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(54) ARTICULATED ARM FOR SUPPORTING AWNINGS

GELENKARM ZUM STÜTZEN EINER MARKISE

BRAS ARTICULE POUR LE SUPPORT DE BACHES

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(56) References cited:
DE-A- 3 900 463
FR-A- 2 381 879
FR-A- 2 708 019

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Description

[0001] The present invention relates to an articulated arm for supporting awnings, which comprises two elements constituted by a first and a second tubular profiles connected to each other by a hinge comprising a core with an axial orifice to arrange the shaft of the hinge, the ends of which are linked to two lugs, among which said core has a clearance and socketing members to said profiles starting from respectively these core and lugs. In order to guarantee a gap between the hinge and arms with regard to the canvas of the awning to facilitate its folding over, said tubular profiles constituting the articulated arms form an angle with respect to this hinge shaft normal plane, a traction spring being housed within the first profile the former being joined by means of a flexible element of the traction transmission which is supported on said core, with the second tubular profile.

[0002] As background of the invention we can mention the utility model DE-U-8700527 (LOSBERGER) and patents DE-A-39 00 463 (KRALER) and FR-A-2708019 (LLAZA), which disclose different variants of embodiment of an arm having general characteristics mentioned with the peculiarity that the flexible element transmitting the traction is constituted by a planar strip or band which in the embodiment of said patent FR-A-2708019 is of plastic material and is interiorly provided with lengthwise and parallel metal filaments as reinforcements.

[0003] In said background a problem which arises from the use of a flexible band as traction transmitting element, alternative to the traditional chain or cable, stands in the form of constituting the join of said flexible band with, on one side the end of the traction spring or of an element linking with it, housed in one of the half-arms and on the other side, with the other half-arm, which is overcame, for example in DE-A-3900463 by forming a loop at the ends of the band to which a hooking ring is associated and in general in referred background by means of an end loop passing through an eyelet having an oblong hole or the like. Such solution has the drawback that said loop has to be formed at the band ends, a loop the ends of which must be tightly linked to the band itself with the risk of weakening it, in the event of piercing or welding and demanding complicated operations.

[0004] This invention offers, with respect to said backgrounds, the peculiarity of a special constitution of said traction transmitting flexible mean which embodies some terminals integral with said band, specially effective to associate the two tubular profiles forming each arm, as well as means defined in the hinge itself, to orientate said band lengthwise centered with respect to the profile housing the traction spring.

[0005] More concretely and according to the technical rule of this patent, said flexible element includes, at its two ends and advantageously injection shaped, both metal ends to join the band to the traction spring arranged within a first tubular profile (half-arm) and the second profile (half-arm) respectively. Said terminals made of a ductile and resistent material for example zamak, are unified with the ends of said metal filaments, protruding from said two ends, prior to the injection. In order to increase said ends joining the filaments, it has been foreseen to fold them, by their ends, before performing the injection, preventing thus any risk of further sliding of said end threads of the terminal, when stretching the band.

[0006] One of said metallic terminals, having a cylindrical shape is arranged embedded in a housing shaped on the side wall of the hinge cylindrical core, close to the starting of the member for socketing to related second tubular profile (not provided with spring), and said housing adopts an inclined orientation with respect to the hinging axis, so that the flexible band which starts from said metallic terminal is orientated lengthwise centered with respect to the first profile which houses the traction spring. So the use of specific shifting means is prevented for orienting centerwise the traction means, as it is disclosed at said patent DE-A-39 00 463.

[0007] In order to make flexible band resistent to weathering, in particular sun radiation, it is made of plastic extruded on filament core, incorporating a component stabilizing said plastic with regard to ultraviolet radiation.

[0008] Said tubular profiles possess in addition a configuration favourable to their folding minimizing the clearance and with a very beautiful external appearance.

[0009] The applicant could check in addition, that in several tests carried out with referred arm for awnings and namely with the flexible band it integrates, that although the injection molding of a metal material provides very favourable results, it is possible to use likewise other materials such as plastic, in the event that the requirements of the stresses, because of the type of arm span is less, and to use the technology of casting in the larger sense, molding not only on the end portion but also on areas close, just near to said end.

[0010] It results also advantageous, as an alternative to strip the band metal threads, and their potential folding or hook-like deforming, to fold the band itself in bordering sectors at its two ends, backing the ends of said band against a face of the band itself, through crushing and forming a loop, which could be susceptible to protrude from the molded part, in whose case said configuration can allow the arrangement through said loop of a stem or shaft, depending on the locking or seizing element to join the ends of the band to referred traction spring and half-arm, respectively.

[0011] Are also characteristics of the arm this model refers to, the configurations of coupling between the socketing members and the mentioned tubular profiles which allow to achieve a rigid and stable linking with the arms.

[0012] In order to facilitate the explanation, three

sheets of drawing are attached to this specification, in which an example of embodiment for indicative and no limitative example purpose of the articulated arm for awnings involved.

[0013] In the drawings:

Fig. 1 is an elevation view from inside the hinge between the two elements or tubular profiles (illustrated in all the figures in stroke line) constituting each arm.

Fig. 2 is a plan view of said hinge, with part undercutting of one of the lugs, a cover to close the housing designed to house one of the terminals of the flexible band used having been also shown cross-split.

Fig. 3 is an elevation view, from outside of the hinge with illustration of the arrangement and orientation of said flexible band.

Fig. 3a is a part view, in detail and enlarged, of said housing to house a terminal of said band in one of the half-parts of the hinge.

Fig. 4 and 5 illustrate in elevation view and profile said flexible band, of plastic, with parallel internal filaments, provided with its two end terminals.

