



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) **EP 0 979 623 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention
of the grant of the patent:
14.04.2004 Bulletin 2004/16

(51) Int Cl.7: **A45B 25/16**

(21) Application number: **98306395.9**

(22) Date of filing: **11.08.1998**

(54) **Automatic spreading umbrella**

Automatisch öffnender Schirm

Parasol à ouverture automatique

(84) Designated Contracting States:
AT DE ES FR GB IT PT

(74) Representative: **Gordon, Michael Vincent**
GILL JENNINGS & EVERY,
Broadgate House,
7 Eldon Street
London EC2M 7LH (GB)

(43) Date of publication of application:
16.02.2000 Bulletin 2000/07

(73) Proprietor: **Wang, Max**
Tai-Ping City, Taichung Hsien (TW)

(56) References cited:
EP-A- 0 525 227 **US-A- 4 548 222**
US-A- 5 232 004 **US-A- 5 247 955**
US-A- 5 361 792 **US-A- 5 533 541**

(72) Inventor: **Wang, Max**
Tai-Ping City, Taichung Hsien (TW)

EP 0 979 623 B1

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description

[0001] The invention relates to an umbrella, more particularly to an automatic spreading umbrella with a handle shaft of considerable strength to prevent bending and breakage thereof.

[0002] A first conventional umbrella includes a spring-loaded telescopic handle shaft, a hub mounted on a top end portion of the handle shaft, a rib assembly mounted pivotally at one end to the hub, a lower runner mounted slidably on the handle shaft and movable toward and away from the hub, an upper runner mounted slidably on the handle shaft between the hub and the lower runner, and a stretcher assembly connected operably to the rib assembly and the lower and upper runners. First and second rib spreading coil springs are sleeved on the handle shaft in such a manner that the first rib spreading coil spring is disposed between the hub and the upper runner while the second rib spreading coil spring is disposed between the upper and lower runners. When the lower runner is moved away from the hub, such as when folding the umbrella, the stretcher assembly will pull the rib assembly downward to a retracted position, thereby compressing the first and second springs in an axial direction of the handle shaft. When the lower runner is moved toward the hub, the stretcher assembly will push the rib assembly, thereby releasing the first and second springs from compression and consequently permitting the rib assembly to be disposed in a stretched state.

[0003] Note that the presence of the first and second springs around the handle shaft prevents the rib assembly from being retracted closely relative to the latter, thereby rendering the size of the folded umbrella to be relatively bulky.

[0004] A second conventional umbrella includes a spring-loaded telescopic handle shaft, a hub fixed to a top end portion of the handle shaft, a lower runner mounted slidably on the handle shaft, a rib assembly mounted pivotally at one end to the hub, an upper runner mounted slidably on the handle shaft above the lower runner, and a stretcher assembly connected operably to the rib assembly and the upper and lower runners such that the umbrella can be operated so as to dispose the same in unfolded or folded states.

[0005] It is noted that a wall surface confining the top end portion of the handle shaft is formed with an axial slot. A slide pin extends through a wall body of the upper runner and the slot so as to limit axial sliding movement of the upper runner on the handle shaft. Formation of the slot weakens the strength of the handle shaft. The longer the slot, the weaker the handle shaft will become.

[0006] Therefore, an object of this invention is to provide an automatic spreading umbrella which can overcome the aforementioned disadvantages that are associated with the conventional umbrellas.

[0007] It is also known from US-A-5232004 for an umbrella to comprise:

a handle shaft having a tubular top end portion with a stop member disposed in the top end portion, a hub mounted fixedly on the top end portion of the handle shaft, a lower runner mounted slidably on the handle shaft below the hub and movable towards and away from the hub, an upper runner disposed slidably on the handle shaft above the hub, a rib assembly mounted pivotally at one end on the upper runner, an intermediate assembly connected operably to the rib assembly and the hub, a stretcher assembly connected operably to the intermediate assembly and the lower runner, and a coiled compression spring having a bottom end that is disposed in the top end portion of the handle shaft and that abuts against the stop member, and a top end that abuts against the upper runner;

whereby, by provision of a further spring and a control device having a resilient retainer slidably held within an elongate slot formed in the handle shaft, when wind pressure acts on an umbrella cloth secured to the rib assembly to tend to lower the rib assembly and the resilient retainer, the elongate slot provides a buffer for allowing a downward movement of the resilient retainer and a folding of the rib assembly to temporarily reduce a wind-catching area of the umbrella cloth.

