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(72) Inventor: **ZANONI, Adelfio**
20018, SEDRIANO (Milan) (IT)

(74) Representative: **De Gregori, Antonella et al**
Ing. Barzano' & Zanardo Milano S.p.A.
Via Borgonuovo 10
20121 Milano (IT)

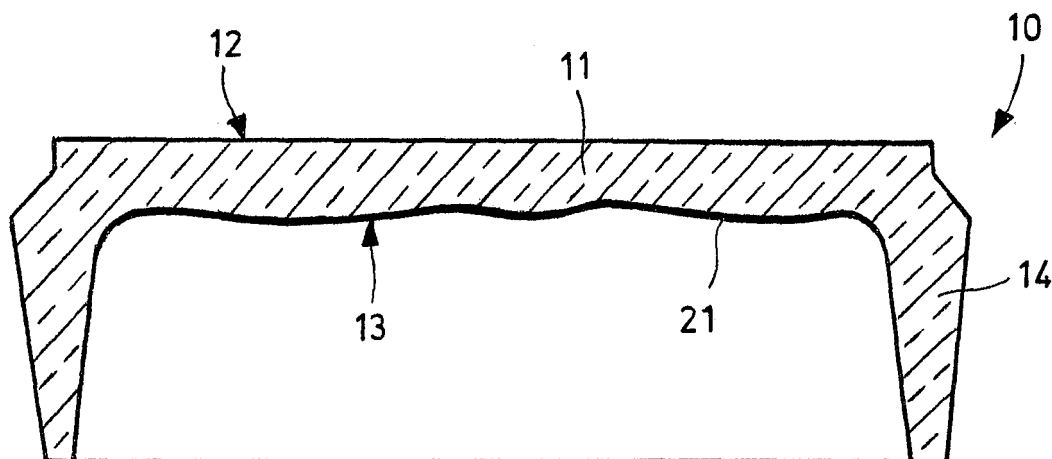
(71) Applicant: **Zaot S.r.l.**
20010 Vittuone (MI) (IT)

(54) **Diffuser element for reinforced concrete and glass tiles**

(57) A diffuser element (10) for reinforced concrete and glass tiles is produced in the form of a hollow glass tile defined by a quadrangular base plate (11) having a first surface (12) and a second surface (13) opposite the

first from which a substantially perimetric edge (14) integrated with the base plate, protrudes, the second surface (13) having a deposit of one or more interferential layers (21) inside the substantially perimetric edge (14).

Fig. 1



Description

[0001] The present invention relates to a diffuser element for reinforced concrete and glass tiles.

[0002] In the building industry the use of glass is known instead of bricks for illumination purposes, for the production of walls and skylights suitable for illuminating environments.

[0003] Thanks to the substantially equal thermal dilation coefficients of glass and reinforced concrete, it is possible to produce walls or slabs having both of the above materials in a composition consisting of glass and reinforced concrete without structural problems.

[0004] Among the diffuser elements commercially available, diffusers with an air chamber are known, which are produced in the form of sealed squares entrapping air and having counter-edges suitable for engaging the concrete and hollow diffusers which have a substantially "U"-shaped section.

[0005] The technological development of the production process of these elements has allowed the air-chamber diffuser element to be produced in two semi-elements very similar to the hollow diffusers which are assembled by means of welding with suitable glass-compatible resins so as to form the air chamber.

[0006] The main use of these elements is for the construction of walls and skylight slabs suitable for allowing the passage of light but at the same time providing a certain insulation for the internal environment.

[0007] The Applicant consequently confronted the problem of how to increase the insulation which can be obtained from these end-products, at the same time improving the aesthetical characteristics so as to provide an architecturally valid and functional element.

[0008] This problem has been solved thanks to the production of a diffuser element having a surface on which one or more interferential layers are deposited.

[0009] A general objective of the present invention therefore consists in providing a diffuser element for reinforced concrete and glass tiles equipped with particular filtrating and insulating properties and destined for aesthetically high-quality constructions.

[0010] In view of this and other objectives, according to the present invention, a diffuser element for reinforced concrete and glass tiles has been conceived, having the characteristics specified in the enclosed claims.

