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**MECANISMO ELECTRICO
DE SOMBRIJA Y TELAMEN**

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71. SOLICITANTE

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SOLICITUD DE :

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Patente de Invención.

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Patente de Modelo de Utilidad

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Capítulo I

☒

Capítulo II

②

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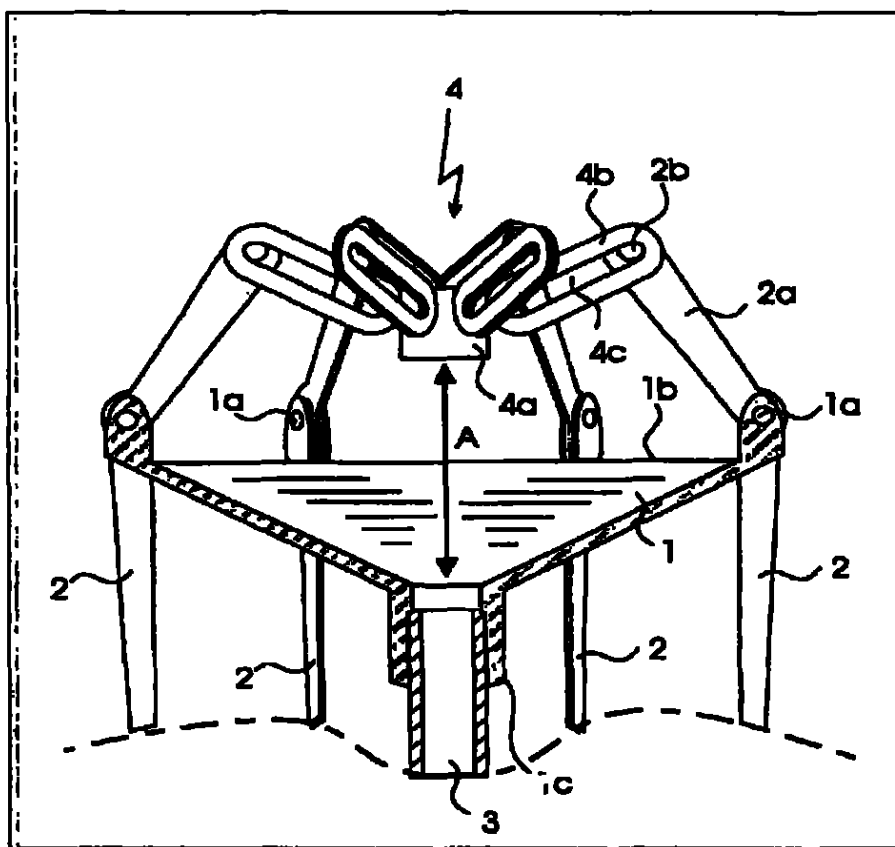
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Anexos

- ☒ Comprobante de pago de la tasa de presentación de la solicitud
- ☐ Documento que acredite la existencia y representación legal cuando el solicitante sea persona jurídica
- ☐ Poderes, si fuere el caso
- ☐ Documento de cesión del inventor al solicitante o a su causante
- ☐ Declaraciones
- ☒ Copia de la solicitud internacional (resumen, descripción, reivindicaciones, dibujos)
- ☐ Traducción simple de la primera solicitud, si se reivindica prioridad
- ☒ Copia del examen preliminar internacional efectuado por la Autoridad Internacional de Examen Preliminar (IPEA)
- ☐ Traducción del examen preliminar internacional efectuado por la IPEA
- ☐ De ser el caso, copia del contrato de acceso
- ☐ De ser el caso, documento que acredite la licencia o autorización de uso de conocimientos tradicionales de las comunidades indígenas
- ☐ De ser el caso, certificado de depósito del material biológico
- ☐ Arte final 12 x 12
- ☐ De ser el caso, información sobre otras solicitudes de patente o títulos en el extranjero por el mismo titular o su causante, relacionadas parcial o totalmente con la invención de esta solicitud
- ☐ De ser el caso, modificaciones efectuadas a la solicitud internacional

⑪

FIGURA CARACTERISTICA:



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solicito la concesión de la patente

NOMBRE: MAURICIO JARAMILLO CAMPUZANO

FIRMA:

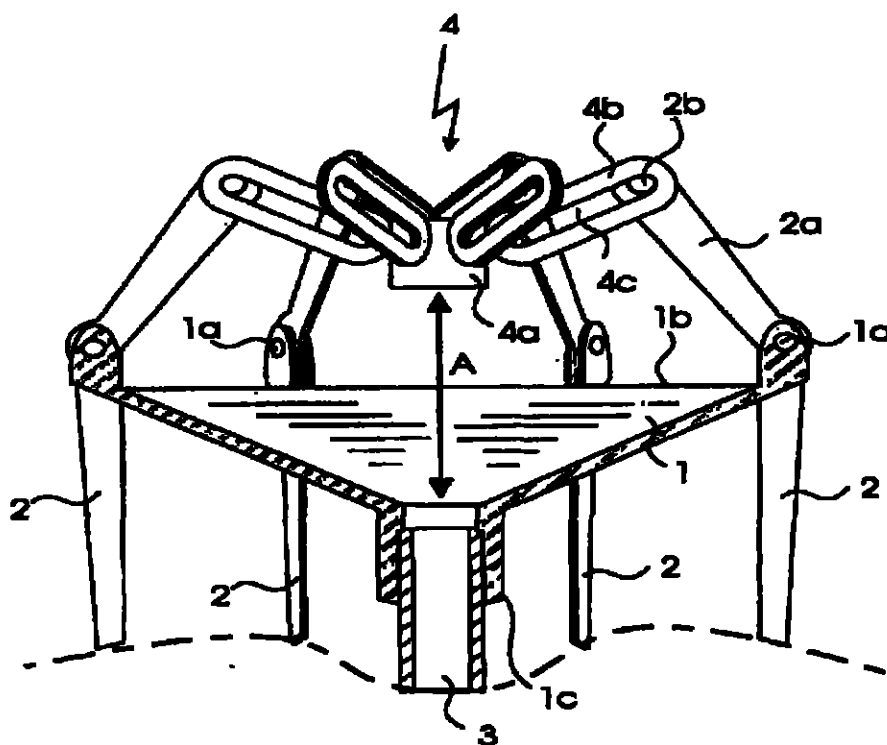
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 Industria y Comercio SUPERINTENDENCIA		SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO DIVISION DE NUEVAS CREACIONES EXTRACTO PARA PUBLICACIÓN SOLICITUD DE PATENTE DE INVENCION PCT	
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(54) Título: MECANISMO ELECTRICO DE SOMBRILLA Y TELAMEN			

Resumen - Reivindicación(es):

RESUMEN

Se describe un mecanismo conductor de telamen para sombrillas manuales. El mecanismo conductor de telamen es especialmente útil para sombrillas eléctricas, aunque se puede usar también para sombrillas operadas manualmente. El mecanismo conductor de telamen tiene movimiento corto entre los estados abierto y cerrado de la sombrilla, y se basa en juntas de pasador y cursor, entre las costillas de la sombrilla y entre un miembro conductor de telamen, que permite un telamen sin puntal (es decir, un telamen sin restiradores que se extienden entre el poste de sombrilla y las costillas). Se describe también una costilla de sombrilla que tiene un extremo flexible, especialmente útil para sombrillas sin puntal. Se describe también una sombrilla eléctrica sin puntal, que comprende el mecanismo conductor de telamen y las costillas de extremo flexible, que incluye modalidades de telamen de un solo doblamiento y de doblamientos múltiples.



PCT REQUEST

Original (for SUBMISSION)

0	For receiving Office use only	
0-1	International Application No.	
0-2	International Filing Date	
0-3	Name of receiving Office and "PCT International Application"	
0-4	Form PCT/RO/101 PCT Request Prepared Using	PCT-SAFE [EASY mode] Version 3.50 (Build 0002.169)
0-5	Petition The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty	
0-6	Receiving Office (specified by the applicant)	Israel Patent Office (RO/IL)
0-7	Applicant's or agent's file reference	159609.7 DAB
I	Title of invention	ELECTRICAL UMBRELLA AND CANOPY MECHANISM
II	Applicant	
II-1	This person is	applicant only
II-2	Applicant for	all designated States except US
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II-7	State of residence	IL
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III-1-7	State of residence	IL

PCT REQUEST

Original (for SUBMISSION)

IV-1	Agent or common representative; or address for correspondence The person identified below is hereby/ has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:	agent
IV-1-1	Name	REINHOLD COHN AND PARTNERS
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IV-1-3	Telephone No.	972-3-7109314
IV-1-4	Facsimile No.	972-3-7109407
IV-1-5	e-mail	dabarash@rcip.co.il
V	DESIGNATIONS	
V-1	The filing of this request constitutes under Rule 4.9(a), the designation of all Contracting States bound by the PCT on the International filing date, for the grant of every kind of protection available and, where applicable, for the grant of both regional and national patents.	
VI-1	Priority claim of earlier national application	
VI-1-1	Filing date	26 April 2004 (26.04.2004)
VI-1-2	Number	161621
VI-1-3	Country	IL
VI-2	Priority claim of earlier national application	
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VI-2-3	Country	US
VI-3	Priority claim of earlier national application	
VI-3-1	Filing date	05 December 2004 (05.12.2004)
VI-3-2	Number	165554
VI-3-3	Country	IL
VI-4	Priority document request The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) identified above as item(s):	VI-1, VI-3
VI-1	International Searching Authority Chosen	European Patent Office (EPO) (ISA/EP)

PCT REQUEST

Original (for SUBMISSION)

VII-2	Request to use results of earlier search; reference to that search		
VII-2-1	Date	27 April 2005 (27.04.2005)	
VII-2-2	Number	RS 112381 IL	
VII-2-3	Country (or regional Office)	EP	
VIII	Declarations	Number of declarations	
VIII-1	Declaration as to the identity of the inventor	-	
VIII-2	Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent	-	
VIII-3	Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application	-	
VIII-4	Declaration of inventorship (only for the purposes of the designation of the United States of America)	-	
VIII-5	Declaration as to non-prejudicial disclosures or exceptions to lack of novelty	-	
IX	Check list	number of sheets	electronic file(s) attached
IX-1	Request (including declaration sheets)	4	✓
IX-2	Description	33	-
IX-3	Claims	4	-
IX-4	Abstract	1	✓
IX-5	Drawings	9	-
IX-7	TOTAL	51	
	Accompanying items	paper document(s) attached	electronic file(s) attached
IX-8	Fee calculation sheet	✓	-
IX-17	PCT-SAFE physical media	-	✓
IX-19	Figure of the drawings which should accompany the abstract	1	
IX-20	Language of filing of the international application	English	
X-1	Signature of applicant, agent or common representative		
X-1-1	Name	REINHOLD COHN AND PARTNERS	
X-1-2	Name of signatory	KOZLOVICH, Nick	
X-1-3	Capacity	Agent for REINHOLD COHN AND PARTNERS	

169609.7 DAB

PCT REQUEST

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10-1	Date of actual receipt of the purported international application	
10-2	Drawings:	
10-2-1	Received	
10-2-2	Not received	
10-3	Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application	
10-4	Date of timely receipt of the required corrections under PCT Article 11(2)	
10-5	International Searching Authority	ISA/EP
10-6	Transmittal of search copy delayed until search fee is paid	

FOR INTERNATIONAL BUREAU USE ONLY

11-1	Date of receipt of the record copy by the International Bureau	
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ELECTRICAL UMBRELLA AND CANOPY MECHANISM

FIELD OF THE INVENTION

The present invention relates to the field of hand held umbrellas.

BACKGROUND OF THE INVENTION

Umbrellas that can be opened automatically by triggering a compressed
5 spring, are well known in the market. Those spring loaded umbrellas has the
advantage of easy opening, however they have also disadvantages accompanying
their spring mechanism. Firstly, their opening is un-controlled after triggering,
that is once the spring has triggered on by pressing and releasing its stopper
tooth, it cannot be stopped. For example, one who wants to exit a car cannot
10 open the canopy partially so it could be passed through the door and
simultaneously protect from rain and snow during exiting. Secondly, the opening
is aggressive, with a risk that the edges of the opened canopy will hurt people in
its close proximity. Furthermore, when the umbrella is to be folded, excessive
hand power should be exerted in order to close the canopy while retracting the
15 spring for a future opening. It is not only the force that should be exerted, the
operation itself is uncomfortable since it requires both hand of the user, one for
holding the umbrella and the other for pulling the canopy retraction handle,
wherein the motion of the retracted canopy threatens to hurt the user in case the
umbrella is held too close to the body. The folding procedure ends only after
20 returning the stopper tooth to the initial position, which is not very easy
accomplish while the umbrella spring is tensely drawn in full. Failing to return
the stopper tooth properly, will cause a sudden aggressive and unintentional
opening of the umbrella. The operation of commonly available spring loaded
umbrellas, is therefore considered not very comfortable to adults, and very
25 uncomfortable to children, to elders, and to disabled ones.

In non automated umbrellas both - opening and closing operations requires both hands of the user to operate, one for holding the umbrella and the other for pushing the canopy open or for pulling it close. In both, the umbrella should be held distantly in order to eliminate possible hurting by the moving canopy. Furthermore, when a wet umbrella is being closed, the user is normally careful not to fold it close to his body in order to eliminate rain water fall onto his dry clothes. As can be appreciated, both spring loaded or non automated umbrellas are required to be closed remotely from user's body, while using both hands.

10 It is therefore a need for an umbrella that could be opened and closed automatically, by one hand activation, wherein the operation can be paused, stopped or canceled at any given moment, allowing for partial opening e.g. in order to allow passing through a narrow passageway.

Several patents were issued, disclosing automated mechanisms for hand-held umbrellas, based on electrical motor drive. US4,572,226; US5,213,122; US5,141,010; US5,213,122 and EP0760609 are examples for the efforts made in the last decades for developing hand-held umbrellas having electrical motor drive. In spite of the efforts made, there is no evidence to a commercial success to any type of electrical umbrellas, and for several decades the only automated umbrellas available in the worldwide markets are half automated umbrellas, of the type having spring for opening, wherein the closing is made manually. According to a survey especially ordered by the inventor of the present invention, there is no electrical umbrella available in the market. As will be further discussed in the following chapters of this specification, is believed that the basic concepts adopted by the inventors of said inventions are certainly prevent a success in developing marketable electrical umbrellas.

U.S.5,711,332 discloses umbrellas especially suited for patio and recreational use. Although this patent does not relate to electrical umbrellas and is of limited relevance to hand held umbrellas as a whole, it is considered to be

relevant prior art, as will be discussed in detail in the following chapters of this specification.

It is therefore an object of the present invention to provide a motor driven mechanism for hand-held umbrellas that will overcome the preventions that
5 cause the fail of the prior art mechanisms to comply with the long felt need for a reliable and comfortably operated umbrella.

SUMMARY OF THE INVENTION

The inventor of the present invention had a basic assumption when starting to develop a successfully marketable electrical umbrella: the umbrella
10 mechanism should be designed so as to allow short movement range of the element which is driven by the motor for conducting the canopy between open and closed states. The element which is driven by the motor for conducting the canopy between open and closed states is called in other patents "rider", "collar", "guiding member", and is located inside the umbrella post and is moveable along
15 the post. In the present invention this element will be referred to as "canopy conducting element", and it is located and moveable outside of the post, from above. In the context of the present invention 'short movement range' relates to a movement distance not greater than 20% of the length of the post, preferably not greater than 14% of it, and most preferably lesser than 7% of it. For example, in a
20 first operating model that was built, the post length is 80 centimeters and the step of the element which conducts the canopy between open and closed states (i.e. the "conducting element") is of 4 centimeters length, that is about 5% respective to total post length. In order to achieve full canopy deployment through such a short movement range, it is required that the canopy ribs will be driven by a short
25 lever arm which shall be located near the close end of each of the ribs (i.e. the rib end that is close to the post). A new innovative short movement conducting mechanism for operating this short lever arm was developed by the inventor of the present invention in order to comply with the requirement of short movement range of the conducting element.

Accordingly the present invention relates to a short movement less components canopy conducting mechanism for umbrellas, especially useful for hand held umbrellas, and essentially recommended for motor driven hand held umbrellas, comprising (a) a hollow pole of a small diameter (i.e. of a diameter
5 similar and in any event not very much larger than the diameter of poles of conventional hand held umbrellas, that is much lesser than the diameter of posts of stationary umbrellas) having a top end and a bottom end ; (b) a canopy conducting member comprising a plurality of a first part (i.e. a pin, or a slide) of a pin and slide joint, spaced angularly and rigidly connected about a common
10 central point ; (c) a plurality of angularly spaced canopy ribs each having a short lever arm comprising a second part (a mate of the first part) of the pin and slide joint, the lever is capable of pivoting the rib about a pivot point located between the short lever arm and the rib, the lever arm forms an angle of between 120 degrees and 165 degrees, and preferably of about 135 degrees, with the rib, about
15 the pivot point, the rib is pivotably connected at the pivot point to a spacer keeping the pivot point distantly from the hollow pole; (d) means for moving the canopy conducting member for a short movement between two vertically spaced positions above the top end of the pole, a most lower position wherein the first of the pin an slide joints are close to the top end of the pole and wherein the canopy
20 is open, and a most upper position wherein the first of the pin an slide joints are distant from the top end of the pole and wherein the canopy is closed.

Reference is herewith made to the U.S. Patent No. 5,711,332 which discloses in figures 2 and 3 a patio umbrella in its opened and closed states, respectively. The umbrella is driven open and closed by the movement of a
25 plunger (14) along the post (12). The plunger (14) is connected to the plurality of ribs (34) of the umbrella through a plurality of link connections (20) connected to the ribs (34) by first link connections (22) and to the plunger (14) by second link connections(24). In order to open the umbrella (as shown in Figure 2) the plunger (14) should be moved downwardly inside the post (12) thus pulling the link
30 connections (20) inside the post, which in turn pull the ribs (34) to pivot about

the rib connections (40) to the open state. In order to close the umbrella, the plunger (14) is moved upwards, pushing the link connections (20) out of the post to the position shown by Figure 3. The mechanism of the umbrella of this U.S.5,711,332 is inappropriate for use in hand held umbrellas, from several reasons. First, although the post of patio umbrellas is of a diameter sufficient to allow link connections to move inside the post (as in Figure 2) or can easily be so designed, hand held umbrellas has posts of relatively small diameters (any 100% enlargement of post diameter increases post weight by 314% assuming the same raw material is used) which does not allow for insertion of link connections inside the post. Furthermore, each link has two pivoting connections (22) and (24) thus in total consists of 3 parts (i.e. one link member plus its two connections) that should be assembled during manufacturing of the umbrella, thereafter withstand repeated operation cycles, and last for the life term of the umbrella. In stationary patio umbrellas this maybe not very problematic connection type, since the link connections could be made of stiff massive material, and since the umbrella is normally not being opened and closed more than once or twice a day. In hand held umbrellas however, the demand for a small post diameter and for compact umbrella dimensions on one hand, do not allow for using massive materials for the links and for their connections to the plunger (which diameter of the plunger is smaller then the post, and should allow at least five or six pivoting link connections spaced angularly around its circumference) while on the other hand, hand held umbrellas are normally being opened and closed several times a day, namely much more times comparing to patio umbrellas.

Another disadvantage of the mechanism disclosed by the U.S.5,711,332 patent is that there is a linkage between the length of the link (20), the distance of the rib connection (40) from the post (12), and the length of movement of the plunger inside the post. For example, in the illustrated umbrella the distance between the rib connection (40) and the post (12) substantially equals to the diameter of the post. In case the distance of the rib connection (40) will be

designed as twice much as it is now, the length of the link will have to be enlarged accordingly, and the step of the plunger between open state and closed state of the umbrella will also be increased accordingly. Furthermore, the arc shape of the enlarged links shall need an enlarged diameter of the post so it could
5 be accommodated and be freely moved inside the post.

Contrarily to the U.S. 5,711,332, the mechanism according to the present invention is (a) free of link type connections which move and change orientation inside the post, thus the mechanism according to the present invention allows to minimize the pole diameter to any required measure; (b) free of double pivoting
10 joint, which in the U.S.5,711,332 connect the links from their one side to a conducting element moving inside the post and from their next side to the ribs, the mechanism of the present invention has less components, and less moving components, wherein there is only one moving connection which is comprised of a massive pin and slide joint that can easily be assembled and maintained, and
15 which dimensions are not restricted by the diameter of the pole since it is not moving inside the pole; (c) free of linkage between measure of umbrella parts, the pin and slide joint of the present invention allows for designing the distance between the rib pivot joint and the pole without changing the movement range of the conducting member and without changing the pole diameter.

20

The short movement less components canopy conducting mechanism for of the present invention is especially useful for the production of motor driven electrical umbrella. Due to the short movement of the canopy conducting member -

25 A) less rounds of the electrical motor of the umbrella are required for opening and closing the umbrella;

B) the umbrella can be built from less parts thus having the benefit of reduced weight and improved durability (e.g. comparing to other electrical umbrella designs having struts and strut joints for supporting the canopy ribs,
30 which struts are driven by a collar for opening or closing the umbrella);

C) due to its strutless construction the canopy can be lowered adjacent the user's head for a maximal protection from rain, snow, and storm winds.

D) a new facile override mechanism can be used (as will be further discussed in detail);

5 E) an auxiliary hand grip could be added on the umbrella pole near the canopy in order to allow both user hands efficiently gripping the umbrella when complying with storm winds; and

F) more innovative and attractive design could be achieved (i.e. without struts), which may assist in keeping the product competitive despite of its
10 naturally increased price deriving from its increased manufacturing costs respective to non fully automated umbrellas.

G) mass production of single size conducting mechanism can be utilized for different sizes of umbrellas (e.g. an umbrella collection for children and for adults may use the same conducting mechanism). This is in contradiction to strut
15 based umbrella constructions which have a linkage between the canopy size, the pole length, the strut length, and the movement extent of the rider.

According to said paragraph G, the present invention relates not only to a conducting mechanism supplied with the ribs assembled therein, but also to a canopy conducting mechanism for hand held umbrellas (that can be designed for
20 mass production for use with various types and sizes of canopy ribs), comprising; (a) canopy conducting member having a plurality of a first part of pin and slide joint rigidly connected and angularly spaced about a common central hub; (b) a spacer having a central lower end adapted for being connected to a pole of an umbrella, and a plurality of pivot connection points remotely and angularly
25 spaced about the central lower end; wherein said mechanism may receive various types of ribs which may differ in their shape, length, and length of the flexible part located at their distal end (see Figure 10), the ribs of the desired type can then be connected to the pivot connection points of the spacer.

The present invention further relates to electrical motor driven hand-held umbrella having a canopy that can be conducted at any desired position between an open state and a closed state by means of a conducting element movable between two points from above the pole of the umbrella, the umbrella comprises
5 a shortened extent screw thread for driving the conducting element between the open and closed states. Preferably, in the various embodiments of the present invention, the motion extent of the conducting element is of effective length of between 20% and 100% comparing to the maximal diameter of the umbrella in its closed state. Most preferably, and according to the preferred embodiments of
10 the present invention, the motion extent of the conducting element is of effective length of between 50% and 95% of the max diameter of the umbrella in its closed state. The term 'conducting element' refers to an element or a combination of elements having back and forth motion along a predetermined extent from above a central pole of the umbrella, wherein said motion conducts the canopy
15 respectively between a close state and an open state. The term 'effective length' refers to the actual extent of motion of the conducting element between its two extreme positions from above the pole (respective to close and open states of the canopy), regardless of what is the length of the threading through which motion of the element is achieved (however, preferably the length of the threading is not
20 longer than required, and the threading portion is connected to the electrical motor through plain planner parts having reduced weight comparing to a screw, in order to decrease the total umbrella weight).

As will become more apparent from the following description, and as mentioned above regarding the short movement less components canopy
25 conducting mechanism for hand held umbrellas according to the present invention, the reduction in the movement extent of the canopy conducting element allows for reducing the number of elements from which the umbrella is constructed, allows to increase the durability of some of those elements, allows to maintain a reasonable weight of the complete umbrella, and allows for
30 directing a collection of safe small sized and easily operated electrical umbrellas

for children, even small ones. Said and other advantages of the electrical umbrella of the present invention are essential in possessing a significant rank in the global markets, which is essential for maintaining a commercial presence, and making realistic the dream of electrical umbrella, contrarily to all other
5 inventions which were failed in successful development and/or commercialization of electrical umbrellas.

In order to allow for the shortened extent movement of the conducting element, the umbrella of the present invention is designed to be conducted open through the near end of its ribs, and so the canopy could be fully deployed by a
10 levering center concentrated near the top end of the umbrella. The levering center of the umbrella has a diameter similar to the max diameter of the umbrella in its closed state, such that according to the preferred embodiments of the present invention, in an open state of the umbrella no struts extend between the canopy ribs and the pole of the umbrella beyond said levering center. This is contrarily to
15 prior art motor operated umbrellas in which the levering center of the umbrella includes struts (stretchers) which protrude from a runner of the umbrella and are of significant length as required to allow a smooth motion of the runner along the post of the umbrella and for essential support of the canopy. Negating the need in struts in the canopy conducting mechanism allows to reduce the number of
20 elements from which the umbrella is constructed, simplifies its manufacturing process, assemblage and maintenance, and allows for enforcing the canopy ribs by thickening, thus having more massive and durable umbrella construction, without significantly increasing the weight of the complete umbrella. The absence of struts allows to provide (according to various embodiments of the
25 present invention) the umbrella with an internal hand grip located near the top end of the umbrella post, which help in stable gripping of the umbrella during storm winds, and enable lowering of the umbrella close to the user's head. This is contrarily to prior art umbrellas which have struts occupying the space around the top portion of the post. It should be however clarified that the present
30 invention does not restrict its scope to a strutless construction, and if one so

wishes he may add struts for passive reinforcement, wherein the umbrella will still defer from prior art umbrellas by having the short movement canopy conducting element using for canopy deployment without active help of struts (struts are used for passive support or stabilization purpose only)

5 Another advantage of the absence of struts visible between the canopy ribs and the post is a more pleasant and attractive design. This allows also to cover the ribs from both sides of the canopy (i.e. by having a double sheet canopy, or by having cloth sleeves extending non interruptedly along the ribs for covering, such that the ribs may be hidden according to various embodiments of the present
10 invention).

As mentioned above, the strutless construction of the umbrella allows for having shortened extent screw thread of the conducting mechanism, useful for erecting the canopy open by a reduced number of motor rounds which allows for faster opening and closing operations, and which reduces motor hours (which is
15 equivalent to reduction in motor wearing).

Accordingly, the present invention further relates to a short movement less components conducting mechanism for hand held umbrellas, especially useful for motor driven hand held umbrellas, comprising (a) a hollow pole of a small diameter (i.e. of a diameter similar and in any event not very much larger than
20 the diameter of poles of conventional hand held umbrellas, that is much lesser than the diameter of posts of stationary umbrellas) having a top end and a bottom end ; (b) a canopy conducting member comprising a plurality of a first part (i.e. a pin, or a slide) of a pin and slide joint, spaced angularly and rigidly connected about a common central point ; (c) a plurality of angularly spaced canopy ribs
25 each having a short lever arm comprising a second part (a mate of the first part) of the pin and slide joint, the lever is capable of pivoting the rib about a pivot point located between the short lever arm and the rib, the lever arm forms an angle of between 120 degrees and 165 degrees, and preferably of about 135 degrees, with the rib, about the pivot point, the rib is pivotably connected at the
30 pivot point to a spacer keeping the pivot point distantly from the hollow pole; (d)

electrical motor geared for moving the canopy conducting member for a short movement between two vertically spaced positions above the top end of the pole, a most lower position wherein the first of the pin and slide joints are close to the top end of the pole and wherein the canopy is open, and a most upper position
5 wherein the first of the pin and slide joints are distant from the top end of the pole and wherein the canopy is closed; (e) battery housing electrically connected for energizing the motor; (f) at least one manual switch allowing a user to control the canopy between open and closed states.

According to various preferred embodiments of the present invention the
10 electrical umbrella is further comprising load recognition circuit which stops the motor (by disconnecting the battery power) upon recognition of increase in the motor current beyond a predetermined threshold. According to the preferred embodiment of the present invention the load recognition circuit is used not only to protect the motor but also to automatically stop the motor once the canopy
15 reaches its fully opened state or once the canopy reaches its fully closed state, wherein in both states the motor is physically being blocked from continuing its revolve which in turn causes an increase in the motor current, thus activates the load recognition circuit which in turn disconnects the power from the motor. According to various embodiments, the electrical circuit of the umbrella is
20 designed such that each activation of the load recognizing circuit (that in normal circumstances is equivalent to the termination of a fully opening or of a fully closing operations of the umbrella) inverts the polarity of the power connection to the motor, such that in the next user activation the motor will revolve in an opposite direction respective to its last operation. By means of this arrangement
25 the umbrella may be provided with only one switch for both opening and closing operations, which automatically switches its role after each operation.

It should be appreciated that although the preferred embodiments of the present invention relate to a pin and slide joint connection between the conducting element and each of the ribs, the use of similar or equivalent
30 arrangements such as a telescopic connection wherein a short lever arm of a rib

moves in telescopic manner respective to a corresponding arm of the conducting element should be considered within the scope of the present invention, and as will be further claimed.

The present invention further relates to a system of rechargeable electrical umbrella comprised of (a) an electrical umbrella powered by a rechargeable battery/ies and having battery charge circuit ending with terminal contacts and of (b) a stand having a connection to an AC power network, an AC to DC converter, and at least one terminal having contacts matching the terminal contacts of the electrical umbrella; or of (c) a stand having a connection to a vehicle battery and at least one terminal having contacts matching the terminal contacts of the electrical umbrella

According to various preferred embodiments of the present invention, the electrical umbrella is provided with electronic circuit for the detection and alarming of low battery power. The alarm of low battery power is preferably through turning on a LED light.

According to various embodiments the electrical umbrella of the present invention has a back-up battery (or batteries). The back-up battery could be provided in a housing for manually replacement with the main battery upon recognition of decreasing in the power of the main battery (or batteries) wherein the replacement is either by physical replacement or by activating an electrical switch which switches between the electrical circuits, or could be switched automatically by means of switching circuit governed by the circuit for detection of low battery power, wherein in such a case there is an alarming LED showing that the backup battery is in use . The back-up battery can be either of rechargeable or of non-rechargeable type. In case that the main battery is of rechargeable type and having recharging circuit inherent to the umbrella (i.e. the batteries are recharged in their housing inside the umbrella), and the back-up battery is also of rechargeable type, then there is preferably provided a separate recharging circuit for the backup battery capable of recognizing the presence of external power and connecting the backup battery for simultaneous recharging

with the main battery, wherein after disconnection of the external power, the backup battery is disconnected and maintained in full power until low power of the main battery is detected. In case that the main battery is of rechargeable type and having recharging circuit inherent to the umbrella (i.e. the batteries are
5 recharged in their housing inside the umbrella), and the back-up battery is of non rechargeable type, then there is provided a switch which prevents mistaken charging of the non- rechargeable battery (the same switch which replaces between the main battery and the backup one).

According to various embodiments of the present invention the electrical
10 umbrella is further comprising location recognizer means allowing for fast locating of the umbrella. The location recognizer means is comprised of a first and a second electronic circuits, the first one is attached to or located inside the umbrella, and the second one is held by the user, wherein an alarm or a beep sound is generated (a) upon the lost of communication between the two circuits
15 (in such a case the alarm will occur at the circuit held by the user) , or (b) upon an activation command generated by the user in order to locate the umbrella (in such a case the alarm will occur at the circuit attached to the umbrella). Preferably, each umbrella will have its unique identification code such that one can locate and recognize his own umbrella from a plurality of similar umbrellas.
20 The location recognizer circuit is preferably powered by an inherent battery, i.e. separately from the main umbrella battery, in order to enable locating the umbrella even in cases where the main battery is empty. Accordingly, the location recognizer circuit can be placed in the top portion of the umbrella, near the lifting center and distantly from the handle of the umbrella where the main
25 battery is located.

The present invention further relates to canopy conducting mechanism for multifold canopies. This embodiment differs from the embodiments for plain folding canopies by further comprising a plurality of pivot joints remotely and angularly spaced about the central lower end each is adapted for receiving a rib

stretcher to be associated with a rib receivable by a corresponding pivot connection point.

The present invention relates also to a situation wherein the canopy conducting mechanism is further comprising the canopy mechanism. The canopy
5 mechanism for multifold canopies includes: (i) multifold ribs pivotally connected to the pivot connections and further form a plurality of pin and slide joints with the conducting member; and (ii) a plurality of rib stretchers, pivotally connected to respected pivot joints and to respective multifold ribs.

Furthermore the present invention relates to electrical umbrella
10 comprising a canopy conducting mechanism according to the embodiment of multifold canopy. According to this embodiment the canopy conducting mechanism of the multifold canopy is connected at its lower end to the top of a telescopic pole, the telescopic pole is connected at its lower end to a main handgrip of the umbrella, wherein the canopy conducting member is driven along
15 a short path between an uppermost position and a lowermost position from above the pole, corresponding to a closed state and an open state of the umbrella, respectively, upon rotation of an electrical motor located near or inside the main handgrip, powered by batteries located nearby, and transmitting its rotation to a screw or to a helical shaft adapted to convert the rotation into vertical movement
20 of the conducting member and into a telescopic movement of at least two telescopic sections of the pole.

According to various embodiments the umbrella is provided with decorative illumination e.g. through LEDs. Such light may be distributed over the canopy through optic fibers.

25 According to various preferred embodiments the umbrella of the present invention is provided with a battery recharger having integral power plug concealed inside the handgrip and may be pulled up, opened or unfolded for connecting to a wall outlet.;

According to various preferred embodiments the umbrella of the present
30 invention is cooperative with a remote controller through wireless

communication means situated at a concealed compartment, preferably from above the upper connection hub.

The umbrella may further have voice or sonic alarm indicative of various abnormal states that may occur during its use, and that are recognizable by its
5 sensors and its electronic utility circuits.

According to various preferred embodiments the handgrip is cushioned or having a padding protection against downfall damages.

According to various embodiments the umbrella of the present invention is further comprising folding or pull out foots accommodated in the handgrip and
10 useful for positioning of the umbrella uprightly.

BRIEF DESCRIPTION OF THE DRAWINGS

In order to understand the invention and to see how it may be carried out in practice, a preferred embodiment will now be described, by way of non-limiting example only, with reference to the accompanying drawings, in which:

15 Fig. 1 illustrates a first preferred embodiment of a short movement canopy conducting mechanism according to the present invention (in a closed umbrella state).

Fig. 1A illustrates a partial view of the short movement canopy conducting mechanism of Fig. 1 (in an opened umbrella state).

20 Fig. 2 illustrates a short movement canopy conducting mechanism according to the present invention especially adapted for use of electrical umbrellas, and illustrating parts of the electrical umbrella.

Fig. 2A illustrates a bottom view of a flange of the conducting mechanism.

25 Fig. 2B illustrates a top view of an embodiment of umbrella pole illustrated by Figure 2.

Figures 3 to 5 illustrate various positions describing the operation of the conducting mechanism and of the override arrangement illustrated by Figure 2.

Figs. 6, 6A and 6B illustrate partial views of another preferred embodiment of an electrical umbrella according to the present invention.

Fig. 7 illustrates a concealed compartment located at the covering of the conducting mechanism, useful for placement of utility electronic circuits.

5 **Fig. 8 illustrates a partial isometric cross sectional view of the lower end of the electrical umbrella according to the present invention, with the main handgrip and the electrical components located inside.**

Fig. 8A illustrates the overload detector which stops the motor upon recognition of load exceeding a predetermined threshold.

10 **Fig. 8B illustrates the 'low battery' detection and alarm circuit.**

Fig. 9 illustrates a general view on an electrical umbrella according to the present invention (without the canopy cloth).

Fig. 10 illustrates the distal end of a rib according to the best mode of the present invention.

15 **Fig. 11 and 12 illustrate two different designs of the relation between the canopy cloth and its conducting mechanism.**

Fig. 13 illustrates an embodiment of a canopy having aeration channels.

Fig. 14 illustrates short movement canopy conducting mechanism according to another embodiment of the present invention, adapted for multifold
20 **canopies having telescopic umbrella pole, in a closed state of the umbrella.**

Fig. 14 A illustrates a top view of the canopy conducting member of the embodiment of Fig. 14 as it is situated in its guide.

Fig. 15 illustrates the same embodiment illustrated by Fig. 14, in an open state of the umbrella.

25 **Fig. 16A to 16C illustrates in partial vertical cross section view three states during the operation of a canopy conducting mechanism according to another preferred embodiment pin and slide joint.**

Fig. 17 illustrates a partial lateral cross section view of the canopy conducting mechanism of the embodiment illustrated by Figs. 16A to 16C in the
30 **state illustrated by Fig. 16 B.**

Fig. 18 illustrates a side view of a canopy rib according to the embodiment illustrated by Figs 16A to 17, made of one piece of material.

Fig. 19 illustrates a top view of the canopy rib of Fig. 18.

DETAILED DESCRIPTION OF THE INVENTION

5 The present invention will be further explained in detail by Figures 1 - 13.

These Figures are solely intend to illustrate several preferred embodiments of the present invention and in no manner intended to limit its scope as defined by the claims.

Fig. 1 illustrates a short movement canopy conducting mechanism for
10 umbrellas, especially hand held umbrellas, and utmost essential for motor driven hand held umbrellas, according to the present invention. The conducting mechanism is comprised of; (a) a base member (1) (in the context of the present invention referred to also as "spacer") having a plurality of pivot connections (1a) spaced angularly around its outer circumference (1b) for the connection of
15 corresponding canopy ribs (2), each of which can thus be pivoting about its pivot connection (1a) between a closed state (the illustrated state) and an open state (the state illustrated by Figure 1A) of the umbrella. The ribs are conducted between the open and the closed states by means of a lever arm (2a) being the close end portion of the rib (the distal end of the rib can be seen in Figure 10, and
20 is made of a flexible material in order to allow stretching the canopy in a mushroom shape (i.e. with lowered circumference end). At the end of the lever arm(2a) there is a pin (2b) slidably located inside a slide (4c) formed in a slide bar (4b), altogether forming a pin and slide joint. A plurality of the slide bar (4b), one per each canopy rib, are rigidly connected, and angularly spaced from one
25 another, about a central hub (4a). The sliding bars (4b) and the hub (4a) form together the canopy conducting member (4), which is moveable along the path illustrated by arrow A, between an uppermost position (the illustrated position) wherein the hub is in an extreme distant position from above the top end of a pole (3) of the umbrella, and between a lowermost position (the position

illustrated in figure 1A) wherein the hub is located in an extreme close position near and above the top end of the pole (3). The movement of the conducting member (4) between said two extreme positions along the path A, conducts the plurality of ribs (2) simultaneously, between a closed canopy state (the illustrated state) corresponding to the uppermost position of the hub (4a) and between an open canopy state (the state illustrated by Figure 1A) corresponding to the lowermost position of the hub (4). The base member (1) has a lower flange (1c) adapted for joining to the top end of a pole (3) of an umbrella.

As can be appreciated, the short movement canopy conducting mechanism which is comprised of the conducting member (4), the base member (1), and the ribs (2), can be manufactured in a mass production and be supplied to umbrella producers, which can then connect it to a post, and cover it with a canopy, according to their own design, wherein the hub (4a) can be connected (either by welding, by having an inner threading for receiving screw connection, or by having a hole open on both ends for receiving a rode reinforced by pressure rings, or through any other acceptable connective means) to a top end of a rod which passes through the hollow middle of the pole (3) and is connected on its next rod end to appropriate driving mechanism selected and designed by each specific producer according to his own product requirements and needs. Different canopy sizes can be produced using the same base member and the same canopy conducting member with different sizes of ribs. This could be performed by means of ribs produced in different sizes or, alternatively, by using ribs of adjustable size.

Fig. 1 A illustrates a partial view of the canopy conducting mechanism of Fig. 1, in an open state of the umbrella. In this state, the hub (4a) is in its lowermost position from above the top end of the pole (3), i.e. near the lower flange (1c) at the bottom of the base member. During shortened extent movement of the conducting element from the uppermost position illustrated by Fig. 1 to the lowermost position illustrated by Fig. 1A, the sliding bars (4b) are forcing the pins (2b) downwards such that each pin (2b) slides along its slide (4c) during the

downward motion of the conducting member, thus lowering the short lever arm (2a) and lifting the rib (2) in a pivoting motion about the pivot connection (1a).

Fig. 2 illustrates a short movement canopy conducting mechanism according to the present invention especially adapted for use in electrical umbrellas. Accordingly, the figure contains parts of an electrical umbrella, as they are combined with the short movement canopy conducting mechanism. The hub (4a) of canopy conducting member according to the present embodiment has a helical thread inside, matching a helical shaft (5). Upon rotation of the helical shaft, and depending in the rotation direction, the conducting member is moved between its uppermost and lowermost positions from above the hollow pole (13). The rotation of the helical shaft (5) is through a rotation transmission rod (5b) passing inside the pole and connected at its lower end (not illustrated in this figure) to an electrical motor (the connection is through appropriate gear adapting the motor torque to the expected resisting force of the canopy upon deployment). As can be appreciated, the inner diameter of the pole through which passes the transmission rod can be reduced to a minimal dimension, having the only restriction it should accommodate the rotating transmission rod, wherein the diameter of the transmission rod itself can be reduced as much as it can withstand the resisting forces which may develop during motor operation, without winding. The embodiment illustrated by Fig. 2 further disclose an override mechanism which allows to open and close the umbrella manually, as may be required in case of malfunction in the motorized system, and in case the batteries becoming empty. The advantage in this specific override arrangement is that it does not deal with the motorized system, which remains connected and ready to use regardless of user activities, while freeing the user from the responsibility to the accurate connection and disconnection of sensitive technical systems and to their proper operation. This simple and user friendly override system is one of the beneficial results deriving from the development of the unique canopy conducting mechanism according to the present invention. The override arrangement is comprised of an extended flange (11c) of the base member (11),

which allow a telescopic motion of the pole (13) with respect to the flange (11c). Accordingly, and differently than the embodiment illustrated in Fig. 1, in the present embodiment the canopy conducting mechanism is not being permanently fixed to the upper end of the pole, and the flange (11c) of the present
5 embodiment differs from the flange (1c) of the embodiment illustrated by Fig. 1, in that it has a greater length, i.e. a length that may allow a telescopic motion of the flange with respect to the pole, to an extent sufficient for elevating the bottom of the base member (11) until it reaches the conducting member (4). The greater length of the flange (11c) comparing to that of (1c) of Fig. 1, can be achieved
10 either by producing it in a greater length, or by connecting to the flange (1c) an extension for having a length similar to that of (11c).