[0008] According to the present invention, however, an umbrella comprises:

a handle shaft having a tubular top end portion with a stop member disposed in the top end portion, a hub mounted fixedly on the top end portion of the handle shaft, a lower runner mounted slidably on the handle shaft below the hub and movable towards and away from the hub, an upper runner disposed slidably on the handle shaft above the hub, a rib assembly mounted pivotally at one end on the hub, a stretcher assembly connected operably to the rib assembly and the lower runner, a coiled compression spring having a bottom end that is disposed in the top end portion of the handle shaft and that abuts against the stop member, and a top end that abuts against the upper runner, and a spreader assembly connected operably to the rib assembly and the upper runner,

whereby, when the lower runner is moved downward away from the hub, the stretcher assembly will pull the rib assembly to a folded state, thereby compressing the compression spring whereas, when the compression spring expands and pushes the upper runner upward away from the hub, the spreader assembly will pull the rib assembly to a stretched state, thereby pulling the stretcher assembly to move the lower runner towards the hub;

the umbrella further comprising:

the handle shaft being provided with a spring-biased catch that is disposed below the lower runner and that is biased radially and inwardly; and the lower runner having an outer surface that is formed with a notch, the lower runner being movable downwardly away from the hub to engage the catch with the notch so as to lock the lower runner on the handle shaft, thereby maintaining a folded state of the umbrella.

[0009] A preferred embodiment of the present invention will now be described with reference to the accompanying drawings, in which:

Figure 1 is a schematic fragmentary sectional view of a preferred embodiment of an umbrella of this invention, wherein the canopy is removed for the sake of clarity; and

Figure 2 is a schematic fragmentary sectional view of the preferred embodiment in a folded state.

[0010] Referring to Figures 1 and 2, the preferred embodiment of an automatic spreading umbrella of this invention is shown to include a handle shaft (40), a hub (60), a lower runner (50), a rib assembly (80), a stretcher assembly (100), an upper runner (70), a coiled compression spring (90), and a spreader assembly (200).

[0011] The handle shaft (40) is a known spring-loaded telescopic handle shaft that has a tubular top end portion (40T) with a distal end surface. A stop member (42) is disposed in the top end portion (40T) and is spaced apart from the distal end surface.

[0012] The hub (60) is mounted securely on the top end portion (40T) of the handle shaft (40).

[0013] The lower runner (50) is mounted slidably on the handle shaft (40) and is movable toward and away from the hub (60). The lower runner (50) can be locked releasably on the handle shaft (40) in a known manner so as to retain the umbrella in a folded state (see Fig. 2). In the preferred embodiment, the lower runner (50) is preferably provided with a radial notch (50R). The handle shaft (40) is provided with a spring-biased catch (40E) at a lower portion thereof to engage the notch (50R) of the lower runner (50), thereby locking the lower runner (50) on the handle shaft (40). Operation of the catch (40E) will result in release of the lower runner (50) from the locked state.

[0014] The rib assembly (80) is mounted pivotally at one end on the hub (60) in a conventional manner. A canopy (not shown) is mounted on the rib assembly (80) in a manner that is known in the art.

[0015] The stretcher assembly (100) is connected operably to the rib assembly (80) and the lower runner (50) in a known manner.

[0016] The upper runner (70) has an enlarged head

(72) disposed above the hub (60), and a guide shaft (71) that extends from the enlarged head (72) and into the tubular top end portion (40T) of the handle shaft (40).

[0017] The compression spring (90) is sleeved on the guide shaft (71), and has a bottom end (90B) that is disposed in the top end portion (40T) of the handle shaft (40) and that abuts against the stop member (42), and a top end (90T) that extends outwardly of the top end portion (40T) of the handle shaft (40) and that abuts against the head (72) of the upper runner (70).

[0018] The spreader assembly (200) is connected operably to the rib assembly (80) and the head (72) of the upper runner (70).

[0019] When the lower runner (50) is moved away from the hub (60), such as when disposing the umbrella in the folded state as shown in Figure 2, the stretcher assembly (100) will pull the rib assembly (80) to the folded state, thereby causing the rib assembly (80) to pull the spreader assembly (200) and move the head (72) of the upper runner (70) toward the hub (60) and compress the compression spring (90). The lower runner (50) can be locked on the handle shaft (40) at this time.

[0020] When the lower runner (50) is released from the locked state, the compression spring (90) expands and pushes the upper runner (70) away from the hub (60). The spreader assembly (200) then pulls the rib assembly (80) to a stretched state, as best shown in Figure 1, thereby pulling the stretcher assembly (100) to move the lower runner (50) toward the hub (60).

[0021] The stop member (42) can be a pin which extends through a radial hole formed through the top end portion (40T) of the handle shaft (40). Alternatively, the stop member (42) can be formed integrally with the top end portion (40T).

