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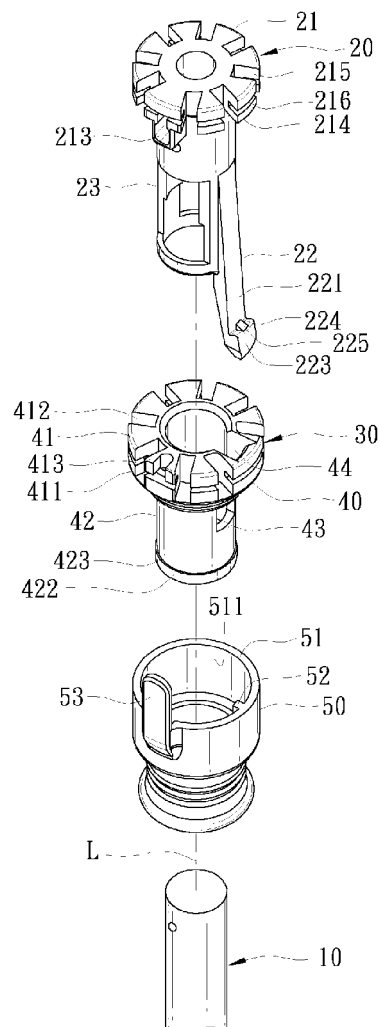
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40593 Düsseldorf (DE)(30) Priority: **20.10.2011 CN 201110321224**(54) **Safety umbrella**

(57) A safety umbrella includes a top notch member (20) fixed on an upper end of a central shaft (10) and having a resilient tongue (22) which extends downwardly to form a hook end (223) with an actuated shoulder surface (224). A runner (40) has a slot (43) for retaining the hook end (223) therein at an upper position. An operating sleeve (50) surrounds and is axially movable relative to the runner (40) and has an actuating frictionblock (52) which is matingly engaged with the actuated shoulder surface (224) at the upper position such that, when the operating sleeve (50) is moved downwardly, the actuated shoulder surface (224) is pressed to withdraw the hook end (223) inwardly so as to disengage the hook end (223) from the slot (43).

**FIG. 1**

Description

[0001] This invention relates to an umbrella, more particularly to a safety umbrella with an operating sleeve operable to move a runner between upper and lower positions.

[0002] A conventional umbrella, such as that disclosed in U.S. Patent No. 5,964,235, includes a runner slidably sleeved on a central shaft to spread and collapse a rib-and-stretcher assembly to which a canopy is fastened. A resilient tongue extends from a ferrule secured on an upper end of the central shaft, and has a distal hook end biased away from the central shaft to be retained in a slot in the runner when the runner is moved upwardly for spreading the canopy. However, when a user presses the distal hook end for downward movement of the runner, the user's finger may get hurt, especially for children.

[0003] Moreover, wire ends of a fastening wire wound on the ferrule for pivotally connecting the ribs to the ferrule, and wire ends of a fastening wire wound on the runner for pivotally connecting the stretchers to the runner expose may prick the canopy and the user's hand and finger during opening or closing of the umbrella.

[0004] An object of the present invention is to provide an umbrella which can be operated safely to spread and collapse a canopy, and which has a simple and rigid structure.

[0005] According to this invention, the umbrella includes a central shaft extending in a direction of an axis, a top notch member fixed on an upper end of the central shaft and including a notched wheel, a rib assembly pivotally connected to the notched wheel for mounting a canopy thereon, a runner sleeved on and movable relative to the central shaft between upper and lower positions and including a notch disc, an operating sleeve, and a stretcher assembly pivotally connected to the notched disc and the rib assembly so as to stretch or retract the rib assembly when the runner is moved to the upper position or the lower position.

