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

(11) **EP 3 625 403 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
03.11.2021 Bulletin 2021/44

(21) Application number: **17726708.5**

(22) Date of filing: **19.05.2017**

(51) Int Cl.:
E04B 9/04 *(2006.01)* *E04F 13/00* *(2006.01)*

(86) International application number:
PCT/IB2017/052960

(87) International publication number:
WO 2018/211313 (22.11.2018 Gazette 2018/47)

(54) BUILDING PANEL ADAPTED TO BE MOUNTED AT A CEILING OR WALL OF A ROOM AND METHOD OF MANUFACTURING SUCH BUILDING PANEL

GEBÄUDEPANEEL ZUR MONTAGE AN EINER GEBÄUDEDECKE ODER -WAND UND HERSTELLUNGSMETHODE EINES SOLCHEN PANEELS

PANNEAU ADAPTÉ POUR ÊTRE INSTALLÉ À UN PLAFOND OU UN MUR ET UNE METHODE DE PRODUCTION D'UN TEL PANNEAU

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(43) Date of publication of application:
25.03.2020 Bulletin 2020/13

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Description

[0001] The present invention relates to a building panel adapted to be mounted at a ceiling or wall of a room so that a framework of the building panel has a room-facing side and a building-facing side, wherein the framework includes a peripheral frame formed by frame profile members, wherein a textile is extended over the room-facing side of the framework between the frame profile members, and wherein each edge of the textile is attached to a corresponding frame profile member by means of a spring-biased tensioning mechanism.

[0002] Such building panels can generally be used to cover interior surfaces in buildings, for instance in auditoriums, open-plan offices, etc. In such fields as architecture and interior design there is often a need for panels for covering of boundaries of a room, such as the ceiling, the walls or partitions placed within the room. Such panels can serve purely aesthetic purposes but can also be used to actively alter a room's characteristics, for instance relating to acoustic and thermal properties of the room.

[0003] WO 2005/073482 A2 discloses a system of building panels for suspended ceilings. Each building panel includes a frame composed by profile members, and a room-facing side of the building panel is formed by a textile suspended between the profile members. Different tensioning systems are disclosed whereby the textile may be stretched evenly over the opening of the frame and thereby form a smooth flat surface visible from the room. However, whereas the building panels disclosed are excellent when a smooth flat textile surface is desired, these building panels are generally not suitable if a curved textile surface is required.

[0004] In the fields of architecture and interior design, building panels having a curved textile surface visible from the room may be required for different reasons, such as for aesthetic or practical purposes. The required dimensions of such building panels may vary greatly.

[0005] The object of the present invention is to provide a building panel suitable for extending smoothly curved textile surfaces of any desired size.

[0006] In view of this object, the peripheral frame is composed by two opposed curved frame profile members and by two opposed straight frame profile members so that the extended textile forms a curved surface, each curved frame profile member is provided with a first spring-biased tensioning mechanism for tensioning the textile and each straight frame profile member is provided with a second spring-biased tensioning mechanism for tensioning the textile, and the first spring-biased tensioning mechanisms are of such a different mechanical construction than the second spring-biased tensioning mechanisms that each first spring-biased tensioning mechanism in the tensioned state of the textile provides a first tensioning force per unit edge length of the textile and each second spring-biased tensioning mechanism is adapted to provide a second maximum tensioning force per unit edge length of the textile, the first tensioning force per unit edge length of the textile being greater than the second maximum tensioning force per unit edge length of the textile.

[0007] In this way, by ensuring said difference between the first and second tensioning forces per unit edge length of the textile, the first spring-biased tensioning mechanisms may extend the textile between the two opposed curved frame profile members by means of a relatively greater force per unit edge length of the textile, thereby ensuring that the textile forms an intended curvature over the entire length of the peripheral frame between the curved frame profile members, and the second spring-biased tensioning mechanisms may by means of a relatively smaller force per unit edge length of the textile ensure that the textile is suitably stretched between the two opposed straight frame profile members without negatively influencing the intended curvature of the textile. Furthermore, as a consequence of said difference between the first and second tensioning forces per unit edge length of the textile, advantageously, the second spring-biased tensioning mechanism may be of a simpler construction and may take up less space in the building panel than the first spring-biased tensioning mechanism.

[0008] In an embodiment, the first tensioning force per unit edge length of the textile is at least two times greater, preferably at least five times greater and most preferred at least ten times greater than the second maximum tensioning force per unit edge length of the textile. Thereby, it may even better be ensured that the textile forms an intended curvature over the entire length of the peripheral frame between the curved frame profile members.

[0009] In a structurally particularly advantageous embodiment, the two opposed curved frame profile members have identical curvatures.

[0010] In an embodiment, in the attached state of an edge of the textile to a corresponding curved frame profile member by means of the first spring-biased tensioning mechanism, the first tensioning force per unit edge length of the textile provided by said first spring-biased tensioning mechanism is adjustable, preferably steplessly. Thereby, by adjustment of the first tensioning force in dependence of the actual curvature of the curved frame profile members, it may even better be ensured that the textile forms an intended curvature over the entire length of the peripheral frame between the curved frame profile members.

[0011] In an embodiment, each first spring-biased tensioning mechanism is arranged at least partly outside the corresponding curved frame profile member, and each second spring-biased tensioning mechanism is arranged inside a channel of the corresponding straight frame profile member. Thereby, the first spring-biased tensioning mechanism may by means of sturdy components suitably be configured to provide a relatively large tensioning force, whereas the second spring-biased tensioning mechanism may by means of smaller components suitably take up relatively little space in the building panel.

[0012] In a structurally particularly advantageous embodiment, each first spring-biased tensioning mechanism includes at least one tension coil spring having a first end attached to a tension profile member forming part of the framework and being spaced from the curved frame profile member and a second end attached to the corresponding edge of the textile.

[0013] In a structurally particularly advantageous embodiment, the first end of said tension coil spring is attached to an adjustment mechanism attached to the tension profile member. Thereby, by adjustment of the first tensioning force in dependence of the actual curvature of the curved frame profile members, it may even better be ensured that the textile forms an intended curvature over the entire length of the peripheral frame between the curved frame profile members.

[0014] In a structurally particularly advantageous embodiment, the first end of said tension coil spring is attached to the eye of an eyebolt inserted through a hole in the tension profile member, and the bolt of the eyebolt is adjustably mounted in the hole of the tension profile member by means of a nut screwed onto the bolt.

[0015] In a structurally particularly advantageous embodiment, the second end of said tension coil spring is attached, preferably by means of a hook member, to an elongated profile attached along the corresponding edge of the textile.

[0016] In an embodiment, each curved frame profile member has a building-facing side and a room-facing side connected by means of a rounded edge about which the textile is bent, and the elongated profile is arranged in a channel in the building-facing side of the curved frame profile member and is preferably attached to the second end of said tension coil spring by means of a hook member extending through an opening in the curved frame profile member. Thereby, the edge of the textile may suitably be attached to the first spring-biased tensioning mechanism at the building-facing side of the curved frame profile member, and at the same time the first spring-biased tensioning mechanism may include a relatively large tension coil spring situated outside the curved frame profile member.

[0017] In an embodiment, each straight frame profile member has a building-facing side and a room-facing side connected by means of a rounded edge about which the textile is bent, each second spring-biased tensioning mechanism includes a bracket arranged in a channel in the building-facing side of the straight frame profile member, and the bracket is spring-biased sideward in the track in order to tension the textile between the opposed rounded edges of the opposed straight frame profile members. Thereby, a suitable maximum tensioning force may be provided by the second spring-biased tensioning mechanism.

[0018] In an embodiment, the distance between the two opposed curved frame profile members is at least 2/3 of, preferably greater than and most preferably at least 4/3 of the distance between the two opposed straight frame profile members. The above-described arrangement of the first and second spring-biased tensioning mechanisms for tensioning the textile is specifically advantageous for panels having the just mentioned distance between the two opposed curved frame profile members, because with such dimensions, by means of already known tensioning systems providing equal tensioning force per unit edge length of the textile in both directions of the textile, it would be very difficult ensuring that the textile forms an intended curvature over the entire length of the peripheral frame between curved frame profile members. Typically, with already known tensioning systems, this would result in the textile flattening out in a central part of the panel.

[0019] In an embodiment, each curved frame profile member is made from an extruded metal profile, preferably made of aluminium, each curved frame profile member is provided with a number of lateral slits spaced from each other in the longitudinal direction of the curved frame profile member, each lateral slit extends only partly through the extruded metal profile, and each curved frame profile member is strengthened by means of a flat, curved metal plate attached to the extruded metal profile along its length. Thereby, a mass produced extruded profile member may easily be formed to any desired curvature of an actual framework of a building panel. The flat, curved metal plate may easily be cut to the desired curvature, for instance by means of a laser cutter, and may compensate for the flexibility of the extruded profile member provided by the lateral slits. In this way, conveniently, the same type of extruded profile member may be employed for producing both the straight frame profile members and the curved frame profile members.

[0020] The present invention further relates to a method of manufacturing a building panel adapted to be mounted at a ceiling or wall of a room so that a framework of the building panel has a room-facing side and a building-facing side, the framework including a peripheral frame formed by frame profile members, whereby a textile is extended over the room-facing side of the framework between the frame profile members, and whereby each edge of the textile is attached to a corresponding frame profile member by means of a spring-biased tensioning mechanism.

[0021] The method is characterised in that the peripheral frame is composed by two opposed curved frame profile members and by two opposed straight frame profile members in order for the extended textile to form a curved surface, in that, firstly, the textile is tensioned to a first tensioning force per unit edge length of the textile in relation to each curved frame profile member by means of a first spring-biased tensioning mechanism and, secondly, the textile is tensioned to a second tensioning force per unit edge length of the textile in relation to each straight frame profile member by means of a second spring-biased tensioning mechanism, the first tensioning force per unit edge length of the textile being greater than the second tensioning force per unit edge length of the

textile.

[0022] In this way, by ensuring said difference between the first and second tensioning forces per unit edge length of the textile, the first spring-biased tensioning mechanisms may extend the textile between the two opposed curved frame profile members by means of a relatively greater force per unit edge length of the textile, thereby ensuring that the textile forms an intended curvature over the entire length of the peripheral frame between the curved frame profile members, and the second spring-biased tensioning mechanisms may by means of a relatively smaller force per unit edge length of the textile ensure that the textile is suitably stretched between the two opposed straight frame profile members without negatively influencing the intended curvature of the textile. By firstly tensioning the textile by means of the relatively greater force by means of the first spring-biased tensioning mechanisms, it may be ensured that the textile forms said intended curvature over the entire length of the peripheral frame between the curved frame profile members before the textile is attached to the straight frame profile members. Thereby, the length of the textile between the opposed straight frame profile members may be adapted accordingly before attachment by means of the second spring-biased tensioning mechanisms. Therefore, the second spring-biased tensioning mechanisms may not need to be adapted to take up large variations in the length of the textile and may therefore be of a relatively simple construction as compared to the first spring-biased tensioning mechanisms. Furthermore, also as a consequence of said difference between the first and second tensioning forces per unit edge length of the textile, advantageously, the second spring-biased tensioning mechanism may be of a relatively simpler construction and may take up less space in the building panel than the first spring-biased tensioning mechanism.

[0023] In an embodiment, the first tensioning force per unit edge length of the textile is at least two times greater, preferably at least five times greater and most preferred at least ten times greater than the second maximum tensioning force per unit edge length of the textile. Thereby, the above-mentioned features may be obtained.

[0024] In an embodiment, before tensioning the textile in relation to each straight frame profile member by means of the second spring-biased tensioning mechanism, the first tensioning force per unit edge length of the textile provided by the first spring-biased tensioning mechanism is adjusted, preferably steplessly, by means of the first spring-biased tensioning mechanism. Thereby, the above-mentioned features may be obtained.

[0025] In an embodiment, the distance between the two opposed curved frame profile members is at least 2/3 of, preferably greater than and most preferably at least 4/3 of the distance between the two opposed straight frame profile members. Thereby, the above-mentioned features may be obtained.