As an alternative to the permanent connection between the flange (1c) and the pole (3) of the embodiment illustrated by Fig. 1, the flange (11c) of the present embodiment is releaseably fixed to the pole (11) of the electrical
15 umbrella, by means of screw-in handgrip (6) which tightens the lower end (11e) of the flange to the pole (13), and by means of a catch (11d) and groove (13a) connection which helps in positioning of the flange (11c) in an appropriate predetermined location with respect to the pole (13) before tightening them together by rotating the handgrip. When a need rises (e.g. batteries are empty),
20 the screw-in handgrip can be rotated in the appropriate direction (let say counterclockwise) a few rotations for releasing the flange from tightly embracing the pole, then by pressing the catch lever (11d1) for retracting the catch (11d) from the groove (13a) the flange (11c) can be freely moved up and down in a telescopic motion about the pole (13) by holding the hand grip and moving it in
25 the desired direction, wherein pulling it down will pull the flange and the base member (11) away from the conducting member (4) thus closing the canopy (in case it was fully or partially opened), and wherein pushing it (i.e. the handgrip) up will push the flange and the base member (11) towards the conducting member (4) thus opening the canopy (in case it was fully or partially closed).
30 After the canopy is brought to the desired position, the handgrip (6) should be

22

rotated clockwise for re-tightening the end portion (11e) of the flange to the pole in the direction of arrows B. The rotation of the handgrip (6) clockwise is designed so as to decrease the diameter of the end portion (11e) of the flange, due to vertical grooves (11f) made in that end portion and allow for a slight
5 change in the diameter of the end portion of the flange upon rotation of the handgrip (6), which change is sufficient to tighten the flange to the pole or to release it from the pole, according to the relative overlapping between the threading of the handgrip and the corresponding threading of the end portion of the flange.

10 According to the preferred embodiments of the present invention the override screw-in handgrip (6) can be located very close to the canopy since there are no stretchers or struts disturbing between the pole and the canopy. Therefore, the handgrip (6) is not only essential for the override operation, but also very helpful for gripping the umbrella by both hands, i.e. one hand is
15 gripping the conventional handgrip located at the bottom end of the pole while the other is gripping the handgrip (6) near the canopy, which is very essential when complying with storm winds. Furthermore it could be appreciated that the umbrella according to the present invention has the advantage that it could be lowered and held with the canopy adjacent the user's head, which is very
20 essential for protecting the user from wind driven rain or snow, and which can not be achieved with prior art umbrellas.

Fig. 2A illustrates a view of the bottom end (11e) of the flange, from below. In this figures it is seen how this end is divided by the vertical grooves (11f) into three sections located between the grooves, which can become closer
25 to one another by means of a pressure exerted in the direction of arrows B by clockwise rotation of the hand grip (6) of Fig. 2. When said sections become closer and tightly embrace the umbrella pole, the flange becomes fixed to the pole and a telescopic motion between them is prevented, thus canopy is maintained

Fig. 2B illustrates a top view of the pole (13), according to one optional variation, wherein the pole is made of hollow thin material (e.g. Aluminum) made by extrusion process and having a plurality of reinforcing ribs (14) forming grooves (15) in between. This grooves can be utilized for placing electrical wires that may be required according to various possible embodiments for connecting between a battery located at the bottom side of the pole and an electronic circuit or light located above the top of the pole.

As can be appreciated, the motorized system of the umbrella which includes the motor unit (not illustrated in this figure), the rotation transmission rod (5b), and the helical shaft (5) (including the location of the hub (4a) about the helical shaft), remains unchanged and is not involved with the operation of the override mechanism. This separation between the two systems (i.e. override and motorized) assures a simple reliable and user friendly device.

Fig. 3 illustrates the override arrangement illustrated by Fig. 2 as it is utilized to open the closed umbrella of Fig. 2. As can be seen the relative position between the pole (13), the rotation transmission rod (5b), the helical shaft (5) and the conducting member (4) have not been changed between Fig. 2 and Fig. 3, that is to say the motorized system maintained its state between the two illustrated situations, and no motor rotation occurred between them two (in case a motor rotation have been occurred, the hub (4a) of the conducting member would have been changing its position along the helical shaft, which is not the case). Although nothing has changed in the motorized system, the canopy ribs that were in closed position as illustrated by Fig. 2, have reached an open position in Fig. 3. This change has been achieved by freeing the flange (11c) from the pole (13) as explained in the text of Fig. 2, then pushing the handgrip (6) causing a telescopic motion of the flange (11c) about the pole (13) towards the conducting member (4), thus forcing the base member (11) to becoming closer to the conducting member (4), while lifting the ribs (2).

Fig. 4 illustrates the same mechanism illustrated by Fig. 2, after the activation of the motorized system for lifting the canopy ribs to open state. As

can be observed, the rotation of the helical shaft conducted the hub (4a) (and the conducting member (4)) to reach their lowermost position above the top of the pole (13), while simultaneously pivoting the conducting the short lever arms (2a) downwards and lifting the ribs (2) about the pivot points, accordingly. The next
5 Fig. illustrates how the override arrangement could be utilized for closing the canopy in case of 'low battery'.

Fig. 5 illustrates the mechanism illustrated by Fig. 4, wherein the canopy ribs that were in open state, have reached a closed state by means of the override arrangement. As can be seen the relative position between the pole (13), the
10 rotation transmission rod (5b), the helical shaft (5) and the conducting member (4) have not been changed between Fig. 4 and Fig. 5, that is to say the motorized system maintained its state between the two illustrated situations, and no motor rotation occurred between them two (in case a motor rotation have been occurred, the hub of the conducting member would have been changing its
15 position along the helical shaft, which is not the case). Although nothing has changed in the motorized system, the canopy ribs that were in open position as illustrated by Fig. 4, have reached a closed position in Fig. 5. This change has been achieved by freeing the flange (11c) from the pole (13) as explained in the text of Fig. 2, then pushing the handgrip (6) causing a telescopic motion of the
20 flange (11c) downwardly about the pole (13), thus forcing the base member (11) away from the conducting member, while lowering the ribs.

Figs. 2 and 3 illustrate how the override mechanism can manage between two extreme positions of the ribs when the ribs were originally in closed state, while Figs. 4 and 5 illustrate how the override mechanism can manage between
25 two extreme positions of the ribs when the ribs were originally in open state. It could therefore be clearly appreciated how the override arrangement according to the present invention could manage the ribs from any initial position that may occasionally exist, to any alternative position preferred by the user.

Fig. 6 illustrates a partial isometric cross sectional view of another
30 embodiment of the short movement canopy conducting mechanism according to

the present invention. This embodiment differs from the one illustrated by Figures 2 to 5 in several details as will be listed below.

First, the hub (4a) of the conducting member (4) is driven between its uppermost position and its lowermost position by means of hub extension member (4aa) ending with a hollow tube (64) having an inner threading matching an outer threading of a screw rod (65) being the upper end of a rotation transmission rod (not illustrated in this Fig., see Fig. 6A). When the screw rod is rotated inside the hollow tube (64) threading, the rotation is converted to a vertical motion and the hub extension member (4aa) is shifted upwardly or downwardly depending on the rotation direction of the screw rod (65) thus shifting the conducting member (4), accordingly, between a lowermost position and between the illustrated uppermost position, which corresponds to an open state and to the illustrated closed state of the umbrella, respectively. It should be appreciated that a system having the hub extension member ending with an outer threading matching an inner threading of a rod being the upper end of a rotation transmission rod, is equivalent to the system described hereinbefore, therefore included in the scope of the present invention. This remark should be noticed in general view, thus any role switching between matching parts of the present invention should be considered within the inventions scope.

Second, the flange (1c) is extended from below by means of a pipe segment (1cc), which ends with a handgrip (66) fixed to and overlapping its lower end. This handgrip is not a rotating one, and it can be used for pulling or for pushing the flange extension pipe segment (1cc) in a telescopic motion with respect to the pole (63), upon releasing of a rotating tightening nut (66a) of Fig. 6A which forms the bottom end of the handgrip 66), and after pressing the catch lever (61d1) for retracting the catch (61d). In this embodiment the catch is located on the handgrip (66) (see Fig. 6B), wherein as mentioned above, the handgrip in this embodiment overlaps a certain extent of the extended portion of the flange (1c). When the tightening nut (66a) is released and the catch is retracted, the override arrangement can be operated in the same manner of that of

Figures 2 to 5, wherein moving the handgrip upwards results in pushing the ribs (2) open, and moving the handgrip downwards results in pulling the ribs close (in case they were partially or fully opened, which is not the illustrated case).

The short movement conducting mechanism according to the present invention is preferably protected, isolated, and covered, by means of the base member (1) from below, and by means of a conical covering (70) from above.

Fig. 7 illustrates a concealed department (72) that can be designed at the top portion of the covering (71) for placing miniature electronic circuits (73) useful for various utilities, such as location identifier which activates alarm when losing RF connection (according to other embodiments ultrasonic connection) with a corresponding circuit held by the user (useful also as anti theft alarm); or such as umbrella identifier which turns on a blinking LED light (according to other embodiments a bip sound, or a combination of sound and light) when called by a remote controller held by the user in order to locate the umbrella and/or identify it between other similar umbrellas; or such as emergency light that can be activated by a remote controller held by the user; or such as safety blinking light useful for notating the user when walking in the dark. Such utility electronic circuits can be powered by an inherent miniature batteries, or through wires passing along the hollow pole of the umbrella, i.e. through one of the grooves of the pole type illustrated by Fig. 2B. In case the umbrella parts are of conductive material all along the path between the battery compartment and the electronic circuit, they can be used instead of one of the wires required for conducting the battery power to the utility electronic circuits and/or the lights, located at the covering.

Fig. 8 illustrates a partial isometric cross sectional view of the lower end of the electrical umbrella according to the present invention, consisting of a main handgrip (80) having a battery compartment (81) inside, rechargeable batteries (81a) (81b), a jack (81c) for receiving a connector of a recharging power source, an electrical motor (82), a switching circuit (83) having a press button (83o) for opening the umbrella, a press button (83c) for closing the umbrella, a 'low

battery' indication light (83c), an electronic circuit for overload detection (see Fig. 8A) and an electronic circuit for 'low battery' indication light (see Fig. 8B), and a gear unit (84) for gearing between the motor (82) and between the rotation transmission rod (65b) which transfers the rotation to the short movement canopy
5 conducting mechanism. According to another preferred embodiment there may be provided additional electronic circuit for measuring and displaying of the surrounding temperature, and/or comprising an electronic watch.

According to various preferred embodiments of the present invention the battery compartment is made withdrawable, thus can be instantly replaced by
10 fresh recharged batteries located inside a similar spare battery compartment, and put for recharging separately (i.e. out of the umbrella, which can now be used by the replacement battery set until becoming empty, and recurrently).

Fig. 8A illustrates a circuit for overload detection, which disconnects the motor from the battery power upon detection of increase in the motor current
15 beyond a predetermined threshold. This circuit is not only directed to protect the motor in unexpected emergency situations, but is also very useful during conventional operation, for indicating the end of the opening and the closing operations of the umbrella, wherein in the end of the closing operation, when the hub (4a) (see Figures 2 to 5) of the conducting member reaches the top end (5a)
20 of the helical shaft (5), or in the end of the opening operation, when the hub reaches the bottom end of the helical shaft, the motor operation is dramatically resisted thus the motor current which passes via resistor (81) dramatically increases and an overload condition is immediately detected, and the automatic switch (80) (a FET gate) disconnects the battery power from the motor. When the
25 user identifies that the motor has stopped he naturally releases the press button, and the umbrella remains in its current position until an opposite operation will be activated by the user, by pressing the press button which governs the opposite operation.

Fig. 8B illustrates an electronic circuit for 'low battery' detection, which
30 lights a red LED light alarm upon detection of insufficient battery voltage.

Fig. 9 illustrates an isometric view of a complete electrical umbrella according to one preferred embodiment of the present invention, without the canopy. The canopy conducting mechanism is located behind the conical covering (70), and is capable of conducting the ribs (2) between the illustrated open position and between a closed position wherein the ribs become substantially parallel to the pole (63), the umbrella could be gripped by one hand holding the main handgrip (80), and when a need rises, by the other hand holding the upper handgrip (66). As can be appreciated from this figure, the space below the canopy is completely free (except of the pole), thus the canopy could be lowered by a user adjacent his head.

The handgrip (66) uses also for activating an override arrangement, and when released by rotating the nut (66a) and by pressing a catch lever (see 61d1 of Fig. 6B), it can be used for closing the canopy by moving it down and for opening the canopy by moving it up. When an appropriate canopy state is achieved, the nut (66a) can be rotated and tightened back for maintaining the state.

Fig. 10 illustrates the distal end of a rib (2) according to various preferred embodiments of the present invention. The rib body (21) is made of a rigid metal, and the rib distal end (22) is made of a flexible metal bar (e.g. flexible steel). The two parts can be connected together in any acceptable way such as miniature screws, pins, pegs (23), welding or combinations thereof. The connection can be reinforced by inserting the flexible bar into a groove prepared in the end of the rib body. The flexible part is essential for receiving a mushroom shape of the canopy in its open state wherein the flexible ends of the ribs are forced to bent downwards in an arc shape (e.g. to the position illustrated by the dotted line), by means of the canopy cloth which is sewn in a mushroom shape. When the canopy is closed the flexible portion of the ribs returns to a straight orientation which is required for having the umbrella folded in a straight compact shape.

According to various preferred embodiments illustrated by Fig. 11, the canopy (120) is sewn from above the covering of the conducting mechanism

(70), and has another covering (77), from above. According to other preferred embodiments, illustrated by Fig. 12, the central portion (121a) of the canopy (121) is inserted and held in the inner space between the base member (1) and the covering (70) of the conducting mechanism.

5 According to various preferred embodiments illustrated by Fig. 13, the umbrella of the present invention is provided with aeration channels (as marked by arrows) useful for decreasing wind forces which tend to flinging the umbrella or to deform its construction. Wind arriving from the bottom side of the canopy is (at least partially) released through the aeration channels illustrated by the
10 arrows. The aeration channels can be created by leaving parts of the proximal (i.e. central) end (122a) of the canopy un tightened, and by providing additional cloth sheet (123) for covering above the central portion of the canopy. The additional cloth sheet can be used also for decoration purpose, thus can be provided in a color or pattern other than that of the canopy (122). The top of the
15 umbrella (to its various embodiments) can be designed as that of conventional umbrellas having a sharpened tip (124) that can be connected to the covering (70) by means of threading (or by any other desired connected method).

 Another option is to make the aeration channels formed not between the canopy cloth and the conducting mechanism base and covering, rather formed as
20 hollow pipes made in the rigid material of the base member and of the covering.

 Fig. 14 illustrates short movement canopy conducting mechanism according to another embodiment of the present invention, adapted for multifold canopies having telescopic umbrella pole, in a closed state of the umbrella. As can be observed, the ribs (only one is illustrated) are formed of three folding
25 sections (202) (212) and (216). The rib section (202) has a rib lever portion (202a) having a pin (202b) movable along a slide (4c) of the slide bar (4b). A plurality of slide bars (4b) are angularly spaced about a hub (204a) which is moveable vertically between a plurality of vertical guide members (240) arranged in a circle around the hub (204a), each in the space between a pair of
30 respective slide bars (4a). In this figure the hub (204a) is situated in its uppermost

location between the guide members, which is corresponding to a closed state of the umbrella. Accordingly, the three section rib is folded and having its three rib sections (202) (21) and (216) lying substantially parallel to each other. As can be appreciated, and similarly to the canopy conducting mechanism of the above described embodiments, movement of the hub (204a) downwards, will result in sliding of the pins (202b) along the slides (4c) and thus in rotating the rib section (202) by the work of rib lever (202a), about the pivot connection (201a). As can be appreciated, the pivoting of the rib section (202) upwardly will result in a correlated pivoting of rib stretcher (217) about its pivot joint (217a), and in turn in a linear movement of its pin (217b) in the direction indicated by arrow R, along a corresponding slide (202h) made in the rib section (202). As a result of the linear movement of the stretcher (217) in the indicated direction, the rib section (212) will rotate about hinge (232) due to the pulling of its lever member (212a) by the pulling member (217b) linked to the lever member (212a) by pivot joint (231). Simultaneously, the still wire (218) will pull the rib lever (215) to pivot about the hinge (235) and thus to lift the elastic rib section (216). The result of said movements is depicted in Fig. 15, showing the open state of the umbrella.

The guide members (240), the extension tube (222) and the base member (201) can all be made of the same piece of material. Alternatively, it is possible to manufacture them as separate parts and to connect them afterwards in any acceptable way.

As can be further observed in this Fig. 14, the pole of the umbrella is telescopic and is comprised of an upper telescopic section (220) connected on its top to the bottom of the canopy conducting mechanism, and of a lower telescopic section (221) connected at its bottom to a handgrip (277) of the umbrella which is also a housing of the motor (279). A helical drive shaft (226) is operatively coupled to the motor (229), and can be rotated by the motor clockwise or counterclockwise, in order to open and close both the canopy and the telescopic pole. In this Fig. the telescopic pole is closed, wherein the lower telescopic section (221) is fully inside the upper telescopic section (220). Upon rotation of

the motor in a direction to open the umbrella, the lower telescopic section will be pulled out of the upper telescopic section due to advancing of the tube nut (227) along the threading of the helical drive shaft (226), since the tube nut (227) is connected through an extension tube (222) to the top of the upper telescopic section (220). After a while during the rotation of the drive shaft, the drive shaft shoulder (226a) which is of a larger diameter than that of the drive shaft (226) itself, will engage the top of a hollow ring (225), and will start pulling it toward the tube nut (227). The hollow ring (225) is connected to the hub (204a) through wires (223) and (224) located from two opposite direction of the drive shaft (226) and anchored to both the hollow ring (225) and the hub (204a) of the conducting member (204). As a result of this pull, the conducting member (204) will move downwards, driving the multifold canopy open by opening the multifold ribs in the mechanism described hereinbefore. When the hollow ring (225) will reach a close proximity of the tube nut (227) the conducting member (204) will reach its lowermost position along its vertical guides (240), with the multifold canopy open and with the telescopic pole in its max length.

As can be appreciated, upon rotation of the motor (279) in an opposite direction, i.e. in a direction to close the umbrella, the rotation of the drive shaft (226) inside the tube nut (227) will close the telescopic pole by pushing the lower telescopic section (221) inside the upper telescopic section (220), and when the top of the drive shaft shoulder (226a) will engage the bottom of the downward extension (204d) of the hub, it will start pushing the conducting member (204) upwards, to the initial close position as depicted in this Fig. 14. The hollow ring (225) has a free passage with respect to the threading of the drive shaft (226) and thus it is not affecting the closing mechanism. From the same reason it is also does not affect the first part of the opening mechanism, i.e. prior the engagement of the drive shaft shoulder (226a) with the top of the hollow ring as described above.

Fig. 14A illustrates a top view of the canopy conducting member (204) of the embodiment of Fig. 14 as it is situated in its guide members (224). As

shown in this figure, the hub (204a) is encompassed by a plurality of guide members (240) marked in black, each of which is situated between a pair of corresponding slide bars (4a) with a gap between the guide members (240) and the slide bars (4a), allowing for a vertical movement of the hub (204a) and the plurality of slide bars (4a) connected to it, up and down between the guide members (240). The top of the two wires (223) and (224) are shown anchored inside the hub from both opposite directions of its downward extension (204d). These wires connect the conducting member (204) to the hollow ring (225) shown in Fig. 14, which by its pulling down the conducting member (204) moves down to open the multifold canopy.

Fig. 15 illustrates the same embodiment illustrated by Fig. 14, in an open state of the umbrella. The lower telescopic section (221) is drawn out of the upper telescopic section (220), the drive shaft shoulder (226a) holds the hollow ring (225) adjacent the tube nut (227) and thus the conducting member (204) is held by the wires (223) and (224) in its lowermost position along the guide members (240) corresponding the open state of the multifold canopy, with the multifold rib sections (202) (212) and (216) in an open state.

Upon rotation of the motor (279) in a direction to close the umbrella, the low telescopic section (221) will move into the upper telescopic section (220) due to the advancing of the threading of the drive shaft (226) through the tube nut (227). When the top of the drive shaft shoulder (226a) will reach the bottom of the downward extension (204d) of the hub (204a) the conducting member (204) will be forced upwards while folding the multifold canopy in a process opposite to the opening process described by Fig. 14. The folding of the canopy will be completed when the conducting member returns to the initial closed position illustrated by Fig. 14, with the telescopic pole in a closed state.

Fig. 16A to 16C illustrates in partial vertical cross section view (taken at A-A of Fig. 17) three states during the operation of a canopy conducting mechanism according to another preferred embodiment pin and slide joint. In the illustrated embodiment the pin (300) of the pin and slide joint is actually the end

portion of the short lever (303) of a canopy rib (301), and it is wider than the rib. Although the pin diameter is significantly greater than its length (which is perpendicularly to the figure plane) it is still called a pin in the context of the present invention, since actually it fulfils the same function as e.g. pin 2b of Fig.

5 1. The slide of the pin (300) is a hollow cell (311) (will be referred to also as "slide (311)") made in a canopy conducting member (310), which actually is a hub comprising a plurality of such hollow cells (311) angularly spaced about a common center, each of which accommodating a pin (300). In Fig. 16A the canopy conducting member (310) is shown in its uppermost position above the

10 umbrella pole (not illustrated), with the pin (300) forcing the short lever (303) upwards thus keeping the rib (301) downwards, which is a closed canopy state. When the canopy conducting member (310) moves down to the position illustrated by Fig. 16B, it forces the pin (300) downwardly and furthermore to slide inwardly inside the hollow cell (311), thus forcing the rib (301) to rotate

15 upwardly about the hinge (302). To a mid position which corresponds to a partially open state of the canopy. By further lowering the canopy conducting member (310) to the lowermost position as illustrated by Fig. 16C, the pin (300) is forced downwards and laterally outwards from the hollow cell (311), thus forcing the rib (301) to further pivot about the hinge (302), to the position

20 illustrated by Fig. 16C which corresponds to open state of the umbrella. As can be appreciated the pin and slide joint formed by pin (300) and slide (311) allows to convert the up-down vertical movement of the conducting member (310) into a pivoting movement of the short lever (303) and the rib (311) about the hinge (302). It is appreciated that the short lever (303) may be designed shorter than

25 illustrated, and actually the pin itself may function as a lever. The length of the short lever (303) is a matter of design and depends inter alia in the torque of the electrical motor to be used (the short lever can be design shorter as long as the motor torque is sufficient to lift the rib and stretch the canopy fabric).

Fig. 17 illustrates a partial lateral cross section view (taken at B-B of Fig.

30 16B) of the canopy conducting mechanism of the embodiment illustrated by

Figs. 16A to 16C in the state illustrated by Fig. 16 B, wherein the ribs (301) are in a mid location with the canopy partially opened and with the pin (300) of each rib maximally slid along the slide (311) in the direction of the central axis of the conducting member (310). As can be observed in Figs 16A and 16C, the pin (300) reaches its maximal opposite slid along the slide (311), i.e. its max distance from the center of the conducting member (310). The up-down movement of the conducting member can be achieved by a hub extension (312) (shown in Figs 16A-16C) extended into the pole of the umbrella similarly to the hub extension member (4aa) of Fig. 6, or by an inner threading represented by the double dotted circular line (314), similarly to the inner threading in hub (4a) of Fig. 1.

Fig. 18 illustrates a side view of a canopy rib according to the embodiment illustrated by Figs 16A to 17, made of one piece of material. The rib can be produced from plastic casting, as one unit comprising the pin (300), the short lever (303), hinges (302) from both its sides, and the rib (301). The rib (301) itself may have recesses (304) from both its sides useful for reducing its weight with negligible lose of strength. The end (305) of the rib can be made gradually tapered, such that its thickness near the rib end is sufficiently reduced as to make it flexible, such that when the canopy is fully opened the rib being forced to the arched shape illustrated by dotted line (306), due to a stress exerted by the canopy fabric (not illustrated) which is dimensioned and designed in a mushroom shape forcing the flexible ends of the ribs to bent downwardly.

Fig. 19 illustrates a top view of the canopy rib of Fig. 18. The rib has a flat end (305) which is flexible in the direction perpendicular to the illustration plane, due to reduced thickness of the end of the rib. Accordingly the present invention relates to an umbrella comprised of a canopy conducting mechanism as described above, wherein the ribs are made of a rigid material and having gradually reduced thickness at their distal ends resulting in flexibility of the ends of the ribs useful for obtaining mushroom shaped canopy. The invention relates also to umbrella rib having gradually reduced thickness near its distal end especially useful for obtaining mushroom shaped canopy in strutless umbrellas.

CLAIMS:

1. Canopy conducting mechanism for hand held umbrellas, comprising; (a) canopy conducting member having a plurality of a first part of pin and slide joint rigidly connected and angularly spaced about a common central hub; (b) a spacer
5 having a central lower end adapted for being connected to a pole of an umbrella, and a plurality of pivot connection points remotely and angularly spaced about the central lower end each is adapted for receiving a canopy rib having a short lever arm having a second part of pin and slid joint matching the first part.
2. Canopy conducting mechanism according to claim 1, further comprising
10 a plurality of canopy ribs pivotably connected to the pivot connections, and further form a plurality of pin and slide joints with the conducting member.
3. Canopy conducting mechanism according to claim 1, connected to the top end of a pole.
4. Canopy conducting mechanism according to claim 1, wherein the spacer
15 has a hollow flange protruding from below.
5. Canopy conducting mechanism according to claim 1, wherein the hub is hollow and heaving inner threading.
6. Canopy conducting mechanism according to claim 1, wherein the hub is connected to an extension member having a threading connection at its lower
20 end.
7. Umbrella comprised of a canopy conducting mechanism according to claim 2.
8. Umbrella comprised of a canopy conducting mechanism according to claim 2, connected at is bottom end to a top end of a pole of the umbrella, the
25 pole has an upper handgrip connected near its upper end and a main handgrip connected to its lower end.
9. Electrical umbrella comprised of a canopy conducting mechanism according to claim 2 connected at its lower end to the top of a hollow pole, the hollow pole is connected at its lower end to a main handgrip of the umbrella,

wherein the canopy conducting member is driven along a short path between an uppermost position and a lowermost position from above the pole, corresponding to a closed state and an open state of the umbrella, respectively, upon rotation of an electrical motor located near or inside the main handgrip, powered by batteries
5 located nearby, and transmitting its rotation to a screw or to a helical shaft adapted to convert the rotation into vertical movement of the conducting member.

10. Electrical umbrella according to claim 9, further comprising override arrangement.

10 11. Electrical umbrella according to claim 9, further comprising override arrangement, the override arrangement comprising an extended flange connected to the bottom of the spacer and capable of telescopic movement with respect to the umbrella pole, and means for releaseably tightening the extended flange to the pole.

15 12. Electrical umbrella according to claim 9, further comprising an upper handgrip located near the top end of the pole and being a part of an override arrangement, the override arrangement comprising an extended flange connected to the bottom of the spacer and capable of telescopic movement with respect to the umbrella pole, and means for releaseably tightening the extended flange to
20 the pole, wherein the upper hand grip is located such that it can be utilized for moving the extended flange up and down in said telescopic movement.

13. Electrical umbrella according to claim 9, further comprising a battery compartment located inside the main handgrip.

14. Electrical umbrella according to claim 9, further comprising a battery
25 compartment located inside the main handgrip in electrical communication with a jack adapted for receiving a plug of a power source for recharging the batteries.

15. Electrical umbrella according to claim 9, further comprising a withdrawable battery compartment located inside the main handgrip.

16. Electrical umbrella according to claim 9, further comprising overload detection circuit capable of disconnecting the battery power from the motor upon recognition of a motor current exceeding a predetermined threshold.
17. Electrical umbrella according to claim 9, further comprising overload
5 detection circuit capable of disconnecting the battery power from the motor upon recognition of a motor current exceeding a predetermined threshold, and further capable of inverting the polarity of the power connection to the motor .
18. Electrical umbrella according to claim 9, further comprising at least one utility electronic or electric circuit selected from; (a) location detector; (b)
10 emergency illumination; (c) safety illumination; (d) low battery alarm; (e) temperature measuring; (f) electronic watch; (g) anti-theft remote sensor; (h) decorative illumination; (i) battery recharger with integral power plug; (j) remote controller in wireless communication with certain electronic or electric circuits of the umbrella; (k) voice or sonic alarm; (l) a combination of at least two of 'a' to
15 'k'.
19. Umbrella comprised of a canopy conducting mechanism according to claim 2, wherein the ribs are made of a rigid material at their proximal portion and of a flexible bars at their distal portion.
20. Umbrella comprised of a canopy conducting mechanism according to
20 claim 2, characterized by having no struts nor stretchers connecting between the pole of the umbrella and its canopy ribs.
21. Canopy conducting mechanism according to claim 1, further comprising a plurality of pivot joints remotely and angularly spaced about the central lower end each is adapted for receiving a rib stretcher to be associated with a rib
25 receivable by a corresponding pivot connection point.
22. Canopy conducting mechanism according to claim 1, further comprising (i) multifold ribs pivotally connected to the pivot connections and further form a plurality of pin and slide joints with the conducting member; and (ii) a plurality of rib stretchers, pivotally connected to respected pivot joints and to respective
30 multifold ribs.

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23. Electrical umbrella comprising a canopy conducting mechanism according to claim 22, the canopy conducting mechanism is connected at its lower end to the top of a telescopic pole, the telescopic pole is connected at its lower end to a main handgrip of the umbrella, wherein the canopy conducting member is driven along a short path between an uppermost position and a lowermost position from above the pole, corresponding to a closed state and an open state of the umbrella, respectively, upon rotation of an electrical motor located near or inside the main handgrip, powered by batteries located nearby, and transmitting its rotation to a screw or to a helical shaft adapted to convert the rotation into vertical movement of the conducting member and into a telescopic movement of at least two telescopic sections of the pole.
24. Electrical umbrella according to claim 9 or 22, wherein the handgrip is cushioned or having a padding protection against downfall damages.
25. Electrical umbrella according to claim 9 or 22, further comprising folding or pull out foots accommodated in the handgrip and useful for positioning of the umbrella uprightly.
26. Umbrella comprised of a canopy conducting mechanism according to claim 2, wherein the ribs are made of a rigid material and having gradually reduced thickness at their distal ends resulting in flexibility of the ends of the ribs useful for obtaining mushroom shaped canopy.
27. Umbrella rib having gradually reduced thickness near its distal end useful for obtaining mushroom shaped canopy.

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ABSTRACT

- Canopy conducting mechanism for hand held umbrellas is disclosed. The canopy conducting mechanism is especially useful for electrical umbrellas although may be used for manually operated umbrellas as well. The canopy conducting
- 5 mechanism has short movement between open and closed states of the umbrella and is based on pin and slide joints between the umbrella ribs and between a canopy conducting member, allowing for strutless canopy (i.e. a canopy without stretchers extending between the umbrella post and the ribs). Umbrella rib having a flexible end especially useful for strutless umbrellas is also disclosed.
- 10 Strutless electrical umbrella comprising said canopy conducting mechanism and flexible end ribs is also disclosed, including single-folding and multi-folding canopy embodiments.

MECANISMO ELÉCTRICO DE SOMBRILLA Y TELAMEN

Campo de la invención

La presente invención se refiere al campo de las sombrillas
5 manuales.

Antecedentes de la invención

Las sombrillas que pueden ser abiertas automáticamente,
disparando un resorte comprimido, son bien conocidas en el
mercado. Esas sombrillas cargadas a resorte tienen la ventaja de
10 que se abren fácilmente; sin embargo, también tienen desventajas
que son concomitantes de su mecanismo de resorte. En primer
lugar, su apertura no se controla después del disparo, es decir, una
vez que se ha accionado el resorte, presionándolo y soltando su
diente retenedor, no puede detenerse. Por ejemplo, quien desee
15 salir de un automóvil no puede abrir parcialmente el telamen de
manera que pueda pasar a través de la puerta y protegerse
simultáneamente de la lluvia y la nieve durante la salida. En
segundo lugar, la apertura es agresiva, con riesgo de que los bordes
del telamen abierto dañen a la gente que se encuentre muy próxima.
20 Adicionalmente, cuando la sombrilla va a ser plegada, se debe
ejercer excesiva potencia manual a fin de cerrar el telamen, mientras
se retrae el resorte para una apertura futura. No solamente es la
fuerza que se debe ejercer; la propia operación es incómoda, dado
que requiere ambas manos del usuario: una para sostener la
25 sombrilla y la otra para tirar de la manija de retracción del telamen;

donde el movimiento del telamen retraído amenaza con dañar al usuario en caso de que la sombrilla se mantenga demasiado cercana al cuerpo. El procedimiento de doblamiento termina únicamente después del regreso del diente de retención a la posición inicial, lo

5 que no se logra muy fácilmente mientras el resorte de la sombrilla esté tensado en su totalidad. Si el diente de retención no pudiera regresar apropiadamente, provocaría una apertura repentina, agresiva y no intencional, de la sombrilla. La operación de las

10 sombrillas cargadas a resorte, obtenibles comúnmente, por lo tanto, no se considera muy cómoda para los adultos y muy incómoda para los niños, los ancianos y las personas discapacitadas.

En las sombrillas no automáticas tanto la operación de apertura como la de cierre requieren de ambas manos del usuario para operar: una para sostener la sombrilla y la otra para empujar el

15 telamen para abrirlo o tirar de él para cerrarlo. En ambos casos, la sombrilla debe ser mantenida distante a fin de eliminar posibles daños al mover el velamen. Adicionalmente, cuando se está cerrando una sombrilla húmeda, el usuario normalmente tiene

20 cuidado de no doblarla cerca de su cuerpo a fin de eliminar que el agua de lluvia caiga sobre sus ropas secas. Como se puede apreciar, tanto las sombrillas cargadas a resorte como las sombrillas no automáticas requieren que se cierren alejadas del cuerpo del usuario mientras se usan ambas manos. Por lo tanto, hay necesidad

25 de una sombrilla que pueda abrirse y cerrarse automáticamente, mediante activación con una sola mano, donde la operación pueda

ser pausada, detenida o cancelada en cualquier momento dado, permitiendo la apertura parcial, por ejemplo, a fin de permitir el paso a través de un pasaje estrecho.

Se han concedido varias patentes que describen mecanismos
5 automáticos para sombrillas manuales, basadas en accionamiento por motor eléctrico. US 4,572,226, US 513,122, US 5,141,010, US 5,213,122 y EP 0760609 son ejemplos de los esfuerzos hechos en las últimas décadas por desarrollar sombrillas manuales que tienen accionamiento por motor eléctrico. A pesar de los esfuerzos hechos,
10 no hay evidencia de éxito comercial en ningún tipo de sombrillas eléctricas; y durante varias décadas las únicas sombrillas automáticas disponibles en los mercados mundiales son sombrillas semiautomáticas, del tipo que tiene resorte para abrir, en las que el cierre se efectúa manualmente. De acuerdo con una investigación
15 especialmente ordenada por el inventor de la presente invención, no hay sombrillas eléctricas disponibles en el mercado. Como se discutirá adicionalmente en los siguientes capítulos de esta memoria descriptiva, se cree que los conceptos básicos adoptados por los inventores de dichas invenciones son ciertamente prevenir un éxito
20 en el desarrollo de sombrillas eléctricas comercializables.

US 5,711,332 describe sombrillas especialmente adecuadas para uso en patios y uso recreativo. Si bien esta patente no se relaciona con sombrillas eléctricas y es de relevancia limitada para las sombrillas manuales en su totalidad, se considera que es técnica
25 anterior relevante, y será discutida detalladamente en los siguientes

capítulos de esta memoria descriptiva.

Por lo tanto, es un objetivo de la presente invención proveer un mecanismo accionado por motor para sombrillas manuales, que resuelva las prevenciones que provocan la falla de los mecanismos de la técnica anterior, para satisfacer la necesidad existente desde
5 hace mucho de una sombrilla confiable y operada cómodamente.

BREVE DESCRIPCIÓN DE LA INVENCION

El inventor de la presente invención tuvo la presunción básica, cuando comenzó a desarrollar una sombrilla eléctrica
10 satisfactoriamente comercializable, de que el mecanismo de la sombrilla debía diseñarse de manera que permitiera un rango corto de movimiento del elemento que es accionado por el motor para conducir el telamen entre estados abierto y cerrado. El elemento que es impulsado por el motor para llevar el telamen entre los
15 estados abierto y cerrado, en otras patentes se denomina "desplazador", "collarín", "miembro de guía", y está localizado dentro del poste de la sombrilla, y es movable a lo largo del poste. En la presente invención este elemento se denominará "elemento conductor de telamen" y está localizado y es movable fuera del poste,
20 desde arriba. En el contexto de la presente invención, un "rango corto de movimiento" se refiere a una distancia de movimiento que no es mayor que el 20 por ciento de la longitud del poste, de preferencia no mayor que el 14 por ciento de ella y, muy preferible, es menor que el 7 por ciento de ella. Por ejemplo, en un primer
25 modelo de operación que fue construido, la longitud del poste es de

80 centímetros y el paso del elemento que conduce el telamen entre los estados abierto y cerrado (es decir, el "elemento conductor") tiene 4 centímetros de largo, es decir, aproximadamente el 5 por ciento con respecto a la longitud total del poste. A fin de obtener un
5 despliegue completo del telamen a través de un rango corto de movimiento, es necesario que las costillas del telamen sean impulsadas por un brazo corto de palanca que esté localizado cerca del extremo cerrado de cada una de las costillas (es decir, el extremo de costilla que está cerca del poste). Un nuevo mecanismo
10 conductor de movimiento corto, innovador, para operar este brazo corto de palanca, fue desarrollado por el inventor de la presente invención, a fin de satisfacer el requisito de un rango corto de movimiento del elemento conductor.

Consecuentemente, la presente invención se refiere a un
15 mecanismo para sombrillas que conduce el telamen con menos componentes, de movimiento corto, especialmente útil para sombrillas manuales, y recomendado esencialmente para sombrillas manuales accionadas por motor, que comprende: (a) un poste hueco, de diámetro pequeño (es decir, con un diámetro similar a, y
20 en todo caso no mucho mayor que, el diámetro de los postes de las sombrillas manuales convencionales, que tiene un diámetro mucho menor que los postes de las sombrillas estacionarias) que tiene un extremo superior y un extremo inferior; (b) un miembro conductor de telamen, que comprende una pluralidad de una primera parte (es
25 decir, un pasador o un cursor) de una junta de pasador y cursor,

espaciada angularmente y conectada rígidamente alrededor de un punto central común; (c) una pluralidad de costillas de telamen espaciadas angularmente, que tienen un brazo corto de palanca que comprende una segunda parte (una pareja de la primera parte) de la junta de pasador y cursor; la palanca es capaz de pivotar la costilla alrededor de un punto de pivote localizado entre el brazo corto de palanca y la costilla; el brazo de palanca forma un ángulo de entre 120 grados y 165 grados, y de preferencia de alrededor de 135 grados, con la costilla, alrededor del punto de pivote; la costilla está conectada pivotalmente en el punto de pivote, a un separador que mantiene el punto de pivote distante del poste hueco; (d) medios para mover el miembro conductor de telamen en un movimiento corto entre dos posiciones verticalmente espaciadas arriba del extremo superior del polo; una posición de más abajo, en la que la primera de las juntas de pasador y cursor está cerca del extremo superior del poste y donde el telamen está abierto; y una posición de más arriba, en la que la primera de las juntas de pasador y cursor está distante del extremo superior del poste, y donde el telamen está cerrado.

Se hace referencia aquí a la patente estadounidense No. 5,711,332, que describe en las figuras 2 y 3 una sombrilla para patio en su estado abierto y en su estado cerrado, respectivamente. La sombrilla es impulsada a abrirse y cerrarse por el movimiento de un émbolo (14) a lo largo del poste (12). El émbolo (14) está conectado con la pluralidad de costillas (34) de la sombrilla a través de una pluralidad de conexiones de eslabón (20), conectadas a las costillas

(34) mediante primeras conexiones de eslabón (22), y al émbolo (14) mediante segundas conexiones de eslabón (24). A fin de abrir la sombrilla (como se muestra en la figura 2), el émbolo (14) debe ser movido hacia abajo dentro del poste (12), tirando de esa manera de las conexiones de eslabón (20) dentro del poste; lo que, a su vez, tira de las costillas (34) para pivotarlas alrededor de las conexiones de costilla (40), al estado abierto. A fin de cerrar la sombrilla, el émbolo (14) es movido hacia arriba, lo que empuja las conexiones de eslabón (20) fuera del poste, a la posición mostrada en la figura 3.

