) when it is in place.

Fig.1 shows a front perspective view of the cardboard sheet (1) which incorporates the features of the invention, in particular, the element (2), the two tongues (3), the two grooves (4) on the two tongues (3).

Fig. 2 and 3 show a front perspective view of the cardboard sheet (1) of the present invention showing the two tongues (3) raised with respect to the plane of the cardboard sheet (1) (Fig. 2) and where said tongues (3) are ready to be fitted according to the movement exemplified with the arrows (Fig. 3).

Fig. 4 shows a front perspective view of the cardboard sheet (1) of the present invention with the two tongues (3) fitted together by the crossing of the

respective grooves (4).

Fig. 5 shows a front perspective view of the cardboard sheet (1) of the present invention where a plurality of elements (2) are present. Fig. 6 shows a front perspective view of the cardboard sheet (1) of the present invention where the plurality of elements (2) are raised to form the three-dimensional structure.

Detailed description of the invention

[0016] As used herein, the terms "top", "bottom", "right", "left", "back", "front", "vertical", "horizontal" and their derivatives refer to the concepts oriented in Fig. 1.

[0017] However, it should be understood that the concepts can take various alternative orientations, unless expressly specified to the contrary.

[0018] As used herein, the term "and/or", when used in a list of two or more items, means that any of the listed items may be employed alone, or in any combination of two or more of the listed items.

[0019] For example, if a combination is described as containing components A, B and/or C, the combination may only contain A; B only; C only; A and B in combination; A and C in combination; B and C in combination; or A, B and C in combination.

[0020] The terms "comprises", "comprising" or any other variation thereof, are intended to cover a non-exclusive inclusion, such that an object, process or use comprising a list of elements does not include only those elements but may include other elements do not expressly listed or pertaining to such item, process or use.

[0021] An element followed by "comprises...a..." does not, without further constraints, prevent the existence of further identical elements in the object, process or use comprising the element.

[0022] Un object of the present invention is a sheet of cardboard (1) for packaging comprising at least one element (2) capable of providing three-dimensionality, wherein said element (2) consists of two tongues (3), wherein said two tongues (3) are side by side and opposite each other, and wherein said two tongues (3) each have a groove (4) arranged on the end and on the external side of said tongue (3).

[0023] It has in fact been surprisingly found that the creation of the aforementioned sheet allows the availability of packaging material which takes up very little space during transport, for example because it is arranged in reels, to then create packaging cartons through the three-dimensionality created by the lifting and interlocking the two tongues (3), using the respective grooves (4), so as to have a three-dimensional packaging cardboard, effective in protecting the goods contained in the packaging from impacts.

[0024] It has been found that the cardboard sheet (1) gives rise to greater sustainability in the packaging sector, in fact it has been found that the volume occupied by the cardboard sheet (1) of the present invention is from 3 to 6 times less than the volume of cartons transported.

[0025] By sheet of cardboard (1) we mean a sheet made of cardboard, cardboard or sturdy paper.

[0026] Preferably, the sheet of cardboard (1) comprises at least one further layer of cardboard arranged lower than the sheet of cardboard (1). More preferably, the two sheets of cardboard are interspersed with a layer of corrugated cardboard.

[0027] The cardboard sheet (1) can be overlapped and coupled with other cardboard in such a way as to increase the overall thickness of the packaging. This solution can create, depending on the item to be packaged, more or less resistant and thick packaging.

[0028] The two tongues (3) can have the same or different shape, preferably the two tongues (3) have the same shape, for example square, rectangular, etc.; more preferably the two tongues (3) have a rectangular shape.

[0029] When the element (2) is installed, the two tongues (2) are raised and are fitted together by the two grooves (4) to form a three-dimensional structure. By raised we mean that its tongues are raised above the plane of the cardboard sheet (1).

[0030] The three-dimensional structure formed by element (2) has the shape of an "X" when observed from above. That is, when the two tongues (3) are fitted together through the grooves (4).

[0031] The cardboard sheet (1) for packaging comprises at least one element (2) capable of providing three-dimensionality, however, preferably, the cardboard sheet (1) comprises a plurality of elements (2).

[0032] Even more preferably the plurality of elements (2) is one or more aligned series of elements (2).

