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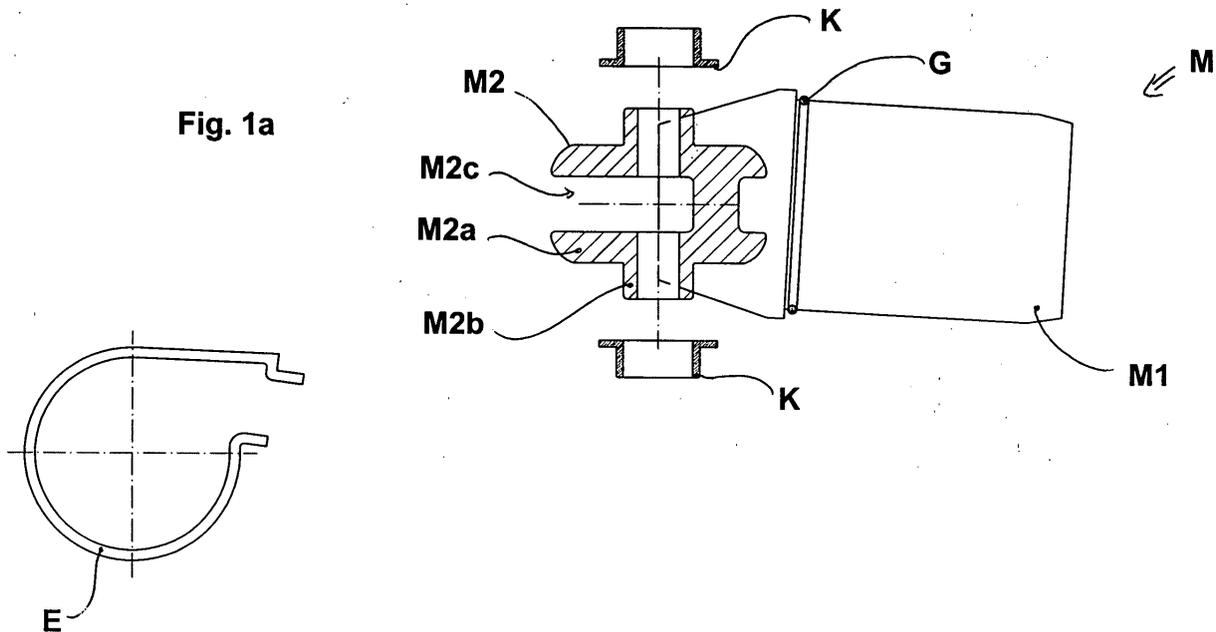
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(54) **Joint for retractable arms for awnings**

(57) The invention is a joint for retractable arms for awnings comprising a male element (M), with the coupling and hinge portion made of a disc or cylinder shaped part (M2a), provided coaxially on both sides with a pivot shaped part (M2b), and a female ele-

ment (F) made of two connectable asymmetrical parts (F', F''), provided with a cup shaped part (F2a) with a cylindrical cavity (F2b) fit for coupling with one side of the disc shaped portion (M2) of the male element of the joint (M).



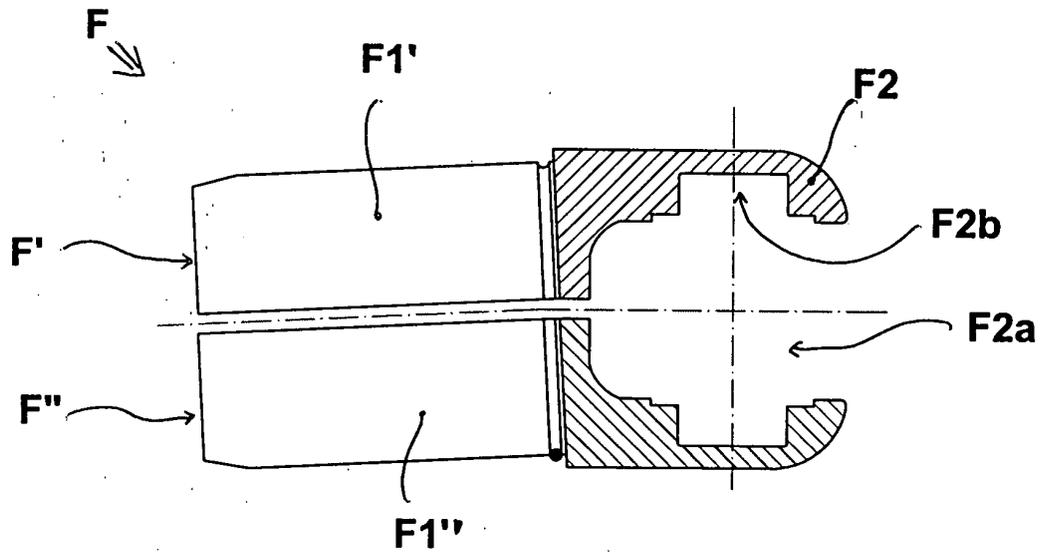


Fig. 2a

Description

[0001] The present patent concerns retractable arms awnings, pertaining particularly the joint of the retractable arms for awnings.

