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Amended claims in accordance with Rule 137(2)
EPC.

(54) **CEILING LAMP**

(57) The ceiling lamp consists of at least one module that includes a mounting plate (1) provided with at least one light source (2) placed in the reflector (3), a faceplate (4) and profiled side strips (5). The edges of the mounting plate (1) and the faceplate (4) are covered by side strips (5) which at the ends are cut obliquely so that the two adjacent ends of the side strips (5) cover the corners of the mounting plate (1) and the faceplate (4). The adjacent ends of at least two side strips (5) are connected by a coupler (6) consisting of at least two arms (7), recessed into the ends of the side strips (5).

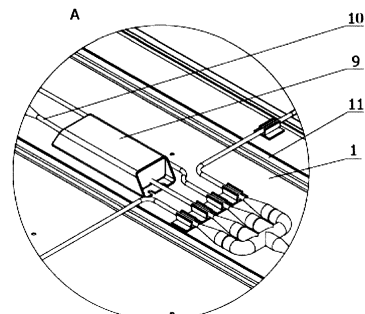
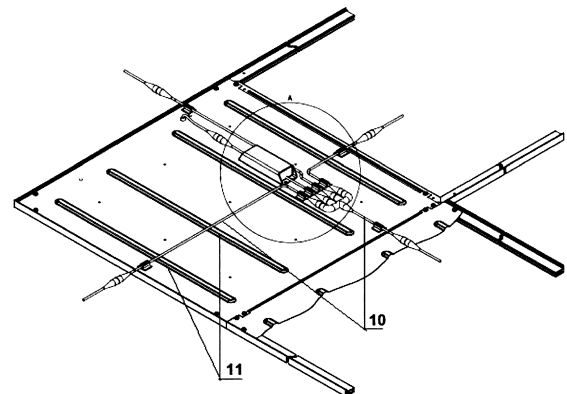


Fig.3

Description

[0001] The invention relates to a ceiling lamp used for ceiling lighting modules, especially designed for indoor lighting.

[0002] Description of the Chinese patent application CN105423194 A (Shanghai Simon Curtain Wall And Ceiling Tile Co., Ltd, CN, 2016-03-23) discloses a ceiling panel integrated with the LED lighting system. The ceiling panel includes a profiled aluminum frame in which a transparent faceplate and mounting plate are mounted. The frame is suspended on T-bars turned upside down so that the projections shaped on the two outer sides of the frame rest against the ledges of the T-bar. Projections of adjacent frames complement each other. The frame also has two peripheral projections on the inner side, a larger lower one and a smaller upper one. The transparent plate is suspended on the lower peripheral projection, and the mounting plate is fixed on the upper peripheral projection. The panels are fitted with strips of LEDs.

[0003] Chinese utility model application CN204326343 U (Zhou Pingchun, CN, 2015-05-13) discloses a suspended ceiling in which aluminum plugs for profiled screws are placed on the aluminum profile strip, and aluminum screw inserts are located on the main body. One end of the aluminum profile strip passes through the aluminum profile screw plugs and the profiled screw for fixing the main body. The other end of the aluminum profile strip and the common aluminum clamping plate are installed in the triangular bracket. The decorative strip is glued in the groove of the decorative strip on the outside of the main body. The LED light source is glued to the inner side of the main body, corresponding to the decorative strip, thus giving peripheral light. The plate decorating the inside of the panel is screwed in the socket.

[0004] Another Chinese utility model application CN203517427 U (Shi Jie, CN, 2014-04-02) refers to an integrated LED lamp in the form of a strip including a lamp body, a transparent housing, an end cover, a LED light source module, a LED light source control unit, wiring and a mounting plate. The body of the lamp is made of profiled steel sheet or aluminum profile and acts as a cooler for LEDs. Both ends of the lamp are closed with end caps.