[0026] The invention will now be explained in more detail below by means of examples of embodiments with reference to the very schematic drawing, in which

Figs. 1 to 7 illustrate perspective views of different stages of the assembly of a framework of a building panel according to the invention;

Fig. 8 illustrates a perspective view of part of a framework of a building panel according to the invention, seen from the room-facing side of the framework, before extension of a textile over the framework;

Fig. 9 illustrates a perspective view of part of the building panel of Fig. 8, seen from the building-facing side of the framework, after extension of a textile over the framework;

Fig. 10 is a side view of part of a first spring-biased tensioning mechanism of the building panel of Fig. 9;

Fig. 11 is a cross-sectional view through part of the building panel of Fig. 9, illustrating the first spring-biased tensioning mechanism of the building panel;

Fig. 12 is a cross-sectional view through a thickened area along an edge of the textile and a corresponding elongated profile adapted to grip over said thickened area;

Fig. 13 illustrates a perspective view of part of the elongated profile of Fig. 12;

Fig. 14 is a cross-sectional view through a straight frame profile member of the building panel of Fig. 9;

Fig. 15 illustrates a perspective, exploded view of part of the straight frame profile member of Fig. 14 and associated fittings; and

Fig. 16 illustrates a perspective cross-sectional view through part of the straight frame profile member of Fig. 14.

Fig. 9 illustrates part of an embodiment of a building panel 1 according to the present invention, adapted to be mounted at a ceiling or wall of a room so that a framework 2 of the building panel has a room-facing side 3 and a building-facing side 4. The framework 2 includes a peripheral frame 5 formed by frame profile members 13, 14, of which only two are visible in the figure. A textile 9 is extended over the room-facing side 3 of the framework 2 between the frame profile members 13, 14, and each edge 18 of the textile 9 is attached to a corresponding frame profile member by means of a spring-biased tensioning mechanism 6, 7. The textile 9 has a first surface 10 facing the framework 2 and a second surface 11 generally visible from said room, as seen in Fig. 11.

[0027] The peripheral frame 5 is composed by two opposed curved frame profile members 13 of which only one in the lower part of Fig. 9 is illustrated and by two opposed straight frame profile members 14 of which only one to the right of the figure is illustrated. It is therefore understood that the part of the building panel 1 illustrated in Fig. 9 forms a (as seen in the figure) lower, right part of the entire building panel 1. Thereby, as illustrated, the extended textile 9 forms a curved surface, which in the illustrated embodiment is concave seen from the room-facing side 3 of the framework 2. In other embodiments, the extended textile 9 may form a curved surface which is convex. Depending on the form of the curved frame profile members 13, the extended textile 9 may form a curved surface which is partly cylindrical, such as a partly circular cylindrical surface.

[0028] Each curved frame profile member 13 is provided with a first spring-biased tensioning mechanism 6 for tensioning the textile 9 as illustrated in more detail in Figs. 9 to 13. Furthermore, each straight frame profile member 14 is provided with a second spring-biased tensioning mechanism 7 for tensioning the textile 9 as illustrated in more detail in Figs. 14 to 16. As it is seen, the first spring-biased tensioning mechanisms 6 are of a different mechanical construction than the second spring-biased tensioning mechanisms 7, whereby each first spring-biased tensioning mechanism 6 is arranged to provide, in the tensioned state of the textile 9, a first tensioning force per unit edge length of the textile 9, and each second spring-biased tensioning mechanism 7 is adapted to provide a second maximum tensioning force per unit edge length of the textile 9, whereby the first tensioning force per unit edge length of the textile is greater than the second maximum tensioning force per unit edge length of the textile. In this way it is ensured that the textile is extended by a relatively greater force (per unit edge length of the textile) in the direction extending between the two opposed curved frame profile members 13 than in the direction extending between the two opposed straight frame profile member 14. It is noted that the tensioning force per unit edge length of the textile 9 is understood as the total tensioning force applied to the textile over a certain edge 18 of the textile 9 divided by the length of that edge of the textile.

[0029] It is preferred that the first tensioning force per unit edge length of the textile is at least two times greater, preferably at least five times greater and most preferred at least ten times greater than the second maximum tensioning force per unit edge length of the textile. As in the illustrated embodiment, it is preferred that the two opposed curved frame profile members 13 have identical curvatures. It is further preferred, as it will be explained in further detail below, that the first tensioning force per unit edge length of the textile provided by said first spring-biased tensioning mechanism 6 is adjustable, preferably steplessly.

[0030] Comparing on the one hand Figs. 9 and 11 and on the other hand Figs. 14 and 16, it is seen that each first spring-biased tensioning mechanism 6 is arranged at least partly outside the corresponding curved frame profile member 13, and each second spring-biased tensioning mechanism 7 is arranged inside a channel 21 of the corresponding straight frame profile member 14.

[0031] As illustrated in Figs. 9 to 11, each first spring-biased tensioning mechanism 6 includes a number of tension coil springs 12 having a first end 23 attached to a tension profile member 26 forming part of the framework 2 and being spaced from the curved frame profile member 13 and a second end 24 attached to the corresponding edge 18 of the textile 9.

[0032] The first end 23 of said tension coil spring 12 is attached to an adjustment mechanism 27 attached to the tension profile member 26 in the following way: The first end 23 of said tension coil spring 12 is attached to the eye 29 of an eyebolt 28 inserted through a hole 31 in the tension profile member 26, and the bolt 32 of the eyebolt 28 is adjustably mounted in the hole 31 of the tension profile member 26 by means of a nut 33 screwed onto the bolt 32. Of course, the adjustment mechanism 27 may be of any other suitable type known to the skilled person. The second end 24 of said tension coil spring 12 is by means of a hook member 34 attached to an elongated profile 35 attached along the corresponding edge 18 of the textile 9. The elongated profile 35 grips over a thickened area 50 along the edge 18 of the textile 9. The elongated profile 35 has a tubular cross-section 51 with a longitudinally extending slit 52 through which the textile 9 extends, and the elongated profile 35 is attached to the second hook 48 of the hook member 34 in that the second hook 48 is inserted into a hole 53 in the flange 49 of the elongated profile 35. Each elongated profile 35 may be provided with a number of holes 53 each connected with a separate tension coil spring 12. Furthermore, each edge 18 of the textile 9 may be provided with a number of elongated profiles 35 arranged in continuation of each other and possibly spaced. The thickened area 50 along the edge 18 of the textile 9 is formed by means of a hem 54 with a string 55 or rod inside. The elongated profile 35 is particularly well illustrated in Figs. 12 and 13, and the elongated profile 35 and the thickened area 50 are illustrated in cross-section in Fig. 12.

[0033] As best illustrated in Fig. 11, each curved frame profile member 13 has a building-facing side 17 and a room-facing side 16 connected by means of a rounded edge 15 about which the textile 9 is bent. The elongated profile 35 is arranged in a channel 21 in the building-facing side 17 of the curved frame profile member 13 and is attached to the second end 24 of said tension coil spring 12 by means of the hook member 34 extending through an opening 36 in the curved frame profile member 13; see also Fig. 2.

[0034] As illustrated in Figs. 14 to 16, each straight frame profile member 14 has a rounded outer edge 15 connecting a room-facing side 16 of the straight frame profile member 14 with a building-facing side 17 of the straight frame profile member 14. The textile 9 is bent

about the rounded outer edges 15 of the straight frame profile members 14, and an edge 18 of the textile 9 is fixed resiliently by means of at least one spring member 19 to the building-facing side 17 of the straight frame profile members 14. Each edge 18 of the textile 9 is provided with a bracket 20 arranged in a channel 21 in the building-facing side 17 of the corresponding straight frame profile member 14, and the bracket 20 is spring-biased sideward in the channel 21 by means of the least one spring member 19 in order to tension the textile 9 between the opposed rounded outer edges 15 of the respective straight frame profile members 14. The spring member 19 has the form of an elongated flexible hoop. As illustrated in Figs. 14 to 16, the edge 18 of the textile 9 is fixed in a serrated track 30 extending longitudinally in the bracket 20 in that a retaining member 22 in the form of a spring is pressed into the serrated track 30, thereby pinching the textile edge 18 against the serrated walls of the serrated track 30. By this arrangement, as a consequence of the maximum possible pressure force of the spring member 19, it may be ensured that the second spring-biased tensioning mechanism 7 is adapted to provide a second maximum tensioning force per unit edge length of the textile 9.

[0035] It is preferred that the distance between the two opposed curved frame profile members 13 is at least 2/3 of, preferably greater than and most preferably at least 4/3 of the distance between the two opposed straight frame profile members 14. The above-described arrangement of the first and second spring-biased tensioning mechanisms 6, 7 for tensioning the textile 9 is specifically advantageous for panels having the just mentioned distance between the two opposed curved frame profile members 13, because with such dimensions, by means of already known tensioning systems providing equal tensioning force per unit edge length of the textile in both directions of the textile, it would be very difficult ensuring that the textile forms an intended curvature over the entire length of the peripheral frame between curved frame profile members. Typically, with already known tensioning systems, this would result in the textile flattening out in a central part of the panel.

[0036] Preferably, each curved frame profile member 13 is made from an extruded metal profile 37, preferably made of aluminium, and each curved frame profile member 13 is provided with a number of lateral slits 38 spaced from each other in the longitudinal direction of the curved frame profile member 13, whereby each lateral slit 38 extends only partly through the extruded metal profile 37. Thereby, by providing flexibility to the extruded metal profile 37 by means of the lateral slits 38, a mass produced extruded profile member may easily be formed to any desired curvature of an actual framework of a building panel. Subsequently to the bending of the extruded metal profile 37 provided with lateral slits 38 into a desired curvature, the flexible extruded metal profile 37 is strengthened by means of a flat, curved metal plate 39 attached to the extruded metal profile 37 along its length. The curved metal plate 39 may be attached to the extruded metal profile 37 for instance by means of rivets 56 or any other suitable fastening devices or methods, such as welding. Thereby a stiff, curved frame profile member 13 suitable for the framework 2 may be obtained from a mass produced extruded profile member. The flat, curved metal plate 39 may easily be cut to the desired curvature, for instance by means of a laser cutter, and may compensate for the flexibility of the extruded metal profile 37 provided by the lateral slits. In this way, conveniently, the same type of extruded profile member may be employed for producing both the straight frame profile members 14 and the curved frame profile members 13.

[0037] Comparing Figs. 11 and 16, it is seen that in the illustrated embodiment, the same type of extruded profile member has been employed for producing both the straight frame profile members 14 and the curved frame profile members 13. It is noted that therefore, for both the straight frame profile members 14 and the curved frame profile members 13, the rounded edge 15 connecting the room-facing side 16 of the frame profile members 13, 14 with the building-facing side 17 of the frame profile members 13, 14 is arranged at the outer edge of an in the figures obliquely downward extending flange portion of the frame profile members 13, 14. Thereby, it may be ensured that the part of the textile 9 visible from the room only touches the framework 2 at the rounded edges 15 of the frame profile members 13, 14. Consequently, a very smooth curved visible textile surface may be obtained.

[0038] In order to manufacture a building panel 1 according to the present invention, the framework 2 as partly illustrated in Fig. 8 is assembled from the peripheral frame 5 formed by the four frame profile members 13, 14 described above, as well as two tension profile members 26 of which one is seen in the figure, a number of curved framework profile members 42, and a number of straight framework profile members 43. Each tension profile member 26 is arranged parallelly to and at a distance from a curved frame profile member 13 in order to support the first spring-biased tensioning mechanism 6. The curved framework profile members 42 are arranged parallelly to and at a distance from a tension profile member 26 in order to support the framework 2 and possibly support a number of insulation mats 8. The straight framework profile member or members 43 is/are arranged parallelly to and at a distance from the straight frame profile members 14 in order to support the framework 2 and possibly support a number of insulation mats 8.

[0039] Subsequently to the assembly of the framework 2, a textile 9 is extended over the room-facing side 3 of the framework 2 between the frame profile members 13, 14, whereby each edge 18 of the textile 9 is attached to a corresponding frame profile member by means of a spring-biased tensioning mechanism 6, 7. Thereby, the extended textile 9 may form a curved surface 10, 11.

[0040] Then, firstly, the textile 9 is tensioned to a first tensioning force per unit edge length of the textile in re-

lation to each curved frame profile member 13 by means of the first spring-biased tensioning mechanism 6 and, secondly, the textile 9 is tensioned to a second tensioning force per unit edge length of the textile in relation to each straight frame profile member 14 by means of the second spring-biased tensioning mechanism 7, whereby the first tensioning force per unit edge length of the textile is greater than the second tensioning force per unit edge length of the textile.

