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(54) ARM FOR AWNINGS

(57) Arm for awnings relating to an arm of the type formed by two profiles ((2),(3)) articulated with respect to each other and which has internal means for the tension between the latter, bending to maintain it in an open position, with the particularity that said arm has an improved structural configuration, with respect to other known systems, and which provides the arm with technical advantages, the asymmetry of the profiles standing out in particular, one concave and another convex, which allows the arm to compact in the closed position and save space.

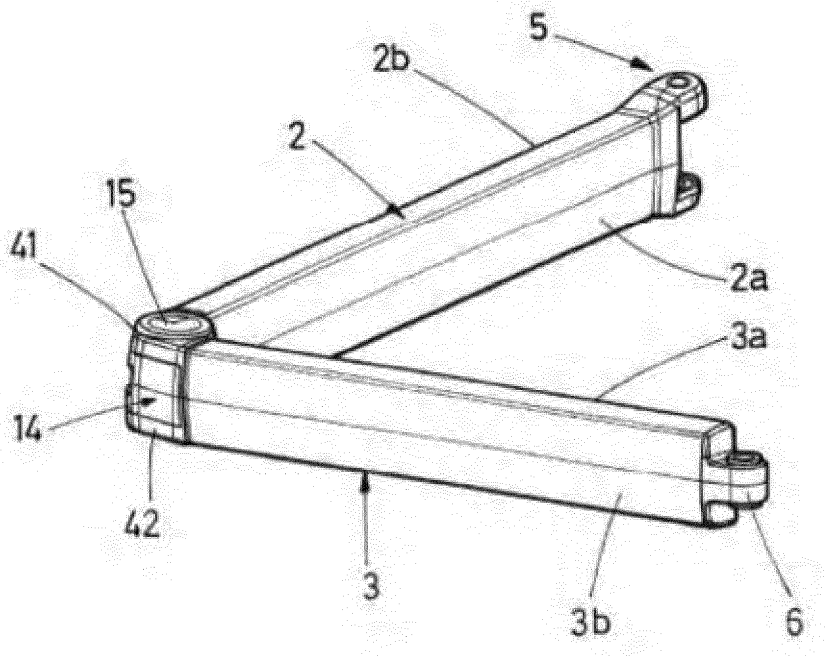

FIG.1

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Description

OBJECT OF THE INVENTION

[0001] The invention, arm for awnings, relates to an arm of the type formed by two profiles articulated with respect to each other and which has internal means for the tension between the latter, bending to maintain it in an open position, with the particularity that said arm has an improved structural configuration, with respect to other known systems, and which provides the arm with technical advantages, the asymmetry of the profiles standing out in particular, one concave and another convex, which allows the arm to compact in the closed position and save space.

[0002] The application field of the present invention is framed within the sector of the industry dedicated to the manufacture of awnings, in particular extendible awnings, focusing specifically on the configuration and the mechanisms of the articulated arms which achieve the extension and collection of the awning, always maintaining it tensed.

BACKGROUND OF THE INVENTION

[0003] Awnings with articulated arms of the types concerned here are widely known on the market and in the state of the art, which are, generally, composed of two profiles joined in an articulated manner to each other at the adjacent ends, one rear, which at a proximal end is joined to the fixed box or support of the awning, and another front, joined with an elbow to the distal end of the rear profile, at the proximal end thereof and at the opposing or distal end thereof to the free edge or load bar of the awning such that when said awning is extended, the angle which said rear and front profiles form is opened and when the awning is collected, the profiles are closed until they are virtually parallel to each other. Furthermore, and in order to maintain the tension of the fabric of the awning, the inclusion of tensing means in the interior of the profiles is considered which bend to maintain the profiles open.

[0004] Specifically, said tensing means consist of a spring which joins the proximal end of the rear profile to a flexible chain or strip fixed in turn to the articulation elbow between the rear and front profile, said strip consisting of a flat belt, normally made of plastic with metallic reinforcement filaments.

[0005] The document ES2074947A1 is known as an example of said types of awnings, in which an articulated arm is described for an awning support structure of the type generally bearing two tubular elements as part of an arm, joined by a central articulation and passed through by a tensioning means made from a flexible element, wherein said central articulation bears two parts, a female and a male, each equipped with two rods suitable for being coupled to plug into the ends of the arms and wherein the flexible element can be of a belt or flat band type made of a plastic, rubber or natural rubber material, internally integrating metallic reinforcement filaments.

[0006] Similarly, in the documents ES9601595A1 or in the document WO2005/017278A1, articulated arms are described with similar solutions improved in certain aspects, but which basically consist of the same principle of arms formed by profiles with an elbow which articulates them and internal tensioning means which comprise a spring and a textile belt which surrounds said elbow.

[0007] The objective of the present invention is thus to provide to the market an articulated arm with innovative improvements in the configuration thereof which provide advantages both in construction, safety and optimization of space.

[0008] Specifically, one of the improvements, which the present invention provides, makes reference to the configuration of the profiles which constitute the arms for facilitating better coupling between both in the closed position, meaning that they result in forming a compact element owing to a complementary design of the same in which the space is also optimized.

[0009] Another of the improvements, which the invention provides, is directly related to safety, in terms of avoiding potential risks through the breakage of the tensioning means, which is in particular capable of occurring prior to the assembly of the arms, during the storage thereof in the workshop and in particular during transport and installation operations since said means can break when handled, and if the end of the arm is not well secured, they may shoot out through said end causing undesired injuries.