[0006] The top notch member includes an upper shell which extends from the notched wheel and which has a smaller dimension than that of the notched wheel, and a resilient tongue which has a tongue body that extends downwardly from the upper shell and that terminates at a hook end. The hook end extends radially to cooperate with the tongue body to form an actuated shoulder surface that faces upwardly. The notched disc has a surrounding passage which surrounds the axis and which is configured for exposing two twisted ends of a lower wire ring. The runner includes a lower shell which extends from the notched disc, which has a smaller dimension than that of the notched disc, and which has a slot that is disposed adjacent to the notched disc and that extends radially therethrough. The slot is configured to permit the hook end to be retainingly engaged therein immediately after an upward movement of the runner to the upper position by thrusting the hook end into the runner against

its biasing action.

[0007] The operating sleeve has an inner sleeve surface which surrounds and is axially movable relative to the lower shell. The operating sleeve includes an actuating friction block which is disposed on the inner sleeve surface and adjacent to the slot. The actuating friction block has an actuating friction surface which is configured to face downwardly and to be matingly engaged with the actuated shoulder surface when the hooked end is retained in the slot at the upper position. When the operating sleeve is moved axially away from the upper position, the actuated shoulder surface is pressed by the actuating friction surface to withdraw the hook end inwardly and radially so as to disengage the hook end from the slot, thereby allowing the runner to move toward the lower position. The operating sleeve has a shielding tab which extends upwardly and which is disposed radially and outwardly of the notched disc so as to shield the twisted ends of the lower wire ring.

[0008] By virtue of the operating sleeve and the shielding tab, the umbrella can be operated safely and conveniently without running any risk of injury to the user and the canopy during operation.

[0009] Other features and advantages of the present invention will become apparent in the following detailed description of the preferred embodiment of the invention, with reference to the accompanying drawings, in which:

Fig. 1 is an exploded perspective view of a top notch member and a runner fastener of the preferred embodiment of an umbrella according to this invention; Fig. 2 is a perspective view of a runner of the runner fastener of the preferred embodiment;

Fig. 3 is an operating sleeve of the runner fastener of the preferred embodiment;

Fig. 4 is a fragmentary sectional view of the preferred embodiment in an opened state;

Fig. 5 is a fragmentary sectional view taken from another angle;

Fig. 6 is a fragmentary sectional view of the preferred embodiment showing an abutment of a surrounding abutting surface against an abutment shoulder surface; and

Fig. 7 is an enlarged view of a portion shown in Fig. 6.

[0010] Referring to Figs. 1, 4 and 5, the preferred embodiment of an umbrella according to the present invention is shown to comprise a central shaft 10 extending in a direction of an axis (L) to terminate at upper and lower ends, a top notch member 20 fixed on the upper end of the central shaft 10, a rib-and-stretcher assembly 60 pivotally connected to the top notch member 20 for mounting a canopy (not shown) thereon, and a runner fastener 30 pivotally connected to the rib-and-stretcher assembly 60 and sleeved on and movable relative to the central shaft 10 between upper and lower positions for spreading and collapsing the canopy.

[0011] The top notch member 20 includes a notched

wheel 21, an upper shell 23 which extends from the notched wheel 21 and which has a smaller dimension than that of the notched wheel 21, and a resilient tongue 22 which has a tongue body 221 that extends downwardly from the upper shell 23 and that terminates at a hook end 223. The hook end 223 extends radially to cooperate with the tongue body 221 to form an actuated shoulder surface 224 that faces upwardly. A ramp 225 is disposed on the actuated shoulder surface 224, and is inclined from the hook end 223 toward the tongue body 221. The notched wheel 21 has a plurality of upper notches 215 formed in an outer surrounding surface 214 thereof and angularly displaced from one another about the axis (L), and a surrounding groove 216 surrounding the axis (L) and communicated with the upper notches 215 for receiving an upper wire ring 71 that engages a rib assembly 61 to be pivotally connected to the notched wheel 21 for mounting the canopy thereon. Specifically, the top notch member 20 has an upper shielding cavity 213 which is disposed on the upper shell 23 and adjacent to the notched wheel 21 for accommodating two twisted wire ends of the upper wire ring 71 exposed from the surrounding groove 216, thereby preventing prick injury to a user and the canopy.

[0012] The runner fastener 30 includes a runner 40 and an operating sleeve 50.