[0041] Preferably, before tensioning the textile 9 in relation to each straight frame profile member 14 by means of the second spring-biased tensioning mechanism 7, the first tensioning force per unit edge length of the textile provided by the first spring-biased tensioning mechanism 6 is adjusted, preferably steplessly, by means of the first spring-biased tensioning mechanism 6.

[0042] The textile 9 may be a non-woven or woven fabric in the form of a flexible material formed by natural or artificial fibres, yarn or thread. The textile 9 is preferably of a material or structure that allows air to diffuse through it.

List of reference numbers

[0043]

1 building panel
2 framework
3 room-facing side of framework
4 building-facing side of framework
5 peripheral frame
6 first spring-biased tensioning mechanism
7 second spring-biased tensioning mechanism
8 insulation mat
9 textile
10 first surface of textile
11 second surface of textile
12 tension coil spring
13 curved frame profile member
14 straight frame profile member
15 rounded outer edge of profile member
16 room-facing side of profile member
17 building-facing side of profile member
18 edge of textile
19 spring member
20 bracket
21 channel of frame profile member
22 retaining member
23 first end of tension coil spring
24 second end of tension coil spring
25 mounting track of profile member
26 tension profile member
27 adjustment mechanism
28 eyebolt
29 eye of eyebolt
30 serrated track of bracket
31 hole in tension profile member
32 bolt of eyebolt
33 nut
34 hook member
35 elongated profile
36 opening in curved frame profile member
37 extruded metal profile of curved frame profile member
38 lateral slit of extruded metal profile of curved frame profile member
39 curved metal plate of curved frame profile member
40 body of tension profile member
41 flange of tension profile member
42 curved framework profile member
43 straight framework profile member
44 partly throughgoing slit of insulation mat
45 curved metal plate of tension profile member
46 slit of tension profile member
47 first hook of hook member
48 second hook of hook member
49 flange of elongated profile
50 thickened area along edge of textile
51 tubular cross-section of elongated profile
52 longitudinally extending slit tubular cross-section of elongated profile
53 hole in flange of elongated profile
54 hem
55 string or rod
56 rivet

Claims

1. A building panel (1) adapted to be mounted at a ceiling or wall of a room so that a framework (2) of the building panel has a room-facing side (3) and a building-facing side (4), wherein the framework (2) includes a peripheral frame (5) formed by frame profile members (13, 14), wherein a textile (9) is extended over the room-facing side (3) of the framework (2) between the frame profile members (13, 14), and wherein each edge (18) of the textile (9) is attached to a corresponding frame profile member by means of a spring-biased tensioning mechanism (6, 7), **characterised in that** the peripheral frame (5) is composed by two opposed curved frame profile members (13) and by two opposed straight frame profile members (14) so that the extended textile (9) forms a curved surface (10, 11), **in that** each curved frame profile member (13) is provided with a first spring-biased tensioning mechanism (6) for tensioning the textile (9) and each straight frame profile member (14) is provided with a second spring-biased tensioning mechanism (7) for tensioning the textile (9), and **in that** the first spring-biased tensioning mechanisms (6) are of such a different mechanical construction than the second spring-biased tensioning mechanisms (7) that each first spring-biased tensioning mechanism (6) in the tensioned state of the textile (9) provides a first tensioning force per unit

edge length of the textile and each second spring-biased tensioning mechanism (7) is adapted to provide a second maximum tensioning force per unit edge length of the textile, the first tensioning force per unit edge length of the textile being greater than the second maximum tensioning force per unit edge length of the textile.

2. A building panel according to claim 1, wherein the first tensioning force per unit edge length of the textile is at least two times greater, preferably at least five times greater and most preferred at least ten times greater than the second maximum tensioning force per unit edge length of the textile.

3. A building panel according to claim 1 or 2, wherein the two opposed curved frame profile members (13) have identical curvatures.

4. A building panel according to any one of the preceding claims, wherein, in the attached state of an edge (18) of the textile (9) to a corresponding curved frame profile member (13) by means of the first spring-biased tensioning mechanism (6), the first tensioning force per unit edge length of the textile provided by said first spring-biased tensioning mechanism (6) is adjustable, preferably steplessly.

5. A building panel according to any one of the preceding claims, wherein each first spring-biased tensioning mechanism (6) is arranged at least partly outside the corresponding curved frame profile member (13), and wherein each second spring-biased tensioning mechanism (7) is arranged inside a channel (21) of the corresponding straight frame profile member (14).

6. A building panel according to any one of the preceding claims, wherein each first spring-biased tensioning mechanism (6) includes at least one tension coil spring (12) having a first end (23) attached to a tension profile member (26) forming part of the framework (2) and being spaced from the curved frame profile member (13) and a second end (24) attached to the corresponding edge (18) of the textile (9).

7. A building panel according to claim 6, wherein the first end (23) of said tension coil spring (12) is attached to an adjustment mechanism (27) attached to the tension profile member (26).

8. A building panel according to claim 6 or 7, wherein the first end (23) of said tension coil spring (12) is attached to the eye (29) of an eyebolt (28) inserted through a hole (31) in the tension profile member (26), and wherein the bolt (32) of the eyebolt (28) is adjustably mounted in the hole (31) of the tension profile member (26) by means of a nut (33) screwed onto the bolt (32).

9. A building panel according to any one of the claims 6 to 8, wherein the second end (24) of said tension coil spring (12) is attached, preferably by means of a hook member (34), to an elongated profile (35) attached along the corresponding edge (18) of the textile (9).

10. A building panel according to claim 9, wherein each curved frame profile member (13) has a building-facing side (17) and a room-facing side (16) connected by means of a rounded edge (15) about which the textile (9) is bent, and wherein the elongated profile (35) is arranged in a channel (21) in the building-facing side (17) of the curved frame profile member (13) and is preferably attached to the second end (24) of said tension coil spring (12) by means of a hook member (34) extending through an opening (36) in the curved frame profile member (13).

11. A building panel according to any one of the preceding claims, wherein each straight frame profile member (14) has a building-facing side (17) and a room-facing side (16) connected by means of a rounded edge (15) about which the textile (9) is bent, wherein each second spring-biased tensioning mechanism (7) includes a bracket (20) arranged in a channel (21) in the building-facing side (17) of the straight frame profile member (14), and wherein the bracket (20) is spring-biased sideward in the track (21) in order to tension the textile (9) between the opposed rounded edges (15) of the opposed straight frame profile members (14).

12. A building panel according to any one of the preceding claims, wherein the distance between the two opposed curved frame profile members (13) is at least 2/3 of, preferably greater than and most preferably at least 4/3 of the distance between the two opposed straight frame profile members (14).

13. A building panel according to any one of the preceding claims, wherein each curved frame profile member (13) is made from an extruded metal profile (37), preferably made of aluminium, wherein each curved frame profile member (13) is provided with a number of lateral slits (38) spaced from each other in the longitudinal direction of the curved frame profile member (13), wherein each lateral slit (38) extends only partly through the extruded metal profile (37), and wherein each curved frame profile member (13) is strengthened by means of a flat, curved metal plate (39) attached to the extruded metal profile (37) along its length.

14. A method of manufacturing a building panel adapted to be mounted at a ceiling or wall of a room so that

a framework (2) of the building panel has a room-facing side (3) and a building-facing side (4), the framework (2) including a peripheral frame (5) formed by frame profile members (13, 14), whereby a textile (9) is extended over the room-facing side (3) of the framework (2) between the frame profile members (13, 14), and whereby each edge (18) of the textile (9) is attached to a corresponding frame profile member by means of a spring-biased tensioning mechanism (6, 7), **characterised in that** the peripheral frame (5) is composed by two opposed curved frame profile members (13) and by two opposed straight frame profile members (14) in order for the extended textile (9) to form a curved surface (10, 11), **in that**, firstly, the textile (9) is tensioned to a first tensioning force per unit edge length of the textile in relation to each curved frame profile member (13) by means of a first spring-biased tensioning mechanism (6) and, secondly, the textile (9) is tensioned to a second tensioning force per unit edge length of the textile in relation to each straight frame profile member (14) by means of a second spring-biased tensioning mechanism (7), the first tensioning force per unit edge length of the textile being greater than the second tensioning force per unit edge length of the textile.

15. A method of manufacturing a building panel according to claim 14, wherein the first tensioning force per unit edge length of the textile is at least two times greater, preferably at least five times greater and most preferred at least ten times greater than the second maximum tensioning force per unit edge length of the textile.

16. A method of manufacturing a building panel according to claim 14 or 15, whereby, before tensioning the textile (9) in relation to each straight frame profile member (14) by means of the second spring-biased tensioning mechanism (7), the first tensioning force per unit edge length of the textile provided by the first spring-biased tensioning mechanism (6) is adjusted, preferably steplessly, by means of the first spring-biased tensioning mechanism (6).

17. A method of manufacturing a building panel according to any one of the claims 14 to 16, wherein the distance between the two opposed curved frame profile members (13) is at least 2/3 of, preferably greater than and most preferably at least 4/3 of the distance between the two opposed straight frame profile members (14).

Patentansprüche

1. Bauplatte (1), die zur Montage an einer Decke oder Wand eines Raumes angepasst ist, so dass ein Rahmen (2) der Bauplatte eine raumzugewandte Seite (3) und eine gebäudezugewandte Seite (4) aufweist, wobei der Rahmen (2) einen durch Rahmenprofilelemente (13, 14) gebildeten umlaufenden Rahmen (5) einschließt, wobei ein Textil (9) über die raumzugewandte Seite (3) des Rahmens (2) zwischen den Rahmenprofilelementen (13, 14) gestreckt ist, und wobei jede Kante (18) des Textils (9) mittels eines federvorgespannten Spannmechanismus (6, 7) an einem entsprechenden Rahmenprofilelement befestigt ist, **dadurch gekennzeichnet, dass** der umlaufende Rahmen (5) aus zwei gegenüberliegenden gekrümmten Rahmenprofilelemente (13) und aus zwei gegenüberliegenden geraden Rahmenprofilelemente (14) zusammengesetzt ist, so dass das gestreckte Textil (9) eine gekrümmte Fläche (10, 11) bildet, dadurch, dass jedes gekrümmte Rahmenprofilelement (13) mit einem ersten federbelasteten Spannmechanismus (6) zum Spannen des Textils (9) bereitgestellt ist und jedes gerade Rahmenprofilelement (14) mit einem zweiten federvorgespanntenn Spannmechanismus (7) zum Spannen des Textils (9) bereitgestellt ist, und dass die ersten federvorgespannten Spannmechanismen (6) eine derart unterschiedliche mechanische Konstruktion aufweisen als die zweiten federvorgespannten Spannmechanismen (7), dass jeder erste federvorgespannte Spannmechanismus (6) im gespannten Zustand des Textils (9) eine erste Spannkraft pro Einheitskantenlänge des Textils bereitstellt und jeder zweite federvorgespannte Spannmechanismus (7) dazu ausgelegt ist, eine zweite maximale Spannkraft pro Einheitskantenlänge des Textils bereitzustellen, wobei die erste Spannkraft pro Einheitskantenlänge des Textils größer ist als die zweite maximale Spannkraft pro Einheitskantenlänge des Textils.

2. Bauplatte nach Anspruch 1, wobei die erste Spannkraft pro Einheitskantenlänge des Textils mindestens zweimal, bevorzugt mindestens fünfmal und besonders bevorzugt mindestens zehnmal größer ist als die zweite maximale Spannkraft pro Einheitskantenlänge des Textils.

3. Bauplatte nach Anspruch 1 oder 2, wobei die beiden gegenüberliegenden gekrümmten Rahmenprofilelemente (13) identische Krümmungen aufweisen.

4. Bauplatte nach einem der vorstehenden Ansprüche, wobei im befestigten Zustand einer Kante (18) des Textils (9) an einem entsprechenden gekrümmten Rahmenprofilelement (13) mittels des ersten federvorgespannten Spannmechanismus (6) die vom ersten federvorgespannten Spannmechanismus (6) bereitgestellte erste Spannkraft pro Einheitskantenlänge des Textils einstellbar, bevorzugt stufenlos ist.

