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AWNING CASKET BOX REINFORCEMENT DEVICE AND AWNING CASKET REINFORCEMENT SYSTEM

- (57)

A reinforcement device for the casing of an awning box and a reinforcement system for an awning box, particularly those in which the box of the awning is inclined at an almost vertical angle and is intended to serve as a reinforcement to improve the closure of the load bar when it approaches the casing to close the box. The re-
- inforcement device prevents the deformation sustained by the upper and lower profiles of said casing mainly in the center portion thereof, and especially in very long awning boxes, therefore facilitating the correct incorporation of the arms therein and the complete protection of the awning inside the box.

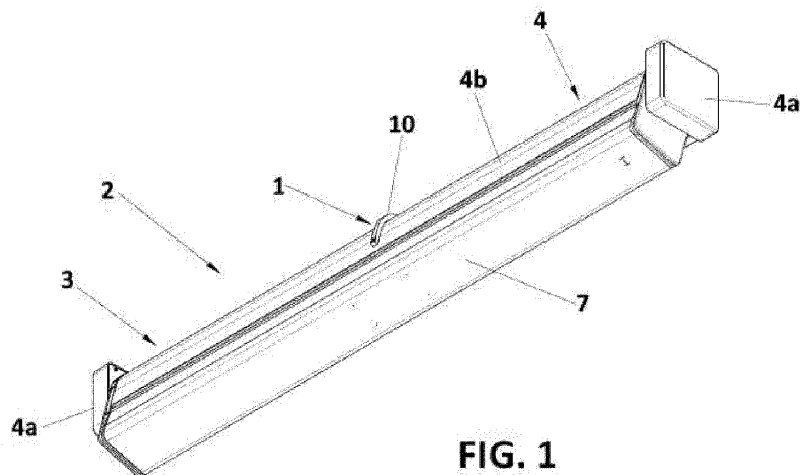


FIG. 1

Description

OBJECT OF THE INVENTION

[0001] The invention, a reinforcement device for the casing of an awning box and reinforcement system, relates to a device or piece for an awning box, particularly those in which the box of the awning is inclined at an almost vertical angle and intended to serve as a reinforcement to improve the closure of the load bar when it approaches the casing to close the box. The reinforcement device prevents the deformation sustained by the upper and lower profiles of said casing mainly in the center portion thereof, and especially in very long awning boxes, therefore facilitating the correct incorporation of the arms therein and the complete protection of the awning inside the box. To this end, the reinforcement device comprises at least one body with a U-shaped or C-shaped cross-section which is preferably attached externally on the rear portion of the casing of the box, opposite that of the bar thereof, and preferably in the central area of said casing. The inner surface of said reinforcement device is preferably complementary to the external surface of the casing where it is coupled, being coupled to the casing of the box by pressure and/or through additional fastening means.

[0002] The reinforcement device can be factory built into the casing of the box itself, or it can be added to casings of existing awning boxes already installed, either on a wall, between two side walls or on a ceiling, without requiring disassembly of the casing of the awning box for placing the reinforcement device therein. The device of the present invention therefore allows to be installed in casings of boxes that do not have a rear wall close to the center portion of the box and that do not allow the use of a traditional support anchored to the rear wall close to the box to limit the fall of the casing of the box due to the weight of said casing.

[0003] Likewise, the invention relates to a reinforcement system for an awning box comprising a reinforcement device and a casing of an awning box.

[0004] The field of application of the present invention falls within the sector of the industry dedicated to the manufacture of accessories for awnings, focusing particularly on the field of boxes with roll-up awnings.

BACKGROUND OF THE INVENTION

[0005] As is known, the box of an awning of the type concerned in this case usually comprises a casing or portion that is fixed to the wall or ceiling on which the awning is installed, inside which it houses the tube on which the canvas is rolled, and which can be formed by a single profile having a U-shaped section or by two profiles, for example, two J-shaped profiles, one upper profile and one lower profile, attached to one another by the curved portion forming a U shape, the lower one being close to the fastening partition of the box, if there is one,

and the upper one closing the upper open area of the box to leave only a slot for passage of the canvas, and a load profile that is fastened to the distal edge of the canvas and to the ends of the arms of the awning.

[0006] In almost vertical awning boxes, there is the problem that the roll of canvas, where the canvas comes out through the top portion of the rolling shaft or upper portion of the roll, tends to push the front partition of the lower profile of the casing, and since the casing is normally U-shaped, when pushing that partition which is in the mouth of the U shape, the U shape tends to open. This occurs regardless of whether the casing of the box consists of one profile or two profiles attached to one another. Since the lower profile is usually stiffer than the upper profile, the upper profile tends to lift up. In boxes where the lower profile is weaker than the upper profile or where the pushing sustained by the lower profile is diagonal, the lower profile may tend to open. The upper profile may also lift up while at the same time the box sustains downward bending. Requiring stiffer profiles means that they are heavier and more expensive.

[0007] In any of these cases, the mouth of the casing of the box becomes larger in the center portion thereof than the load profile that approaches when the awning is closed, which causes the profiles to collide at the time of closing, preventing the efficient closing movement of the box from occurring, which is what protects the canvas (which is the pure essence of the box's existence). This is magnified because at the time when the closing of the load profile against the casing is going to occur, it is precisely when the entire canvas is rolled around the tube and reaches the maximum diameter and weight, and that is when the maximum pressure of said canvas is exerted on the partition that protects same.

[0008] Two-arm awning boxes generally have caps at both ends of the profiles of the casing that stiffen the profiles at their ends, but in the central area the profiles have the capacity to deform, acting as a beam supported at both ends. This deformation in the central area is what generally causes the box to sometimes not close correctly, regardless of the inclination of the box.

[0009] Moreover, different central support solutions that fasten the profile from below to contain the deformation of the casing under its own weight are commonly available on the market. They usually consist of two pieces, one rotating piece attached to the casing and that rotates integrally with same, and another piece anchored to the wall or ceiling, which are attached to one another to allow the adjustment of the box and to fasten or hold the box from below to prevent the bending thereof due to its own weight, which could hinder closing.

[0010] This type of central support is usually suitable for awnings that have inclinations from horizontal to about 45°, which is when the bending of the casing in the central area due to its own weight is important when supporting the canvas on the bottom of the casing. It is important to highlight that in boxes with inclinations from horizontal to 45°, the two upper and lower profiles bend downwards

at the same time, maintaining the measurement of the opening of the mouth of the casing in the central area of the box. However, when the box is in an almost vertical position (from, for example, 45° to 75° from the horizontal), the behaviour of the box is usually such that the lower profile bends downwards while the upper one lifts up, substantially increasing the measurement of the mouth of the box in the central area. The pushing of the canvas on the front partition of the upper profile by opening the casing occurs in awnings that are generally inclined more than 45° to almost vertical, an arrangement which, on the other hand, is a recent trend on the market due to the emergence of glass railings that prevent other models of almost vertical awnings from being placed to cover balconies in more recent constructions.

[0011] The objective of the present invention is, therefore, to provide the market with a simple, economical and effective practical solution to overcome said problem by means of the development of a reinforcement device specifically designed for this purpose. The device object of the present invention avoids having to use additional supports other than those of the box which, in addition to the economic cost, imply that the box is dismantled from its installation in order to install said support. Likewise, the use of the reinforcement device object of the invention allows the weight of the profiles of the casing to be lightened, therefore reducing their cost, since the reinforcement device provides the necessary resistance to the casing of the box having a much lower weight than that which would be necessary to obtain the same resistance by adding material to the profiles of the casing along the entire length thereof.