[0002] The known retractable arms awnings are made of a shaft positioned on two hinge-supports fixed on the wall, a piece of fabric wound around the shaft, a rigid beam attached to the front free edge of the fabric, two or more retractable arms hinged to the rigid beam and to the fixed structure right below the shaft.

[0003] Each retractable arm is made of two arms, which shall be refer to hereforward as half-arms, hinged, with essentially vertical axis, to their common end.

[0004] Each half-arm is made of a square or shaped section bar, to the ends of which the joint elements, both the male and the female, are applied. The male joint element comprises a clutch, suitable for being inserted and fixed inside the section bar, and a normally tubular shaped portion, positioned with its axis perpendicular to the clutch axis.

[0005] The female joint element comprises a clutch, fit for being inserted and fixed inside the section bar and two usually annular portions, overlapped and coaxial, fit for receiving between them the normally tubular shaped portion of the male joint element.

[0006] A screw-pivot, passing through one of the two rings of the female joint element, through the generically tubular portion of the male joint element, and through the second ring of the female joint element, joins and hinges the two joint elements, male and female.

[0007] The thusly constructed joint, male element and female element, hinged and united by means of the screw-pivot, causes many problems.

[0008] Instruments and tools are needed to fix and tighten the screw-pivot of the joint.

[0009] It is necessary to tighten the screw enough to keep the two elements together, but not too much, permitting a normal rotation of the two elements of the joint itself.

[0010] If the screw-pivot is not tightened correctly, the two elements of the joint work in anomalous positions or with anomalous movements, inhibiting the correct functioning of the retractable structure of the awning, consuming and damaging the different parts of the joint and of the retractable structure of the awning.

[0011] The thusly constructed joint, with the present screw-pivot, makes it easy for liquids, or dirt in general, to enter the joint and between the various mobile parts, thus degrading the efficiency of the joint itself.

[0012] The construction of the different parts of the joint requires expensive and specifically made mould and precise working.

[0013] To overcome the aforementioned problems a new joint for retractable arms for awnings has been studied and realized.

[0014] An aim of the new joint for awning retractable arms is to reduce the number of parts needed to make

the joint.

[0015] Another aim is to permit the assembly without using instruments or tools.

[0016] Another aim of the new joint is to maintain the shape of its elements and/or its rotation-functioning during use.

[0017] Another aim of the new joint is to prevent the entrance of liquids and dirt into the joint itself and between the mobile parts.

[0018] Another aim of the new joint is to minimize the amount of maintenance necessary to keep the system at its maximum efficiency.

[0019] These and other aims are achieved by the new joint for retractable arms for awnings. Said new joint comprises a male element, with the coupling and hinge portion made of a disc shaped part, provided coaxially on both sides with a stump or a pivot shaped part, and a female element made of two connectable asymmetrical parts, provided with a cup shaped part fit for coupling with one side of the disc shaped portion of the male element of the joint.

[0020] The two parts of the female element of the joint are coupled one to another, securing the disc shaped part with pivots of the male element of the new joint.

[0021] Both the male and the female element of the joint comprise a clutch part fit for being inserted in one end of the tubular section bar that forms the half-arm of the awning.

[0022] In particular, each of the two symmetrical parts of the female element of the joint comprises a longitudinal semi-portion of said clutch. In this way the tubular section bar of the half-arm holds together the two parts of the female element, when the latter are inserted in the clutch of the female element.

[0023] The characteristics of the new joint for retractable arms for awning will be clarified by the following description, that refers to the drawings, attached as a non limitative example.

[0024] Figure 1a and figure 1b represent, respectively, a vertical section and a plan of the male element (M) of the new joint made of a clutch (M1) and a coupling and hinge section (M2).

[0025] Said coupling and hinge section (M2) of the male element (M) comprises a disc or cylinder shaped part (M2a) with a pivot shaped part (M2b) coaxially positioned on each of the two circular sides.