[0005] Still another Chinese utility model application CN201621566 U (Shanghai Xinhouhua Building Material Co., Ltd., CN, 2010-11-03) discloses a LED lamp comprising two profiled side grips, two profiled lateral lamp fastening strips, a front and a back cover, a profiled body and a transparent front panel. The radial ribs of the heat sink are located on the rear surface of the profiled lamp body. The LED modules are installed on the front surface of the body. The profiled lamp fastening strips are attached respectively below the two sides of the profiled body by adjusting slides and sliding grooves. The transparent luminaire is located on two profiled fixing strips.

[0006] None of the above ceiling lamp solutions allows

simple assembly of modules into a unit of any size that can be both a separate lamp or a part of the ceiling, built in between the panels of suspended ceiling or in the niche shaped in the ceiling.

[0007] A device containing at least one frame with a rectangular outer contour with front spring catches and rear spring catches is known from the Polish patent application PL411633 A1 (Skiba Krzysztof, PL, 2016-09-26). Front spring catches are used to attach a transparent bowl-shaped cover, having an elliptical cross section, while the rear spring catches are used to attach to a printed circuit board and the light diodes. The printed circuit board contains an aluminum plate on the side opposite to the side of the light-emitting diodes. The aluminum plate is covered with a lacquer and/or a polymer film on all or part of its surface, while the lacquer and/or the polymer film is printed on all or part of the surface. The aluminum plate acts as a heat sink increasing the efficiency of LEDs. Between the frame and the transparent cover of the lighting device, there is an edge of the opening in the housing plate and between the transparent cover and the housing plate is a sealing ring, eg. an o-ring, compensating the technological clearance, thus ensuring excellent sealing. It is commonly known that in the case of LED lamps the lamp housing tightness and moisture resistance are extremely important.

[0008] The proposed ceiling lamp has a simpler construction and is easier to install than the lamp known from the above document PL411633. It can also be installed on sloping attic surfaces, as well as on walls or floors, providing respectively a lateral or bottom source of light in the room.

[0009] The ceiling lamp according to the invention consists of at least one module that includes a mounting plate with at least one light source arranged in the reflector; a faceplate and profiled side strips. The edges of the mounting plate and the faceplate are covered by the side strips that are obliquely cut at their ends so that the two adjacent ends of the side strips cover the corners of the mounting plate and the faceplate, with the adjacent ends of at least two side strips being coupled by a coupler consisting of at least two arms, recessed into the ends of the side strips.

[0010] At the ends of the side strips and in the arms of the couplers there are corresponding holes for screws fixing the coupler in the side strip and preferably fixing the mounting plate to the side strip. In the variant of the lamp according to the invention corresponding latching elements securing the coupler in the side strip are shaped at the ends of the side strips and in the arms of the couplers. The side strips between the modules are common to the adjacent modules, while the side strips at the edges of the lamp have full outer walls or are closed with masking strips.

[0011] The couplers located in the corners of the lamp have two arms shaped in a letter L, while the couplers linking the modules on the edge of the lamp have three arms making a letter T, and the couplers of the modules

inside the lamp have four arms that resemble a letter X.

[0012] The inner side of the reflector has a reflective or scattering, and/or textured surface, in particular embossed, while the horizontal cross-section of the reflector is round or elliptical, or rectangular, in particular square, or triangular, or hexagonal.

[0013] The faceplate of the ceiling lamp according to the invention is transparent or milky, optionally textured. Its texture can be made of pyramids, preferably with a triangular or rectangular base or the assemblies of Fresnel lenses. The faceplate may be stained with any colour.

[0014] A power supply connected to the light sources along with the leads to the adjacent modules is mounted on the mounting plate of the ceiling lamp according to the invention. The source of light is at least one LED.

[0015] The stiffenings are embossed on the mounting plate, preferably with holes to hang the lamp or screw it to the supporting surface.

[0016] The subject of the invention is shown in the embodiment in the drawing, where Fig. 1 shows one module of the ceiling lamp with light sources; Fig. 2 shows the cross section A-A of the lamp module fragment; Fig. 3 shows the electrical connection of the modules; Fig. 4 shows the prismatic texture on the surface of the faceplate, successively in plan, sideways and cross-sectional view, and Fig. 5 shows the coupling of the profiled side strips of the individual modules by means of couplers.