5. Bauplatte nach einem der vorstehenden Ansprüche, wobei jeder erste federvorgespannte Spannmechanismus (6) zumindest teilweise außerhalb des entsprechenden gekrümmten Rahmenprofilelements (13) angeordnet ist und wobei jeder zweite federvorgespannte Spannmechanismus (7) innerhalb eines Kanals (21) des entsprechenden geraden Rahmenprofilelements (14) angeordnet ist.

6. Bauplatte nach einem der vorstehenden Ansprüche, wobei jeder erste federvorgespannte Spannmechanismus (6) mindestens eine Zugspiralfeder (12) umfasst, die ein erstes Ende (23), dass an einem Zugprofilelement (26) befestigt ist, dass einen Teil des Rahmens (2) bildet und von dem gekrümmten Rahmenprofilelement (13) beabstandet ist, und ein zweites Ende (24) aufweist, dass an der entsprechenden Kante (18) des Textils (9) befestigt ist.

7. Bauplatte nach Anspruch 6, wobei das erste Ende (23) der Zugspiralfeder (12) an einem Einstellmechanismus (27) befestigt ist, der an dem Zugprofilelement (26) befestigt ist.

8. Bauplatte nach Anspruch 6 oder 7, wobei das erste Ende (23) der Zugspiralfeder (12) an der Öse (29) einer Ringschraube (28) befestigt ist, die durch ein Loch (31) in dem Zugprofilelement (26) eingesetzt ist, und wobei der Bolzen (32) der Ringschraube (28) mittels einer auf den Bolzen (32) geschraubten Mutter (33) verstellbar in dem Loch (31) des Zugprofilelements (26) befestigt ist.

9. Bauplatte nach einem der Ansprüche 6 bis 8, wobei das zweite Ende (24) der Zugspiralfeder (12) bevorzugt mittels eines Hakenelements (34) an einem länglichen Profil (35) befestigt ist, dass entlang der entsprechenden Kante (18) des Textils (9) befestigt ist.

10. Bauplatte nach Anspruch 9, wobei jedes gekrümmte Rahmenprofilelement (13) eine gebäudezugewandte Seite (17) und eine raumzugewandte Seite (16) aufweist, die durch eine abgerundete Kante (15) verbunden sind, um die das Textil (9) gebogen ist, und wobei das längliche Profil (35) in einem Kanal (21) in der dem gebäudezugewandten Seite (17) des gekrümmten Rahmenprofilelements (13) angeordnet ist und bevorzugt an dem zweiten Ende (24) der Zugspiralfeder (12) mittels eines Hakenelements (34) befestigt ist, dass sich durch eine Öffnung (36) in dem gekrümmten Rahmenprofilelement (13) erstreckt.

11. Bauplatte nach einem der vorstehenden Ansprüche, wobei jedes gerade Rahmenprofilelement (14) eine gebäudezugewandte Seite (17) und eine raumzugewandte Seite (16) aufweist, die durch eine abgerundete Kante (15) verbunden sind, um die das Textil (9) gebogen ist, wobei jeder zweite federvorgespannte Spannmechanismus (7) einen in einem Kanal (21) in der gebäudezugewandten Seite (17) des geraden Rahmenprofilelements (14) angeordneten Bügel (20) einschließt, und wobei der Bügel (20) seitlich in der Spur (21) federvorgespannt ist, um das Textil (9) zwischen den gegenüberliegenden abgerundeten Kanten (15) der gegenüberliegenden geraden Rahmenprofilelemente (14) zu spannen.

12. Bauplatte nach einem der vorstehenden Ansprüche, wobei der Abstand zwischen den beiden gegenüberliegenden gekrümmten Rahmenprofilelementen (13) mindestens 2/3, bevorzugt mehr als und am besonders bevorzugt mindestens 4/3 des Abstandes zwischen den beiden gegenüberliegenden geraden Rahmenprofilelementen (14) beträgt.

13. Bauplatte nach einem der vorstehenden Ansprüche, wobei jedes gekrümmte Rahmenprofilelement (13) aus einem stranggepressten Metallprofil (37), bevorzugt aus Aluminium, hergestellt ist, wobei jedes gekrümmte Rahmenprofilelement (13) mit einer Anzahl von seitlichen Schlitzen (38) bereitgestellt ist, die in Längsrichtung des gekrümmten Rahmenprofilelements (13) voneinander beabstandet sind, wobei sich jeder seitliche Schlitz (38) nur teilweise durch das stranggepresste Metallprofil (37) erstreckt, und wobei jedes gekrümmte Rahmenprofilelement (13) mittels einer flachen, gebogenen Metallplatte (39) verstärkt ist, die an dem stranggepressten Metallprofil (37) entlang seiner Länge befestigt ist.

14. Verfahren zur Herstellung einer Bauplatte, die zur Montage an einer Raumdecke oder -wand angepasst ist, so dass ein Rahmen (2) der Bauplatte eine raumzugewandte Seite (3) und eine gebäudezugewandte Seite (4) aufweist, wobei der Rahmen (2) einen aus Rahmenprofilelemente (13, 14) gebildeten umlaufenden Rahmen (5) einschließt, wobei ein Textil (9) über die raumzugewandte Seite (3) des Rahmens (2) zwischen den Rahmenprofilelementen (13, 14) über die raumzugewandte Seite (3) des Rahmens (2) gestreckt ist, und wobei jede Kante (18) des Textils (9) mittels eines federvorgespannten Spannmechanismus (6, 7) an einem entsprechenden Rahmenprofilelement befestigt ist, **dadurch gekennzeichnet, dass** der umlaufende Rahmen (5) aus zwei gegenüberliegenden gekrümmten Rahmenprofilelemente (13) und aus zwei gegenüberliegenden geraden Rahmenprofilelemente (14) zusammengesetzt ist, sodass das gestreckte Textil (9) eine gebogene Fläche (10, 11) bildet, indem erstens das Textil (9) mit einer ersten Spannkraft pro Einheitskantenlänge des Textils gegenüber jedem gekrümmten Rahmenprofilelement (13) mittels eines ersten federvorgespannten Spannmechanismus (6)

gespannt wird und zweitens, das Textil (9) gegenüber jedem geraden Rahmenprofilelement (14) mittels eines zweiten federvorgespannten Spannmechanismus (7) auf eine zweite Spannkraft pro Einheitskantenlänge des Textils gespannt wird, wobei die erste Spannkraft pro Einheitskantenlänge des Textils größer ist als die zweite Spannkraft pro Einheitskantenlänge des Textils.

15. Verfahren zur Herstellung einer Bauplatte nach Anspruch 14, wobei die erste Spannkraft pro Einheitskantenlänge des Textils mindestens zweimal, bevorzugt mindestens fünfmal und besonders bevorzugt mindestens zehnmal größer ist als die zweite maximale Spannkraft pro Einheitskantenlänge des Textils.

16. Verfahren zur Herstellung einer Bauplatte nach Anspruch 14 oder 15, wobei vor dem Spannen des Textils (9) gegenüber jedem geraden Rahmenprofilelement (14) mittels des zweiten federvorgespannten Spannmechanismus (7) die vom ersten federvorgespannten Spannmechanismus (6) bereitgestellte erste Spannkraft pro Einheitskantenlänge des Textils mittels des ersten federvorgespannten Spannmechanismus (6) bevorzugt stufenlos eingestellt wird.

17. Verfahren zur Herstellung einer Bauplatte nach einem der Ansprüche 14 bis 16, wobei der Abstand zwischen den beiden gegenüberliegenden gekrümmten Rahmenprofilelementen (13) mindestens 2/3, bevorzugt mehr als und besonders bevorzugt mindestens 4/3 des Abstandes zwischen den beiden gegenüberliegenden geraden Rahmenprofilelementen (14) beträgt.

Revendications

1. Panneau de bâtiment (1) adapté pour être monté sur un plafond ou un mur d'une pièce de sorte qu'une ossature (2) du panneau de bâtiment présente une face côté pièce (3) et une face côté bâtiment (4), dans lequel l'ossature (2) inclut un cadre périphérique (5) formé par des éléments de profil de cadre (13, 14), dans lequel un textile (9) est étendu au-dessus de la face côté pièce (3) de l'ossature (2) entre les éléments de profil de cadre (13, 14), et dans lequel chaque bord (18) du textile (9) est fixé à un élément de profil de cadre correspondant au moyen d'un mécanisme de tension sollicité par ressort (6, 7), **caractérisé en ce que** le cadre périphérique (5) se compose de deux éléments de profil de cadre incurvés opposés (13) et de deux éléments de profil de cadre droits opposés (14) de telle sorte que le textile étendu (9) forme une surface incurvée (10, 11), **en ce que** chaque élément de profil de cadre incurvé (13) est pourvu d'un premier mécanisme de tension sollicité par ressort (6) pour tendre le textile (9) et chaque élément de profil de cadre droit (14) est pourvu d'un second mécanisme de tension sollicité par ressort (7) pour tendre le textile (9), et **en ce que** les premiers mécanismes de tension sollicité par ressort (6) sont d'une construction mécanique tellement différente des seconds mécanismes de tension sollicité par ressort (7) que chaque premier mécanisme de tension sollicité par ressort (6), dans l'état tendu du textile (9), fournit une première force de tension par longueur de bord unitaire du textile et chaque second mécanisme de tension sollicité par ressort (7) est adapté pour fournir une seconde force de tension maximum par longueur de bord unitaire du textile, la première force de tension par longueur de bord unitaire du textile étant supérieure à la seconde force de tension maximum par longueur de bord unitaire du textile.

2. Panneau de bâtiment selon la revendication 1, dans lequel la première force de tension par longueur de bord unitaire du textile est au moins deux fois supérieure, de préférence au moins cinq fois supérieure et le plus préférentiellement au moins dix fois supérieure à la seconde force de tension maximum par longueur de bord unitaire du textile.

3. Panneau de bâtiment selon la revendication 1 ou 2, dans lequel les deux éléments de profil de cadre incurvés opposés (13) présentent des courbures identiques.

4. Panneau de bâtiment selon l'une quelconque des revendications précédentes, dans lequel, dans l'état fixé d'un bord (18) du textile (9) à un élément de profil de cadre incurvé correspondant (13) au moyen du premier mécanisme de tension sollicité par ressort (6), la première force de tension par longueur de bord unitaire du textile fournie par ledit premier mécanisme de tension sollicité par ressort (6) est ajustable, de préférence en continu.

5. Panneau de bâtiment selon l'une quelconque des revendications précédentes, dans lequel chaque premier mécanisme de tension sollicité par ressort (6) est agencé au moins en partie à l'extérieur de l'élément de profil de cadre incurvé correspondant (13), et dans lequel chaque second mécanisme de tension sollicité par ressort (7) est agencé à l'intérieur d'un canal (21) de l'élément de profil de cadre droit correspondant (14).

6. Panneau de bâtiment selon l'une quelconque des revendications précédentes, dans lequel chaque premier mécanisme de tension sollicité par ressort (6) inclut au moins un ressort hélicoïdal de tension (12) présentant une première extrémité (23) fixée à

un élément de profil de tension (26) formant une partie de l'ossature (2) et étant espacée de l'élément de profil de cadre incurvé (13) et une seconde extrémité (24) fixée au bord correspondant (18) du textile (9).

7. Panneau de bâtiment selon la revendication 6, dans lequel la première extrémité (23) dudit ressort hélicoïdal de tension (12) est fixée à un mécanisme d'ajustement (27) fixé à l'élément de profil de tension (26).

8. Panneau de bâtiment selon la revendication 6 ou 7, dans lequel la première extrémité (23) dudit ressort hélicoïdal de tension (12) est fixée à l'œil (29) d'un boulon à œil (28) inséré à travers un trou (31) dans l'élément de profil de tension (26), et dans lequel le boulon (32) du boulon à œil (28) est monté de manière ajustable dans le trou (31) de l'élément de profil de tension (26) au moyen d'un écrou (33) vissé sur le boulon (32).

9. Panneau de bâtiment selon l'une quelconque des revendications 6 à 8, dans lequel la seconde extrémité (24) dudit ressort hélicoïdal de tension (12) est fixée, de préférence au moyen d'un élément de crochet (34), à un profil allongé (35) fixé le long du bord correspondant (18) du textile (9).