[0011] The Applicant has therefore used a diffuser element for reinforced concrete and glass tiles in the form of a hollow glass tile defined by a quadrangular base plate having a first surface and a second surface opposite the first from which a substantially perimetric edge integrated with the base plate, protrudes, the second surface having a deposit of one or more interferential layers inside the substantially perimetric edge.

[0012] The structural and functional characteristics of the present invention and its advantages with respect to the known art will appear more evident from the following description, referring to the enclosed drawings, which

show different embodiments of diffusers according to the innovative principles of the invention itself.

[0013] In the drawings:

- 5 - figure 1 is a raised sectional view of a diffuser according to the invention;
- figure 2 is a raised sectional view of a different embodiment of the diffuser according to the invention;
- 10 - figure 3 is a perspective view of the diffuser of figure 2;
- figure 4 is a perspective view of the diffuser of figure 2 assembled.

[0014] With reference to the figures, a diffuser element 10 for reinforced concrete and glass tiles is produced in the form of a hollow glass tile defined by a quadrangular base plate 11 having a first surface 12 and a second surface 13 opposite the first from which a substantially perimetric edge 14 integrated with the base plate, protrudes.

[0015] The second surface 13 inside the substantially perimetric edge 14 is irregularly shaped with crests and hollows or also smooth and has a deposit of one or more interferential layers 21.

25 **[0016]** This deposit is obtained by the direct or indirect deposition, by means of PVD, of a material, for example a metal or metallic oxide in one or more layers having a thickness ranging from a few nanometers to a several tens of micrometers on the base material of the tile consisting of suitably prepared glass.

30 **[0017]** Said deposition of metallic oxides is suitable for producing interferential layers which allow a colouring of the substrate which has an intense transparency and bright reflection.

35 **[0018]** Alternatively, with the use of suitable starting materials, it is possible to obtain the selective absorption and/or reflection of some solar light radiations in order to provide thermal insulation or the filtration of particular radiation ranges.

40 **[0019]** The deposition of the layers 21 is effected in a high vacuum metallization plant with the PVD technique (Physical Vapour Deposition).

[0020] The main physical vapour deposition techniques are vacuum evaporation; sputtering (cathode ablation); thermal deposition; and electron gun deposition.

45 **[0021]** With reference to figures 2 to 4, for particular insulation requirements and to prevent the condensation of atmospheric humidity on the surfaces, it is possible to produce a diffuser element 10' with an air chamber using a pair of diffuser elements 10 of the hollow type on at least one of which the deposition of interferential layers is effected, and which are assembled by means of welding S with suitable glass-compatible resins along the ends of the edges 14 so as to form a closed chamber 16.

55 **[0022]** In this case, at least one of the two diffuser elements 10 has the second surface 13 which is inside the assembled end-product, containing the deposit of one or more interferential layers 21.

Claims

1. A diffuser element (10) for reinforced concrete and glass tiles in the form of a hollow glass tile defined by a quadrangular base plate (11) having a first surface (12) and a second surface (13) opposite the first, from which a substantially perimetric edge (14) integrated with the base plate, protrudes, **characterized in that** the second surface (13) has a deposit of at least one interferential layer (21) inside the substantially perimetric edge (14). 5 10
2. The diffuser element (10) for reinforced concrete and glass tiles according to claim 1, wherein said second surface (13) is irregularly shaped with crests and hollows or also smooth. 15
3. The diffuser element (10) for reinforced concrete and glass tiles according to claim 1, wherein said at least one interferential layer (21) has a thickness ranging from a few nanometers to several tens of micrometers, obtained by direct or indirect deposition, by means of PVD. 20
4. The diffuser element (10) for reinforced concrete and glass tiles according to claim 3, wherein said at least one interferential layer (21) is suitable for filtrating light radiations or absorbing and/or reflecting thermal or ultraviolet energy. 25 30
5. A light diffuser (10') with an air chamber for reinforced concrete and glass tiles **characterized in that** said element comprises a pair of diffuser elements (10) of the hollow type assembled by means of welding (S) with suitable glass-compatible resins along the ends of the edges (14) so as to form a closed chamber (16) and wherein at least one of said hollow diffusers (10) is produced according to any of the previous claims. 35 40