[0017] The ceiling lamp consists of at least one module that includes a mounting plate (1) with at least one light source (2) placed in the reflector (3), a faceplate (4) and profiled side strips (5). The mounting plate (1) and the faceplate (4) are covered by the side strips (5) which at the ends are cut obliquely so that the two adjacent ends of the side strips (5) cover the corners of the mounting plate (1) and the faceplate (4).

[0018] The adjoining ends of at least two profiled side strips (5) are coupled by a coupler (6) consisting of at least two arms (7) which are inserted into the hollow ends of the side strips (5). At the ends of the side strips (5) and the arms (7) of the couplers (6), there are corresponding holes for screws (8) locking the coupler (6) in the side strip (5) and preferably fixing the mounting plate (1) to the side strips (5). In the embodiment shown in Fig. 5, the holes in the arms (7) of the couplers (6) engage with additional cuts extending to the edge of the arm (7), so that the holes do not require drilling but are pierced simultaneously with punching the coupler (6) in one production stage. Lateral cuts in the arms (7) do not change the tightness of the screw (8) joints, but they additionally immobilize the coupler (6) in the side strip (5), since the arm (7) slightly deforms in the direction opposite to the cut and locks between the inner guides profiled in the side strip (5).

[0019] Alternatively, at the ends of the side strips (5) and in the arms (7) of the couplers (6) there are corresponding latching elements locking the coupler (6) in the side strip (5).

[0020] In the recommended embodiment, the side

strips (5) between the modules are common to the neighboring modules, while the side strips (5) on the edges of the lamp have full outer walls or are closed by masking strips.

5 [0021] The couplers (6) in the lamp corners have two arms (7) making a letter L, the couplers that connect the modules on the lamp edge have three arms (7) set in a letter T, and the couplers (6) linking the modules making the lamp inner part have four arms (7) arranged in an X shape.

10 [0022] A power supply (9) is fixed to the mounting plate (1), and is connected to the light source (2) with the leads (10) to the adjacent modules. The light source (2) has at least one LED.

15 [0023] Stiffening bumps (11) are punched on the mounting plate (1), preferably with holes for hanging the lamp or screwing it to the supporting surface, eg. a ceiling, wall, or a cavity in a floor.

20 [0024] Depending on the embodiment, the inner surface of the reflector (3) is a reflecting or scattering or textured surface, in particular embossed, and the horizontal cross section of the reflector (3) is circular or elliptical, or rectangular, in particular square, or triangular, or hexagonal.

25 [0025] Also depending on the embodiment, the faceplate (4) is transparent or milky, or textured, and the texture of the faceplate (4) forms pyramids, preferably of a triangular or rectangular base, as shown in Fig. 4, or Fresnel lens assemblies, preferably with centers lying on the symmetry axes of the respective reflectors (3).

Claims

- 35 1. A ceiling lamp, **characterized in that** it comprises at least one module which comprises a mounting plate (1) having at least one light source (2) arranged in the reflector (3), a faceplate (4) and profiled side strips (5), the edges of the mounting plate (1) and the faceplate (4) being covered by the side strips (5) which are at the ends obliquely cut so that the two adjacent ends of the side strips (5) cover the corners of the mounting plate (1) and faceplate (4), with the adjacent ends of at least two side strips (5) being coupled by a coupler (6) consisting of at least two arms (7) recessed into the ends of the side strips (5).
- 40 2. The lamp according to claim 1, **characterized in that** at the ends of the side strips (5) and of the arms (7) of the couplers (6) there are corresponding holes for screws (8) locking the coupler (6) in the side strips (5) and preferably fixing the mounting plate (1) to the side strips (5).
- 45 3. The lamp according to claim 1, **characterized in that** at the ends of the side strips (5) and in the arms (7) of the couplers (6) there are corresponding latching members locking the coupler (6) in the side strips (5).

