(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 271 049 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
02.01.2003 Bulletin 2003/01

(51) Int Cl.[7]: **F21V 5/00**

(21) Application number: **02077517.7**

(22) Date of filing: **25.06.2002**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **28.06.2001 IT MI20011368**

(71) Applicant: **Sirrah S.r.l.**
62019 Recanati (Macerata) (IT)

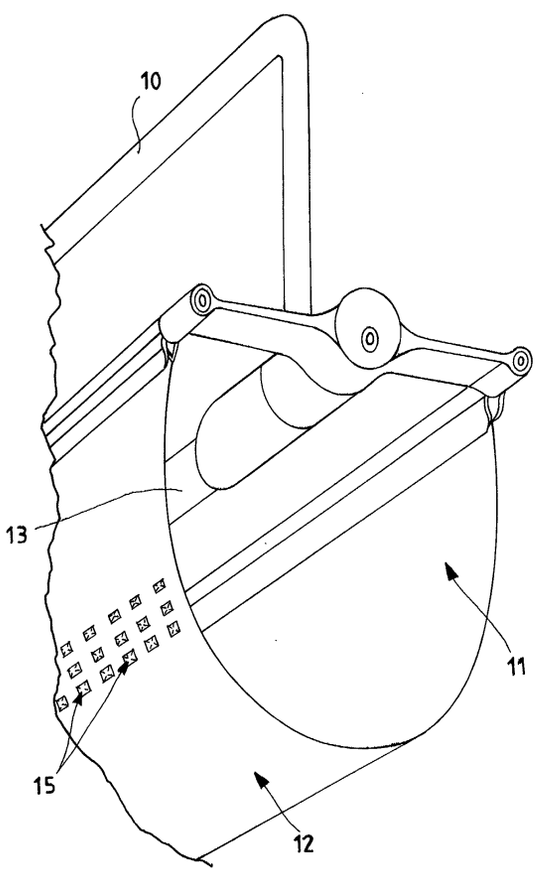
(72) Inventor: **Guzzini, Giannunzio**
62019 Recanati (Macerata) (IT)

(74) Representative: **Coppo, Alessandro**
Ing. Barzanò & Zanardo Milano S.p.A.,
Via Borgonuovo, 10
20121 Milano (IT)

(54) Process for the production of diffusing screens for lighting appliances and the diffusing screen thus obtained

(57) A process for the production of diffusing screens (12) of light radiation for lighting appliances (11), according to which a series of elements (15) is obtained, which form one or more patterns or finishes, on at least one polycarbonate sheet (16), used as a diffusing screen (12), by means of the drawing technology.

Fig.1



EP 1 271 049 A2

Description

[0001] The present invention relates to a process for the production of diffusing screens for lighting appliances and to the diffusing screen thus obtained.

[0002] Lighting appliances, such as lamp-shades or lamps in general (wall-lamps and ceiling light-fixtures), currently have a diffusing screen of the light radiation which is normally made of glass, paper materials or plastic materials.

[0003] The use of these materials however has a series of disadvantages, among which the main drawback relates to the non-uniformity of light diffusion, which can cause iridescence, reflections, refractions and other disturbing and harmful effects for the users. It would in fact be preferable to produce a completely homogeneous light diffusion in an environment, creating totally relaxing conditions for those immersed therein.

[0004] Furthermore, the above iridescence and other defects caused using light diffusing screens of the traditional type can create unpleasant light effects on the walls, especially in environments which must be kept aesthetically "clean" and sober (such as environments suitable for exhibitions, congresses, meetings, etc.).

[0005] An objective of the present invention is consequently to indicate a process for the production of diffusing screens for lighting appliances which overcomes the above drawbacks and, in particular, to indicate a process for the production of diffusing screens, suitable for preventing a non-uniform and heterogeneous light radiation distribution.

[0006] A further objective of the present invention is to indicate a process for the production of diffusing screens for lighting appliances which is highly reliable and with limited costs, with respect to the known art, having the same functionalities specified above.

[0007] Yet another objective of the present invention is a diffusing screen for lighting appliances which is simple and economic to produce and which allows a homogeneous diffusion within the environment where it is installed.

[0008] These and other objectives, according to the present invention, are achieved by means of a process for the production of diffusing screens for lighting appliances, according to claim 1, and thanks to a diffusing screen according to claim 7, to which reference is made for the sake of brevity.

[0009] The characteristics and advantages of a diffusing screen of light radiation for lighting appliances, produced according to the process, object of the present invention, are evident from the following description, relating to an illustrative and nonlimiting embodiment and referring to the enclosed drawings, wherein:

- figure 1 shows an example of a lighting appliance to which a diffusing screen produced according to the process object of the present invention, can be applied;
- figure 2 shows an enlarged detail of a diffusing screen for lighting appliances produced according to the present invention;
- figure 3 is a section along the line III-III of figure 2.

[0010] With reference to the above figures, 10 generically indicates a support for a lighting appliance 11, whose light radiation is diffused by a screen 12, which at least partially surrounds the light source 13.