Fig. 6 and 7 illustrate a plan and elevation view of a terminal part molded on a end of a flat, flexible band, with internal reinforcement threads, the molding of which can be carried out by technology of casting or injection.

Fig. 8 and 9 are plan and elevation views, respectively, which show an alternative embodiment to that of figures 6 and 7, of union of a terminal part molded on the end of the flat, flexible band, with longitudinal internal reinforcement threads.

[0014] On the other side, at Fig. 10 and 11, plan and elevation views have been drawn of a terminal part molded on a part close to the end of a flat, flexible band having reinforcement threads.

[0015] Last, figure 12 is a cross section of the two tubular profiles constituting the arms, in folding position, directly facing each other, showing the arrangement, socketed within it, of the union members which start from the two parts forming the hinge and locking configurations have been illustrated in details to guarantee the stability of the socketing.

[0016] According to said drawings, the invention is applied to articulated arms of the type which is constituted by a first (10) and a second (11) tubular profiles, or half-arms, connected to each other by a hinge (12) which comprises a cylindric core (13) with an axial orifice for arranging the hinge shaft (14), the ends of said shaft are linked to two lugs (15, 15a), between which said core (13) has a clearance in rotation, from said core (13) and lugs (15, 15a) start members (16, 17) socketing with said profiles (10, 11). Said profiles (10, 11) form, according to a typical framework already commented, an angle with respect to the normal plane of the shaft of said hinge, a traction spring housing itself within the first profile (10), joined by means of a flexible traction transmission element, with support on said core (13), with the second tubular profile (11), the flexible element being constituted by a planar band (18) of plastic provided inside with metal reinforcement filaments (18a). An arm having said characteristics appears disclosed in said patent FR-A-2708019.

[0017] According to the invention, said flat band (18) includes at its two ends and injection shaped, metallic terminals (19, 20) to join the band (18) to the traction spring associated to the first arm (10), by a first end and the second arm (11) at the other end, respectively. The terminals (19, 20) are unified with the ends of said metal filaments (18a), protruding from the two ends of the band (18) when performing the injection, doing in addition some folds at each of the ends free of said filaments (18a) previously to the injection of related terminals (19, 20) on the end portions of the band (18), in order to increase the force of seizing them to the injection material mass and preventing that they can slide when said terminals act under traction.

[0018] As it can be seen in figures 3 to 5, one of the metallic terminals (19) of the flexible band (18) adopts a cylindrical configuration, for arrangement and retention in related housing (21) the characteristics of which are detailed thereafter. The terminal (19) is extended at its two ends by stubs (22, 22a). On its side the second metallic terminal (20) adopts a plane configuration with at least one eyelet (25) to be fixed with the traction spring topped by a hook or similar linking element.

[0019] With reference to the figures 3 and 3a, in same one can see that the terminal (19) is arranged embedded in a housing (21) shaped on the side wall of the core (13), close to the starting of the member (17) socketing at related second profile (11), the housing (21) of which adopts an inclined orientation with respect to the shaft (14) of the hinge (12) so that the flexible band (18) starting from the terminal (19) is oriented longitudinally centered with respect to the first profile (10) which houses the traction spring. Said housing (21) includes an undercutting delimited by two parallel walls with two sectors (21a, 22a) susceptible to house two end portions of the cylindrical element (19) (the portions where the stubs (22, 22a) are established and a central opening (26), in the farthest wall (35) from the member (17) joining to the second arm (11), having a sufficient width to allow a band (18) passing through it. The band (18) is supported on the external surface of the cylindrical core (13) which in addition shows a portion (13a) delimited by raised flanks (37) for guiding and centering said band (18).

[0020] In fig. 2, a cover (23) appears illustrated with a wall-like (24) hip topped by coupling configurations (24a) which are embedded in said stubs (22, 22a) , provided for closing the housing (21) where it is superposed on it concealing the terminal (19).

[0021] In order to reinforce the wall (35) against the traction stresses brackets (36) have been provided

which join said wall (35) with the cylindric core (13).

[0022] With reference to figures 6 and 7, it can be seen in said figures that the planar flexible band (40) with reinforcing longitudinal internal threads (40a) includes its folded end portion (41) shaping a fold and the end part (41a) of said fold remaining backed against the band itself (40) by crushing on its lower face (40b). On said folded end part (41) a terminal part (42) is molded by casting or injection which will serve to join the band (40) end to one or the members of the arm or to the stretched traction spring (both not shown). The orifice which remains at the fold sector (41) allows that the molding material penetrates in said area achieving an effective locking within the cast material when this later becomes solid.

[0023] In the example of fig. 8 and 9 said end part of the planar, flexible band (40), having internal reinforcement threads (40a) includes cuts which do not affect said threads (40a), and the end portions (43), (44) in which said cuts subdivide the band (40), are folded and rabated on one and the other faces of the band (40) prior to molding the end parts (45). Such an embodiment likewise offers good anchoring conditions, bearing in mind that mentioned cuts will respect the internal threads (40a) of the band (40) so that said folds (43) and (44) act as hooks within the molded body mass (45).

[0024] In fig. 10 and 11, the terminal end (46) is molded by covering a part just close to the end of the band (40), and the end portion of said band (40) shows a fold (47) shaping a loop protruding from the molded sector (46), which makes workable to have available a stem or shaft (48) through said loop, depending on the seizing element.

[0025] As an alternative to the means to constitute the seizing parts to the mass of the molded terminal part on the end of the planar band, with reinforcement threads, it was also foreseen, bearing in mind that each of the reinforcement metal threads includes a multiplicity of filaments, to leave a part of them stripped, protruding from the end of the band, prior to molding related terminal part, and it has been foreseen that from said filaments enlarged cores are shaped by deforming-compacting them.