4. The lamp according to claim 1 or 2, or 3, **characterized in that** the side strips (5) located between the modules are common to adjacent modules.
5. The lamp according to claim 1 or 2, or 3 or 4, **characterized in that** the side strips (5) located on the lamp edges have full outer walls or are closed by masking strips.
6. The lamp according to any one of claims 1 to 5, **characterized in that** the couplers (6) in the lamp corners have two arms (7) arranged in a letter L, the couplers (6) connecting the modules at the edge of the lamp have three arms (7) arranged in a letter T, and the couplers (6) connecting the modules in the inner part of the lamp have four arms (7) arranged in a letter X.
7. The lamp according to any one of claims 1 to 6, **characterized in that** the inner surface of the reflector (3) is reflective.
8. The lamp according to any one of claims 1 to 6, **characterized in that** the inner surface of the reflector (3) is dispersive.
9. The lamp according to any one of claims 1 to 8, **characterized in that** the inner surface of the reflector (3) is textured, in particular embossed.
10. The lamp according to any one of claims 1 to 9, **characterized in that** the horizontal cross-section of the reflector (3) is circular, or elliptical, or rectangular, in particular square, or triangular, or hexagonal.
11. The lamp according to any one of claims 1 to 10, **characterized in that** the faceplate (4) is transparent or milky, or textured.
12. The lamp according to claim 11, **characterized in that** the texture of the faceplate (4) is formed by pyramids, preferably of a triangular or rectangular base.
13. The lamp according to claim 11, **characterized in that** the texture of the faceplate (4) is formed by assemblies of Fresnel lenses.
14. The lamp according to any one of claims 1 to 13, **characterized in that** the faceplate (4) is stained.
15. The lamp according to any one of claims 1 to 14, **characterized in that** a supply device (9) is mounted on the mounting plate (1) and is connected to the light sources (2) with the leads (10) to the adjacent modules.
16. The lamp according to any one of claims 1 to 15, **characterized in that** the light source (2) is at least one LED.

17. The lamp according to any one of claims 1 to 16, **characterized in that** the mounting plate (1) has stiffening bumps (11), preferably with holes for hanging the lamp or screwing it to the supporting surface.

Amended claims in accordance with Rule 137(2) EPC.

1. A ceiling lamp comprising at least one module which comprises a mounting plate (1) having at least one light source (2) arranged in the reflector (3), a faceplate (4) and profiled side strips (5), the edges of the mounting plate (1) and the faceplate (4) being covered by the side strips (5) which are at the ends obliquely cut so that the two adjacent ends of the side strips (5) cover the corners of the mounting plate (1) and faceplate (4), with the adjacent ends of at least two side strips (5) being coupled by a coupler (6) consisting of at least two arms (7) recessed into the ends of the side strips (5), **characterized in that** at the ends of the side strips (5) and of the arms (7) of the couplers (6) there are corresponding holes for screws (8) locking the coupler (6) in the side strips (5) and fixing the mounting plate (1) to the side strips (5), and there are also corresponding latching members locking the coupler (6) in the side strips (5), and **in that** the side strips (5) located between the modules are common to adjacent modules, wherein the side strips (5) located on the lamp edges have full outer walls or are closed by masking strips, and also **in that** the couplers (6) in the lamp corners have two arms (7) arranged in a letter L, the couplers (6) connecting the modules at the edge of the lamp have three arms (7) arranged in a letter T, and the couplers (6) connecting the modules in the inner part of the lamp have four arms (7) arranged in a letter X, and **in that** the mounting plate (1) has stiffening bumps (11).
2. The lamp according to claim 1, **characterized in that** the inner surface of the reflector (3) is reflective.
3. The lamp according to claims 1 or 2, **characterized in that** the inner surface of the reflector (3) is dispersive.
4. The lamp according to any one of claims 1 to 3, **characterized in that** the inner surface of the reflector (3) is textured, in particular embossed.
5. The lamp according to any one of claims 1 to 4, **characterized in that** the horizontal cross-section of the reflector (3) is circular, or elliptical, or rectangular, in particular square, or triangular, or hexagonal.
6. The lamp according to any one of claims 1 to 5, **characterized in that** the faceplate (4) is transparent or

milky, or textured.