[0011] It should be noted that the lighting appliance 11 represented in figure 1 is an illustrative but nonlimiting example of application, onto which the diffusing screen 12 produced according to the process object of the invention, can be applied.

[0012] Said diffusing screen 12 can in fact be used for a variety of applications, from classical lamp-shades to numerous types of lamps, such as wall-lamps or ceiling light-fixtures, ceiling lamps, standard or floor lamps, without losing any of its functionality and obtaining optimum physical properties of light radiation in an environment.

[0013] Furthermore, the diffusing screen 12 produced according to the method, object of the invention, allows an extremely pleasant aesthetic and ornamental effect to be obtained in lighted environments from this type of source.

[0014] As clearly demonstrated in figure 2, which represents a view of an enlarged detail of the diffusing screen 12, said screen 12, consisting of at least one polycarbonate sheet 16 having a thickness equal to 0.3 mm or 0.5 mm or 0.8 mm, can be of various forms, as a result of the easy handling and lightness of the material of which it is made, and, in at least one portion facing the light source 13 of the lighting appliance 11, it has a pattern, comprising a series of signs, having a wide variety of shapes and dimensions and preferably arranged according to regular geometrical representations.

[0015] In particular, the finish obtained on the polycarbonate sheets 16 can consist of a series of elements 15, which, arranged in specific and illustrative ways, can produce and form numerous patterns and/or figures inside defined and pre-established portions of the sheet 16.

[0016] The finish of the portions and entire polycarbonate sheet 16 is obtained by means of a drawing process of the elements 15, which, produced according to any of the desired forms, have a conformation in relief (portions 17) on the external part of the polycarbonate sheet 16 (i.e. in the direction of the light diffusion or towards the user), whereas, inside the sheet 16 (i.e. towards the light source 13), they are slightly hollowed forming seats or cavities 18. The final finish allows an extremely pleasant diffusion to be obtained, especially when the elements 15 have substantially pyramidal geometrical surfaces, resulting in an overall homogeneity of radiation in the environment.

[0017] Moreover, by combining the various elements 15 in different ways, numerous patterns and geometries

can be obtained on the diffusing screen 12, thus also satisfying the aesthetic appearance of the lighting appliance 11 on which the screen 12 is inserted.

[0018] The characteristics of the process for the production of diffusing screens of light radiation for lighting appliances and of the diffusing screen thus obtained, which are object of the present invention, as also the advantages are clearly evident from the description provided.

[0019] Numerous variations can obviously be applied to the process in question and to the diffusing screen of light radiation itself, according to the invention, without excluding any of the novelty principles which characterize the inventive idea illustrated, and it is also evident that, in the embodiment of the invention, the materials, forms and dimensions of the details illustrated can vary according to the demands and can be substituted with other technically equivalent alternatives.

Claims

1. A process for the production of diffusing screens (12) of light radiation for lighting appliances (11), **characterized in that** it comprises a drawing phase of a series of shaped elements (15), arranged in at least a portion of said screen (12).

2. The process according to claim 1, **characterized in that** said diffusing screen (12) of light radiation consists of at least one polycarbonate sheet (16).

3. The process according to claim 1, **characterized in that** said lighting appliances (11) comprises lampshades, screens for various types of lamps, wall- and ceiling-lighting fixtures, floor lamps, etc.

4. The process according to claim 1, **characterized in that** said drawn elements (15) have a shape in relief (17) on a surface of the screen (12) facing said light source (13) and are hollowed in correspondence with the surface adjacent to the light source (13) forming seats or cavities (18).

5. The process according to claim 1, **characterized in that** said drawn elements (15) form patterns inside the portion of the screen (12) and have at least one defined shape.

6. The process according to claim 5, **characterized in that** said drawn elements (15) have pyramidal surfaces.

7. A diffusing screen (12) of light radiation to be installed for the protection of at least one light source (13) of at least one lighting appliance (11), consisting of at least one diffusing layer, **characterized in that** it has, in at least one of its portions, a series of drawn elements (15), so that said elements (15), situated in pre-established positions, form an overall finish of said portion of the screen (12).

8. The diffusing screen (12) according to claim 7, **characterized in that** it consists of at least one polycarbonate sheet (16), which is subjected to a drawing process in correspondence with said elements (15).