10. Panneau de bâtiment selon la revendication 9, dans lequel chaque élément de profil de cadre incurvé (13) présente une face côté bâtiment (17) et une face côté pièce (16) reliées au moyen d'un bord arrondi (15) autour duquel le textile (9) est plié, et dans lequel le profil allongé (35) est agencé dans un canal (21) dans la face côté bâtiment (17) de l'élément de profil de cadre incurvé (13) et est de préférence fixé à la seconde extrémité (24) dudit ressort hélicoïdal de tension (12) au moyen d'un élément de crochet (34) s'étendant à travers une ouverture (36) dans l'élément de profil de cadre incurvé (13).

11. Panneau de bâtiment selon l'une quelconque des revendications précédentes, dans lequel chaque élément de profil de cadre droit (14) présente une face côté bâtiment (17) et une face côté pièce (16) reliées au moyen d'un bord arrondi (15) autour duquel le textile (9) est plié, dans lequel chaque second mécanisme de tension sollicité par ressort (7) inclut un support (20) agencé dans un canal (21) dans la face côté bâtiment (17) de l'élément de profil de cadre droit (14), et dans lequel le support (20) est sollicité latéralement par ressort dans la piste (21) afin de tendre le textile (9) entre les bords arrondis opposés (15) des éléments de profil de cadre droits opposés (14).

12. Panneau de bâtiment selon l'une quelconque des revendications précédentes, dans lequel la distance entre les deux éléments de profil de cadre incurvés opposés (13) est d'au moins 2/3, de préférence supérieure à et le plus préférentiellement d'au moins 4/3 de la distance entre les deux éléments de profil de cadre droits opposés (14).

13. Panneau de bâtiment selon l'une quelconque des revendications précédentes, dans lequel chaque élément de profil de cadre incurvé (13) est constitué d'un profil métallique extrudé (37), de préférence réalisé en aluminium, dans lequel chaque élément de profil de cadre incurvé (13) est pourvu d'un nombre de fentes latérales (38) espacées les unes des autres dans la direction longitudinale de l'élément de profil de cadre incurvé (13), dans lequel chaque fente latérale (38) ne s'étend que partiellement à travers le profil métallique extrudé (37), et dans lequel chaque élément de profil de cadre incurvé (13) est renforcé au moyen d'une plaque métallique plate et incurvée (39) fixée au profilé métallique extrudé (37) sur sa longueur.

14. Procédé de fabrication d'un panneau de bâtiment adapté pour être monté sur un plafond ou un mur d'une pièce de sorte qu'une ossature (2) du panneau de bâtiment présente une face côté pièce (3) et une face côté bâtiment (4), l'ossature (2) incluant un cadre périphérique (5) formé par des éléments de profil de cadre (13, 14), selon lequel un textile (9) est étendu au-dessus de la face côté pièce (3) de l'ossature (2) entre les éléments de profil de cadre (13, 14) et selon lequel chaque bord (18) du textile (9) est fixé à un élément de profil de cadre correspondant au moyen d'un mécanisme de tension sollicité par ressort (6, 7), **caractérisé en ce que** le cadre périphérique (5) est composé de deux éléments de profil de cadre incurvés opposés (13) et de deux éléments de profil de cadre droits opposés (14) afin que le textile étendu (9) forme une surface incurvée (10, 11), **en ce que**, premièrement, le textile (9) est tendu à une première force de tension par longueur de bord unitaire du textile par rapport à chaque élément de profil de cadre incurvé (13) au moyen d'un premier mécanisme de tension sollicité par ressort (6) et, deuxièmement, le textile (9) est tendu à une seconde force de tension par longueur de bord unitaire du textile par rapport à chaque élément de profil de cadre droit (14) au moyen d'un second mécanisme de tension sollicité par ressort (7), la première force de tension par longueur de bord unitaire du textile étant supérieure à la seconde force de tension par longueur de bord unitaire du textile.

15. Procédé de fabrication d'un panneau de bâtiment selon la revendication 14, dans lequel la première force de tension par longueur de bord unitaire du textile est au moins deux fois supérieure, de préférence au moins cinq fois supérieure et de la manière

plus préférée au moins dix fois supérieure à la seconde force de tension maximum par longueur de bord unitaire du textile.

16. Procédé de fabrication d'un panneau de bâtiment selon la revendication 14 ou 15, selon lequel, avant de tendre le textile (9) par rapport à chaque élément de profil de cadre droit (14) au moyen du second mécanisme de tension sollicité par ressort (7), la première force de tension par longueur de bord unitaire du textile fournie par le premier mécanisme de tension sollicité par ressort (6) est ajustée, de préférence en continu, au moyen du premier mécanisme de tension sollicité par ressort (6).

17. Procédé de fabrication d'un panneau de bâtiment selon l'une quelconque des revendications 14 à 16, dans lequel la distance entre les deux éléments de profil de cadre incurvés opposés (13) est d'au moins 2/3 de, de préférence supérieure à et le plus préférentiellement d'au moins 4/ 3 de la distance entre les deux éléments de profil de cadre droits opposés (14).