[0013] The runner 40 includes a notched disc 41 and a lower shell 42 which extends from the notched disc 41 and which has a smaller dimension than that of the notched disc 41. With reference to Fig. 2, the notched disc 41 has a plurality of lower notches 412 formed in an outer surrounding surface 411 thereof and angularly displaced from one another about the axis (L), and a surrounding passage 413 surrounding the axis (L) and communicated with the lower notches 412 for receiving a lower wire ring 72 (see Figs. 4 and 5) that engages a stretcher assembly 62 to be pivotally connected to the notched disc 41. The stretcher assembly 62 is pivotally connected to the rib assembly 61 so as to stretch or retract the rib assembly 61 when the runner fastener 30 is moved to the upper position or the lower position. The notched disc 41 has an inner guideway 44 which extends axially to permit insertion of the tongue body 221 thereinto. The lower shell 42 has a slot 43 which is disposed adjacent to the notched disc 41 and communicating with the inner guideway 44. The slot 43 extends radially through the lower shell 42 to permit the hook end 223 to be retainingly engaged therein immediately after an upward movement of the runner 40 to the upper position by thrusting the hook end 223 into the runner 40 against its biasing action. In particular, the slot 43 has a larger width in a circumferential direction than that of the inner guideway 44 so as to form a pair of retaining stays 431 (see Fig. 2) therebetween. Further, the runner 40 has a flange 422 extending radially and outwardly from a lower end of the lower shell 42 to define an abutment shoulder surface 423 facing upwardly, and an axially extending key 424 disposed on the flange 422.

[0014] With reference to Fig. 3, the operating sleeve

50 includes a sleeve body 51 which has an inner sleeve surface 511 surrounding and axially movable relative to the lower shell 42, an actuating friction block 52 which is disposed on the inner sleeve surface 511 and adjacent to the slot 43, and a shielding tab 53 which extends upwardly from the sleeve body 51. The actuating friction block 52 has an actuating friction surface 521 which is inclined and faces downwardly to be matingly engaged with the ramp 225 of the actuated shoulder surface 224 when the hooked end 223 is retained in the slot 43 at the upper position (as shown in Fig. 4). The inner sleeve wall surface 511 has a small-diameter surface region 513 which is fittingly sleeved on and slidably movable relative to the lower shell 42, and a large-diameter surface region 514 which extends downwardly from the small-diameter surface region 513 to define a surrounding abutting surface 516. An axially extending keyway 515 is formed in the inner sleeve wall surface 511 to be engaged with the key 424 to serve as a key-and-keyway structure so as to guide axial movement of the operating sleeve 50 relative to the lower shell 42.

[0015] Figs. 4 and 5 illustrate the runner fastener 30 in the upper position, i.e., in an opened state. In this state, the tongue body 221 is received in the inner guideway 44 and the hook end 223 is retained in the slot 43 to have the actuated shoulder surface 224 abutting against the retaining stays 431 (see Fig. 2) so as to retain the runner fastener 30 to the top notch member 20, thereby holding the umbrella in the opened state. By means of the engagement of the key 424 and the keyway 515, angular displacement of the operating sleeve 50 relative to the runner 40 is prevented such that the ramp 225 can confront and be in slidable frictional engagement with the actuating friction surface 521.

[0016] Referring to Fig. 6, when it is desired to close the umbrella, the operating sleeve 50 is moved axially and downwardly. By means of the friction engagement of the actuating friction surface 521 with the ramp 225, the actuating friction block 52 can readily press the actuated shoulder surface 224 to withdraw the hook end 223 inwardly and radially so as to disengage the hook end 223 from the slot 43, thereby allowing the runner fastener 30 to move toward the lower position. As shown in Fig. 7, due to the surrounding abutting surface 516 which is brought to abut against the abutment shoulder surface 423, the runner 40 is moved downwardly with the operating sleeve 50 to the lower position while preventing the operating sleeve 50 from slipping from the runner 40.