[0026] Another potential solution to increase seizing between the end part of the band and the molded part is based in stripping reinforcement metal threads 40a of the flexible planar band 40, prior to molding related terminal part and further separating or unthreading their different filaments.

[0027] In figure 12, the structure and shape of said tubular profiles (10, 11) integrating each arm are detailed. Said tubular profiles (10, 11) adopt a shape having one of their walls (10a, 11a), oriented inwardly the awning, significantly planar, and its external wall (10b, 11b) curved-convex crowning outwardly, so that in a folded position, they shape and oval, compact and pleasant assembly. Inside both tubular profiles (10, 11) include opposite walls, a pair of longitudinal ribs (27-28, 29-30) oppositely shifted which are embedded in grooves (31, 32) pierced in one of the side faces of the socketing members (16, 17), and in steps defined by a protruding rib (33, 34) on the opposite face thereof. In order to make possible these socketing members (16, 17) locking within the tubular profiles (10, 11) said grooves (31, 32) offer an enlargement (31a, 32a) at their end portions, delimited by an inclined plane. In addition, and as it can be seen in the enlarged detail, attached to fig. 6, small protrusions (38) present on the internal wall of each tubular profile (10, 11), contribute to lock related socketing member (16, 17), by retaining it embedded within it.

[0028] The object of this invention being sufficiently disclosed, it is stated that said object protects any variation of detail within the subject-matter of the appended claims, namely the material of the flexible plastic band, the internal cores, the shapes of the half-arms, etc.

Claims

1. Articulated support arm for awnings, which includes a first and a second tubular profiles (10, 11) connected to each other by a hinge (12) comprising a rotatable core (13) with an axial orifice to arrange a hinge shaft (14), the ends of which shaft are linked to two lugs (15, 15a) embracing said core (13), said core (13) and lugs (15, 15a) being extended by socketed members (16, 17) located within the ends of said profiles (10, 11), said first profile (10) housing a tension spring joined to said second tubular profile (11) by means of a flexible element supported on said core (13), said flexible element being constituted by a plastic planar band (18, 40a) internally provided with reinforcing metal filaments (18a, 40), **CHARACTERIZED in that**:

   both ends of said plastic planar band (18, 40) integrate terminals (19, 20) being united with the ends of said metal filaments (18a, 40a), the shape of these terminals being achieved through
   a casting molding or injection molding of a metal or plastic material on the ends of said metal filaments (18a, 40a) protruding at the two ends of said band (18, 40); and
   at least one fold is set at each of the ends of said filaments (18a, 40a), prior to the molding of related terminals (19, 20).

2. Articulated arm, **characterized in that** said plastic planar band extruded on the core of said filaments (18a, 40a) includes a stabilizing component of said plastic against ultraviolet radiation.

3. Articulated support arm, according to claim 1, **characterised in that** the terminals are metallic

and one of the metallic terminals (19) of the flexible band (18, 40) has a cylindrical configuration, for arrangement and retention in a housing (21) of said core (13) said terminal (19) being extended at its two ends by stubs (22, 22a) and **in that** the second metallic terminal (20) adopts a plane configuration with at least one eyelet (25) to be connected with the traction spring.

4. Articulated arm, according to claim 3, **characterized in that** said cylindrical metallic terminal (19) is arranged embedded in a housing (21) shaped on the side wall of the core (13), close to the starting of the member (17) socketing at related second profile (11), the housing (21) of which adopts an inclined orientation with respect to the shaft (14) of the hinge (12) so that the flexible band (18, 40) starting from the terminal (19) is oriented longitudinally centered with respect to the first profile (10) which houses the traction spring.

5. Articulated arm, according to claim 4 **characterised in that** a cover (23) with a wall-like (24) hip topped by coupling configurations (24a) which are embedded in said stubs (22, 22a), has been provided for closing the housing (21) as it is superposed on the cylindrical core (13).

6. Articulated arm, according to claim 4, **characterised in that** the housing (21) which lodges said metallic terminal (19) includes an undercutting delimited by two parallel walls with two sectors (21a, 22a) prepared to house two end portions of the cylindrical element (19) and a central opening (26), in the farthest wall (35) from the member (17) joining to the second arm (11), having a sufficient width to allow the band (18, 40) passing through it, said band (18, 40) being supported on the external surface of the cylindrical core (13) which has a portion (13a) delimited by raised flanks (37) for guiding and centering said band (18, 40).

7. Articulated arm according to claim 6, **characterised in that** traction stresses brackets (36) have been provided which join the wall (35) with the cylindric core (13).

8. Articulated arm, according to claim 1, **characterized in that** said casting is performed on a section covering the end portion or one zone near to said end portion.

9. Articulated arm according to claim 8, **characterized in that** each of the end portions of the band (40) has at least a folded end portion (41) shaping a fold and the end part (41a) of said fold remains backed against the band itself (40) by crushing.

10. Articulated arm, according to claim 9, **characterised in that** said end portion of the band includes several cuts and the portions (43), (44) in which said cuts subdivide the band (40), are folded and rabated on one and the other faces of the band (40) prior to molding the end piece (45).

11. Articulated arm, according to claim 9 **characterised in that** the moulded terminal end (46) is positioned covering a portion close to the end of the band (40), so that the at least one fold (47) shaping a loop protruding from the moulded sector (46), which allows workable to have a stem or shaft (48) inserted through said loop.