[0026] The clutch (M1) of the male element (M) is situated substantially tangentially to the disc or cylinder shaped part (M2a).

[0027] On the circular edge of the disc or cylinder shaped part (M2a) there is an annular spline (M2c) for an elastic element (E), fit for closing the two half-arms, with its related attachment hole (M4).

[0028] It is possible to foresee that the pivot shaped parts (M2b) and the disc or cylinder shaped part (M2a) will be provided with a coaxial passing hole.

[0029] Figure 2a and figure 2b represent, respectively, a vertical section and a plan of the female element

(F) of the new joint constituted by two symmetrical parts (F', F''), that can be coupled one to another.

[0030] Each of the two symmetrical parts (F', F'') comprises a cup shaped part (F2), fit for coupling with a side of the disc or cylinder shaped part (M2) of the male element (M) of the joint, and also comprises a site (F2a) to receive half of the disc shaped portion (M2a) and a cylindrical cavity (F2b) to receive the pivot shaped part (M2b).

[0031] Each of the two parts (F', F'') of the female element (F) of the joint has also a semi-portion of the clutch (F1', F1'') for the attachment of the half-arm to the section bar.

[0032] The symmetry axis of said appendixes (F1', F1'') is slightly not in-line with the symmetry axis of the portions (F2).

[0033] Each of the two semi-portions of the clutch (F1', F1'') is situated substantially tangentially to the cup shaped portion (F2).

[0034] The two parts (F', F'') of the female element (F) of the joint are coupled one to another in order to enclose and receive among them the disc shaped part (M2a) with pivots (M2b) of the male element (M) of the new joint.

[0035] For this reason each of the two parts (F', F'') of the female element (F) has a step shaped edge for the coupling with the symmetrical part (F', F'').

[0036] The two elements, male (M) and female (F), of the new joint are coupled one to another and attached to the tubular section bar of the half-arms.

[0037] The male element (M) of the new joint is attached to the half-arm of the structure.

[0038] On the pivot shaped parts (M2b) of the male element (M), slipping rings (K) against friction are preferably applied.

[0039] On the pline (M2c) of the male element (M) an elastic element (E) is applied. Said element (E) for the closing and the re-calling of the two half-arms.

[0040] Each of the two parts (F', F'') of the female element (F) is applied to each side of the male element (M) of the new joint in order to enclose it, and to present a single clutch (F1', F1'').

[0041] The two thusly fitted together parts (F1', F1'') of the clutch (F1), of the female element (F) of the new joint are united to the second half-arm of the structure.

[0042] The clutches (F1, M1) of the two elements (F, M) of the new joint can be partially conic, so that it will be easier to insert the half-arms and to hold them, and they can be provided with gaskets (G) or seals.

[0043] The new joint for retractable arms for structures for awnings, as described above, presents many advantages.

[0044] The various parts can be built easily, they don't require complex moulds, and they require common working procedures.

[0045] The assembly and the union of the male (M) and female (F) element of the new joint, and their union with the half-arms of the structure, are simple, fast, and

do not require the use of special instruments and tools.

[0046] The new joint doesn't present fixing or assembling parts made in a way that they, if not fixed or positioned correctly, or if consumed, interrupt the correct functioning of the retractable arm.

[0047] The two parts of the female element (F) cover and enclose the joint, protecting it from the infiltration of liquid and dirt.

[0048] Therefore, with reference to the above description and to the attached figures, the following claims are put forth.

Claims

1. Joint for retractable arms for awning **characterized by** comprising:

- a male element (M), with the coupling and hinge section composed of a disc or cylinder shaped part (M2a), provided coaxially on both sides of a pivot-shaped part (M2b);
- a female element composed of two symmetrical parts (F', F''), that can be coupled one to another, each provided with a cup shaped portion (F2a) with a cylindrical cavity (F2b) suitable for coupling to a side of the disc shaped part (M2) of the male element of the joint,

and where both the male (M) and the female (F) element each have a clutch appendix (M1, F1) for the attachment on the ends of the half-arms of the structure of the retractable arm.

2. Joint for retractable arms for awning, according to claim 1, **characterized by** the fact that said clutch appendix (F1), of the female element (F), comprises two symmetrical parts (F1', F1''), coupled one to another, suitable for being inserted on the cave end of the half-arm.

3. Joint for retractable arms for awning, according to claims 1, 2, **characterized by** the fact that the coupling edge of the two symmetrical parts (F', F'') of the female element is , partially or wholly, step or gain shaped.