[0010] Lastly, a third aspect which improves the present invention is the inclusion of means suitable for achieving the incorporation of metallic trims, matching the material of the profiles, normally aluminum, avoiding the use of plastic in covers and trims, especially in the area of the elbow which with the passing of time and use, weaken the assembly as it deteriorates more quickly.

[0011] It should also be indicated that at least on the part of the applicant, the existence of any other similar arm for an awning or invention is not known, which presents technical or structural characteristics like those which the arm object of the present invention presents.

DESCRIPTION OF THE INVENTION

[0012] The arm for awnings object of the present invention comprises two profiles, one rear and one front, joined at the adjacent ends thereof by an articulated elbow, with one male piece and one female piece, and respectively, to the box of the awning with a rear terminal in the case of the rear profile and to the distal edge of the awning at a front terminal in the front profile, incorporating tensing means in the interior of the rear profile, which bend to maintain the profiles open, each one of the interior faces of said profiles having at least two planes which form at least one indentation and one pro-

trusion such that both faces complement each other, forming a compact assembly. Said tensing means or tensor group, comprise at least one spring, one flexible strip or belt, a hook and a bolt. The spring can be protected by a mesh. The hook joins a first end of the spring to the rear terminal, the second end opposite the spring is joined to a first end of the strip and the second end of the strip is joined to a bolt which serves to join the assembly to the articulated elbow, preferably surrounding the male piece of the cited elbow. The rear terminal can incorporate a safety cover and trim. The flexible strip or belt is preferably a textile belt.

[0013] As has been mentioned, the arm of the present invention has front and rear profiles which are tightly coupled to each other owing to the fact that the faces, which are opposing each other, which are the interior faces, of both profiles have a complementary configuration, that is to say, they comprise at least two planes which when opposing each other cause one face to be partially introduced into the other. In particular, because the interior face of the rear profile is preferably convex and the interior face of the front profile is concave, although the shapes of both profiles can be inverted. Thus the closed arm constitutes a compact element such that it saves volume and improves the aesthetic, this being the essential characteristic of the arm. In addition to a curved or curvilinear configuration, the cited interior faces can have other configurations, such as for example two surfaces formed by two straight planes which form an angle with each other, or undulated surfaces. It is excluded for the interior faces to be formed by one single straight plane such that when they oppose each other there is no indentation or protrusion in said faces.

[0014] This asymmetry or complementary configuration of the arms enables a more compact arm such that with a convex profile and another concave profile the strength and rigidity of the profiles is maintained and space is saved.

[0015] The rear profile therefore, preferably, has two convex faces such that it is further reinforced and has more interior space to house the tensor group previously defined. The front profile can in turn be less rigid since it is further from the anchoring of the arm to the box of the awning and does not include any element of the tensor group in the interior thereof. This allows smaller boxes to be manufactured and consequently saves costs.

[0016] Similarly, according to another characteristic of the invention, the arm is distinguished in that the safety cover and trim of the rear terminal is metallic and is fixed by screwing to said terminal with the aim of preventing the tensor group arranged in said rear profile and fixed to the rear terminal from shooting out in the case of breakage of any of the elements of said tensor assembly, a problem which takes place at present with the arms which have plastic covers fixed only by means of pressure. In the awnings of the state of the art and which are not yet installed, that is to say, those which are in storage, if the tensor group fails, any of the parts may shoot out through the rear profile since the covers which they have are made of plastic and are not screwed. By means of the solution of the present arm, if the tensor group is broken, none of the components thereof goes out through said rear profile.

[0017] According to another characteristic of the invention, in addition to the cover of the rear terminal described, the rest of the trim covers which the arm incorporates, are also metallic. Specifically, the cover of the male elbow is metallic and is fixed to the same with a fastening hidden by means of an auxiliary plastic frame.

[0018] In the known arms of the awnings of the state of the art, the trims are plastic such that in order that they are made of aluminum as in the arm of the present invention, the use of an intermediate piece of plastic between the metal of the arm and the aluminum trim is envisaged since it is difficult to fasten the trim to the profile of the injected arm. This piece of plastic is not seen and allows the arm and the trim to be joined.

[0019] Similarly the two upper and lower covers of the female elbow are also metallic.

DESCRIPTION OF THE DRAWINGS

[0020] In order to complement the description of the present invention and to aid a better understanding of the characteristics of the same, a set of plans is included in the present specification as an integral part of the same, which depict a preferred embodiment of the invention in an illustrative and non-limiting manner.

Figure 1 shows a perspective view of the arm for awnings object of the invention depicted in a semi-open position, the principal parts and elements which it comprises being observed.

Figure 2 shows the tensor group which is arranged in the interior of the arm of Figure 1.

Figure 3 shows the tensor group being introduced into the rear profile of the arm and also a safety cover arranged on the rear terminal of said profile.

Figure 4 shows the rear terminal with the tensor group introduced and prior to the placement of the safety cover.

Figure 5 shows a section of the two profiles which form an arm for awnings when the arm is closed.

Figure 6 shows a section of the two profiles which form an alternative arm of an awning when the arm is closed.