DESCRIPTION OF THE INVENTION

[0012] The present invention, a reinforcement device for the casing of an awning box, to improve the closing of the casing, has as its first object a reinforcement device according to claim 1. Specifically, claim 1 refers to a reinforcement device for the casing of an awning box, said box comprising at least one casing with an external surface, a load profile or bar that fits in the casing, a canvas and at least two extendable arms, said reinforcement device having a body with a C-shaped or U-shaped cross-section, with an inner surface, an outer surface and two free ends, said device being couplable to the external surface of the casing of the box. The longitudinal section of the body of the device is preferably rectangular.

[0013] Thus, the reinforcement device is especially applicable to casings of roll-up awning boxes, and particularly to those of an awning box that are very inclined or inclined at an almost vertical angle. Said reinforcement device has the purpose of serving as a reinforcement to improve the closure of the load profile or bar when it approaches the casing to close the box, preventing the deformation sustained by the partitions of the profile or profiles of said casing in the center portion thereof, especially in very long awning boxes, especially greater than 4 or

5 metres, depending on the design and thickness of the profiles, and thus facilitating the correct incorporation of the arms therein.

[0014] The width of the longitudinal section of the body may vary depending on the length of the box, but will preferably vary between 7 and 15 mm for a length of the casing of the box of between 5.5 and 6.5 m. Likewise, more than one reinforcement device can be used for each casing, depending on the length of the casing and the width of the reinforcement device. Thus, with these dimensions of the reinforcement device, it is possible to reduce the weight of the assembly compared to providing the profile itself of the casing with greater material and weight to increase the stiffness thereof.

[0015] Specifically, the geometry of the different surfaces that enable the closure of the casing has ramps that provide tolerance to certain deformation of the casing. The deformation of the casing depends on several factors, mainly:

- the canvas rolled up on the tube causes a bending thereof that causes the canvas to rest and press on the lower inner portion of the profile of the casing,
- the profile itself of the casing, due to its own weight and length, in turn sustains certain bending, and said deformation in the lower portion of the profile is in turn transmitted to the upper portion of the profile, or "register", in turn deforming it, and
- the above factors are aggravated by the length of the profile, since these are tubes and profiles supported at both ends and subjected to loads distributed along the length thereof.

[0016] In accordance with the above, and from a certain length, as mentioned, greater than about 4 or 5 metres, and mainly when the awning is almost completely rolled up, and only a few centimetres are missing for the closure of the box to be completed, the deformation sustained at the edges of the profiles of the casing is greater than the tolerance allowed by the closing ramps, so that the profiles collide (in the upper portion or in the lower portion, or both), and the inner canvas of the box is left unprotected from the elements.

[0017] Likewise, when in the present invention reference is made to the C-shaped or U-shaped shape, whether in reference to the profile of the casing or to the body of the reinforcement device, it should be understood not as a strict C shape or U shape, but rather as an approximate C shape or U shape. Thus, the inside of said C shape or U shape can be formed by a curved surface or by a series of flat surfaces, so that the cross-section of the profile of the casing or of the reinforcement device has a curved inner side or an inner side formed by a series of straight lines. In the event that the inner surface of the profile of the casing or of the reinforcement device has a series of flat surfaces, these will be present on at least three consecutive flat surfaces, determining an angle between two adjacent surfaces. This angle can be a

right angle or an obtuse angle.

[0018] The shape of the inner surface of the reinforcement device is preferably complementary to the outer surface of the profile of the casing. The width of the body is preferably between 5 and 20 mm.

[0019] Although reference is made to the casing comprising a single profile with a C-shaped or U-shaped cross-section, the casing will preferably be formed by two profiles, an upper or register profile and a lower or casing profile, each with a J-shaped cross-section and attached to one another by the curved portion of the J shape, thus forming the profile with a U-shaped or C-shaped cross-section. The casings are frequently formed by two profiles, mainly due to the fact that the extrusion of a profile with an almost closed C-shaped or U-shaped section in aluminium presents technical and economic problems. For example, a casing with a single profile requires a greater thickness than two half profiles and the manufacturing tooling for a single profile is much more complex and requires a greater investment. In any case, the casing can also be manufactured with three or more profiles, but these are rare since the assembly of the casing is complicated and the resistance and watertightness thereof are reduced.

[0020] The upper or register profile can be removed to access the inside of the casing, thus being able, for example, to access the roll of canvas during the installation or maintenance of the awning. Likewise, the lower profile or casing profile is the profile that remains below when the box is adjusted horizontally. As the canvas usually comes out above the rolling tube, the lower profile usually has a front partition that hides the roll of canvas and limits the bending thereof, ensuring that the canvas is taut in its central area. For this reason, the lower profile usually has a shape that makes it more resistant to bending than the shape of the upper or register profile.

[0021] The material of the body of the reinforcement device is preferably made of the same material as the rest of the components of the box, with the exception of the canvas. These, specifically the profile or profiles of the casing, the load bar, the wall or ceiling supports of the casing and the arms are usually made of aluminium, so that the reinforcement device is also made of aluminium to be able to use in the body of the reinforcement device the same finishing process, preferably lacquering, as in the components of the box, thus achieving the same texture and colour as the rest of the components of the box of the awning. Plastic materials could also be used, although it must be taken into account that they tend to lose tension over time and due to being exposed to the elements, so that in the latter the pressure of the casing would open the plastic reinforcement device over time, thus losing effectiveness.

[0022] As mentioned, the reinforcement device preferably has an inner surface complementary to the outer surface of the casing to enable coupling between the two, preferably in the central area of the casing. Thus, the reinforcement device is externally coupled to the central

area of the casing, without the reinforcement device being attached to the wall or ceiling to which the box is anchored, and in such a way that it embraces the profile or profiles of the casing on three of its four sides, being fastened on the external surface of the profile simply by pressure or through additional fastening means provided for this purpose, preferably mechanical elements or by means of an adhesive.

[0023] To carry out said coupling between both portions, the distance between the free ends of the body of the reinforcement device is about the same, preferably slightly smaller, than the distance between the ends of the C-shaped or U-shaped cross-section of the longitudinal profile of the casing.

[0024] Additionally or complementarily, the reinforcement device has, preferably close to at least one of its free ends, at least one through hole to receive additional fastening means going through the body of the reinforcement device. Said additional fastening means are preferably a screw which, after going through the reinforcement device, is at least partially introduced into the outer surface of the profile of the casing of the box of the awning.

[0025] Likewise, additionally or complementarily to the above fastening means, the reinforcement device comprises at least one projection on its inner surface and which is intended to fit into at least one housing arranged on the external surface of the casing.

[0026] The body of the reinforcement device can be formed by two pieces, which can be articulated with one another and/or can move with respect to one another to facilitate, if necessary, assembly on the casing of the box.

[0027] A second object of the invention is a reinforcement system for an awning box according to claim 12. Said reinforcement system comprises a reinforcement device with the features of the device described above and a casing of the box. Specifically, the casing of an awning box that is formed by at least one longitudinal profile with an opening and C-shaped or U-shaped cross-section, with an outer surface and an inner surface, defining an inner space housing the at least one rolling tube, a canvas and at least two extendable arms coupled at one end to a load profile or bar that is partially introduced into the aforementioned opening of the casing to protect the awning from the elements when the awning is closed and the canvas thereof is drawn in. Preferably, the profile of the casing is formed by two profiles, as mentioned above, a lower profile or casing profile and an upper profile or register profile.

[0028] As mentioned, the reinforcement device, specifically the inner surface thereof, is coupled to the outer surface of the profile of the casing since both surfaces are preferably complementary. As mentioned above, the profile of the casing can be formed by two profiles, an upper profile and a lower profile. Likewise, the profile or profiles of the casing preferably comprise an upper partition, a rear partition and a lower partition.

