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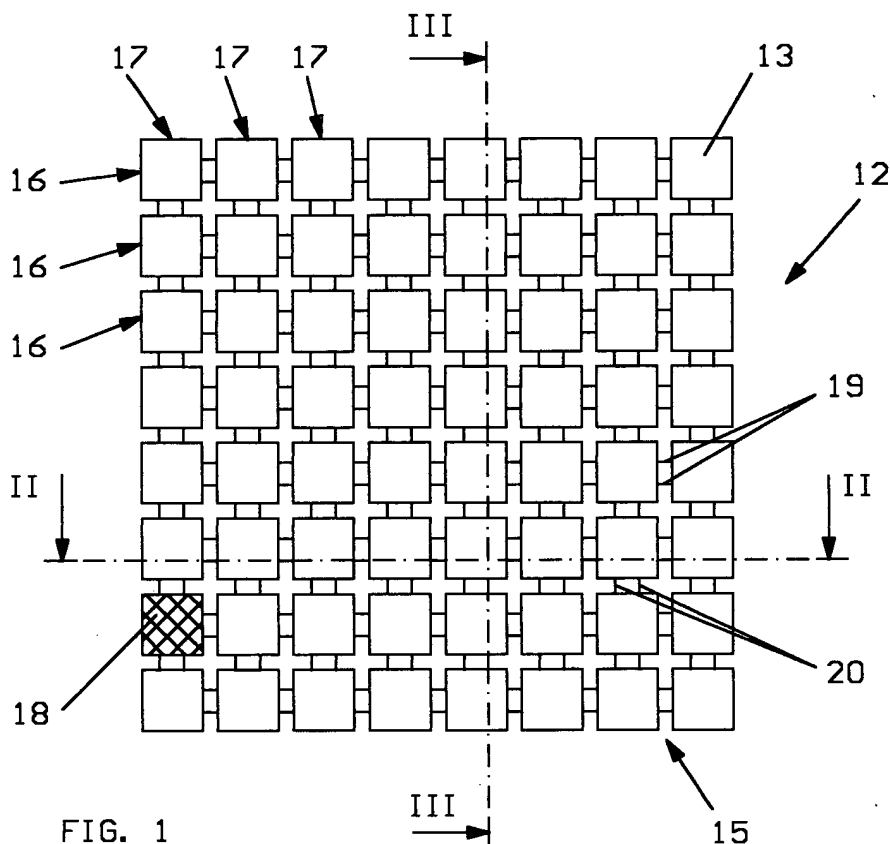
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(54) **Panel structure for realizing decorative mural compositions and the like, and decorative composition feasible with this structure, as well as a process for realizing this structure**

(57) Panel structure for realizing decorative mural compositions and the like, whose peculiarity consists in

the fact that it comprises plastic tesserae laid out in a plane and plastic connecting means that mutually connect these tesserae (ref. Fig. 1).



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Description

[0001] The present invention refers to a panel structure for realizing decorative mural compositions and the like, to a composition feasible with this structure and to a process for realizing this structure. This structure is especially yet not exclusively useful in the civil building industry.

[0002] The realization of mosaic-type decorative compositions is diffused and especially prized in the construction sector. To create these compositions, panels are found on the market formed by a reticular support that carries a glued-on plurality of tesserae laid out on a plane and lined up in adjacent longitudinal and transversal rows. The purpose of the support is to hold the tesserae in their respective position, so as to facilitate their installation. The tesserae are in turn of an approximately cubic shape and present a frontally arranged face exposed to view, finished in various ways. The tesserae are normally made of numerous materials such as glass, marble, composite materials such as glass and gold, or agglomerates such as glass or marble dust. The installation of these panels, normally sized like a tile, is carried out by specialized workers, as described in the following. The composition's application surface is suitably prepared and then coated with an adhesive material. The panels are applied to this surface on the supporting side, in the order defined by the designer of the composition. The installation is completed by manually filling out the grooves between the tesserae with a putty, lime or plaster. This leaves only the frontally arranged tesserae faces exposed to view, while the rest of the panel disappears from sight.