Figures 7a, 7b, 7c and 7d show the coupling between a trim cover and the intermediate piece of plastic for the subsequent coupling thereof to the elbow, profile of the arm or terminal. Specifically, Figures 7a and 7b show two views of the coupling between both pieces, Figure 7c shows both pieces coupled and Figure 7d shows a section (AA) of the coupling of Figure 7c.

Figures 8a, 8b and 8c show the coupling between the assembly formed by the trim cover and the piece

of plastic, with the elbow, specifically the male piece of the elbow. Figure 8a shows the assembly prior to the coupling thereof, Figure 8b shows the coupled assembly and Figure 8c shows a section of the coupling of Figure 8b.

PREFERRED EMBODIMENT OF THE INVENTION

[0021] As is observed in Figure 1, the arm (1) in question is configured from two profiles, one rear (2) and one front (3) which are joined in an articulated manner to each other by an elbow (4) composed of a male piece (42) and a female piece (41) and to which are coupled, respectively and at the opposing ends thereof, a rear terminal (5) for fixing to the box of the awning and a front terminal (6) for fixing to the distal edge of the awning. Figure 2 shows the tensor assembly or group of the arm, which allows the tensioned rotation of one profile with respect to the other profile of the arm. Said tensor group, which is housed in the rear profile (2) of the arm comprises at least one spring (7) which is fixed at one of the ends thereof with a hook (9) to the rear terminal (5) and at the opposing end to one end of a flexible strip (10), preferably a textile belt, which in turn is fastened at the opposing end thereof by means of a bolt (11) to the male piece (42) of the elbow (4), said male piece (42) being embedded in the front profile (3).

[0022] Furthermore, the arm has various covers (13, 14, 15, 16) which have, as one of the functions thereof, aesthetic or trim aspects. Specifically, the rear terminal (5) which is fixed to the box of the awning is closed with a rear safety cover (13). Similarly, the male piece (42) of the elbow (4) incorporates a lateral cover (14) which covers the point in which the flexible strip (10) is interlocked, providing access to the interior of the mechanism in the elbow (4) which allows the rotation of one profile with respect to the other. Similarly, the female piece (41) of the elbow (4) can have another two covers, one upper (15) and another lower (not shown), between which an axis of articulation is normally arranged for the rotation of one profile of the arm with respect to the other.

[0023] The rear (2) and front (3) profiles have the respective interior faces (2a) and (3a) thereof configured for being tightly coupled to each other when the arm is in a closed position such that it constitutes a compact element as Figures 5 and 6 show. Specifically, the interior face (2a) of the rear profile (2) is a convex shape and the interior face (3a) of the front profile (3) is a concave shape suitable for complementing the convex shape of said internal face (2a) of the rear profile (2). The interior faces (2a, 3a) of the profiles (2, 3) can be inverted with respect to the foregoing, that is to say, the interior face (2a) of the rear profile (2) is a concave shape and the interior face (3a) of the front profile (3) is a convex shape. Similarly and preferably, the rear profile (2) has both the interior face (2a) thereof and the exterior face (2b) thereof in a convex shape, while the front profile (3) has the interior face (3a) thereof in a concave shape and the exterior face (3b) thereof in a convex shape.

[0024] Based on the Figures 3 and 4, it is observed that the rear safety cover (13) and trim of the rear terminal (5) is fixed to said rear terminal by means of screws (18) inserted into respective holes (19) made for such purpose therein in order to prevent any of the components of the tensor group or assembly of the arm, in particular the hook (9) or the spring (7) from shooting out in the case of breakage of the flexible strip (10) or any other component.

[0025] Furthermore, this rear safety cover (13) and the other lateral (14) and upper (15) and lower covers of the elbow (4) are metallic, preferably aluminum, like the profiles (2, 3) of the arm.

[0026] Specifically, as is observed in detail in Figures 7a to 8c, the lateral cover (14) is fixed to the male piece (42) of the elbow (4) by means of an intermediate plastic frame (20) which is hidden between the cover (14) and the male piece (42) such that it makes possible the coupling between two metallic pieces, the cover (14) and the male piece (42). The cover (14) has mechanical coupling means, preferably clipping elements (141) which are coupled into projections (201) arranged on the plastic frame (20) and this, in turn, has mechanical coupling means, also preferably clipping elements (202) which are coupled into projections (421) arranged on the male piece (42).

[0027] The upper and lower part of the male piece (41) of the elbow (4) are in turn covered by two covers, one upper (15) and one lower.

Claims

1. An arm for awnings comprising two profiles, one rear (2) and one front (3), joined in an articulated manner at one of the ends thereof by an elbow (4) which, in turn, comprises a male piece (42) and a female piece (41) associated with said ends of the profiles (2, 3) and said profiles (2, 3) respectively having at the ends thereof opposed to the foregoing, a rear terminal (5) for fixing to the box of the awning and a front terminal (6) for fixing to the distal edge of the awning; housing the tensor group or assembly of the arm in the rear profile (2), **characterized in that** the rear (2) and front (3) profiles have the respective interior faces (2a) and (3a) thereof, each one formed by at least two planes which each form an indentation and a protrusion configured for being tightly coupled to each other when the arm is in a closed position, constituting a compact assembly.

2. The arm according to claim 1, **characterized in that** it comprises a rear safety cover (13) in the rear terminal (5) screwed to said rear terminal (5).