[0029] Preferably, the U-shaped body of the reinforcement

ment device is screwed to the casing with two sheet metal screws, one arranged at each free end of the body of the reinforcement device (one at the top and one at the bottom). However, and as mentioned, the reinforcement device can also be fixed by means of only one screw, either at any of the two free ends thereof, and/or without any screw since the pressure itself of the casing tends to expand it under the U-shaped body of the reinforcement device being fastened by friction and/or by means of an adhesive.

[0030] Likewise, when the U-shaped or C-shaped body that constitutes the reinforcement device object of the invention comprises at least one projection on the inner surface thereof for fixing thereof to the casing of the box with one or more interior projections, the outer surface of the casing having at least one housing complementary to the projection of the reinforcement device. Said housing is preferably in the form of channels provided for this purpose on the external surface of the casing.

[0031] These projections and housings, together with screws and/or adhesives, if used, prevent the movement of the reinforcement device along the casing of the box.

[0032] Finally, it should be noted that the reinforcement device object of the invention can consist of both a device that is factory built into the awning, coupled to the casing thereof, and an element that can be added to existing and installed wall and ceiling awnings. This is because the reinforcement device object of the present invention allows it to be assembled later even if the U-shaped or C-shaped body is somewhat closed since, by taking advantage of the flexibility of the profiles, it will be possible for the reinforcement device to somewhat deform the profile of the casing so that the latter enters the reinforcement device and, therefore, without requiring the disassembly of the box to place the reinforcement device.

[0033] With all this, for boxes of this type with large lines and strong inclinations, the U-shaped or C-shaped body of the reinforcement device provides means embracing the upper, lower and rear portions of the casing of the box, preferably in the center portion thereof, strongly reducing the deformation of the profiles that form said casing, whether due to expansion or shrinkage, so that in the central area of the casing and box of the awning, the mouth of the casing neither opens nor closes, but rather maintains its measurement with respect to the load profile or bar and, therefore, makes it easier for the box to close.

DESCRIPTION OF THE DRAWINGS

[0034] To complete the description of the present invention and to facilitate the understanding of its features, a set of figures is attached as an integral portion thereof for illustrative and non-limiting purposes.

Figure 1 shows a perspective view of an example of a very inclined box awning supported on a wall, with

the box forming an angle of about 75° with the perpendicular to the wall and depicted in the closed position, which includes an example of the reinforcement device to improve the closure of the casing object of the invention, where the arrangement thereof can be seen.

Figure 2 shows a front elevational view of the closed box shown in Figure 1.

Figures 3, 4 and 5 show respective section views of the box according to the corresponding sections A-A, B-B and C-C indicated in Figure 2, Figure 4 especially showing the arrangement of the reinforcement device on the casing of the box. Figure 4 shows how the roll of canvas descends with respect to its ends until it rests on the partition of the lower profile of the casing, so that said roll pushes on the partition of the lower profile in the central area of the casing due to the bending of the rolling tube, but due to the action of the reinforcement device the upper profile of the casing is not deformed, enabling a perfect coupling of the profile of the load bar inside the casing, below the upper profile thereof.

Figures 6 and 7 show front and side elevational views, respectively, of the example of a very inclined box awning, forming about 75° with the perpendicular of the fastening wall for the box, shown in Figures 1 and 2 with the built-in reinforcement device, in this case the awning being depicted in the open position. Figures 8, 9 and 10 show respective section views of the box according to the corresponding sections D-D, E-E and F-F indicated in Figure 6.

Figures 11 and 12 show perspective and front elevational views, respectively, of an example of a very inclined box awning, similar to that of Figure 1, depicted in the closed position, according to the prior art, that is, it does not include the reinforcement device to improve the closure of the casing of the invention. It can be seen in Figure 11 how the profile of the load bar is not perfectly coupled to the upper profile of the casing. This difference becomes more noticeable if Figure 11 is compared with Figure 1.

Figures 13, 14 and 15 show respective section views of the box according to the corresponding sections G-G, H-H and I-I indicated in Figure 12. Figures 13 and 15 show how the load bar is arranged inside the casing, specifically the ends of the profile of said bar are located inside the casing, below the upper profile. However, Figure 14 shows how the profile of the load bar is not coupled inside the casing due to the deformation of the upper profile as a result of the bending of the rolling shaft of the canvas of the awning. Said Figure 14 also shows, as in Figure 4, how the roll of canvas descends with respect to its ends until it rests on the partition of the lower profile of the casing, so that said roll pushes on the partition of said lower profile in the central area of the casing due to the bending of the rolling tube.

Figure 16 shows a perspective view of an exemplary

embodiment of the reinforcement device of the invention, depicted independently.

Figures 17 and 18 show respective enlarged views of Figures 4 and 14, corresponding to section B-B of Figure 2 and section H-H of Figure 12, allowing to compare the difference in the arrangement of the profiles of the casing when the awning incorporates the reinforcement device (Figure 4) and when it does not incorporate it (Figure 12) according to the prior art. Figures 17 and 18 show how the roll of canvas descends with respect to its ends until it rests on the partition of the lower profile of the casing, so that said roll pushes on the partition in the central area of the lower profile of the casing due to bending of the rolling tube. This causes, as seen in Figure 18, the center portion of the upper profile to deform, widening the opening of the casing, that is, widening the distance, mainly in the central area of the casing, between the upper profile and the lower profile. On the contrary, in Figure 17, the reinforcement device prevents the opening of the casing from widening, maintaining the distance between the upper profile and lower profile.

Figure 19 shows a perspective view of an alternative example of a reinforcement device object of the invention formed by five sides angled with respect to one another, determining a portion of an octagon, coupled to a casing with a complementary profile.

PREFERRED EMBODIMENT OF THE INVENTION

[0035] In view of the aforementioned figures, and in accordance with the numbering used, an exemplary embodiment of the reinforcement device and reinforcement system for casings of awning boxes according to the invention is described below.

[0036] According to the figures, the reinforcement device (1) of the invention is preferably incorporated in a roll-up awning (2) box (3), which is very inclined, that is, with an angle of between 45 to 75° with respect to the horizontal.

[0037] In any case, the reinforcement device (1) is applicable for incorporation in boxes (3) which comprise, in a known manner, a casing (4), which is fixed, for example, to the surface (S) of a wall or ceiling, and can also be fixed to two facing walls, using anchors (14), said casing preferably being formed by at least two side caps (4a), a profile having a U-shaped or C-shaped configuration, which can be divided, as shown in the figures, into two J-shaped profiles so that the attachment of both profiles through the curved portion of the J shape forms the U-shaped or C-shaped profile, with an upper profile or register profile (4b) and a closing lower profile or casing closing (4c). Said casing (4) internally houses, in addition to other possible drive elements (not depicted), a rolling tube (5) and the canvas (6) that is wound on said tube (5), incorporating at the distal edge of said canvas (6) a load profile or bar (7), which is attached at the ends to

extendable arms (8) in turn fixed to the casing (4), and which, in the rolled position of the canvas (6), defines the closing cap of the box (3) of the awning when it fits into the front portion of the casing (4).

[0038] In turn, the reinforcement device (1) comprises at least one body (10) with a U-shaped or C-shaped cross-section (see Figure 16), with an inner surface, an outer surface and two free ends, said device being couplable to the external surface of the casing of the box. The longitudinal section of the body of the device is preferably rectangular.