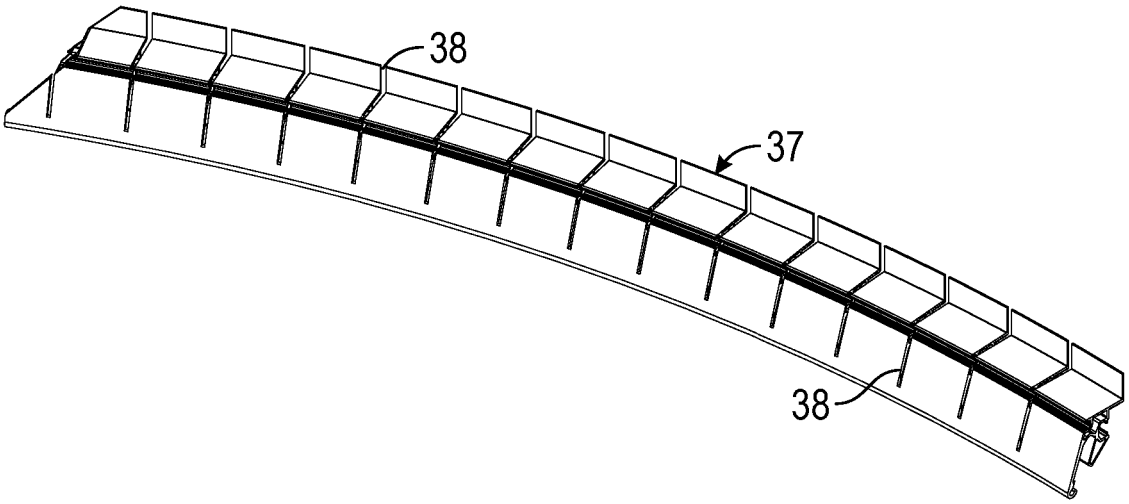

FIG. 1

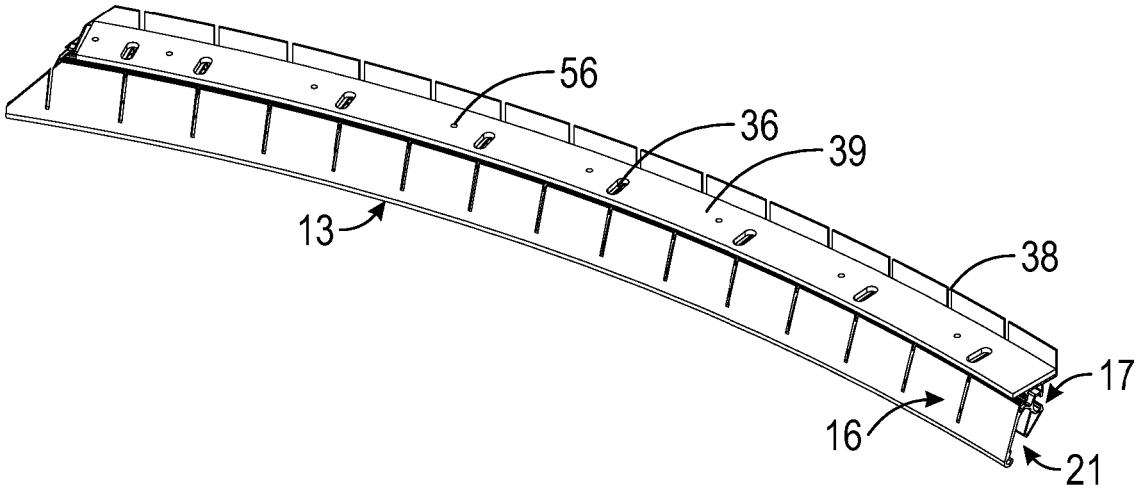

FIG. 2

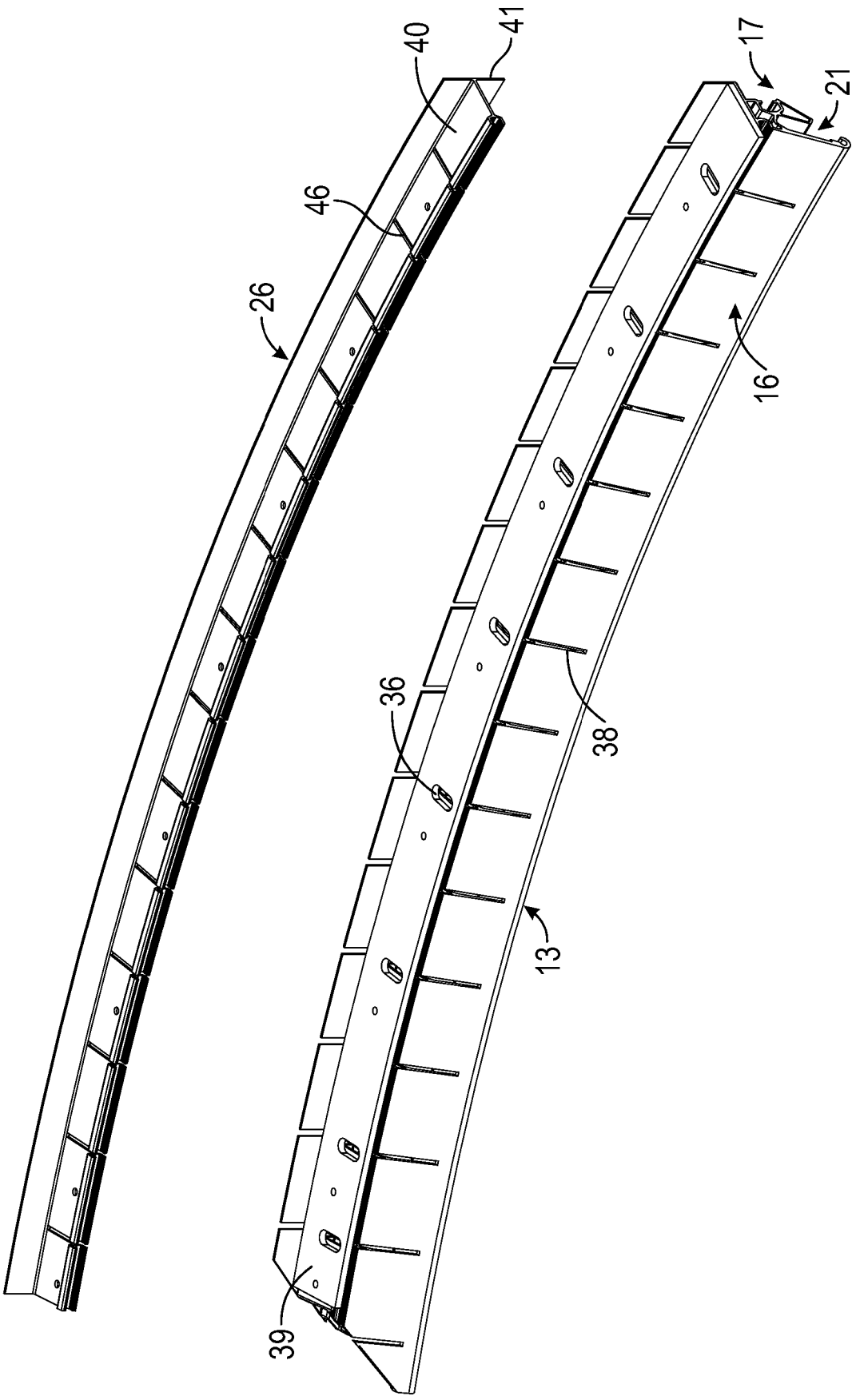

FIG. 3

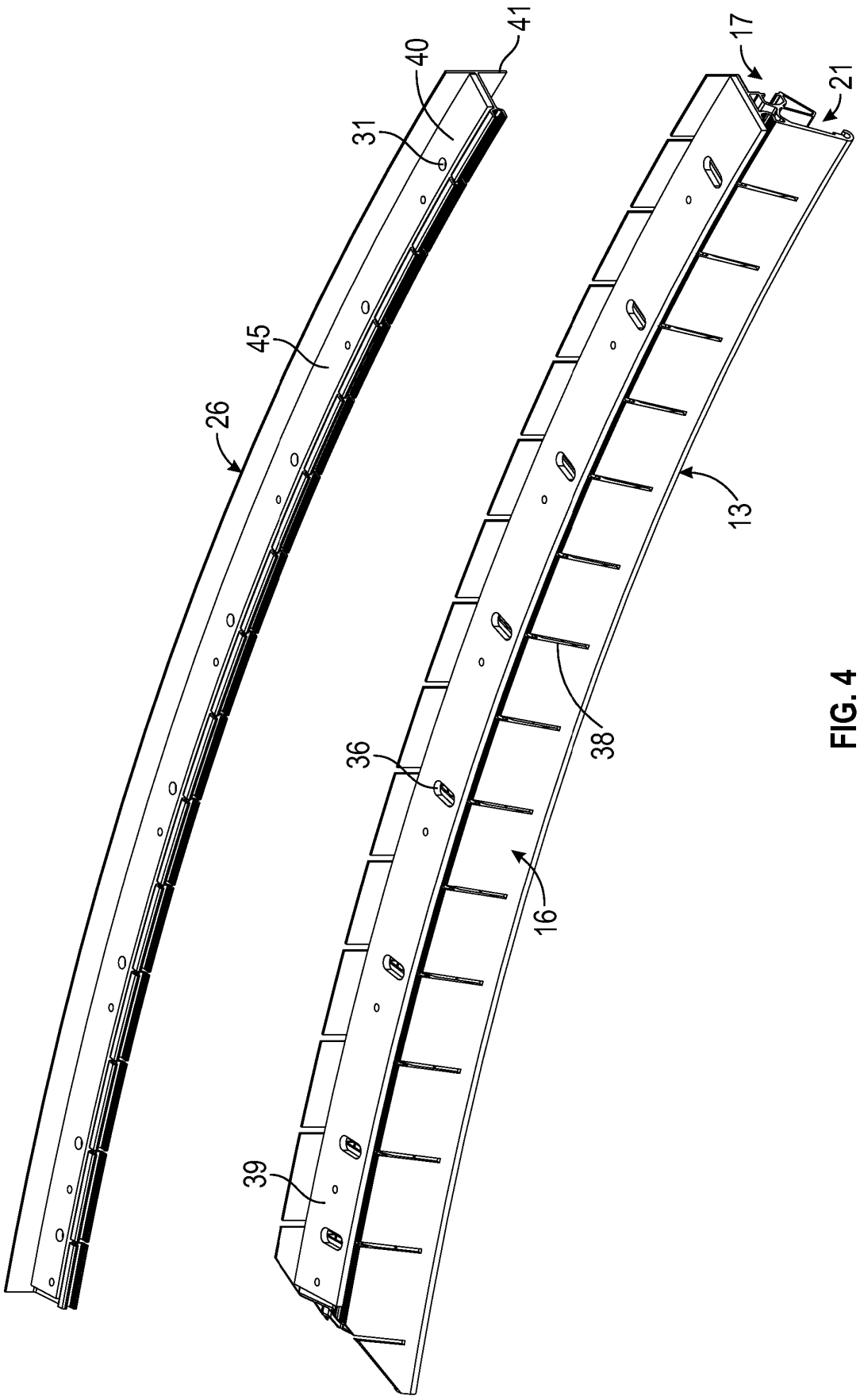

FIG. 4

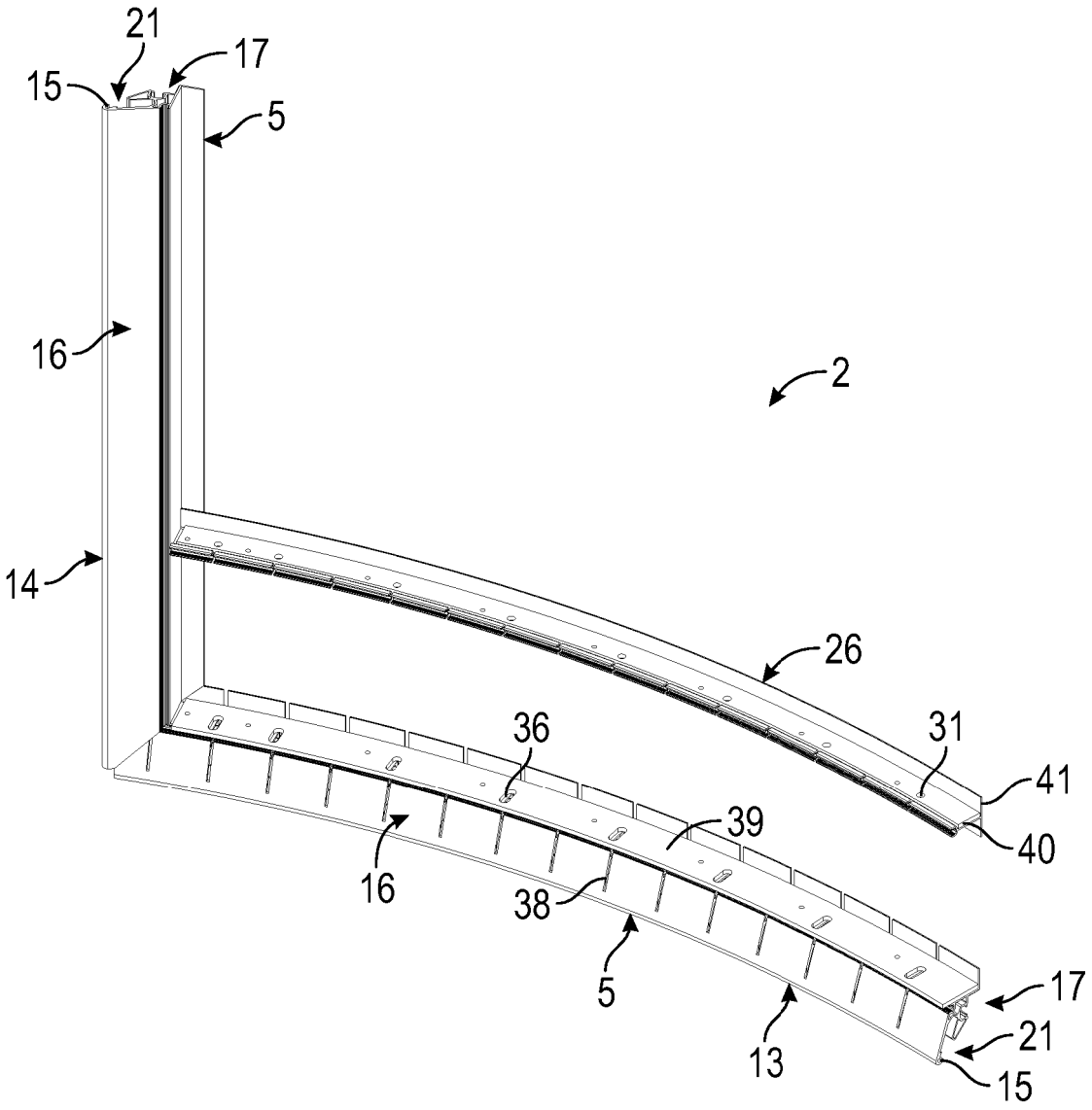

FIG. 5

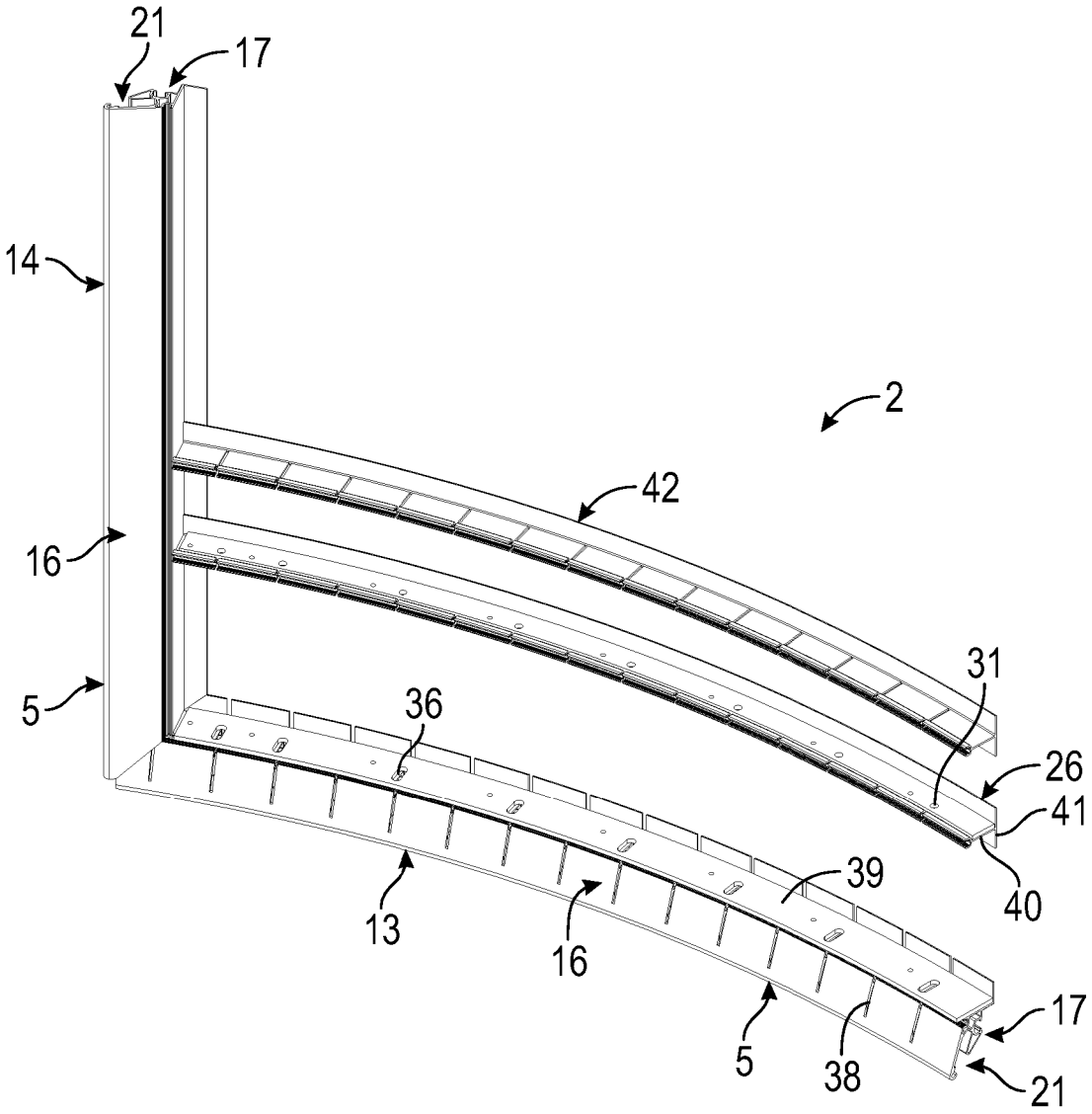

FIG. 6