3. The arm according to claim 1, **characterized in that** it comprises trim covers, one lateral (14) in the male

piece (42) of the elbow (4), one upper cover (15) and another lower cover in the female piece (41) of the elbow (4).

4. The arm according to claim 1, **characterized in that** the rear profile (2) comprises an interior face (2a) in a convex shape and the front profile (3) comprises an interior face (3a) in a concave shape suitable for both complementing each other, the convex shape of said interior face (2a) of the rear profile (2) complementing the concave shape of the interior face (3a) of the front profile (3).

5. The arm according to claim 1, **characterized in that** the rear profile (2) comprises an interior face (2a) in a concave shape and the front profile (3) comprises an interior face (3a) in a convex shape suitable for both complementing each other, the concave shape of said interior face (2a) of the rear profile (2) complementing the convex shape of the interior face (3a) of the front profile (3).

6. The arm according to claim 3, **characterized in that** the profiles (2, 3) of the arms and the covers are metallic.

7. The arm according to claim 3, **characterized in that** the lateral cover (14) is fixed to the male piece (42) of the elbow (4) by means of a plastic frame (20), said lateral cover comprising mechanical coupling means for the fixing thereof to the plastic frame (20).

8. The arm according to claim 7, **characterized in that** said plastic frame (20) comprises mechanical coupling means for the fixing thereof to the male piece (42) of the elbow (4).

9. The arm according to claims 7 and 8, **characterized in that** the mechanical coupling means are clips (141, 202) which are coupled into projections (201, 421).