[0039] The reinforcement device (1) is preferably attached to the central area of the casing (4), without being fastened to the wall or ceiling to which the box (3) is anchored, in such a way that it embraces the upper profile (4b) of said casing (4) at the upper partition (4b1) and rear partition (4b2) thereof and embraces the lower profile (4c) at the rear partition (4b2) and lower partition (4b3) of the lower profile (4c). In the example in the figures, the lower profile (4c) and the upper profile (4b) are attached at about the middle of the rear portion of the casing (3). Specifically, and by way of example, the figures show said attachment between the upper profile (4b) and lower profile (4c) following the housing or channel (13) (see Figure 17) located in the lower profile (4c). The reinforcement device makes the assembly stiffer than the profile itself of the casing (4), so that it prevents eventual deformation of said upper profile (4b) and lower profile (4c), at least in the upper partition (4b1) thereof, especially in very long boxes (3), from 4 or 5 metres, making it easier to correctly incorporate the arms (8) therein and mainly close the loading profile (7), fitting perfectly into the mouth or front face of the casing (4).

[0040] In one embodiment, the body (10) of the reinforcement device (1) is fixed to the partitions of the upper profile (4b) and lower profile (4c) of the casing (4), being fastened on the external surface thereof simply by pressure.

[0041] In another embodiment, the U-shaped body (10) forming the reinforcement device (1) is fixed to the partitions of the upper profile (4b) and lower profile (4c) of the casing (4), being fastened on the external surface thereof through additional fastening means (11, 12, 13). Preferably, the additional fastening means of the body (10) of the reinforcement device (1) are one or two sheet metal screws (11), preferably located one above and one below, close to the free ends of the body (10) of the reinforcement device (1).

[0042] Optionally, the additional fastening means of the body (10) of the reinforcement device (1) consist of a layer of appropriate adhesive or glue (not shown in the figures), although said option does not allow the disassembly of the reinforcement device (1) if necessary.

[0043] Optionally, the additional fastening means of the body (10) of the reinforcement device (1) comprise one or more inner projections (12), arranged on the inner surface of the reinforcement device (1), and which fit into one or more complementary housings, preferably in the

form of channels (13), provided for this purpose on the external surface of the casing (4).

[0044] Preferably, said fastening by means of inner projections (12) in the channels (13) is complemented with the aforementioned support screws (11) to prevent the body (10) of the reinforcement device from being able to come out of place or move along the casing (4) of the box (3).

[0045] In any case, in a preferred embodiment, the U-shaped or C-shaped body (10) of the reinforcement device (1) is made up of a single piece. In an alternative embodiment, not depicted in the figures, the U-shaped or C-shaped body (10) of the reinforcement device (1) is formed by two pieces articulated with one another or movable with respect to one another, to facilitate assembly on the casing (4).

[0046] Finally, it should be noted that the reinforcement device (1) is either an element that is factory built into in the awning (2) or it is an element that can be coupled later to the box of an awning already installed on a wall, on walls, or a ceiling, and that can be assembled without requiring the disassembly of the box (3) for the placement thereof.

[0047] In particular, Figures 1 and 2 show an example of a very inclined awning (2) box (3), about 75° between the awning casing and the perpendicular to the fastening wall of the box, in the closed position, with the canvas (6) drawn in and with the body (10) of the reinforcement device (1) coupled to the central area of the casing (4), on the external surface thereof. Sections A-A and C-C of Figures 3 and 5 show the ends of the upper profile (4b) and lower profile (4c) of the casing (4) of the box (3), the point of minimum bending of the rolling tube (5) and of said upper profile (4b) and lower profile (4c), while section B-B of Figure 4 (as well as in the enlargement of figure 17) shows the central area of the box (3), the point of maximum bending of the rolling tube (5) and the upper and lower profiles (4b, 4c) of the casing (4) resting on the lower profile (4c) of the casing (4). However, thanks to the existence of the body (10) of the reinforcement device (1) and despite the support on the lower profile (4c) of the rolling tube, the casing (4), mainly the upper profile (4b), does not sustain any deformation.

[0048] The support of the rolling tube (5) of the canvas on the lower profile (4c) causes the upper profile (4b) to deform, causing the distance between the upper profile (4b) and the lower profile (4c) to increase in the central area of the casing, that is, increasing the size of the opening or mouth of the casing. This circumstance occurs in the central area of the casing and not at the ends thereof. The deformation of the upper profile (4b) occurs when the canvas is drawn in or is being drawn in since it is the weight of the canvas that causes the bending of the rolling shaft and the subsequent deformation of the upper profile (4b). When installing the casing, the profile of the load bar (7) is perfectly coupled inside the casing (4), thus protecting the canvas of the awning, however, after deploying the canvas of the awning, when it is drawn in

again the weight of the rolling tube (5) increases and causes it to be supported on the partition of the lower profile (4c), causing the deformation of the upper profile (4b). As mentioned, this deformation of the upper profile (4c) widens the mouth or opening of the casing (distance between the upper profile (4b) and lower profile (4c)) in its central area, preventing the profile of the load bar (7) from fitting inside the casing (4).

[0049] Figures 8, 9 and 10 show the situation of the box (3) of the awning when the canvas (6) is unrolled, so that since the rolling shaft (5) weighs less because it does not incorporate the entire canvas (6) rolled on same, the lower profile (4c) of the casing (4) does not deform. This deformation occurs mainly when the canvas of the awning is being rolled up or, in other words, when the box (3) is being closed when the load bar (7) thereof moves towards the casing (4).

[0050] In turn, Figures 11 to 15 show the behaviour of a very inclined box (3) awning (2), about 75° between the casing of the awning and the perpendicular to the fastening wall of the box, according to the prior art, that is, without including the reinforcement device (1) of the invention. Specifically, Figure 14 (as well as the enlargement thereof in Figure 18) shows how both the upper profile (4b) and the lower profile (4c) of the casing (4), as well as the rolling tube (5) itself, are slightly deformed in the central area of the casing (4) of the box (3), giving rise, when the canvas (6) is in the rolled position, to unwanted friction between said canvas and the partition of the lower profile (4c). Furthermore, at the same time, the upper partition (4b1) of the upper profile (4b) of the casing (4) is deformed, being lifted up and the mouth of the casing (4) opening in its central area, so that the load profile (7) does not fit correctly in the mouth or front face of the casing (4), since it has been deformed and widened, inadequately fulfilling its protective function of the canvas (6).

[0051] Figure 16 shows an example of a preferred reinforcement device (1) object of the invention. This example with a curved surface has the projection (12) as well as the holes (11) at its ends for coupling and fixing to the profile or profiles of a casing (4) of an awning box (3). In any case, it is possible for said reinforcement device (1) not to have projections (12) or holes (11) at the ends thereof, or for it to only incorporate one of the two, at least one projection (12) or at least one hole (11). Figure 19 shows an alternative to the reinforcement device object of the invention, in which it is not curved, but rather is formed by five sides angled with respect to one another, specifically with an obtuse angle between adjacent sides.

[0052] Figures 4, 14, 17 and 18 show the central bulging of the upper profile (4b) of the casing (4) when the rolling tube of the canvas rests on the lower profile (4c), which prevents the load profile (7) from fitting with the upper profile (4b). The lower profile (4c) also deforms, although due to the geometry of the profiles, the upper profile (4b) is usually weaker, hence its greater deformation. Likewise, said bulging is observed in the upper pro-

file (4b) of Figure 11 since it shows how the profile of the load bar (7) is not perfectly coupled to the upper profile (4b) of the casing (4). This difference becomes more noticeable when comparing Figure 11 to Figure 1, where the profile of the load bar (7) is perfectly coupled in the opening of the casing (4) formed by the upper profile (4b) and lower profile (4c) thereof.