[0017] When it is desired to open the umbrella, by pressing the operating sleeve 50 upwardly, the tongue body 221 is inserted into the inner guideway 44 from the hook end 223. The hook end 223 is thrust inwardly against its biasing action and subsequently is retained in the slot 43 when the runner fastener 30 reaches the upper position.

[0018] As illustrated, by virtue of the operating sleeve 50, operation of the umbrella of this invention is safe and convenient. The shielding tab 53 is disposed radially and

outwardly of the notched disc 41 so as to shield the twisted wire ends of the lower wire ring 72, and the upper shielding cavity 213 can accommodate the twisted wire ends of the upper wire ring 71. Hence, the umbrella can be operated safely and conveniently without any risk of injury to the user and the canopy during operation.

Claims

1. A safety umbrella comprising:

a central shaft (10) extending in a direction of an axis (L) to terminate at upper and lower ends; a top notch member (20) fixed on said upper end of said central shaft (10), and including a notched wheel (21), an upper shell (23) which extends from said notched wheel (21) and which has a smaller dimension than that of said notched wheel (21), and a resilient tongue (22) which has a tongue body (221) that extends downwardly from said upper shell (23) and that terminates at a hook end (223), said hook end (223) extending radially to cooperate with said tongue body (221) to form an actuated shoulder surface (224) that faces upwardly;

a rib assembly (61) pivotally connected to said notched wheel (21) for mounting a canopy thereon;

a runner (40) sleeved on and movable relative to said central shaft (10) between upper and lower positions, and including a notched disc (41) and a lower shell (42) which extends from said notched disc (41), which has a smaller dimension than that of said notched disc (41), and which has a slot (43) that is disposed adjacent to said notched disc (41) and that extends radially therethrough, said slot (43) being configured to permit said hook end (223) to be retainingly engaged therein immediately after an upward movement of said runner (40) to the upper position by thrusting said hook end (223) into said runner (40);

a stretcher assembly (62) pivotally connected to said notched disc (41) and said rib assembly (61) so as to stretch or retract said rib assembly (61) when said runner (40) is moved to the upper position or the lower position, **characterized in that** said umbrellas further comprises

an operating sleeve (50) having an inner sleeve surface (511) which surrounds and is axially movable relative to said lower shell (42), said operating sleeve (50) including an actuating friction block (52) which is disposed on said inner sleeve surface (511) and adjacent to said slot (43), said actuating friction block (52) having an actuating friction surface (521) which is configured to face downwardly and to be matingly en-

gaged with said actuated shoulder surface (224) when said hooked end (223) is retained in said slot (43) at the upper position such that, when said operating sleeve (50) is moved axially away from the upper position, said actuated shoulder surface (224) is pressed by said actuating friction surface (521) to withdraw said hook end (223) inwardly and radially so as to disengage said hook end (223) from said slot (43), thereby allowing said runner (40) to move toward the lower position.

2. The safety umbrella as claimed in Claim 1, **characterized in that** said notch disc (41) has a surrounding passage (413) which surrounds the axis (L) and which is configured for exposing two twisted ends of a lower wire ring (72), said operating sleeve (50) having a shielding tab (53) which extends upwardly and which is disposed radially and outwardly of said notched disc (41) so as to shield the twisted ends of the lower wire ring (72).

3. The safety umbrella as claimed in Claim 2, **characterized in that** said notched wheel (21) has a surrounding groove (216) which surrounds the axis (L) and which is configured for exposing two twisted ends of an upper wire ring (71), said top notch member (20) having an upper shielding cavity (213) which is disposed on said upper shell (23) and adjacent to said notched wheel (21) for accommodating the twisted ends of the upper wire ring (71).

4. The safety umbrella as claimed in Claim 3, **characterized in that** said actuating friction surface (521) is configured to be inclined downwardly, said resilient tongue (22) having a ramp (225) which is disposed on said actuated shoulder surface (224), and which is inclined from said hook end (223) toward said tongue body (221) so as to be in slidable frictional engagement with said actuating friction surface (521), thereby facilitating the pressing of said actuated shoulder surface (224) by said actuating friction surface (521) when said operating sleeve (50) is moved axially away from the upper position.