[0033] Even more preferably, the entire surface of the cardboard sheet (1) can comprise elements (2). For example, an entire 1 m^2 sheet could include a plurality of elements (2).

[0034] By the end part of the tongue (3) we mean the part of the tongue (3) more distant from the point where the tongue (3) is joined with the cardboard sheet (1).

[0035] By external side of the tongue (3) we mean the side of the tongue oriented towards the outside of the element (2) or, in other words, the side of the tongue (3) which is not adjacent to the other tongue (3).

[0036] The two tongue (3) have grooves (4) which can have the same or different section. Preferably the two grooves (4) have the same section.

[0037] The two tongues (3) have grooves (4) which can have sections of different shapes, for example semicircular, rectangular, triangular, etc. Preferably the two grooves (4) have a triangular section.

[0038] More preferably the two grooves (4) have the same section, where said section is a triangular section.

[0039] The two tongues (3) are opposite each other, that is, they are fixed on opposite sides of the element (2). The fixing of the tongues (3) on the sheet of cardboard (1) allows the tongues (3) to be able to lift them with respect to the plane of the cardboard sheet (1) while remaining

fixed to said sheet on one side of the tongue (3).

[0040] The two tongues (3) are opposite each other. With this terminology it is also preferably meant that, when not in use, the terminal part of a tongue (3) is arranged parallel to the initial part of the other tongue (3), while the two tongues remain adjacent to each other.

[0041] According to a preferred aspect, the cardboard sheet (1) for packaging comprises at least one element (2), where said element (2) is the one exemplified in Fig. 1.

[0042] Furthermore, according to a preferred aspect the cardboard sheet (1) for packaging includes at least one element (2), where said element (2) is the one exemplified in Fig. 4 when in use.

[0043] According to a preferred aspect, the plurality of elements (2) is like that of figures 5, and/or figure 6 when in place.

[0044] An other object is a process for preparing a sheet of cardboard (1), comprising the following steps:

(a) providing a flat sheet of cardboard,
(b) die-cutting said flat sheet of cardboard so as to make the two tongues (3) with related grooves (4).

[0045] The die-cutting of step b) includes cutting the flat cardboard to generate the tongues (3) with the relative grooves (4).

[0046] The die-cutting can be carried out with a suitable machine by marking and cutting the cutting lines indicated to give the two tongues (3) with the grooves (4).

[0047] At the end of step b) the cardboard sheet (1) can optionally be rolled up to form reels. These reels will in fact be made mainly of cardboard and not of air.

[0048] Another object is a process for installing the cardboard sheet (1) comprising the following steps:

a1) lift the two tongues (3),
b1) cross the two tongues (3) so that the two grooves (4) can fit together.

[0049] Step b1) involves crossing the two tongues (3), or interpolating the two tongues (3) so that they fit through the grooves (4). This interpolation of the tongues can be achieved through mechanical processing.

[0050] Another object is a packaging board comprising a cardboard sheet (1) as described above.

[0051] Another object is a packaging container comprising at least one sheet of cardboard (1) as described above or a packaging cardboard as described above.

[0052] Said packaging container can be a box, a tube, etc., preferably the container is a box. The box can have different shapes, for example the box can have a parallelepiped, cubic, cylindrical or spherical shape. Preferably the box has the shape of a parallelepiped.

[0053] Another object is the use of at least one sheet of cardboard (1) as described above for the production of packaging cardboard and/or packaging containers.

[0054] All the components of the sheet of cardboard (1) are commercially available on any online commercial platform or in papermaking shops and, considering the figures reported here, their assembly does not require further inventive efforts.

[0055] It will be possible to understand the innovativeness of the cardboard sheet for packaging of the present invention which during transport is two-dimensional while during use it has a three-dimensional structure. This is achieved through element (2) which changes from two-dimensional to three-dimensional.

Claims

1. Sheet of cardboard (1) for packaging comprising at least one element (2) capable of providing three-dimensionality, wherein said element (2) consists of two tongues (3), wherein said two tongues (3) are side by side and opposite each other, and wherein said two tongues (3) each have a groove (4) arranged on the end and on the external side of said tongue (3).

2. Sheet of cardboard (1) according to claim 1, comprising at least one further layer of cardboard arranged lower than to the sheet of cardboard (1).