12. Articulated arm, according to claim 8, **characterised in that** each of the reinforcement metal threads (40a) within the band (40) includes a multiplicity of filaments, a part of them having been stripped, protruding from the end of the band (40), prior to molding related terminal part, and **in that** from said filaments enlarged cores are shaped by deforming-compacting them.

13. Articulated arm, according to claim 8, **characterised in that** each of the reinforcement metal threads (40a) includes a multiplicity of filaments, a part of them stripped, protruding from the end of the band (40), prior to molding related terminal part, and **in that** the different filaments are unthreaded in the end zones of each filament (40a).

14. Articulated arm, according to the claim 1, **characterized in that** said tubular profiles (10, 11) have a shape with one of their walls (10a, 11a), oriented inwardly the area covered by the awning, significantly planar, and its external wall (10b, 11b) curved-convex crowning outwardly, including inside both tubular profiles in opposite walls, a pair of longitudinal ribs (27-28, 29-30) oppositely shifted which are embedded in grooves (31, 32) pierced in one of the side faces of the socketing members (16, 17), and in steps defined by a protruding rib (33, 34) on the opposite face thereof, said grooves (31, 32) offering an enlargement (31a, 32a) at their end portions, delimited by an inclined plane.

Patentansprüche

1. Gelenkstützarm für Markisen, mit einem ersten und zweiten Rohrprofil (10, 11), die über ein Scharnier (12) miteinander verbunden sind und einen drehbaren Kern mit einer Axialöffnung zur Anordnung einer Scharnierwelle (14) aufweisen, deren Enden mit zwei den Kern (13) umschließenden Ansätzen (15, 15a) verbunden sind, wobei der Kern (13) und die Ansätze (15, 15a) durch zwischen den Enden der

genannten Profile (10, 11) angeordnete Steckglieder (16, 17) verlängert sind, wobei im ersten Profil (10) eine Druckfeder untergebracht ist, dic mit dem zwcitcn Rohrprofil (11) über ein auf dem Kern (13) liegendes flexibles Element verbunden ist, wobei das flexible Element aus einem flachen Kunststoffband (18, 40) besteht, das im Innern mit Metallfasern verstärkt ist (18a, 40a), **dadurch gekennzeichnet, daß**:

an beiden Enden des flachen Kunststoffbands (18, 40) Endstücke (19, 20) integriert sind, die mit den Enden der Metallfasern (18a, 40a) verbunden sind, wobei die Form dieser Endstücke durch einen Guß- oder Spritzgußteil aus Metall oder Kunststoffmaterial an den Enden der an den Enden des Bandes (18, 40) hervorstehenden Metallfasern (18a, 40a) bewerkstelligt wird; sowie

an den Enden der Fasern (18a, 40a) vor dem Angießen der entsprechenden Endstücke (19, 20) jeweils mindestens ein Falz angebracht wird.

2. Gelenkarm, **dadurch gekennzeichnet, daß** das am Kern der Fasern (18a, 40a) hervorstehende flache Kunststoffband einen gegen ultraviolette Strahlung stabilen Bauteil aus diesem Kunststoff aufweist.

3. Gelenkstützarm nach Anspruch 1, **dadurch gekennzeichnet, daß** die Endstücke aus Metall bestehen und eines der Metallendstücke (19) des flexiblen Bands (18, 40) zwecks Anordnung und Sicherung in einem Gehäuse (21) des Kerns (13) zylindrisch ausgeführt sind, wobei das Endstück (19) an seinen zwei Enden durch Stutzen (22, 22a) verlängert sind, und daß das zweite Metallendstück (20) eine planare Anordnung einnimmt, wobei mindestens eine Öse (25) mit der Druckfeder verbunden werden muß.

4. Gelenkarm nach Anspruch 3, **dadurch gekennzeichnet, daß** das zylindrische metallische Endstück (19) in einem Gehäuse (21) eingebettet angeordnet ist, das an der Seitenwand des Kerns (13) angeformt ist, und zwar nahe dem Anfang des Glieds (17), das auf das entsprechende zweite Profil (11) aufgesteckt ist, dessen Gehäuse (21) eine geneigte Orientierung zur Welle (14) des Scharniers (12) annimmt, so daß das am Endstück (19) beginnende flexible Band (18, 40) längsorientiert und zum ersten Profil (10), in dem die Druckfeder untergebracht ist, zentriert angeordnet ist.

5. Gelenkarm nach Anspruch 4, **dadurch gekennzeichnet, daß** eine Abdeckung (23) mit wandähnlichen (24), in die Stutzen (22, 22a) eingebetteten Kupplungselementen (24a) zum Schließen des Gehäuses beim Überstülpen auf den zylindrischen Kern (13) vorgesehen ist.

6. Gelenkarm nach Anspruch 4, **dadurch gekennzeichnet, daß** das Gehäuse (21), in dem das metallische Endstück (19) untergebracht ist, eine Hinterschneidung aufweist, der durch zwei parallele Wände mit zwei Abschnitten (21a, 22a) begrenzt ist, die zur Unterbringung zweier Endabschnitte des zylindrischen Elements (19) und einer mittigen Öffnung (26) dienen, und zwar in der von dem mit dem zweiten Arm (11) verbundenen Glied (17) am weitesten entfernt liegenden Wand (35), wobei der Arm so breit ist, daß das Band (18, 40) durch ihn hindurchgeht, wobei das Band (18, 40) an der Außenfläche des zylindrischen Kerns (13) aufliegt, der einen Abschnitt (13a) aufweist, der durch erhöhte Flanken (37) zur Führung und Zentrierung des Bandes begrenzt ist

7. Gelenkarm nach Anspruch 6, **dadurch gekennzeichnet, daß** Zugspannungsträger (36) vorgesehen sind, durch die die Wand (35) mit dem zylindrischen Kern (13) verbunden wird.