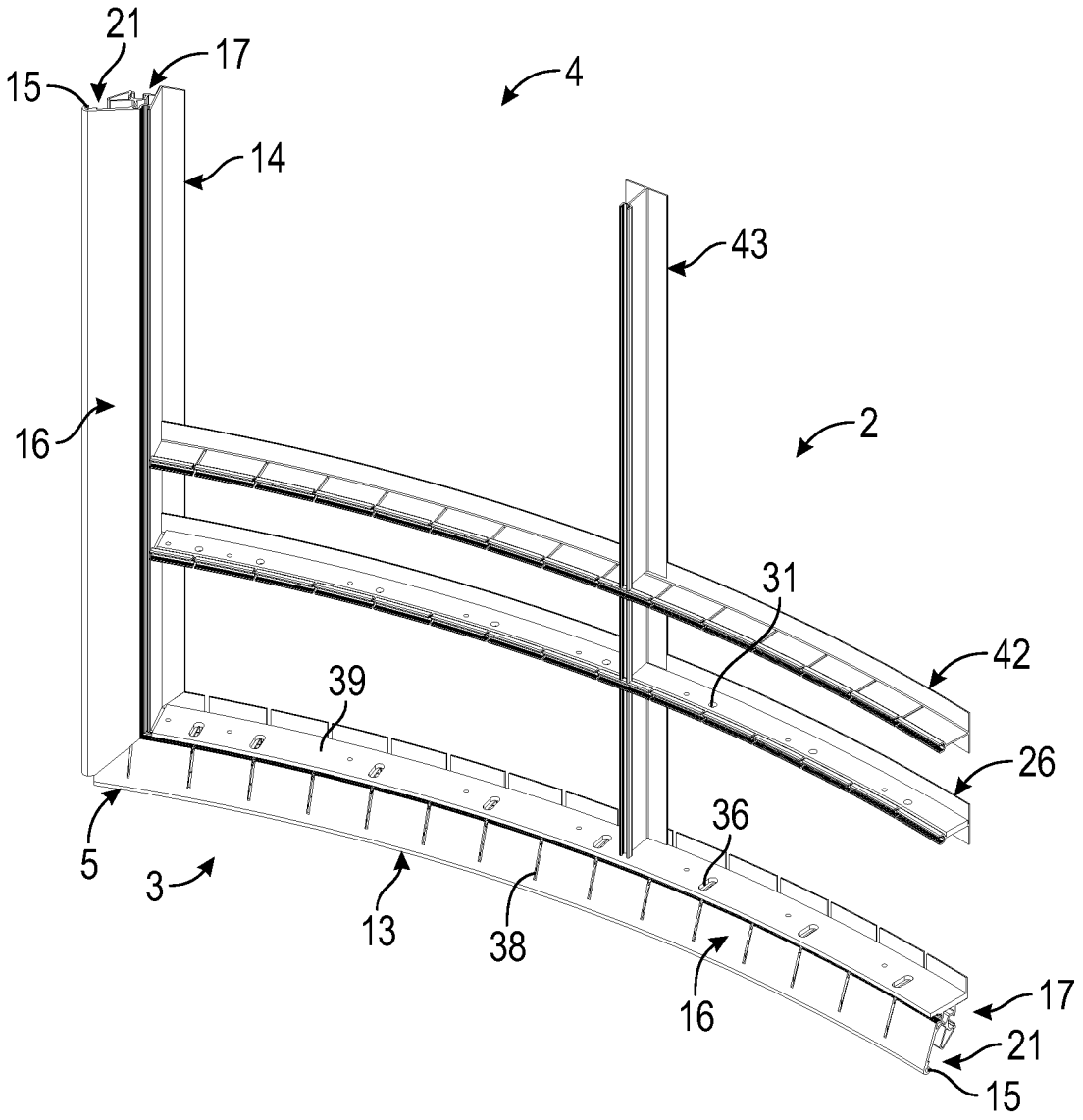

FIG. 7

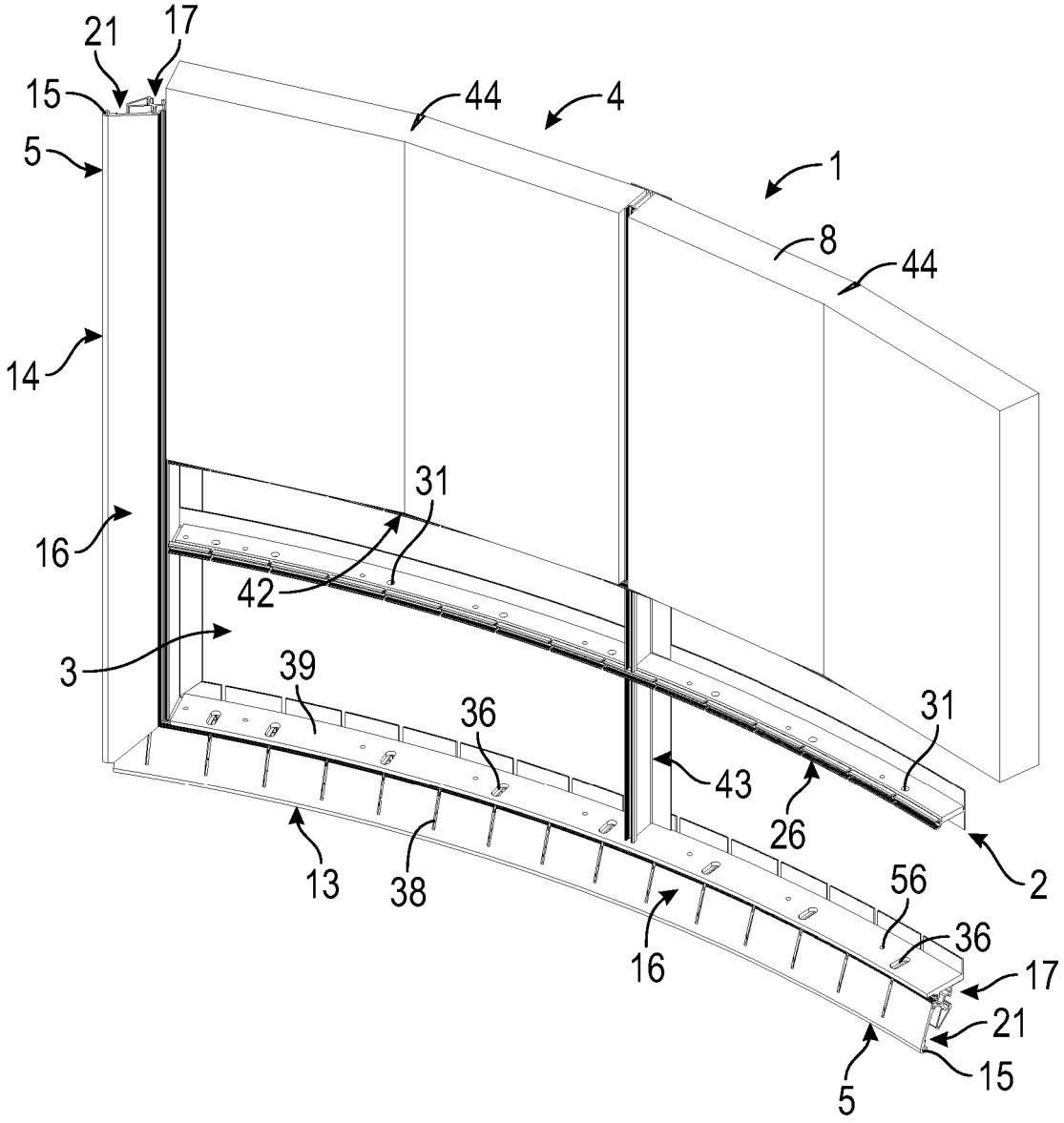
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FIG. 8

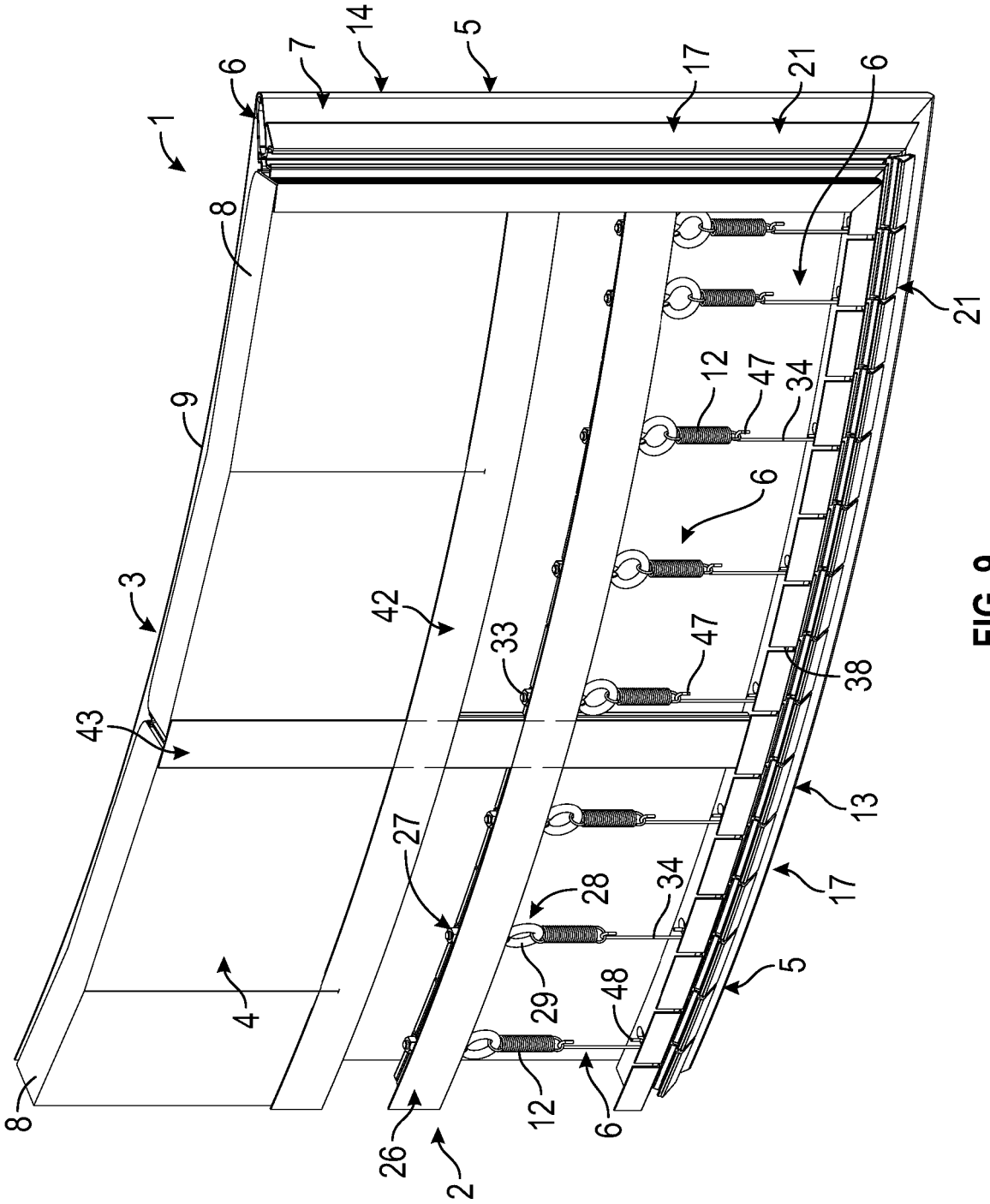

FIG. 9

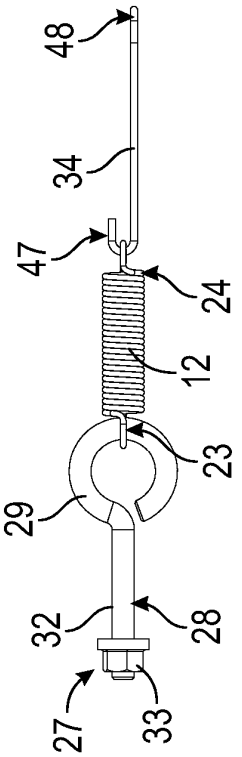
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FIG. 10