7. The lamp according to claim 6, **characterized in that** the texture of the faceplate (4) is formed by pyramids, preferably of a triangular or rectangular base. 5
8. The lamp according to claim 6, **characterized in that** the texture of the faceplate (4) is formed by assemblies of Fresnel lenses. 10
9. The lamp according to any one of claims 1 to 8, **characterized in that** the faceplate (4) is stained.
10. The lamp according to any one of claims 1 to 9, **characterized in that** a supply device (9) is mounted on the mounting plate (1) and is connected to the light sources (2) with the leads (10) to the adjacent modules. 15
11. The lamp according to any one of claims 1 to 10, **characterized in that** the light source (2) is at least one LED. 20
12. The lamp according to any one of claims 1 to 11, **characterized in that** the stiffening bumps (11) have holes for hanging the lamp or screwing it to the supporting surface. 25

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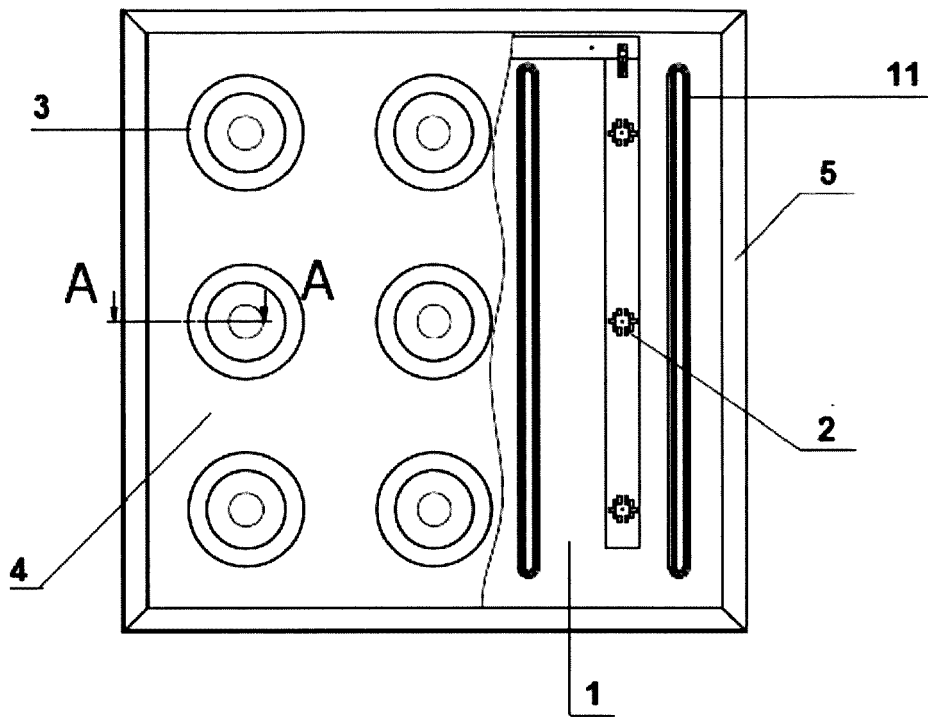


