(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 737 818 A1

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
04.06.2014 Bulletin 2014/23

(21) Application number: **11869932.1**

(22) Date of filing: **06.12.2011**

(51) Int Cl.:
A45B 25/14 *(2006.01)* ***A45B 25/16*** *(2006.01)*

(86) International application number:
PCT/CN2011/083581

(87) International publication number:
WO 2013/013474 (31.01.2013 Gazette 2013/05)

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **28.07.2011 CN 201110214123**

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(54) AN EFFORTLESS UNFOLDING STRUCTURE OF SUNSHADE UMBRELLA

(57) The present invention relates to an effortless unfolding structure of sunshade umbrella, which comprises a cantilever, a pulling rope, an elastic component and a fixing block. The pulling rope comprises a first end part and a second end part. The second end part, the elastic component and the fixing block are all arranged inside the cantilever. The first end part threads though the end face of the cantilever and the second end part is fixed to the fixing block. The elastic is arranged between the end face of the cantilever and the fixing block with its two ends resisting against the end face of the cantilever and the fixing block respectively. Preferably, the elastic component is a spring and the spring sleeves outside the pulling rope. The fixing block is an end face snap-fit piece. A bearing component for the pulling rope is also comprised, and the first end part winds part of the bearing component for the pulling rope. A fixing block for the oblique rods and a locking plate are also comprised. The bearing component for the pulling rope is mounted on the fixing block for the oblique rods. The first end part is fixed on the fixing block for the oblique rods, and the fixing block for the oblique rods is fixed to the post of the sunshade umbrella by means of the locking plate. The effortless unfolding structure of sunshade umbrella is ingeniously deigned, concise in structure and can facilitate to open umbrella in a labor saving way. Besides, its overall appearance will not be damaged. It is suitable to be promoted and applied on a large scale.

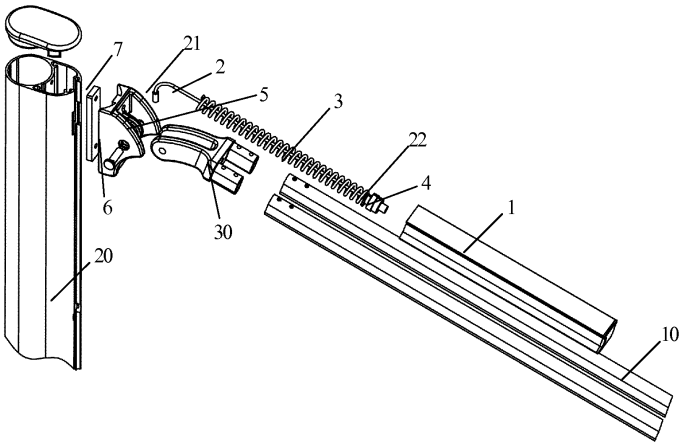

Fig 1

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Description

Field of Technology

[0001] The present invention relates to the technical field of umbrellas, particularly to the technical field of sunshade umbrellas, and more particularly to an effortless unfolding structure of sunshade umbrella which facilitates to unfold the umbrella in a labor-saving way.

Description of the Prior Art

[0002] Nowadays, sunshade umbrellas can be seen everywhere. Some types of the sunshade umbrellas have effortless unfolding structures, while similar existing products on the market are all provided with external gas springs to achieve the effortless unfolding of the umbrellas. The drawback of these products lies in the destroyed overall appearance, the high cost and being subjected to the limitation of gas springs. Moreover, the Chinese patent ZL 97249802.8 has disclosed an elastic pipe clip for umbrella rib, which could clamp onto the umbrella rib and hinge with branching ribs, and on which springs mounted resists against the branching ribs. Thus while opening the umbrella with such elastic pipe clip, the branching ribs receive release force from spring and stretch out for unfolding the umbrella in a quick and effortless way. But the drawback of harm in the whole appearance also exists in this structure.

[0003] Thus, in order to solve the abovementioned problems and drawbacks, an effortless unfolding structure of sunshade umbrellas needs to be provided. It is effortless to unfold the umbrella and the whole appearance will not be affected.

Summary of the Invention

[0004] The object of the present invention is to provide an effortless unfolding structure of sunshade umbrella for overcoming above drawbacks in prior art. The effortless unfolding structure of sunshade umbrella is ingeniously designed, concise in structure and can facilitate to open umbrella in a labor saving way. Also, the whole appearance will not be affected and it is appropriate to be promoted and applied on a large scale.