[0003] A first drawback of these panels noted by the buyers consists in their high cost, deriving from the cost of the materials needed to fabricate the tesserae, from the cost owing to the production process of the tesserae and from the cost due to the tesserae's installation process on the supports, respectively.

[0004] A second drawback of these panels noted by the buyers consists in the fact the possibility of choosing the panels is limited to the types available in the various producers' catalogs.

[0005] A third drawback noted by the buyers consists in the fact that the costs of executing non-standard compositions made with tesserae taken from various panels are particularly high, because of the large number of unused panels to be discarded. Moreover, some drawbacks are also encountered from an applicative viewpoint, as the decoration must be performed without the aid of the support.

[0006] A fourth drawback noted by the operators consists in the considerable weight of each panel, which renders the manual transport of the panels containers and their vertical and ceiling installation particularly tiresome.

[0007] A fifth drawback is encountered in the fact that the industrial process for realizing the panels available

on the market is complex and elaborate, as it comprises fully four production phases, namely a phase of realizing the tesserae, a phase of realizing the decorative composition, a phase of arranging the tesserae on the reticulated support and a relative gluing phase.

[0008] The aim of the invention consists in preparing a panel structure for realizing decorative mural compositions and the like, a decorative composition feasible with such a panel, as well as a process for realizing such a structure capable of resolving the drawbacks encountered in the known art.

[0009] Within this aim, an object of the invention consists in preparing a panel structure of limited cost.

[0010] A second object of the invention consists in preparing a panel structure adaptable to the tastes and requirements of the designers of decorative compositions.

[0011] A further object of the invention is to prepare a panel structure capable of limiting the production costs of non-standard compositions.

[0012] Another object of the invention is to prepare a panel of limited weight.

[0013] An additional object of the invention is to prepare a panel structure capable of withstanding the mechanical stresses deriving for instance from a prolonged walk-on usage and chemical attacks such as for instance originating from chemical cleaning operations.

[0014] Not the last object of the invention is to prepare a simple and economical production process for such a structure.

[0015] This aim, as well as these and other objects that will be better evident in the following, are achieved by a panel structure for realizing decorative mural compositions and the like, by a decorative composition feasible with such a panel, as well as by a process of realizing such a structure in accordance with the attached claims.

[0016] According to the attached claim 1, the execution of the structure in a plastic material allows limiting the production costs and therefore realizing an economic structure with respect to the panels existing on the market.

[0017] Again according to claim 1, the execution of the structure in a plastic material allows a considerable production flexibility, so as to meet a broad range of the needs and requirements of the buyers and designers of decorative compositions, which cannot be found when using traditional materials.

[0018] Further according to claim 1, the execution of the structure in a plastic material allows reducing the weight per unit surface with respect to that of the panels on the market, thus facilitating both their manual transport and their vertical or ceiling applications.

[0019] According to the process claim, the structure is feasible in a simple and economical manner, as it suffices to have a single production phase using known equipment.

[0020] Also according to the process claims, the poly-

carbonate (PC) tesserae are subjected to a surface coating phase that allows the structure to be made particularly resistant to ultraviolet rays, mechanical stresses and chemical attacks.

[0021] Further according to the process claims, the application of the decorative pattern is done by applying a decorative film on the tesserae in the printing stage, so as to achieve an aesthetically pleasing overall effect.