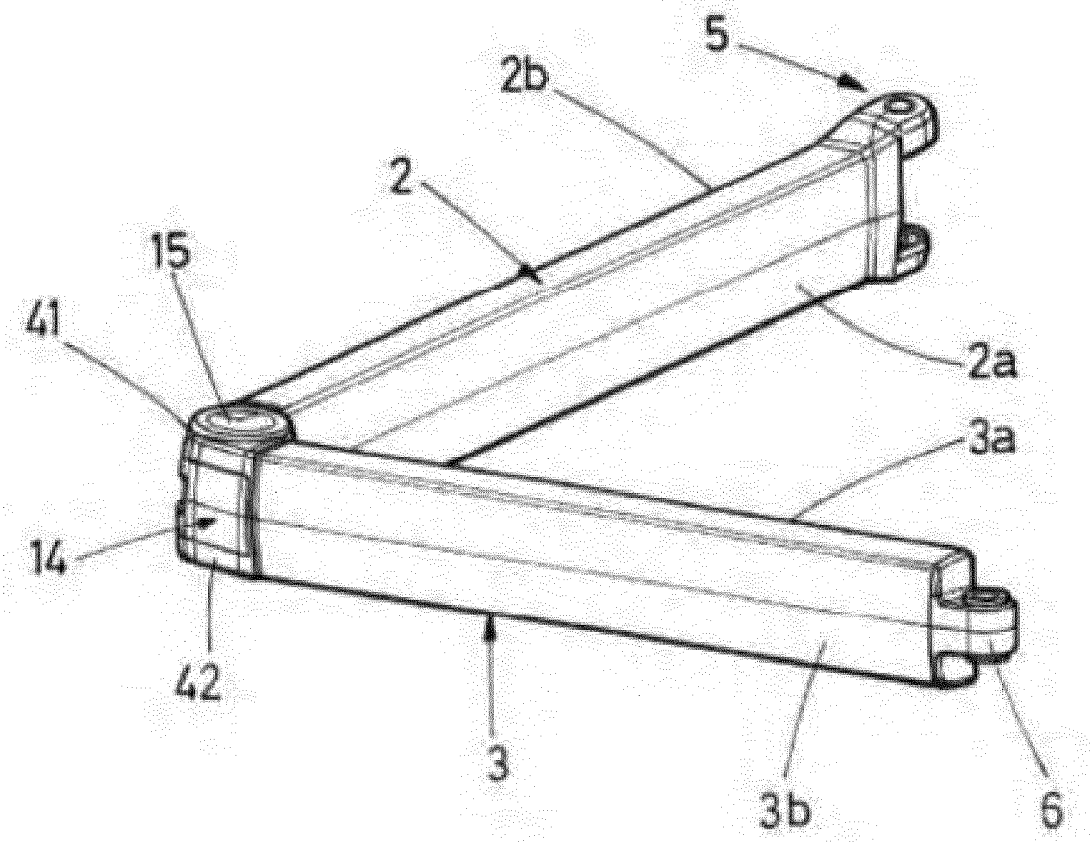


FIG.1

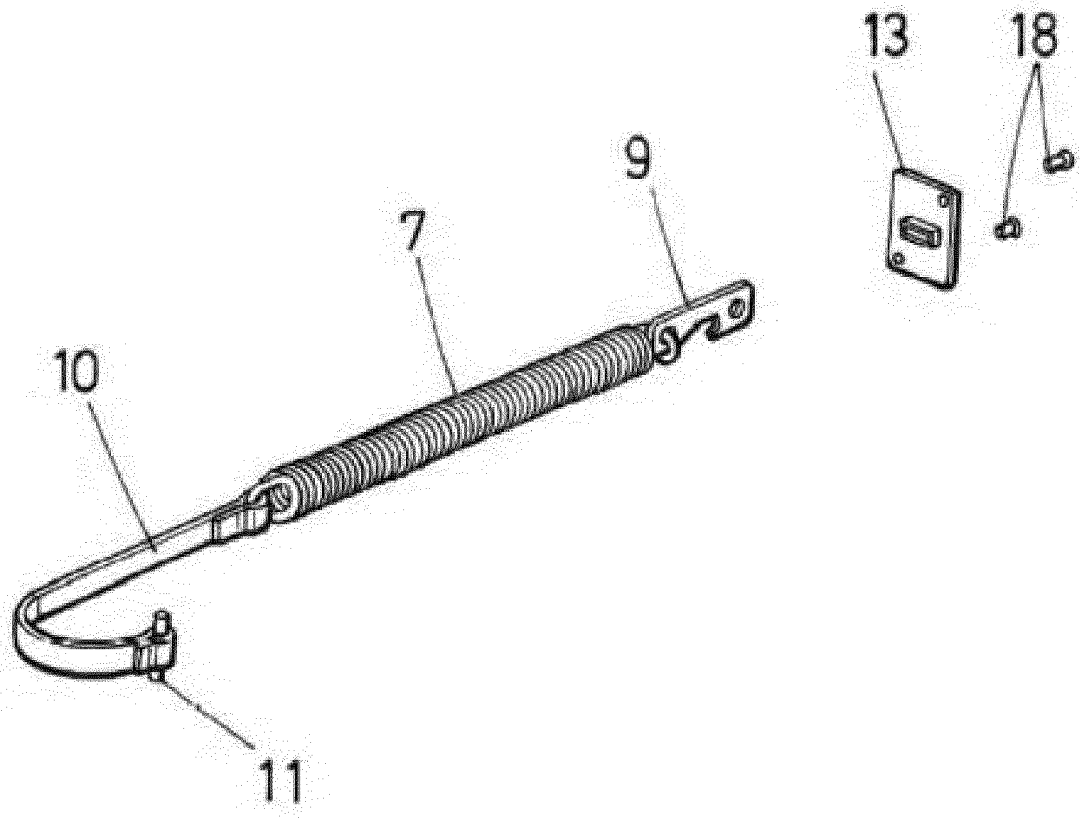


FIG.2

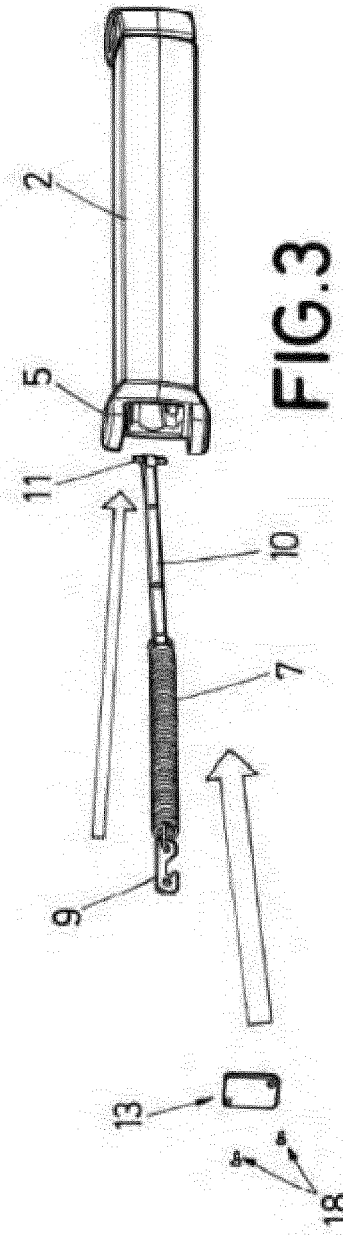


FIG.3

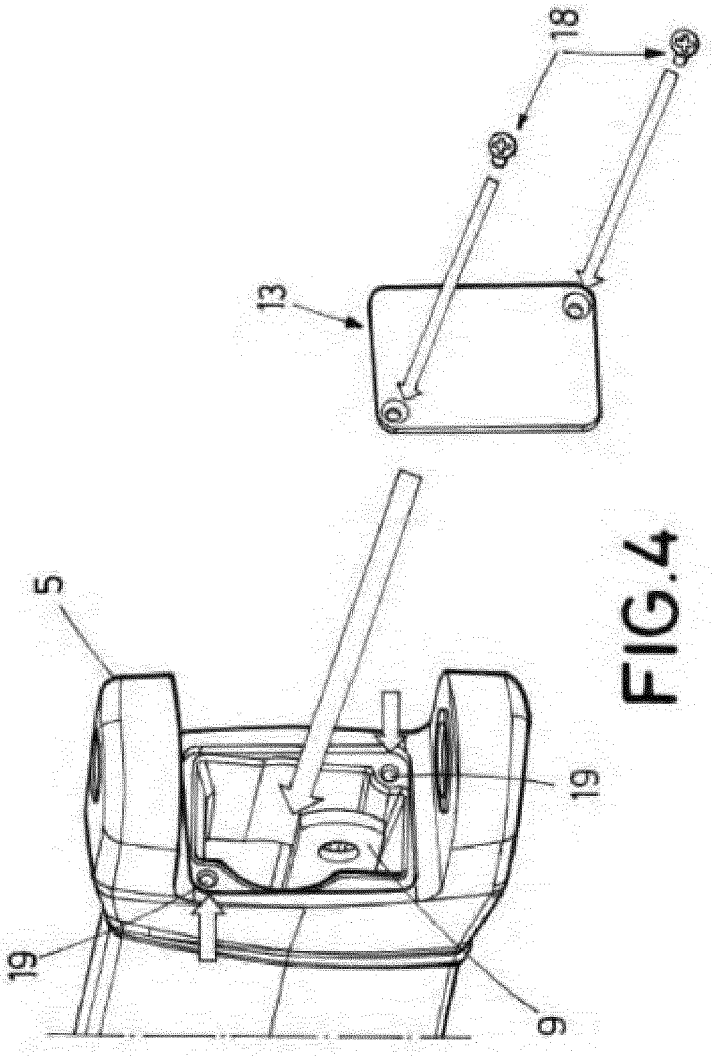


FIG.4

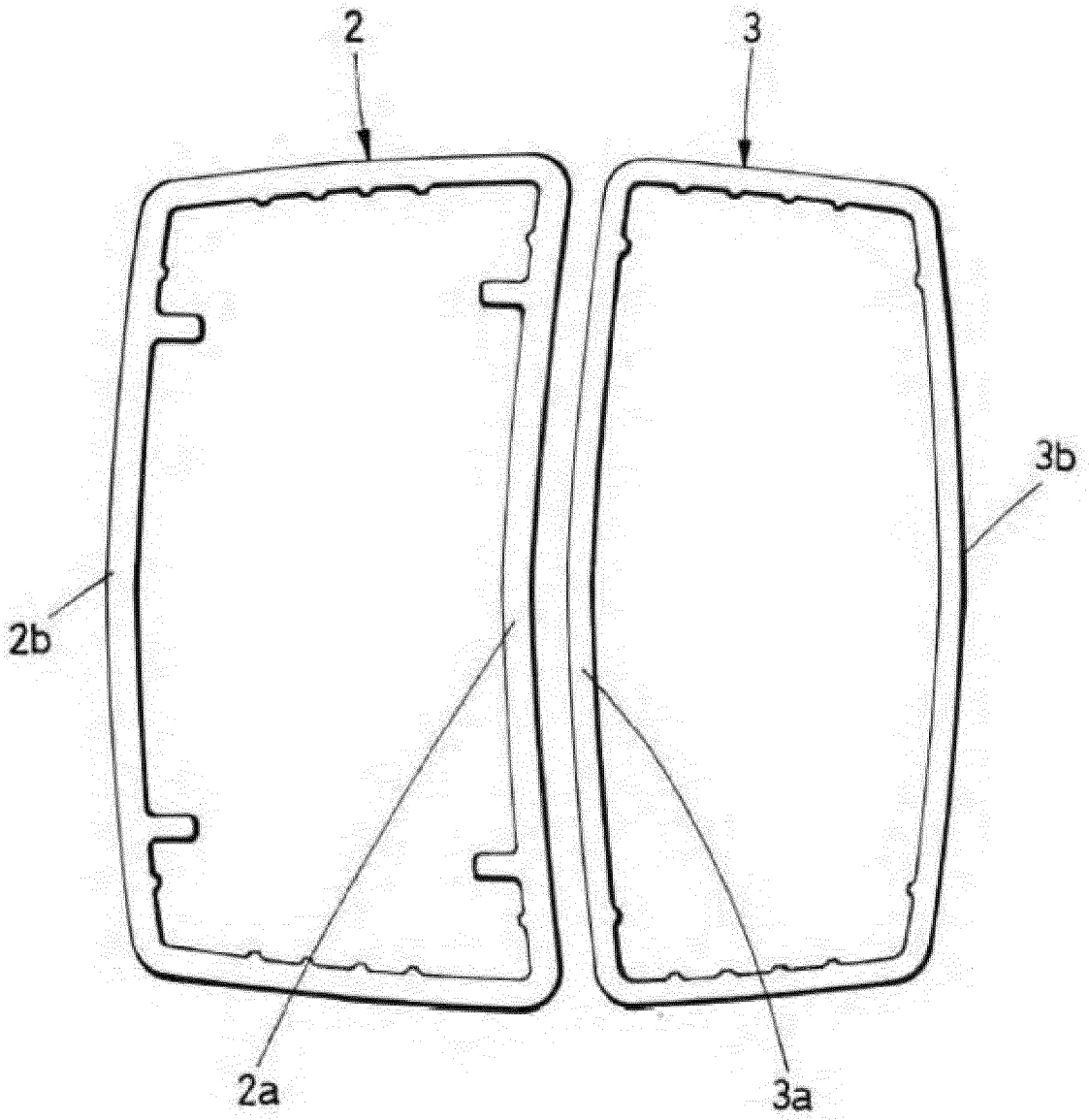


FIG.5