[0005] In order to achieve the abovementioned object, the present invention provides an effortless unfolding structure of sunshade umbrella comprising a cantilever, a pulling rope, an elastic component and a fixing block, wherein pulling rope comprises a first end part and a second end part. Said second end part, said elastic component and said fixing block are all arranged inside said cantilever. Said first end part passes through the end face of said cantilever and said second end part is fixed to said fixing block. Said elastic component is arranged between the end face of said cantilever and said fixing block with its two ends resisting against the end face of said cantilever and said fixing block respectively.

[0006] Preferably, said elastic component is a spring and said spring sleeves outside said pulling rope.

[0007] Preferably, said fixing block is an end face snap-fit piece.

[0008] More preferably, said pulling rope is a steel wire rope, and said end face snap-fit piece is applied for the steel wire rope.

[0009] Preferably, the effortless unfolding structure of sunshade umbrellas also comprises a bearing component for the pulling rope, and said first end part winds part of said bearing component for the pulling rope.

[0010] More preferably, said bearing component for the pulling rope is a bearing block with a groove, and said first end part winds part of said groove.

[0011] More preferably, the effortless unfolding structure of sunshade umbrellas also comprises a fixing block for the oblique rods. Said bearing component for the pulling rope is mounted on the fixing block for the oblique rods, and said first end part is fixed on said fixing block for the oblique rods.

[0012] Further, said bearing component for the pulling rope and said fixing block for the oblique rods are integrally formed.

[0013] Further, the effortless unfolding structure of sunshade umbrellas also comprises a locking plate. Said fixing block for the oblique rods is fixed on the post of the sunshade umbrella by means of said locking block.

[0014] The advantages of the present invention lie in: the effortless unfolding structure of sunshade umbrellas of the present invention comprises a cantilever, a pulling rope, an elastic component and a fixing block; said pulling rope comprises a first end part and a second end part; said second end part, said elastic component and said fixing block are all arranged inside said cantilever; said first end part threads through the end face of said cantilever and said second end part is fixed to said fixing block; said elastic component is arranged between the end face of said cantilever and said fixing block with its two ends resisting against the end face of said cantilever and said fixing block respectively; during the installation, The cantilever is mounted between the two oblique rods which support the umbrella frame; the first end part of the pulling rope is mounted on the post of the sunshade umbrella, and thus making use of the relative movement of the oblique rods relative to the post; the pulling rope pulls the fixing block to compress the elastic component for storing energy to unfold the umbrella. It is ingeniously designed, concise in structure and can facilitate to open umbrella in a labor saving way; also the whole appearance will not be affected and it is appropriate to be promoted and applied on a large scale.

Brief Description of the Drawings

[0015]

Fig.1 is a partial exploded perspective view showing the assembly of connection between the post and

the oblique rod in one embodiment of the present invention.

Fig.2 is the partial cross sectional view showing connection between the post and the oblique rod in the embodiment illustrated in Fig.1.

Fig.3 is another partial cross sectional view showing connection between the post and the oblique rod in the embodiment illustrated in Fig.1.

Detailed Description of the Preferred Embodiment

[0016] In order to understand the technical content of the present invention more clearly, the following embodiments is exemplified to be described in details. It should be understood that the embodiment should be considered as illustrative rather than restrictive.

[0017] Please refer to Fig.1 to Fig.3, the effortless unfolding structure of sunshade umbrella of the present invention comprises a cantilever 1, a pulling rope 2, an elastic component 3 and a fixing block 4. Said pulling rope 2 comprises a first end part 21 and a second end part 22. The said second end part 22, the said elastic component 3 and the said fixing block 4 are all arranged inside the said cantilever 1. The said first end part 21 threads the end face 11 of the said cantilever 1. The second end part 22 is fixed to the said fixing block 4. Said elastic component 3 is mounted between the end face 11 of the said cantilever 1 with its two ends resisting against the end face 11 of the cantilever 1 and the said fixing block 4 respectively.

[0018] The elastic component 3 can be any appropriate component. Please refer to Fig.1 to Fig.3, in the embodiment of the present invention, the elastic component 3 is a spring and the said spring sleeves outside said pulling rope 2.

[0019] Said fixing block 4 can be any appropriate component. Preferably, the said fixing block 4 is an end face snap-fit piece. Please refer to Fig.1 to Fig. 3, in the embodiment of the present invention, said pulling rope 2 is a steel wire rope and said end face snap-fit piece is an end face snap-fit piece for a steel wire rope. The steel wire rope is snapped in the end face snap-fit piece.