[0053] Figure 19 shows a perspective view of an alternative example of a reinforcement device object of the invention formed by five sides angled with respect to one another, determining a portion of an octagon, coupled to a casing with a complementary profile.

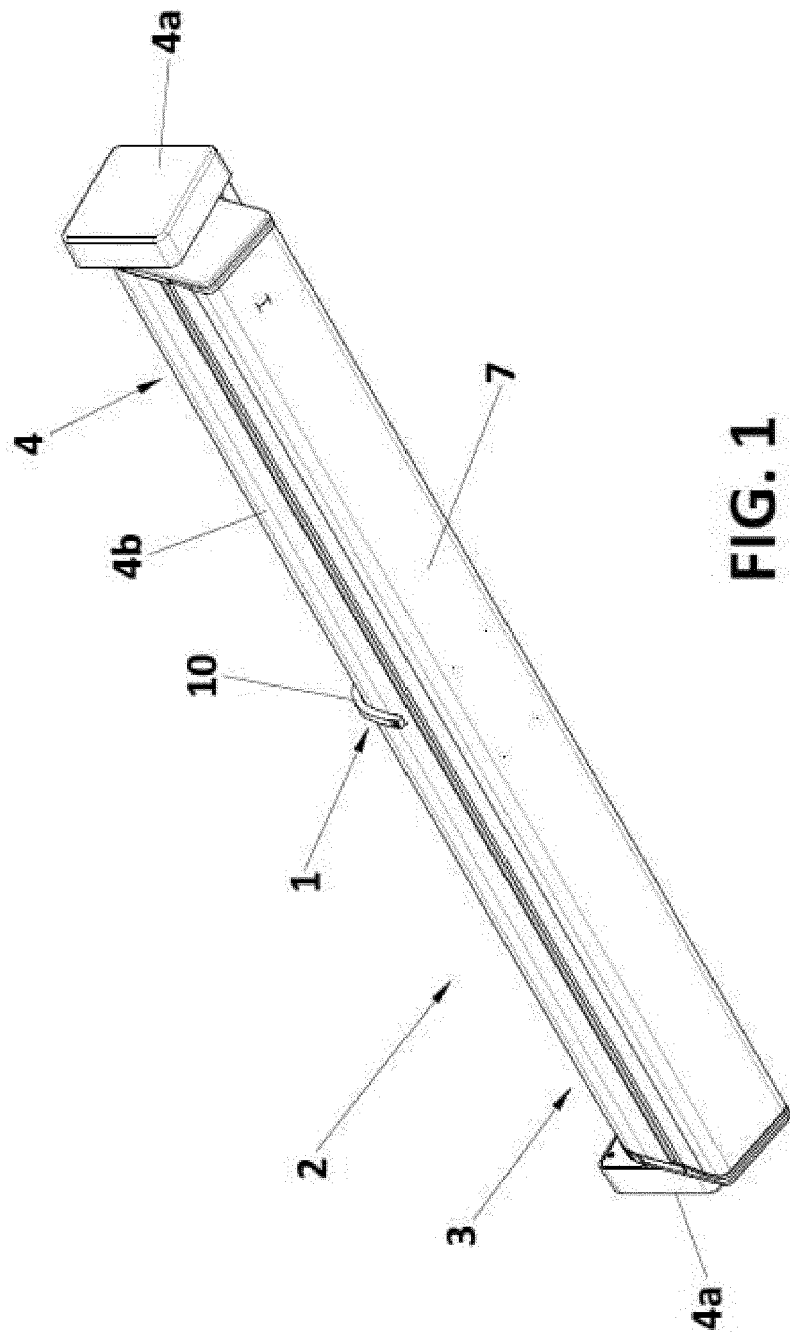
Claims

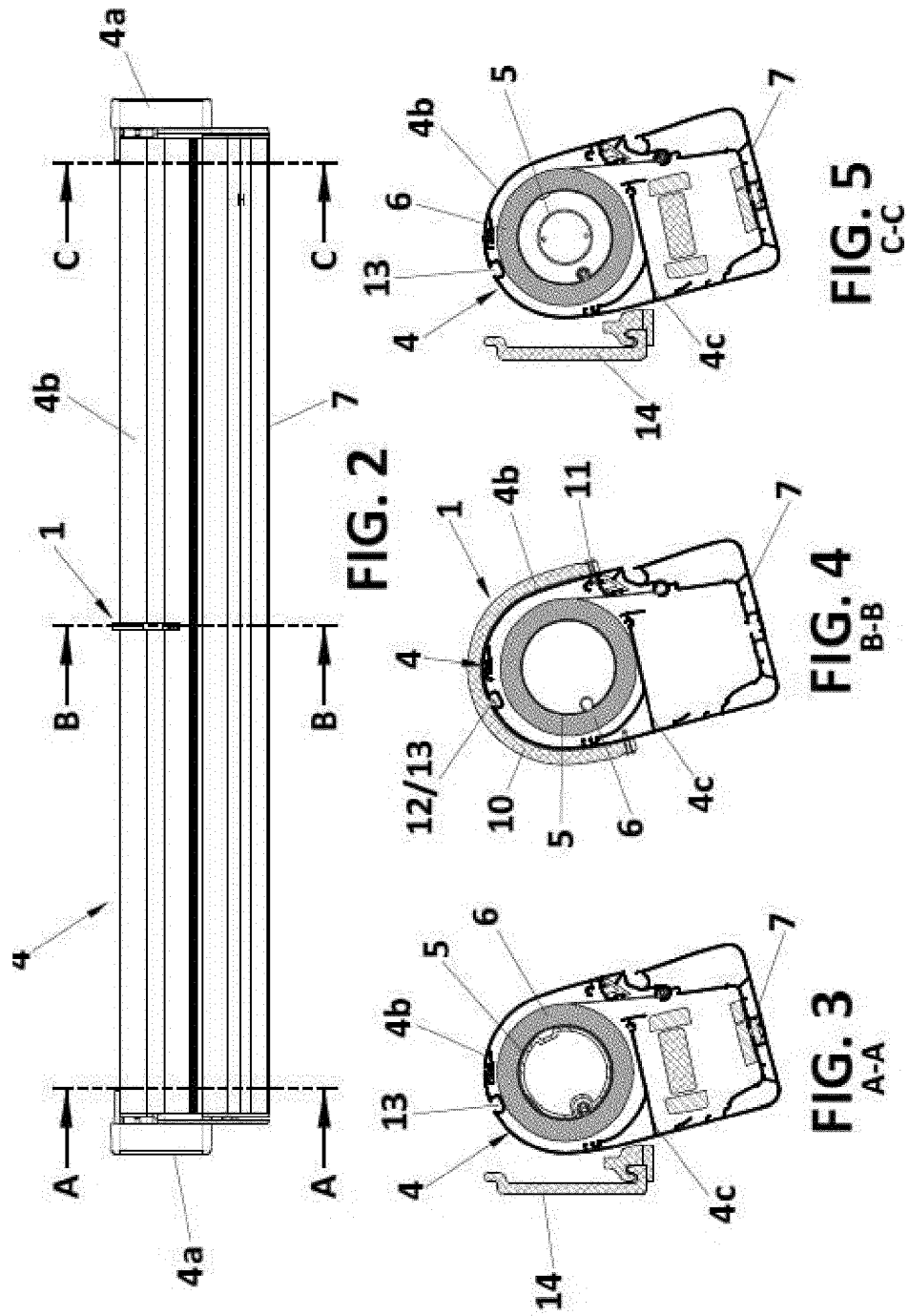
1. A reinforcement device for the casing of an awning (2) box (3), said box (3) of the type comprising at least one casing (4) with an external surface, a load profile or bar (7) that fits in the casing (4), a canvas (6) and at least two extendable arms (8), **characterised in that** said reinforcement device comprises a body with a C-shaped or U-shaped cross-section (10), with an inner surface, an outer surface and two free ends, said device (1) being couplable to the external surface of the casing (4) of the box (3).
2. The device according to claim 1, **characterised in that** it comprises, on its outer surface, at least one hole to receive additional fastening means (11).
3. The device according to any of the preceding claims, **characterised in that** it comprises at least one projection (12) on the inner surface that fits into at least one housing arranged on the external surface of the casing (4).
4. The device according to any of the preceding claims, **characterised in that** the body (10) thereof comprises two pieces articulated with one another or movable with respect to one another.
5. The device according to any of the preceding claims, **characterised in that** the inner surface of the body (10) is curved.
6. The device according to any of claims 1 to 4, **characterised in that** the inner surface of the body (10) comprises at least three consecutive flat surfaces that determine an angle at the attachment between two adjacent flat surfaces.
7. The device according to any of the preceding claims, **characterised in that** the longitudinal section of the body (10) is rectangular.
8. A reinforcement system for an awning (2) box (3), **characterised in that** it comprises:

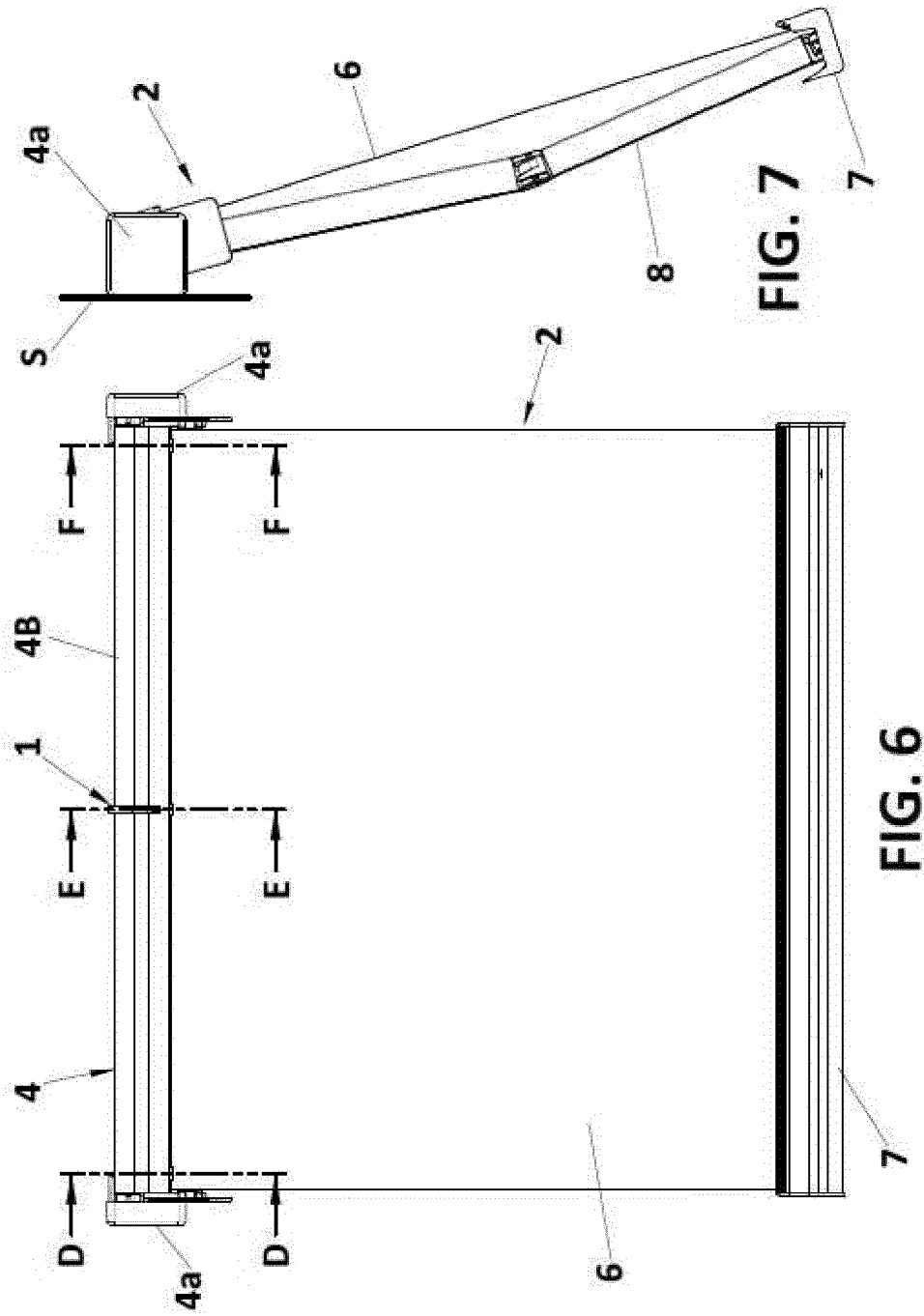
- a reinforcement device (1) according to any of claims 1 to 10, and
- a casing (4) of an awning (2) box (3), said casing (4) being formed by at least one longitudinal profile with an opening and C-shaped or U-shaped cross-section, with an outer surface and an inner surface, defining an inner space housing at least one rolling tube (5), a canvas (6) and at least two extendable arms (6) coupled at one end to a load profile or bar (7) that is partially introduced into the aforementioned opening of the casing (4),

the body (10) of said reinforcement device (1) being coupled to the outer surface of the casing (4).

9. The system according to claim 8, **characterised in that** the inner surface of the reinforcement device (1) is complementary to the outer section of the casing (4).
10. The system according to any of claims 8 or 9, **characterised in that** the distance between the free ends of the body (10) of the reinforcement device (1) is about the same as the distance between the ends of the C-shaped or U-shaped cross-section of the longitudinal profile of the casing (4).
11. The system according to any of claims 8 to 10, **characterised in that** the reinforcement device (1) is fixed to the profile of the casing (4) through at least one screw introduced in the at least one hole arranged at one of the ends of the body (10).
12. The system according to any of claims 8 to 11, **characterised in that** the reinforcement device (1) is fixed to the profile of the casing (4) through an adhesive.
13. The system according to any of claims 8 to 11, **characterised in that** the casing comprises at least one housing arranged on the external surface of the profile of the casing (4) in which a projection (12) arranged on the inner side of the body (10) of the device (1) is introduced.
14. The system according to any of claims 8 to 13, **characterised in that** the profile of the casing (4) comprises an upper partition (4b1), a rear partition (4b2) and a lower partition (4b3).
15. The system according to any of claims 8 to 14, **characterised in that** the profile of the casing (4) is formed by at least two profiles, an upper profile (4b) and a lower profile (4c).