[0022] Further characteristics and advantages will become better evident from in the description of two preferred embodiments of the invention, as shown for indicative yet non limiting purposes, in the four drawings attached, where:

- The Figure 1 represents a front view of a first embodiment of the panel structure according to the invention;
- The Figure 2 represents a sectional view, along the line II - II of Figure 1, of the first embodiment of the structure of Figure 1;
- The Figure 3 represents a sectional view, along the line III - III of Figure 1, of the first embodiment of the structure of Figure 1;
- The Figures 4 and 5 represent the sectional views of two executive variants of the first embodiment of the structure of Figure 1;
- The Figure 6 represents a partially sectioned view of a portion of a mural decoration produced with the first embodiment of the structure;
- The Figure 7 represents a sectional view of a handling system of the first embodiment of the structure;
- The Figure 8 represents a front view of the second embodiment of the panel structure according to the invention;
- The Figures 9, 10 and 11 represent front views of a first and second portion, respectively, taken from different panels produced in accordance with the second embodiment shown in Figure 8, and a decorative composition created by using this first and second portion.

[0023] With reference to the Figures of the attached drawings and first of all to the Figures 1 and 8, the panel structure in its first and second embodiment, as indicated in the overall by the reference numbers 12 and 112, respectively, is formed by a plurality of tesserae 13, 113 of a plastic material, arranged in a plane and joined by connecting means 15 and 115, also produced from a plastic material, that mutually connect them. In detail, these tesserae 13, 113 are laid out to be aligned in longitudinal rows 16, 116 and transversal rows 17, 117. These tesserae 13, 113 are of an approximately cubic shape with a face 18, 118 frontally exposed to view. This frontally exposed face 18, 118 may be flat as illustrated in the Figures 2 and 3 or curved, as shown in the Figure 4, or again flat with rounded edges as shown in Figure 5. The tesserae are preferably made of PMMA

(polymethylmethacrylate) or PET (polyethylene-terephthalate) or PETG (modified glycol-polyethylene-terephthalate or PC (polycarbonate), so as to guarantee a suitable resistance to ultraviolet rays, mechanical stresses as well as aggressive agents of a chemical nature. The connecting means of the structure 15 according to the first embodiment comprise elements for a longitudinal and transversal connection marked by the reference numbers 19 and 20, respectively. The longitudinal connecting means 19 join the sides of the tesserae 13 in the direction of each of the longitudinal rows 16. The transversal connecting means 20 join the sides of the tesserae 13 in the direction of each of the transversal rows 17. Alternatively, the connecting means of the structure 112 in its second embodiment are constituted of "X"-type connecting elements numbered with the reference number 119. These "X"-type connecting elements 119 connect the tips of the tesserae 113 so as to define a multiple number of tesserae groups 113 formed by four tesserae 113. The connecting means may be realized indifferently in a rigid or flexible form, depending on whether a rigid or a flexible structure is desired. In the first case, these connecting means are realized in the mentioned materials of which the tesserae are made. In the second case, these connecting means are preferably realized in a material belonging to the silicone class. The Figure 11 shows a decorative composition numbered as a whole by the reference number 221, produced by using two panel structures of the type shown in Figure 8. In detail, this composition 221 is constituted of a first portion illustrated in Figure 9 and numbered 222, taken from a first panel structure with "X"-type connecting means that are subjected to or superimposed to a second portion shown in Figure 10 and numbered 223, and taken from a second panel structure with "X"-type connecting means. As can be seen in the Figures 9 and 10, the first and the second portion 222 and 223 are each formed by a pair of longitudinal rows 216 of tesserae 213, alternatively shortened by one tessera 213. Finally, the invention refers to a process for realizing the structure obtained in a single plastic material molding phase by the use of available molding means. Within the framework of this process, the tesserae 113 and 213 made of PC (polycarbonate) are subjected to a surface coating to increase their surface resistance as mentioned above. Moreover, the decorative pattern of said structure is advantageously obtained by laying down a decorative film on said tesserae during the molding phase.