El mecanismo de la sombrilla de esta patente US 5,711,332 es impropio para uso en sombrillas manuales, por varias razones. En primer lugar, aunque el poste de las sombrillas de patio es de diámetro suficiente para permitir que las conexiones de eslabón se muevan dentro del poste (como en la figura 2) o pueda diseñarse fácilmente de esa manera, las sombrillas manuales tienen postes de diámetros relativamente pequeños (cualquier agrandamiento de 100 por ciento en el diámetro del poste aumenta en 314 por ciento el peso del poste, suponiendo que se use la misma materia prima), lo que no permite la inserción de conexiones de eslabón dentro del poste. Adicionalmente, cada eslabón tiene dos conexiones pivotantes (22) y (24), así que en total consiste de tres partes (es decir, un miembro de eslabón más sus dos conexiones), que se deben ensamblar durante la fabricación de la sombrilla, posteriormente resisten ciclos de operación repetidos y duran toda la vida de la sombrilla. En las sombrillas estacionarias para patio esto

puede no ser un tipo de conexión muy problemática, puesto que las conexiones de eslabón podrían hacerse de material masivo rígido, y puesto que normalmente la sombrilla no se abre y se cierra más de una o dos veces al día. Sin embargo, en las sombrillas portátiles la
5 demanda de un poste de diámetro pequeño y de dimensiones compactas de sombrilla, por una parte, no permiten el uso de materiales masivos para los eslabones y para sus conexiones con el émbolo (donde el diámetro del émbolo es menor que el del poste y debe permitir por lo menos cinco o seis conexiones de eslabón
10 pivotantes, espaciadas angularmente alrededor de su circunferencia); mientras que, por otra parte, las sombrillas manuales normalmente son abiertas y cerradas varias veces al día, es decir, muchas más veces, en comparación con las sombrillas para patio.

Otra desventaja del mecanismo descrito por la patente US
15 5,711,332 es que hay una conexión entre la longitud del eslabón (20), la distancia de la conexión de costilla (40) desde el poste (12) y la longitud de movimiento del émbolo dentro del poste. Por ejemplo, en la sombrilla ilustrada, la distancia entre la conexión (40) de costilla y el poste (12) es sustancialmente igual al diámetro del
20 poste. En el caso de la distancia de la conexión (40) de costilla se diseñará al doble de lo que es ahora; la longitud del eslabón tendrá que agrandarse en consecuencia, y el paso del émbolo entre el estado abierto y el estado cerrado de la sombrilla también se incrementará en consecuencia. Adicionalmente, la forma de arco de
25 los enlaces agrandados necesitará un diámetro agrandado del poste,

de manera que puedan acomodarse y se muevan libremente dentro del poste.

Contrariamente a US 5,711,332, el mecanismo de acuerdo con la presente invención está: (a) libre de conexiones del tipo de eslabón que se muevan y cambien de orientación dentro del poste; así que el mecanismo de acuerdo con la presente invención permite que se reduzca al mínimo el diámetro del poste, en cualquier medida requerida; (b) libre de doble junta de pivote, la que en US 5,711,332 conecta los eslabones desde uno de sus lados a un elemento conductor que se mueve dentro del poste, y desde su siguiente lado, a las costillas; el mecanismo de la presente invención tiene menos componentes y menos componentes movibles, donde hay únicamente una conexión movable que consiste de una junta de pasador masivo y cursor, que puede ensamblarse y mantenerse fácilmente, y cuyas dimensiones no están restringidas por el diámetro del polo, puesto que no se está moviendo dentro del poste; (c) libre de enlace entre la medida de las partes de la sombrilla, así que la junta de pasador y cursor de la presente invención permite que se diseñe la distancia entre la junta de pivote de costilla y el poste, sin cambiar la escala o rango de movimiento del miembro conductor, y sin cambiar el diámetro del poste.

El mecanismo conductor de telamen, de corto movimiento y de menos componentes, para la presente invención, es especialmente útil para la producción de una sombrilla eléctrica accionada por motor. Debido al movimiento corto del miembro conductor de

telamen:

- A) se requieren menos revoluciones del motor eléctrico de la sombrilla para abrir y cerrar la sombrilla;
- B) se puede construir la sombrilla con menos partes, obteniendo así el beneficio del peso reducido y la durabilidad mejorada (por ejemplo, comparando con otros diseños de sombrilla eléctrica, que tiene tirantes y juntas de tirante para soportar las costillas de telamen; y dichos tirantes son accionados por un collarín para abrir o cerrar la sombrilla);
- 10 C) debido a su construcción sin tirantes, el telamen puede ser bajado adyacente a la cabeza del usuario para máxima protección de la lluvia, la nieve y los vientos huracanados;
- D) se puede usar un nuevo mecanismo de sobreposición fácil (como se discutirá con mayor detalle más adelante;
- 15 E) se podría añadir un mango auxiliara en el poste de la sombrilla, cerca del telamen, a fin de permitir que ambas manos del usuario agarren eficientemente la sombrilla cuando se encuentra con vientos huracanados; y
- F) se podrían obtener diseños más innovadores y atractivos (es decir, sin tirantes), lo que puede ayudar a mantener el producto competitivo, pese a su precio naturalmente incrementado, que se deriva de los costos de fabricación incrementados con respecto a las sombrillas no totalmente automáticas.
- 20
- G) se puede utilizar producción en masa del mecanismo conductor de tamaño único, para diferentes tamaños de sombrilla (por
- 25

ejemplo, una colección de sombrillas para niños y para adultos pueden usar el mismo mecanismo conductor). Esto está en contradicción con las construcciones de sombrilla basadas en tirantes, que tienen una conexión entre el tamaño del telamen, la longitud del poste, la longitud del tirante y el grado de movimiento del cursor.

De acuerdo con el párrafo G, la presente invención se relaciona no únicamente con un mecanismo conductor suministrado con las costillas ensambladas en él, sino también con un mecanismo conductor de telamen para sombrillas manuales (que se puede diseñar para producción en masa, para uso con diversos tipos y tamaños de costillas de telamen), que comprende: (a) miembro conductor de telamen que tiene una pluralidad de una primera parte de junta de pasador y cursor, conectada rígidamente y espaciada angularmente alrededor de un cubo central común; (b) un separador que tiene un extremo inferior central, adaptado para ser conectado a un poste de una sombrilla, y una pluralidad de puntos de conexión de pivote, espaciados remota y angularmente alrededor del extremo inferior central; donde el mecanismo puede recibir diversos tipos de costillas que pueden diferir en su forma, su longitud y la longitud de la parte flexible localizadas en su extremo distal (véase la figura 10), las costillas del tipo deseado pueden conectarse entonces a los puntos de conexión de pivote del separador.

La presente invención se relaciona adicionalmente con una sombrilla manual accionada por motor eléctrico que tiene un telamen

que puede ser conducido a cualquier posición deseada entre un estado abierto y un estado cerrado por medio de un elemento conductor, movable entre dos puntos desde arriba del poste de la sombrilla; la sombrilla comprende una rosca de tornillo de corta
5 extensión, para accionar el elemento conductor entre estados abierto y cerrado. De preferencia, en las diversas modalidades de la presente invención, el grado de movimiento del elemento conductor tiene una longitud efectiva de entre 20 por ciento y 100 por ciento, en comparación con el diámetro máximo de la sombrilla en su estado
10 cerrado. Muy preferible, y de acuerdo con las modalidades preferidas de la presente invención, el grado de movimiento del elemento conductor es de longitud efectiva de entre 50 por ciento y 95 por ciento del diámetro máximo de la sombrilla en su estado cerrado. El término "elemento conductor" se refiere a un elemento o
15 una combinación de elementos que tienen movimiento hacia atrás y hacia delante, a lo largo de una extensión predeterminada, desde encima del poste central de la sombrilla; donde el movimiento conduce el telamen, respectivamente, entre un estado cerrado y un estado abierto. El término "longitud efectiva" se refiere a la
20 extensión real del movimiento del elemento conductor entre sus dos posiciones extremas desde arriba del poste (respectivamente a los estados cerrado y abierto del telamen), independientemente de cual sea la longitud del roscado a través de la cual se obtenga el movimiento del elemento (sin embargo, de preferencia, la longitud
25 del roscado no es mayor que la necesaria, y la porción roscada está

conectada al motor eléctrico a través de partes planas de planificador que tienen peso reducido en comparación con un tornillo, a fin de disminuir el peso total de la sombrilla).

Como será aparente a partir de la siguiente descripción, y como se mencionó en lo que antecede con respecto al mecanismo conductor de telamen de movimiento corto y de menos componentes, para las sombrillas manuales de acuerdo con la presente invención, la reducción del grado de movimiento del elemento conductor de telamen, permite reducir el número de elementos a partir de los cuales se construye la sombrilla, permite que se incremente la durabilidad de algunos de esos elementos; permite mantener un peso razonable de la sombrilla completa, y permite dirigir una colección de sombrillas eléctricas, operadas fácilmente, seguras y de tamaño pequeño, para niños, incluso los pequeños. Dichas ventajas y otras de la sombrilla eléctrica de la presente invención, son esenciales para obtener un rango en los mercados globales, que es esencial para mantener una presencia comercial y hacer real el sueño de una sombrilla eléctrica, contrariamente a todas las demás invenciones que fallaron en su desarrollo satisfactorio y/o una comercialización exitosa de sombrillas eléctricas.

A fin de permitir el movimiento de corta extensión del elemento conductor, la sombrilla de la presente invención está diseñada para ser llevada a abrirse a través del extremo cercano de sus costillas, y de modo que el telamen pudiera desplegarse completamente mediante un centro de palancas concentrado cerca del extremo

superior de la sombrilla. El centro de palancas de la sombrilla tiene un diámetro similar al diámetro máximo de la sombrilla en su estado cerrado, de modo que, de acuerdo con la modalidad preferida de la presente invención, en el estado abierto de la sombrilla, no hay

5 tirantes que se extiendan entre las costillas del telamen y el poste de la sombrilla, más allá del centro de palancas. Esto es contrario a las sombrillas operadas por motor de la técnica anterior, en las que el centro de palancas de la sombrilla incluye tirantes (extensores) que sobresalen desde un cursor de la sombrilla, y tienen una longitud

10 importante, según se requiera para permitir un movimiento uniforme del cursor a lo largo del poste de la sombrilla, para soporte esencial del telamen.. Negar la necesidad de tirantes en el mecanismo conductor de telamen, permite reducir el número de elementos a partir de los cuales se construye la sombrilla, simplifica su proceso

15 de fabricación, su ensamble y su mantenimiento, y permite reforzar las costillas del telamen por engrosamiento, teniendo de esa manera una construcción de sombrilla más masiva y durable, sin incrementar significativamente el peso de la sombrilla completa. La ausencia de tirantes permite proveer (de acuerdo con varias modalidades de la

20 presente invención) en la sombrilla, un mango interno, localizado cerca del extremo superior del poste de la sombrilla, que ayude a la sujeción estable de la sombrilla durante vientos huracanados, y que permita bajar la sombrilla hasta cerca de la cabeza del usuario. Esto es contrario a las sombrillas de la técnica anterior que tienen tirantes

25 que ocupan el espacio alrededor de la porción superior del poste.

Sin embargo, se debe aclarar que la presente invención no restringe su alcance a una construcción sin tirantes, y si se desea, se pueden añadir tirantes para refuerzo pasivo; donde la sombrilla todavía diferirá de las sombrillas de la técnica anterior por tener un elemento conductor de telamen de movimiento corto, que se utiliza para el despliegue sin ayuda activa de los tirantes (se usan los tirantes para soporte pasivo o para propósitos de estabilización únicamente).

Otra ventaja de la ausencia de tirantes visibles entre las costillas del telamen y el poste, es un diseño más agradable y atractivo. Esto permite también cubrir las costillas de ambos lados del telamen (es decir, al tener un telamen de doble lenzo, o al tener manguitos de tela que se extienden ininterrumpidamente a lo largo de las costillas para cubrimiento, de manera que se pueden ocultar las costillas de acuerdo con las diversas modalidades de la presente invención).

Tal como se mencionó con anterioridad, la construcción sin tirantes de la sombrilla permite tener una rosca de tornillo de corta extensión del mecanismo conductor, útil para erigir el telamen a la condición abierta mediante un número reducido de revoluciones de motor, lo que permite operaciones más rápidas de apertura y cierre, y lo que reduce las horas-motor (que es equivalente a una reducción en el desgaste del motor).

Consecuentemente, la presente invención se refiere adicionalmente a un mecanismo conductor de menos componentes y de movimiento corto para sombrillas manuales, especialmente útil

para sombrillas manuales accionadas por motor, que comprende: (a) un poste hueco, de diámetro pequeño (es decir, de un diámetro similar, y en todo caso no mucho mayor que el diámetro de los postes de las sombrillas manuales convencionales, que es mucho menor que el diámetro de los postes de las sombrillas estacionarias),
5 que tiene un extremo superior y un extremo inferior; (b) un miembro conductor de telamen que comprende una pluralidad de una primera parte (es decir, un pasador o bien un cursor) de una junta de pasador y cursor, espaciadas angularmente y conectadas
10 rígidamente alrededor de un punto central común; (c) una pluralidad de costillas de telamen, espaciadas angularmente, cada una de las cuales tiene un brazo de palanca corto que comprende una segunda parte (una pareja cooperante de la primera parte) de la junta de pasador y cursor; la palanca es capaz de hacer pivotar la costilla
15 alrededor de un punto de pivote localizado entre el brazo de palanca corto y la costilla; el brazo de palanca forma un ángulo de entre 120 grados y 165 grados y, de preferencia, alrededor de 135 grados, con la costilla, alrededor del punto de pivote; la costilla está conectada pivotalmente en el punto de pivote, a un separador que mantiene el
20 punto de pivote distante del poste hueco; (d) motor eléctrico diseñado para mover el miembro conductor de telamen en un movimiento corto, entre dos posiciones verticalmente espaciadas encima del extremo superior del poste; una posición inferior, en la que la primera de las juntas de pasador y cursor están cerca del
25 extremo superior del poste, y donde el telamen está abierto, y una

posición superior, en la que la primera de las juntas de pasador y cursor está distante del extremo superior del poste, y donde el telamen está cerrado; (e) alojamiento para baterías, conectado eléctricamente para energizar el motor; (f) por lo menos un
5 conmutador manual que permite que un usuario controle el telamen entre los estados abierto y cerrado.

De acuerdo con diversas modalidades preferidas de la presente invención, la sombrilla eléctrica consiste adicionalmente de un circuito de reconocimiento de carga, que detiene el motor
10 (desconectando la alimentación de la batería) cuando reconoce un incremento en la corriente del motor más allá de un umbral predeterminado. De acuerdo con la modalidad preferida de la presente invención, el circuito de reconocimiento de carga es usado no únicamente para proteger el motor, sino también para detener
15 automáticamente el motor una vez que el telamen alcanza su estado totalmente abierto, o una vez que el telamen alcanza su estado totalmente cerrado; donde, en ambos estados, el motor es bloqueado físicamente para que no continúe revolucionando, lo que, a su vez, provoca un incremento en la corriente del motor, y de tal manera,
20 activa el circuito de reconocimiento de carga, lo que, a su vez, desconecta la energía del motor. De acuerdo con diversas modalidades, el circuito eléctrico de la sombrilla está diseñado de tal manera que cada activación del circuito de reconocimiento de carga (que en circunstancias normales equivale a la terminación de una
25 operación de apertura total o de una operación de cierre total de la

sombrilla) invierte la polaridad de la conexión de alimentación al motor, de manera que la siguiente activación por el usuario del motor, éste revolucionará en dirección opuesta con respecto a la última operación. Por medio de esta disposición, se puede hacer

5 que la sombrilla, con un solo interruptor, efectúe las operaciones de apertura y de cierre, que automáticamente cambia su función después de cada operación.

Se debe apreciar que, aun cuando las modalidades preferidas de la presente invención se refieren a una conexión de junta de

10 pasador y cursor entre el elemento conductor y cada una de las costillas, el uso de dispositivos similares o equivalentes, tales como una conexión telescópica, en la que un brazo corto de palanca de una costilla se mueva telescópicamente con respecto a un brazo correspondiente del elemento conductor, deben considerarse dentro

15 del alcance de la presente invención, y como se los reivindicará ulteriormente.

La presente invención se refiere adicionalmente a un sistema de sombrilla eléctrica recargable, que consiste de: (a) una sombrilla eléctrica, accionada por una o más baterías recargables, y que tiene

20 un circuito de carga de batería que termina en contactos terminales; y (b) un puesto que tiene una conexión a una red de alimentación de CA, un convertidor de CA a CD y por lo menos un terminal que tiene contactos que son complementarios de los contactos terminales de la sombrilla eléctrica; o (c) un puesto que tiene una conexión a una

25 batería de vehículo y por lo menos una terminal que tiene contactos

que son complementarios de los contactos terminales de la sombrilla eléctrica

De acuerdo con diversas modalidades preferidas de la presente invención, la sombrilla eléctrica está provista de un circuito electrónico para la detección y alarma de baja energía en la batería. La alarma de baja energía de batería de preferencia se efectúa encendiendo una luz LED.

De acuerdo con diversas modalidades, la sombrilla eléctrica de la presente invención tiene una (o más) batería de respaldo. Se podría proveer la batería de respaldo en un alojamiento para reemplazo manual con la batería principal, al reconocer una disminución en la energía de la batería (o baterías) principal(es); donde el reemplazo es ya sea un reemplazo físico, o mediante activación de un conmutador eléctrico, que cambia entre los circuitos eléctricos, y podría conmutar automáticamente por medio de un circuito de conmutación controlado por el circuito de detección de baja energía de la batería; donde, en dicho caso, hay un LED de alarma que muestra que la batería de respaldo está en uso. La batería de respaldo puede ser recargable o de tipo no recargable. En caso de que la batería principal sea de tipo recargable y que tenga un circuito de recarga inherente a la sombrilla (es decir, las baterías se recargan en su alojamiento dentro de la sombrilla) y que la batería de recarga también sea de tipo recargable, entonces de preferencia se provee un circuito de recarga separado para la batería de respaldo, capaz de reconocer la presencia de energía externa y de

conectar la batería de respaldo para recargarla simultáneamente con la batería principal; donde después de la desconexión de la energía externa, se desconecta la batería de respaldo y se mantiene con su potencia completa hasta que se detecte la baja energía de la batería principal. En caso de que la batería principal sea de tipo recargable, y que tenga un circuito de recarga inherente a la sombrilla (es decir, que se recarguen las baterías en su alojamiento dentro de la sombrilla) y la batería de respaldo sea de tipo no recargable, entonces se provee un interruptor que previene la carga por error de la batería no recargable (el mismo interruptor que reemplaza la batería principal por la de respaldo).

De acuerdo con diversas modalidades de la presente invención, la sombrilla eléctrica consiste adicionalmente de medios reconocedores de ubicación, que permite la rápida localización de la sombrilla. Los medios reconocedores de ubicación consiste en un primero y un segundo circuitos electrónicos; el primero está fijado a, o situado dentro de la sombrilla, y el segundo es llevado por el usuario; donde se genera un sonido de alarma o de "bip" (a) cuando se pierde la comunicación entre los dos circuitos (en dicho caso, la alarma ocurrirá en el circuito que lleva el usuario); o (b) cuando se genera una orden de activación por el usuario, a fin de localizar la sombrilla (en dicho caso, la alarma ocurrirá en el circuito fijado a la sombrilla). De preferencia, cada sombrilla tendrá su código de identificación único, de manera que se pueda localizar y reconocer la sombrilla propia entre una pluralidad de sombrillas similares. El

circuito reconocedor de ubicación de preferencia es accionado por una batería inherente, es decir, separadamente de la batería principal de la sombrilla, a fin de permitir la localización de la sombrilla aun en casos en que la batería principal esté vacía.

- 5 Consecuentemente, el circuito reconocedor de ubicación puede ser colocado en la porción superior de la sombrilla, cerca del centro de izamiento, y distante del mango de la sombrilla, donde está localizada la batería principal.

La presente invención se refiere adicionalmente a un
10 mecanismo conductor de telamen para telámenes de pliegues múltiples. Esta modalidad difiere de las modalidades para telámenes de pliegues simples, por comprender adicionalmente una pluralidad de juntas de pivote, espaciadas remota y angularmente alrededor del extremo inferior central; cada una está adaptada para recibir un
15 extensor de costilla que esté asociado con una costilla que puede ser recibida por un punto de conexión de pivote correspondiente.

La presente invención se refiere también a una situación en la que el mecanismo conductor de telamen comprende adicionalmente el mecanismo de telamen. El mecanismo de telamen para telámenes
20 de pliegues múltiples incluye: (i) costillas de pliegues múltiples, conectadas pivotalmente a las conexiones de pivote y que forman adicionalmente una pluralidad de juntas de pivote y cursor, con el miembro conductor; y (ii) una pluralidad de extensores de costilla, conectados pivotalmente a las juntas de pivote respectivas, y a las
25 costillas de pliegues múltiples respectivas.

Adicionalmente la presente invención se refiere a una sombrilla eléctrica que comprende un mecanismo conductor de telamen de acuerdo con la modalidad de telamen de pliegues múltiples. De acuerdo con esta modalidad, el mecanismo conductor de telamen del telamen de pliegues múltiples está conectado en su extremo inferior a la parte superior de un poste telescópico; el poste telescópico está conectado en su extremo inferior a un mango de agarre principal de la sombrilla, donde el miembro conductor de telamen es accionado a lo largo de una trayectoria corta entre una posición superior y una posición inferior desde arriba del poste, que corresponden a un estado cerrado y a un estado abierto de la sombrilla, respectivamente; cuando un motor eléctrico situado cerca de, o dentro del mango de agarre principal gira, accionado por las baterías situadas en las inmediaciones, y se transmite su rotación a un tornillo o a una flecha helicoidal, adaptada para convertir la rotación a movimiento vertical del miembro conductor, y a un movimiento telescópico de por lo menos dos secciones telescopiantes del polo.

De acuerdo con diversas modalidades, la sombrilla está provista de iluminación decorativa, por ejemplo, por medio de LED. Dicha luz puede estar distribuida en el telamen por medio de fibras ópticas.

De acuerdo con diversas modalidades preferidas, la sombrilla de la presente invención está provista de un recargador de batería que tiene un enchufe integral, oculto dentro del mango de agarre y que puede ser sacado, abierto o desplegado para conectarse a un

tomacorriente de pared.

De acuerdo con diversas modalidades preferidas, la sombrilla de la presente invención es cooperante con un controlador remoto a través de un medio de comunicación situado en un compartimiento oculto, de preferencia desde arriba del cubo de conexión superior.

La sombrilla puede tener adicionalmente alarma de voz o de sonido, que indique diversos estados anormales que pueden ocurrir durante su uso, y que son reconocibles por sus sensores y sus circuitos de servicio electrónicos.

De acuerdo con diversas modalidades, el mango de agarre está acojinado o tiene una protección amortiguadora contra daños por caídas.

De acuerdo con diversas modalidades, la sombrilla de la presente invención consiste adicionalmente de patas plegables o extensibles, acomodadas en el mango de agarre, y útiles para colocar verticalmente la sombrilla.

Breve descripción de los dibujos

A fin de que se comprenda la invención y se vea cómo puede ser puesta en práctica, se describirá ahora una modalidad preferida, únicamente a manera de ejemplo no limitativo, con referencia a los dibujos anexos, en los cuales:

La figura 1 ilustra una primera modalidad preferida del mecanismo conductor de telamen, de movimiento corto, de acuerdo con la presente invención (en un estado de sombrilla cerrada).

La figura 1A ilustra una vista parcial del mecanismo conductor

de telamen, de movimiento corto de la figura 1 (en un estado de sombrilla abierta).

La figura 2 ilustra un mecanismo conductor de telamen de movimiento corto de acuerdo con la presente invención, adaptado especialmente para uso de sombrillas eléctricas, y que ilustra partes de la sombrilla eléctrica.

La figura 2A ilustra una vista inferior de una pestaña del mecanismo conductor.

La figura 2B ilustra una vista superior de una modalidad de poste de sombrilla ilustrado en la figura 2.

Las figuras 3 a 5 ilustran diversas posiciones que describen la operación del mecanismo conductor y de la disposición del dispositivo de superposición ilustrado en la figura 2.

Las figuras 6, 6A y 6B ilustran vistas parciales de otra modalidad preferida de una sombrilla eléctrica de acuerdo con la presente invención.

La figura 7 ilustra un compartimiento oculto localizado en el cubrimiento del mecanismo conductor, útil para la colocación de circuitos electrónicos de uso general.

La figura 8 ilustra una vista isométrica parcial, en sección, del extremo inferior de la sombrilla eléctrica de acuerdo con la presente invención, con el mango de agarre principal y los componentes eléctricos localizados dentro.

La figura 8A ilustra el detector de sobrecarga que detiene el motor cuando reconoce una carga que sobrepasa un mínimo

predeterminado.

La figura 8B ilustra el circuito de detección y alarma de "batería baja".

La figura 9 ilustra una vista general de una sombrilla eléctrica de acuerdo con la presente invención (sin la tela del telamen).

La figura 10 ilustra el extremo distal de una costilla de acuerdo con la mejor modalidad de la presente invención.

Las figuras 11 y 12 ilustran dos diseños diferentes de la relación entre la tela de telamen y su mecanismo conductor.

La figura 13 ilustra una modalidad de un telamen que tiene canales de ventilación.

La figura 14 ilustra el mecanismo conductor de telamen, de movimiento corto, de acuerdo con otra modalidad de la presente invención, adaptada para telámenes de pliegues múltiples que tiene poste telescópico de sombrilla, en estado cerrado de la sombrilla.

La figura 14A ilustra una vista superior del miembro conductor de telamen de la modalidad de la figura 14, como está situado en su guía.

La figura 15 ilustra la misma modalidad ilustrada en la figura 14, en estado de sombrilla abierta.

Las figuras 16A a 16C ilustra en vistas parciales en sección vertical, tres estados durante la operación de un mecanismo conductor de telamen de acuerdo con otra modalidad preferida de junta de pasador y cursor.

La figura 17 ilustra una vista lateral parcial, en sección, del

mecanismo conductor de telamen de la modalidad ilustrada por las figuras 16A a 16C, en el estado ilustrado por la figura 16B.

La figura 18 ilustra una vista lateral de una costilla de telamen de acuerdo con la modalidad ilustrada por las figuras 16A a 17,
5 hecha de una sola pieza de material.

La figura 19 ilustra una vista superior de la costilla de telamen de la figura 18.

Descripción detallada de la Invención

La presente invención será explicada adicionalmente en detalle
10 mediante las figuras 1 a 13.

Estas figuras están destinadas únicamente a ilustrar las modalidades preferidas de la presente invención, y de ninguna manera están destinadas a limitar su alcance, como se define por las reivindicaciones.

15 La figura 1 ilustra un mecanismo conductor de telamen, de movimiento corto, para sombrillas, especialmente para sombrillas manuales, y sumamente esencial para sombrillas manuales accionadas por motor, de acuerdo con la presente invención. El mecanismo conductor consiste de: (a) un miembro de base 1 (en el
20 contexto de la presente invención también se denomina "separador") que tiene una pluralidad de conexiones 1a de pivote, espaciadas angularmente alrededor de su circunferencia exterior 1b, para la conexión de costillas 2 de telamen correspondientes, cada una de las cuales puede pivotar así alrededor de su conexión de pivote 1a,
25 entre un estado cerrado (el estado ilustrado) y un estado abierto (el

estado ilustrado por la figura 1A) de la sombrilla. Las costillas son conducidas entre los estados abierto y cerrado por medio de un brazo de palanca (2a) que es la porción de extremo cerrado de la costilla (el extremo distal de la costilla puede verse en la figura 10, y

5 está hecho de un material flexible, a fin de permitir que se extienda el telamen en una forma de hongo (o sea, con el extremo de la circunferencia bajado). En el extremo del brazo de palanca 2a hay un pasador 2b situado deslizablemente dentro de un cursor 4c, formado en una barra de cursor 4b, formando juntos una junta de

10 pasador y cursor. Una pluralidad de barras de cursor 4b, una por cada costilla de telamen, están conectadas rígidamente, y espaciadas angularmente entre sí, alrededor de un cubo central 4a. Las barras deslizantes 4b y el cubo 4a forman juntos el miembro 4 conductor de telamen, que es movable a lo largo de la trayectoria

15 ilustrada por la flecha A, entre una posición superior (la posición ilustrada), en la que el cubo está en una posición extrema distante desde arriba del extremo superior de un poste 3 de la sombrilla, y una posición inferior (la posición ilustrada en la figura 1A), en la que el cubo está situado en una posición extrema cerrada, cerca de y

20 encima del extremo superior del poste 3. El movimiento del miembro conductor 4 entre las dos posiciones extremas a lo largo de la trayectoria A, conduce la pluralidad de costillas 2, simultáneamente, entre un estado de telamen cerrado (el estado ilustrado), que corresponde a la posición superior del cubo 4a, y un estado de

25 telamen abierto (el estado ilustrado por la figura 1A) que

corresponde a la posición inferior del cubo 4. El miembro de base 1 tiene una pestaña inferior 1c, adaptada para unirse al extremo superior de un poste 3 de una sombrilla.

Como se puede apreciar, el mecanismo conductor de telamen, de movimiento corto, que consiste del miembro conductor 4, el miembro de base 1 y las costillas 2, puede ser fabricado en una producción en masa, y puede ser suministrado a los productores de sombrillas, quienes luego lo conectan a un poste y lo cubren con un telamen, de acuerdo con su propio diseño; donde el cubo 4a puede ser conectado (ya sea por soldadura o al tener una rosca interna para recibir una conexión roscada, o por tener un agujero abierto en ambos extremos para recibir una varilla reforzada por anillos de presión, o por medio de cualquier otro medio conector aceptable), al extremo superior de una varilla que pasa a través del medio hueco del poste 3, y está conectada en su siguiente extremo de varilla a un mecanismo impulsor apropiado, seleccionado y diseñado por cada productor específico, de acuerdo con sus propios requerimientos y sus propias necesidades de producto. Se pueden producir diferentes tamaños de telamen usando el mismo miembro de base y el mismo miembro conductor de telamen, con diferentes tamaños de costillas. Esto se podría efectuar por medio de costillas producidas en diferentes tamaños o, alternativamente, usando costillas de tamaño ajustable.

La figura 1 ilustra una vista parcial del mecanismo conductor de telamen de la figura 1, en un estado abierto de la sombrilla. En este

estado, el cubo 4a está en su posición más baja desde arriba del extremo superior del poste 3, es decir, cerca de la pestaña inferior 1c, en el fondo del miembro de base. Durante el movimiento de extensión acortado del elemento conductor, desde la posición superior ilustrada por la figura 1, a la posición inferior ilustrada por la figura 1A, las varillas deslizantes 4b están forzando los pasadores 2b hacia abajo, de manera que cada pasador 2b se desliza a lo largo de su cursor 4c durante el movimiento descendente del miembro conductor, bajando así el brazo de palanca corto 2a y levantando la costilla 2 en un movimiento de pivote alrededor de la conexión 1a de pivote.

La figura 2 ilustra un mecanismo conductor de telamen de movimiento corto, de acuerdo con la presente invención, especialmente adaptado para uso en sombrillas eléctricas. Consecuentemente, la figura contiene partes de una sombrilla eléctrica, ya que están combinadas con el mecanismo conductor de telamen, de movimiento corto. El cubo 4a del miembro conductor de telamen, de acuerdo con la presente modalidad, tiene una rosca helicoidal interior, que coopera con una flecha helicoidal 5. Cuando gira la flecha helicoidal, y dependiendo de la dirección de rotación, se mueve el miembro conductor entre su posición superior y su posición inferior, desde arriba del poste hueco 13. La rotación de la flecha helicoidal 5 se efectúa por medio de la rotación de una barra 5b de transmisión de rotación, que pasa dentro del poste, y que está conectada en su extremo inferior (no ilustrado en esta figura) a un

motor eléctrico (la conexión se efectúa a través de engranes apropiados que adaptan el par de torsión del motor a la fuerza de resistencia esperada del telamen cuando se está desplegando). Como se puede apreciar, el diámetro interno del poste, a través del cual pasa la varilla de transmisión, se puede reducir a una dimensión mínima, que tiene la única restricción de que debe acomodar la barra de transmisión, donde el diámetro de la propia barra de transmisión se puede reducir tanto como pueda resistir las fuerzas de resistencia que se pueden desarrollar durante la operación del motor, sin alabeo. La modalidad ilustrada en la figura 2 describe adicionalmente un mecanismo de sobreposición, que permite la apertura y cierre manuales de la sombrilla, cuando pudiera requerirse, en caso de descomposición del sistema motorizado, y en caso de que quedaran agotadas las baterías. La ventaja de esta disposición de sobreposición específica es que no trata con el sistema motorizado, que permanece conectado y listo para ser usado, independientemente de las actividades del usuario, mientras que libera al usuario de la responsabilidad de una conexión y desconexión precisas de los sistemas técnicos sensibles, y de su funcionamiento apropiado. Este sistema de sobreposición simple y amistoso para el usuario, es uno de los resultados benéficos que se derivan del desarrollo del mecanismo único conductor de telamen, de acuerdo con la presente invención. La disposición de sobreposición comprende una pestaña extendida 11c del miembro de base 11, que permite un movimiento telescópico del poste 13 con respecto a la

pestaña 11c. Consecuentemente, y de manera diferente a la modalidad ilustrada en la figura 1, en la presente modalidad el mecanismo conductor de telamen no está siendo fijado permanentemente al extremo superior del poste, y la pestaña 11c de la presente modalidad difiere de la pestaña 1c de la modalidad ilustrada en la figura 1 en que tiene mayor longitud; es decir, una longitud que puede permitir un movimiento telescópico de la pestaña con respecto al poste, en un grado suficiente para elevar el fondo del miembro de base 11, hasta que alcance el miembro conductor 4. La mayor longitud de la pestaña 11c, en comparación con la pestaña 1c de la figura 1, se puede lograr ya sea produciéndola con mayor longitud, o conectando con la pestaña 1c una extensión para que tenga una longitud similar a la de la pestaña 11c.

Como alternativa a la conexión permanente entre la pestaña 1c y el poste 3, de la modalidad ilustrada en la figura 1, la pestaña 11c de la presente modalidad está fijada soltablemente al poste 11 de la sombrilla eléctrica, por medio de un mango de agarre 6 atornillable, que aprieta el extremo inferior 11c de la pestaña al poste 13, y por medio de una conexión de fiador 11d y muesca 13a, que ayuda a la colocación de la pestaña 11c en una ubicación predeterminada apropiada con respecto al poste 13, antes de apretarlas juntas al girar el mango de agarre. Cuando surge la necesidad (por ejemplo, que se agotaron las baterías), se puede hacer girar el mango de agarre atornillable, en la dirección apropiada (por ejemplo levógiramente) unas cuantas rotaciones, para soltar la pestaña del

abrazo apretado con el poste; luego presionando la palanca 11d1 del fiador para retraer el fiador 11d de la muesca 13a de la pestaña 11c, se puede mover libremente hacia arriba y hacia abajo, en movimiento telescópico alrededor del poste 13, sosteniendo el mango de agarre y moviéndolo en la dirección deseada, donde al llevarlo hacia abajo tirará de la pestaña y del miembro de base 11 en alejamiento del miembro conductor 4, cerrando así el telamen (en caso de que estuviera total o parcialmente abierto), y donde al empujarlo (es decir, al mango de agarre) hacia arriba, empujará la pestaña y el miembro de base 11 hacia el miembro conductor 4, abriendo de esa manera el telamen (en caso de que estuviera total o parcialmente cerrado). Después que se ha llevado el telamen a la posición deseada, el mango de agarre 6 debe girarse dextrógiramente para volver a apretar la porción extrema 11e de la pestaña al poste, en la dirección de las flechas B. La rotación del mango de agarre 6 dextrógiramente está diseñada a fin de disminuir el diámetro de la porción extrema y permitir un ligero cambio en el diámetro de la porción extrema de la pestaña al hacer girar el mango de agarre 6, cambio que es suficiente para apretar la pestaña al poste, o para soltarla del poste, de acuerdo con el traslape relativo entre la rosca del mango de agarre y la rosca correspondiente de la porción extrema de la pestaña.

De acuerdo con las modalidades preferidas de la presente invención, el mango de agarre 6 atornillable de sobreposición puede localizarse muy cerca del velamen, puesto que no hay extensores de

tirantes que molesten entre el poste y el telamen. Por lo tanto, no solamente es esencial el mango de agarre 6 para la operación de sobreposición, sino que también es útil para sujetar la sombrilla con ambas manos; es decir, una mano que está agarrando el mango convencional situado en el extremo inferior del poste, mientras la otra mano está agarrando el mango de agarre 6, cerca del telamen; lo que es muy esencial cuando se encuentra con vientos tormentosos. Adicionalmente, se podría apreciar que la sombrilla de acuerdo con la presente invención tiene la ventaja de que podría bajarse y sostenerse con el telamen adyacente a la cabeza del usuario, lo que es muy esencial para proteger al usuario de la lluvia o la nieve impulsadas por el viento, y lo que no puede lograrse con las sombrillas de la técnica anterior.

La figura 2A ilustra una vista del extremo inferior 11e de la pestaña, tomada desde abajo. En estas figuras se ve cómo está dividido el extremo por las muescas verticales 11f, en tres secciones localizadas entre las muescas, que pueden quedar más cerca entre sí por medio de una presión ejercida en la dirección de las flechas B, mediante rotación dextrógira del mango de agarre 6 de la figura 2. Cuando dichas secciones quedan más cerca y abarcan apretadamente el poste de la sombrilla, la pestaña queda fija al poste y se previene un movimiento telescópico entre ellos, y de esa manera se mantiene el telamen.

La figura 2B ilustra una vista superior del poste 13, de acuerdo con una variación opcional, donde el poste está hecho de un material

delgado, hueco (por ejemplo, de aluminio) hecho mediante un proceso de extrusión, y que tiene una pluralidad de nervaduras de refuerzo 14, que forman muescas 15 entre ellas. Estas muescas pueden ser utilizadas para colocar los alambres eléctricos que
5 puedan ser requeridos, de acuerdo con las diversas modalidades posibles para conectar entre una batería, localizada en el lado inferior del poste, y un circuito electrónico o iluminación localizada encima del extremo superior del poste.

Como se puede apreciar, el sistema motorizado de la sombrilla,
10 que incluye la unidad de motor (no ilustrada en esta figura), la varilla de transmisión de rotación 5b y la flecha helicoidal 5 (incluyendo la ubicación del cubo 4a, alrededor de la flecha helicoidal), permanece sin cambios y no está involucrado con la operación del mecanismo de sobreposición. Esta separación entre los dos sistemas (es decir,
15 la sobreposición y la motorización) garantiza un dispositivo simple, confiable, y amistoso para el usuario.

La figura 3 ilustra el dispositivo de sobreposición ilustrado en la figura 2, tal como se utiliza para abrir la sombrilla cerrada de la figura 2. Como se puede ver, la posición relativa entre el poste 13,
20 la varilla de transmisión de rotación 5b, la flecha helicoidal 5 y el miembro conductor 4, no ha sido cambiada entre la figura 2 y la figura 3; es decir, que el sistema motorizado es mantenido en su estado entre las dos situaciones ilustradas, y no ocurrió rotación de motor entre ellas dos (en el caso de que hubiera ocurrido una
25 rotación de motor, el cubo 4a del miembro conductor habría estado

cambiando su posición a lo largo de la flecha helicoidal, lo que no es el caso). Aunque nada ha cambiado en el sistema motorizado, las costillas de telamen que estaban en la posición cerrada que se ilustra en la figura 2, han alcanzado una posición abierta en la figura 3. Este cambio se ha logrado liberando la pestaña 11c del poste 13, tal como se explicó en el texto de la figura 2, empujando luego el mango de agarre 6, lo que provoca un movimiento telescópico de la pestaña 11c alrededor de poste 13, hacia el miembro conductor 4, forzando de esa manera a que el miembro de base 11 quede más cerca del miembro conductor 4, al mismo tiempo que levanta las costillas 2.

La figura 4 ilustra el mismo mecanismo ilustrado en la figura 2, después de la activación del sistema motorizado para levantar las costillas de telamen al estado abierto. Como se puede observar, la rotación de la flecha helicoidal llevó el cubo 4a (y el miembro conductor 4) a alcanzar su posición más baja encima del extremo superior del poste 13, al mismo tiempo que hace pivotar simultáneamente los brazos de palanca cortos 2a y los conduce hacia abajo levantando las costillas 2 alrededor de los puntos de pivote, consecuentemente. La siguiente figura ilustra cómo se pudo utilizar el dispositivo de superposición para cerrar el telamen, en caso de "batería baja".

La figura 5 ilustra el mecanismo ilustrado en la figura 4, en el que las costillas de telamen que estaban en estado abierto, han alcanzado un estado cerrado por medio del dispositivo de

sobreposición. Como se puede ver, la posición relativa entre el poste 13, la varilla de transmisión de rotación 5b, la flecha helicoidal 5 y el miembro conductor 4 no ha sido cambiada entre la figura 4 y la figura 5, es decir, que el sistema motorizado mantuvo su estado
5 entre las dos situaciones ilustradas y no ocurrió rotación de motor entre ellas dos (en caso de que hubiera ocurrido una rotación de motor, el cubo del miembro conductor habría cambiado su posición a lo largo de la flecha helicoidal, lo que no es el caso). Aunque nada ha cambiado en el sistema motorizado, las costillas de telamen que
10 estaban en la posición abierta que está ilustrada en la figura 4, han llegado a la posición cerrada en la figura 5. Este cambio se ha logrado liberando la pestaña 11c del poste 13, tal como se explica en el texto de la figura 2, luego empujando el mango de agarre 6, lo que provoca un movimiento telescópico de la pestaña 11c hacia abajo,
15 alrededor del poste 13, forzando así al miembro de base 11 en alejamiento del miembro conductor, al mismo tiempo que baja las costillas.

Las figuras 2 y 3 ilustran cómo se puede manejar el mecanismo de sobreposición entre dos posiciones extremas de las costillas, cuando las costillas estaban originalmente en estado cerrado;
20 mientras que las figuras 4 y 5 ilustran cómo se puede manejar el mecanismo de sobreposición entre dos posiciones extremas de las costillas cuando las costillas estaban originalmente en estado abierto. Por lo tanto, se podrá apreciar claramente cómo el
25 dispositivo de sobreposición de acuerdo con la presente invención

podría manejar las costillas desde cualquier posición inicial que pudiera existir ocasionalmente, hasta una posición alternativa, preferida por el usuario.