3. Sheet of cardboard (1) according to any one of claims 1 to 2, wherein the two tongues (3) have a rectangular shape.

4. Sheet of cardboard (1) according to any one of claims 1 to 3, wherein, when the element (2) is placed in place, the two tongues (2) are raised and are interlocked with each other by means of the two grooves (4) to form a three-dimensional structure.

5. Sheet of cardboard (1) according to claim 4, wherein the three-dimensional structure formed by the element (2) has the shape of an "X" when observed from above.

6. Sheet of cardboard (1) according to any one of claims 1 to 5, comprising a plurality of elements (2).

7. Process for preparing a sheet of cardboard (1) according to any one of claims 1 to 6, comprising the following steps:

(a) providing a flat sheet of cardboard,
(b) die-cutting said flat sheet of cardboard so as to make the two tongues (3) with related grooves (4).

8. Packaging cardboard comprising a sheet of cardboard (1) according to any one of claims 1 to 6.

9. Packaging container comprising at least one sheet of

cardboard (1) according to any one of claims 1 to 6 or a packaging cardboard according to claim 8.

10. Use of at least one sheet of cardboard (1) according to any one of claims 1 to 6, for making packaging cardboard and/or packaging containers.

Fig.1

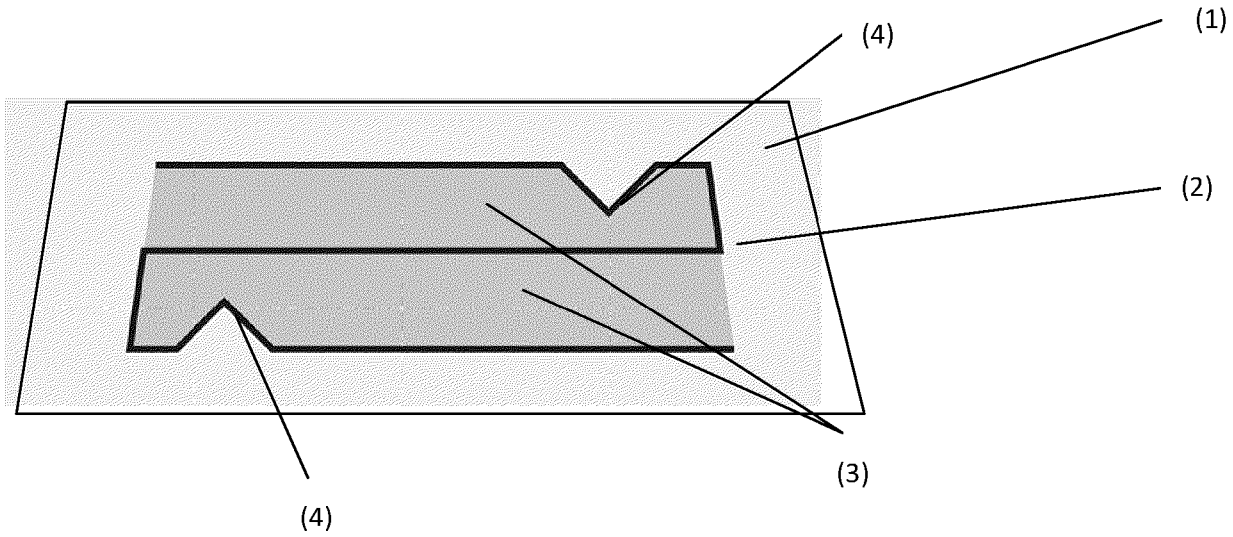


Fig. 2

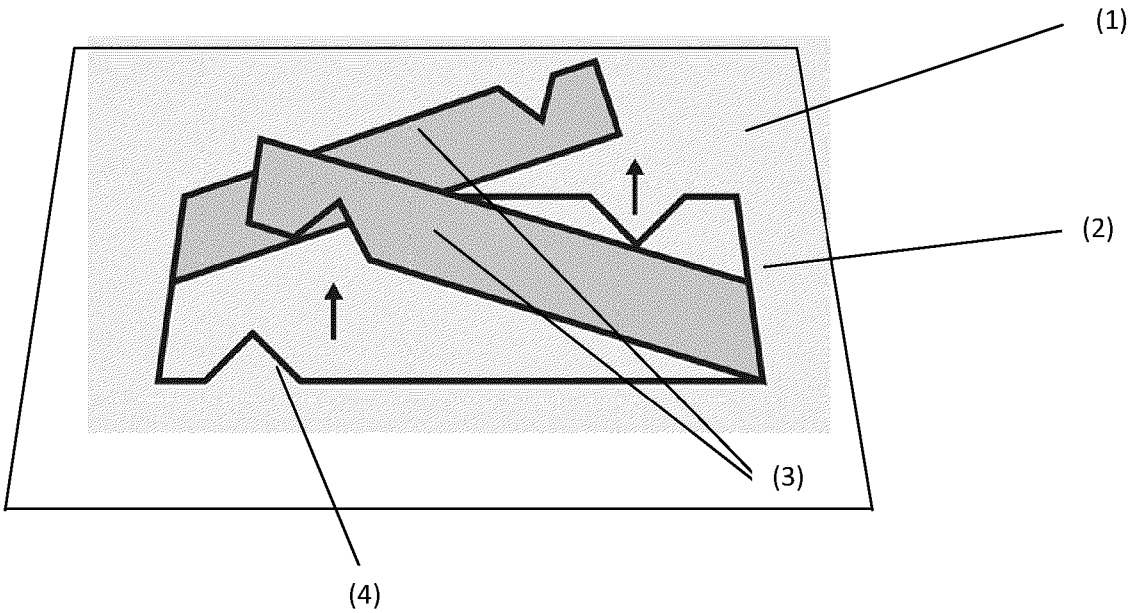


Fig. 3

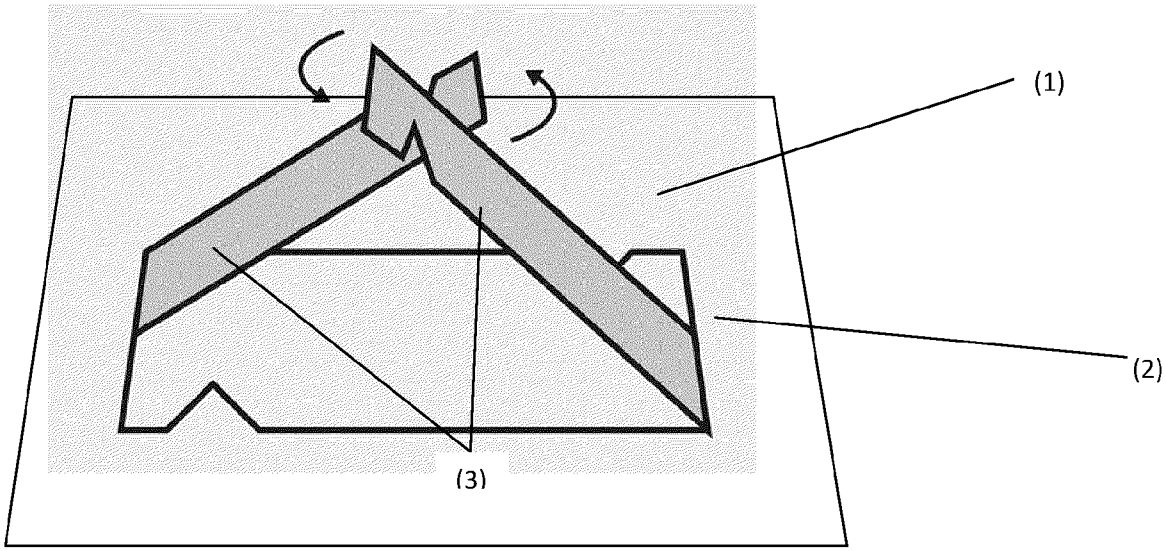


