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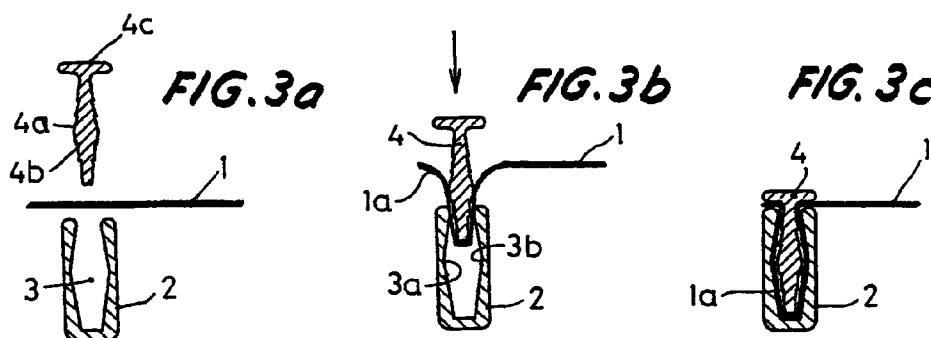
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(54) Arrangements for fastening fabrics to supporting structural members and standing sunshade made according thereof.

(57) Applicable to covers, tarpaulin canvases, large sized sunshades, screens, supporting and grooving fabrics, filters, etc. of the type including onto a longitudinal edge of said fabric (1), very close to the structural member (5) to which it has to be fastened, an enlarged retaining element, which is arranged embedded within a related groove having a narrow mouth and a passage-way downstream the section of said retaining element, this groove being shaped in said structural member (5). It is proposed that said retaining element comprises an

elongated profile (2, 2a, 2b) provided with a longitudinal opening (3) in the interior of whose profile (2, 2a, 2b) a peripheral band (1a), very close to a side edge of the fabric or canvas (1) to be fastened, remains locked between said profile and a strip (4), having suitable shape, socketed in said longitudinal opening (3). The invention also refers to a sunshade, namely large sized, constructed by using said arrangement.



Description

This invention relates to an arrangement for fastening fabrics or canvas to supporting structural members applicable to covers made of fabric or cloth, tarpaulin canvases, big tops, large sized sunshades, screens, supporting and grooving fabrics, filters, etc. This arrangement for fastening fabrics is of the type including onto a longitudinal edge of said fabric, very close to the structural member to which it has to be fastened, an enlarged retaining element, which is arranged embedded within a related groove having a narrow mouth and a passageway downstream the section of said retaining element, this groove being shaped in said structural member.

According to the state of the art, several embodiments are known to fasten the end of a fabric or cloth to a supporting structural profile, for said purpose can be stated as examples the Spanish Utility Models nos. 113131, 222301, 247239, 262503, 271114 and 8802410 as well as European patents EP-A-415233 and EP-A-524272.

In all these backgrounds, different solutions are disclosed which either are little effective to achieve a tight fastening of the fabric or cloth to the profile or involve production an/or assembly costs which significantly increase the total cost of the structure involved.

The invention also refers to a sunshade, namely large sized, designed to be installed in terraces, gardens and any kind of environments exposed to weathering, although it can also be used in closed spaces such as fair premises, department stores, community spaces etc., constructed in accordance to the technical teaching of mentioned arrangement for fastening fabrics.

The concerned sunshade is of the type comprising radial arms on which are spread and joined a fabric, cloth or the like cover, namely composed of some sectors independent from each other, the longitudinal edges of which, close to said arms, comprises a retaining enlarged element which is arranged embedded within one of related narrowed entrance grooves provided on said radial arms. The make of the cover by means of a series of fabric or cloth sectors cut significantly down said cover manufacturing costs, and namely it simplifies and substantially shorten the job of assembling it and its tight joining (it must be capable of standing strong wind impacts) the radial arms.

A sunshade of above characteristics is disclosed in the aforementioned document EP-A-0524272 which in addition relates to the existence of said structure (fabric sectors) in prior patent FR-A-1 418 948. In referred European patent, means are disclosed to constitute said retaining means which ends the edge of the sunshade fabric cover, constituted by reinforcing elements of the fabric edge by means of a U-shaped portion of fabric or cloth which surrounds said edge, in order to enlarge it and the portion of which is affixed to said edge through gluing, welding or sewing.

Referred embodiment, despite it simplifies carrying out French patent FR-A-1 418 948 which, in turn discloses joining means with eyes and linking elements, which could be affected by weathering, namely rain water, it still means a high cost manufacturing job, as it needs special machines and subtle finish work, while the result it offers has a limited effectiveness, because the retaining section is still limited to the edge itself of each fabric sector, retained within a narrowed mouth groove with the risk that, at any moment, and when it sustains strong wind impacts or unwilling pulls, it can be taken apart or broken away.