La figura 6 ilustra una vista parcial isométrica en sección, de otra modalidad del mecanismo conductor de telamen, de movimiento corto, de acuerdo con la presente invención. Esta modalidad difiere de la ilustrada en las figuras 2 a 5 en varios detalles, que serán enumerados a continuación.

En primer lugar, el cubo 4a del miembro conductor 4 es impulsado entre su posición superior y su posición inferior por medio del miembro 4aa de extensión del cubo, con un tubo hueco 64 que tiene una rosca interna que coopera con una rosca externa de una varilla roscada 65 que es el extremo superior de una varilla de transmisión de rotación (no ilustrada en esta figura; véase la figura 6A). Cuando se hace girar la varilla roscada dentro la rosca del tubo hueco 64, la rotación se convierte a movimiento vertical, y se empuja hacia arriba o hacia abajo el miembro 4aa de extensión de cubo, dependiendo de la dirección de rotación de la varilla roscada 65, desplazando así el miembro conductor 4 en consecuencia, entre una posición inferior y entre la posición superior ilustrada, que corresponde al estado abierto, y al estado cerrado ilustrado de la sombrilla, respectivamente. Se debe apreciar que un sistema que tiene el miembro de extensión de cubo que termina con una rosca exterior que coopera con una rosca interna de una barra que es el extremo superior de una barra de transmisión de rotación, es

equivalente al sistema descrito en lo que antecede; por lo tanto, está incluido en el alcance de la presente invención. Esta nota debe ser tomada en cuenta en la vista general, así que cualquier cambio de función entre las partes cooperantes de la presente invención debe
5 considerarse dentro del alcance de la invención.

En segundo lugar, se extiende la pestaña 1c desde abajo por medio de un segmento de tubo 1cc, que termina con un mango de agarre 66 fijado a y que traslapa su extremo inferior. Este mango de agarre no es giratorio y se puede usar para tirar del segmento de
10 tubo 1cc de la extensión de pestaña o para empujarlo, en un movimiento telescópico, con respecto al poste 63, cuando se libera una tuerca de apriete giratoria 66a de la figura 6A, que forma el extremo inferior del mango de agarre 66), y después presionando la palanca de fiador (61d1) para retraer el fiador 61d. En esta
15 modalidad, el fiador está localizado en el mango de agarre 66 (véase la figura 6B), donde, como se mencionó en lo que antecede, el mango de agarre en esta modalidad traslapa un cierto grado de la porción extendida de la pestaña 1c. Cuando se libera la tuerca de apriete 66a y se retrae el fiador, el dispositivo de sobreposición
20 puede ser operado de la misma manera que el de las figuras 2 a 5, donde el movimiento del mango de agarre hacia arriba da por resultado que se empujen las costillas 2 para abrirlas, y el movimiento del mango de agarre hacia abajo da por resultado que se tire de las costillas para cerrarlas (en cuyo caso estaban parcial o
25 totalmente abiertas, que no es el caso ilustrado).

El mecanismo conductor de movimiento corto, de acuerdo con la presente invención de preferencia es protegido, aislado y cubierto por medio del miembro de base 1, desde abajo, y por medio de una cobertura cónica 70, desde arriba.

5 La figura 7 ilustra un departamento oculto 72 que puede estar diseñado como la porción superior de la cobertura 71 para colocar circuitos electrónicos miniaturizados 73, útiles para diversos aspectos, tales como el identificador de ubicación, que activa una alarma cuando se pierde la conexión de RF (de acuerdo con otras
10 modalidades, la conexión ultrasónica), con un circuito correspondiente llevado por el usuario (útil también como alarma antirrobo); o tal como un identificador de sombrilla que enciende una luz LED parpadeante (de conformidad con otras modalidades un sonido de "bip" o una combinación de sonido y luz) cuando se
15 solicita mediante un controlador remoto llevado por el usuario, a fin de localizarla la sombrilla y/o identificarla entre otras sombrillas similares; o de manera que se pueda activar una luz de emergencia por un controlador remoto llevado por el usuario, o tal como una luz parpadeante útil para hacer notar al usuario cuando va caminando en
20 la oscuridad. Dichos circuitos electrónicos diversos pueden ser alimentados mediante baterías miniatura inherentes, o a través de alambres que pasan a lo largo del poste hueco de la sombrilla, es decir, a través de una de las muescas del tipo de poste ilustrado en la figura 2B. En caso de que las partes de la sombrilla sean de
25 material conductor, a todo lo largo de la trayectoria entre el

compartimiento de batería y el circuito electrónico, se pueden usar en lugar de uno de los alambres requeridos para conducir la energía de la batería hasta los circuitos electrónicos de utilidad y/o las luces, localizadas en el cubrimiento.

5 La figura 8 ilustra una vista isométrica parcial, en sección, del extremo inferior de la sombrilla eléctrica de acuerdo con la presente invención, que consiste de un mango de agarre principal 80 que tiene un compartimiento 81 para baterías, dentro del cual están las baterías recargables 81a, 81b; un enchufe 81c para recibir un
10 conector de una fuente de energía para recargar, un motor eléctrico 82, un circuito conmutador 83 que tiene un pulsador 83a para abrir la sombrilla, un botón pulsador 83b para cerrar la sombrilla, una luz indicadora de "batería baja" 83c; un circuito electrónico para detección de sobrecarga (véase la figura 8A) y un circuito electrónico
15 para la luz de indicación de "batería baja" (véase la figura 8B), y una unidad de engrane 84, para engranar entre el motor 82 y entre la barra de transmisión de rotación 65b, que transfiere la rotación del mecanismo conductor de telamen, de movimiento corto. De acuerdo con otra modalidad preferida se puede proveer un circuito electrónico
20 adicional para medir y exhibir la temperatura del entorno y/o que comprende un reloj electrónico.

De acuerdo con diversas modalidades de la presente invención, el compartimiento para baterías está hecho extraíble; de esa manera se puede reemplazar instantáneamente con baterías recién
25 recargadas, localizadas dentro de un compartimiento similar, para

baterías de repuesto, que se pueden usar entonces en reemplazo del juego de baterías que ha quedado agotado, y recurrentemente).

La figura 8A ilustra un circuito para la detección de sobrecarga, que desconecta el motor de la energía de la batería, cuando se detecta un incremento en la corriente de motor más allá de un umbral predeterminado. Este circuito no está dirigido únicamente a proteger el motor en situaciones de emergencia inesperadas, si no que es también muy útil durante la operación convencional, para indicar el final de las operaciones de apertura y de cierre de la sombrilla, donde, al final de la operación de cierre, cuando el cubo 4a (véase las figuras 2 a 5) del miembro conductor alcanza el extremo superior 5a de la flecha helicoidal 5, o al final de la operación de apertura, cuando el cubo alcanza el extremo inferior de la flecha helicoidal, la operación del motor es resistida dramáticamente; de esa manera, la corriente de motor que pasa a través del resistor 81 aumenta dramáticamente y se detecta inmediatamente una condición de sobrecarga, y el interruptor automático 80 (una compuerta FET) desconecta la energía de la batería del motor. Cuando el usuario identifica que el motor se ha detenido, suelta naturalmente el pulsador y la sombrilla permanece en su posición actual hasta que sea activada una operación opuesta por el usuario, al oprimir el pulsador que controla la operación opuesta.

La figura 8B ilustra un circuito electrónico para detectar la "batería baja", que enciende una alarma luminosa de LED rojo cuando detecta un voltaje de batería insuficiente.

La figura 9 ilustra una vista isométrica de una sombrilla eléctrica completa de acuerdo con una modalidad preferida de la presente invención, sin el telamen. El mecanismo conductor de telamen está localizado detrás del cubrimiento cónico 70, y es capaz de llevar las costillas 2 entre la posición abierta ilustrada y una posición cerrada, en la que las costillas quedan sustancialmente paralelas al poste 63; la sombrilla podría ser agarrada con una mano que sostiene el mango de agarre principal 80 y, cuando haya necesidad, con la otra mano, que sostiene el mango de agarre superior 66. Como se puede apreciar de esta figura, el espacio debajo del telamen está completamente libre (excepto por el poste); de manera que el telamen podría ser bajado por el usuario hasta que esté junto a su cabeza.

Se usa también el mango de agarre 66 para activar un dispositivo de sobreposición, y cuando se suelta al tirar la tuerca 66a y presionar una palanca de fiador (véase 61d1 de la figura 6B), se puede usar para cerrar el telamen, moviéndolo hacia abajo, y para abrir el telamen moviéndolo hacia arriba. Cuando se obtiene un estado de telamen apropiado, se puede hacer girar la tuerca 66a y apretarla de nuevo para mantener el estado.

La figura 10 ilustra el extremo distal de una costilla 2, de acuerdo con varias modalidades preferidas de la presente invención. El cuerpo 21 de costilla está hecho de un metal rígido, y el extremo distal 22 de la costilla está hecho de una varilla metálica flexible (por ejemplo, acero flexible. Las dos partes se pueden conectar entre sí

de cualquier manera aceptable, tal como mediante tornillos miniatura, pasadores, espigas 23, soldadura o sus combinaciones. Se puede reforzar la conexión insertando la varilla flexible dentro de una muesca preparada en el extremo del cuerpo de la costilla. La

5 parte flexible es esencial para recibir una forma de hongo del telamen en su estado abierto; donde los extremos flexibles de las costillas son forzados a doblarse hacia abajo en forma de arco (por ejemplo, a la posición ilustrada por la línea punteada), por medio de la tela del telamen, que está cosida en una forma de hongo. Cuando

10 se cierra el telamen, la porción flexible de las costillas regresa a una orientación recta, que es necesaria para que la sombrilla se pliegue a una forma recta, compacta.

De acuerdo con varias modalidades preferidas ilustradas en la figura 11, el telamen 120 está cosido desde arriba del cubrimiento

15 del mecanismo conductor 70, y tiene otro cubrimiento 77 encima. De acuerdo con otras modalidades preferidas, ilustradas por la figura 12, la porción central 121a del telamen 121 está insertada y mantenida en el espacio interior entre el miembro de base 1 y el cubrimiento 70 del mecanismo conductor.

20 De acuerdo con diversas modalidades preferidas ilustradas en la figura 13, la sombrilla de la presente invención está provista con canales de ventilación (como se marca con las flechas) útiles para disminuir las fuerzas del viento que tiendan a volar la sombrilla o a deformar su construcción. El viento que llega desde el lado inferior

25 del telamen es soltado (al menos parcialmente) a través de los

canales de ventilación ilustrados por las flechas. Se pueden crear los canales de ventilación dejando partes del extremo próximo (es decir central) 122a del telamen sin tensar, y proporcionando lienzo de tela adicional para cubrir por encima la porción central del telamen. Se puede usar el lienzo de tela adicional también para fines decorativos; por ejemplo, se puede proveerlo en un color o en un diseño diferentes al del telamen 122. El extremo superior de la sombrilla (en sus diversas modalidades) puede estar diseñado como el de las sombrillas convencionales que tienen una punta ahusada 124 que se puede conectar con el cubrimiento 70 por medio de costura (o por cualquier otro método de conexión deseado).

Otra opción es hacer que los canales de ventilación formados no estén entre la tela del telamen y la base del mecanismo conductor y el cubrimiento, sino que estén formados como tubos huecos en el material rígido del miembro de base y del cubrimiento.

La figura 14 ilustra el mecanismo conductor de telamen, de movimiento corto, de acuerdo con otra modalidad de la presente invención, adaptada para telámenes de pliegues múltiples que tienen un poste telescópico de sombrilla, en estado cerrado de la sombrilla. Como se puede observar, las costillas (solamente se ilustra una) están formadas de tres secciones de pliegue 202, 212 y 216. La sección de costilla 202 tiene una porción 202a de palanca de costilla, que tiene un pasador 202b movable a lo largo de un cursor 4c de la barra de cursor 4b. Una pluralidad de barras de cursor 4b están espaciadas angularmente alrededor de un cubo 204a, que es movable

verticalmente entre una pluralidad de miembros de guía verticales 240, dispuestos en un círculo alrededor del cubo 204a, cada uno en el espacio entre un par de barras de cursor respectivas 4a. En esta figura, el cubo 204a está situado en su ubicación inferior entre los

5 miembros de guía, que corresponde a un estado cerrado de la sombrilla. Consecuentemente, la costilla de tres secciones es plegada y tiene sus tres secciones de costilla 202, 21 y 216 sustancialmente paralelas entre sí. Como se puede apreciar, y de manera similar al mecanismo conductor de telamen de las

10 modalidades descritas más atrás, el movimiento hacia abajo del cubo 204a dará por resultado el deslizamiento de los pasadores 202b a lo largo de los cursores 4c, y de esa manera, la rotación de la sección de costilla 202 por el trabajo de la palanca 202a de costilla alrededor de la conexión de pivote 201a. Como se puede apreciar, al pivotar la

15 sección de costilla 202 hacia arriba dará como resultado un pivote correlacionado del extensor de costilla 217 alrededor de su junta de pivote 217a, y a su vez, el movimiento lineal de su pasador 217b, en la dirección indicada por la flecha R, a lo largo de un cursor correspondiente 202h, formado en la sección de costilla 202. Como

20 resultado del movimiento lineal del extensor 217 en la dirección indicada, la sección de costilla 212 girará alrededor del gozne 232, debido a la tracción de su miembro de palanca 212a por el miembro de tracción 217b, conectado al miembro de palanca 212a mediante la junta de pivote 231. Simultáneamente el alambre fijo 218 tirará de la

25 palanca de costilla 215 para que pivote alrededor del gozne 235 y,

de esa manera, levante la sección 216 de costilla elástica. El resultado de dichos movimientos está ilustrado en la figura 15, que muestra el estado abierto de la sombrilla.

Los miembros de guía 240, el tubo de extensión 22 y el miembro de base 201 pueden estar todo hechos de la misma pieza de material. Alternativamente, es posible fabricarlos como partes separadas y conectarlos posteriormente de cualquier manera aceptable.

Como se puede observar adicionalmente en esta figura 14, el poste de la sombrilla es telescópico, y consiste de una sección telescópica superior 220, conectada en su parte superior a la parte inferior del mecanismo conductor de telamen, y de una sección telescópica inferior 221, conectada en su parte inferior al mango de agarre 277 de la sombrilla, que también es el alojamiento del motor 279. Una flecha de transmisión helicoidal 226 está acoplada operativamente al motor 229, y puede girar dextrógira o levógiramente gracias al motor, a fin de abrir y cerrar tanto el telamen como el poste telescópico. En esta figura, el poste telescópico está cerrado, donde la sección telescópica inferior 221 está totalmente dentro de la sección telescópica superior 220. Cuando gira el motor en una dirección para abrir la sombrilla, la sección telescópica inferior será llevada fuera de la sección telescópica superior, debido al avance de la tuerca 227 de tubo a lo largo de la rosca de la flecha 226 de transmisión helicoidal, puesto que la tuerca 227 de tubo está conectada a través de un tubo de

extensión 222, con el extremo superior de la sección telescópica superior 220. Después de un rato durante la rotación de la flecha de transmisión, el hombrón 226a de la flecha de transmisión, que tiene un diámetro mayor que el de la flecha de transmisión 226
5 propiamente dicha, se acoplará con el extremo superior de un anillo hueco 226, y comenzará a tirar de él hacia la tuerca de tubo 227. El anillo hueco 225 está conectado al cubo 204a a través de los alambres 223 y 224, situados desde dos direcciones opuestas de la flecha de transmisión 226, y anclados tanto al anillo hueco 226 como
10 al cubo 204a del miembro conductor 204. Como resultado de esta tracción, el miembro conductor 204 se moverá hacia abajo, forzando al telamen de pliegues múltiples a abrir las costillas de pliegues múltiples en el mecanismo descrito aquí con anterioridad. Cuando el anillo hueco 225 alcance una proximidad cercana con la tuerca
15 tubular 227, el miembro conductor 204 llegará a su posición más baja a lo largo de sus guías verticales 240, con el telamen de pliegues múltiples abierto y con el poste telescópico en su longitud máxima.

Tal como se puede apreciar, cuando se efectúa la rotación del motor 279 en una dirección opuesta, es decir, en una dirección para
20 cerrar la sombrilla, la rotación de la flecha de transmisión 226 dentro de la tuerca tubular 227 cerrará el poste telescópico al empujar la sección telescópica inferior 221 dentro de la sección telescópica superior 220; y cuando el extremo superior del hombrón 226a de la flecha de transmisión se acople con la parte inferior de la extensión
25 descendente 204d del cubo, comenzará a empujar el miembro

conductor 204 hacia arriba, a la posición inicial cerrada, que se ilustra en esta figura 14. El anillo hueco 225 tiene un pasaje libre con respecto a la rosca de la flecha de transmisión 226, y de tal manera, no es afectado por el mecanismo de cierre. Por la misma
5 tación tampoco afecta la primera parte del mecanismo de apertura, es decir, antes del acoplamiento del hombrón 226a de la flecha de transmisión con el extremo superior del anillo hueco, como se describió más atrás.

La figura 14A ilustra una vista superior del miembro 204
10 conductor de telamen de la modalidad de la figura 14, que está situado en sus miembros de guía 224. Como se muestra en esta figura, el cubo 204a está comprendido por una pluralidad de miembros de guía 240, marcados en negro; cada uno de los cuales está situado entre un par de barras 4a de cursor correspondientes,
15 con una separación entre los miembros de guía 240 y las barras 4a de cursor, permitiendo un movimiento vertical del cubo 204a y la pluralidad de barras de cursor 4a, conectadas a él, hacia arriba y hacia abajo, entre los miembros de guía 240. La parte superior de los dos alambres 223 y 224 está mostrada anclada dentro del cubo,
20 desde direcciones opuestas de su extensión descendente 204d. Estos alambres conectan el miembro conductor 204 al anillo hueco 225 mostrado en la figura 14, que al tirar hacia abajo del miembro conductor 204, se mueve hacia abajo para abrir el telamen de pliegues múltiples.

25 La figura 15 ilustra la misma modalidad ilustrada en la figura

14, en estado abierto de la sombrilla. La sección telescópica inferior 221 está sacada de la sección telescópica superior 220, el hombrón 226a de la flecha de transmisión mantiene el anillo hueco 226 adyacente a la tuerca de tubo 227 y, de tal manera, se mantiene el

5 miembro conductor 204 mediante los alambres 223 y 224, en su posición más baja a lo largo de los miembros de guía 240, que corresponde al estado abierto del telamen de pliegues múltiples, con las secciones de costilla de pliegues múltiples 202, 212 y 216, en estado abierto.

10 Al girar el motor 279 en una dirección para cerrar la sombrilla, la sección telescópica inferior 221 se moverá dentro de la sección telescópica superior 220, debido al avance de la rosca de la flecha de transmisión 226 a través de la tuerca de tubo 227. Cuando el extremo superior del hombrón 226a de la flecha de transmisión

15 alcanza la parte inferior de la extensión descendente 204d del cubo 204a, el miembro conductor 204 será forzado hacia arriba, mientras pliega el telamen de pliegues múltiples en un proceso opuesto al proceso de apertura descrito por la figura 14. El plegamiento del telamen se completará cuando el miembro conductor regrese a la

20 posición cerrada inicial ilustrada en la figura 14, con el poste telescópico en estado cerrado.

Las figuras 16A a 16C ilustran, en una vista parcial en sección vertical (tomada en A-A de la figura 17), tres estados durante la operación de un mecanismo conductor de telamen, de acuerdo con

25 otra modalidad preferida de junta de pasador y cursor. En la

modalidad ilustrada, el pasador 300 de la junta de pasador y cursor es realmente la porción extrema de la palanca corta (303) de una costilla 301 de telamen, y es más ancho que la costilla. Si bien el diámetro del pasador es significativamente mayor que su longitud (que es perpendicular al plano de la figura), sin embargo se denomina pasador en el contexto de la presente invención, puesto que en realidad efectúa la misma función que, por ejemplo, el pasador 2b de la figura 1. El cursor del pasador 300 es una celda hueca 311 (se denominará también el "cursor 311") hecha de un miembro conductor de telamen 310, que en realidad es un cubo que comprende una pluralidad de celdas huecas 311, espaciadas angularmente alrededor de un centro común; cada una de las cuales acomoda un pasador 300. En la figura 16A, el miembro conductor de telamen 310 está mostrado en su posición superior encima del poste de la sombrilla (no ilustrado) con el pasador 300 forzando la palanca corta 303 hacia arriba, manteniendo así la costilla 301 hacia abajo, que es el estado cerrado de la sombrilla. Cuando el miembro conductor de telamen 310 se mueve hacia abajo, a la posición ilustrada por la figura 16B, fuerza al pasador 300 hacia abajo y, adicionalmente a deslizarse hacia dentro, dentro de la celda hueca 311, forzando de esa manera a que la costilla 301 gire hacia arriba alrededor del gozne 302, a una posición media que corresponde a un estado parcialmente abierto del telamen. Al bajar adicionalmente el miembro 310 conductor de telamen a la posición más baja que se ilustra en la figura 16C, el pasador 300 es forzado hacia abajo y

lateralmente hacia fuera de la celda hueca 311, forzando así a que la costilla 301 pivote adicionalmente alrededor del gozne 302, a la posición ilustrada en la figura 16C, que corresponde al estado abierto de la sombrilla. Como se puede apreciar, la junta de pasador y cursor formada por el pasador 300 y el cursor 311 permite convertir el movimiento vertical ascendente-descendente del miembro conductor 310 a movimiento pivotal de la palanca corta 303 y la costilla 311, alrededor del gozne 302. Se apreciará que la palanca corta 303 puede estar diseñada más corta que lo ilustrado, y en realidad el propio pasador puede funcionar como palanca. La longitud de la palanca corta 303 es cuestión de diseño y depende, entre otros factores, del par de torsión del motor eléctrico que se vaya a usar (la palanca corta puede diseñarse más corta siempre y cuando el par de torsión del motor sea suficiente para levantar la costilla y extender la tela del telamen).

La figura 17 ilustra una vista en sección lateral parcial (tomada en B-B de la figura 16B), del mecanismo conductor de telamen de la modalidad ilustrada por las figuras 16A a 16C, en el estado ilustrado por la figura 16B; donde las costillas (301) están en una ubicación media, con el telamen parcialmente abierto y con el pasador 300 de cada costilla deslizado máximamente a lo largo del cursor 311 en la dirección del eje central del miembro conductor 310. Como se puede observar en las figuras 16A y 16C, el pasador 300 alcanza su deslizamiento opuesto máximo a lo largo del cursor 311, es decir, la distancia máxima desde el centro del miembro conductor 310. El

movimiento ascendente-descendente del miembro conductor se puede obtener por una extensión 312 del cubo (mostrada en las figuras 16A-16C) extendido hacia el poste de la sombrilla, de manera similar a la del miembro de extensión de cubo 4aa) de la figura 6, o
5 mediante una rosca interna, representada por la doble línea circular punteada 314, de manera similar a la rosca interna del cubo 4a de la figura 1.

La figura 18 ilustra una vista lateral de una costilla de telamen de acuerdo con la modalidad ilustrada en las figuras 16A a 17, hecha
10 de una sola pieza de material. Se puede producir la costilla de moldeo de plástico, como una unidad que comprende el pasador 300, la palanca corta 303, los goznes 302 de ambos lados, y la costilla 301. La propia costilla 301 puede tener rebajos 304 en ambos lados, útiles para reducir su peso, con pérdida insignificante de su
15 resistencia. El extremo 30 de la costilla puede estar gradualmente ahusado, de manera que su espesor, cerca del extremo de la costilla, esté reducido lo suficiente para hacerla flexible, de manera que cuando se abra completamente el telamen, la costilla sea forzada a la forma arqueada ilustrada por la línea punteada 306, debido a la
20 tensión ejercida por la tela del telamen (no ilustrada) que está dimensionada y diseñada a la forma de un hongo, forzando los extremos flexibles de las costillas a doblarse hacia abajo.

La figura 19 ilustra una vista superior de la costilla de telamen de la figura 18. La costilla tiene un extremo plano 305, que es
25 flexible en dirección perpendicular al plano de ilustración, debido al

espesor reducido del extremo de la costilla. Consecuentemente, la presente invención se refiere a una sombrilla que consiste de un mecanismo conductor de telamen, como se describió con anterioridad, donde las costillas están hechas de un material rígido y

5 que tiene espesor reducido gradualmente en sus extremos distales, lo que da por resultado flexibilidad de los extremos de las costillas, útil para obtener un telamen en forma de hongo. La invención se refiere además a la costilla de sombrilla que tiene un espesor gradualmente reducido cerca de su extremo distal, útil especialmente

10 para obtener telamen en forma de hongo, en sombrillas sin tirantes.

REIVINDICACIONES

1. Mecanismo conductor de telamen para sombrillas manuales, que comprende: (a) un miembro conductor de telamen, que tiene una pluralidad de una primera parte de una junta de pasador y cursor, conectada rígidamente y espaciada angularmente alrededor de un cubo central común; (b) un separador que tiene un extremo inferior central, adaptado para ser conectado a un poste de una sombrilla; y una pluralidad de puntos de pivote, espaciados remota y angularmente alrededor del extremo inferior central; cada uno está adaptado para recibir una costilla de telamen que tiene un brazo de palanca corto que tiene una segunda parte de la junta de pasador y cursor, que complementa la primera parte.

2. Mecanismo conductor de telamen de conformidad con la reivindicación 1, que comprende adicionalmente una pluralidad de costillas de telamen, conectadas pivotalmente a las conexiones de pivote, y que forma adicionalmente una pluralidad de juntas de pasador y cursor, con el miembro conductor.

3. Mecanismo conductor de telamen de conformidad con la reivindicación 1, que está conectado al extremo superior de un poste.

4. Mecanismo conductor de telamen de conformidad con la reivindicación 1, en el que el separador tiene una pestaña hueca que sobresale desde abajo.

5. Mecanismo conductor de telamen de conformidad con la

reivindicación 1, en el que el cubo es hueco y tiene una rosca interior.

6. Mecanismo conductor de telamen de conformidad con la reivindicación 1, en el que el cubo está conectado a un miembro de extensión que tiene una conexión roscada en su extremo inferior.

7. Sombrilla que comprende un mecanismo conductor de telamen de acuerdo con la reivindicación 2.

8. Sombrilla que comprende un mecanismo conductor de telamen de cuerdo con la reivindicación 2, conectado en su extremo inferior a un extremo superior de un poste de la sombrilla; y el poste tiene un mango de agarre superior, conectado cerca de su extremo superior, y un mango de agarre principal, conectado a su extremo inferior.

9. Sombrilla eléctrica que comprende un mecanismo conductor de telamen de acuerdo con la reivindicación 2, conectado en su extremo inferior al extremo superior de un poste hueco; el poste hueco está conectado en su extremo inferior a un mango de agarre principal de la sombrilla, donde el miembro conductor de telamen es impulsado a lo largo de una trayectoria corta, entre una posición superior y una posición inferior, encima del poste, que corresponden a un estado cerrado y un estado abierto de la sombrilla, respectivamente, por rotación de un motor eléctrico situado cerca de, o dentro del mango de agarre principal, accionado por baterías situadas en las inmediaciones, y que transmite su rotación a un tornillo o una flecha helicoidal, adaptada para convertir

la rotación a movimiento vertical del miembro conductor.

10. Sombrilla eléctrica de conformidad con la reivindicación 9, que comprende adicionalmente un dispositivo de sobreposición.

11. Sombrilla eléctrica de conformidad con la reivindicación 9, que comprende adicionalmente un dispositivo de sobreposición; comprendiendo el dispositivo de sobreposición una pestaña extendida, conectada a la parte inferior del separador, y capaz de efectuar movimiento telescópico con respecto al poste de la sombrilla; y medios para apretar liberablemente la pestaña extendida, al poste.

12. Sombrilla eléctrica de conformidad con la reivindicación 9, que comprende adicionalmente un mango de agarre superior, situado cerca del extremo superior del poste, y que es parte de un dispositivo de sobreposición; comprendiendo el dispositivo de sobreposición una pestaña extendida, conectada a la parte inferior del separador, y capaz de moverse telescópicamente con respecto al poste de la sombrilla; y medios para apretar liberablemente la pestaña extendida al poste; donde el mango de agarre superior está localizado de manera que pueda ser utilizado para mover la pestaña extendida hacia arriba y hacia abajo, en el movimiento telescópico.

13. Sombrilla eléctrica de conformidad con la reivindicación 9, que comprende adicionalmente un compartimiento para batería, localizado dentro del mango de agarre principal.

14. Sombrilla eléctrica de conformidad con la reivindicación 9, que comprende adicionalmente un compartimiento para batería

localizado dentro del mango principal, en comunicación eléctrica con un conector adaptado para recibir una clavija de una fuente de poder, para recargar las baterías.

15. Sombrilla eléctrica de conformidad con la reivindicación 9, que comprende adicionalmente un compartimiento de baterías extraíble, localizado dentro del mango de agarre principal.

16. Sombrilla eléctrica de conformidad con la reivindicación 9, que comprende adicionalmente un circuito de detección de sobrecarga, capaz de desconectar la alimentación de baterías al motor, cuando se reconoce que hay una corriente de motor que sobrepasa un umbral predeterminado.

17. Sombrilla eléctrica de conformidad con la reivindicación 9, que comprende adicionalmente un circuito de detección de sobrecarga, capaz de desconectar la alimentación de baterías al motor, cuando se reconoce que hay una corriente de motor que sobrepasa un umbral predeterminado; y capaz adicionalmente de invertir la polaridad de la conexión de poder al motor.

18. Sombrilla eléctrica de conformidad con la reivindicación 9, que comprende adicionalmente por lo menos un circuito eléctrico o electrónico de uso común, seleccionado de: (a) un detector de ubicación; (b) una iluminación de emergencia; (c) una iluminación de seguridad; (d) una alarma de batería baja; (e) un medidor de temperatura; (f) un reloj electrónico; (g) un sensor remoto antirrobo; (h) iluminación decorativa; (i) recargador de batería con clavija de energía integral; (j) controlador remoto en comunicación inalámbrica

con ciertos circuitos electrónicos o eléctricos de la sombrilla; (k) alarma de voz o sónica; (l) una combinación de por lo menos dos de entre "a" a "k".

19. Sombrilla eléctrica que comprende un mecanismo
5 conductor de telamen de conformidad con la reivindicación 2, en la que las costillas están hechas de un material rígido en su porción próxima, y de varillas flexibles en su porción distal.

20. Sombrilla que comprende un mecanismo conductor de telamen de conformidad con la reivindicación 2, caracterizada porque
10 no tiene tirantes ni extensores que conecten entre el poste de la sombrilla y sus costillas de telamen.

21. Mecanismo conductor de telamen de conformidad con la reivindicación 1, que comprende adicionalmente una pluralidad de juntas de pivote, espaciadas remota y angularmente alrededor del
15 extremo inferior central; cada una de las cuales está adaptada para recibir un extensor de costilla que se va a asociar con una costilla que se va a recibir en un punto de conexión de pivote correspondiente.

22. Mecanismo conductor de telamen de conformidad con la
20 reivindicación 1, que comprende adicionalmente: (i) costillas de pliegue múltiple, conectadas pivotalmente a las conexiones de pivote, y que forman adicionalmente una pluralidad de juntas de pasador y cursor, con el miembro conductor; y (ii) una pluralidad de extensores de costilla, conectados pivotalmente a juntas de pivote
25 respectivas, y a costillas de pliegue múltiple respectivas.

23. Sombrilla eléctrica que comprende un mecanismo conductor de telamen de conformidad con la reivindicación 22; el mecanismo conductor de telamen está conectado en su extremo inferior al extremo superior de un poste telescópico; el poste telescópico está conectado en su extremo inferior a un mango de agarre principal de la sombrilla; donde el miembro conductor de telamen es impulsado a lo largo de una trayectoria corta entre una posición superior y una posición inferior, encima del poste, que corresponden al estado cerrado y al estado abierto de la sombrilla, respectivamente, por rotación de un motor eléctrico situado cerca de, o dentro del mango de agarre principal, accionado por baterías situadas en las inmediaciones; y que transmite su rotación a un tornillo o a una flecha helicoidal, adaptada para convertir la rotación a movimiento vertical del miembro conductor y a movimiento telescópico de por lo menos dos secciones telescópicas del poste.

24. Sombrilla eléctrica de conformidad con la reivindicación 9 o la reivindicación 22, en la que el mango de agarre está acojinado o tiene una protección amortiguadora contra daños por caída.

25. Sombrilla eléctrica de conformidad con la reivindicación 9 o la reivindicación 22, que comprende adicionalmente patas que se pliegan y que se extienden, acomodadas en el mango de agarre, y útiles para colocar verticalmente la sombrilla.

26. Sombrilla que comprende un mecanismo conductor de telamen de conformidad con la reivindicación 2, en la que las costillas están hechas de un material rígido y que tienen espesor que

se reduce gradualmente en sus extremos distales, lo que da por resultado flexibilidad de los extremos de las costillas, útiles para obtener un telamen en forma de hongo.

27. Costilla para sombrilla que tiene un espesor
5 gradualmente reducido cerca de su extremo distal, útil para obtener un telamen en forma de hongo.

RESUMEN

Se describe un mecanismo conductor de telamen para sombrillas manuales. El mecanismo conductor de telamen es especialmente útil para sombrillas eléctricas, aunque se puede usar también para sombrillas operadas manualmente. El mecanismo conductor de telamen tiene movimiento corto entre los estados abierto y cerrado de la sombrilla, y se basa en juntas de pasador y cursor, entre las costillas de la sombrilla y entre un miembro conductor de telamen, que permite un telamen sin puntal (es decir, un telamen sin restiradores que se extienden entre el poste de sombrilla y las costillas). Se describe también una costilla de sombrilla que tiene un extremo flexible, especialmente útil para sombrillas sin puntal. Se describe también una sombrilla eléctrica sin puntal, que comprende el mecanismo conductor de telamen y las costillas de extremo flexible, que incluye modalidades de telamen de un solo doblamiento y de doblamientos múltiples.

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Fig. 1

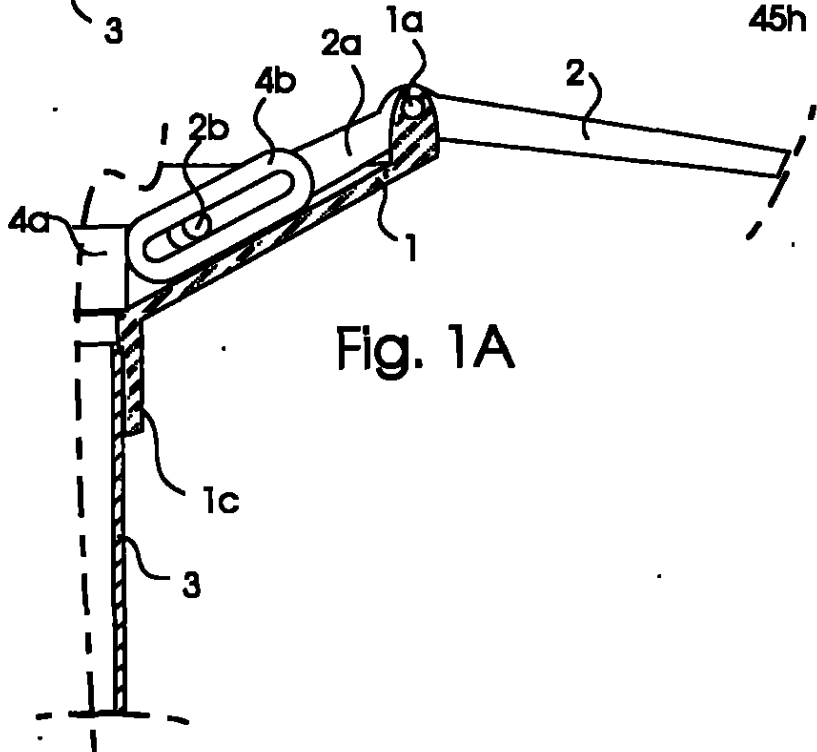
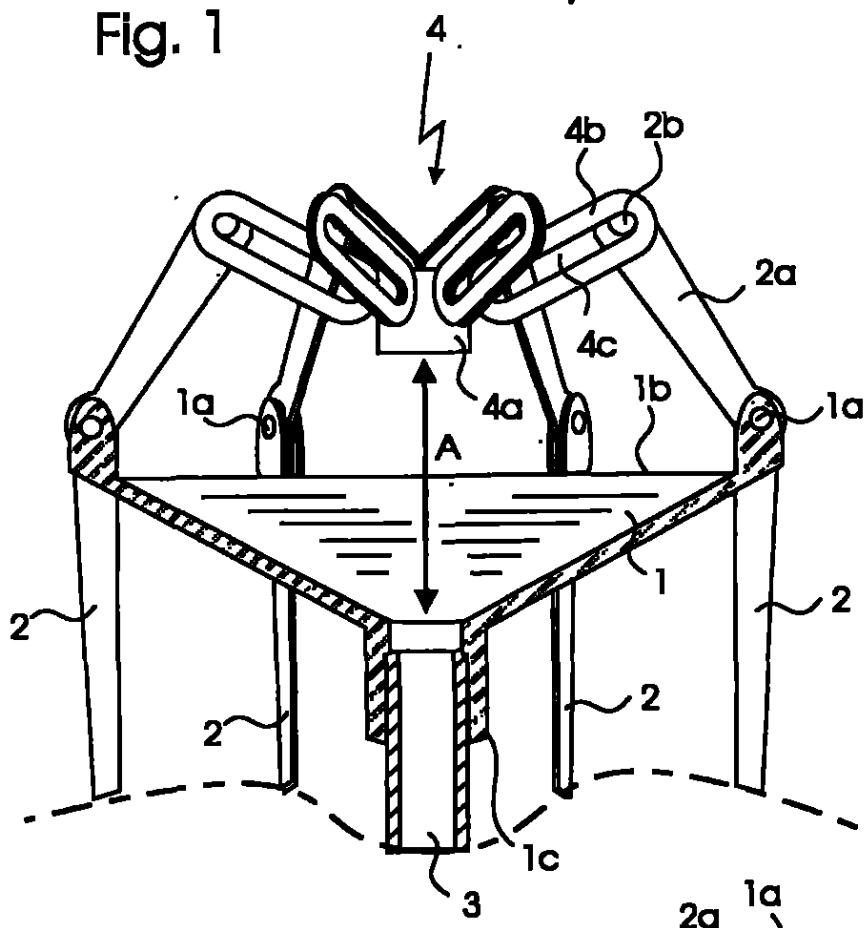