[0020] In order to facilitate the pulling rope 2 to displace relative to the cantilever 1, preferably, said effortless unfolding structure of sunshade umbrella also comprises a bearing component 5 for the pulling rope. The said first end part 21 winds part of the said bearing component 5. Said bearing component 5 can be of any appropriate structure. Please refer to Fig.1 to Fig.3, in the embodiment of the present invention, said bearing component for the pulling rope 5 is a bearing block with a groove, and the first end part 21 winds part of said groove.

[0021] The oblique rod 10 of the sunshade umbrella can be fixed to the post 20 by any appropriate ways. Preferably, the said effortless unfolding structure of sunshade umbrella also comprises a fixing block 6 for the oblique rods. Said bearing component 5 for the pulling rope is mounted on the said fixing block 6 for the oblique rod. Said first end pat 21 is fixed on the said fixing block 6 for the oblique rods. The oblique rods 10 are pivotally connected with the fixing block 6 and the fixing block 6 is fixed on the post 20.

[0022] Said bearing component 5 for the pulling rope can be mounted on said fixing block 6 for the oblique rod; or otherwise, said bearing component 5 for the pulling rope and said fixing block 6 for the oblique rods can be formed integrally. Please refer to Fig.1 to Fig.3, in the embodiment of the present model utility, the bearing block 5 with the groove and said fixing block 6 for the oblique rods are formed integrally. That is to say, the groove is actually a protruded groove of the fixing block 6 for the oblique rods and preferably has a gradual changing diameter.

[0023] Said fixing block 6 for the oblique rods can be fixed to the post 20 of the sunshade umbrella in any appropriate structures. Please refer to the Fig.1 to Fig.3, in the embodiment of the present invention, said effortless unfolding structure of sunshade umbrellas also comprises a locking plate 7. Said fixing block 6 for the oblique rods is fixed to the post 20 of the sunshade umbrella by means of the said locking plate 7. The oblique rods 10 are pivotally connected with the fixing block 6 for the oblique rods by means of a connecting head 30.

[0024] Refer to Fig.1, during the installation the cantilever1 is mounted between the two oblique rods 10 which support the umbrella fame. The first end part 21 of the pulling rope 2 winds the groove and is mounted on the fixing block 6 for the oblique rod. The fixing block 6 for the oblique rod is fixed to the post 20 of the sunshade umbrella by means of the said locking plate 7, for example locking screw.

[0025] Refer to Fig.2, it is an unfolding status of the umbrella. The spring inside the cantilever 1 is in its initial status which can be considered that there is no compressive force. Refer to Fig.3, it is an folding status of the umbrella. Since the length of the wire steel rope won't change, and as the oblique rods 10 rotate downwards and inwards relative to the post 20, the more of the wire steel rope will wind the groove. For example, the steel wire rope in Fig.3 wind almost a quarter of the groove, and thus the difference in size is produced. The steel wire rope makes the end face snap-fit piece compress the spring to produce a reactive force against the folding action. However, the rebound force of the spring is less than the force that is needed to unfold the umbrella, so that the umbrella can be folded successfully. In reverse, when the umbrella is unfolded, this rebound force will facilitate to unfold the umbrella effortlessly. The specific process is that the spring elongates to make the end face snap-fit piece for the steel wire rope acting on the cantilever internally, which makes the oblique rods unfolded.

[0026] To sum up, the effortless unfolding structure of sunshade umbrella is ingeniously designed, concise in structure, and can facilitate to open umbrella in a labor saving way. The overall appearance will not be damaged. It is suitable to be promoted and applied on a large scale.

[0027] In this specification, the present invention has been described with reference to its specific embodiments. However, it is obvious still that modifications and alterations may be made without departing from the spirit and scope of the present invention. Accordingly, the specification and the drawings should be considered as illustrative rather than restrictive.

Claims

1. An effortless unfolding structure of sunshade umbrella, comprising a cantilever, a pulling rope, an elastic component and a fixing block; wherein, said pulling rope comprises a first end part and a second end part; said second end part, said elastic component and said fixing block all arranged inside said cantilever; said first end part threads the end face of said cantilever; said second end part is fixed to said fixing block; said elastic component is arranged between the end face of said cantilever and said fixing block with its two ends resisting against the end face of said cantilever and said fixing block respectively.

2. The effortless unfolding structure of sunshade umbrella according to claim 1, wherein said elastic component is a spring and said spring sleeves outside said pulling rope.

3. The effortless unfolding structure of sunshade umbrellas according to claim 1, wherein said fixing block is an end face snap-fit piece.

4. The effortless unfolding structure of sunshade umbrellas according to claim 3, wherein said pulling rope is a steel wire rope, and said end face snap-fit piece is applied for the steel wire rope.