On the contrary, the arrangement as per the invention, particularly applied to a sunshade, proposes a solution which means a significantly simple achievement and mounting providing a higher security of the attachment and allowing a production and assembly under a low cost, particularly avoiding the requirement to use proceedings of high cost: sewing, welding, etc. or the use of special skilled forces, and the supporting structure of which and most of its component elements are basically composed by several extruded aluminum profiles, joined to each other by standardized elements which means a lower manufacturing cost. In addition said sunshade a very safe joining of each sector of fabric or cloth to the radial arms, no machines or skilled workers being required for its manufacturing and assembly.

According to the invention, said fabric or cloth edge retaining element of the edges of the cloth or canvas and in particular of each sunshade cover sector, for joining it to related radial arm is constituted by means of an elongated profile provided with a longitudinal opening within which profile a peripheral band remains locked, just close to a side edge of a related cover sector, locked in said profile and a strip, having a suitable shape, socketed in said opening. Said embodiment provides each fabric edge with a profile in the interior of which is tightly joined not a end or edge of the fabric but a peripheral band thereof, in a way it can hardly escape and said profile, in addition provides tightness and consistency to the arms union parts.

Said elongated profile with preference is obtained through extrusion, in order to cheapen its obtention and it forms a channel, for example having a U-shaped section, on the internal faces of which, in two longitudinal areas directly facing each other, there exists recesses, meanwhile said locking strip possesses a protruding mid portion, said strip span being such that it can be socketed within said channel introducing at same time a peripheral portion or band of the cover fabric, and remaining tightly locked within said "U" by the correspondence between recesses and protrusions of said profile and strip respectively, in a position of maximum embedding of the later.

On the other hand, the radial arms consists in some profiles obtained by extrusion provided with grooves to house and fasten said profiles joined to the fabric edges

or said grooves constituting a portion of the fastening profile of the fabric peripheral band.

Regardless of above, the proposed structure by means of independent sectors of fabric or cloth allows to match colors from the fabric and the profile constituting the radial arm.

The main characteristics of the arrangement for fastening fabrics to supporting structural members and the features of the sunshade obtained by its implementation, as well as its performances and advantages with respect to the state of the art, will result more apparent from the detailed description of preferred embodiment examples, which are described below with reference to drawing sheets.

In said drawings:

Figs. 1a, 1b, 1c show in cross section and schematically the object of this invention, which proposes to constitute the retaining element or fastening arrangement of the cover fabric edge by means of a pair of socketed members, locking between them a peripheral band of said fabric. Said figures show in three steps the union of the band just close to the side edge of the fabric to a grooved profile constituting said retaining element.

Fig. 2 shows in cross section, the arrangement of said retaining element within a groove of a structural member.

Figs. 3a, 3b and 3c are equivalents to Figs. 1a, 1b and 1c only including a change in the shape of the profile or retaining element.

Figs. 4, 4a, 5 and 6 shows in cross section through the cutting plane IV-IV of Fig. 8, the assembly of said retaining profile within another profile forming an structural supporting element (which can adopt several shapes) such as a radial arm of a sunshade on which rests a cover.

As far as it is concerned, Figs. 7a, 7b and 7c show another alternative embodiment of the retaining profile, said Figs. being equivalent to Figs. 1a - 1c and 3a - 3c previously referred.

Fig. 8 is a perspective view of the sunshade involved.

Fig. 9 shows in longitudinal section a radial arm and its hinging as well to a post linked in turn to a central mast as with an upper knot or element applied to the displacement of said arm.

Fig. 10 is an elevation view of the sunshade showing a folded radial arm and another unfolded.

Figs. 11 and 12 correspond to respective cross sections of the lower and upper sections of the mast, respectively.

Fig. 13 shows in an elevation longitudinal section, the mechanism to move the tubular element which acts on the radial arms in its folding and unfolding, being Figs. 14 and 15, respective cross sections of said mechanism by the cutting planes XIV-XIV and XV-XV of Fig. 13.

Fig. 16 shows another example of embodiment which in an elevation view shows a simplified embodiment of the driving means of the ring coupled to the mast, in this case not fixed but coaxially movable, useful for the case of smaller sizes of sunshade.

Fig. 17 is a plan view cut by plane XVII-XVII of Fig. 16.

According to said figures, the sunshade object of this invention is characterized first in that the retaining element of the fabric edges -1- comprises a profile -2- -2b-, elongated as a channel, with a longitudinal opening -3- in the interior of which a peripheral band -1a- remains locked, very close to a side edge of a corresponding sector of the fabric -1- of the cover thanks to the introduction in the opening -3- of the profile -2- -2b- of a strip -4- which, embedded under pressure, tightly locks the portion -1a- of the fabric. This is due to the fact that the channel internal to the profile -2- -2b- shows at its internal faces some recesses -3a-, -3b- and the strip -4- in turn possesses a protruding central area -4a- (by its two faces) achieving thanks to it a tight embedding and a very tight locking of the band -1a- (see Figs. 3a, 3b and 3c). It can also be stated that the profile -2- possesses a slightly deformable constitution (its side branches can be slightly bent) to facilitate the introduction of the strip -4-, socketed under pressure. This strip -4- in addition possesses longitudinal ribs -4b- or a slightly toothed profile and it is ended at one of its edges by an elongated strip -4- which covers the channel -3- mouth (see Figs. 3a and 3c).