8. Gelenkarm nach Anspruch 1, **dadurch gekennzeichnet, daß** das Angießen an einem Abschnitt erfolgt, durch den der Endabschnitt oder ein Bereich in dessen Nähe überdeckt wird.

9. Gelenkarm nach Anspruch 8, **dadurch gekennzeichnet, daß** die Endabschnitte des Bands (40) jeweils mindestens einen einen Falz bildenden gefalteten Endabschnitt (41) aufweisen, und die Rückseite des Endteils (41a) des Falz an dem Band selbst (40) durch Druck gehalten wird.

10. Gelenkarm nach Anspruch 9, **dadurch gekennzeichnet, daß** der Endabschnitt des Bands mehrere Einschnitte aufweist und die Abschnitte (43, 44), in die das Band (40) durch die Einschnitte unterteilt ist, gefaltet sind und vor dem Anformen des Endstückes (45) auf beide Seiten des Bands (40) zurückgefaltet sind.

11. Gelenkarm nach Anspruch 9, **dadurch gekennzeichnet, daß** das angeformte Endstück (46) so positioniert ist, daß es einen Abschnitt nahe dem Ende des Bandes (40) überdeckt, so daß der mindestens eine Falz (47) eine von dem angeformten Abschnitt (46) abstehende Schleife bildet, wodurch ein Stab oder eine Welle (48) durch diese Schleife geführt werden kann.

12. Gelenkarm nach Anspruch 8, **dadurch gekennzeichnet, daß** die im Band (40) vorhandenen Metallverstärkungsfasern (40a) jeweils mehrere Fä-

den aufweisen, wobei vor dem Anformen des entsprechenden Endstücks einige der vom Ende des Bands (40) abvorstehenden Fäden entfernt wurden, und daß aus den Fasern vergrößerte Kerne geformt werden, indem man sie deformiert bzw. zusammenpreßt.

13. Gelenkarm nach Anspruch 8, **dadurch gekennzeichnet, daß** die Metallverstärkungsfasern (40a) jeweils mehrere Fäden aufweisen, wobei vor dem Anformen des entsprechenden Endstücks einige der vom Ende des Bands (40) hervorstehenden Fäden entfernt wurden, und daß die verschiedenen Fäden in den Endbereichen der jeweiligen Faser nicht verzwirnt sind.

14. Gelenkarm nach Anspruch 1, **dadurch gekennzeichnet, daß** die Rohrprofile (10, 11) so geformt sind, dass eine ihrer im wesentlichen flachen Wände (10a, 11a) in das Innere des von der Markise bedeckten Bereichs und ihre konvex gewölbte Außenwand (10b, 11b) nach außen gerichtet ist, wobei beide Rohrprofile in gegenüberliegenden Wänden ein Paar länglicher Rippen (27-28, 29-30) aufweisen, die entgegengesetzt zueinander verschoben und in Rillen (31, 32) eingebettet sind, die in einer der seitlichen Flächen der Steckglieder durchstochen und an dessen gegenüberliegender Fläche über eine hervorstehende Rippe (33, 34) abgestuft sind, wobei die Rillen (31, 32) an ihren Enden eine durch eine geneigte Ebene begrenzte Verbreiterung (31a, 32a) aufweisen.

Revendications

1. Bras de support articulé pour vélums comportant un premier et un deuxième profils (10, 11) tubulaires reliés l'un à l'autre par une articulation (12) comprenant un noyau pivotant (13) avec un orifice axial pour y aménager un axe d'articulation (14), les extrémités de cet axe étant reliées à deux oreilles (15, 15a) qui entourent ce noyau (13), ce noyau (13) et ces oreilles (15, 15a) étant rallongés par des membres emboîtés (16, 17) situés à l'intérieur des extrémités de ces profils (10, 11), ce premier profil (10) logeant un ressort de tension relié à ce deuxième profil tubulaire (11) au moyen d'un élément flexible supporté par ce noyau (13), ledit élément flexible étant constitué par une bande plate élastique (18, 40a) pourvue à son intérieur de filaments de renfort métalliques (18a, 40), **caractérisé en ce que**:

les deux extrémités de cette bande plate en plastic (18, 40) comportent des bouts (19, 20) reliés aux extrémités de ces filaments en métal (18a, 40a), dépassent les bouts étant obtenue par un moulage par fonte ou par injection d'un métal ou d'une matière plastique sur les extrémités de ces filaments en métal (18a, 40a) qui sont en saillie aux deux extrémités de cette bande (18, 40); et

au moins un pli est formé à chacune des extrémités de ces filaments (18a, 40a), avant le moulage de ces bouts (19, 20).

2. Bras articulé, **caractérisé en ce que** cette bande plate en plastique extrudée du noyau de ces filaments (18a, 40a) comprend un composant stabilisant ce plastique contre la radiation ultraviolette.

3. Bras de support articulé conformément à la revendication 1, **caractérisé en ce que** les bouts sont métalliques et **en ce qu'**un des bouts métalliques (19) de la bande flexible (18, 40) a une configuration cylindrique, pour y aménager et y retenir ce noyau (13) dans un logement (21) ce bout (19) étant rallongé à ses deux extrémités par des tronçons (22, 22a) et **en ce que** le deuxième bout métallique (20) prend une configuration plate avec au moins un oeillet (25) pour être relié au ressort de traction.