4. Joint for retractable arms for awning, according to claims 1, 2, 3, **characterized by** the fact that the clutches (F1,M1) of the male (M) and female (F) element are substantially tangent to the disc (M2) and cup (F2) shaped parts of said male (M) and female (F) elements.

5. Joint for retractable arms for awning, according to claims 1, 2, 3, 4 **characterized by** the fact that in the female element (F) the symmetry axis of the appendixes (F1', F1'') is not in-line with the symmetry

axis of the cup shaped portions (F2).

6. Joint for retractable arms for awning, according to claims 1, 2, 3, 4, 5, **characterized by** the fact that the clutches (F1, M1) of the male (M) and female (F) elements are partially conic. 5
7. Joint for retractable arms for awning, according to claims 1, 2, 3, 4, 5, 6, **characterized by** the fact that the male element (M) shows, on the circular edge of the disc or cylinder shaped part (M2a), an annular spline suitable for receiving an elastic element (E) for the closing of the two half-arms. 10
8. Joint for retractable arms for awning, according to claims 1, 2, 3, 4, 5, 6, 7, **characterized by** having slipping rings against friction (K), applied on pivot shaped parts (M2b) of the male element (M). 15
9. Joint for retractable arms for awning, according to claims 1, 2, 3, 4, 5, 6, 7, 8, **characterized by** having gaskets (G), or seal elements applied on the clutches (F1, M1) of the two male (M) and female elements. 20
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10. Joint for retractable arms for awning, according to claims 1, 2, 3, 4, 5, 6, 7, 8, 9, **characterized by** the fact that the male element (M) has a hole or a hook (M4) for the attachment of the spring of the elastic tie bar. 30

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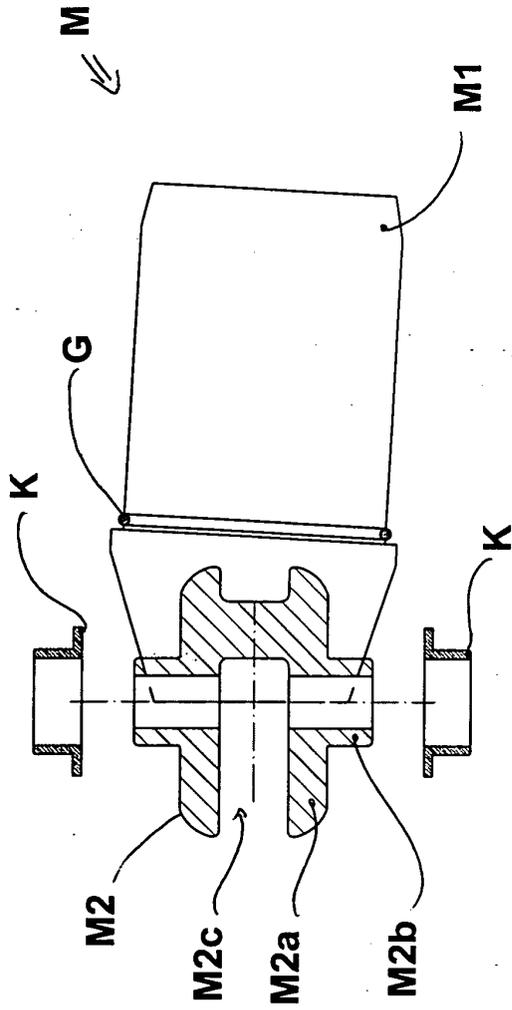