On the other hand, each radial arm comprises, according to example of Figs 4, 4a (and Figs. 5 and 6 including little variations) 3, a U-grooved profile -5- which shows side grooves -5a-, -5b-, with a central wall -6-, raised, the grooves -5a-, -5b-, of which receive the housed profiles -2- linked to the edges of the fabric or cloth -1- as it is shown in Fig. 2, said assembly being longitudinally introduced without it being possible they go out of said grooves -5a-, -5b- as they remain covered at the top by the setoff of said band -7-. In addition the profile -5- comprises side panels -5c- extending on the distal face of said band -7-, provided to clasp radial supporting posts -8-, joined to a ring -21- fixed to the mast -16- of the assembly support which is detailed below. The assembly is completed by end corks -9- fastened with end screws -9a- which complete each profile -2- locking to its related groove (see Figs. 4 and 4a).

In another example or optional variant (see Fig. 5) the profile -10- also comprises side grooves -11-, 11a- with separating walls -12-, -12a-, the grooves -11-, -11a- of which form in this case equivalents of the profiles -2- shown in Figs. 3a to 3c, as they receive directly embedded the strips -4- and within them a peripheral band -1a- of fabric or cloth -1- remains locked. Also, in this case, the profile -10- is extended in the lower part by walls -10a- which surrounds the radial supporting posts -15-.

In this case an upper cover -13- has been provided which covers and protects (namely from the rain) the mouths of said grooves -11- and -11a-, adopting a shape similar to the strip -7- disclosed in Fig. 4, leaving a slot for the fabric -1- exit. Optionally, it was thought to include in addition some rivets -29-, transversal to each groove -11-, -11a- which tightly fasten them on related post -4- embedded in them. Fig. 5 shows an alternative embodiment of the radial arm of Fig. 4

On the other hand and with reference to Figs. 11 and 12, it can be seen in them that in a first example of embodiment, devised for wide span sunshades having a diameter equal to 4 m or over, the mast -16- is hollow and it has embedded in it a tubular, quadrangular element -17- which can be moved telescopically guided by angular profiles and is ended at the top by an annular element -18- with a plurality of pairs of radial bored wings -19- to which is connected with a bolt -20- the internal ends of the radial arms -5- or -10-. In addition, tightly joined to the post -17- there exists another annular element -21- with analogous wings -21a-, collar-like, fixed at the mast -16- at which wings -21a- are hinged the internal ends of some radial members -23-, depending on supporting posts of the radial arms -5- themselves, to which they are connected by their external end by the bolt -22- introduced within the walls -5c- or -10a-. It has to be pointed out that said annular elements -18-, -21- with wings -19-, -21a- are obtained by cutting the related extruded profile, which cheapens significantly its cost. Figs. 8 and 10 illustrate some of said sunshade elements.

The driving or operating mechanism of the central tubular element -17-, telescopically movable and which in this case means shutting the sunshade by upward movement of the tubular element -17-, are with preference constituted in the case of a large sized sunshade, a set of gears -24- driven by an external handle -25-, making the upright spindle -26- rotate, on which a centrally threaded plate -27- is moving like a nut, in a high resistance material, linked to the lower part of the tubular element -17- (see Figs. 13, 14 and 15).