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Fig. 1

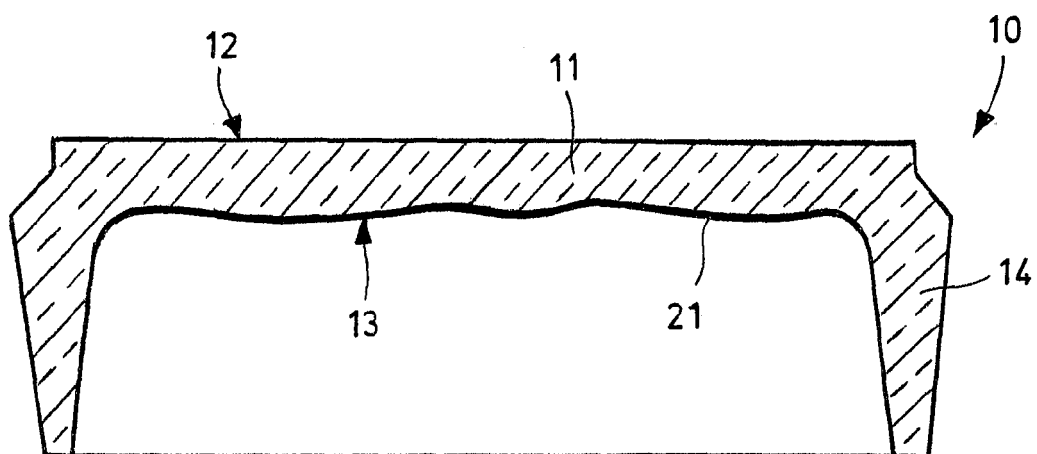


Fig. 2

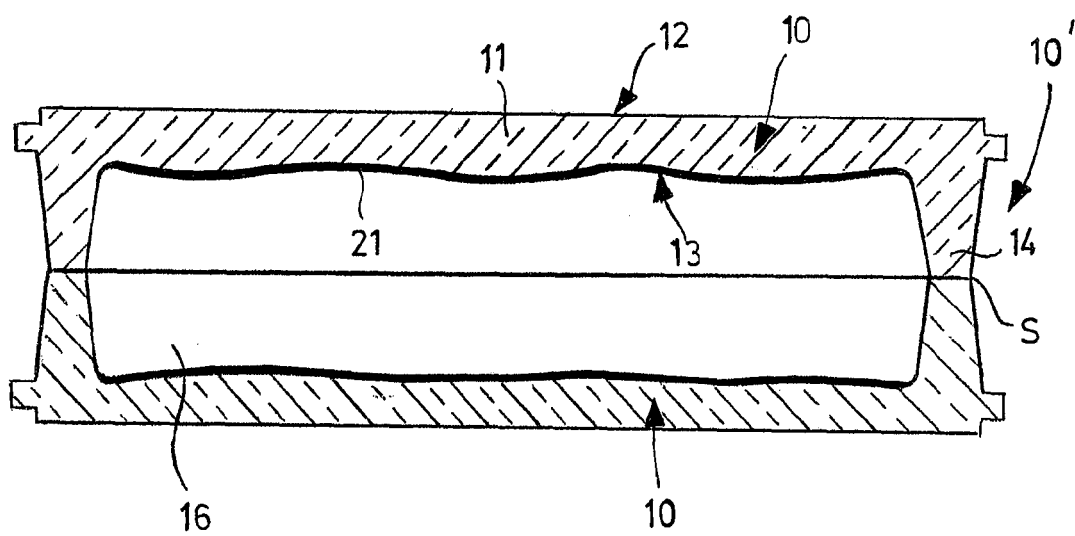


Fig. 3

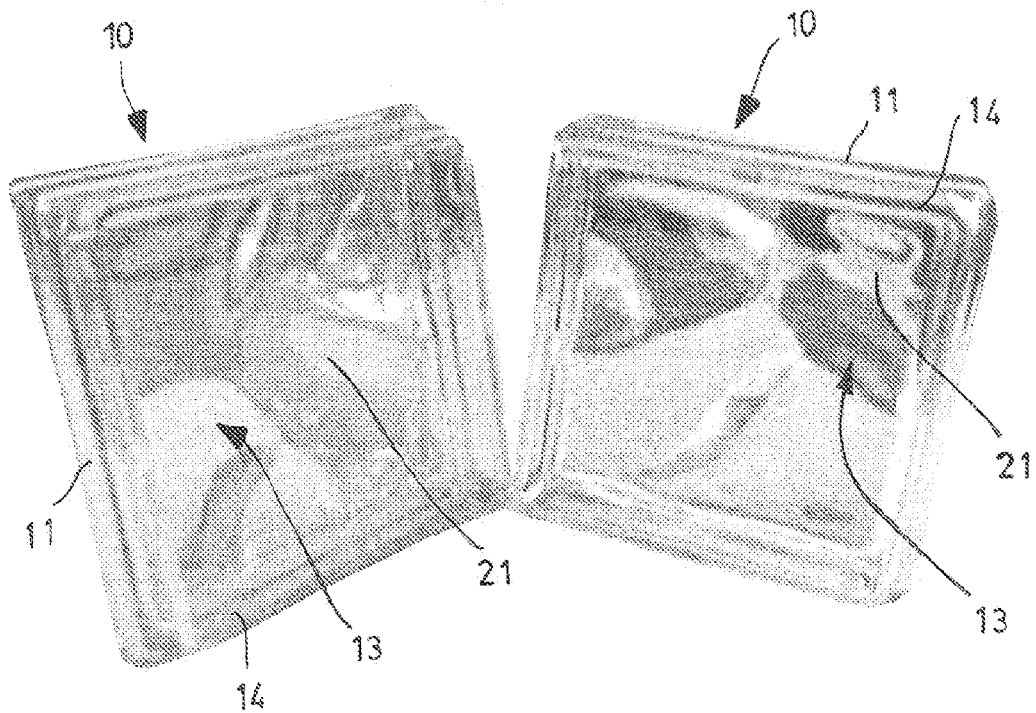
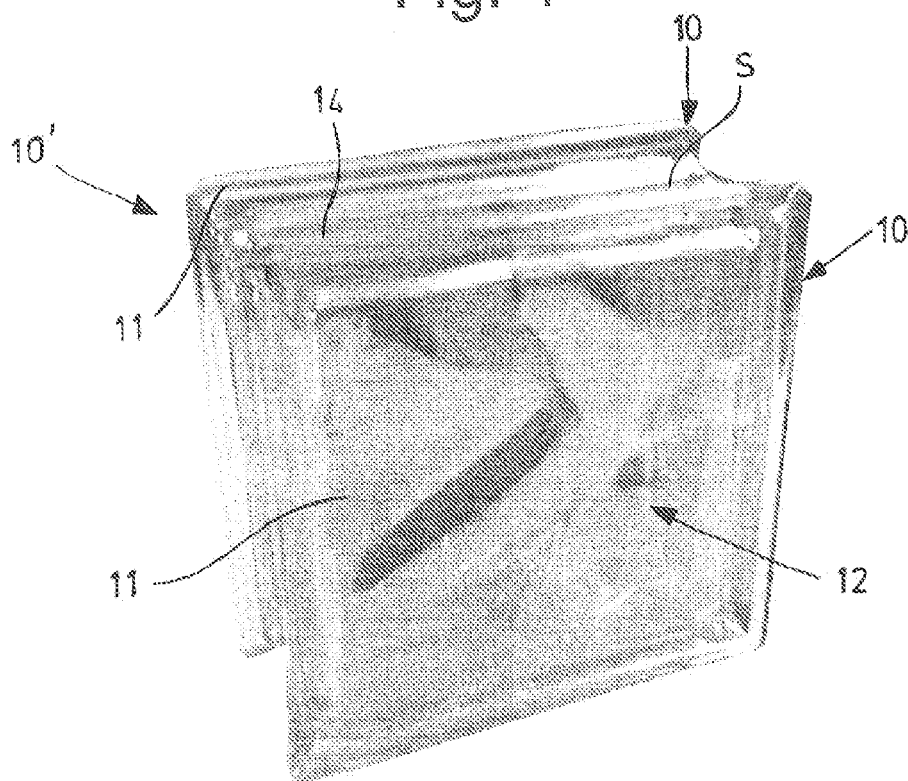


Fig. 4





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 07 10 9453

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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Y	* page 4, line 14 - page 8, line 19 * * page 12, line 1 - page 13, line 1; claims 1-3,6; figures 1,2 *	2	
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			TECHNICAL FIELDS SEARCHED (IPC)
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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		3 December 2007	Mysliwetz, Wolfgang
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 07 10 9453

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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