[0022] Note that no axial slot is formed through a wall body that confines the top end portion of the handle shaft so that the rigidity and strength thereof are not affected. The object of the invention is accordingly achieved.

Claims

1. An umbrella comprising:

a handle shaft (40) having a tubular top end portion (40T) with a stop member (42) disposed in the top end portion (40T),

a hub (60) mounted fixedly on the top end portion (40T) of the handle shaft (40),

a lower runner (50) mounted slidably on the handle shaft (40) below the hub (60) and movable towards and away from the hub (60),

an upper runner (70) disposed slidably on the handle shaft (40) above the hub (60),

a rib assembly (80) mounted pivotally at one end on the hub (60),

a stretcher assembly (100) connected operably to the rib assembly (80) and the lower runner

(50),
 a coiled compression spring (90) having a bottom end (90B) that is disposed in the top end portion (40T) of the handle shaft (40) and that abuts against the stop member (42), and a top end that abuts against the upper runner (70), and
 a spreader assembly (200) connected operably to the rib assembly (80) and the upper runner (70),

whereby, when the lower runner (50) is moved downward away from the hub (60), the stretcher assembly (100) will pull the rib assembly (80) to a folded state, thereby compressing the compression spring (90) whereas, when the compression spring (90) expands and pushes the upper runner (70) upward away from the hub (60), the spreader assembly (200) will pull the rib assembly (80) to a stretched state, thereby pulling the stretcher assembly (100) to move the lower runner (50) towards the hub (60);
 the umbrella further comprising:

the handle shaft (40) being provided with a spring-biased catch (40E) that is disposed below the lower runner (50) and that is biased radially and inwardly; and
 the lower runner (50) having an outer surface that is formed with a notch (50R), the lower runner (50) being movable downwardly away from the hub (60) to engage the catch (40E) with the notch (50R) so as to lock the lower runner (50) on the handle shaft (40), thereby maintaining a folded state of the umbrella.

Patentansprüche

1. Schirm folgendes aufweisend:

eine Griffstange (40) mit einem rohrförmigen oberen Endabschnitt (40T), in dem ein Stoppelement (42) angeordnet ist,
 eine Buchse (60), die an dem oberen Endabschnitt (40T) der Griffstange (40) fest montiert ist,
 einen unteren Schieber (50), der verschieblich auf der Griffstange (40) unterhalb der Buchse (60) befestigt und zu der Buchse (60) hin und von dieser fort beweglich ist,
 einen oberen Schieber (70), der auf der Griffstange (40) oberhalb der Buchse (60) verschieblich angeordnet ist,
 einen Speichenaufbau (80), der schwenkbar mit einem Ende an der Buchse (60) befestigt ist,
 einen Streckaufbau (100), der wirksam mit dem Speichenaufbau (80) und dem unteren Schie-

ber (50) verbunden ist,
 eine gewendelte Druckfeder (90), die ein unteres Ende (90B), das an dem oberen Endabschnitt (40T) der Griffstange (40) angeordnet ist und das gegen das Stoppelement (42) anliegt, und ein oberes Ende aufweist, das an dem oberen Schieber (70) anliegt, und
 einen Spreizaufbau (200), der wirksam mit dem Speichenaufbau (80) und dem oberen Schieber (70) verbunden ist,

wobei, wenn der untere Schieber (50) nach unten von der Hülse (60) fort bewegt wird, der Streckaufbau (100) den Speichenaufbau (80) in einen gefalteten Zustand zieht, wodurch die Druckfeder (90) zusammengedrückt wird, wohingegen, wenn die Druckfeder (90) expandiert und den oberen Schieber (70) nach oben von der Hülse (60) fort schiebt, der Spreizaufbau (200) den Speichenaufbau (80) in einen gestreckten Zustand zieht, wodurch der Streckaufbau (100) gezogen wird, um den unteren Schieber (50) zu der Hülse (60) zu bewegen,

wobei der Schirm zusätzlich folgendes aufweist:

die Griffstange (40) ist mit einer federvorgespannten Sperrnase (40E) versehen, die unterhalb des unteren Schiebers (50) angeordnet ist und die radial nach innen vorgespannt ist, und der untere Schieber (50) besitzt eine Außenfläche, die mit einer Ausnehmung (50R) versehen ist, wobei der untere Schieber (50) nach unten von der Hülse (60) fort geschoben werden kann, damit die Sperrnase (40E) in Eingriff mit der Ausnehmung (50R) gelangt, um den unteren Schieber auf der Griffstange (40) zu verriegeln, wodurch der gefaltete Zustand des Schirms erhalten bleibt.