[0024] With further reference to the Figures of the attached drawings, the installation of the structure in the embodiments described above takes place as follows. The first phase carried out in a traditional manner consists in preparing the application surface and in spreading an adhesive material over the surface. The subsequent phase consists in applying each panel on the surface as prepared above. The fitting to size of each panel is achieved simply by eliminating the longitudinal and

transversal rows as needed, by repeatedly applying a bending action opposite the connecting means, as illustrated in a simplified manner in Figure 7, or by cutting these connecting means with a normal cutting tool. After applying the panels, the decoration is finished by filling the grooves between the panels with putty, lime or plaster, as done in the known art, until achieving a result as shown in Figure 6. The decoration of Figure 11 is achieved in the same manner. In this case, the first and the second portion of the Figures 9 and 10 are taken from two panel structures having "X"-type connecting elements. The first portion is then initially applied to the application surface and the second portion is subsequently applied to obtain the composition shown in Figure 11.

[0025] In practice, it has been found that the panel structure, the decorative composition and the structure realizing process achieve the intended aim and objects while overcoming the drawbacks encountered in the state of the art.

[0026] In a practical embodiment, the employed materials, forms, dimensions and executive details may differ from the indicated ones but be technically equivalent to them, without thereby exceeding the legal limits of the invention.

Claims

1. Panel structure for realizing decorative mural compositions and the like, **characterized in that** it comprises tesserae of a plastic material arranged in a plane and connecting means of a plastic material that mutually connect said tesserae.
2. Panel structure, according to claim 1, **characterized in that** said tesserae are arranged to be lined up in both adjacent longitudinal and adjacent transversal rows.
3. Panel structure, according to claim 1 or 2, **characterized in that** said tesserae have an approximately cubic form, with at least one frontally arranged face exposed to view.
4. Panel structure, according to one or more of the foregoing claims, **characterized in that** said face to be exposed to view is flat or curved or fitted with rounded edges.
5. Panel structure, according to one or more of the foregoing claims, **characterized in that** said tesserae are made of PMMA (polymethylmethacrylate) or PET (polyethyleneterephthalate) or PETG (modified glycol-polyethyleneterephthalate) or also of PC (polycarbonate).
6. Panel structure, according to one or more of the foregoing claims, **characterized in that** said connecting means comprise longitudinal connecting elements and transversal connecting elements.
7. Panel structure, according to one or more of the foregoing claims, **characterized in that** said longitudinal connecting means join the sides of said tesserae in the sense that said longitudinal rows and said transversal connecting means join the sides of said tesserae in the direction of said transversal rows.
8. Panel structure, according to one or more of the foregoing claims, **characterized in that** said connecting means comprise "X"-type connecting elements.
9. Panel structure, according to one or more of the foregoing claims, **characterized in that** said connecting "X"-type means join the tips of said tesserae to define a plurality of groups formed by four tesserae.
10. Panel structure, according to one or more of the foregoing claims, **characterized in that** said connecting means are rigid or flexible.
11. Panel structure, according to one or more of the foregoing claims, **characterized in that** said rigid connecting means are made of PMMA (polymethylmethacrylate) or PET (polyethyleneterephthalate) or PETG (modified glycol-polyethyleneterephthalate) or PC (polycarbonate) and that said flexible connecting means are made of materials belonging to the silicone class.
12. Decorative composition feasible with a panel structure according to one or more of the foregoing claims, **characterized in that** it comprises a first portion taken from a first panel structure with "X"-type connecting elements subjected to or superimposed to a second portion taken from a second panel structure with "X"-type connecting elements.
13. Decorative composition, according to the preceding claim, **characterized in that** said first and second portions are formed by a pair of longitudinal rows of tesserae alternatively shortened by one tessera.
14. Production process of a panel structure according to one or more of the foregoing claims, **characterized in that** said structure is produced by a molding phase of a plastic material.
15. Production process, according to the preceding claim, **characterized in that** said tesserae produced from PC (polycarbonate) are subjected to a surface coating process.

16. Production process, according to one or more of the foregoing claims, **characterized in that** the decorative pattern of said structure is obtained by laying down a decorated film on said tesserae during the molding phase.