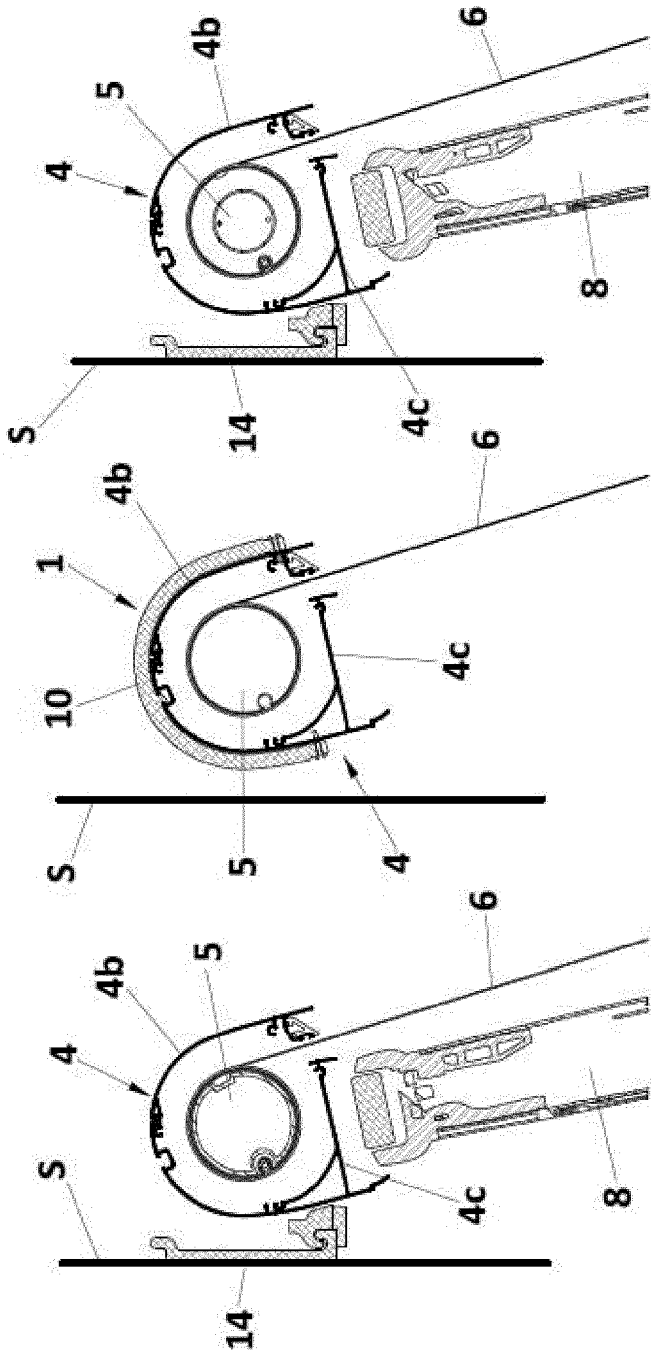
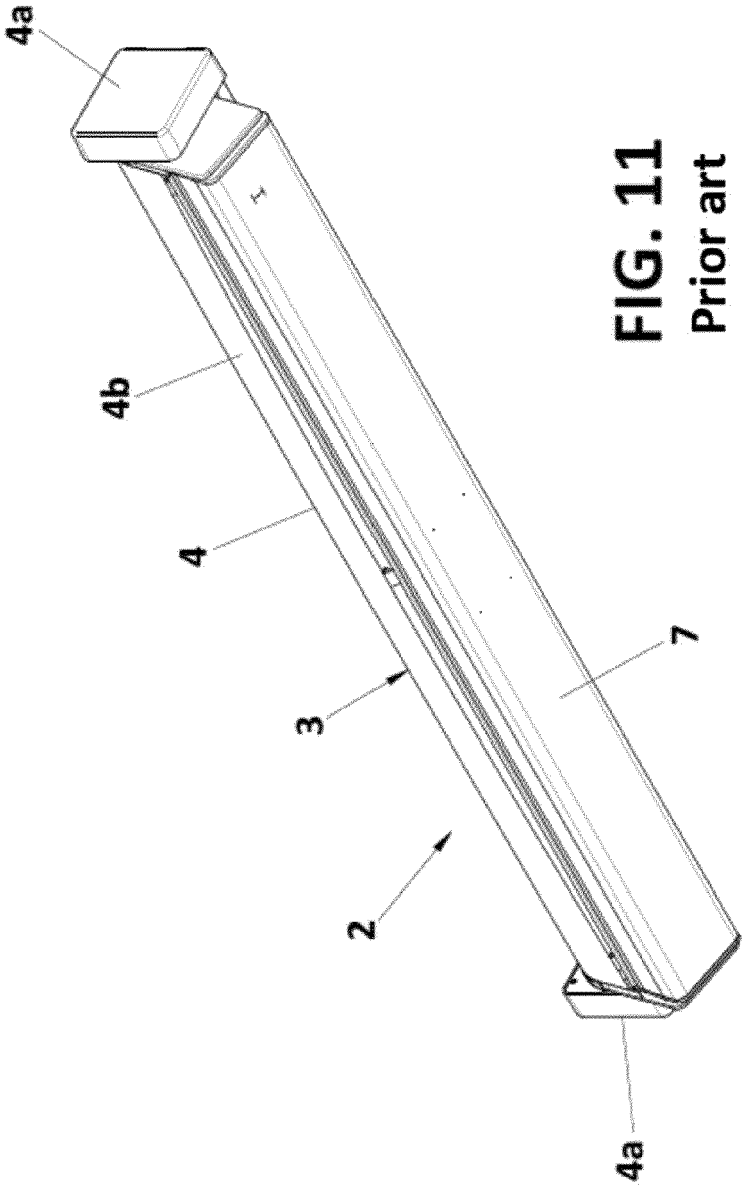