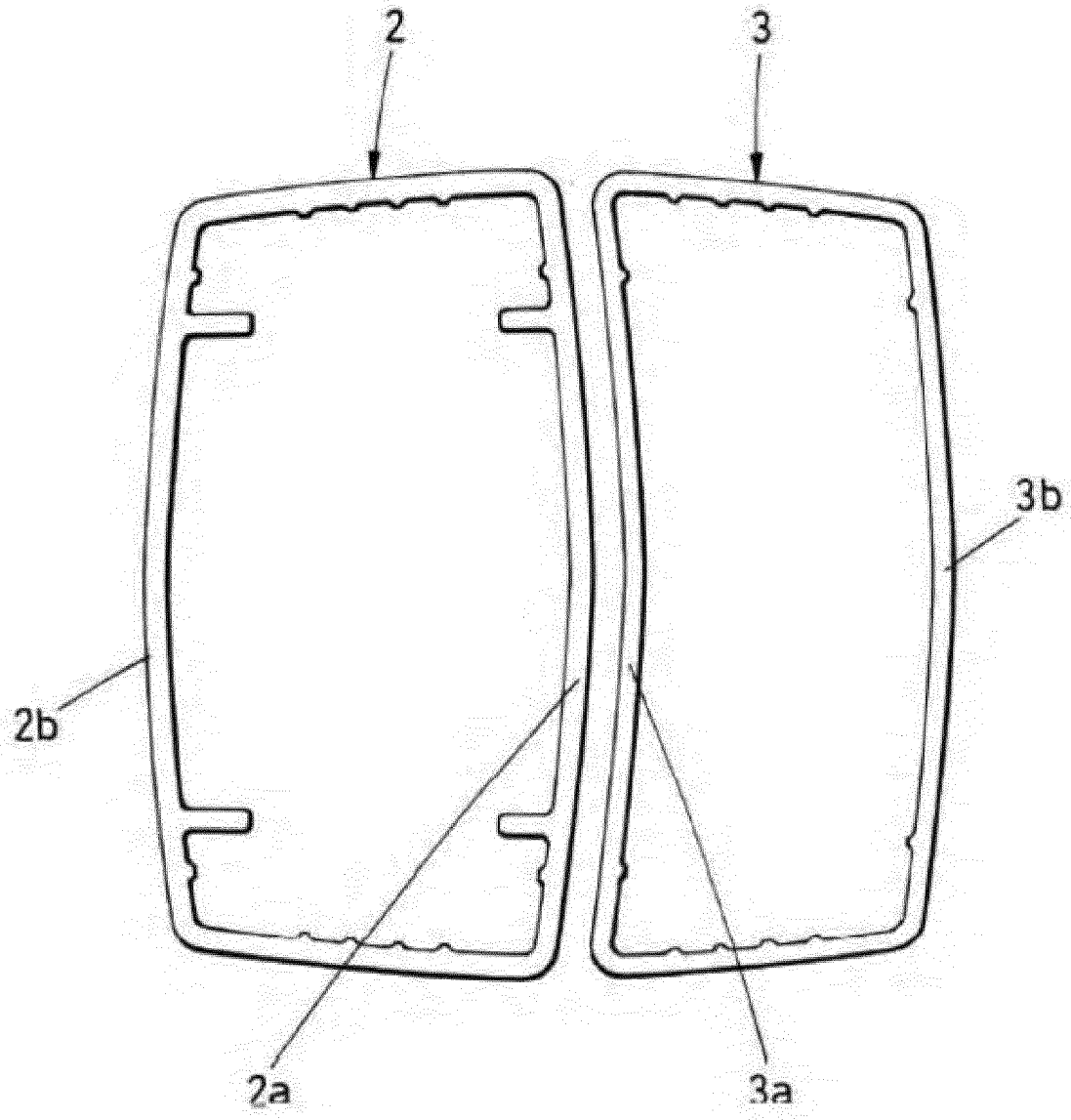


FIG.6

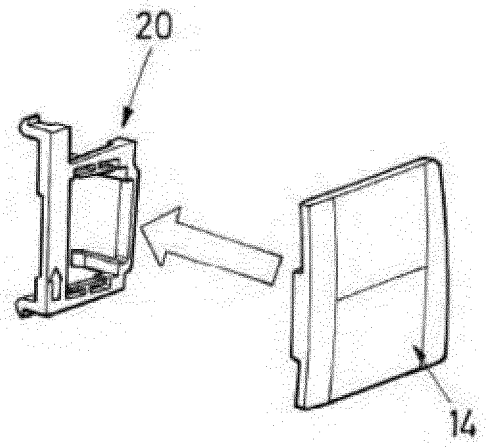


FIG.7a

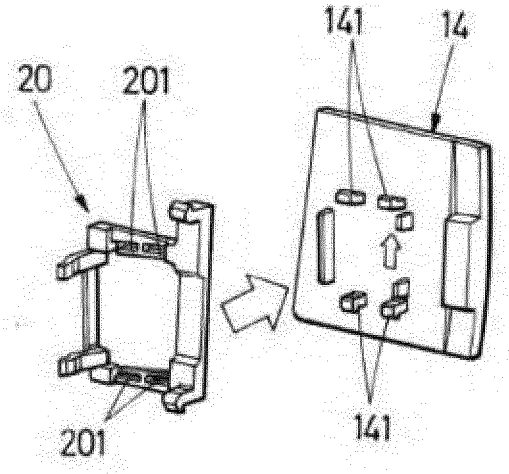


FIG.7b

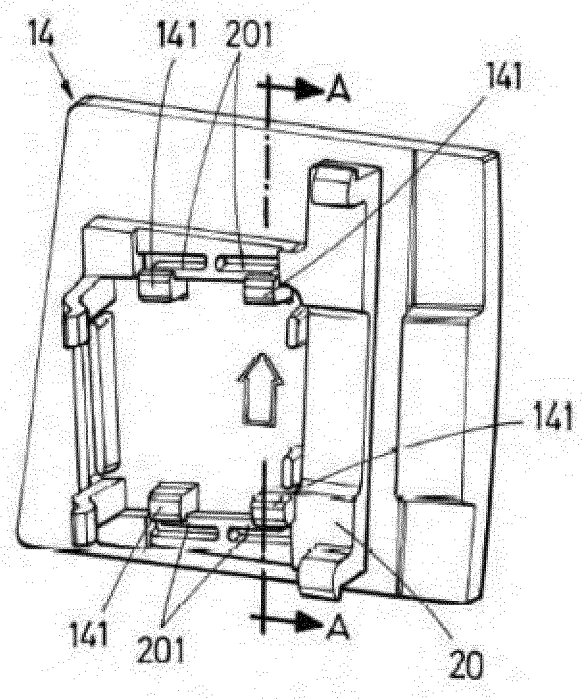
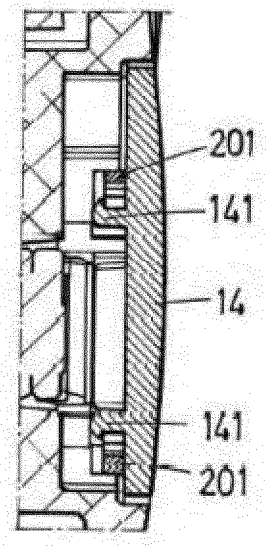


FIG.7c