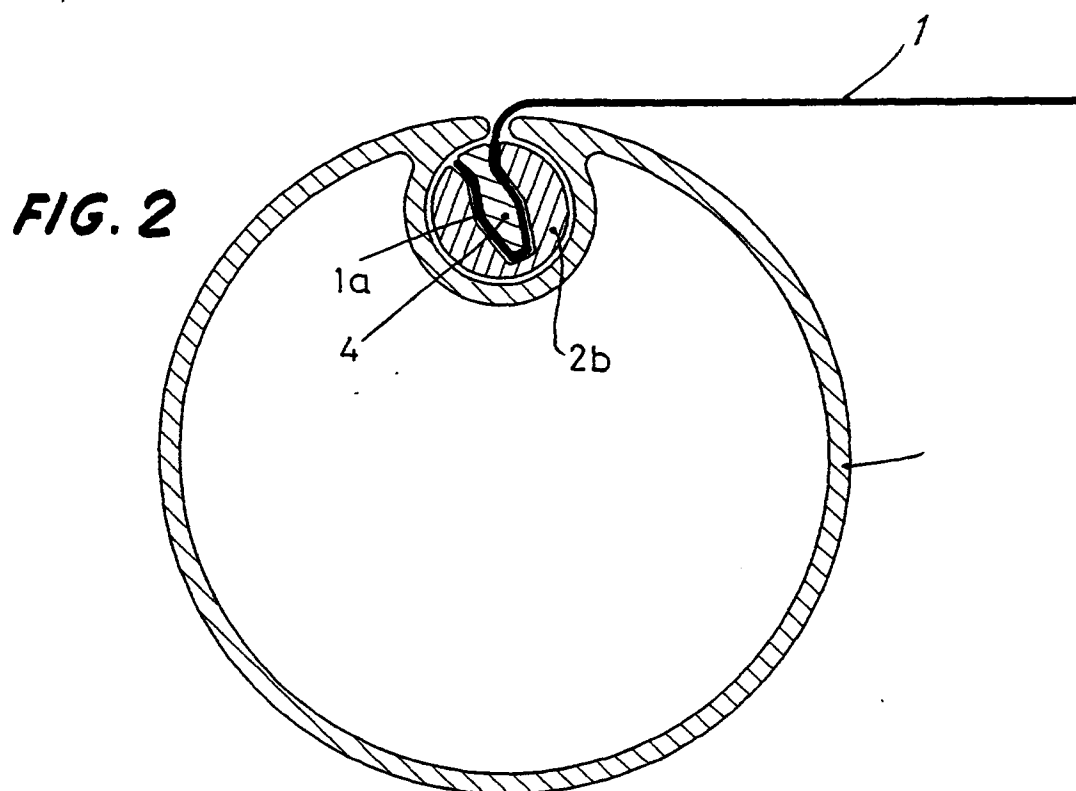
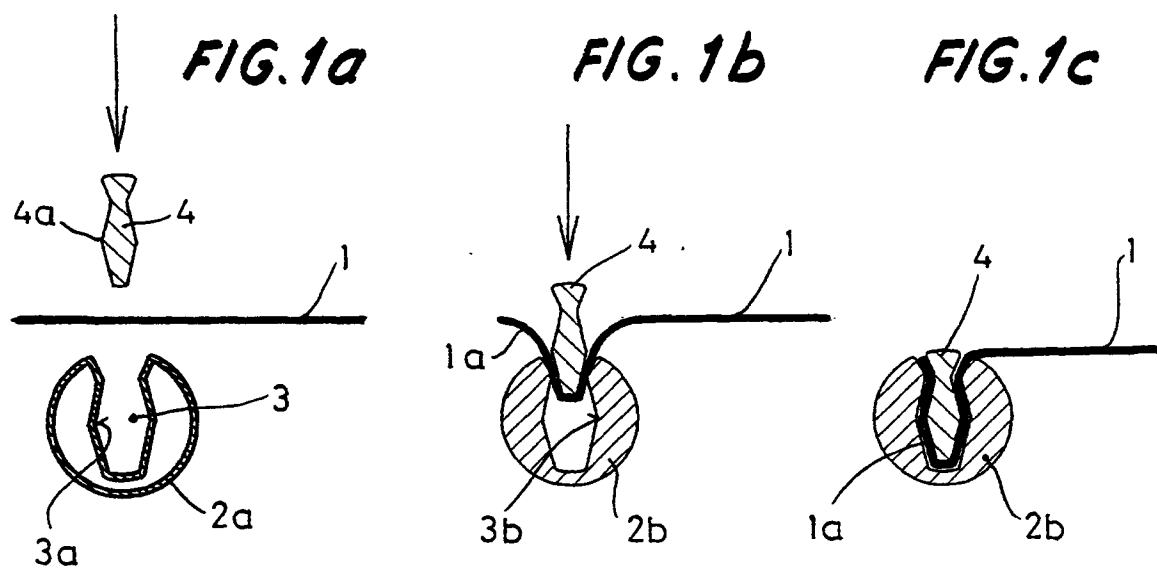
Figs. 16 and 17 show an example of embodiment which implements the principles of the invention, i.e. the means for joining the edges of each cloth or fabric sector -1- to the radial arms -5-, -10-, comprising in this case a minor sized in which a classical fastening has been chosen, i.e. with displacement of the annular element -30- to which are hinged the radial posts or ribs -31- coaxially to the mast -32-.