5. The effortless unfolding structure of sunshade umbrella according to claim 1, wherein the effortless unfolding structure of sunshade umbrella also comprises a bearing component for the pulling rope, and said first end part winds part of said bearing component for the pulling rope.

6. The effortless unfolding structure of sunshade umbrella according to claim 5, wherein said bearing component for the pulling rope is a bearing block with a groove, and said first end part winds part of said groove.

7. The effortless unfolding structure of sunshade umbrella according to claim 5, wherein the effortless unfolding structure of sunshade umbrella also comprises a fixing block for the oblique rods; said bearing component for the pulling rope is mounted on the fixing block for the oblique rods, and said first end part is fixed on said fixing block for the oblique rods.

8. The effortless unfolding structure of sunshade umbrella according to claim 7, said bearing component for the pulling rope and said fixing block for the oblique rods are integrally formed.

9. The effortless unfolding structure of sunshade umbrella according to claim 7, wherein the effortless unfolding structure of sunshade umbrella also comprises a locking plate, and said fixing block for the oblique rods is fixed on the post of the sunshade umbrella by means of said locking plate.

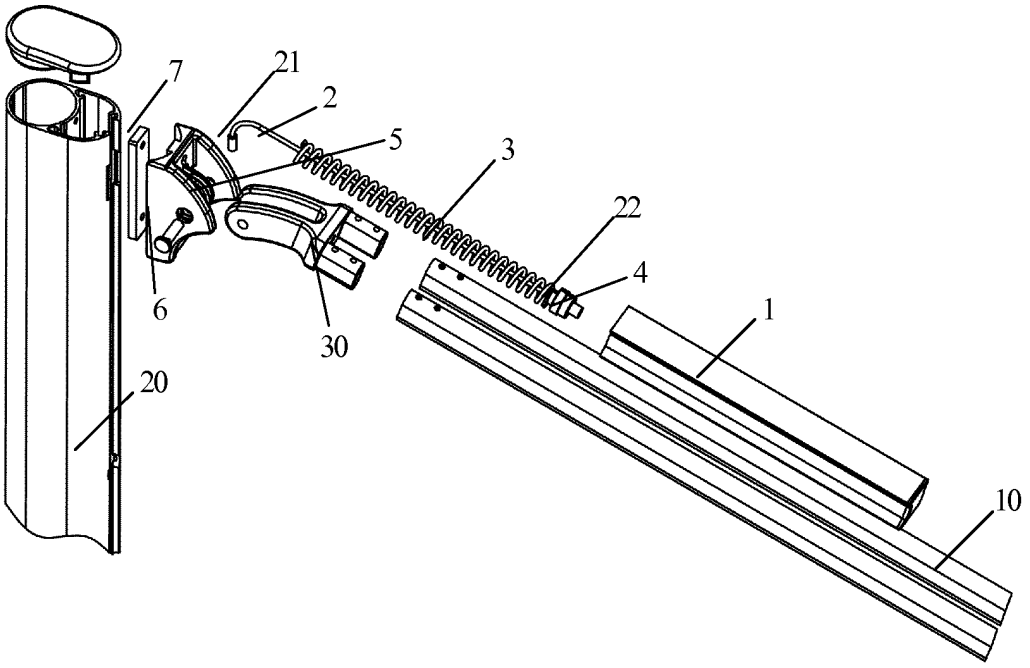

Fig 1

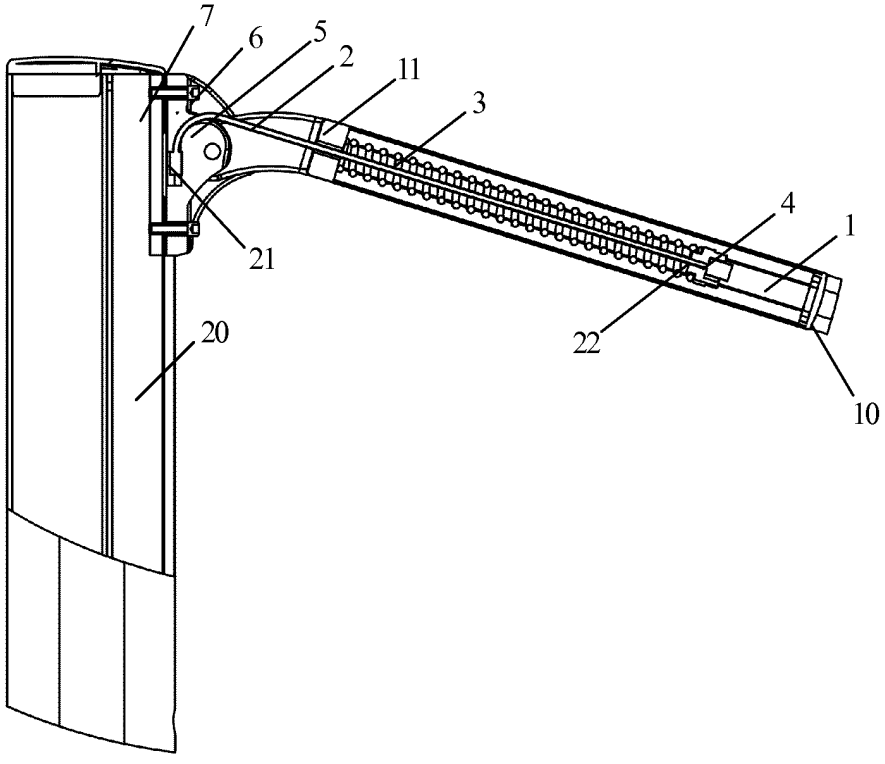

Fig 2

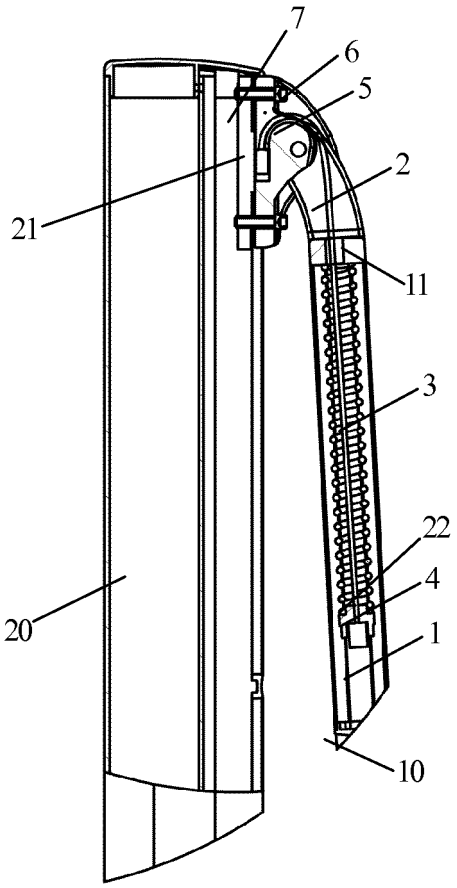

Fig 3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2011/083581

A. CLASSIFICATION OF SUBJECT MATTER