5. The safety umbrella as claimed in Claim 3, **characterized in that** said runner (40) has a flange (422) extending radially and outwardly from a lower end of said lower shell (42) to define an abutment shoulder surface (423) facing upwardly, said inner sleeve wall surface (511) of said operating sleeve (50) having a small-diameter surface region (513) which is fittingly sleeved on and slidably movable relative to said lower shell (42), and a large-diameter surface region (514) which extends downwardly from said small-diameter surface region (513) to define a surrounding abutting surface that is brought to abut against said abutment shoulder surface (423), there-

by facilitating movement of said operating sleeve (50) toward the lower position while preventing said operating sleeve (50) from slipping from said runner (40).

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6. The safety umbrella as claimed in Claim 5, further **characterized by** a key-and-keyway structure (424, 515) which is disposed between said flange (422) of said runner (40) and said inner sleeve wall surface (511) of said operating sleeve (50) to guide axial movement of said operating sleeve (50) relative to said lower shell (42). 10
7. The safety umbrella as claimed in Claim 3, **characterized in that** said notched disc (41) of said runner (40) has an inner guideway (44) which extends axially to communicate with said slot (43) for facilitating insertion of said hook end (223) when said runner member (40) is moved toward the upper position. 15
8. The safety umbrella as claimed in Claim 7, **characterized in that** said runner (40) defines a pair of retaining stays (431) formed between said inner guideway (44) and said slot (43) for abutting against said actuated shoulder surface (224) when said runner (40) is in the upper position. 20 25

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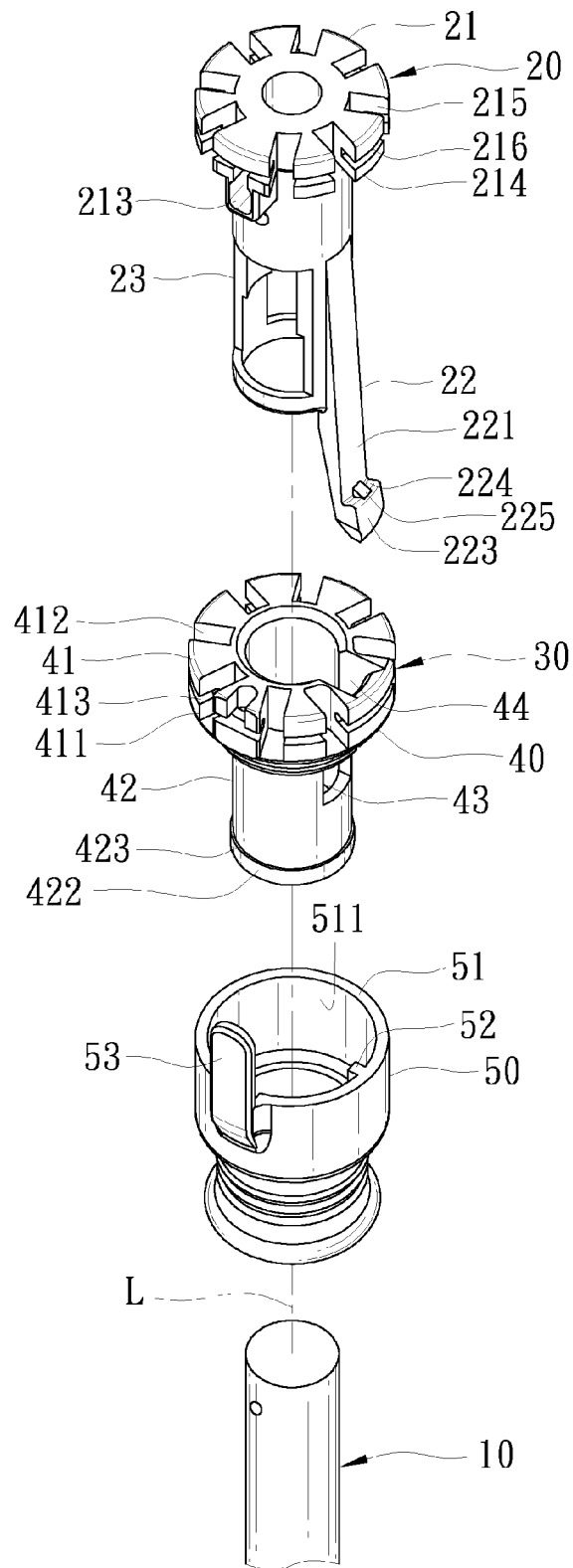