Fig.1

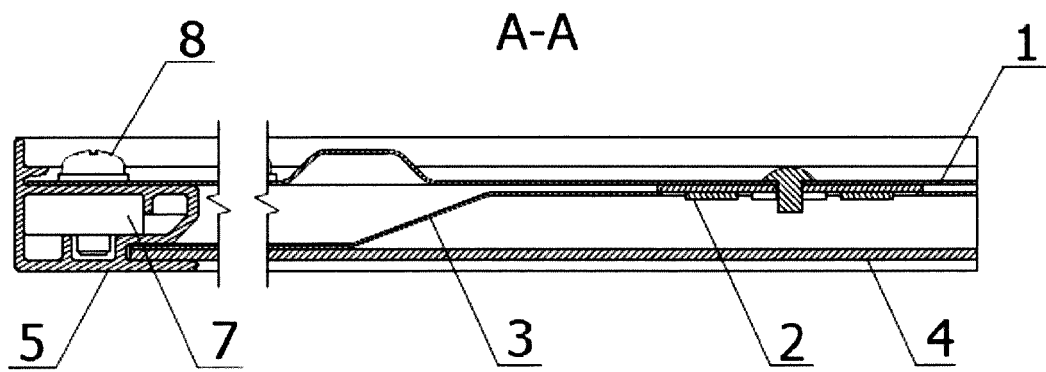


Fig.2

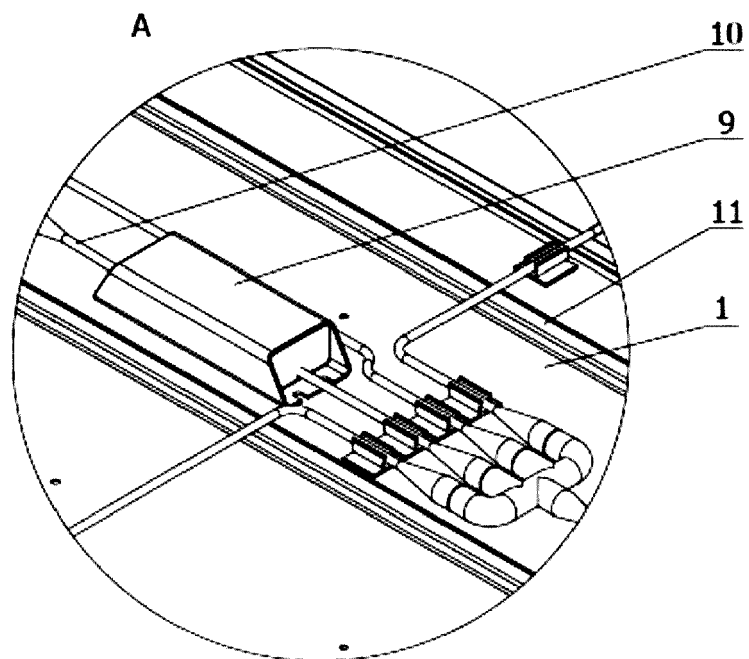
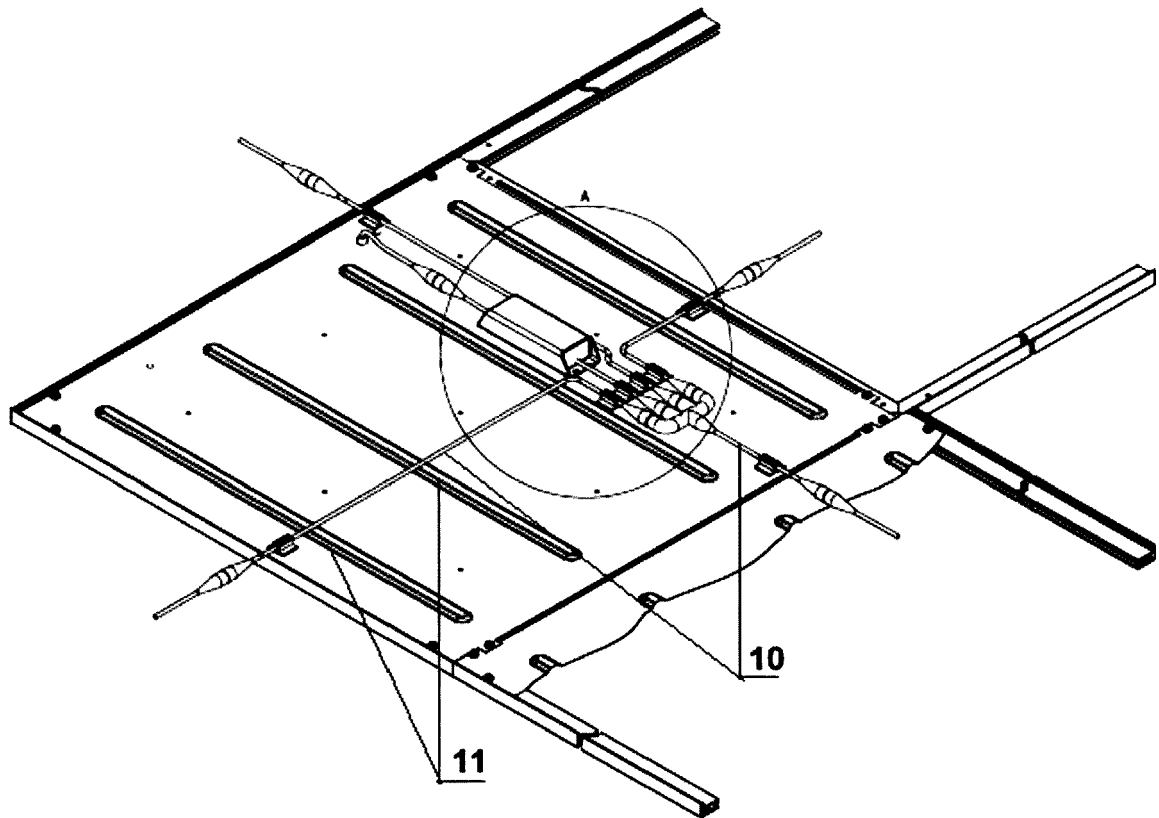