See the extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: A45B, E04H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNABS, CNTXT, CNKI, DWPI, VEN: compressed spring/pressure spring, labor-saving/opening-aid; umbrella, sunshade, spring, compression

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4080976 A (ASAHI KOGYO CO., LTD.), 28 March 1978 (28.03.1978), description, column 7, line 16 to column 8, line 36, and figures 5-6	1-4
A	CN 2323633 Y (PAN, Xingyuan), 16 June 1999 (16.06.1999), the whole document	1-9
A	CN 201630407 U (XIE, Yihe), 17 November 2010 (17.11.2010), the whole document	1-9
A	CN 101623143 A (LOU, Zhengrong), 13 January 2010 (13.01.2010), the whole document	1-9
A	US 4610262 A (SRPM SOC REAL PROD), 09 September 1986 (09.09.1986), the whole document	1-9

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
21 February 2012 (21.02.2012)	**15 March 2012 (15.03.2012)**
Name and mailing address of the ISA/CN: State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No.: (86-10) 62019451	Authorized officer **TAN, Feiwen** Telephone No.: (86-10) **62085532**

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2011/083581

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
US 4080976 A	28.03.1978	DE 2723189 A1	30.11.1978
		JP 53047950 U	22.04.1978
		CH 615573 A5	15.02.1980
		FR 2392623 A1	02.02.1979
CN 2323633 Y	16.06.1999	None	
CN 201630407 U	17.11.2010	None	
CN 101623143 A	13.01.2010	None	
US 4610262 A	09.09.1986	FR 2569753 A1	07.03.1986
		EP 0176454 A1	02.04.1986
		EP 0176454 B1	03.08.1986
		CA 1251373 A1	21.03.1989
		DE 3564072 D	08.09.1988

Form PCT/ISA/210 (patent family annex) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2011/083581

A. CLASSIFICATION OF SUBJECT MATTER

A45B 25/14 (2006.01) i

A45B 25/16 (2006.01) i

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CN ZL97249802 **[0002]**