Fig. 4

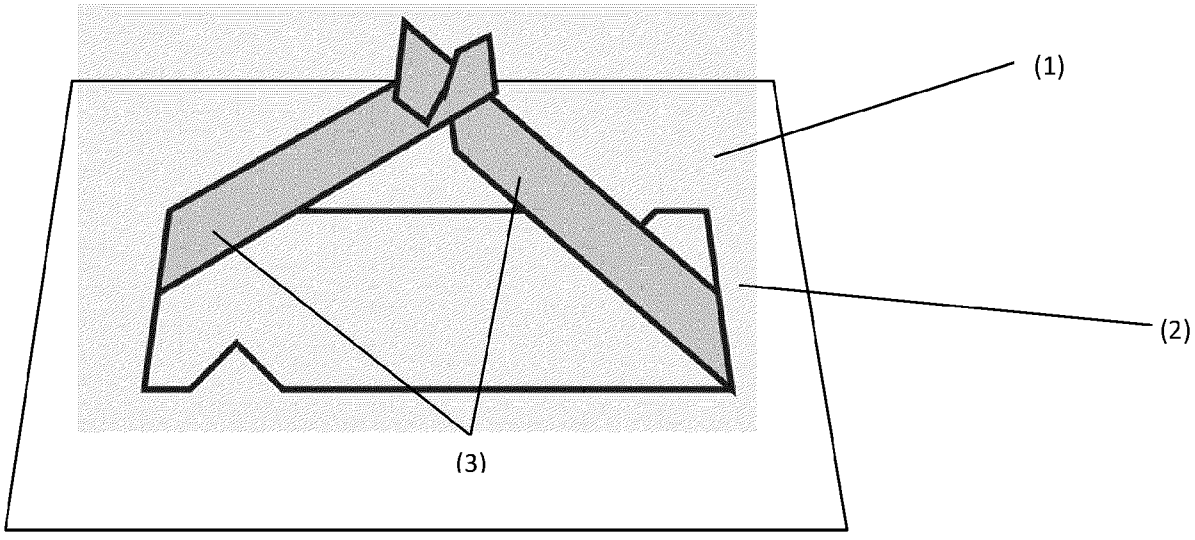


Fig. 5

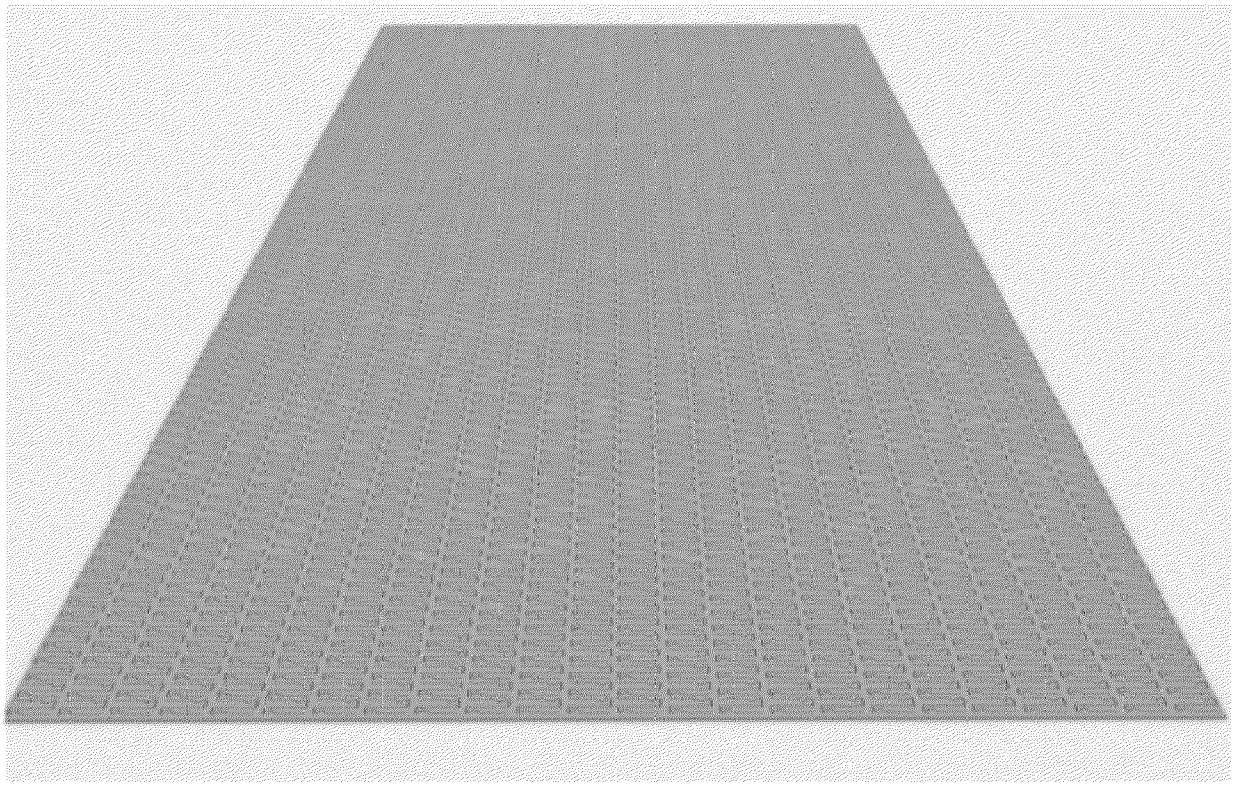
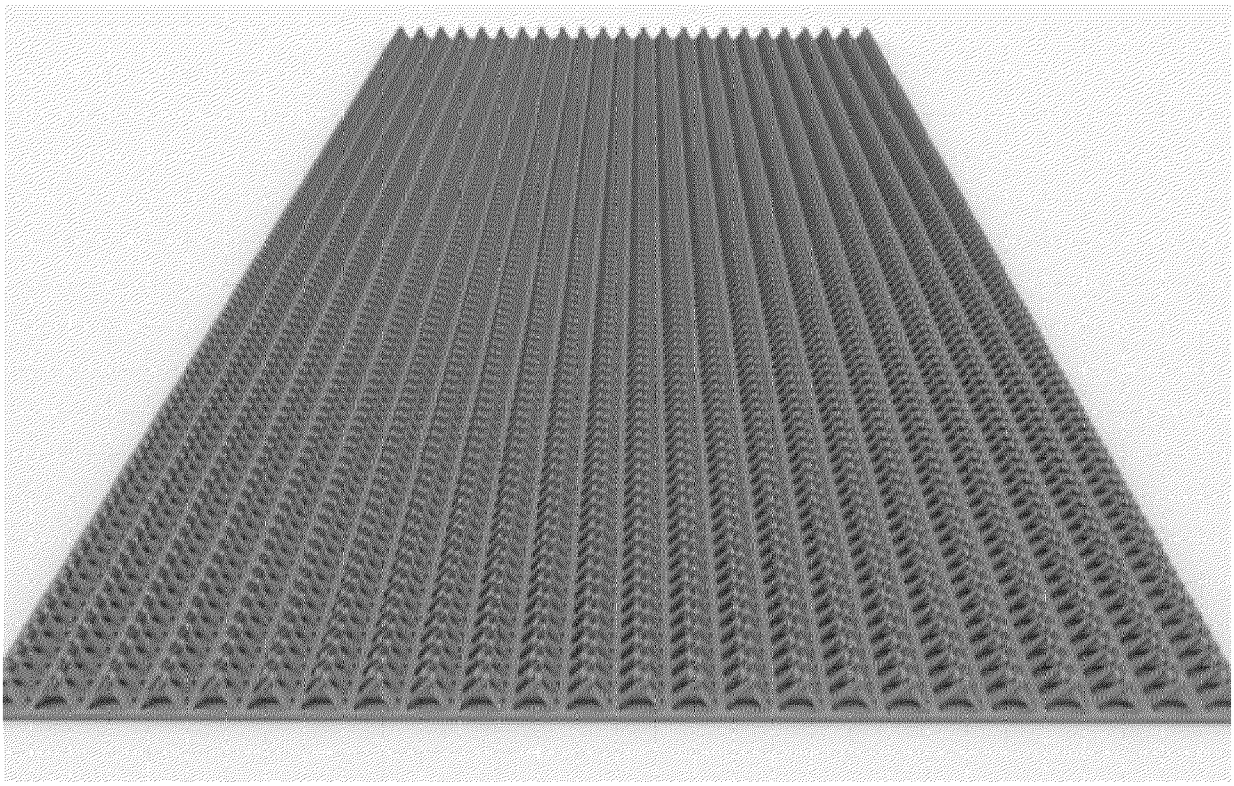


Fig. 6



P.I. : Ubiquitt S.r.l. unipersonale

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EUROPEAN SEARCH REPORT

Application Number
EP 24 20 4844

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	4 March 2025	Mans-Kamerbeek, M

CATEGORY OF CITED DOCUMENTS

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