Fig.3

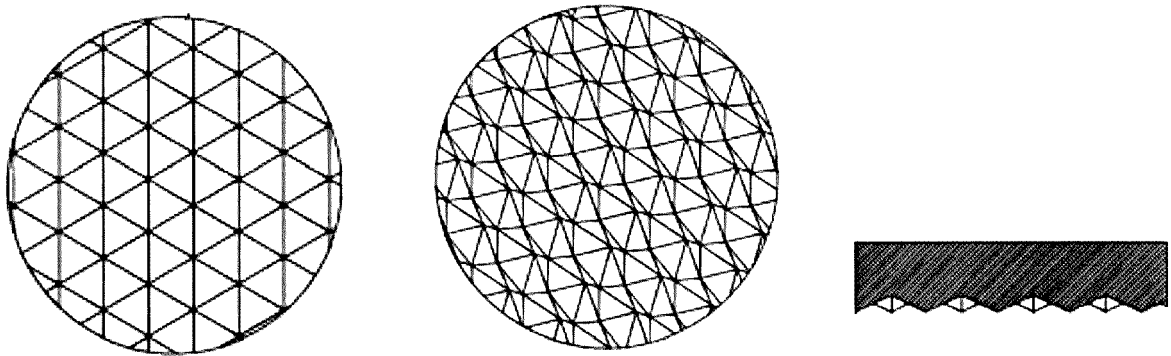


Fig. 4

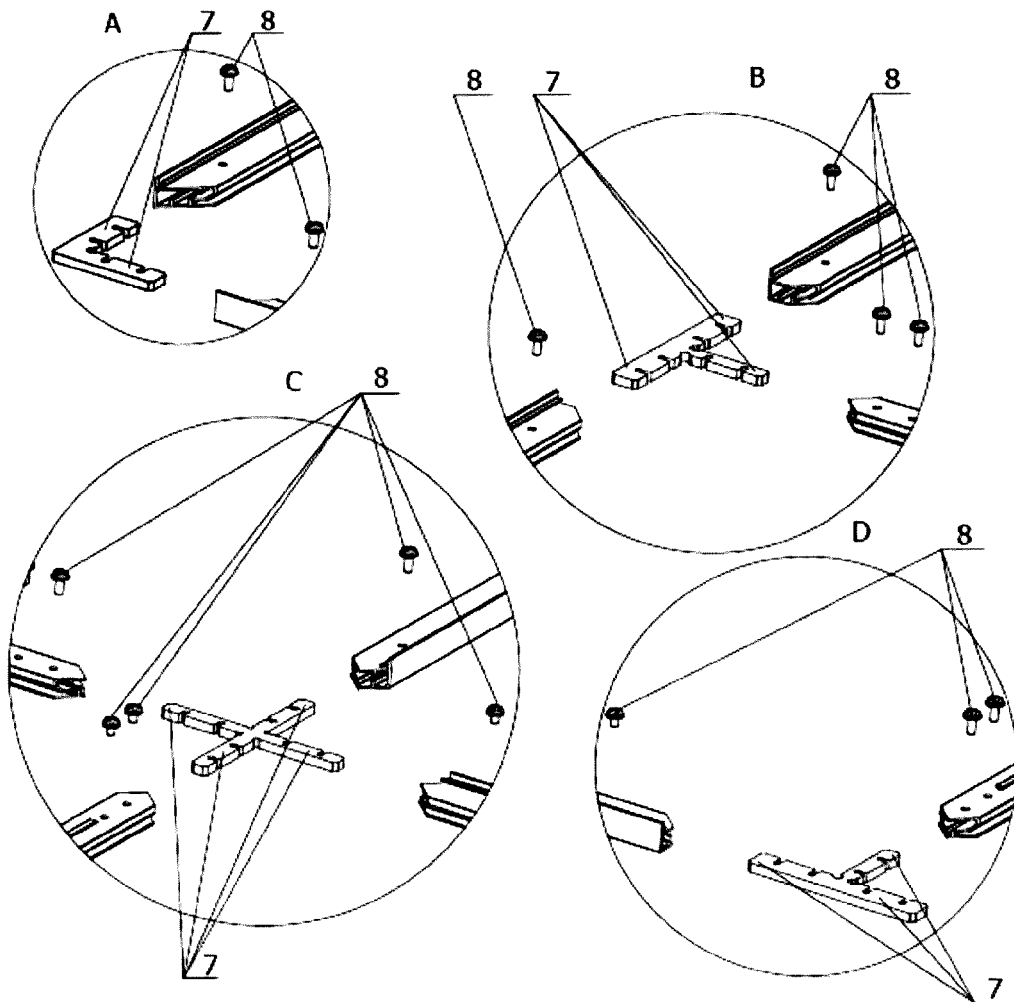
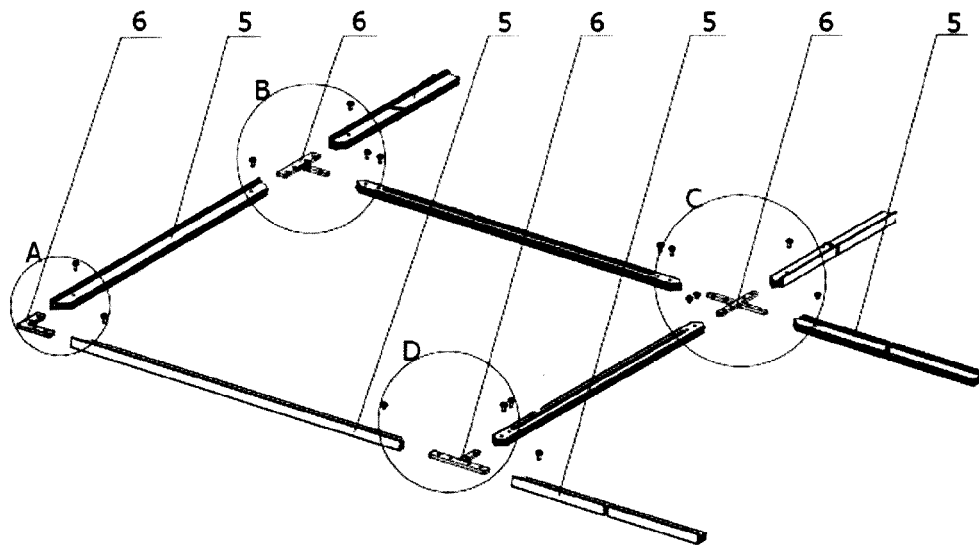


Fig.5



EUROPEAN SEARCH REPORT

Application Number
EP 17 46 0060

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Y	* figures 11-15 * * paragraphs [0019] - [0046] *	4,6-10, 12-14	F21S8/00 F21S8/04 F21V15/01 F21V21/005
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 16 November 2017	Examiner Vida, Gyorgy
CATEGORY OF CITED DOCUMENTS 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		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	

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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5 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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