Fig. 1A

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Fig. 2

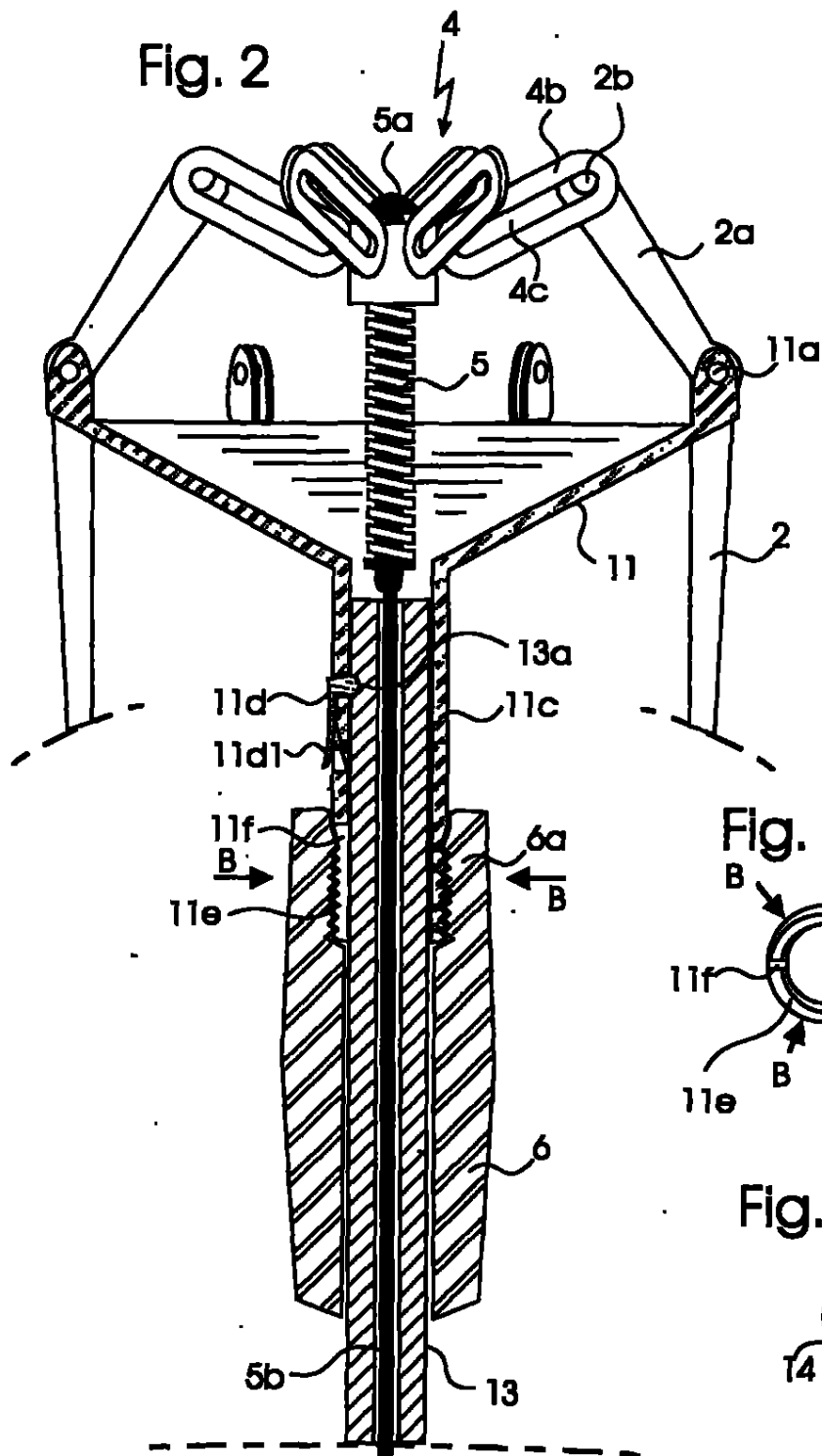


Fig. 2A

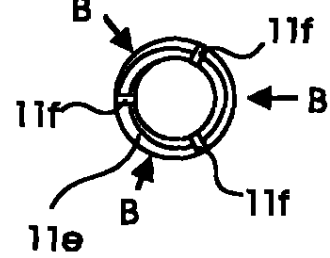
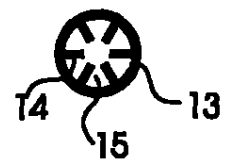
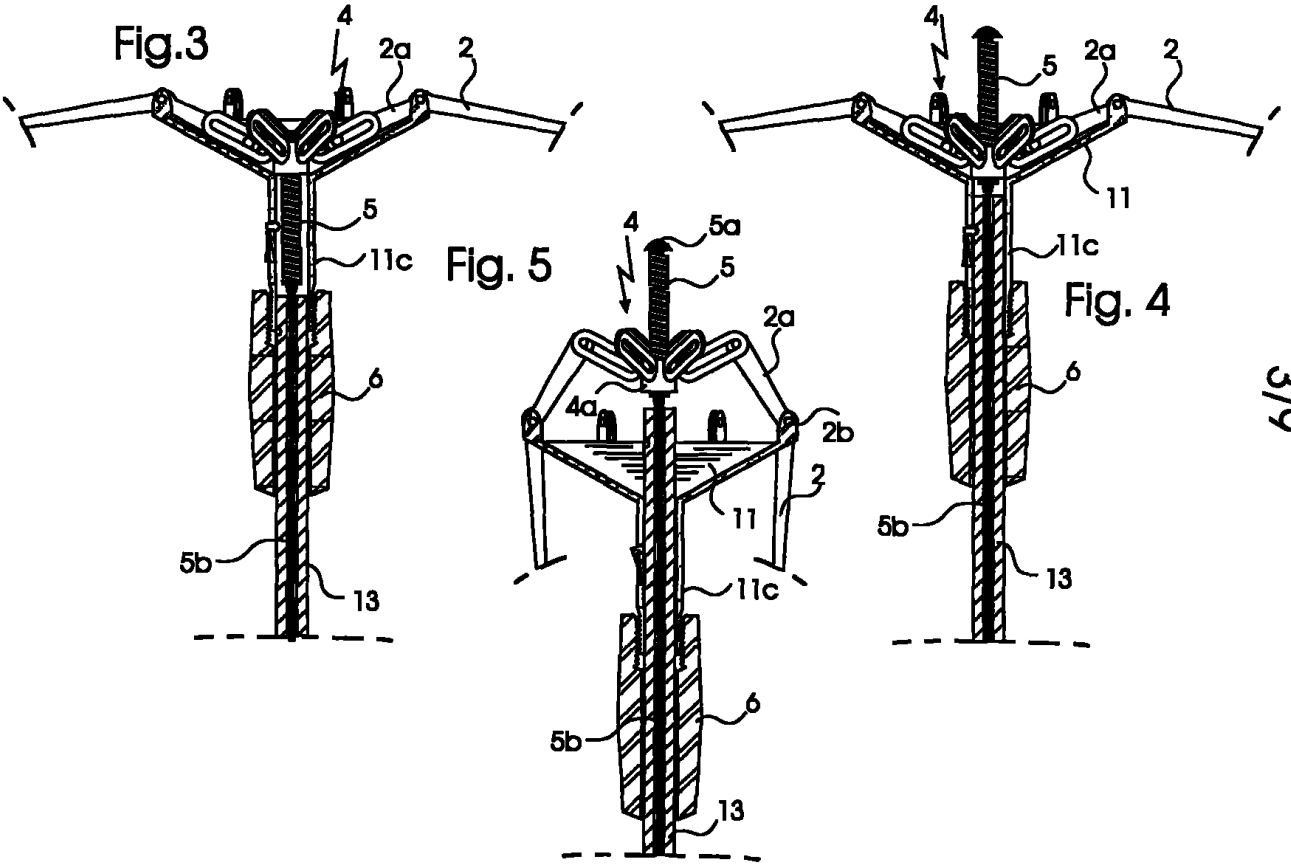


Fig. 2B



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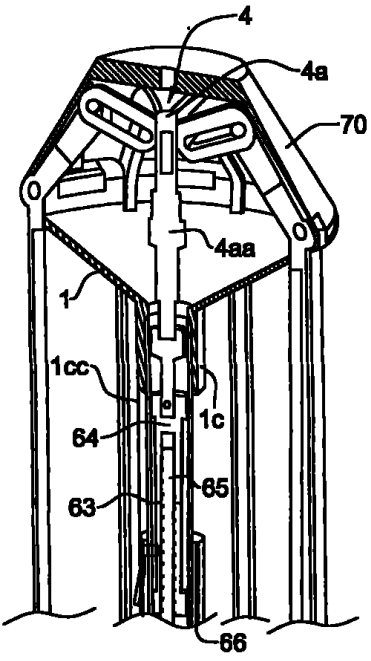


Fig 6

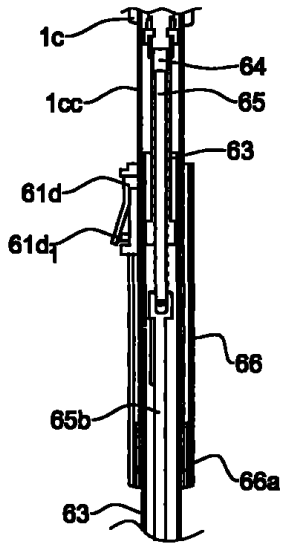


Fig 6A

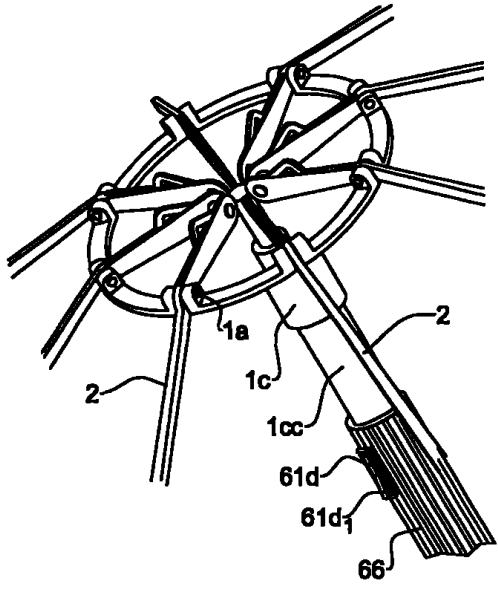


Fig 6B

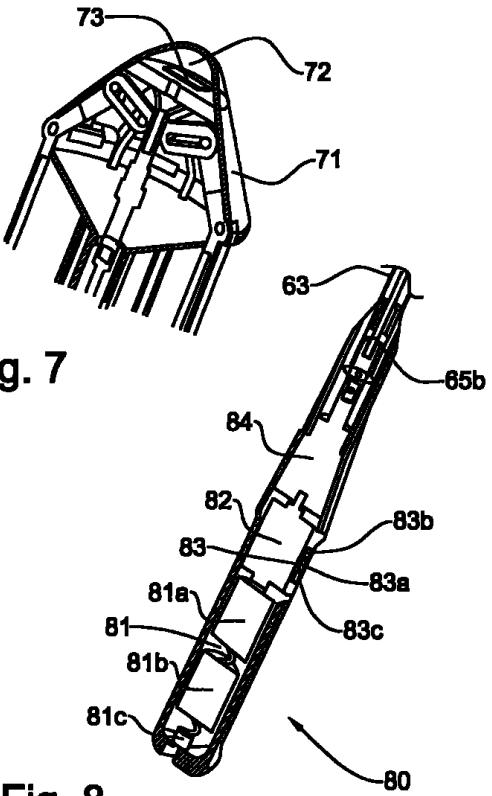


Fig. 7

Fig 8

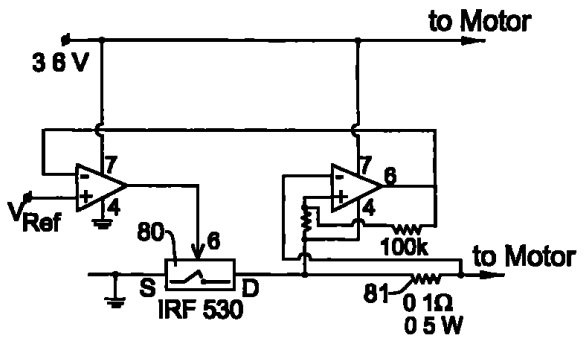


Fig. 8A

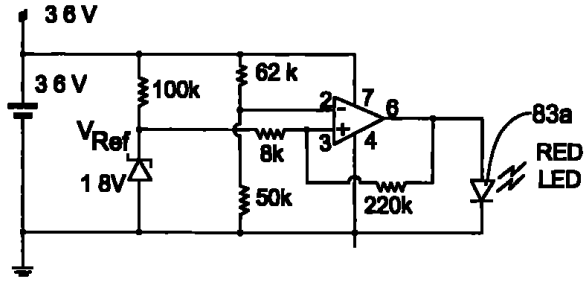


Fig. 8B

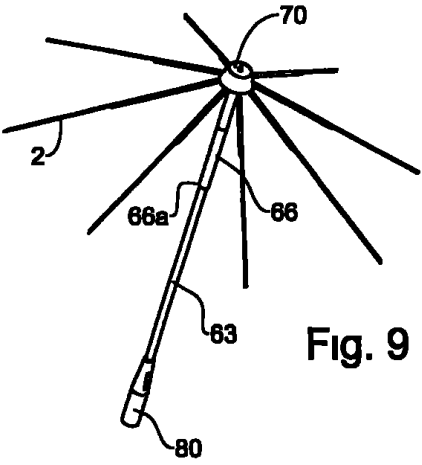


Fig. 9

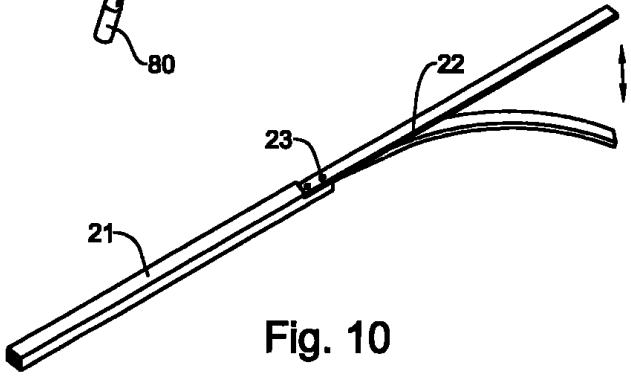


Fig. 10

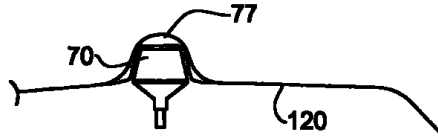


Fig 11

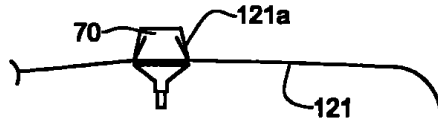


Fig 12

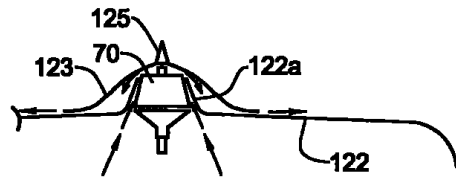
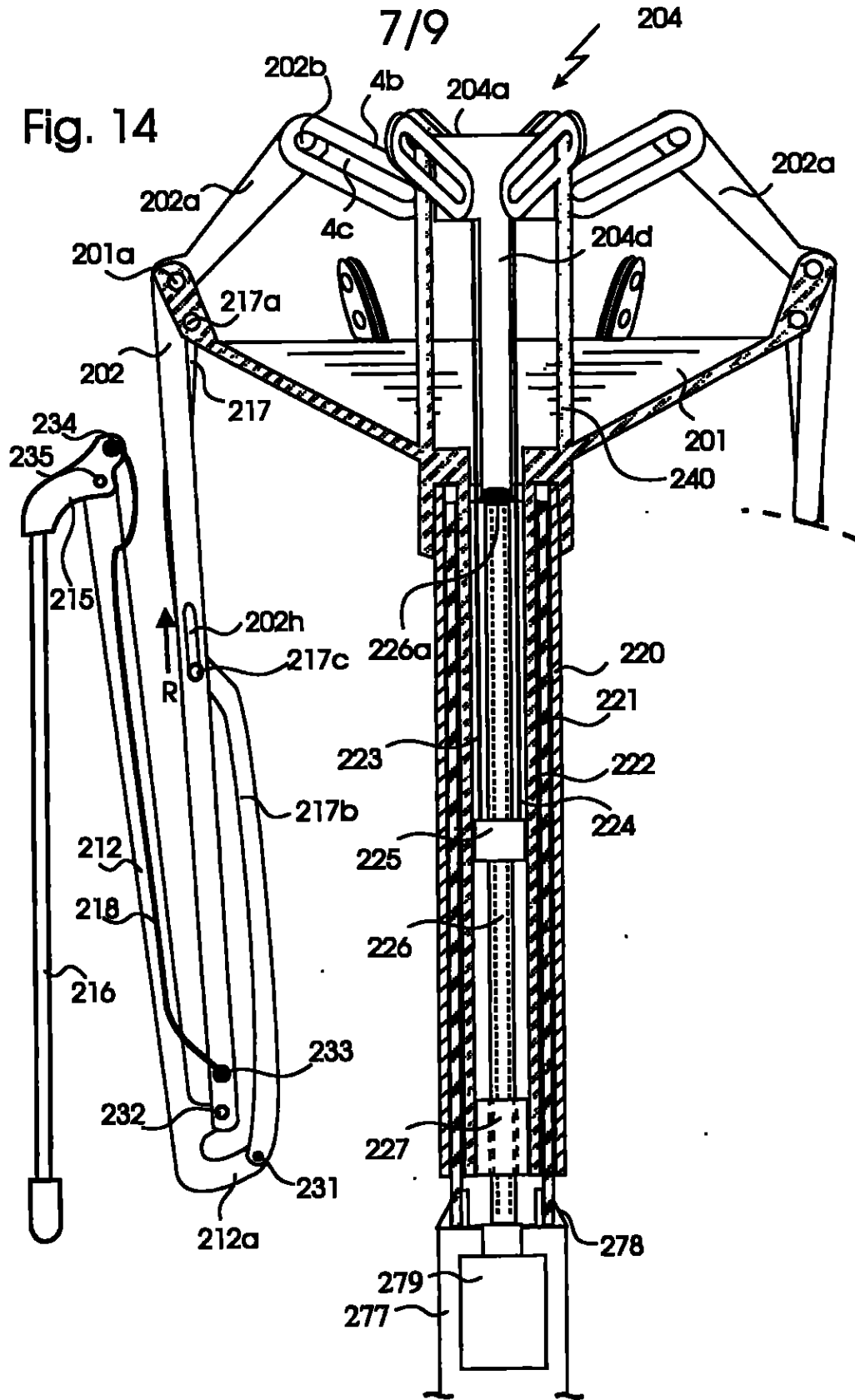


Fig 13

Fig. 14



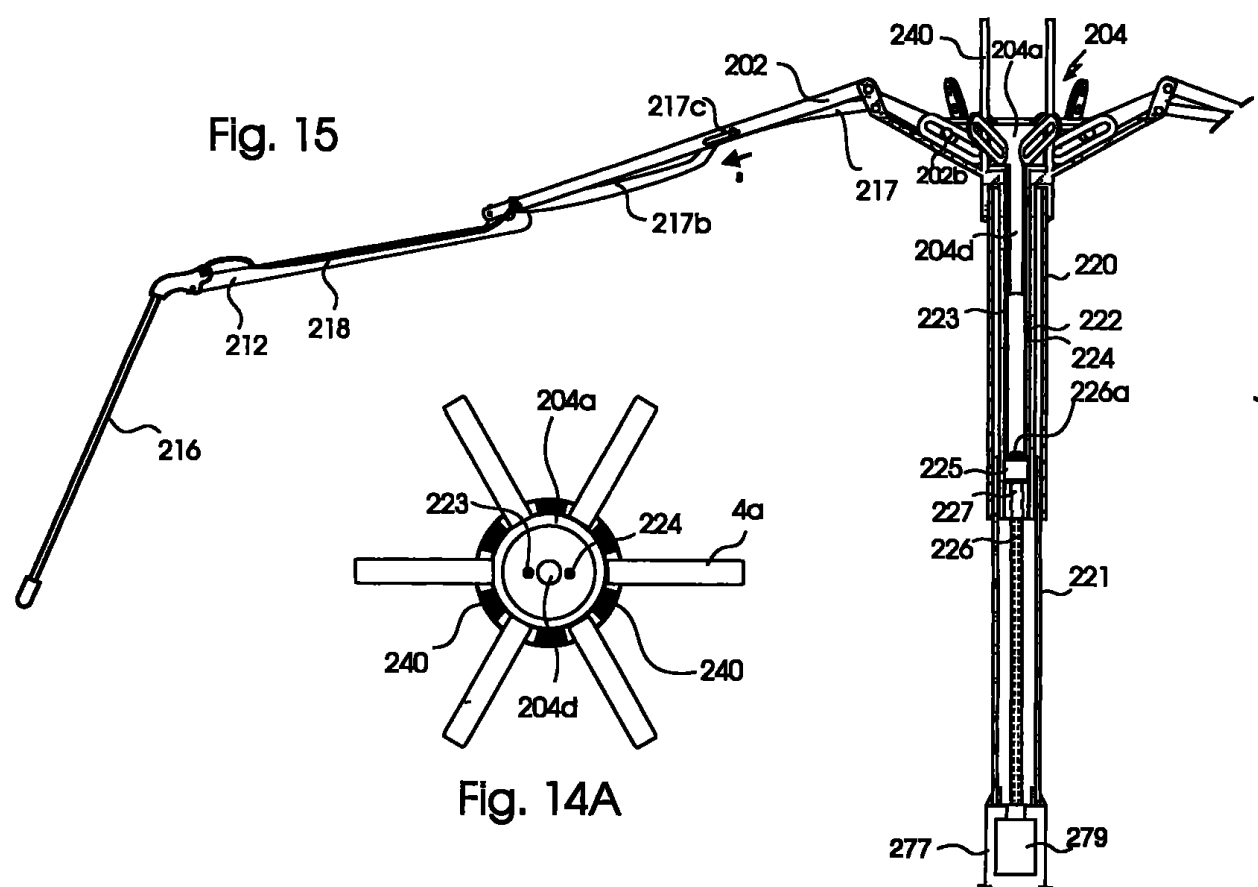


Fig. 15

Fig. 14A

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Fig. 16A

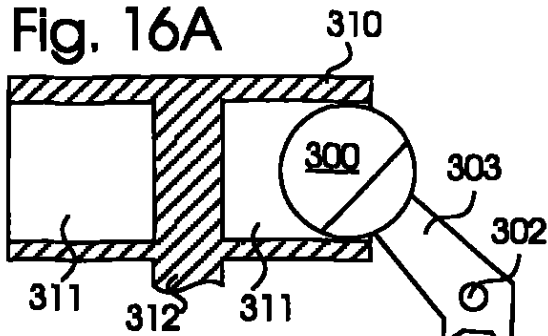


Fig. 16B

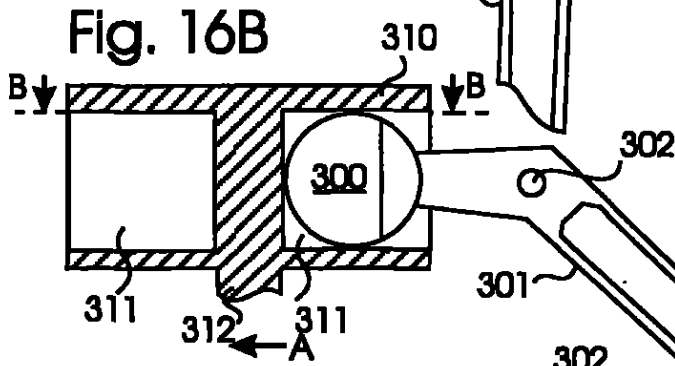


Fig. 16C

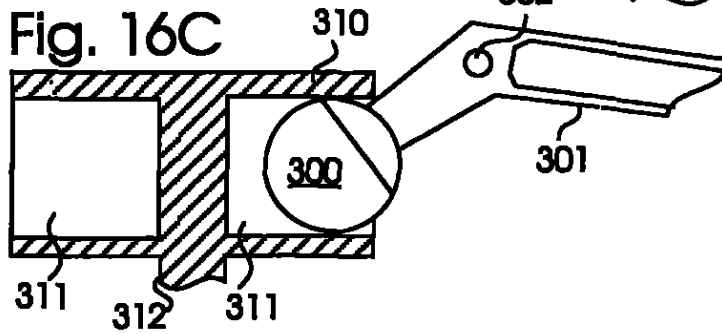


Fig. 17

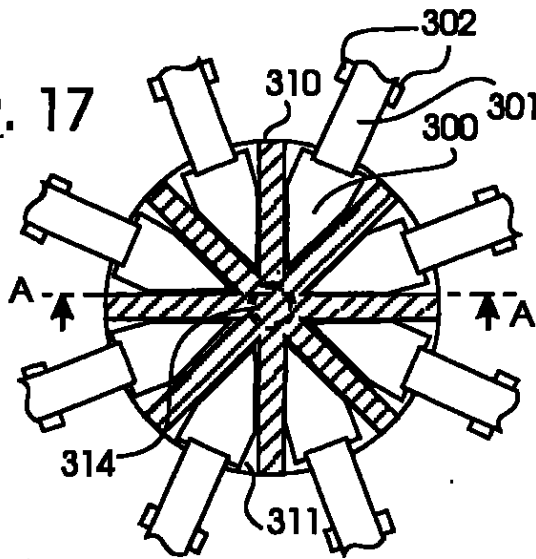


Fig. 19

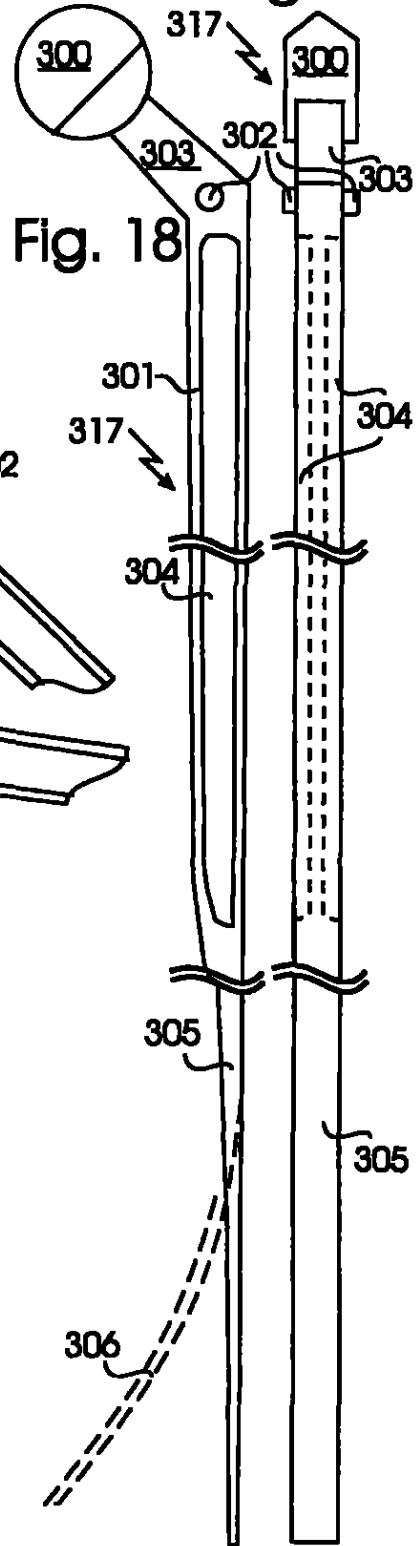


Fig. 18

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International publication date (day/month/year)	Priority date (day/month/year) 28 April 2004 (28.04.2004)	
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25 June 2004 (25.06.2004)	60/582,429	US	15 June 2005 (15.06.2005)
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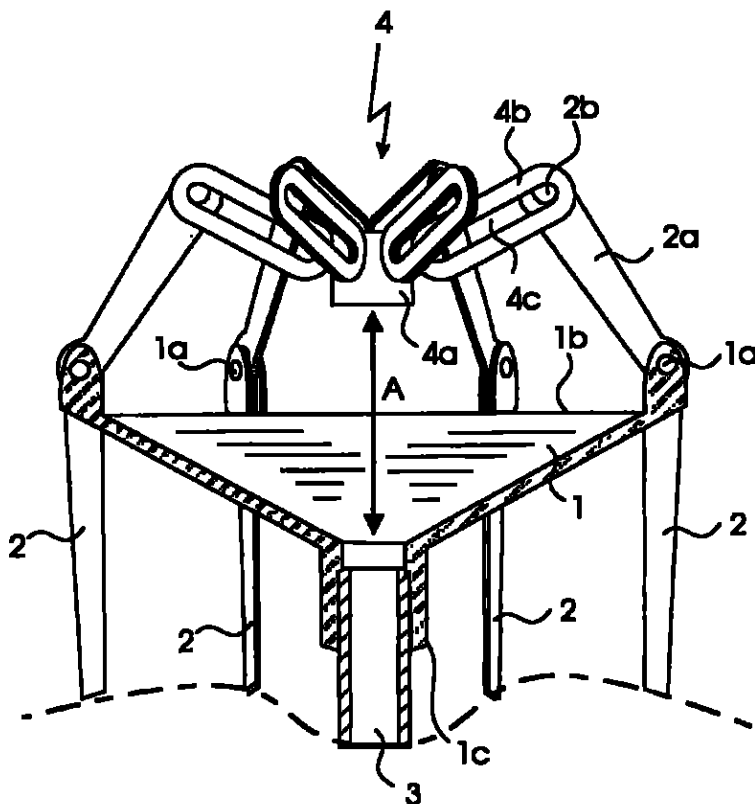
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(54) Title: ELECTRICAL UMBRELLA AND CANOPY MECHANISM



(57) Abstract: Canopy conducting mechanism for hand held umbrellas is disclosed. The canopy conducting mechanism is especially useful for electrical umbrellas although may be used for manually operated umbrellas as well. The canopy conducting mechanism has short movement between open and closed states of the umbrella and is based on pin and slide joints between the umbrella ribs and between a canopy conducting member, allowing for strutless canopy (i.e. a canopy without stretchers extending between the umbrella post and the ribs). Umbrella rib having a flexible end especially useful for strutless umbrellas is also disclosed. Strutless electrical umbrella comprising said canopy conducting mechanism and flexible end ribs is also disclosed, including single-folding and multi-folding canopy embodiments.



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ELECTRICAL UMBRELLA AND CANOPY MECHANISM

FIELD OF THE INVENTION

The present invention relates to the field of hand held umbrellas.

BACKGROUND OF THE INVENTION

Umbrellas that can be opened automatically by triggering a compressed
5 spring, are well known in the market. Those spring loaded umbrellas has the
advantage of easy opening, however they have also disadvantages accompanying
their spring mechanism. Firstly, their opening is un-controlled after triggering,
that is once the spring has triggered on by pressing and releasing its stopper
tooth, it cannot be stopped. For example, one who wants to exit a car cannot
10 open the canopy partially so it could be passed through the door and
simultaneously protect from rain and snow during exiting. Secondly, the opening
is aggressive, with a risk that the edges of the opened canopy will hurt people in
its close proximity. Furthermore, when the umbrella is to be folded, excessive
hand power should be exerted in order to close the canopy while retracting the
15 spring for a future opening. It is not only the force that should be exerted, the
operation itself is uncomfortable since it requires both hand of the user, one for
holding the umbrella and the other for pulling the canopy retraction handle,
wherein the motion of the retracted canopy threatens to hurt the user in case the
umbrella is held too close to the body. The folding procedure ends only after
20 returning the stopper tooth to the initial position, which is not very easy
accomplish while the umbrella spring is tensely drawn in full. Failing to return
the stopper tooth properly, will cause a sudden aggressive and unintentional
opening of the umbrella. The operation of commonly available spring loaded
umbrellas, is therefore considered not very comfortable to adults, and very
25 uncomfortable to children, to elders, and to disabled ones.

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In non automated umbrellas both - opening and closing operations requires both hands of the user to operate, one for holding the umbrella and the other for pushing the canopy open or for pulling it close. In both, the umbrella should be held distantly in order to eliminate possible hurting by the moving canopy. Furthermore, when a wet umbrella is being closed, the user is normally careful not to fold it close to his body in order to eliminate rain water fall onto his dry clothes. As can be appreciated, both spring loaded or non automated umbrellas are required to be closed remotely from user's body, while using both hands.

10 It is therefore a need for an umbrella that could be opened and closed automatically, by one hand activation, wherein the operation can be paused, stopped or canceled at any given moment, allowing for partial opening e.g. in order to allow passing through a narrow passageway.

Several patents were issued, disclosing automated mechanisms for hand-held umbrellas, based on electrical motor drive. US4,572,226; US5,213,122; US5,141,010; US5,213,122 and EP0760609 are examples for the efforts made in the last decades for developing hand-held umbrellas having electrical motor drive. In spite of the efforts made, there is no evidence to a commercial success to any type of electrical umbrellas, and for several decades the only automated umbrellas available in the worldwide markets are half automated umbrellas, of the type having spring for opening, wherein the closing is made manually. According to a survey especially ordered by the inventor of the present invention, there is no electrical umbrella available in the market. As will be further discussed in the following chapters of this specification, is believed that the basic concepts adopted by the inventors of said inventions are certainly prevent a success in developing marketable electrical umbrellas.

U.S.5,711,332 discloses umbrellas especially suited for patio and recreational use. Although this patent does not relate to electrical umbrellas and is of limited relevance to hand held umbrellas as a whole, it is considered to be

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relevant prior art, as will be discussed in detail in the following chapters of this specification.

It is therefore an object of the present invention to provide a motor driven mechanism for hand-held umbrellas that will overcome the preventions that
5 cause the fail of the prior art mechanisms to comply with the long felt need for a reliable and comfortably operated umbrella.

SUMMARY OF THE INVENTION

The inventor of the present invention had a basic assumption when starting to develop a successfully marketable electrical umbrella: the umbrella
10 mechanism should be designed so as to allow short movement range of the element which is driven by the motor for conducting the canopy between open and closed states. The element which is driven by the motor for conducting the canopy between open and closed states is called in other patents "rider", "collar", "guiding member", and is located inside the umbrella post and is moveable along
15 the post. In the present invention this element will be referred to as "canopy conducting element", and it is located and moveable outside of the post, from above. In the context of the present invention 'short movement range' relates to a movement distance not greater than 20% of the length of the post, preferably not greater than 14% of it, and most preferably lesser than 7% of it. For example, in a
20 first operating model that was built, the post length is 80 centimeters and the step of the element which conducts the canopy between open and closed states (i.e. the "conducting element") is of 4 centimeters length, that is about 5% respective to total post length. In order to achieve full canopy deployment through such a short movement range, it is required that the canopy ribs will be driven by a short
25 lever arm which shall be located near the close end of each of the ribs (i.e. the rib end that is close to the post). A new innovative short movement conducting mechanism for operating this short lever arm was developed by the inventor of the present invention in order to comply with the requirement of short movement range of the conducting element.

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Accordingly the present invention relates to a short movement less components canopy conducting mechanism for umbrellas, especially useful for hand held umbrellas, and essentially recommended for motor driven hand held umbrellas, comprising (a) a hollow pole of a small diameter (i.e. of a diameter
5 similar and in any event not very much larger than the diameter of poles of conventional hand held umbrellas, that is much lesser than the diameter of posts of stationary umbrellas) having a top end and a bottom end ; (b) a canopy conducting member comprising a plurality of a first part (i.e. a pin, or a slide) of a pin and slide joint, spaced angularly and rigidly connected about a common
10 central point ; (c) a plurality of angularly spaced canopy ribs each having a short lever arm comprising a second part (a mate of the first part) of the pin and slide joint, the lever is capable of pivoting the rib about a pivot point located between the short lever arm and the rib, the lever arm forms an angle of between 120 degrees and 165 degrees, and preferably of about 135 degrees, with the rib, about
15 the pivot point, the rib is pivotably connected at the pivot point to a spacer keeping the pivot point distantly from the hollow pole; (d) means for moving the canopy conducting member for a short movement between two vertically spaced positions above the top end of the pole, a most lower position wherein the first of the pin an slide joints are close to the top end of the pole and wherein the canopy
20 is open, and a most upper position wherein the first of the pin an slide joints are distant from the top end of the pole and wherein the canopy is closed.

Reference is herewith made to the U.S. Patent No. 5,711,332 which discloses in figures 2 and 3 a patio umbrella in its opened and closed states, respectively. The umbrella is driven open and closed by the movement of a
25 plunger (14) along the post (12). The plunger (14) is connected to the plurality of ribs (34) of the umbrella through a plurality of link connections (20) connected to the ribs (34) by first link connections (22) and to the plunger (14) by second link connections(24). In order to open the umbrella (as shown in Figure 2) the plunger (14) should be moved downwardly inside the post (12) thus pulling the link
30 connections (20) inside the post, which in turn pull the ribs (34) to pivot about

the rib connections (40) to the open state. In order to close the umbrella, the plunger (14) is moved upwards, pushing the link connections (20) out of the post to the position shown by Figure 3. The mechanism of the umbrella of this U.S.5,711,332 is inappropriate for use in hand held umbrellas, from several reasons. First, although the post of patio umbrellas is of a diameter sufficient to allow link connections to move inside the post (as in Figure 2) or can easily be so designed, hand held umbrellas has posts of relatively small diameters (any 100% enlargement of post diameter increases post weight by 314% assuming the same raw material is used) which does not allow for insertion of link connections inside the post. Furthermore, each link has two pivoting connections (22) and (24) thus in total consists of 3 parts (i.e. one link member plus its two connections) that should be assembled during manufacturing of the umbrella, thereafter withstand repeated operation cycles, and last for the life term of the umbrella. In stationary patio umbrellas this maybe not very problematic connection type, since the link connections could be made of stiff massive material, and since the umbrella is normally not being opened and closed more than once or twice a day. In hand held umbrellas however, the demand for a small post diameter and for compact umbrella dimensions on one hand, do not allow for using massive materials for the links and for their connections to the plunger (which diameter of the plunger is smaller than the post, and should allow at least five or six pivoting link connections spaced angularly around its circumference) while on the other hand, hand held umbrellas are normally being opened and closed several times a day, namely much more times comparing to patio umbrellas.

Another disadvantage of the mechanism disclosed by the U.S.5,711,332 patent is that there is a linkage between the length of the link (20), the distance of the rib connection (40) from the post (12), and the length of movement of the plunger inside the post. For example, in the illustrated umbrella the distance between the rib connection (40) and the post (12) substantially equals to the diameter of the post. In case the distance of the rib connection (40) will be

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designed as twice much as it is now, the length of the link will have to be enlarged accordingly, and the step of the plunger between open state and closed state of the umbrella will also be increased accordingly. Furthermore, the arc shape of the enlarged links shall need an enlarged diameter of the post so it could
5 be accommodated and be freely moved inside the post.

Contrarily to the U.S. 5,711,332, the mechanism according to the present invention is (a) free of link type connections which move and change orientation inside the post, thus the mechanism according to the present invention allows to minimize the pole diameter to any required measure; (b) free of double pivoting
10 joint, which in the U.S. 5,711,332 connect the links from their one side to a conducting element moving inside the post and from their next side to the ribs, the mechanism of the present invention has less components, and less moving components, wherein there is only one moving connection which is comprised of a massive pin and slide joint that can easily be assembled and maintained, and
15 which dimensions are not restricted by the diameter of the pole since it is not moving inside the pole; (c) free of linkage between measure of umbrella parts, the pin and slide joint of the present invention allows for designing the distance between the rib pivot joint and the pole without changing the movement range of the conducting member and without changing the pole diameter.

20

The short movement less components canopy conducting mechanism for of the present invention is especially useful for the production of motor driven electrical umbrella. Due to the short movement of the canopy conducting member -

25 A) less rounds of the electrical motor of the umbrella are required for opening and closing the umbrella;

B) the umbrella can be built from less parts thus having the benefit of reduced weight and improved durability (e.g. comparing to other electrical umbrella designs having struts and strut joints for supporting the canopy ribs,
30 which struts are driven by a collar for opening or closing the umbrella);

C) due to its strutless construction the canopy can be lowered adjacent the user's head for a maximal protection from rain, snow, and storm winds.

D) a new facile override mechanism can be used (as will be further discussed in detail);

5 E) an auxiliary hand grip could be added on the umbrella pole near the canopy in order to allow both user hands efficiently gripping the umbrella when complying with storm winds; and

F) more innovative and attractive design could be achieved (i.e. without struts), which may assist in keeping the product competitive despite of its
10 naturally increased price deriving from its increased manufacturing costs respective to non fully automated umbrellas.

G) mass production of single size conducting mechanism can be utilized for different sizes of umbrellas (e.g. an umbrella collection for children and for adults may use the same conducting mechanism). This is in contradiction to strut
15 based umbrella constructions which have a linkage between the canopy size, the pole length, the strut length, and the movement extent of the rider.

According to said paragraph G, the present invention relates not only to a conducting mechanism supplied with the ribs assembled therein, but also to a canopy conducting mechanism for hand held umbrellas (that can be designed for
20 mass production for use with various types and sizes of canopy ribs), comprising;
(a) canopy conducting member having a plurality of a first part of pin and slide joint rigidly connected and angularly spaced about a common central hub; (b) a spacer having a central lower end adapted for being connected to a pole of an umbrella, and a plurality of pivot connection points remotely and angularly
25 spaced about the central lower end; wherein said mechanism may receive various types of ribs which may differ in their shape, length, and length of the flexible part located at their distal end (see Figure 10), the ribs of the desired type can then be connected to the pivot connection points of the spacer.

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The present invention further relates to electrical motor driven hand-held umbrella having a canopy that can be conducted at any desired position between an open state and a closed state by means of a conducting element movable between two points from above the pole of the umbrella, the umbrella comprises

5 a shortened extent screw thread for driving the conducting element between the open and closed states. Preferably, in the various embodiments of the present invention, the motion extent of the conducting element is of effective length of between 20% and 100% comparing to the maximal diameter of the umbrella in its closed state. Most preferably, and according to the preferred embodiments of

10 the present invention, the motion extent of the conducting element is of effective length of between 50% and 95% of the max diameter of the umbrella in its closed state. The term 'conducting element' refers to an element or a combination of elements having back and forth motion along a predetermined extent from above a central pole of the umbrella, wherein said motion conducts the canopy

15 respectively between a close state and an open state. The term 'effective length' refers to the actual extent of motion of the conducting element between its two extreme positions from above the pole (relative to close and open states of the canopy), regardless of what is the length of the threading through which motion of the element is achieved (however, preferably the length of the threading is not

20 longer than required, and the threading portion is connected to the electrical motor through plain planner parts having reduced weight comparing to a screw, in order to decrease the total umbrella weight).

As will become more apparent from the following description, and as mentioned above regarding the short movement less components canopy

25 conducting mechanism for hand held umbrellas according to the present invention, the reduction in the movement extent of the canopy conducting element allows for reducing the number of elements from which the umbrella is constructed, allows to increase the durability of some of those elements, allows to maintain a reasonable weight of the complete umbrella, and allows for

30 directing a collection of safe small sized and easily operated electrical umbrellas

for children, even small ones. Said and other advantages of the electrical umbrella of the present invention are essential in possessing a significant rank in the global markets, which is essential for maintaining a commercial presence, and making realistic the dream of electrical umbrella, contrarily to all other inventions which were failed in successful development and/or commercialization of electrical umbrellas.

In order to allow for the shortened extent movement of the conducting element, the umbrella of the present invention is designed to be conducted open through the near end of its ribs, and so the canopy could be fully deployed by a levering center concentrated near the top end of the umbrella. The levering center of the umbrella has a diameter similar to the max diameter of the umbrella in its closed state, such that according to the preferred embodiments of the present invention, in an open state of the umbrella no struts extend between the canopy ribs and the pole of the umbrella beyond said levering center. This is contrarily to prior art motor operated umbrellas in which the levering center of the umbrella includes struts (stretchers) which protrude from a runner of the umbrella and are of significant length as required to allow a smooth motion of the runner along the post of the umbrella and for essential support of the canopy. Negating the need in struts in the canopy conducting mechanism allows to reduce the number of elements from which the umbrella is constructed, simplifies its manufacturing process, assemblage and maintenance, and allows for enforcing the canopy ribs by thickening, thus having more massive and durable umbrella construction, without significantly increasing the weight of the complete umbrella. The absence of struts allows to provide (according to various embodiments of the present invention) the umbrella with an internal hand grip located near the top end of the umbrella post, which help in stable gripping of the umbrella during storm winds, and enable lowering of the umbrella close to the user's head. This is contrarily to prior art umbrellas which have struts occupying the space around the top portion of the post. It should be however clarified that the present invention does not restrict its scope to a strutless construction, and if one so

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wishes he may add struts for passive reinforcement, wherein the umbrella will still defer from prior art umbrellas by having the short movement canopy conducting element using for canopy deployment without active help of struts (struts are used for passive support or stabilization purpose only)

5 Another advantage of the absence of struts visible between the canopy ribs and the post is a more pleasant and attractive design. This allows also to cover the ribs from both sides of the canopy (i.e. by having a double sheet canopy, or by having cloth sleeves extending non interruptedly along the ribs for covering, such that the ribs may be hidden according to various embodiments of the present
10 invention).