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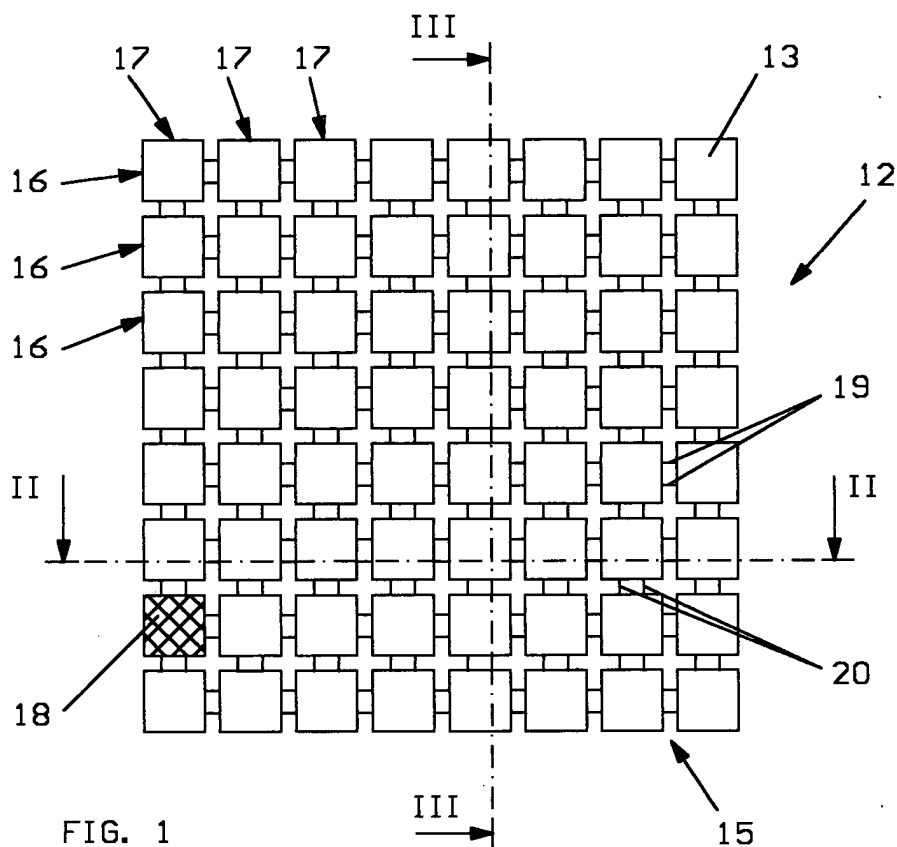


FIG. 2



FIG. 4



FIG. 5

FIG. 6

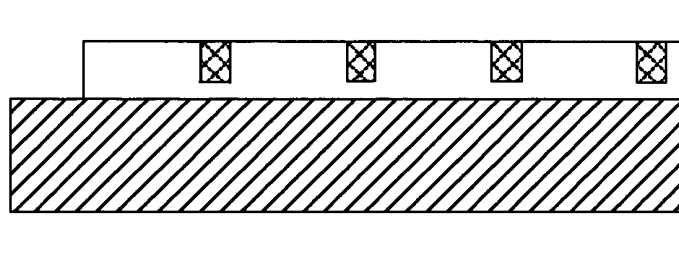
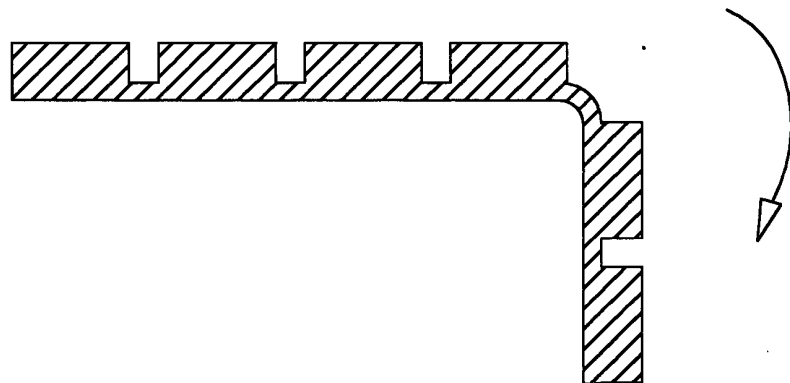