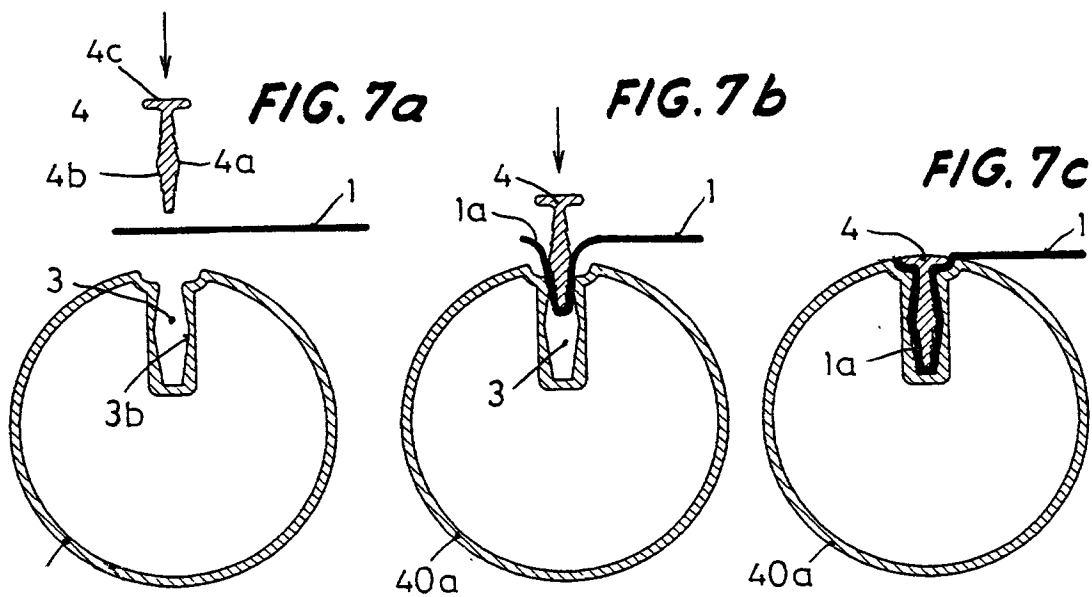
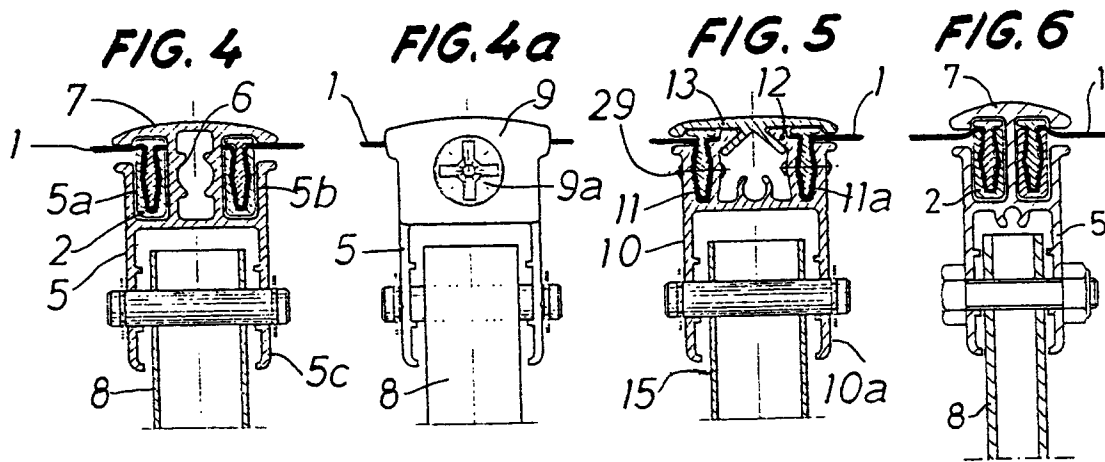
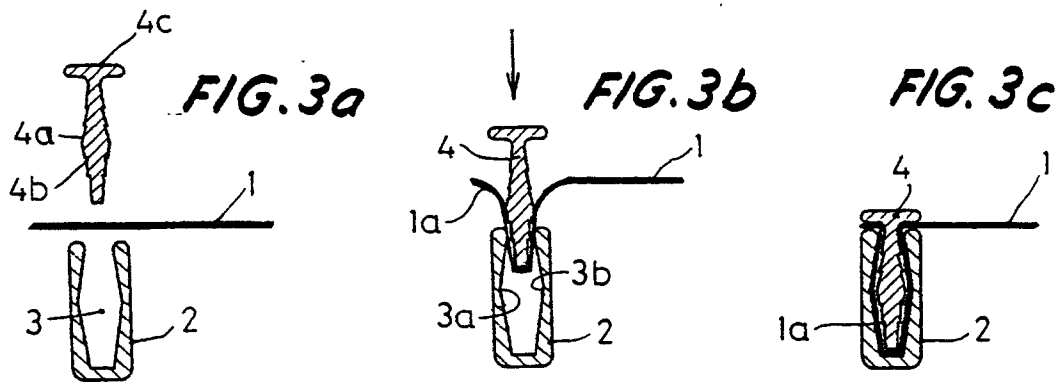
In this case it has been provided through driving an endless flexible element, such as a cord or belt -33-, joined to the ring -30- and which runs parallel to the mast -32- supported on guide cylinders -34-, 34a- or rollers -35-, -35a-. Although the example includes the rollers -35-, -35a- in the interior of the mast -32- this embodiment could include the cord or belt -33- parallel to both opposite sides of the mast -32-, supported on suitable guide rollers or cylinders.