FIG. 10
F-F

FIG. 9
E-E

FIG. 8
D-D



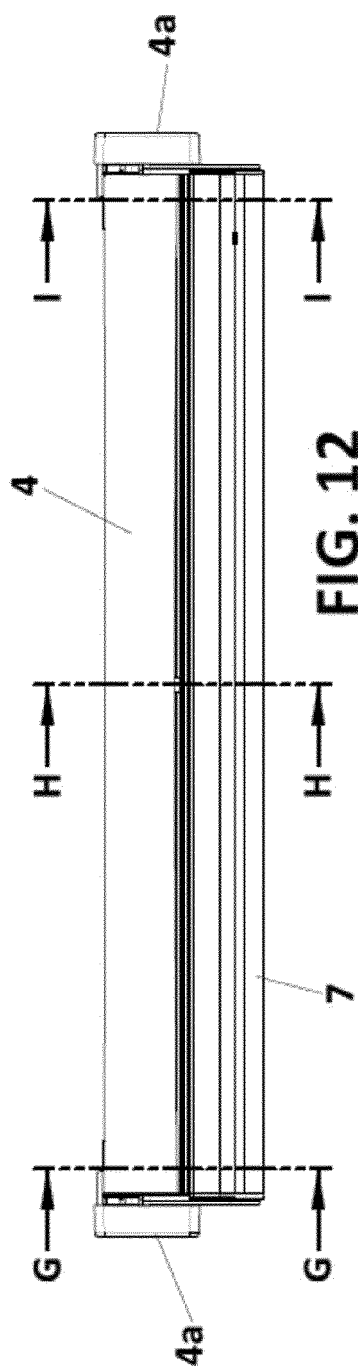


FIG. 12
Prior art

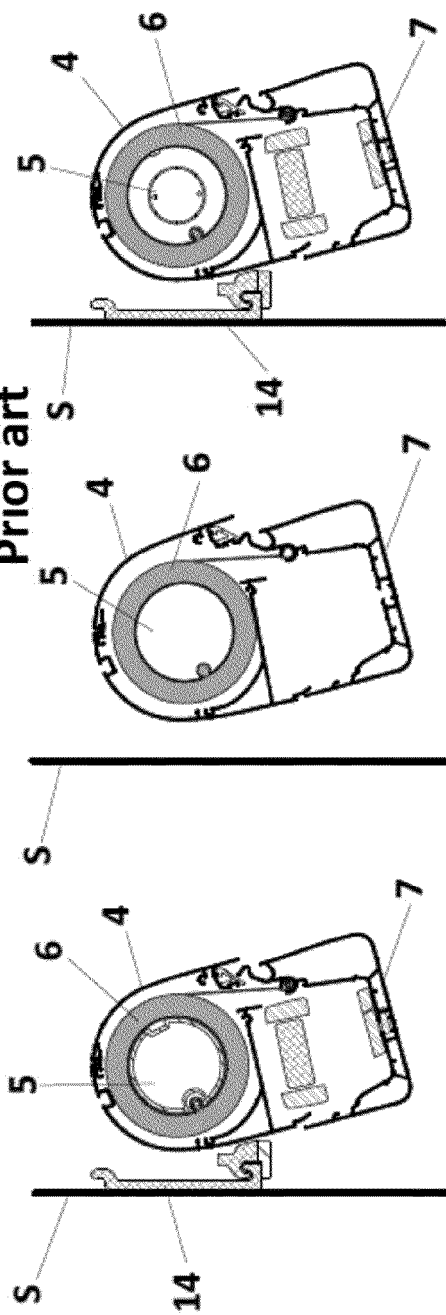
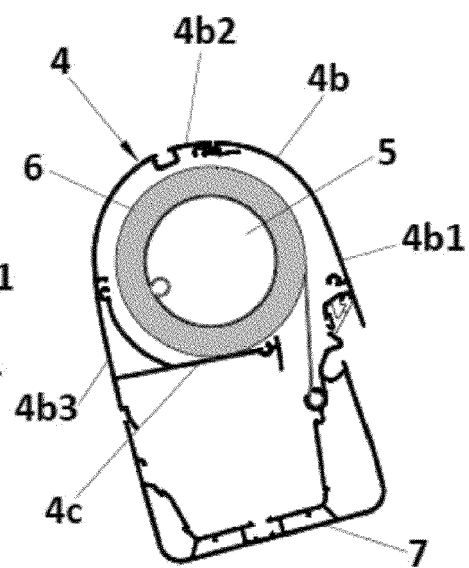
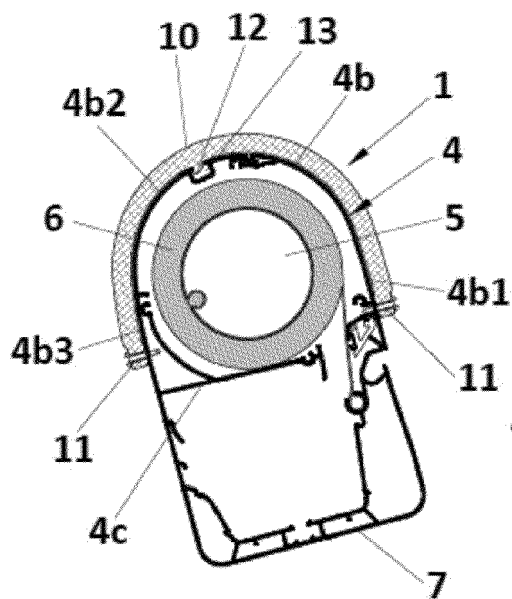
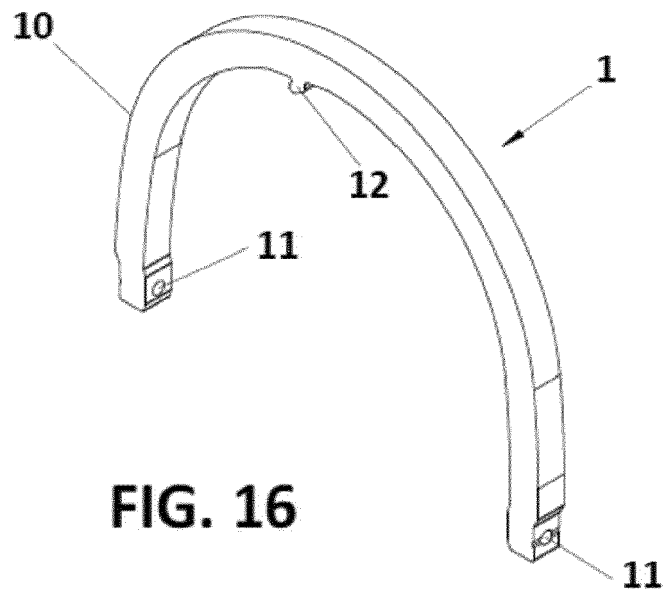
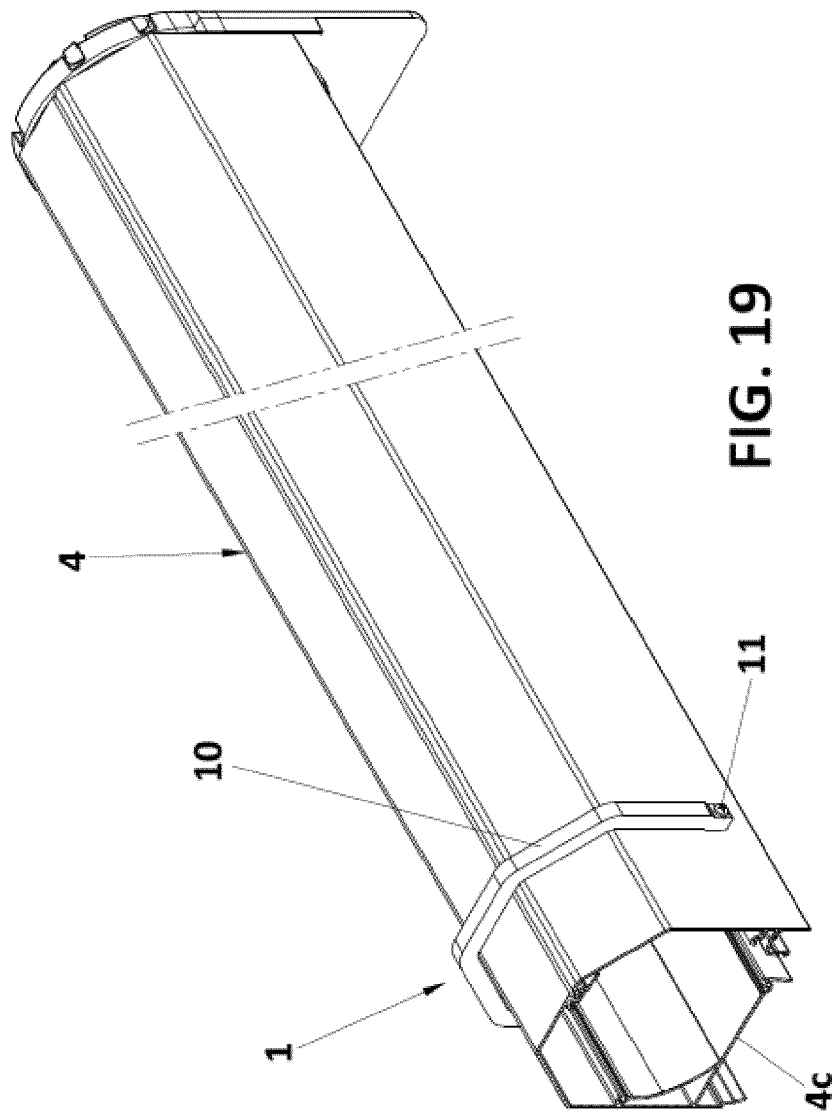


FIG. 13
Prior art

FIG. 14
Prior art

FIG. 15
Prior art







EUROPEAN SEARCH REPORT

Application Number

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X	US 5 427 168 A (LOHAUSEN VIKTOR [DE]) 27 June 1995 (1995-06-27) * column 1, line 40 - column 3, line 20; figures 1-4 *	1, 2, 4-12, 14, 15	
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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 May 2024	Examiner Melhem, Charbel
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	

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