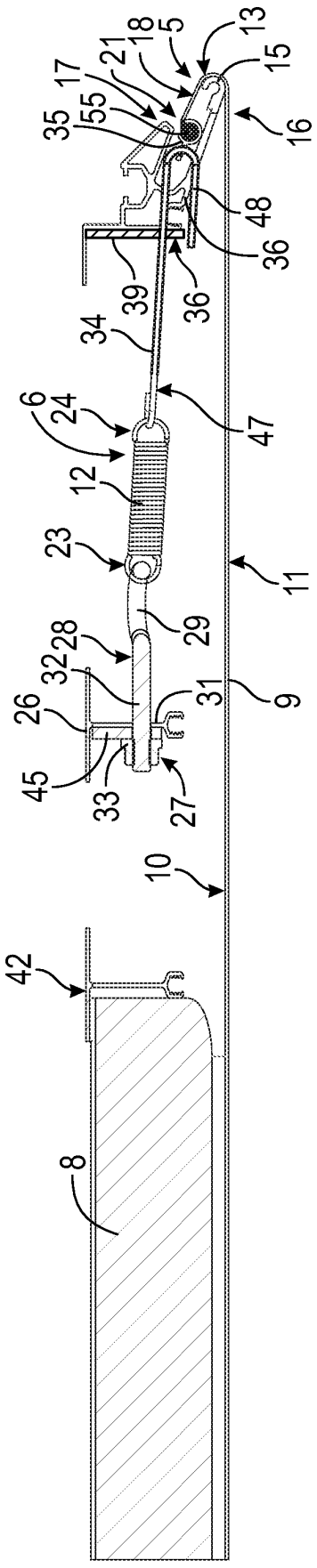
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FIG. 11

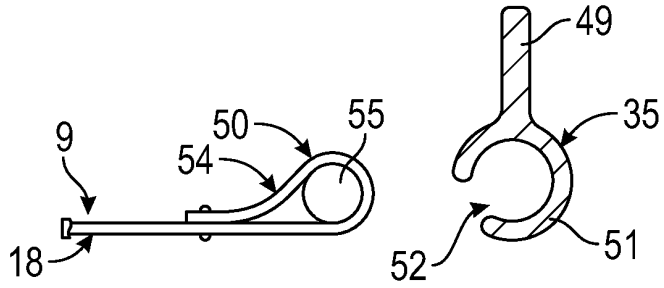

FIG. 12

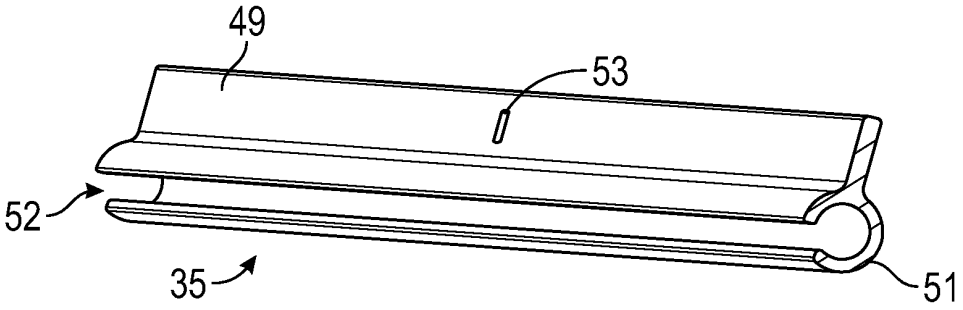

FIG. 13

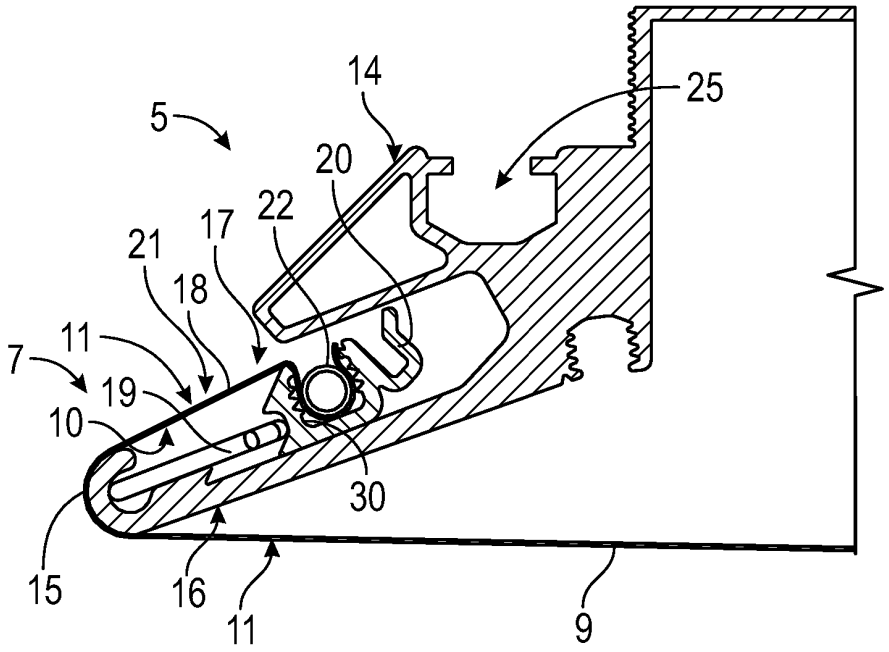

FIG. 14

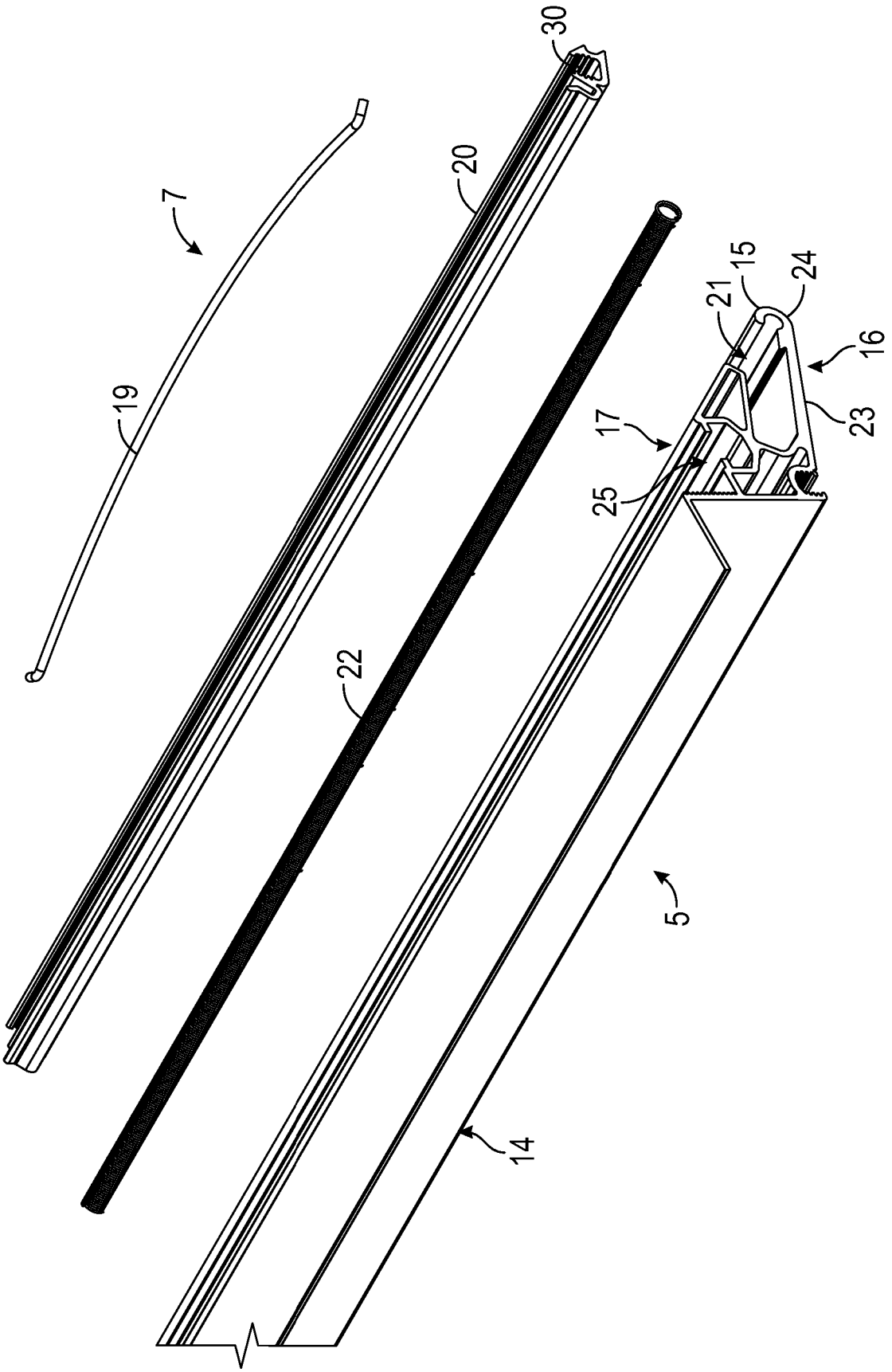

FIG. 15

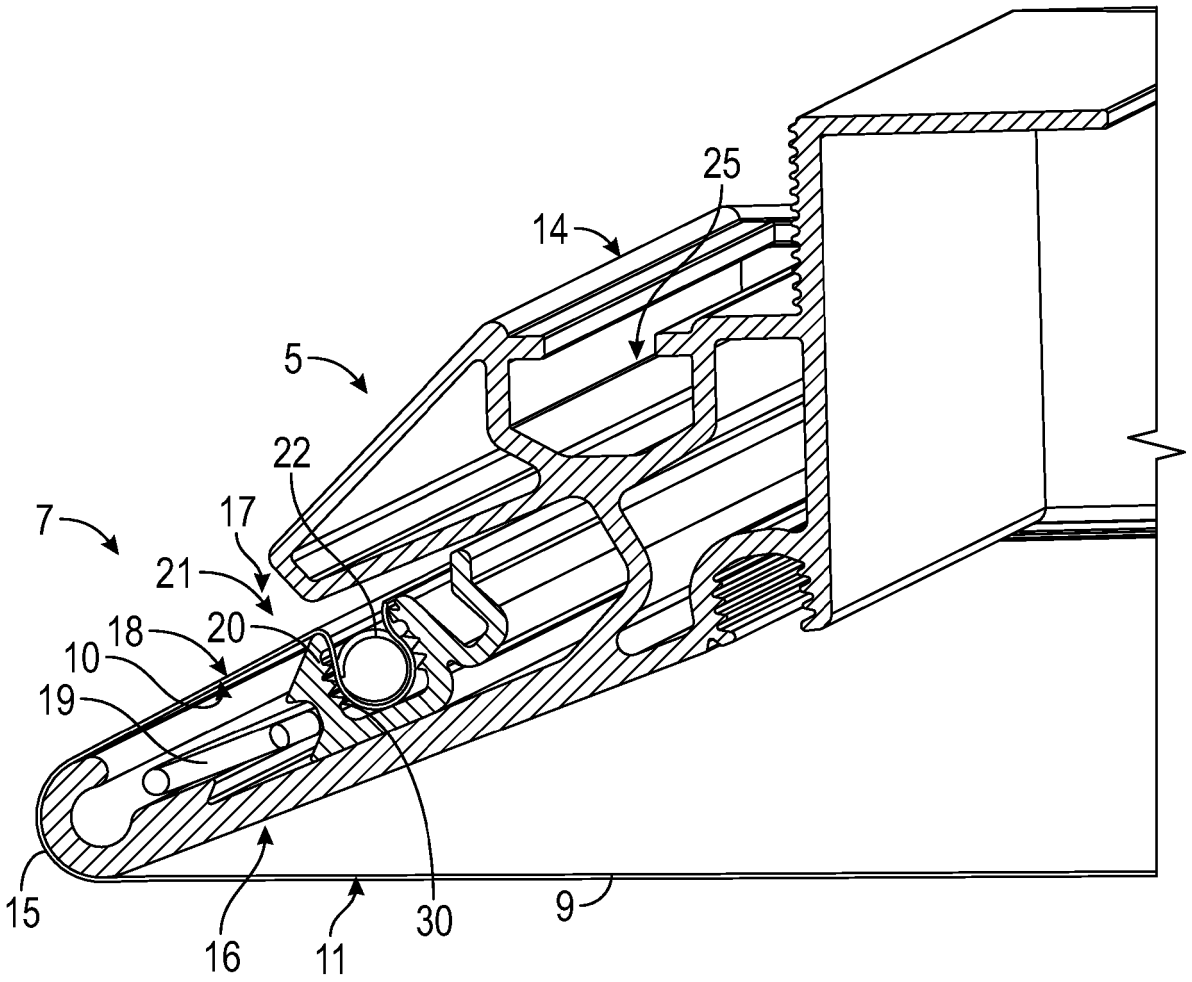

FIG. 16

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO 2005073482 A2 **[0003]**