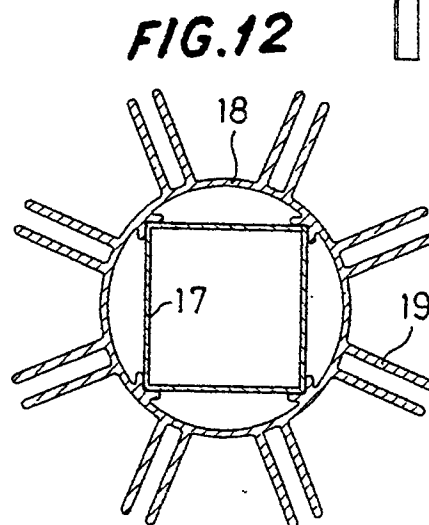
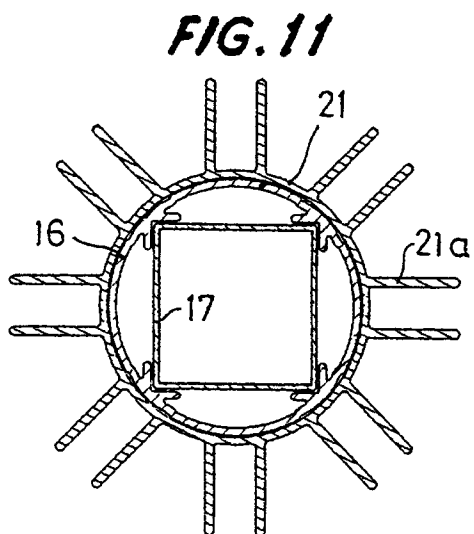
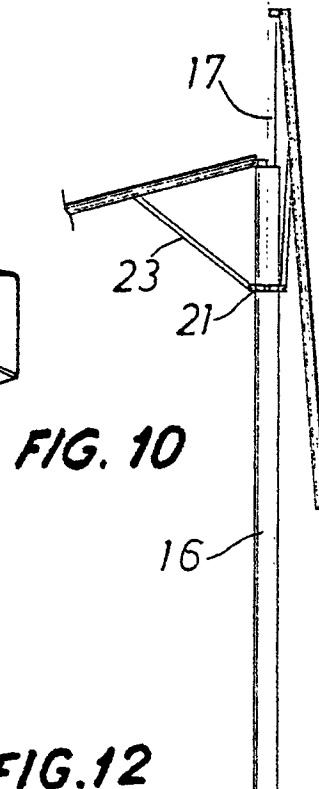
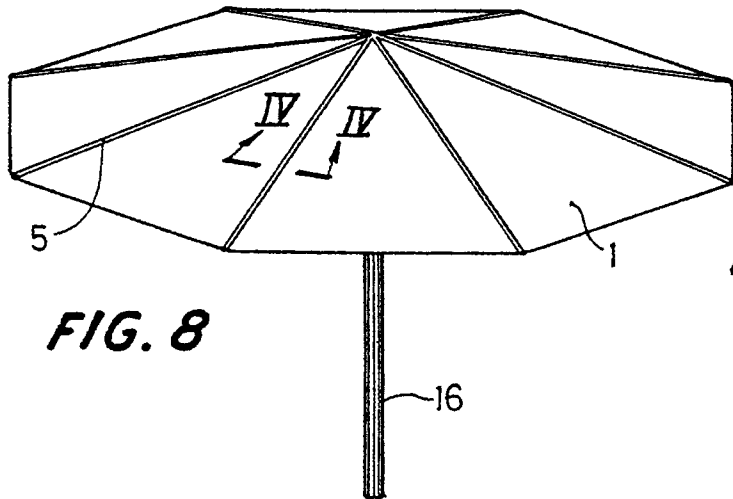
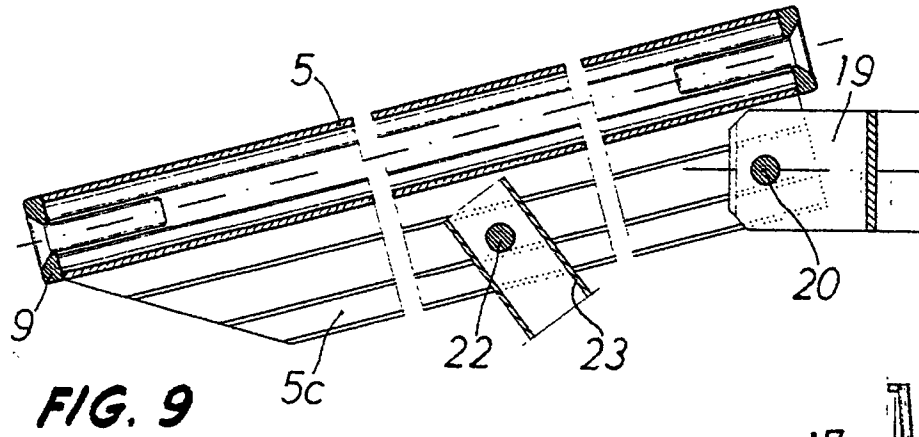
Claims