As mentioned above, the strutless construction of the umbrella allows for having shortened extent screw thread of the conducting mechanism, useful for erecting the canopy open by a reduced number of motor rounds which allows for faster opening and closing operations, and which reduces motor hours (which is
15 equivalent to reduction in motor wearing).

Accordingly, the present invention further relates to a short movement less components conducting mechanism for hand held umbrellas, especially useful for motor driven hand held umbrellas, comprising (a) a hollow pole of a small diameter (i.e. of a diameter similar and in any event not very much larger than
20 the diameter of poles of conventional hand held umbrellas, that is much lesser than the diameter of posts of stationary umbrellas) having a top end and a bottom end ; (b) a canopy conducting member comprising a plurality of a first part (i.e. a pin, or a slide) of a pin and slide joint, spaced angularly and rigidly connected about a common central point ; (c) a plurality of angularly spaced canopy ribs
25 each having a short lever arm comprising a second part (a mate of the first part) of the pin and slide joint, the lever is capable of pivoting the rib about a pivot point located between the short lever arm and the rib, the lever arm forms an angle of between 120 degrees and 165 degrees, and preferably of about 135 degrees, with the rib, about the pivot point, the rib is pivotably connected at the
30 pivot point to a spacer keeping the pivot point distantly from the hollow pole; (d)

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electrical motor geared for moving the canopy conducting member for a short movement between two vertically spaced positions above the top end of the pole, a most lower position wherein the first of the pin and slide joints are close to the top end of the pole and wherein the canopy is open, and a most upper position
5 wherein the first of the pin and slide joints are distant from the top end of the pole and wherein the canopy is closed; (e) battery housing electrically connected for energizing the motor; (f) at least one manual switch allowing a user to control the canopy between open and closed states.

According to various preferred embodiments of the present invention the
10 electrical umbrella is further comprising load recognition circuit which stops the motor (by disconnecting the battery power) upon recognition of increase in the motor current beyond a predetermined threshold. According to the preferred embodiment of the present invention the load recognition circuit is used not only to protect the motor but also to automatically stop the motor once the canopy
15 reaches its fully opened state or once the canopy reaches its fully closed state, wherein in both states the motor is physically being blocked from continuing its revolve which in turn causes an increase in the motor current, thus activates the load recognition circuit which in turn disconnects the power from the motor. According to various embodiments, the electrical circuit of the umbrella is
20 designed such that each activation of the load recognizing circuit (that in normal circumstances is equivalent to the termination of a fully opening or of a fully closing operations of the umbrella) inverts the polarity of the power connection to the motor, such that in the next user activation the motor will revolve in an opposite direction respective to its last operation. By means of this arrangement
25 the umbrella may be provided with only one switch for both opening and closing operations, which automatically switches its role after each operation.

It should be appreciated that although the preferred embodiments of the present invention relate to a pin and slide joint connection between the conducting element and each of the ribs, the use of similar or equivalent
30 arrangements such as a telescopic connection wherein a short lever arm of a rib

moves in telescopic manner respective to a corresponding arm of the conducting element should be considered within the scope of the present invention, and as will be further claimed.

The present invention further relates to a system of rechargeable electrical umbrella comprised of (a) an electrical umbrella powered by a rechargeable battery/ies and having battery charge circuit ending with terminal contacts and of (b) a stand having a connection to an AC power network, an AC to DC converter, and at least one terminal having contacts matching the terminal contacts of the electrical umbrella; or of (c) a stand having a connection to a vehicle battery and at least one terminal having contacts matching the terminal contacts of the electrical umbrella

According to various preferred embodiments of the present invention, the electrical umbrella is provided with electronic circuit for the detection and alarming of low battery power. The alarm of low battery power is preferably through turning on a LED light.

According to various embodiments the electrical umbrella of the present invention has a back-up battery (or batteries). The back-up battery could be provided in a housing for manually replacement with the main battery upon recognition of decreasing in the power of the main battery (or batteries) wherein the replacement is either by physical replacement or by activating an electrical switch which switches between the electrical circuits, or could be switched automatically by means of switching circuit governed by the circuit for detection of low battery power, wherein in such a case there is an alarming LED showing that the backup battery is in use . The back-up battery can be either of rechargeable or of non-rechargeable type. In case that the main battery is of rechargeable type and having recharging circuit inherent to the umbrella (i.e. the batteries are recharged in their housing inside the umbrella), and the back-up battery is also of rechargeable type, then there is preferably provided a separate recharging circuit for the backup battery capable of recognizing the presence of external power and connecting the backup battery for simultaneous recharging

with the main battery, wherein after disconnection of the external power, the backup battery is disconnected and maintained in full power until low power of the main battery is detected. In case that the main battery is of rechargeable type and having recharging circuit inherent to the umbrella (i.e. the batteries are recharged in their housing inside the umbrella), and the back-up battery is of non rechargeable type, then there is provided a switch which prevents mistaken charging of the non- rechargeable battery (the same switch which replaces between the main battery and the backup one).

According to various embodiments of the present invention the electrical umbrella is further comprising location recognizer means allowing for fast locating of the umbrella. The location recognizer means is comprised of a first and a second electronic circuits, the first one is attached to or located inside the umbrella, and the second one is held by the user, wherein an alarm or a beep sound is generated (a) upon the lost of communication between the two circuits (in such a case the alarm will occur at the circuit held by the user) , or (b) upon an activation command generated by the user in order to locate the umbrella (in such a case the alarm will occur at the circuit attached to the umbrella). Preferably, each umbrella will have its unique identification code such that one can locate and recognize his own umbrella from a plurality of similar umbrellas. The location recognizer circuit is preferably powered by an inherent battery, i.e. separately from the main umbrella battery, in order to enable locating the umbrella even in cases where the main battery is empty. Accordingly, the location recognizer circuit can be placed in the top portion of the umbrella, near the lifting center and distantly from the handle of the umbrella where the main battery is located.

The present invention further relates to canopy conducting mechanism for multifold canopies. This embodiment differs from the embodiments for plain folding canopies by further comprising a plurality of pivot joints remotely and angularly spaced about the central lower end each is adapted for receiving a rib

stretcher to be associated with a rib receivable by a corresponding pivot connection point.

The present invention relates also to a situation wherein the canopy conducting mechanism is further comprising the canopy mechanism. The canopy mechanism for multifold canopies includes: (i) multifold ribs pivotally connected to the pivot connections and further form a plurality of pin and slide joints with the conducting member; and (ii) a plurality of rib stretchers, pivotally connected to respected pivot joints and to respective multifold ribs.

Furthermore the present invention relates to electrical umbrella comprising a canopy conducting mechanism according to the embodiment of multifold canopy. According to this embodiment the canopy conducting mechanism of the multifold canopy is connected at its lower end to the top of a telescopic pole, the telescopic pole is connected at its lower end to a main handgrip of the umbrella, wherein the canopy conducting member is driven along a short path between an uppermost position and a lowermost position from above the pole, corresponding to a closed state and an open state of the umbrella, respectively, upon rotation of an electrical motor located near or inside the main handgrip, powered by batteries located nearby, and transmitting its rotation to a screw or to a helical shaft adapted to convert the rotation into vertical movement of the conducting member and into a telescopic movement of at least two telescopic sections of the pole.

According to various embodiments the umbrella is provided with decorative illumination e.g. through LEDs. Such light may be distributed over the canopy through optic fibers.

According to various preferred embodiments the umbrella of the present invention is provided with a battery recharger having integral power plug concealed inside the handgrip and may be pulled up, opened or unfolded for connecting to a wall outlet;

According to various preferred embodiments the umbrella of the present invention is cooperative with a remote controller through wireless

communication means situated at a concealed compartment, preferably from above the upper connection hub.

The umbrella may further have voice or sonic alarm indicative of various abnormal states that may occur during its use, and that are recognizable by its
5 sensors and its electronic utility circuits.

According to various preferred embodiments the handgrip is cushioned or having a padding protection against downfall damages.

According to various embodiments the umbrella of the present invention is further comprising folding or pull out foots accommodated in the handgrip and
10 useful for positioning of the umbrella uprightly.

BRIEF DESCRIPTION OF THE DRAWINGS

In order to understand the invention and to see how it may be carried out in practice, a preferred embodiment will now be described, by way of non-limiting example only, with reference to the accompanying drawings, in which:

15 Fig. 1 illustrates a first preferred embodiment of a short movement canopy conducting mechanism according to the present invention (in a closed umbrella state).

Fig. 1A illustrates a partial view of the short movement canopy conducting mechanism of Fig. 1 (in an opened umbrella state).

20 Fig. 2 illustrates a short movement canopy conducting mechanism according to the present invention especially adapted for use of electrical umbrellas, and illustrating parts of the electrical umbrella.

Fig. 2A illustrates a bottom view of a flange of the conducting mechanism.

25 Fig. 2B illustrates a top view of an embodiment of umbrella pole illustrated by Figure 2.

Figures 3 to 5 illustrate various positions describing the operation of the conducting mechanism and of the override arrangement illustrated by Figure 2.

Fig. 6, 6A and 6B illustrate partial views of another preferred embodiment of an electrical umbrella according to the present invention.

Fig. 7 illustrates a concealed compartment located at the covering of the conducting mechanism, useful for placement of utility electronic circuits.

5 Fig. 8 illustrates a partial isometric cross sectional view of the lower end of the electrical umbrella according to the present invention, with the main handgrip and the electrical components located inside.

Fig. 8A illustrates the overload detector which stops the motor upon recognition of load exceeding a predetermined threshold.

10 Fig. 8B illustrates the 'low battery' detection and alarm circuit.

Fig. 9 illustrates a general view on an electrical umbrella according to the present invention (without the canopy cloth).

Fig. 10 illustrates the distal end of a rib according to the best mode of the present invention.

15 Fig. 11 and 12 illustrate two different designs of the relation between the canopy cloth and its conducting mechanism.

Fig. 13 illustrates an embodiment of a canopy having aeration channels.

Fig. 14 illustrates short movement canopy conducting mechanism according to another embodiment of the present invention, adapted for multifold
20 canopies having telescopic umbrella pole, in a closed state of the umbrella.

Fig. 14 A illustrates a top view of the canopy conducting member of the embodiment of Fig. 14 as it is situated in its guide.

Fig. 15 illustrates the same embodiment illustrated by Fig. 14, in an open state of the umbrella.

25 Fig. 16A to 16C illustrates in partial vertical cross section view three states during the operation of a canopy conducting mechanism according to another preferred embodiment pin and slide joint.

Fig. 17 illustrates a partial lateral cross section view of the canopy conducting mechanism of the embodiment illustrated by Figs. 16A to 16C in the
30 state illustrated by Fig. 16 B.

Fig. 18 illustrates a side view of a canopy rib according to the embodiment illustrated by Figs 16A to 17, made of one piece of material.

Fig. 19 illustrates a top view of the canopy rib of Fig. 18.

DETAILED DESCRIPTION OF THE INVENTION

5 The present invention will be further explained in detail by Figures 1 - 13.

These Figures are solely intend to illustrate several preferred embodiments of the present invention and in no manner intended to limit its scope as defined by the claims.

Fig. 1 illustrates a short movement canopy conducting mechanism for
10 umbrellas, especially hand held umbrellas, and utmost essential for motor driven hand held umbrellas, according to the present invention. The conducting mechanism is comprised of; (a) a base member (1) (in the context of the present invention referred to also as "spacer") having a plurality of pivot connections (1a) spaced angularly around its outer circumference (1b) for the connection of
15 corresponding canopy ribs (2), each of which can thus be pivoting about its pivot connection (1a) between a closed state (the illustrated state) and an open state (the state illustrated by Figure 1A) of the umbrella. The ribs are conducted between the open and the closed states by means of a lever arm (2a) being the close end portion of the rib (the distal end of the rib can be seen in Figure 10, and
20 is made of a flexible material in order to allow stretching the canopy in a mushroom shape (i.e. with lowered circumference end). At the end of the lever arm(2a) there is a pin (2b) slidably located inside a slide (4c) formed in a slide bar (4b), altogether forming a pin and slide joint. A plurality of the slide bar (4b), one per each canopy rib, are rigidly connected, and angularly spaced from one
25 another, about a central hub (4a). The sliding bars (4b) and the hub (4a) form together the canopy conducting member (4), which is moveable along the path illustrated by arrow A, between an uppermost position (the illustrated position) wherein the hub is in an extreme distant position from above the top end of a pole (3) of the umbrella, and between a lowermost position (the position

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illustrated in figure 1A) wherein the hub is located in an extreme close position near and above the top end of the pole (3). The movement of the conducting member (4) between said two extreme positions along the path A, conducts the plurality of ribs (2) simultaneously, between a closed canopy state (the illustrated state) corresponding to the uppermost position of the hub (4a) and between an open canopy state (the state illustrated by Figure 1A) corresponding to the lowermost position of the hub (4). The base member (1) has a lower flange (1c) adapted for joining to the top end of a pole (3) of an umbrella.

As can be appreciated, the short movement canopy conducting mechanism which is comprised of the conducting member (4), the base member (1), and the ribs (2), can be manufactured in a mass production and be supplied to umbrella producers, which can then connect it to a post, and cover it with a canopy, according to their own design, wherein the hub (4a) can be connected (either by welding, by having an inner threading for receiving screw connection, or by having a hole open on both ends for receiving a rode reinforced by pressure rings, or through any other acceptable connective means) to a top end of a rod which passes through the hollow middle of the pole (3) and is connected on its next rod end to appropriate driving mechanism selected and designed by each specific producer according to his own product requirements and needs. Different canopy sizes can be produced using the same base member and the same canopy conducting member with different sizes of ribs. This could be performed by means of ribs produced in different sizes or, alternatively, by using ribs of adjustable size.

Fig. 1 A illustrates a partial view of the canopy conducting mechanism of Fig. 1, in an open state of the umbrella. In this state, the hub (4a) is in its lowermost position from above the top end of the pole (3), i.e. near the lower flange (1c) at the bottom of the base member. During shortened extent movement of the conducting element from the uppermost position illustrated by Fig. 1 to the lowermost position illustrated by Fig. 1A, the sliding bars (4b) are forcing the pins (2b) downwards such that each pin (2b) slides along its slide (4c) during the

downward motion of the conducting member, thus lowering the short lever arm (2a) and lifting the rib (2) in a pivoting motion about the pivot connection (1a).

Fig. 2 illustrates a short movement canopy conducting mechanism according to the present invention especially adapted for use in electrical umbrellas. Accordingly, the figure contains parts of an electrical umbrella, as they are combined with the short movement canopy conducting mechanism. The hub (4a) of canopy conducting member according to the present embodiment has a helical thread inside, matching a helical shaft (5). Upon rotation of the helical shaft, and depending in the rotation direction, the conducting member is moved between its uppermost and lowermost positions from above the hollow pole (13). The rotation of the helical shaft (5) is through a rotation transmission rod (5b) passing inside the pole and connected at its lower end (not illustrated in this figure) to an electrical motor (the connection is through appropriate gear adapting the motor torque to the expected resisting force of the canopy upon deployment). As can be appreciated, the inner diameter of the pole through which passes the transmission rod can be reduced to a minimal dimension, having the only restriction it should accommodate the rotating transmission rod, wherein the diameter of the transmission rod itself can be reduced as much as it can withstand the resisting forces which may develop during motor operation, without winding. The embodiment illustrated by Fig. 2 further disclose an override mechanism which allows to open and close the umbrella manually, as may be required in case of malfunction in the motorized system, and in case the batteries becoming empty. The advantage in this specific override arrangement is that it does not deal with the motorized system, which remains connected and ready to use regardless of user activities, while freeing the user from the responsibility to the accurate connection and disconnection of sensitive technical systems and to their proper operation. This simple and user friendly override system is one of the beneficial results deriving from the development of the unique canopy conducting mechanism according to the present invention. The override arrangement is comprised of an extended flange (11c) of the base member (11),

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which allow a telescopic motion of the pole (13) with respect to the flange (11c). Accordingly, and differently than the embodiment illustrated in Fig. 1, in the present embodiment the canopy conducting mechanism is not being permanently fixed to the upper end of the pole, and the flange (11c) of the present
5 embodiment differs from the flange (1c) of the embodiment illustrated by Fig. 1, in that it has a greater length, i.e. a length that may allow a telescopic motion of the flange with respect to the pole, to an extent sufficient for elevating the bottom of the base member (11) until it reaches the conducting member (4). The greater length of the flange (11c) comparing to that of (1c) of Fig. 1, can be achieved
10 either by producing it in a greater length, or by connecting to the flange (1c) an extension for having a length similar to that of (11c).

As an alternative to the permanent connection between the flange (1c) and the pole (3) of the embodiment illustrated by Fig. 1, the flange (11c) of the present embodiment is releaseably fixed to the pole (11) of the electrical
15 umbrella, by means of screw-in handgrip (6) which tightens the lower end (11e) of the flange to the pole (13), and by means of a catch (11d) and groove (13a) connection which helps in positioning of the flange (11c) in an appropriate predetermined location with respect to the pole (13) before tightening them together by rotating the handgrip. When a need rises (e.g. batteries are empty),
20 the screw-in handgrip can be rotated in the appropriate direction (let say counterclockwise) a few rotations for releasing the flange from tightly embracing the pole, then by pressing the catch lever (11d1) for retracting the catch (11d) from the groove (13a) the flange (11c) can be freely moved up and down in a telescopic motion about the pole (13) by holding the hand grip and moving it in
25 the desired direction, wherein pulling it down will pull the flange and the base member (11) away from the conducting member (4) thus closing the canopy (in case it was fully or partially opened), and wherein pushing it (i.e. the handgrip) up will push the flange and the base member (11) towards the conducting member (4) thus opening the canopy (in case it was fully or partially closed).
30 After the canopy is brought to the desired position, the handgrip (6) should be

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rotated clockwise for re-tightening the end portion (11e) of the flange to the pole in the direction of arrows B. The rotation of the handgrip (6) clockwise is designed so as to decrease the diameter of the end portion (11e) of the flange, due to vertical grooves (11f) made in that end portion and allow for a slight
5 change in the diameter of the end portion of the flange upon rotation of the handgrip (6), which change is sufficient to tighten the flange to the pole or to release it from the pole, according to the relative overlapping between the threading of the handgrip and the corresponding threading of the end portion of the flange.

10 According to the preferred embodiments of the present invention the override screw-in handgrip (6) can be located very close to the canopy since there are no stretchers or struts disturbing between the pole and the canopy. Therefore, the handgrip (6) is not only essential for the override operation, but also very helpful for gripping the umbrella by both hands, i.e. one hand is
15 gripping the conventional handgrip located at the bottom end of the pole while the other is gripping the handgrip (6) near the canopy, which is very essential when complying with storm winds. Furthermore it could be appreciated that the umbrella according to the present invention has the advantage that it could be lowered and held with the canopy adjacent the user's head, which is very
20 essential for protecting the user from wind driven rain or snow, and which can not be achieved with prior art umbrellas.

Fig. 2A illustrates a view of the bottom end (11e) of the flange, from below. In this figures it is seen how this end is divided by the vertical grooves (11f) into three sections located between the grooves, which can become closer
25 to one another by means of a pressure exerted in the direction of arrows B by clockwise rotation of the hand grip (6) of Fig. 2. When said sections become closer and tightly embrace the umbrella pole, the flange becomes fixed to the pole and a telescopic motion between them is prevented, thus canopy is maintained

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Fig. 2B illustrates a top view of the pole (13), according to one optional variation, wherein the pole is made of hollow thin material (e.g. Aluminum) made by extrusion process and having a plurality of reinforcing ribs (14) forming grooves (15) in between. This grooves can be utilized for placing electrical wires that may be required according to various possible embodiments for connecting between a battery located at the bottom side of the pole and an electronic circuit or light located above the top of the pole.

As can be appreciated, the motorized system of the umbrella which includes the motor unit (not illustrated in this figure), the rotation transmission rod (5b), and the helical shaft (5) (including the location of the hub (4a) about the helical shaft), remains unchanged and is not involved with the operation of the override mechanism. This separation between the two systems (i.e. override and motorized) assures a simple reliable and user friendly device.

Fig. 3 illustrates the override arrangement illustrated by Fig. 2 as it is utilized to open the closed umbrella of Fig. 2. As can be seen the relative position between the pole (13), the rotation transmission rod (5b), the helical shaft (5) and the conducting member (4) have not been changed between Fig. 2 and Fig. 3, that is to say the motorized system maintained its state between the two illustrated situations, and no motor rotation occurred between them two (in case a motor rotation have been occurred, the hub (4a) of the conducting member would have been changing its position along the helical shaft, which is not the case). Although nothing has changed in the motorized system, the canopy ribs that were in closed position as illustrated by Fig. 2, have reached an open position in Fig. 3. This change has been achieved by freeing the flange (11c) from the pole (13) as explained in the text of Fig. 2, then pushing the handgrip (6) causing a telescopic motion of the flange (11c) about the pole (13) towards the conducting member (4), thus forcing the base member (11) to becoming closer to the conducting member (4), while lifting the ribs (2).

Fig. 4 illustrates the same mechanism illustrated by Fig. 2, after the activation of the motorized system for lifting the canopy ribs to open state. As

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can be observed, the rotation of the helical shaft conducted the hub (4a) (and the conducting member (4)) to reach their lowermost position above the top of the pole (13), while simultaneously pivoting the conducting the short lever arms (2a) downwards and lifting the ribs (2) about the pivot points, accordingly. The next
5 Fig. illustrates how the override arrangement could be utilized for closing the canopy in case of 'low battery'.

Fig. 5 illustrates the mechanism illustrated by Fig. 4, wherein the canopy ribs that were in open state, have reached a closed state by means of the override arrangement. As can be seen the relative position between the pole (13), the rotation transmission rod (5b), the helical shaft (5) and the conducting member (4) have not been changed between Fig. 4 and Fig. 5, that is to say the motorized
10 system maintained its state between the two illustrated situations, and no motor rotation occurred between them two (in case a motor rotation have been occurred, the hub of the conducting member would have been changing its position along the helical shaft, which is not the case). Although nothing has changed in the motorized system, the canopy ribs that were in open position as illustrated by Fig. 4, have reached a closed position in Fig. 5. This change has been achieved by freeing the flange (11c) from the pole (13) as explained in the text of Fig. 2, then pushing the handgrip (6) causing a telescopic motion of the
15 flange (11c) downwardly about the pole (13), thus forcing the base member (11) away from the conducting member, while lowering the ribs.

Figs. 2 and 3 illustrate how the override mechanism can manage between two extreme positions of the ribs when the ribs were originally in closed state, while Figs. 4 and 5 illustrate how the override mechanism can manage between
25 two extreme positions of the ribs when the ribs were originally in open state. It could therefore be clearly appreciated how the override arrangement according to the present invention could manage the ribs from any initial position that may occasionally exist, to any alternative position preferred by the user.

Fig. 6 illustrates a partial isometric cross sectional view of another
30 embodiment of the short movement canopy conducting mechanism according to

the present invention. This embodiment differs from the one illustrated by Figures 2 to 5 in several details as will be listed below.

First, the hub (4a) of the conducting member (4) is driven between its uppermost position and its lowermost position by means of hub extension member (4aa) ending with a hollow tube (64) having an inner threading matching an outer threading of a screw rod (65) being the upper end of a rotation transmission rod (not illustrated in this Fig., see Fig. 6A). When the screw rod is rotated inside the hollow tube (64) threading, the rotation is converted to a vertical motion and the hub extension member (4aa) is shifted upwardly or downwardly depending on the rotation direction of the screw rod (65) thus shifting the conducting member (4), accordingly, between a lowermost position and between the illustrated uppermost position, which corresponds to an open state and to the illustrated closed state of the umbrella, respectively. It should be appreciated that a system having the hub extension member ending with an outer threading matching an inner threading of a rod being the upper end of a rotation transmission rod, is equivalent to the system described hereinbefore, therefore included in the scope of the present invention. This remark should be noticed in general view, thus any role switching between matching parts of the present invention should be considered within the inventions scope.

Second, the flange (1c) is extended from below by means of a pipe segment (1cc), which ends with a handgrip (66) fixed to and overlapping its lower end. This handgrip is not a rotating one, and it can be used for pulling or for pushing the flange extension pipe segment (1cc) in a telescopic motion with respect to the pole (63), upon releasing of a rotating tightening nut (66a) of Fig. 6A which forms the bottom end of the handgrip (66), and after pressing the catch lever (61d1) for retracting the catch (61d). In this embodiment the catch is located on the handgrip (66) (see Fig. 6B), wherein as mentioned above, the handgrip in this embodiment overlaps a certain extent of the extended portion of the flange (1c). When the tightening nut (66a) is released and the catch is retracted, the override arrangement can be operated in the same manner of that of

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Figures 2 to 5, wherein moving the handgrip upwards results in pushing the ribs (2) open, and moving the handgrip downwards results in pulling the ribs close (in case they were partially or fully opened, which is not the illustrated case).

The short movement conducting mechanism according to the present invention is preferably protected, isolated, and covered, by means of the base member (1) from below, and by means of a conical covering (70) from above.

Fig. 7 illustrates a concealed department (72) that can be designed at the top portion of the covering (71) for placing miniature electronic circuits (73) useful for various utilities, such as location identifier which activates alarm when losing RF connection (according to other embodiments ultrasonic connection) with a corresponding circuit held by the user (useful also as anti theft alarm); or such as umbrella identifier which turns on a blinking LED light (according to other embodiments a bip sound, or a combination of sound and light) when called by a remote controller held by the user in order to locate the umbrella and/or identify it between other similar umbrellas; or such as emergency light that can be activated by a remote controller held by the user; or such as safety blinking light useful for notating the user when walking in the dark. Such utility electronic circuits can be powered by an inherent miniature batteries, or through wires passing along the hollow pole of the umbrella, i.e. through one of the grooves of the pole type illustrated by Fig. 2B. In case the umbrella parts are of conductive material all along the path between the battery compartment and the electronic circuit, they can be used instead of one of the wires required for conducting the battery power to the utility electronic circuits and/or the lights, located at the covering.

Fig. 8 illustrates a partial isometric cross sectional view of the lower end of the electrical umbrella according to the present invention, consisting of a main handgrip (80) having a battery compartment (81) inside, rechargeable batteries (81a) (81b), a jack (81c) for receiving a connector of a recharging power source, an electrical motor (82), a switching circuit (83) having a press button (83o) for opening the umbrella, a press button (83c) for closing the umbrella, a 'low

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battery' indication light (83c), an electronic circuit for overload detection (see Fig. 8A) and an electronic circuit for 'low battery' indication light (see Fig. 8B), and a gear unit (84) for gearing between the motor (82) and between the rotation transmission rod (65b) which transfers the rotation to the short movement canopy
5 conducting mechanism. According to another preferred embodiment there may be provided additional electronic circuit for measuring and displaying of the surrounding temperature, and/or comprising an electronic watch.

According to various preferred embodiments of the present invention the battery compartment is made withdrawable, thus can be instantly replaced by
10 fresh recharged batteries located inside a similar spare battery compartment, and put for recharging separately (i.e. out of the umbrella, which can now be used by the replacement battery set until becoming empty, and recurrently).

Fig. 8A illustrates a circuit for overload detection, which disconnects the motor from the battery power upon detection of increase in the motor current
15 beyond a predetermined threshold. This circuit is not only directed to protect the motor in unexpected emergency situations, but is also very useful during conventional operation, for indicating the end of the opening and the closing operations of the umbrella, wherein in the end of the closing operation, when the hub (4a) (see Figures 2 to 5) of the conducting member reaches the top end (5a)
20 of the helical shaft (5), or in the end of the opening operation, when the hub reaches the bottom end of the helical shaft, the motor operation is dramatically resisted thus the motor current which passes via resistor (81) dramatically increases and an overload condition is immediately detected, and the automatic switch (80) (a FET gate) disconnects the battery power from the motor. When the
25 user identifies that the motor has stopped he naturally releases the press button, and the umbrella remains in its current position until an opposite operation will be activated by the user, by pressing the press button which governs the opposite operation.

Fig. 8B illustrates an electronic circuit for 'low battery' detection, which
30 lights a red LED light alarm upon detection of insufficient battery voltage.

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Fig. 9 illustrates an isometric view of a complete electrical umbrella according to one preferred embodiment of the present invention, without the canopy. The canopy conducting mechanism is located behind the conical covering (70), and is capable of conducting the ribs (2) between the illustrated open position and between a closed position wherein the ribs become substantially parallel to the pole (63), the umbrella could be gripped by one hand holding the main handgrip (80), and when a need rises, by the other hand holding the upper handgrip (66). As can be appreciated from this figure, the space below the canopy is completely free (except of the pole), thus the canopy could be lowered by a user adjacent his head.

The handgrip (66) uses also for activating an override arrangement, and when released by rotating the nut (66a) and by pressing a catch lever (see 61d1 of Fig. 6B), it can be used for closing the canopy by moving it down and for opening the canopy by moving it up. When an appropriate canopy state is achieved, the nut (66a) can be rotated and tightened back for maintaining the state.

Fig. 10 illustrates the distal end of a rib (2) according to various preferred embodiments of the present invention. The rib body (21) is made of a rigid metal, and the rib distal end (22) is made of a flexible metal bar (e.g. flexible steel). The two parts can be connected together in any acceptable way such as miniature screws, pins, pegs (23), welding or combinations thereof. The connection can be reinforced by inserting the flexible bar into a groove prepared in the end of the rib body. The flexible part is essential for receiving a mushroom shape of the canopy in its open state wherein the flexible ends of the ribs are forced to bent downwards in an arc shape (e.g. to the position illustrated by the dotted line), by means of the canopy cloth which is sewn in a mushroom shape. When the canopy is closed the flexible portion of the ribs returns to a straight orientation which is required for having the umbrella folded in a straight compact shape.

According to various preferred embodiments illustrated by Fig. 11, the canopy (120) is sewn from above the covering of the conducting mechanism

(70), and has another covering (77), from above. According to other preferred embodiments, illustrated by Fig. 12, the central portion (121a) of the canopy (121) is inserted and held in the inner space between the base member (1) and the covering (70) of the conducting mechanism.

5 According to various preferred embodiments illustrated by Fig. 13, the umbrella of the present invention is provided with aeration channels (as marked by arrows) useful for decreasing wind forces which tend to flinging the umbrella or to deform its construction. Wind arriving from the bottom side of the canopy is (at least partially) released through the aeration channels illustrated by the
10 arrows. The aeration channels can be created by leaving parts of the proximal (i.e. central) end (122a) of the canopy un tightened, and by providing additional cloth sheet (123) for covering above the central portion of the canopy. The additional cloth sheet can be used also for decoration purpose, thus can be provided in a color or pattern other than that of the canopy (122). The top of the
15 umbrella (to its various embodiments) can be designed as that of conventional umbrellas having a sharpened tip (124) that can be connected to the covering (70) by means of threading (or by any other desired connected method).

 Another option is to make the aeration channels formed not between the canopy cloth and the conducting mechanism base and covering, rather formed as
20 hollow pipes made in the rigid material of the base member and of the covering.

 Fig. 14 illustrates short movement canopy conducting mechanism according to another embodiment of the present invention, adapted for multifold canopies having telescopic umbrella pole, in a closed state of the umbrella. As can be observed, the ribs (only one is illustrated) are formed of three folding
25 sections (202) (212) and (216). The rib section (202) has a rib lever portion (202a) having a pin (202b) movable along a slide (4c) of the slide bar (4b). A plurality of slide bars (4b) are angularly spaced about a hub (204a) which is moveable vertically between a plurality of vertical guide members (240) arranged in a circle around the hub (204a), each in the space between a pair of
30 respective slide bars (4a). In this figure the hub (204a) is situated in its uppermost

location between the guide members, which is corresponding to a closed state of the umbrella. Accordingly, the three section rib is folded and having its three rib sections (202) (21) and (216) lying substantially parallel to each other. As can be appreciated, and similarly to the canopy conducting mechanism of the above described embodiments, movement of the hub (204a) downwards, will result in sliding of the pins (202b) along the slides (4c) and thus in rotating the rib section (202) by the work of rib lever (202a), about the pivot connection (201a). As can be appreciated, the pivoting of the rib section (202) upwardly will result in a correlated pivoting of rib stretcher (217) about its pivot joint (217a), and in turn in a linear movement of its pin (217b) in the direction indicated by arrow R, along a corresponding slide (202h) made in the rib section (202). As a result of the linear movement of the stretcher (217) in the indicated direction, the rib section (212) will rotate about hinge (232) due to the pulling of its lever member (212a) by the pulling member (217b) linked to the lever member (212a) by pivot joint (231). Simultaneously, the still wire (218) will pull the rib lever (215) to pivot about the hinge (235) and thus to lift the elastic rib section (216). The result of said movements is depicted in Fig. 15, showing the open state of the umbrella.

The guide members (240), the extension tube (222) and the base member (201) can all be made of the same piece of material. Alternatively, it is possible to manufacture them as separate parts and to connect them afterwards in any acceptable way.

As can be further observed in this Fig. 14, the pole of the umbrella is telescopic and is comprised of an upper telescopic section (220) connected on its top to the bottom of the canopy conducting mechanism, and of a lower telescopic section (221) connected at its bottom to a handgrip (277) of the umbrella which is also a housing of the motor (279). A helical drive shaft (226) is operatively coupled to the motor (229), and can be rotated by the motor clockwise or counterclockwise, in order to open and close both the canopy and the telescopic pole. In this Fig. the telescopic pole is closed, wherein the lower telescopic section (221) is fully inside the upper telescopic section (220). Upon rotation of

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the motor in a direction to open the umbrella, the lower telescopic section will be pulled out of the upper telescopic section due to advancing of the tube nut (227) along the threading of the helical drive shaft (226), since the tube nut (227) is connected through an extension tube (222) to the top of the upper telescopic section (220). After a while during the rotation of the drive shaft, the drive shaft shoulder (226a) which is of a larger diameter than that of the drive shaft (226) itself, will engage the top of a hollow ring (225), and will start pulling it toward the tube nut (227). The hollow ring (225) is connected to the hub (204a) through wires (223) and (224) located from two opposite direction of the drive shaft (226) and anchored to both the hollow ring (225) and the hub (204a) of the conducting member (204). As a result of this pull, the conducting member (204) will move downwards, driving the multifold canopy open by opening the multifold ribs in the mechanism described hereinbefore. When the hollow ring (225) will reach a close proximity of the tube nut (227) the conducting member (204) will reach its lowermost position along its vertical guides (240), with the multifold canopy open and with the telescopic pole in its max length.

As can be appreciated, upon rotation of the motor (279) in an opposite direction, i.e. in a direction to close the umbrella, the rotation of the drive shaft (226) inside the tube nut (227) will close the telescopic pole by pushing the lower telescopic section (221) inside the upper telescopic section (220), and when the top of the drive shaft shoulder (226a) will engage the bottom of the downward extension (204d) of the hub, it will start pushing the conducting member (204) upwards, to the initial close position as depicted in this Fig. 14. The hollow ring (225) has a free passage with respect to the threading of the drive shaft (226) and thus it is not affecting the closing mechanism. From the same reason it is also does not affect the first part of the opening mechanism, i.e. prior the engagement of the drive shaft shoulder (226a) with the top of the hollow ring as described above.

Fig. 14A illustrates a top view of the canopy conducting member (204) of the embodiment of Fig. 14 as it is situated in its guide members (224). As

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shown in this figure, the hub (204a) is encompassed by a plurality of guide members (240) marked in black, each of which is situated between a pair of corresponding slide bars (4a) with a gap between the guide members (240) and the slide bars (4a), allowing for a vertical movement of the hub (204a) and the plurality of slide bars (4a) connected to it, up and down between the guide members (240). The top of the two wires (223) and (224) are shown anchored inside the hub from both opposite directions of its downward extension (204d). These wires connect the conducting member (204) to the hollow ring (225) shown in Fig. 14, which by its pulling down the conducting member (204) moves down to open the multifold canopy.

Fig. 15 illustrates the same embodiment illustrated by Fig. 14, in an open state of the umbrella. The lower telescopic section (221) is drawn out of the upper telescopic section (220), the drive shaft shoulder (226a) holds the hollow ring (225) adjacent the tube nut (227) and thus the conducting member (204) is held by the wires (223) and (224) in its lowermost position along the guide members (240) corresponding the open state of the multifold canopy, with the multifold rib sections (202) (212) and (216) in an open state.

Upon rotation of the motor (279) in a direction to close the umbrella, the low telescopic section (221) will move into the upper telescopic section (220) due to the advancing of the threading of the drive shaft (226) through the tube nut (227). When the top of the drive shaft shoulder (226a) will reach the bottom of the downward extension (204d) of the hub (204a) the conducting member (204) will be forced upwards while folding the multifold canopy in a process opposite to the opening process described by Fig. 14. The folding of the canopy will be completed when the conducting member returns to the initial closed position illustrated by Fig. 14, with the telescopic pole in a closed state.

Fig. 16A to 16C illustrates in partial vertical cross section view (taken at A-A of Fig. 17) three states during the operation of a canopy conducting mechanism according to another preferred embodiment pin and slide joint. In the illustrated embodiment the pin (300) of the pin and slide joint is actually the end

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portion of the short lever (303) of a canopy rib (301), and it is wider than the rib. Although the pin diameter is significantly greater than its length (which is perpendicularly to the figure plane) it is still called a pin in the context of the present invention, since actually it fulfils the same function as e.g. pin 2b of Fig. 5

1. The slide of the pin (300) is a hollow cell (311) (will be referred to also as "slide (311)") made in a canopy conducting member (310), which actually is a hub comprising a plurality of such hollow cells (311) angularly spaced about a common center, each of which accommodating a pin (300). In Fig. 16A the canopy conducting member (310) is shown in its uppermost position above the

10 umbrella pole (not illustrated), with the pin (300) forcing the short lever (303) upwards thus keeping the rib (301) downwards, which is a closed canopy state. When the canopy conducting member (310) moves down to the position illustrated by Fig. 16B, it forces the pin (300) downwardly and furthermore to slide inwardly inside the hollow cell (311), thus forcing the rib (301) to rotate

15 upwardly about the hinge (302). To a mid position which corresponds to a partially open state of the canopy. By further lowering the canopy conducting member (310) to the lowermost position as illustrated by Fig. 16C, the pin (300) is forced downwards and laterally outwards from the hollow cell (311), thus forcing the rib (301) to further pivot about the hinge (302), to the position

20 illustrated by Fig. 16C which corresponds to open state of the umbrella. As can be appreciated the pin and slide joint formed by pin (300) and slide (311) allows to convert the up-down vertical movement of the conducting member (310) into a pivoting movement of the short lever (303) and the rib (311) about the hinge (302). It is appreciated that the short lever (303) may be designed shorter than

25 illustrated, and actually the pin itself may function as a lever. The length of the short lever (303) is a matter of design and depends inter alia in the torque of the electrical motor to be used (the short lever can be design shorter as long as the motor torque is sufficient to lift the rib and stretch the canopy fabric).

Fig. 17 illustrates a partial lateral cross section view (taken at B-B of Fig. 30 16B) of the canopy conducting mechanism of the embodiment illustrated by

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Figs. 16A to 16C in the state illustrated by Fig. 16 B, wherein the ribs (301) are in a mid location with the canopy partially opened and with the pin (300) of each rib maximally slid along the slide (311) in the direction of the central axis of the conducting member (310). As can be observed in Figs 16A and 16C, the pin
5 (300) reaches its maximal opposite slid along the slide (311), i.e. its max distance from the center of the conducting member (310). The up-down movement of the conducting member can be achieved by a hub extension (312) (shown in Figs 16A-16C) extended into the pole of the umbrella similarly to the hub extension member (4aa) of Fig. 6, or by an inner threading represented by the double dotted
10 circular line (314), similarly to the inner threading in hub (4a) of Fig. 1.

Fig. 18 illustrates a side view of a canopy rib according to the embodiment illustrated by Figs 16A to 17, made of one piece of material. The rib can be produced from plastic casting, as one unit comprising the pin (300), the short lever (303), hinges (302) from both its sides, and the rib (301). The rib
15 (301) itself may have recesses (304) from both its sides useful for reducing its weight with negligible lose of strength. The end (305) of the rib can be made gradually tapered, such that its thickness near the rib end is sufficiently reduced as to make it flexible, such that when the canopy is fully opened the rib being forced to the arched shape illustrated by doted line (306), due to a stress exerted
20 by the canopy fabric (not illustrated) which is dimensioned and designed in a mushroom shape forcing the flexible ends of the ribs to bent downwardly.

Fig. 19 illustrates a top view of the canopy rib of Fig. 18. The rib has a flat end (305) which is flexible in the direction perpendicular to the illustration plane, due to reduced thickness of the end of the rib. Accordingly the present
25 invention relates to an umbrella comprised of a canopy conducting mechanism as described above, wherein the ribs are made of a rigid material and having gradually reduced thickness at their distal ends resulting in flexibility of the ends of the ribs useful for obtaining mushroom shaped canopy. The invention relates also to umbrella rib having gradually reduced thickness near its distal end
30 especially useful for obtaining mushroom shaped canopy in strutless umbrellas.