Revendications

1. Parapluie comprenant :

un manche à poignée (40) possédant une partie d'extrémité supérieure tubulaire (40T) dotée d'un élément butoir (42) disposé dans la partie d'extrémité supérieure (40T),
 un moyeu (60) monté de manière fixe sur la partie d'extrémité supérieure (40T) du manche (40),
 un anneau mobile inférieur (50) monté coulissant sur le manche (40) au-dessous du moyeu (60) et pouvant être déplacé dans les sens de rapprochement et d'éloignement par rapport au moyeu (60),
 un anneau mobile supérieur (70) disposé de

manière à pouvoir coulisser sur le manche (40)
 au-dessus du moyeu (60),
 un ensemble de baleines (80) monté pivotant,
 au niveau d'une extrémité, sur le moyeu (60),
 un ensemble d'extenseurs (100) connecté 5
 fonctionnellement avec l'ensemble de baleines
 (80) et l'anneau mobile inférieur (50),
 un ressort de compression du type ressort à
 boudin (90) dont l'extrémité inférieure est dis- 10
 posée sur la partie d'extrémité supérieure (40T)
 du manche (40) et vient en appui contre l'élé-
 ment butoir (42), et dont l'extrémité supérieure
 vient en appui contre l'anneau mobile supérieur
 (70), et
 un ensemble de tendeurs (200) fonctionnelle- 15
 ment connecté à l'ensemble des nervures (80)
 et à l'anneau mobile supérieur (70),

de sorte que, lorsqu'on déplace l'anneau mo- 20
 bile inférieur (50) vers le bas de manière à l'écartier
 du moyeu (60), l'ensemble d'extenseurs (100) tire
 l'ensemble de baleines (80) jusque dans un état
 plié, ce qui comprime le ressort de compression
 (90), tandis que, lorsque le ressort de compression 25
 (90) se dilate et pousse l'anneau mobile supérieur
 (70) vers le haut en l'éloignant du moyeu (60), l'en-
 semble de tendeurs (200) tire l'ensemble de balei-
 nes (80) jusque dans un état étendu, ce qui tire l'en-
 semble d'extenseurs (100) de manière à déplacer 30
 l'anneau mobile inférieur (50) en direction du moyeu
 (60) ;

le parapluie comprenant en outre les particu-
 larités suivantes :

le manche à poignée (40) est doté d'un ergot à 35
 ressort (40E) qui est disposé au-dessous de
 l'anneau mobile inférieur (50) et qui est élasti-
 quement sollicité à aller dans le sens radial et
 vers l'intérieur ; et
 l'anneau mobile inférieur (50) possède une sur- 40
 face supérieure qui est dotée d'un cran (50R),
 l'anneau mobile inférieur (50) étant mobile vers
 le bas dans un sens d'éloignement par rapport
 au moyeu (60) de façon à mettre en prise de
 l'ergot (40E) avec le cran (50R) et ainsi ver- 45
 rouiller l'anneau mobile inférieur (50) sur le
 manche (40), de manière à maintenir l'état plié
 du parapluie.