1. Arrangement for fastening fabrics or canvas to supporting structural members applicable to covers, tarpaulin canvases, large sized sunshades, screens, supporting and grooving fabrics, filters, etc, of the type including onto a longitudinal edge of said fabric, very close to the structural member to which it has to be fastened, an enlarged retaining element, which is arranged embedded within a related groove having a narrow mouth and a passageway downstream the section of said retaining element, this groove being shaped in said structural member characterized in that said retaining element comprises an elongated profile provided with a longitudinal opening in the interior of whose profile a peripheral band, very close to a side edge of a cover fabric to be fastened, remains secured, said peripheral band remaining locked between said profile and a strip, having suitable shape, socketed in said longitudinal opening.
2. Arrangement, according to claim 1, characterized in that said elongated profile is obtained through extrusion and forms a channel, in the internal faces of which there exists, in two directly facing each other areas, some recesses and in that said locking strip possesses a protruding mid part, the span of said strip being so that it can be embedded in the interior of said channel introducing at same time a peripheral portion or band of cover fabric and remaining tightly fastened within said channel by correspondence between concavities and protrusions of said profile and strip, respectively, in a position of maximum socketing of the latter.
3. Arrangement, according to claim 2, characterized in the said locking strip comprises, on its side surface, longitudinal ribs and is ended with an elongated band which covers the mouth of the channel.
4. Arrangement, according to the previous claims, characterized in that said channelled profiles are formed in the structural members themselves, obtained through extrusion as grooves provided to receive, socketed, the locking strip.
5. Arrangement, according to claim 4, characterized in that the groove is very close to a wall of said structural member and in that it further includes rivets transversal to each groove which tightly fasten its related strip socketed thereto.
6. Arrangement, according to any of the claims 1 to 3, characterized in that the structural members have at least one groove provided to receive socketed through longitudinal insertion said profile attached to the edges of the cloth.

7. Sunshade, namely a large sized sunshade, comprising radial arms on which a fabric, cloth or the like cover is arranged and joined, composed of sectors independent from each other, longitudinal edges of which, very close to said arms, include an enlarged retaining element which is arranged embedded in the interior of related narrowed mouth grooves, provided in said radial arms, characterized in that said retaining element comprises an elongated profile provided with a longitudinal opening in the interior of whose profile a peripheral band, very close to a side edge of a related sector of the cover, remains locked between said profile and a strip, having suitable shape, socketed in said opening.
8. Sunshade, according to claim 7, characterized in that said elongated profile is obtained through extrusion and forms a channel, in the internal faces of which there exists, in two directly facing each other areas, some recesses and in that said locking strip possesses a protruding mid part, the span of said strip being so that it can be embedded in the interior of said channel introducing at same time a peripheral portion or band of cover fabric and remaining tightly fastened within said channel by correspondence between concavities and protrusions of said profile and strip, respectively, in a position of maximum socketing of the later.
9. Sunshade, according to claim 8, characterized in that said profile (2) adopts a U-shaped cross section with its branches adapted to slightly bend themselves to aid said strip to be locked thereto by socketing.
10. Sunshade, according to claim 9, characterized in that said U-shape channelled profiles are formed in the radial arms themselves, obtained through extrusion, which include in areas very close to its sides, upperly opened grooves, separated by at least a raised wall, said grooves being provided to receive, socketed, respective locking strips and in that it has been provided a cover, having the shape of a longitudinal band with two opposite inclination sides which covers in setoff the upper part of said two grooves delimiting at both sides some slots for fabric passing, said band being fastened to the arm by internal appendages which are coupled to mentioned at least one raised wall, and it is further foreseen that each arm shows some extensions of their lower face constituted by side walls designed to surround supporting posts.
11. Sunshade according to any one of the claims 7 to 10, characterized in that the radial arms comprise profiles obtained through extrusion which include a main portion having U-shaped grooves at their sides, separated by at least one intermediate wall which upwardly extends in a longitudinal band having two opposite inclination sides which covers in setoff the entrance of said grooves, delimitating a small slot for the fabric passing, said grooves being adapted to receive longitudinally introduced said profile linked to the edges of each cover sector of the cover fabric and because under said pair of grooves the profile extends in side walls designed to surround the supporting posts.
12. Sunshade according to claim 7 characterized in that it comprises a hollow central mast in which a tubular element is introduced which is adapted to be telescopically moved by driving means, such as a spindle, said tubular element ending at the top by a first annular element provided with a plurality of pairs of radial bored wings, each pair being angularly equispaced, to which internal ends of said radial arms are hinge connected by a bolt.
13. Sunshade according to claim 12 characterized in that a second annular element has being provided, which also includes a plurality of radial bored wings pairs, each pair angularly equispaced, said annular element constituting a collar fixed to the central mast, to which it is coaxial, and on which are hinged the external ends of crossbars acting as supporting strips of the radial arms, said strips are in turn hinged by their external free end, introduced between said extension side walls.
14. Sunshade according to claim 7, characterized in that it comprises an annular element to which the supporting strips of the radial arms supporting the cover are joined, said annular element being movable coaxially to the mast and linked to an endless flexible element which runs parallel to the mast surrounding some guide rollers or cylinders duly anchored to the mast.