A-A

FIG.7d

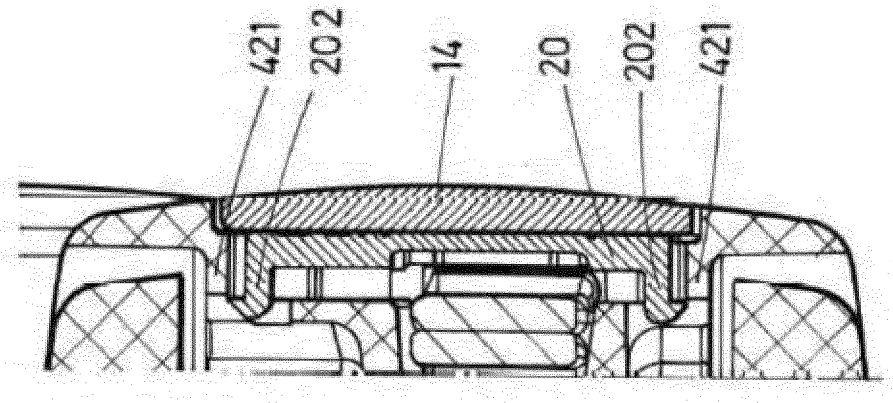


FIG.8c

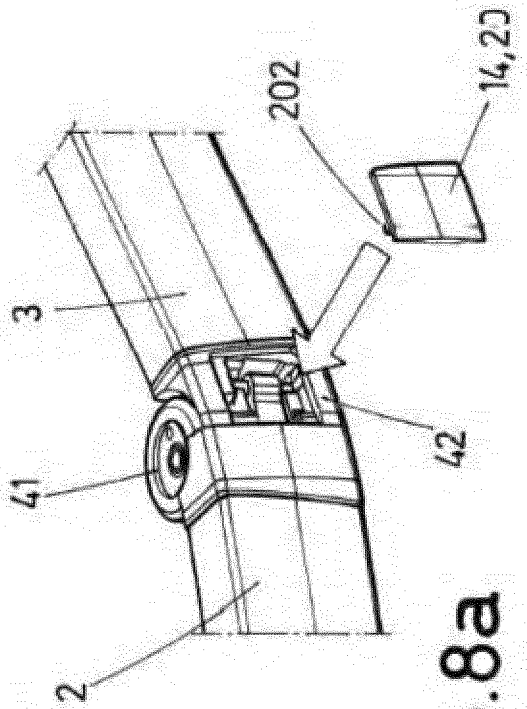


FIG.8a

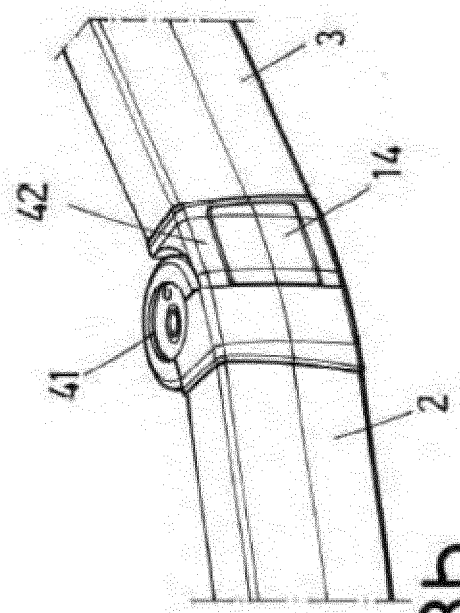


FIG.8b

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EUROPEAN SEARCH REPORT

Application Number
EP 16 38 2087

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	19 July 2016	Cornu, Olivier

CATEGORY OF CITED DOCUMENTS

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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