4. Bras articulé, conformément à la revendication 3, **caractérisé en ce que** ce bout métallique cylindrique (19) est aménagé inséré dans un logement (21) formé dans la paroi latérale du noyau (13), près de l'endroit de départ du membre (17) qui est emboîté dans le deuxième profil correspondant (11), ce logement (21) adoptant une orientation inclinée par rapport à l'axe (14) de l'articulation (12) de sorte que la bande flexible (18,40) qui commence au bout (19) soit orientée longitudinalement centrée par rapport au premier profil (10) qui loge le ressort de traction.

5. Bras articulé conformément à la revendication 4, **caractérisé en ce qu'**un couvercle (23) ayant une croupe semblable à une paroi (24) finissant en des configurations de couplage (24a) qui sont insérées dans ces tronçons (22, 22a), a été prévue pour fermer le logement (21) lorsqu'il est superposé sur le noyau cylindrique (13).

6. Bras articulé, conformément à la revendication 4, **caractérisé en ce que** le logement (21) qui loge ce bout métallique (19) comprend un découpage délimité par deux parois parallèles avec deux secteurs (21a, 22a) préparés pour y loger deux portions d'extrémité de l'élément cylindrique (19) et une ouverture centrale (26), sur la paroi la plus éloignée (35) du membre (17) qui relie au deuxième bras (11), ayant une largeur suffisante pour permettre que la bande (18, 40) passe à travers lui, cette bande (18, 40) étant appuyée sur la surface externe du noyau cylindrique (13) qui a une portion (13a) délimitée par des flancs dressés vers le haut (37) pour guider et centrer cette bande (18, 40).

7. Bras articulé conformément à la revendication 6, **caractérisé en ce que** des brides (36) de traction ont été prévues qui relient la paroi (35) au noyau cylindrique (13).

8. Bras articulé, conformément à la revendication 1, **caractérisé en ce que** ce moulage se fait sur une section couvrant la portion d'extrémité ou une zone près de cette portion d'extrémité.

9. Bras articulé conformément à la revendication 8, **caractérisé en ce que** chacune des portions d'extrémité de la bande (40) a au moins une portion d'extrémité (41) pliée formant un pli et la pièce d'extrémité (41a) de ce pli reste appuyée contre la propre bande (40) par écrasement.

10. Bras articulé conformément à la revendication 9, **caractérisé en ce que** cette portion d'extrémité de la bande comprend plusieurs découpages et les portions (43), (44) dans lesquelles ces découpages sous-divisent la bande (40) sont pliées et rabattues sur l'une et l'autre faces de la bande (40) avant le moulage de la pièce d'extrémité (45).

11. Bras articulé, conformément à la revendication 9, **caractérisé en ce que** le bout moulé (46) est positionné couvrant une portion fermée à l'extrémité de la bande (40) de sorte que ce au moins un pli (47) forme une boucle qui dépasse le secteur moulé (46), qui permet d'avoir un axe ou une tige (48) insérée à travers cette boucle.

12. Bras articulé, conformément à la revendication 8, **caractérisé en ce que** chacun des fils métalliques de renfort (40a) à l'intérieur de la bande (40) comprend une multiplicité de filaments dont une partie ayant été dénudée dépasse l'extrémité de la bande (40) avant de mouler la pièce de bout correspondante, et **en ce que** de ces filaments agrandis des noyaux ont été formés par déformation-compactation.

13. Bras articulé, conformément à la revendication 8, **caractérisée en ce que** chacun des fils métalliques de renfort (40a) comprend une multiplicité de filaments, dont une partie est dénudée dépassant l'extrémité de la bande (40), avant de mouler la pièce du bout correspondante, et **en ce que** les divers filaments sont effilochés dans les zones d'extrémité de chaque filament (40a).

14. Bras articulé, conformément à la revendication 1, **caractérisé en ce que** ces profils tubulaires (10, 11) ont une forme avec un de leurs parois (10a, 11a), orientée vers l'intérieur de la région couverte par le vélum, remarquablement plate et sa paroi externe (10b, 11b) curvo-convexe bombée vers l'extérieur, comprenant à l'intérieur les profils tubulaires sur les parois opposées, une paire de nervures longitudinales (27-28, 29-30) déviées en sens inverse qui sont insérées dans des entailles (31, 32) percées sur une des faces latérales des membres d'emboîtement (16, 17), et dans des gradins définis par une nervure en saillie (33, 34) sur la face opposée de ceux-ci, ces entailles (31, 32) offrant un grossissement (31a, 32a) à leurs portions d'extrémité, délimité par un plan incliné.