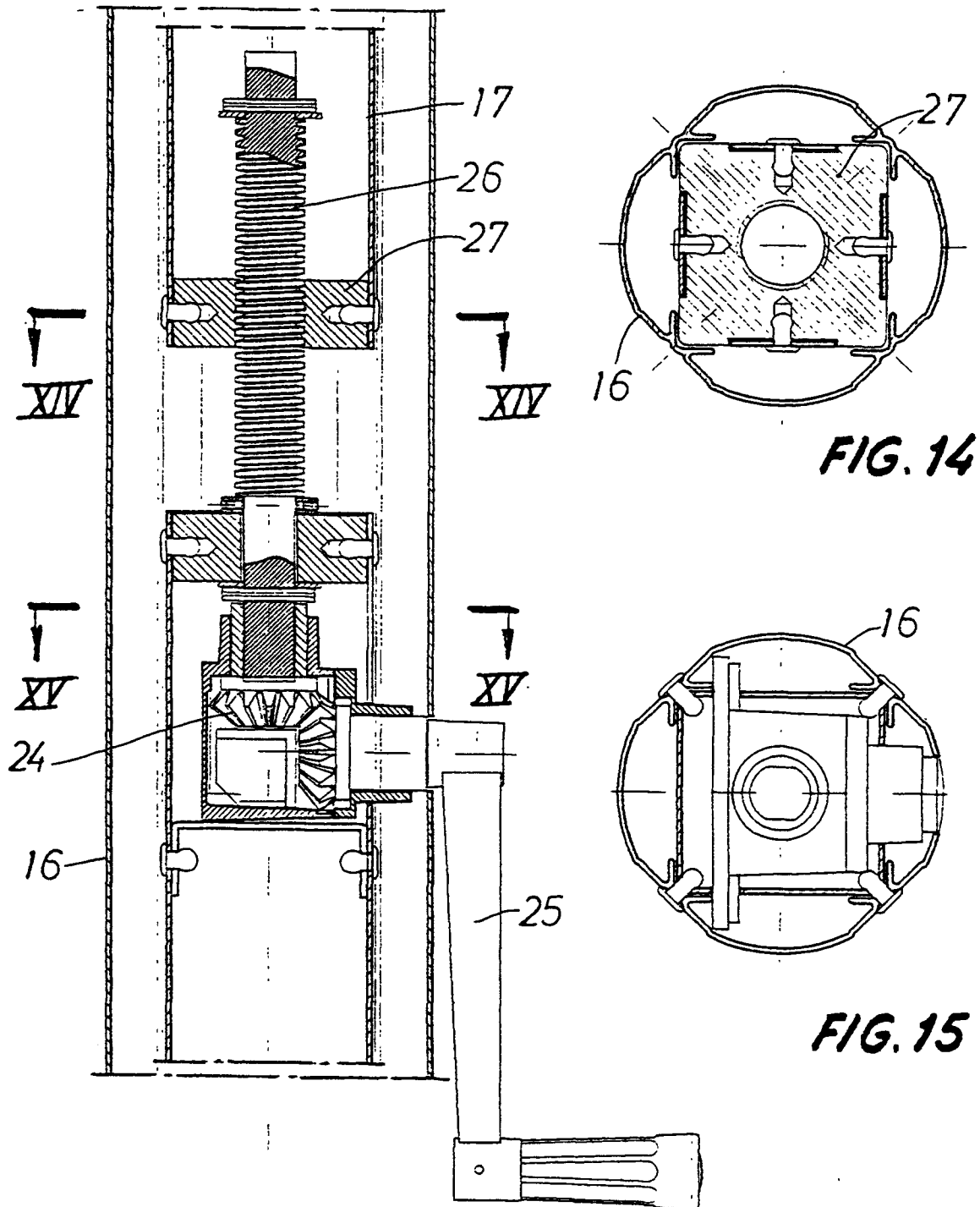


FIG. 13

FIG. 14

FIG. 15