FIG. 7



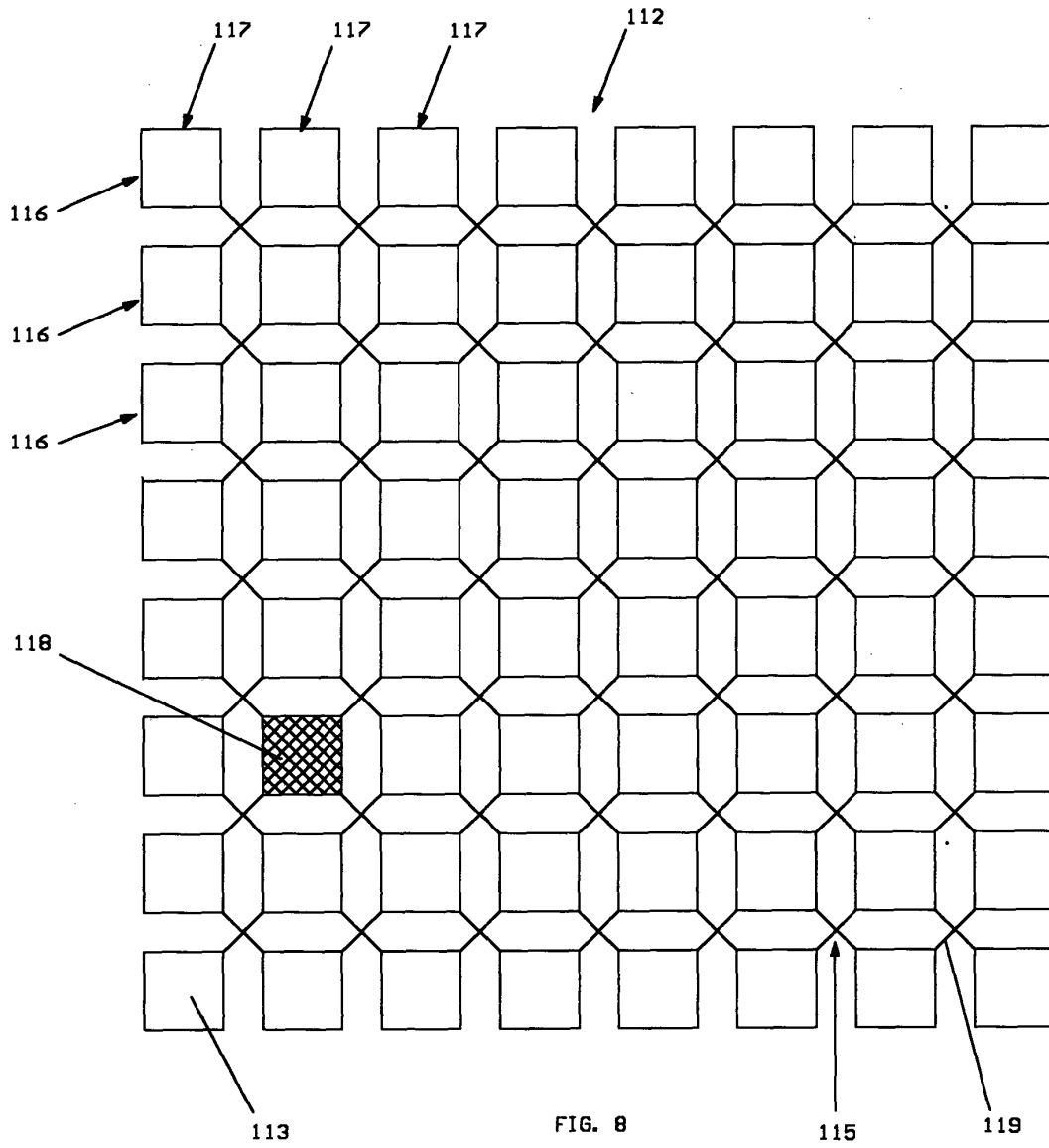


FIG. 8

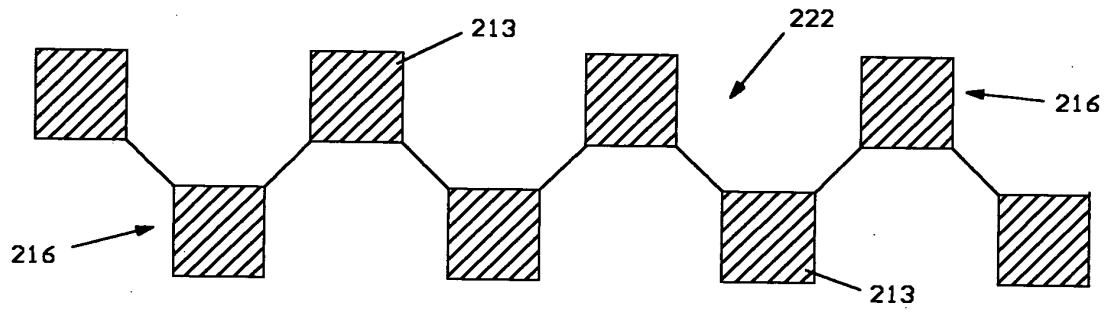


FIG. 9

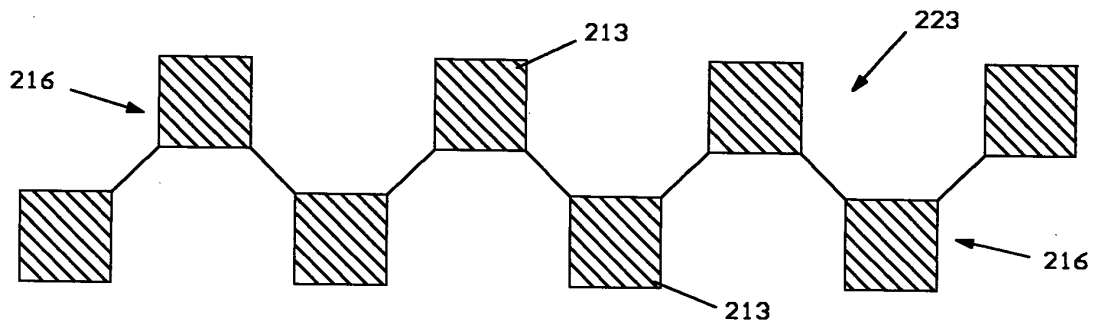


FIG. 10

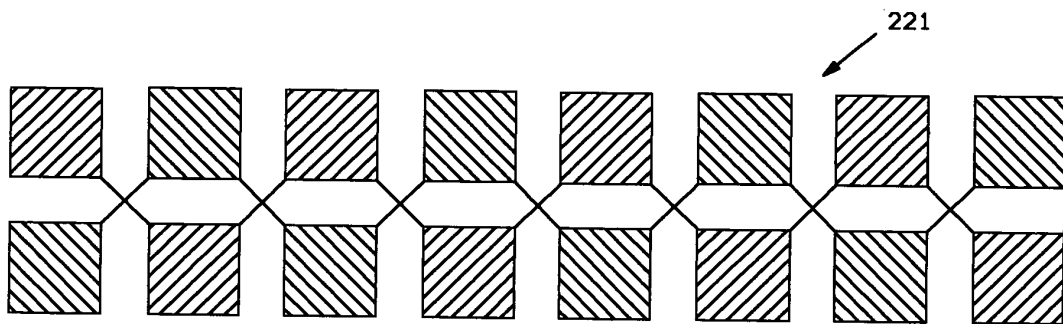


FIG. 11



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EUROPEAN SEARCH REPORT

Application Number
EP 05 42 5409

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Place of search Munich		Date of completion of the search 21 September 2005	Examiner Saretta, G
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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