Fig. 1a

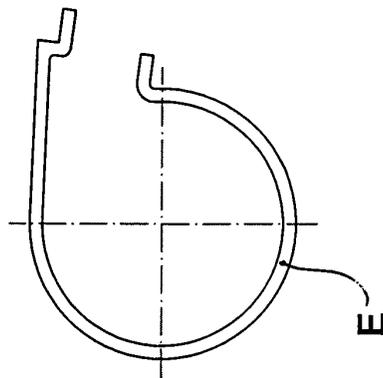
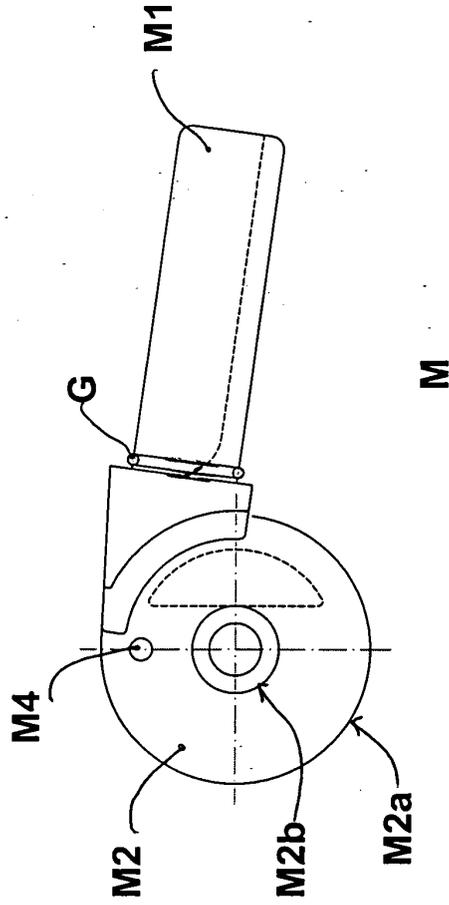
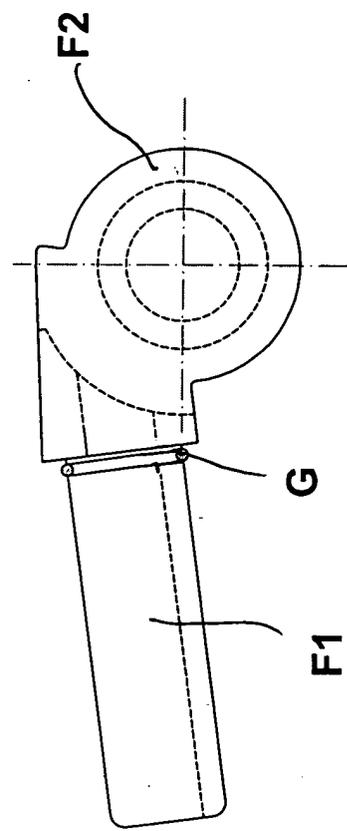
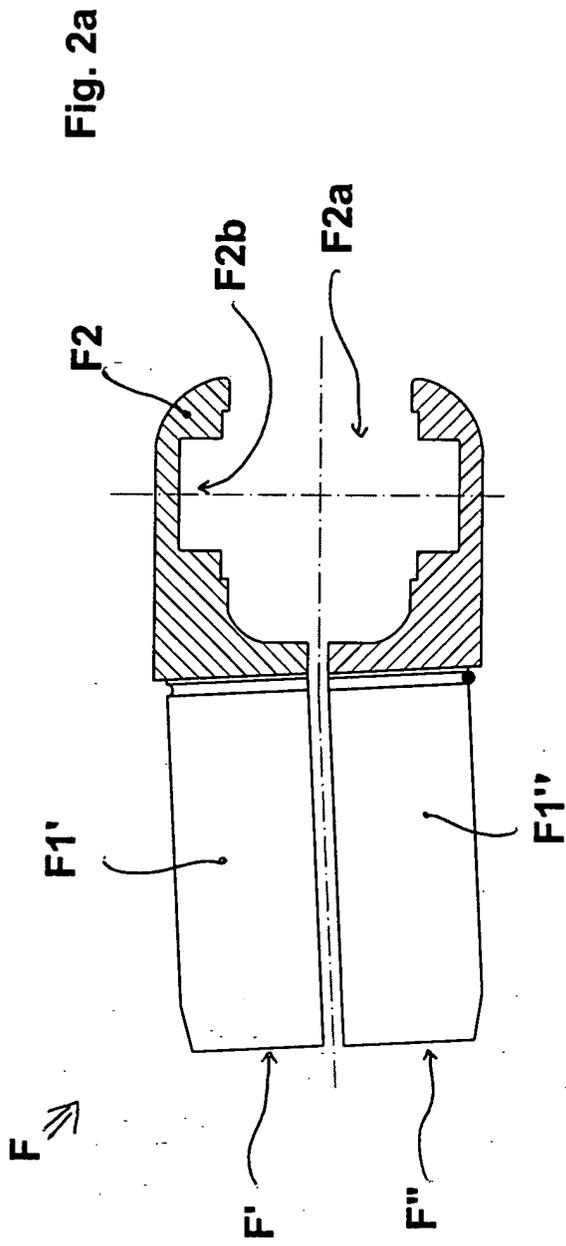


Fig. 1b







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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		1 September 2004	Severens, G
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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EPO FORM 1503 03.02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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