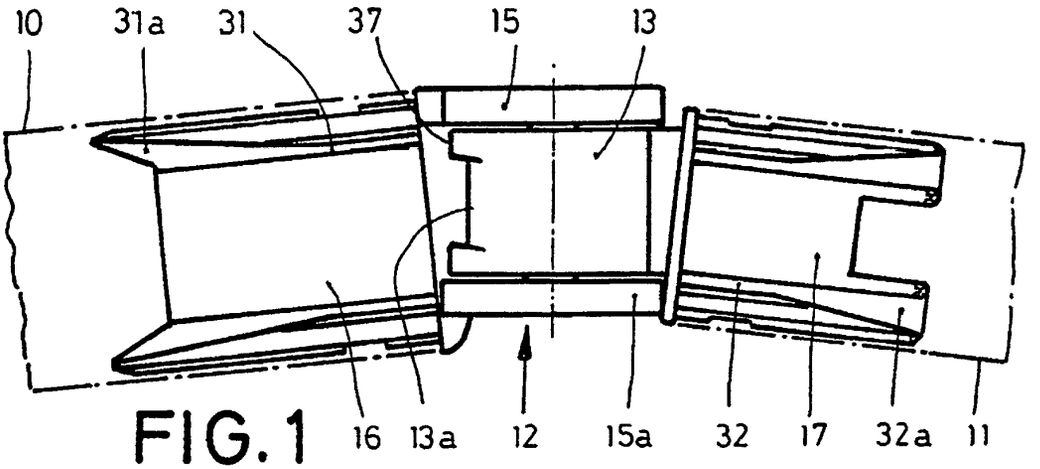


FIG. 1

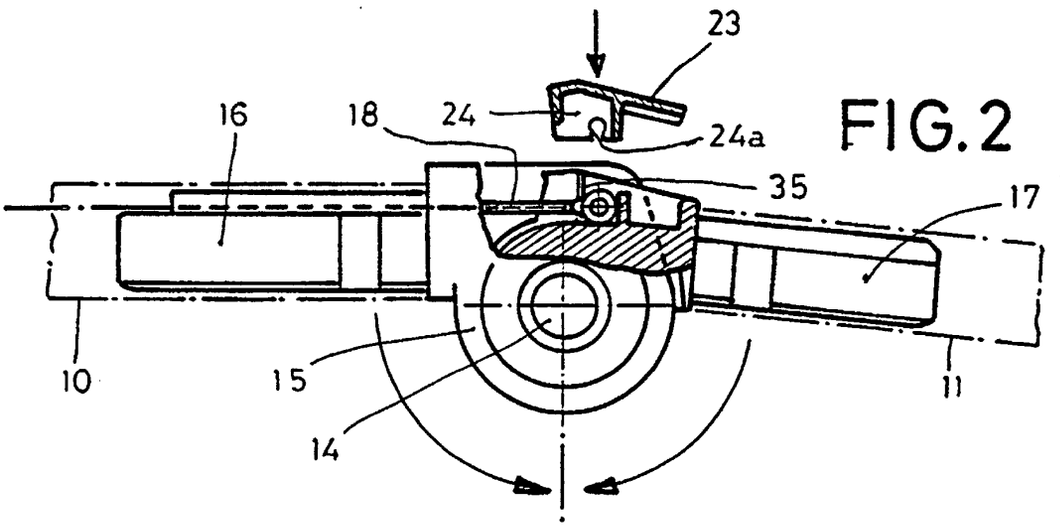
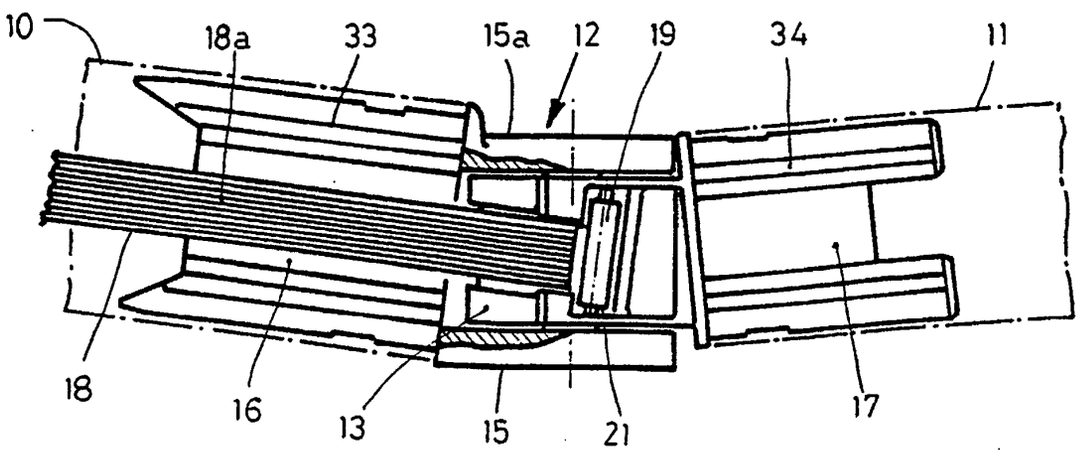