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CLAIMS:

1. Canopy conducting mechanism for hand held umbrellas, comprising; (a) canopy conducting member having a plurality of a first part of pin and slide joint rigidly connected and angularly spaced about a common central hub; (b) a spacer
5 having a central lower end adapted for being connected to a pole of an umbrella, and a plurality of pivot connection points remotely and angularly spaced about the central lower end each is adapted for receiving a canopy rib having a short lever arm having a second part of pin and slid joint matching the first part.
2. Canopy conducting mechanism according to claim 1, further comprising
10 a plurality of canopy ribs pivotably connected to the pivot connections, and further form a plurality of pin and slide joints with the conducting member.
3. Canopy conducting mechanism according to claim 1, connected to the top end of a pole.
4. Canopy conducting mechanism according to claim 1, wherein the spacer
15 has a hollow flange protruding from below.
5. Canopy conducting mechanism according to claim 1, wherein the hub is hollow and having inner threading.
6. Canopy conducting mechanism according to claim 1, wherein the hub is connected to an extension member having a threading connection at its lower
20 end.
7. Umbrella comprised of a canopy conducting mechanism according to claim 2.
8. Umbrella comprised of a canopy conducting mechanism according to claim 2, connected at its bottom end to a top end of a pole of the umbrella, the
25 pole has an upper handgrip connected near its upper end and a main handgrip connected to its lower end.
9. Electrical umbrella comprised of a canopy conducting mechanism according to claim 2 connected at its lower end to the top of a hollow pole, the hollow pole is connected at its lower end to a main handgrip of the umbrella,

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- wherein the canopy conducting member is driven along a short path between an uppermost position and a lowermost position from above the pole, corresponding to a closed state and an open state of the umbrella, respectively, upon rotation of an electrical motor located near or inside the main handgrip, powered by batteries
- 5 located nearby, and transmitting its rotation to a screw or to a helical shaft adapted to convert the rotation into vertical movement of the conducting member.
10. Electrical umbrella according to claim 9, further comprising override arrangement.
- 10 11. Electrical umbrella according to claim 9, further comprising override arrangement, the override arrangement comprising an extended flange connected to the bottom of the spacer and capable of telescopic movement with respect to the umbrella pole, and means for releasably tightening the extended flange to the pole.
- 15 12. Electrical umbrella according to claim 9, further comprising an upper handgrip located near the top end of the pole and being a part of an override arrangement, the override arrangement comprising an extended flange connected to the bottom of the spacer and capable of telescopic movement with respect to the umbrella pole, and means for releasably tightening the extended flange to
- 20 the pole, wherein the upper hand grip is located such that it can be utilized for moving the extended flange up and down in said telescopic movement.
13. Electrical umbrella according to claim 9, further comprising a battery compartment located inside the main handgrip.
14. Electrical umbrella according to claim 9, further comprising a battery
- 25 compartment located inside the main handgrip in electrical communication with a jack adapted for receiving a plug of a power source for recharging the batteries.
15. Electrical umbrella according to claim 9, further comprising a withdrawable battery compartment located inside the main handgrip.

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16. Electrical umbrella according to claim 9, further comprising overload detection circuit capable of disconnecting the battery power from the motor upon recognition of a motor current exceeding a predetermined threshold.

17. Electrical umbrella according to claim 9, further comprising overload
5 detection circuit capable of disconnecting the battery power from the motor upon recognition of a motor current exceeding a predetermined threshold, and further capable of inverting the polarity of the power connection to the motor .

18. Electrical umbrella according to claim 9, further comprising at least one utility electronic or electric circuit selected from; (a) location detector; (b)
10 emergency illumination; (c) safety illumination; (d) low battery alarm; (e) temperature measuring; (f) electronic watch; (g) anti-theft remote sensor; (h) decorative illumination; (i) battery recharger with integral power plug; (j) remote controller in wireless communication with certain electronic or electric circuits of the umbrella; (k) voice or sonic alarm; (l) a combination of at least two of 'a' to
15 'k'.

19. Umbrella comprised of a canopy conducting mechanism according to claim 2, wherein the ribs are made of a rigid material at their proximal portion and of a flexible bars at their distal portion.

20. Umbrella comprised of a canopy conducting mechanism according to
20 claim 2, characterized by having no struts nor stretchers connecting between the pole of the umbrella and its canopy ribs.

21. Canopy conducting mechanism according to claim 1, further comprising a plurality of pivot joints remotely and angularly spaced about the central lower end each is adapted for receiving a rib stretcher to be associated with a rib
25 receivable by a corresponding pivot connection point.

22. Canopy conducting mechanism according to claim 1, further comprising (i) multifold ribs pivotally connected to the pivot connections and further form a plurality of pin and slide joints with the conducting member; and (ii) a plurality of rib stretchers, pivotally connected to respected pivot joints and to respective
30 multifold ribs.

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23. Electrical umbrella comprising a canopy conducting mechanism according to claim 22, the canopy conducting mechanism is connected at its lower end to the top of a telescopic pole, the telescopic pole is connected at its lower end to a main handgrip of the umbrella, wherein the canopy conducting member is driven along a short path between an uppermost position and a lowermost position from above the pole, corresponding to a closed state and an open state of the umbrella, respectively, upon rotation of an electrical motor located near or inside the main handgrip, powered by batteries located nearby, and transmitting its rotation to a screw or to a helical shaft adapted to convert the rotation into vertical movement of the conducting member and into a telescopic movement of at least two telescopic sections of the pole.
24. Electrical umbrella according to claim 9 or 22, wherein the handgrip is cushioned or having a padding protection against downfall damages.
25. Electrical umbrella according to claim 9 or 22, further comprising folding or pull out foots accommodated in the handgrip and useful for positioning of the umbrella uprightly.
26. Umbrella comprised of a canopy conducting mechanism according to claim 2, wherein the ribs are made of a rigid material and having gradually reduced thickness at their distal ends resulting in flexibility of the ends of the ribs useful for obtaining mushroom shaped canopy.
27. Umbrella rib having gradually reduced thickness near its distal end useful for obtaining mushroom shaped canopy.

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Fig. 1

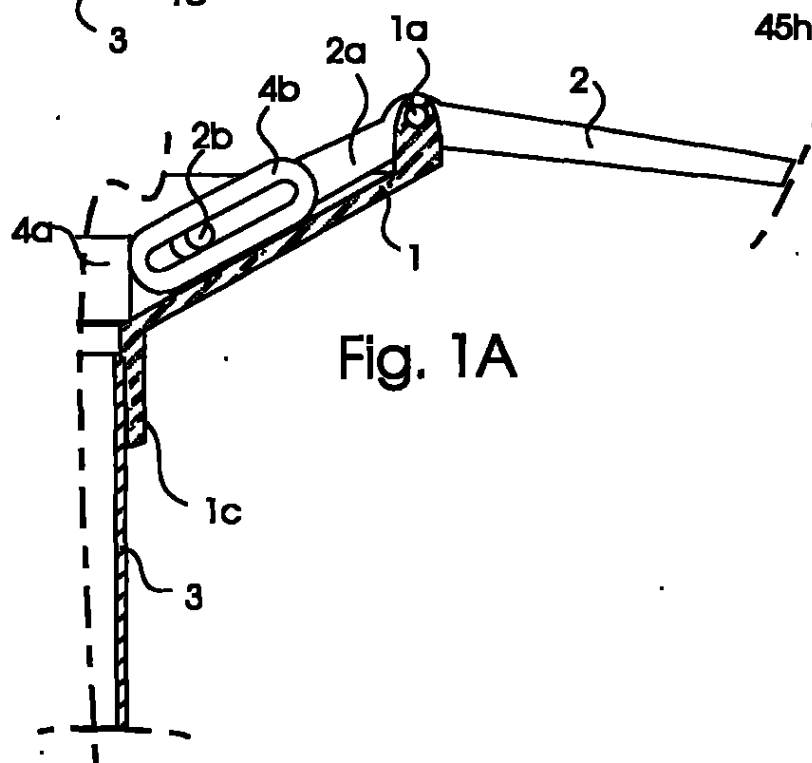
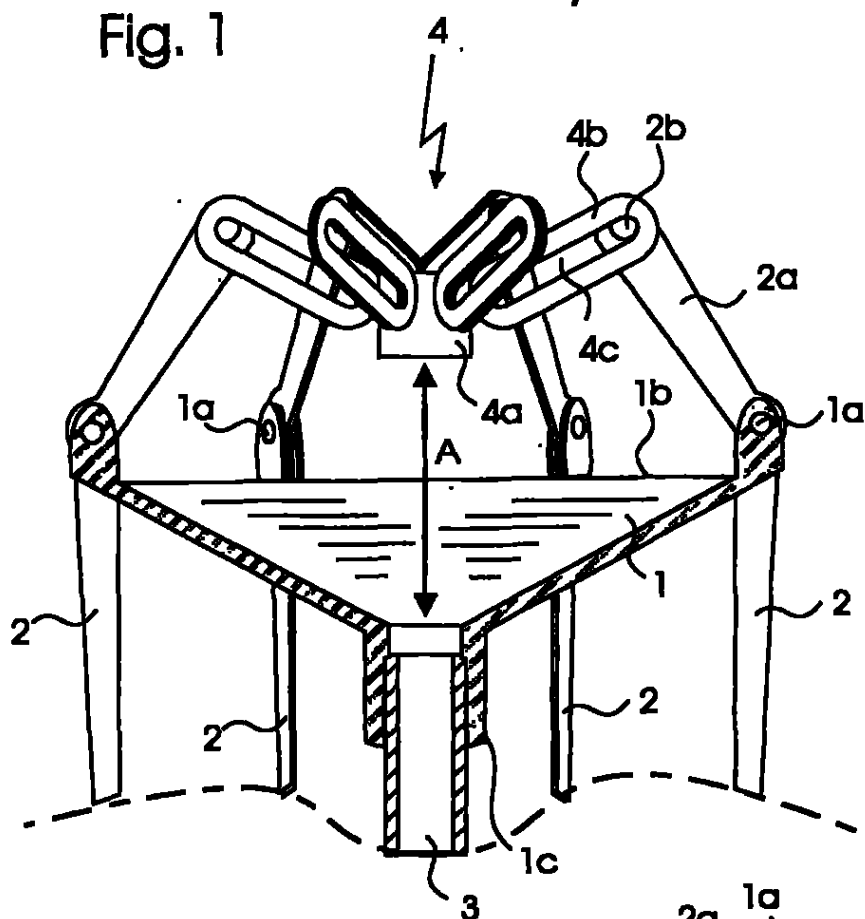
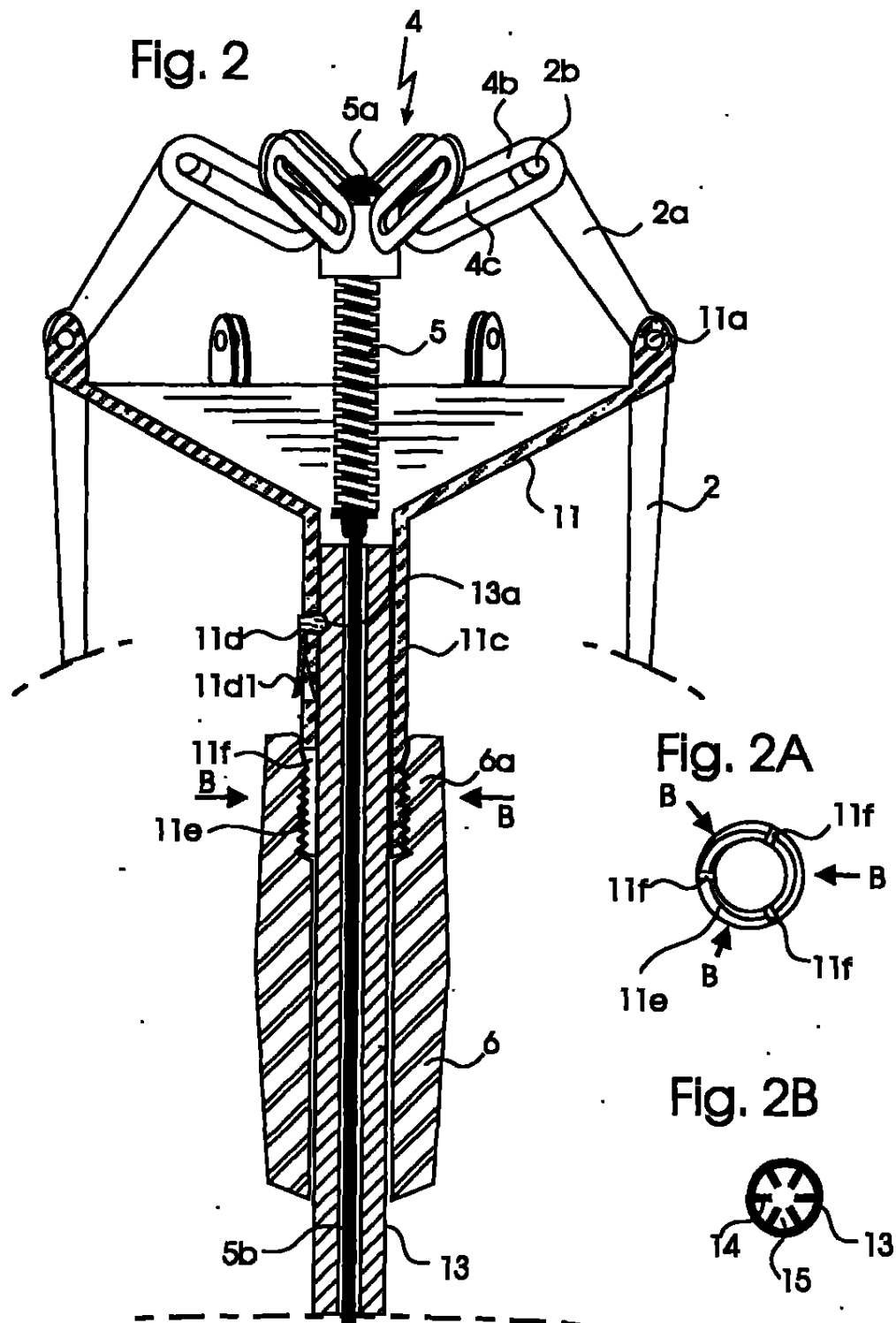


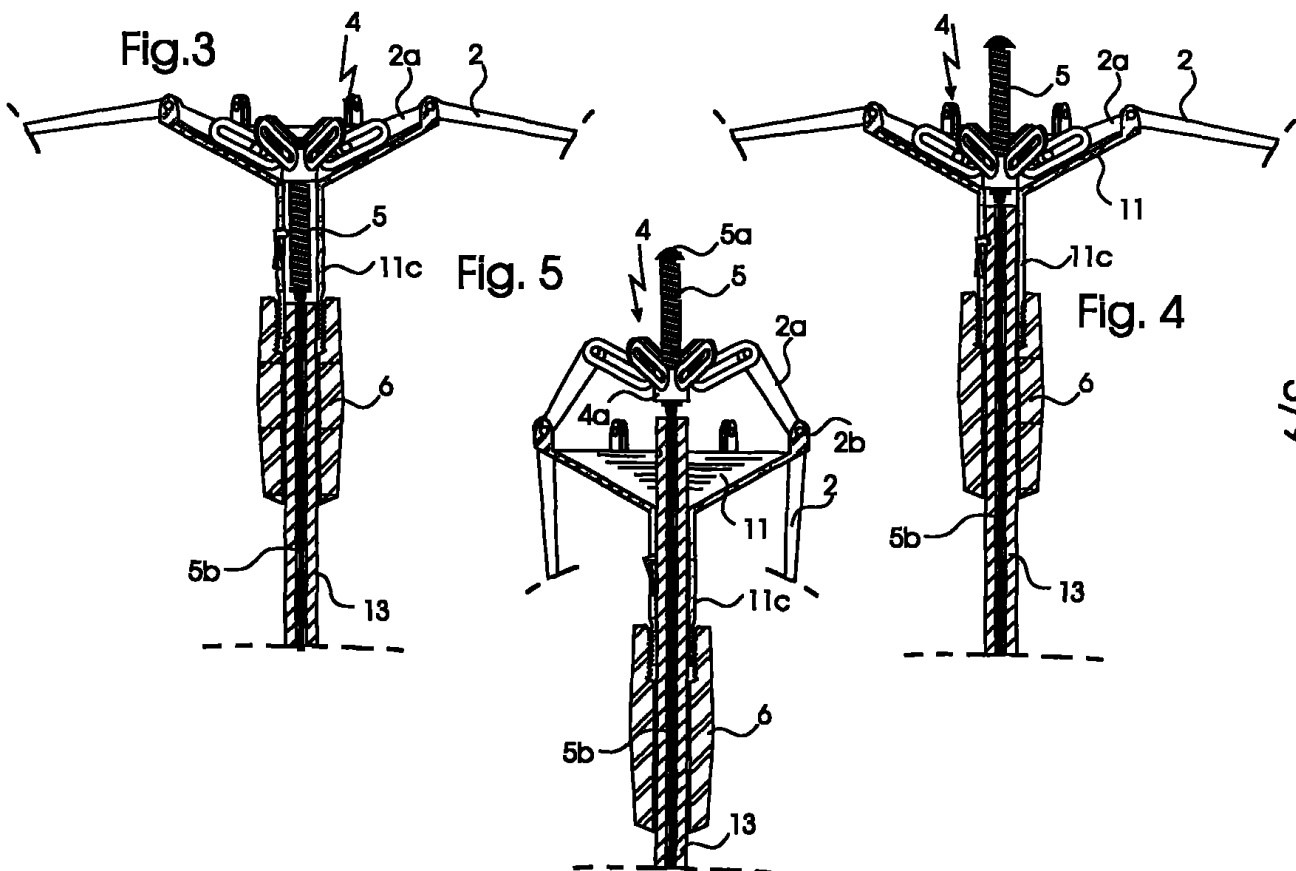
Fig. 1A

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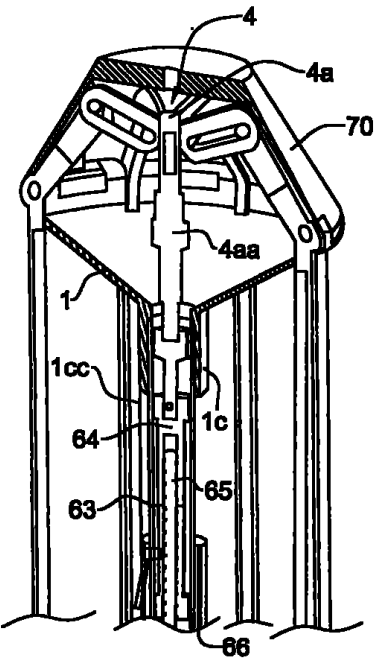


Fig. 6

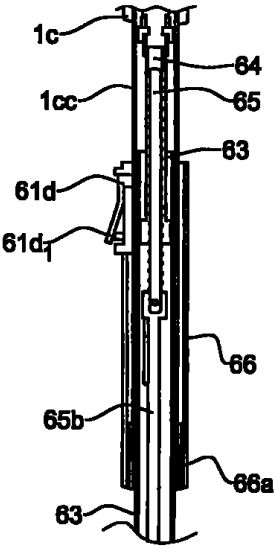


Fig. 6A

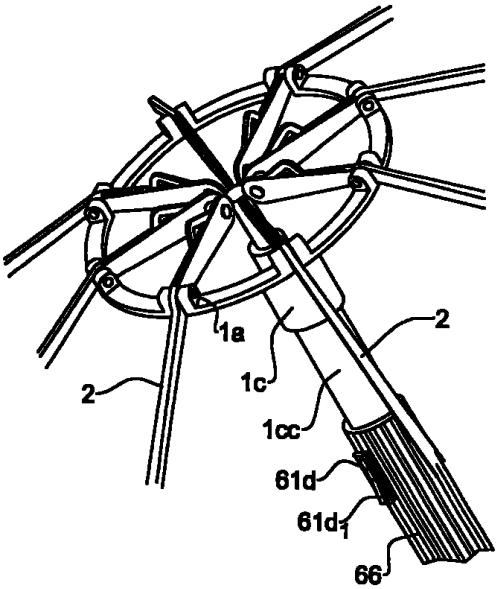


Fig. 6B

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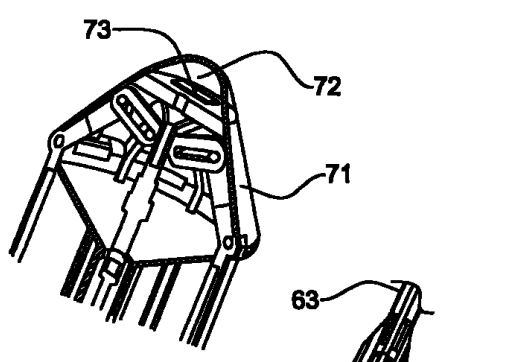


Fig. 7

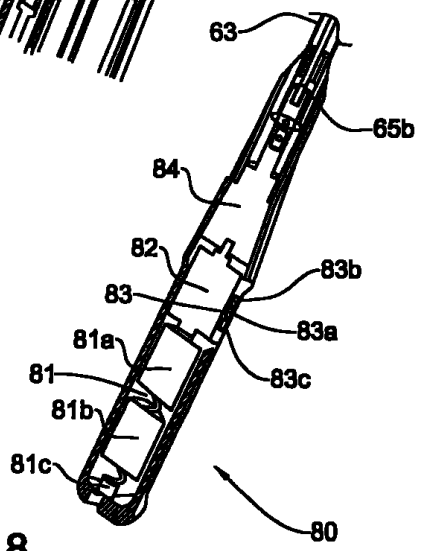


Fig. 8

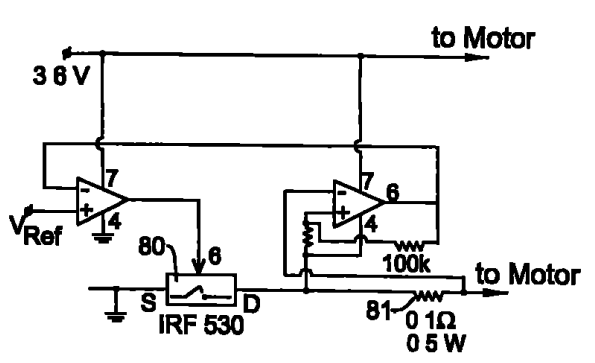


Fig. 8A

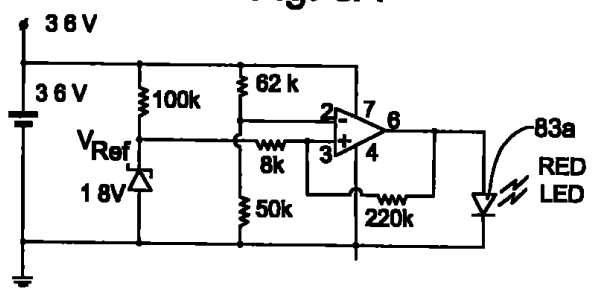


Fig. 8B

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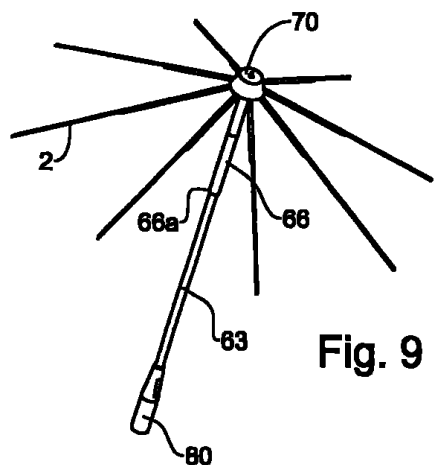


Fig. 9

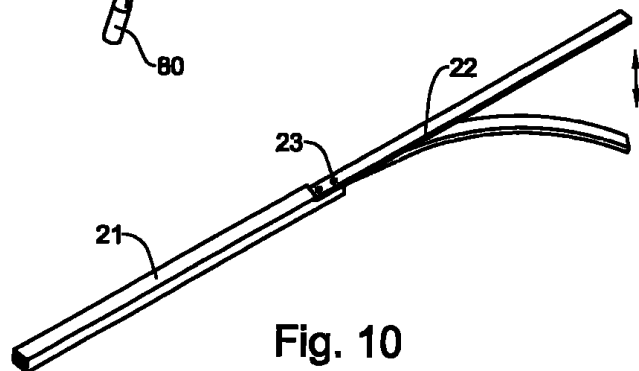


Fig. 10

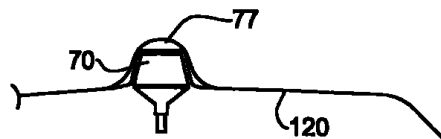


Fig. 11

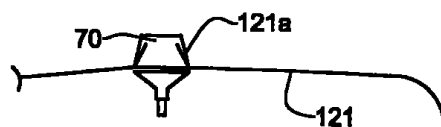


Fig. 12

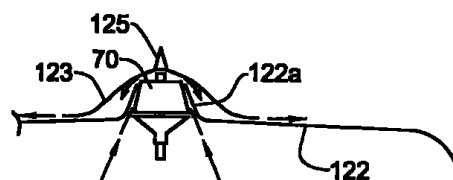
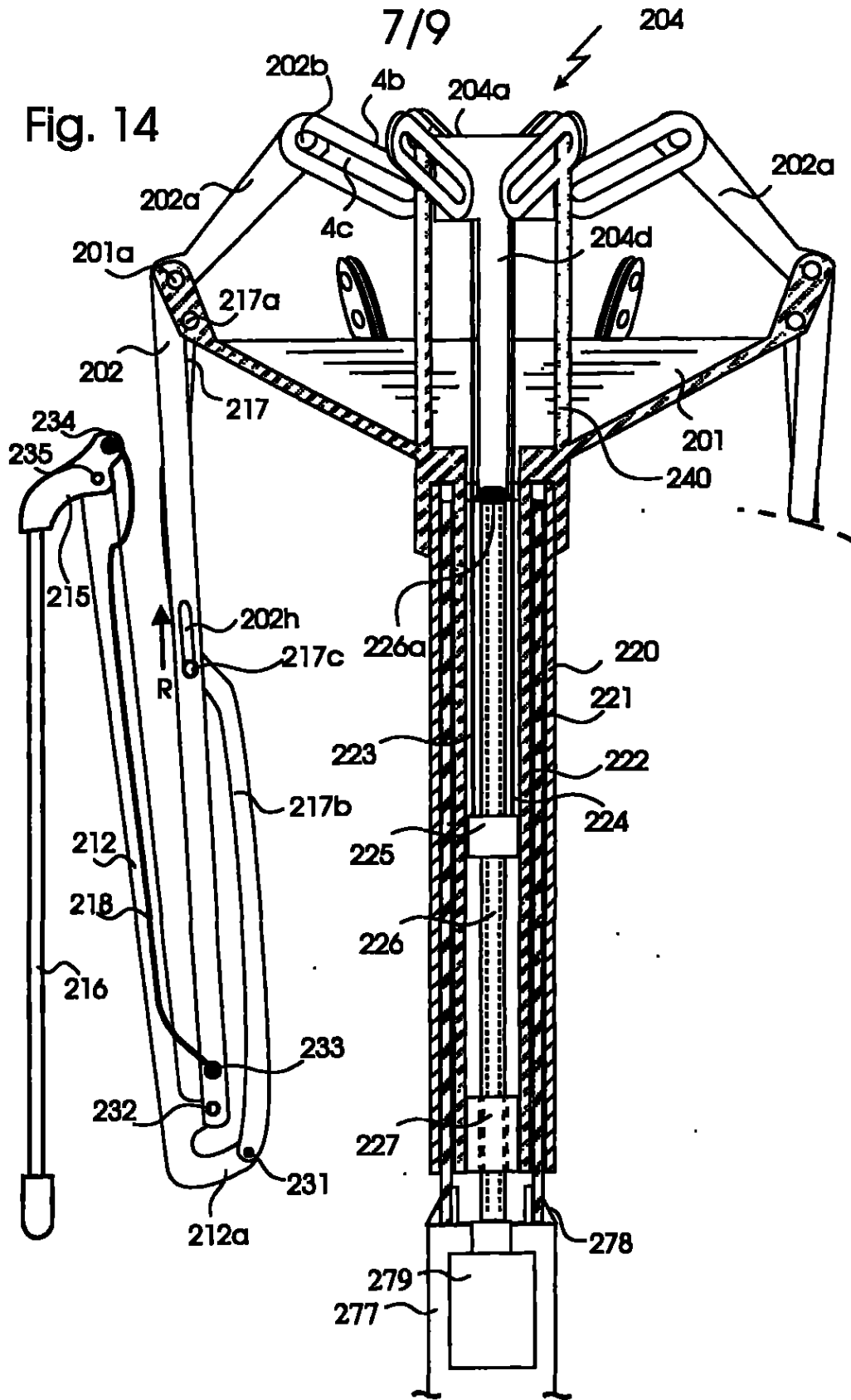


Fig. 13

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Fig. 14



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Fig. 15

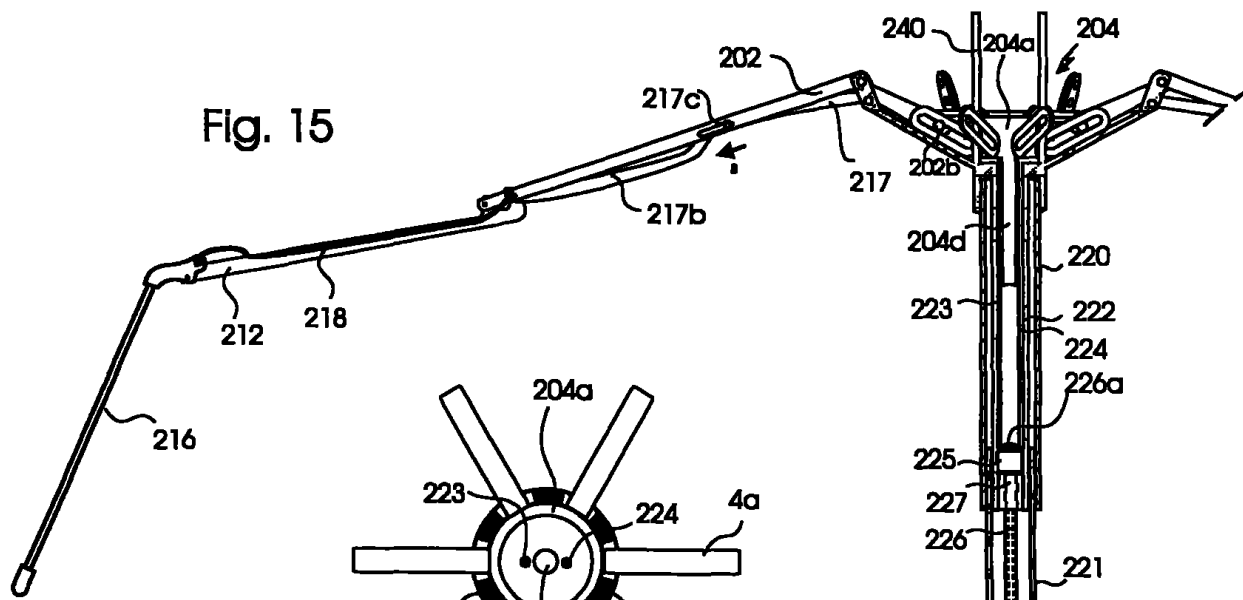
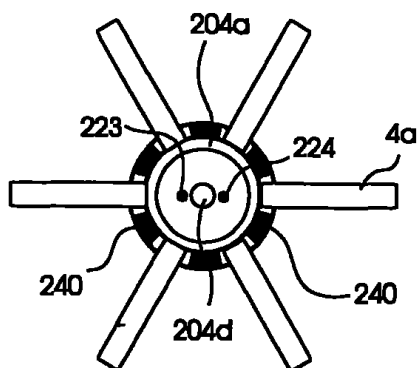


Fig. 14A



Hot
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Fig. 16A

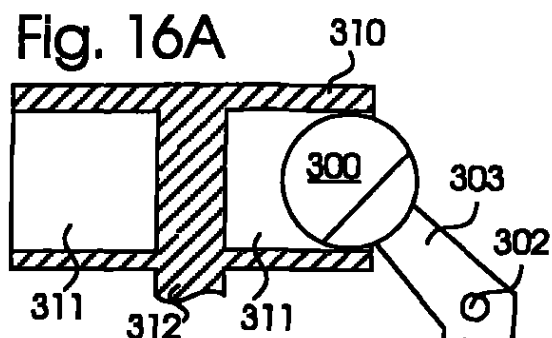


Fig. 16B

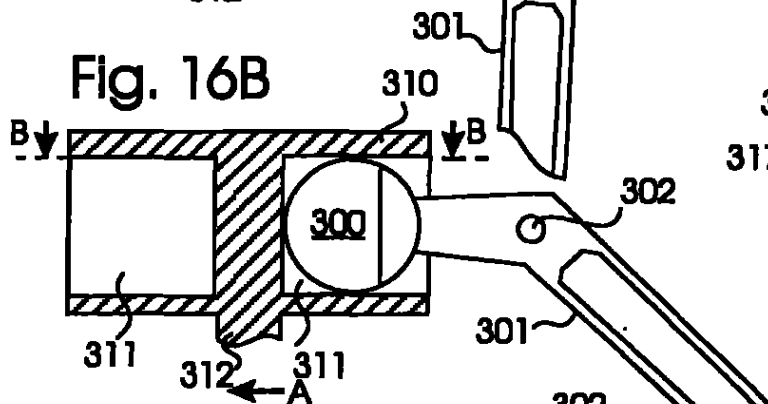


Fig. 16C

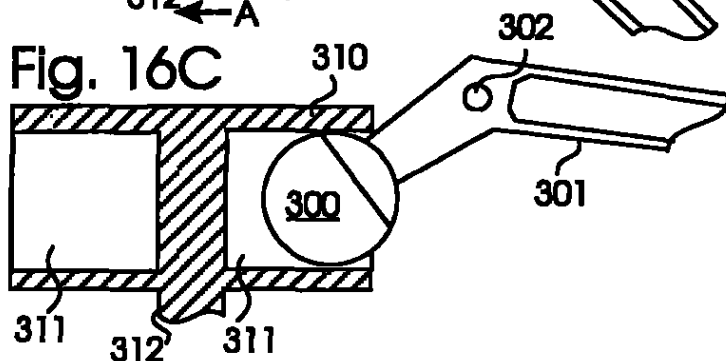


Fig. 17

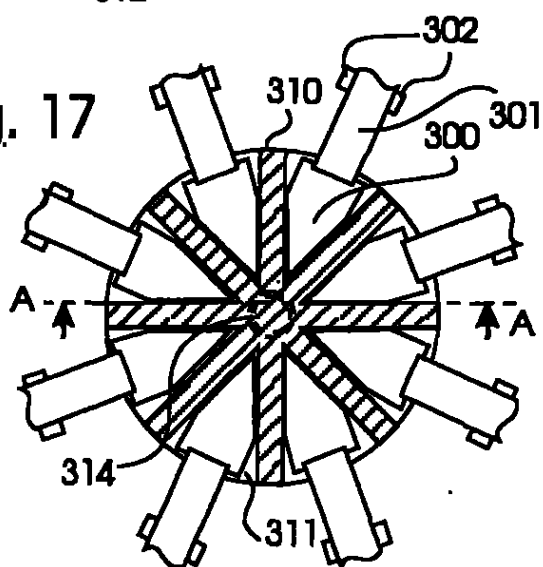


Fig. 19

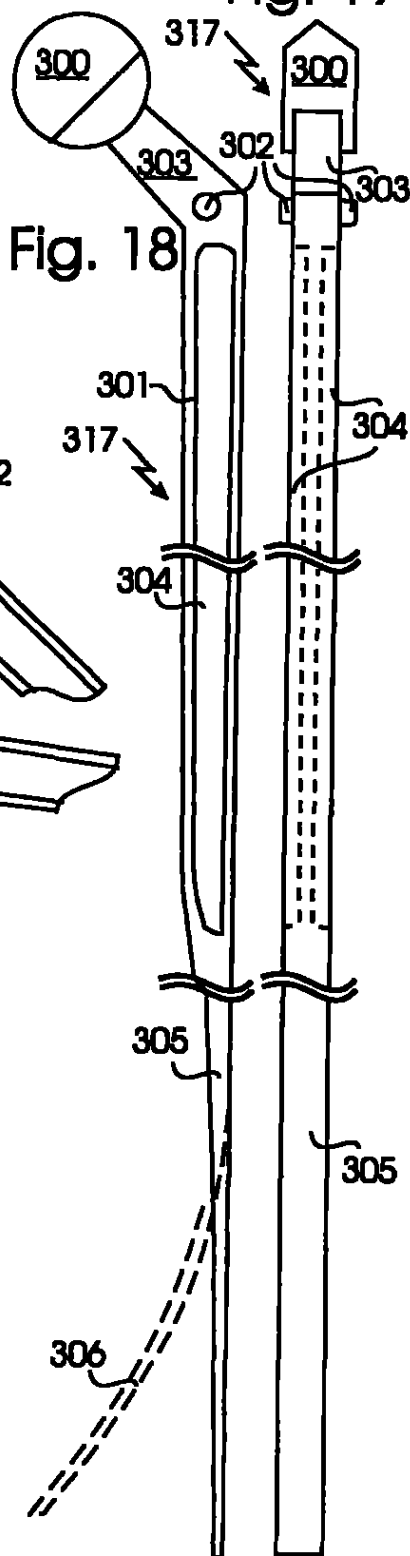


Fig. 18



(43) International Publication Date
3 November 2005 (03.11.2005)

PCT

(10) International Publication Number
WO 2005/102097 A3

(51) International Patent Classification: A45B 19/00, 25/14

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(21) International Application Number: PCT/IL2005/000450

(74) Agent: REINHOLD COHN AND PARTNERS; P.O. Box 4060, 61040 Tel Aviv (IL).

(22) International Filing Date: 1 May 2005 (01.05.2005)

(25) Filing Language: English

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(26) Publication Language: English

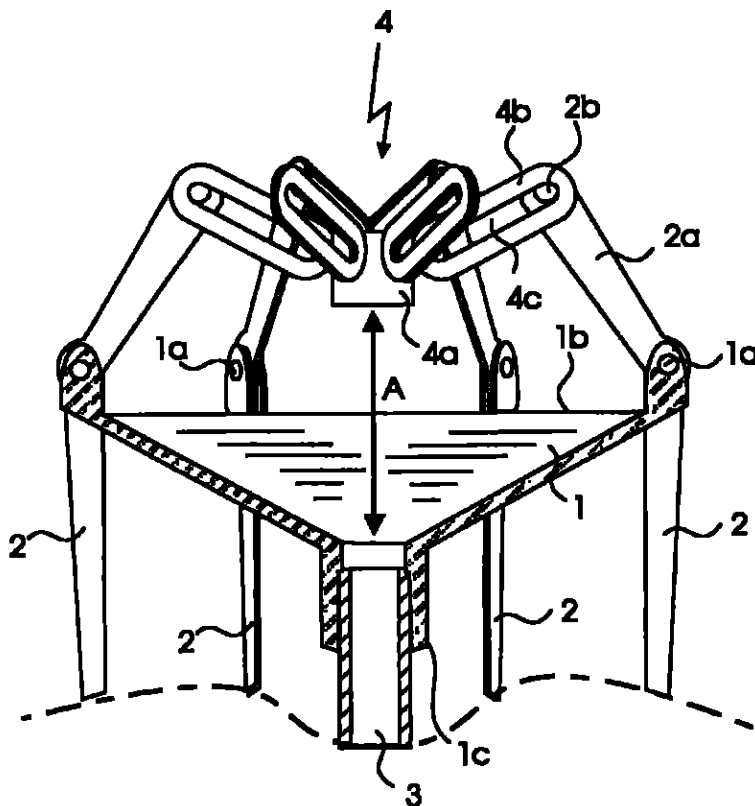
(30) Priority Data:
161621 26 April 2004 (26.04.2004) IL
60/582,429 25 June 2004 (25.06.2004) US
165554 5 December 2004 (05.12.2004) IL

(71) Applicant (for all designated States except US): LASIES INVESTMENTS AND ENTERPRISES LTD. [IL/IL]; 8 Hartum Street, Har-Hachotzvim, 97770 Jerusalem (IL).

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GI,

[Continued on next page]

(54) Title: ELECTRICAL UMBRELLA AND CANOPY MECHANISM



(57) Abstract: Canopy conducting mechanism for hand held umbrellas is disclosed. The canopy conducting mechanism is especially useful for electrical umbrellas although may be used for manually operated umbrellas as well. The canopy conducting mechanism has short movement between open and closed states of the umbrella and is based on pin and slide joints (2b, 4c) between the umbrella ribs (2) and between a canopy conducting member (4), allowing for strutless canopy (i.e. a canopy without stretchers extending between the umbrella post and the ribs). Umbrella rib having a flexible end especially useful for strutless umbrellas is also disclosed. Strutless electrical umbrella comprising said canopy conducting mechanism and flexible end ribs is also disclosed, including single-folding and multi-folding canopy embodiments.

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GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Burmian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NI, SN, TD, TG).

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1 December 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

— with international search report

INTERNATIONAL SEARCH REPORT

International Application No
PCT/IL2005/000450

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 A45B19/00 A45B25/14				
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 7 A45B				
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 practical, search terms used) EPO-Internal, WPI Data				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	AT 231 634 B (DR. VIKTOR GORLITZER) 10 February 1964 (1964-02-10)	1-3,5-8, 20		
Y	page 1, line 16 - line 34 page 2, line 2 - line 13; figure	4,19,26		
X	US 5 638 846 A (BASSO ET AL) 17 June 1997 (1997-06-17)	27		
Y	column 2, line 62 - column 3, line 27; figures 1-6	4,19,26		
A	US 5 213 122 A (GRADY, II ET AL) 25 May 1993 (1993-05-25) cited in the application abstract; figures 1-2a,15,23	9-18,21, 23		
-/-				
☒ Further documents are listed in the continuation of box C. ☒ Patent family members are listed in annex.				
* Special categories of cited documents : <table border="0"> <tr> <td style="vertical-align: top;"> "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubt on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "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 </td> <td style="vertical-align: top;"> "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 "A" document member of the same patent family </td> </tr> </table>			"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubt on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "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 "A" document member of the same patent family
"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubt on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "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 "A" document member of the same patent family			
Date of the actual completion of the international search 19 August 2005		Date of mailing of the international search report 05/09/2005		
Name and mailing address of the ISA European Patent Office, P.B. 5518 Patenkamp 2 NL - 2580 HV Rijswijk Tel. (+31-70) 340-6040, Tx. 31 651 epo nl, Fax (+31-70) 340-3018		Authorized officer Dindorf, J		

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IL2005/000450

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 736 761 A (WARFIELD ET AL) 12 Apr 11 1988 (1988-04-12) abstract; figures 1-7	1-4, 7, 8, 19, 20, 26, 27
A	US 5 711 332 A (APPLE ET AL) 27 January 1998 (1998-01-27) cited in the application abstract; figures 2, 3, 7, 8	1-4, 7, 8, 20

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No.