Fig.1

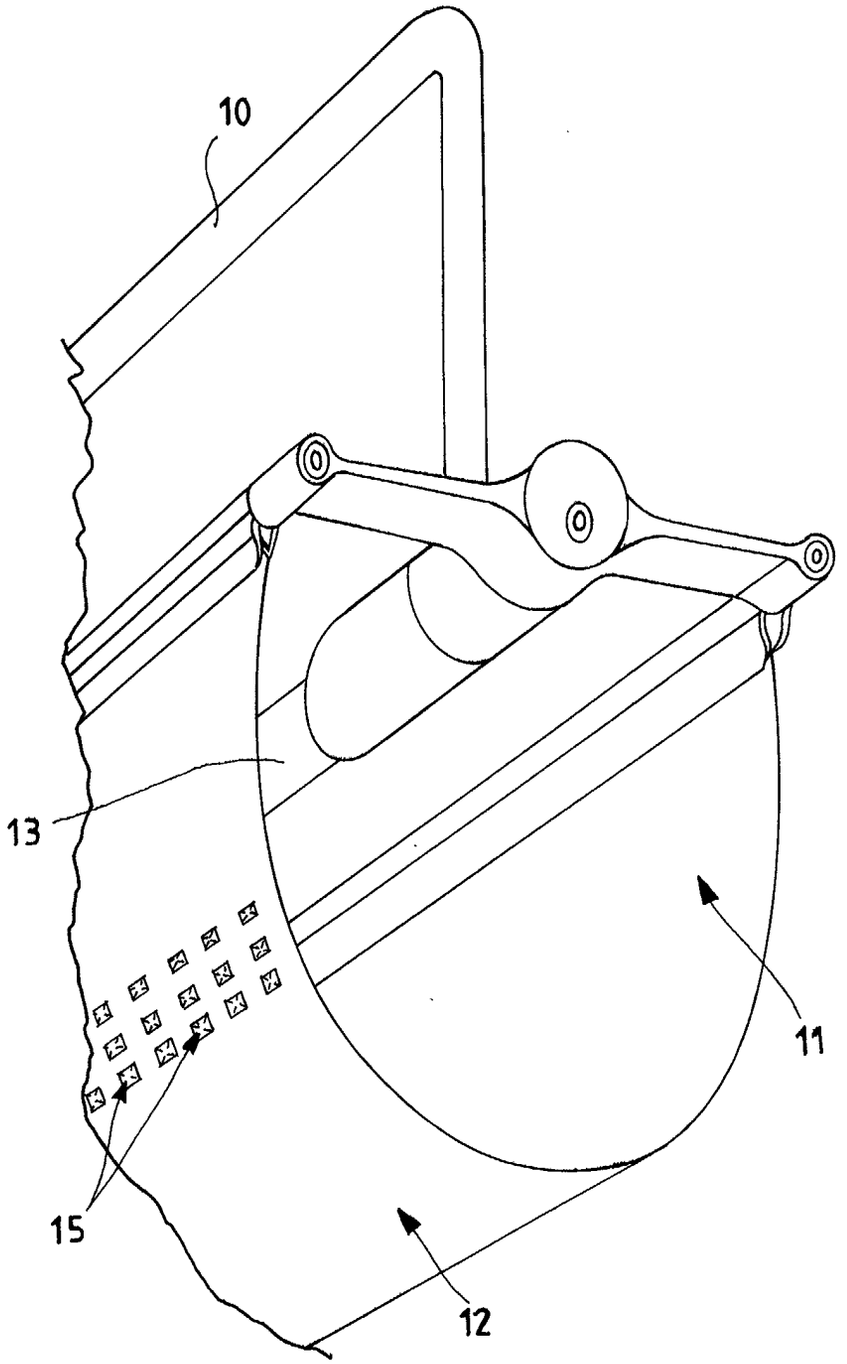


Fig.2

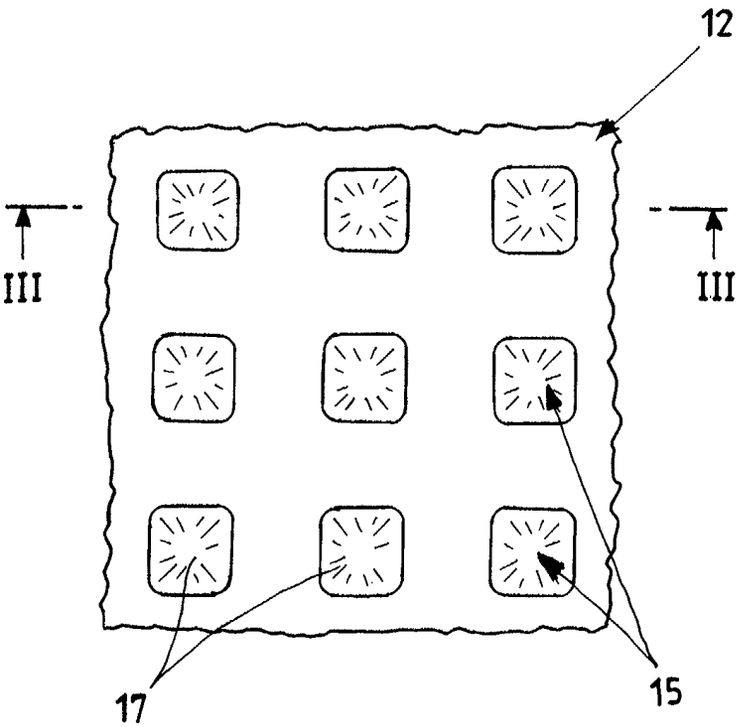


Fig.3