FIG. 2

FIG. 3



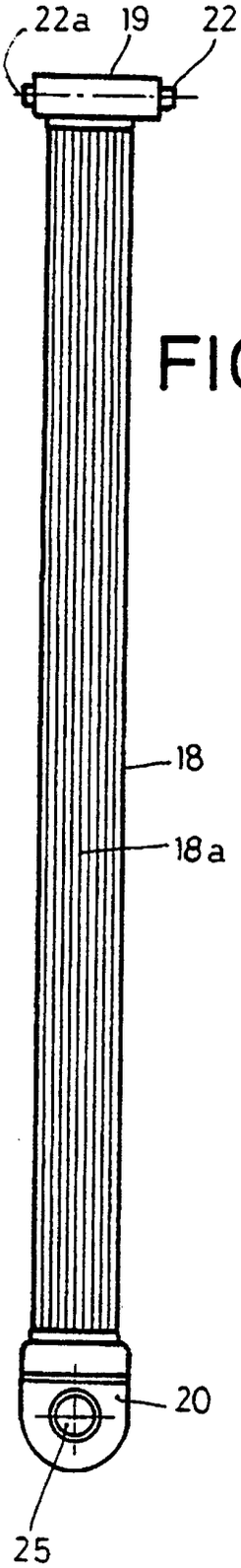


FIG.4

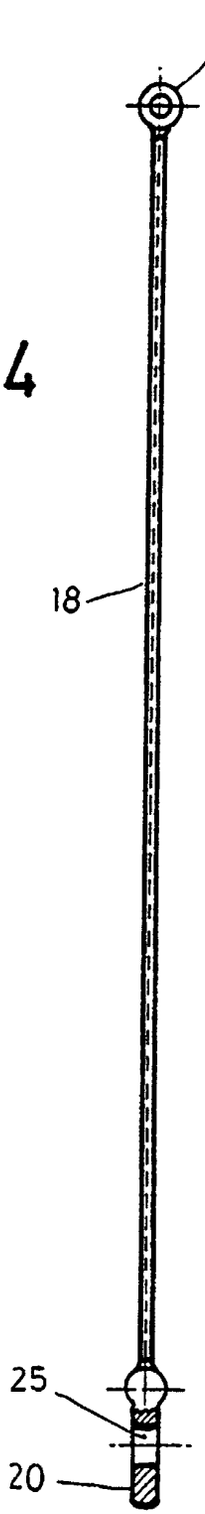


FIG.5

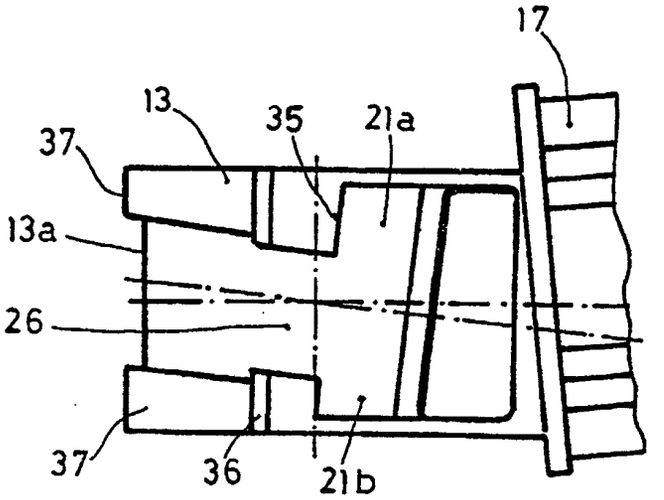


FIG.3a

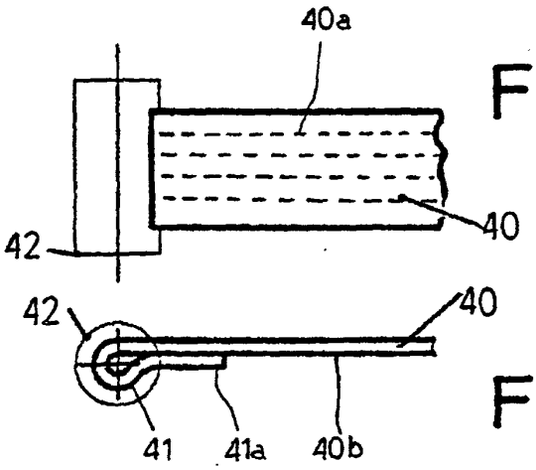


FIG. 6

FIG. 7

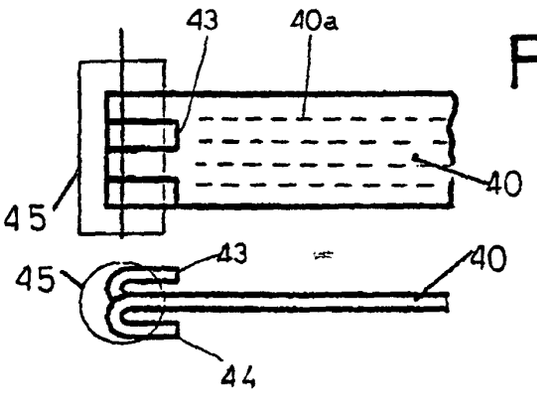


FIG.8

FIG. 9

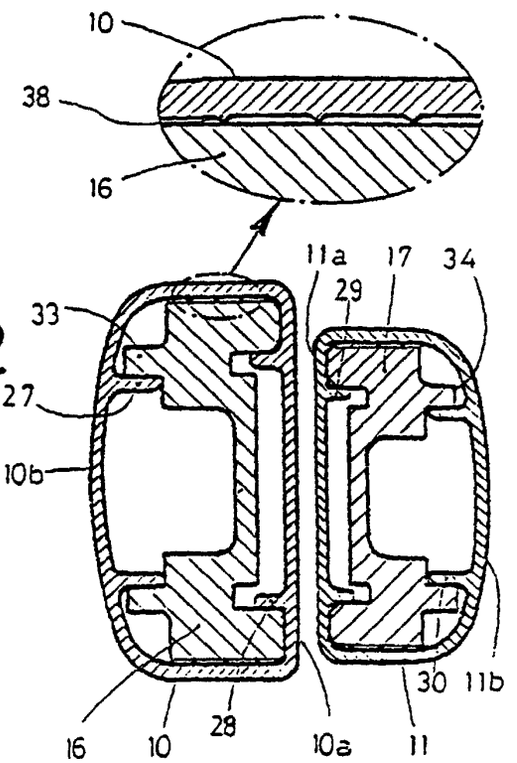


FIG.12

FIG.10

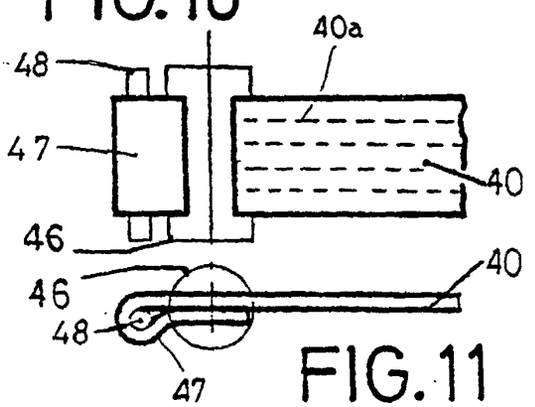


FIG.11