PCT/IL2005/000450

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
AT 231634	B	10-02-1964	NONE
US 5638846	A	17-06-1997	DE 69508914 D1 12-05-1999
			DE 69508914 T2 02-12-1999
			EP 0739174 A1 30-10-1996
			ES 2132605 T3 16-08-1999
			WO 9518554 A1 13-07-1995
			JP 3388750 B2 24-03-2003
			JP 9507145 T 22-07-1997
US 5213122	A	25-05-1993	US 5291908 A 08-03-1994
US 4736761	A	12-04-1988	NONE
US 5711332	A	27-01-1998	NONE

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PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT :

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(PCT Rule 71.1)

To:

REINHOLD COHN AND PARTNERS
P.O. Box 4060
61040 Tel Aviv
ISRAEL

Date of mailing
(day/month/year)

10.10.2006

Applicant's or agent's file reference
159609.7 DAB

IMPORTANT NOTIFICATION

International application No.
PCT/IL2006/000450

International filing date (day/month/year)
01.06.2005

Priority date (day/month/year)
28.04.2004

Applicant
LASIES INVESTMENTS AND ENTERPRISES LTD. et Al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed invention is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international
preliminary examining authority:



European Patent Office - P.B. 5818 Paternoster
NL-2200 HV Rijswijk - Pays Bas
Tel. +31 70 340 - 2040 Tlx 81 651 epo nl
Fax +31 70 340 - 3018

Authorized Officer

VIEGAS DA CRUZ, I

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 159609.7 DAB	FOR FURTHER ACTION See Form PCT/PEA/410	
International application No. PCT/IL2005/000450	International filing date (day/month/year) 01.05.2005	Priority date (day/month/year) 26.04.2004
International Patent Classification (IPC) or national classification and IPC INV. A45B19/00		
Applicant LASIES INVESTMENTS AND ENTERPRISES LTD. et Al.		
1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 38. 2. This REPORT consists of a total of 6 sheets, including this cover sheet. 3. This report is also accompanied by ANNEXES, comprising: a. ☒ sent to the applicant and to the International Bureau a total of 5 sheets, as follows: ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 807 of the Administrative Instructions). ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in Item 4 of Box No. I and the Supplemental Box. b. ☐ (sent to the International Bureau only) a total of (Indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).		
4. This report contains indications relating to the following items: ☒ Box No. I Basis of the report ☐ Box No. II Priority ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability ☐ Box No. IV Lack of unity of invention ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement ☐ Box No. VI Certain documents cited ☐ Box No. VII Certain defects in the international application ☐ Box No. VIII Certain observations on the international application		
Date of submission of the demand 22.02.2006	Date of completion of this report 10.10.2006	
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5518 Patandean 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 940 - 2040 Tx: 31 851 epo nl Fax: +31 70 940 - 3018	Authorized officer Zetzsche, Brigitta Telephone No. +31 70 340-4328 	

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172**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**International application No.
PCT/IL2005/000450**Box No. | Basis of the report****1. With regard to the language, this report is based on**

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3(a) and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4(a))
 - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements* of the international application, this report is based on (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):**Description, Pages**

1-33 as originally filed

Claims, Numbers

1-26 filed with telefax on 04.04.2006

Drawings, Sheets

10-66 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (specify):
- ☐ any table(s) related to sequence listing (specify):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (specify):
- ☐ any table(s) related to sequence listing (specify):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/IL2005/000450

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-26
	No: Claims	
Inventive step (IS)	Yes: Claims	1-26
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-26
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

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174**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/IL2005/000450**Re Item V****Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Reference is made to the following document:**D1: AT 231 834 B (GORLITZER)****2. 1st group of inventions: claims 1-8, 19-26****2.1. The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and shows, see p. 1, l. 37 - p. 2, l. 19, fig. 1 (the references in parentheses applying to this document):****a canopy conducting mechanism for hand held umbrellas, comprising:****(a) canopy conducting member (7) having a plurality of a first part of pin and slide joint rigidly connected and angularly spaced about a common central hub;****(b) a spacer (1) having a central lower end adapted for being connected to a pole (2) of an umbrella, and a plurality of pivot connection points (13) remotely and angularly spaced about the central lower end each being adapted for receiving a pivot point of a canopy rib (12) having a short lever arm being the rib portion between the close rib end and the pivot point, the short lever arm having a second part (14) of pin and slide joint matching the first part.****The subject-matter of claim 1 differs from the above prior art in that the slides are separated from one another by being formed in angularly spaced bars or cells.****The subject-matter of claim 1 is therefore new (Article 33(2) PCT).****2.2. The problem to be solved by the present invention may be regarded as avoiding jamming between the short lever arms.**

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175**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/IL2005/000450

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

The solution provides for vertical and horizontal guiding. The solution cannot be found and is also not hinted at in the prior art.

2.3. Claims 2-8, 10-26 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

3. 2nd group of inventions: claims 9-18, 24, 25

3.1. The document D1 is regarded as being the closest prior art to the subject-matter of claim 9, and shows, see p. 1, l. 37 - p. 2, l. 19, fig. 1 (the references in parentheses applying to this document):

an umbrella comprising an umbrella hollow pole (2) having a main handgrip (22) at a first end thereof; a canopy conducting member (7) having a plurality of a first part of pin and slide joint rigidly connected and angularly spaced about a common central hub; a spacer (1) having a central lower end connected to a second end of the pole (2) and a plurality of pivot points (13) remotely and angularly spaced about the central lower end; a respective plurality of canopy ribs (12) pivotably connected to the pivot points (13), each rib (12) having a short lever arm being the rib portion between the close rib end and the pivot point, the short lever arm having a second part (14) of pin and slide joint matching the first part, the ribs (12) thereby form a plurality of pin and slide joints with the conducting member (7), wherein the canopy conducting member (7) is driven along a short path between an uppermost position and a lowermost position from above the pole (2), corresponding to a closed state and an open state of the umbrella, respectively.

The subject-matter of claim 9 differs from the above prior art in that the umbrella is electrically operated.

The subject-matter of claim 9 is therefore new (Article 33(2) PCT).

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**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

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3.2. Although electrically operated umbrellas are well known in the art, none of them uses a canopy conducting mechanism as defined in claim 9. This conducting mechanism only needs a short travel between open and closed positions, allowing for a compact construction. The combination of features is novel and is not rendered obvious by the prior art.

3.3. Claims 10-18, 24, 25 are dependent on claim 9 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

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CLAIMS:

1. *Canopy conducting mechanism for hand held umbrellas, comprising: (a) canopy conducting member having a plurality of a first part of pin and slide joint rigidly connected and angularly spaced about a common central hub; (b) a spacer*
5 *having a central lower end adapted for being connected to a pole of an umbrella, and a plurality of pivot connection points remotely and angularly spaced about the central lower end each being adapted for receiving a pivot point of a canopy rib (2) having a short lever arm (2a) being the rib portion between the close rib end and the pivot point, the short lever arm (2a) having a second part (2b) of pin*
10 *and slid joint matching the first part, the pin and slide joints being characterized in that the slides are separated from one another by being formed in angularly spaced bars or cells*
2. *Canopy conducting mechanism according to claim 1, further comprising a plurality of canopy ribs pivotably connected to the pivot connections, and*
15 *further form a plurality of pin and slide joints with the conducting member.*
3. *Canopy conducting mechanism according to claim 1, connected to the top end of a pole.*
4. *Canopy conducting mechanism according to claim 1, wherein the spacer has a hollow flange protruding from below.*
- 20 5. *Canopy conducting mechanism according to claim 1, wherein the hub is hollow and having inner threading for moving the hub up and down upon rotation of a screw having outer threading matching the hub's inner threading, for closing and opening the umbrella respective to the rotation direction of the screw.*
6. *Canopy conducting mechanism according to claim 1, wherein the hub is*
25 *connected to an extension member having at its lower end a threading connection with a screw, for closing and opening the umbrella respective to the rotation direction of the screw.*
7. *Umbrella comprised of a canopy conducting mechanism according to claim 2.*

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8. Umbrella comprised of a canopy conducting mechanism according to claim 2, connected at its bottom end to a top end of a pole of the umbrella, the pole has an upper handgrip connected near its upper end and a main handgrip connected to its lower end.

5 9. Electrical umbrella comprising an umbrella hollow pole having a main handgrip at a first end thereof; a canopy conducting member having a plurality of a first part of pin and slide joint rigidly connected and angularly spaced about a common central hub; a spacer having a central lower end connected to a second end of the pole and a plurality of pivot points remotely and angularly spaced
10 about the central lower end; a respective plurality of canopy ribs pivotably connected to the pivot points, each rib having a short lever arm (2a) being the rib portion between the close rib end and the pivot point, the short lever arm (2a) having a second part (2b) of pin and slide joint matching the first part, the ribs thereby form a plurality of pin and slide joints with the conducting member (2),
15 wherein the canopy conducting member is driven along a short path between an uppermost position and a lowermost position from above the pole, corresponding to a closed state and an open state of the umbrella, respectively, upon rotation of an electrical motor located near or inside the main handgrip, powered by batteries located nearby, and transmitting its rotation to a screw or to a helical shaft
20 adapted to convert the rotation into vertical movement of the conducting member.

10. Electrical umbrella according to claim 9, further comprising override arrangement.

11. Electrical umbrella according to claim 9, further comprising override
25 arrangement, the override arrangement comprising an extended flange connected to the bottom of the spacer and capable of telescopic movement with respect to the umbrella pole, and means for releasably tightening the extended flange to the pole.

12. Electrical umbrella according to claim 9, further comprising an upper
30 handgrip located near the top end of the pole and being a part of an override

04/04 '06 11:46 NO.436 05/12

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arrangement, the override arrangement comprising an extended flange connected to the bottom of the spacer and capable of telescopic movement with respect to the umbrella pole, and means for releasably tightening the extended flange to the pole, wherein the upper hand grip is located such that it can be utilized for
5 moving the extended flange up and down in said telescopic movement.

13. Electrical umbrella according to claim 9, further comprising a battery compartment located inside the main handgrip.

14. Electrical umbrella according to claim 9, further comprising a battery compartment located inside the main handgrip in electrical communication with
10 a jack adapted for receiving a plug of a power source for recharging the batteries.

15. Electrical umbrella according to claim 9, further comprising a withdrawable battery compartment located inside the main handgrip.

16. Electrical umbrella according to claim 9, further comprising overload detection circuit capable of disconnecting the battery power from the motor upon
15 recognition of a motor current exceeding a predetermined threshold.

17. Electrical umbrella according to claim 9, further comprising overload detection circuit capable of disconnecting the battery power from the motor upon recognition of a motor current exceeding a predetermined threshold, and further capable of inverting the polarity of the power connection to the motor .

20 18. Electrical umbrella according to claim 9, further comprising at least one utility electronic or electric circuit selected from; (a) location detector; (b) emergency illumination; (c) safety illumination; (d) low battery alarm; (e) temperature measuring; (f) electronic watch; (g) anti-theft remote sensor; (h) decorative illumination; (i) battery recharger with integral power plug; (j) remote
25 controller in wireless communication with certain electronic or electric circuits of the umbrella; (k) voice or sonic alarm; (l) a combination of at least two of 'a' to 'k'.

19. Umbrella comprised of a canopy conducting mechanism according to claim 2, wherein the ribs are made of a rigid material at their proximal portion
30 and of a flexible bars at their distal portion.

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20. Umbrella comprised of a canopy conducting mechanism according to claim 2, characterized by having no struts nor stretchers connecting between the pole of the umbrella and its canopy ribs.
21. Canopy conducting mechanism according to claim 1, further comprising
5 a plurality of pivot joints remotely and angularly spaced about the central lower end each is adapted for receiving a rib stretcher to be associated with a rib receivable by a corresponding pivot connection point.
22. Canopy conducting mechanism according to claim 1, further comprising
10 (i) multifold ribs pivotally connected to the pivot connections and further form a plurality of pin and slide joints with the conducting member; and (ii) a plurality of rib stretchers, pivotally connected to respected pivot joints and to respective multifold ribs.
23. Electrical umbrella comprising a canopy conducting mechanism according to claim 22, the canopy conducting mechanism is connected at its
15 lower end to the top of a telescopic pole, the telescopic pole is connected at its lower end to a main handgrip of the umbrella, wherein the canopy conducting member is driven along a short path between an uppermost position and a lowermost position from above the pole, corresponding to a closed state and an open state of the umbrella, respectively, upon rotation of an electrical motor
20 located near or inside the main handgrip, powered by batteries located nearby, and transmitting its rotation to a screw or to a helical shaft adapted to convert the rotation into vertical movement of the conducting member and into a telescopic movement of at least two telescopic sections of the pole.
24. Electrical umbrella according to claim 9 or 22, wherein the handgrip is
25 cushioned or having a padding protection against downfall damages.
25. Electrical umbrella according to claim 9 or 22, further comprising folding or pull out foots accommodated in the handgrip and useful for positioning of the umbrella uprightly.
26. Umbrella comprised of a canopy conducting mechanism according to
30 claim 2, wherein the ribs are made of a rigid material and having gradually

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reduced thickness at their distal ends resulting in flexibility of the ends of the ribs
useful for obtaining mushroom shaped canopy.

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**MODIFICACIONES A LAS REIVINDICACIONES EFECTUADAS EN
VIRTUD DEL ARTÍCULO 34 DEL PCT – EN APLICACIÓN DE LA
REGLA 66.3 DEL REGLAMENTO DE EJECUCIÓN DEL PCT –
Capítulo II**

CLAIMS:

1. Canopy conducting mechanism for hand held umbrellas, comprising; (a) canopy conducting member having a plurality of a first part of pin and slide joint rigidly connected and angularly spaced about a common central hub; (b) a spacer
5 having a central lower end adapted for being connected to a pole of an umbrella, and a plurality of pivot connection points remotely and angularly spaced about the central lower end each being adapted for receiving a pivot point of a canopy rib (2) having a short lever arm (2a) being the rib portion between the close rib end and the pivot point, the short lever arm (2a) having a second part (2b) of pin
10 and slid joint matching the first part, the pin and slide joints being characterized in that the slides are separated from one another by being formed in angularly spaced bars or cells
2. Canopy conducting mechanism according to claim 1, further comprising a plurality of canopy ribs pivotably connected to the pivot connections, and
15 further form a plurality of pin and slide joints with the conducting member.
3. Canopy conducting mechanism according to claim 1, connected to the top end of a pole.
4. Canopy conducting mechanism according to claim 1, wherein the spacer has a hollow flange protruding from below.
- 20 5. Canopy conducting mechanism according to claim 1, wherein the hub is hollow and having inner threading for moving the hub up and down upon rotation of a screw having outer threading matching the hub's inner threading, for closing and opening the umbrella respective to the rotation direction of the screw.
6. Canopy conducting mechanism according to claim 1, wherein the hub is
25 connected to an extension member having at its lower end a threading connection with a screw, for closing and opening the umbrella respective to the rotation direction of the screw.
7. Umbrella comprised of a canopy conducting mechanism according to claim 2.

8. Umbrella comprised of a canopy conducting mechanism according to claim 2, connected at its bottom end to a top end of a pole of the umbrella, the pole has an upper handgrip connected near its upper end and a main handgrip connected to its lower end.
- 5 9. Electrical umbrella comprising an umbrella hollow pole having a main handgrip at a first end thereof; a canopy conducting member having a plurality of a first part of pin and slide joint rigidly connected and angularly spaced about a common central hub; a spacer having a central lower end connected to a second end of the pole and a plurality of pivot points remotely and angularly spaced
10 about the central lower end; a respective plurality of canopy ribs pivotably connected to the pivot points, each rib having a short lever arm (2a) being the rib portion between the close rib end and the pivot point, the short lever arm (2a) having a second part (2b) of pin and slide joint matching the first part, the ribs thereby form a plurality of pin and slide joints with the conducting member (2), ,
15 wherein the canopy conducting member is driven along a short path between an uppermost position and a lowermost position from above the pole, corresponding to a closed state and an open state of the umbrella, respectively, upon rotation of an electrical motor located near or inside the main handgrip, powered by batteries located nearby, and transmitting its rotation to a screw or to a helical shaft
20 adapted to convert the rotation into vertical movement of the conducting member.
10. Electrical umbrella according to claim 9, further comprising override arrangement.
11. Electrical umbrella according to claim 9, further comprising override
25 arrangement, the override arrangement comprising an extended flange connected to the bottom of the spacer and capable of telescopic movement with respect to the umbrella pole, and means for releaseably tightening the extended flange to the pole.
12. Electrical umbrella according to claim 9, further comprising an upper
30 handgrip located near the top end of the pole and being a part of an override

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- arrangement, the override arrangement comprising an extended flange connected to the bottom of the spacer and capable of telescopic movement with respect to the umbrella pole, and means for releaseably tightening the extended flange to the pole, wherein the upper hand grip is located such that it can be utilized for
- 5 moving the extended flange up and down in said telescopic movement.
13. Electrical umbrella according to claim 9, further comprising a battery compartment located inside the main handgrip.
14. Electrical umbrella according to claim 9, further comprising a battery compartment located inside the main handgrip in electrical communication with
- 10 a jack adapted for receiving a plug of a power source for recharging the batteries.
15. Electrical umbrella according to claim 9, further comprising a withdrawable battery compartment located inside the main handgrip.
16. Electrical umbrella according to claim 9, further comprising overload detection circuit capable of disconnecting the battery power from the motor upon
- 15 recognition of a motor current exceeding a predetermined threshold.
17. Electrical umbrella according to claim 9, further comprising overload detection circuit capable of disconnecting the battery power from the motor upon recognition of a motor current exceeding a predetermined threshold, and further capable of inverting the polarity of the power connection to the motor .
- 20 18. Electrical umbrella according to claim 9, further comprising at least one utility electronic or electric circuit selected from; (a) location detector; (b) emergency illumination; (c) safety illumination; (d) low battery alarm; (e) temperature measuring; (f) electronic watch; (g) anti-theft remote sensor; (h) decorative illumination; (i) battery recharger with integral power plug; (j) remote
- 25 controller in wireless communication with certain electronic or electric circuits of the umbrella; (k) voice or sonic alarm; (l) a combination of at least two of 'a' to 'k'.
19. Umbrella comprised of a canopy conducting mechanism according to claim 2, wherein the ribs are made of a rigid material at their proximal portion
- 30 and of a flexible bars at their distal portion.

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20. Umbrella comprised of a canopy conducting mechanism according to claim 2, characterized by having no struts nor stretchers connecting between the pole of the umbrella and its canopy ribs.

21. Canopy conducting mechanism according to claim 1, further comprising
5 a plurality of pivot joints remotely and angularly spaced about the central lower end each is adapted for receiving a rib stretcher to be associated with a rib receivable by a corresponding pivot connection point.

22. Canopy conducting mechanism according to claim 1, further comprising
10 (i) multifold ribs pivotally connected to the pivot connections and further form a plurality of pin and slide joints with the conducting member; and (ii) a plurality of rib stretchers, pivotally connected to respected pivot joints and to respective multifold ribs.

23. Electrical umbrella comprising a canopy conducting mechanism according to claim 22, the canopy conducting mechanism is connected at its
15 lower end to the top of a telescopic pole, the telescopic pole is connected at its lower end to a main handgrip of the umbrella, wherein the canopy conducting member is driven along a short path between an uppermost position and a lowermost position from above the pole, corresponding to a closed state and an open state of the umbrella, respectively, upon rotation of an electrical motor
20 located near or inside the main handgrip, powered by batteries located nearby, and transmitting its rotation to a screw or to a helical shaft adapted to convert the rotation into vertical movement of the conducting member and into a telescopic movement of at least two telescopic sections of the pole.

24. Electrical umbrella according to claim 9 or 23, wherein the handgrip is
25 cushioned or having a padding protection against downfall damages.

25. Electrical umbrella according to claim 9 or 23, further comprising folding or pull out foots accommodated in the handgrip and useful for positioning of the umbrella uprightly.

26. Umbrella comprised of a canopy conducting mechanism according to
30 claim 2, wherein the ribs are made of a rigid material and having gradually

reduced thickness at their distal ends resulting in flexibility of the ends of the ribs useful for obtaining mushroom shaped canopy.

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REIVINDICACIONES

1. Mecanismo conductor de telamen para sombrillas manuales, que comprende: (a) un miembro conductor de telamen, que tiene una pluralidad de una primera parte de una junta de pasador y cursor, conectada rígidamente y espaciada angularmente alrededor de un cubo central común; (b) un separador que tiene un extremo inferior central, adaptado para ser conectado a un poste de una sombrilla; y una pluralidad de puntos de pivote, espaciados remota y angularmente alrededor del extremo inferior central; cada uno siendo adaptado para recibir un punto de pivote de la costilla del telamen que tiene un brazo de palanca corto (2a) siendo la porción de la costilla entre el final de la costilla y el punto del telamen, el brazo más corto (2a) que tiene una segunda parte (2b) de la junta de pasador y cursor, que complementa la primera parte, las uniones entre el pin y el cursor están caracterizadas de manera que los cursores están separados uno del otro al estar formadas por barras o celdas espaciadas angularmente.

2. Mecanismo conductor de telamen de conformidad con la reivindicación 1, que comprende adicionalmente una pluralidad de costillas de telamen, conectadas pivotalmente a las conexiones de pivote, y que forma adicionalmente una pluralidad de juntas de pasador y cursor, con el miembro conductor.

3. Mecanismo conductor de telamen de conformidad con la reivindicación 1, que está conectado al extremo superior de un poste.

4. Mecanismo conductor de telamen de conformidad con la reivindicación 1, en el que el separador tiene una pestaña hueca que

sobresale desde abajo.

5. Mecanismo conductor de telamen de conformidad con la reivindicación 1, en el que el cubo es hueco y tiene una rosca interior para mover el cubo hacia arriba y hacia abajo sobre la rotación de un tornillo que tiene una rosca exterior que empalma con la rosca interna del cubo, para abrir y cerrar la sombrilla de acuerdo con la dirección de rotación del tornillo

6. Mecanismo conductor de telamen de conformidad con la reivindicación 1, en el que el cubo está conectado a un miembro de extensión en su extremo inferior enroscada con un tornillo para cerrar y abrir la sombrilla de dirección de rotación del tornillo .

7. Sombrilla que comprende un mecanismo conductor de telamen de acuerdo con la reivindicación 2.

8. Sombrilla que comprende un mecanismo conductor de telamen de acuerdo con la reivindicación 2, conectado en su extremo inferior a un extremo superior de un poste de la sombrilla; y el poste tiene un mango de agarre superior, conectado cerca de su extremo superior, y un mango de agarre principal, conectado a su extremo inferior.

9. Sombrilla eléctrica comprendiendo un poste hueco que tiene una agarradera principal al final del mismo; mecanismo conductor del telamen con una pluralidad de conectores de pines y cursores rígidamente unidas y angularmente espaciadas alrededor de un cubo central común; un espaciador que tiene un extremo inferior central conectado a un segundo extremo del poste y una pluralidad de puntos pivotes remota y angularmente espaciados alrededor de un extremo

central inferior; una respectiva de costillas conectadas a los puntos del pivote, donde cada costilla tiene una palanca pequeña (2a), siendo la porción entre el extremo final de la costilla y el extremo del punto pivote, la palanca mas corta (2b), teniendo una segunda parte (2b) de un pin y un curso juntando a la primer parte; las las costillas, de ese modo, forman una pluralidad de conexiones de pin y cursor con el miembro conductor . .

10. Sombrilla eléctrica de conformidad con la reivindicación 9, que comprende adicionalmente un dispositivo de superposición.

11. Sombrilla eléctrica de conformidad con la reivindicación 9, que comprende adicionalmente un dispositivo de superposición; comprendiendo el dispositivo de superposición una pestaña extendida, conectada a la parte inferior del separador, y capaz de efectuar movimiento telescópico con respecto al poste de la sombrilla; y medios para apretar liberablemente la pestaña extendida, al poste.

12. Sombrilla eléctrica de conformidad con la reivindicación 9, que comprende adicionalmente un mango de agarre superior, situado cerca del extremo superior del poste, y que es parte de un dispositivo de superposición; comprendiendo el dispositivo de superposición una pestaña extendida, conectada a la parte inferior del separador, y capaz de moverse telescópicamente con respecto al poste de la sombrilla; y medios para apretar liberablemente la pestaña extendida al poste; donde el mango de agarre superior está localizado de manera que pueda ser utilizado para mover la pestaña extendida hacia arriba y hacia abajo, en el movimiento telescópico.

13. Sombrilla eléctrica de conformidad con la reivindicación 9,

que comprende adicionalmente un compartimiento para batería, localizado dentro del mango de agarre principal.

14. Sombrilla eléctrica de conformidad con la reivindicación 9, que comprende adicionalmente un compartimiento para batería localizado dentro del mango principal, en comunicación eléctrica con un conector adaptado para recibir una clavija de una fuente de poder, para recargar las baterías.

15. Sombrilla eléctrica de conformidad con la reivindicación 9, que comprende adicionalmente un compartimiento de baterías extraíble, localizado dentro del mango de agarre principal.

16. Sombrilla eléctrica de conformidad con la reivindicación 9, que comprende adicionalmente un circuito de detección de sobrecarga, capaz de desconectar la alimentación de baterías al motor, cuando se reconoce que hay una corriente de motor que sobrepasa un umbral predeterminado.

17. Sombrilla eléctrica de conformidad con la reivindicación 9, que comprende adicionalmente un circuito de detección de sobrecarga, capaz de desconectar la alimentación de baterías al motor, cuando se reconoce que hay una corriente de motor que sobrepasa un umbral predeterminado; y capaz adicionalmente de invertir la polaridad de la conexión de poder al motor.

18. Sombrilla eléctrica de conformidad con la reivindicación 9, que comprende adicionalmente por lo menos un circuito eléctrico o electrónico de uso común, seleccionado de: (a) un detector de ubicación; (b) una iluminación de emergencia; (c) una iluminación de seguridad; (d) una alarma de batería baja; (e) un medidor de

temperatura; (f) un reloj electrónico; (g) un sensor remoto antirrobo; (h) iluminación decorativa; (i) recargador de batería con clavija de energía integral; (j) controlador remoto en comunicación inalámbrica con ciertos circuitos electrónicos o eléctricos de la sombrilla; (k) alarma de voz o sónica; (l) una combinación de por lo menos dos de entre "a" a "k".

19. Sombrilla eléctrica que comprende un mecanismo conductor de telamen de conformidad con la reivindicación 2, en la que las costillas están hechas de un material rígido en su porción próxima, y de varillas flexibles en su porción distal.

20. Sombrilla que comprende un mecanismo conductor de telamen de conformidad con la reivindicación 2, caracterizada porque no tiene tirantes ni extensores que conecten entre el poste de la sombrilla y sus costillas de telamen.

21. Mecanismo conductor de telamen de conformidad con la reivindicación 1, que comprende adicionalmente una pluralidad de juntas de pivote, espaciadas remota y angularmente alrededor del extremo inferior central; cada una de las cuales está adaptada para recibir un extensor de costilla que se va a asociar con una costilla que se va a recibir en un punto de conexión de pivote correspondiente.

22. Mecanismo conductor de telamen de conformidad con la reivindicación 1, que comprende adicionalmente: (i) costillas de pliegue múltiple, conectadas pivotalmente a las conexiones de pivote, y que forman adicionalmente una pluralidad de juntas de pasador y cursor, con el miembro conductor; y (ii) una pluralidad de extensores de costilla, conectados pivotalmente a juntas de pivote respectivas, y a

costillas de pliegue múltiple respectivas.

23. Sombrilla eléctrica que comprende un mecanismo conductor de telamen de conformidad con la reivindicación 22; el mecanismo conductor de telamen está conectado en su extremo inferior al extremo superior de un poste telescópico; el poste telescópico está conectado en su extremo inferior a un mango de agarre principal de la sombrilla; donde el miembro conductor de telamen es impulsado a lo largo de una trayectoria corta entre una posición superior y una posición inferior, encima del poste, que corresponden al estado cerrado y al estado abierto de la sombrilla, respectivamente, por rotación de un motor eléctrico situado cerca de, o dentro del mango de agarre principal, accionado por baterías situadas en las inmediaciones; y que transmite su rotación a un tornillo o a una flecha helicoidal, adaptada para convertir la rotación a movimiento vertical del miembro conductor y a movimiento telescópico de por lo menos dos secciones telescópicas del poste.

24. Sombrilla eléctrica de conformidad con la reivindicación 9 o la reivindicación 23, en la que el mango de agarre está acojinado o tiene una protección amortiguadora contra daños por caída.

25. Sombrilla eléctrica de conformidad con la reivindicación 9 o la reivindicación 23, que comprende adicionalmente patas que se pliegan y que se extienden, acomodadas en el mango de agarre, y útiles para colocar verticalmente la sombrilla.

26. Sombrilla que comprende un mecanismo conductor de telamen de conformidad con la reivindicación 2, en la que las costillas están hechas de un material rígido y que tienen espesor que se reduce

gradualmente en sus extremos distales, lo que da por resultado flexibilidad de los extremos de las costillas, útiles para obtener un telamen en forma de hongo.

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Tm. 11 PATENTEMII
Ent: 379 FASENACIONALI
Act 411 PRESENTACION Fcof: 190

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 06 - 90,623
FECHA : NOVIEMBRE 24 DE 2006

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
SOMEZ PINZON Y ASOCIADOS CONSIGNACION		BANCO POPULAR	050-00110-6	45283112	23/11/2006	24,186,000.00

***** C O N C E P T O *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01 SOLICITUDES	1 TRANITES DE SOL. DE PATENTE DE IN	463,000.00
		TOTAL :	\$ 463,000.00

SOM: CUATROCIENTOS SESENTA Y TRES MIL PESOS

RESPONSABLE : _____

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

PETITORIO

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

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Ta. 11 PATENTEYU

Eve: 379 FASENACIONALI

Act: 411 PRESENTACION

Folios: 190

FORMULARIO UNICO DE SOLICITUD DE PATENTE
PCT

ENTRADA EN FASE NACIONAL

1. SOLICITUD DE PATENTE ☒ Patente de Invención ☐ Patente de Modelo de Utilidad ☐ Patente de Disposición de Negocio			
2. SOLICITANTE Nombre: <u>MAURICIO JARAMILLO CAMPUZANO</u> Domicilio: <u>CRA. 9 No. 73-24, BOGOTA COLOMBIA</u> Identificación: <u>80.421.942</u> C.C. ☒ NIT ☐ C.E. ☐ Otro ☐ Número <u>80.421.942</u> TP <u>74.555</u> C.S.J.			
3. REPRESENTANTE O APODERADO Nombre: <u>MAURICIO JARAMILLO CAMPUZANO</u> Dirección: <u>CRA. 9 No. 73-24, BOGOTA COLOMBIA</u> Teléfono: <u>310 7055</u> Fax: <u>310 6657</u> E-Mail: <u>mjaramillo@gomacpinzon.com</u>			
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5. PFC 2004 Solicitud Internacional No. <u>100/2004/0450</u> Fecha: <u>08 de Mayo de 2005</u> O.I. <u>05/2005</u> Publicación Internacional No. <u>WO/2005/01997</u> Fecha: <u>19 de Noviembre de 2005</u> O.I. <u>02/11/2005</u>			
6. Título (54) MECANISMO ELECTRONICO DE SOMBRILLA AUTOMATICA			
7. Clasificación Internacional (51)			
8. Prioridad SI ☒ NO ☐ (33) País de Origen: <u>Israel</u> <u>Estados Unidos</u> <u>Israel</u> (32) Fecha: <u>26/04/2004</u> <u>25/06/2004</u> <u>05/12/2004</u> (31) Número de Solicitud: <u>161621</u> <u>60/582,429</u> <u>165554</u>			
9. Comprobante de pago No. <u>NOVIEMBRE DE 2004</u>			

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(2.1) PATENTEE(Y)
C: 379 F. RENACIONALII
AN: 11 PRESENTACION Folios: 150

**FORMULARIO UNICO DE SOLICITUD DE PATENTE
PCT
ENTRADA EN FASE NACIONAL**

1 SOLICITUD DE : ☒ Patente de Invención ☐ Patente de Modelo de Utilidad			
☐ Capítulo I		☒ Capítulo II	
2 SOLICITANTE (71)		IDENTIFICACION	
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3 REPRESENTANTE O APODERADO		IDENTIFICACION	
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5 PTC (86) Solicitud Internacional No: <u>PCT/IL2005/000450</u> Fecha: <u>01 de Mayo de 2005 (01.05.2005)</u> Publicación Internacional No: <u>WO 2005/102097</u> Fecha: <u>03 de Noviembre de 2005 (03.11.2005)</u>			
6 Título (54) <u>MECANISMO ELECTRICO DE SOMBRILLA Y TELAMEN</u>			
7 Clasificación Internacional (51)			
8 Prioridad		(33) País de Origen	
SI ☒ NO ☐		Israel Estados Unidos Israel	
		(32) Fecha 26/04/2004 25/06/2004 05/12/2004	
		(31) Número de Solicitud 161621 60/582,429 165554	
9 Comprobante de pago No: _____ Fecha: <u>NOVIEMBRE DE 2006</u>			

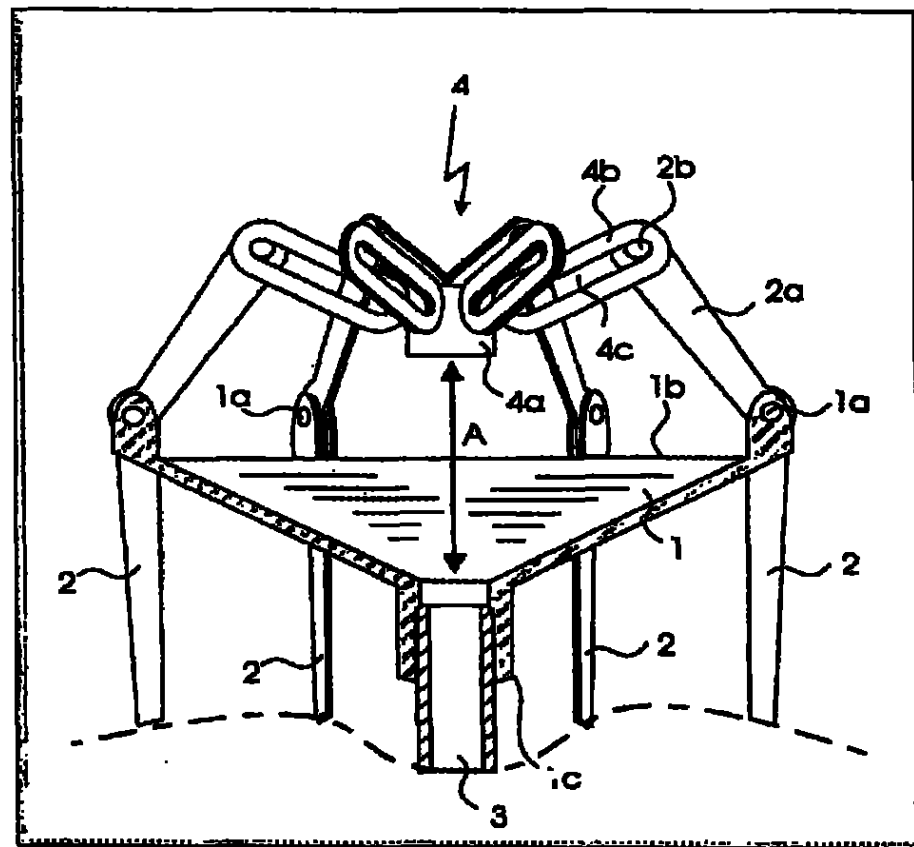
10

Anexos

- ☒ Comprobante de pago de la tasa de presentación de la solicitud
- ☐ Documento que acredite la existencia y representación legal cuando el solicitante sea persona jurídica
- ☐ Poderes, si fuere el caso
- ☐ Documento de cesión del inventor al solicitante o a su causante
- ☐ Declaraciones
- ☒ Copia de la solicitud internacional (resumen, descripción, reivindicaciones, dibujos)
- ☐ Traducción simple de la primera solicitud, si se reivindica prioridad
- ☒ Copia del examen preliminar internacional efectuado por la Autoridad Internacional de Examen Preliminar (IPEA)
- ☐ Traducción del examen preliminar internacional efectuado por la IPEA
- ☐ De ser el caso, copia del contrato de acceso
- ☐ De ser el caso, documento que acredite la licencia o autorización de uso de conocimientos tradicionales de las comunidades indígenas
- ☐ De ser el caso, certificado de depósito del material biológico
- ☐ Arte final 12 x 12
- ☐ De ser el caso, información sobre otras solicitudes de patente o títulos en el extranjero por el mismo titular o su causante, relacionadas parcial o totalmente con la invención de esta solicitud
- ☐ De ser el caso, modificaciones efectuadas a la solicitud internacional

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FIGURA CARACTERISTICA:



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REIVINDICACIONES

1. Mecanismo conductor de telamen para sombrillas manuales, que comprende: (a) un miembro conductor de telamen, que tiene una pluralidad de una primera parte de una junta de pasador y cursor, conectada rígidamente y espaciada angularmente alrededor de un cubo central común; (b) un separador que tiene un extremo inferior central, adaptado para ser conectado a un poste de una sombrilla; y una pluralidad de puntos de pivote, espaciados remota y angularmente alrededor del extremo inferior central; cada uno siendo adaptado para recibir un punto de pivote de la costilla del telamen que tiene un brazo de palanca corto (2a) siendo la porción de la costilla entre el final de la costilla y el punto del telamen, el brazo más corto (2a) que tiene una segunda parte (2b) de la junta de pasador y cursor, que complementa la primera parte, las uniones entre el pin y el cursor están caracterizadas de manera que los cursores están separados uno del otro al estar formadas por barras o celdas espaciadas angularmente.

2. Mecanismo conductor de telamen de conformidad con la reivindicación 1, que comprende adicionalmente una pluralidad de costillas de telamen, conectadas pivotalmente a las conexiones de pivote, y que forma adicionalmente una pluralidad de juntas de pasador y cursor, con el miembro conductor.

3. Mecanismo conductor de telamen de conformidad con la reivindicación 1, que está conectado al extremo superior de un poste.

4. Mecanismo conductor de telamen de conformidad con la reivindicación 1, en el que el separador tiene una pestaña hueca que

**REQUISITOS MINIMOS PARA ADMISION A TRAMITE
PCT**

PATENTE DE INVENCION

[✓]

MODELO DE UTILIDAD []

- ◆ Indicación de que se solicita la concesión de una patente [✓]
- ◆ Datos de identificación del solicitante o de la persona que presenta la solicitud [✓]
- ◆ Descripción de la Invención [✓]
- ◆ Dibujos de ser estos pertinentes ~~164~~ [✓]
- ◆ Comprobante de pago de las tasas establecidas [✓]

COMPLETA []

INCOMPLETA []

DISEÑO INDUSTRIAL []

- ◆ Indicación de que se solicita el registro de Diseño Industrial []
- ◆ Datos de identificación del solicitante o de la persona que presenta la solicitud []
- ◆ Representación gráfica y fotográfica del Diseño Industrial o muestra del material que incorpora el diseño []
- ◆ Comprobante de pago de las tasas establecidas []

COMPLETA []

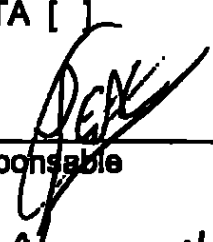
INCOMPLETA []

ESQUEMA DE TRAZADO []

- ◆ Indicación de que se solicita el registro de un Esquema de Trazado []
- ◆ Datos de identificación del solicitante o de la persona que presenta la solicitud []
- ◆ Representación gráfica del esquema trazado []
- ◆ Comprobante de pago de las tasas establecidas []

COMPLETA []

INCOMPLETA []


Firma Responsable

Fecha Nov 24 de 2006.

Carretera 13 No. 27-00 Piso 5, 7 y 10
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REPUBLICA DE COLOMBIA
SUPERINTENDENCIA DE INDUSTRIA Y COMERCI

Bogotá,
2020

Doctor(a)
JARAMILLO CAMPUZANO MAURICIO

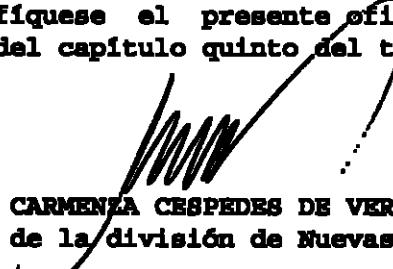
REFERENCIA	Radicación No.	6 119235
	Solicitud internacional	PCT/IL2005/000450
	Fecha inicio fase nacional	26/11/2006
	Trámite	11
	Evento	379
	Actuación	139
	Oficio No.	14666

Como resultado del examen de forma, realizado con fundamento en el artículo 38 de la Decisión 486 de la Comisión de la Comunidad Andina, artículo 27 del Tratado de Cooperación en Materia de Patentes (PCT), regla 51 bis del Reglamento y Circular Única de la Superintendencia de Industria y Comercio, se le comunica que:

1. La solicitud no contiene el poder debidamente otorgado, con el lleno de los requisitos exigidos por los artículos 63 y subsiguientes del Código de Procedimiento Civil. Adicionalmente, deberá presentar el documento que acredita la existencia y representación legal de la sociedad solicitante, cuando ésta fuere persona jurídica.

En cumplimiento de lo dispuesto por el artículo 39 de la Decisión 486, se le requiere para que dentro del término de dos meses siguientes a la fecha de notificación del presente oficio, complete los requisitos anteriormente enunciados. En caso de no dar cumplimiento al presente requerimiento, la solicitud se considerará abandonada y perderá su prelación.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Unica No.10 de 2001.


ALIX CARMEN CEPEDES DE VERGEL
Jefe de la división de Nuevas Creaciones

El anterior, requerimiento fue notificado por fijación en lista de fecha 22 DIC. 2006
adpall