50

55

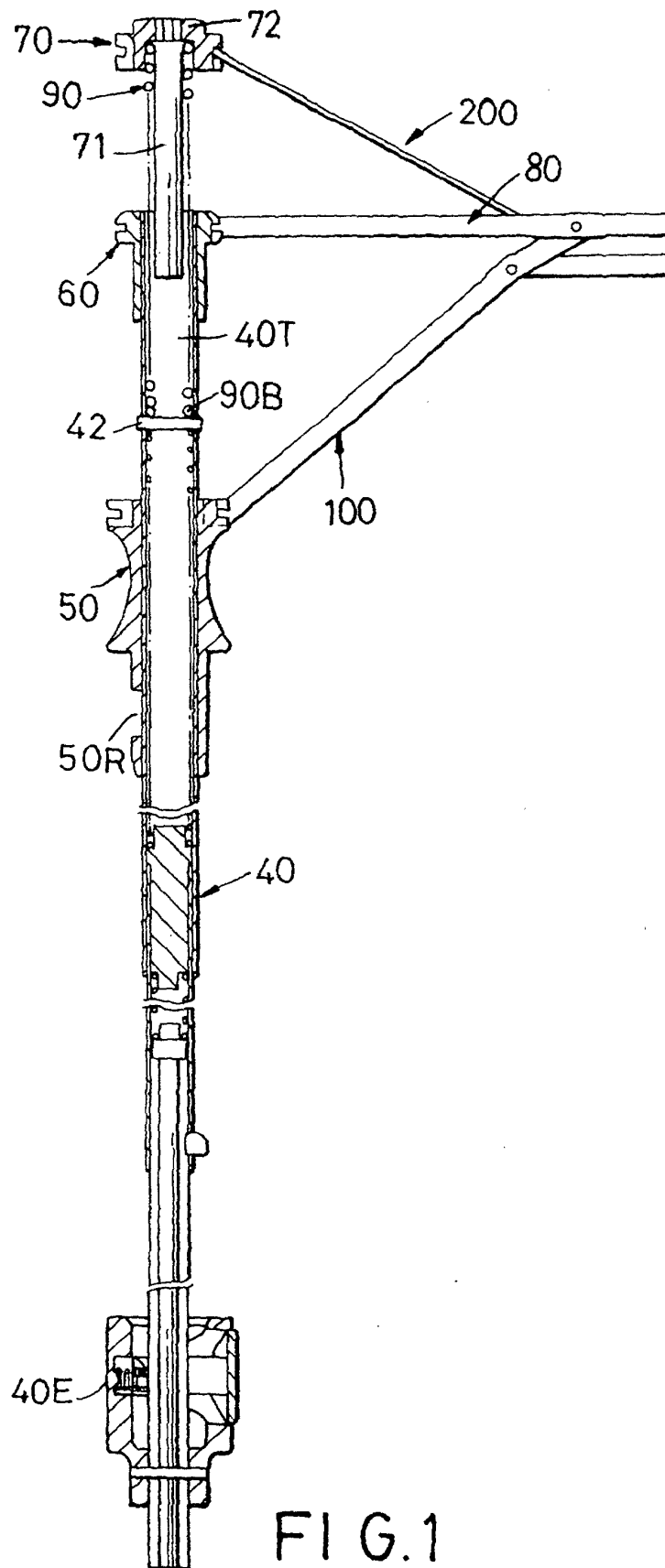


FIG. 1

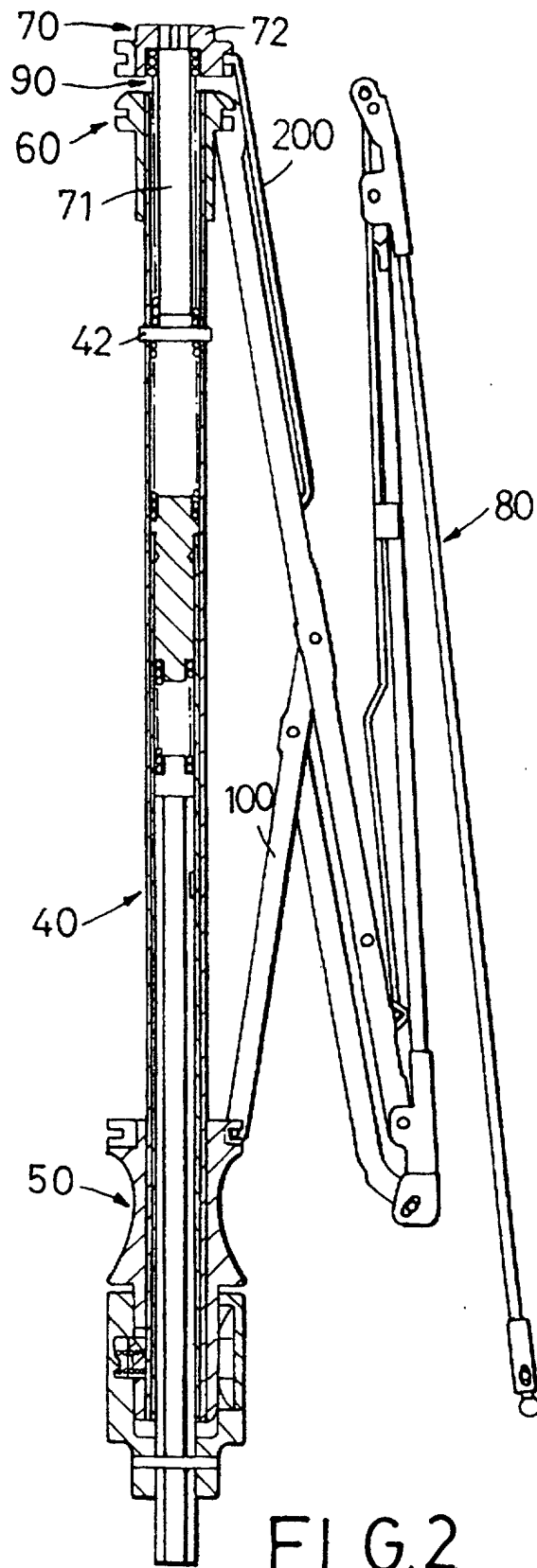


FIG. 2