FIG. 1

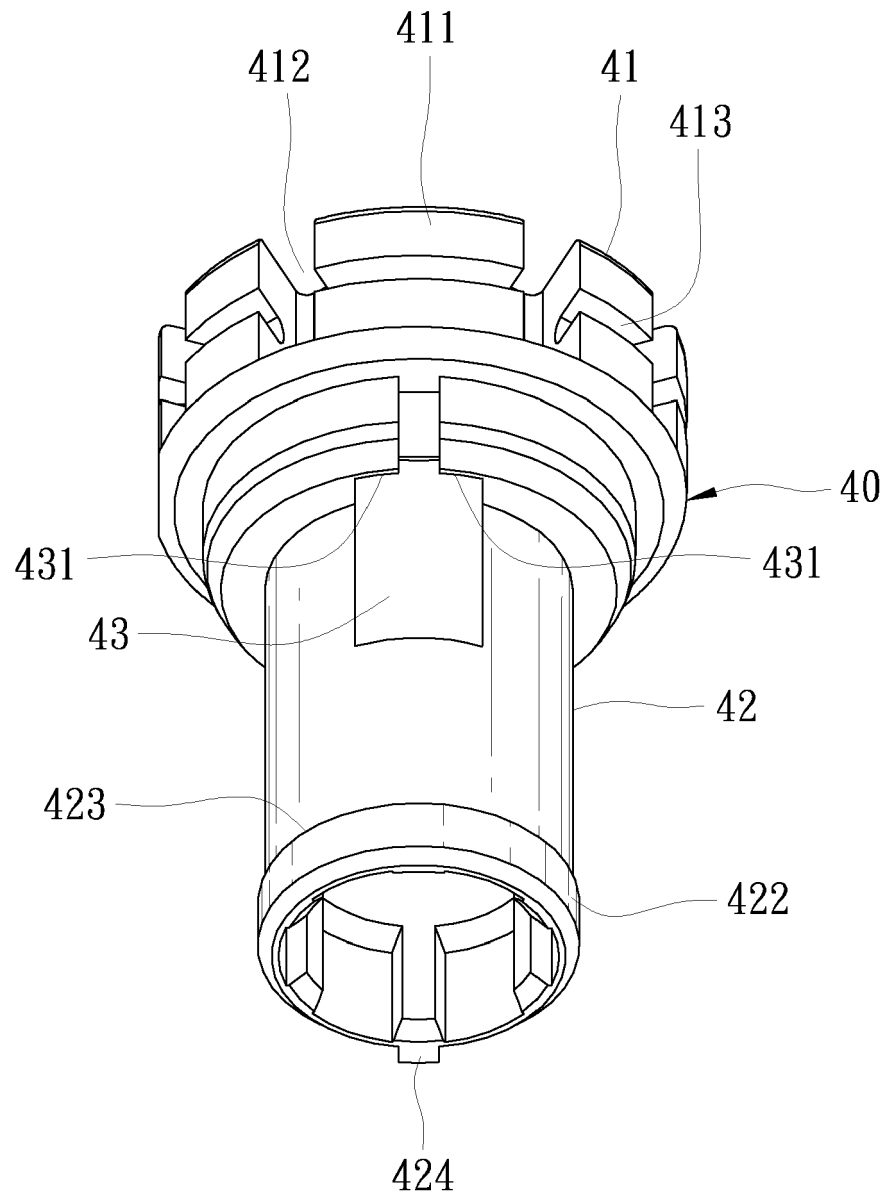


FIG. 2

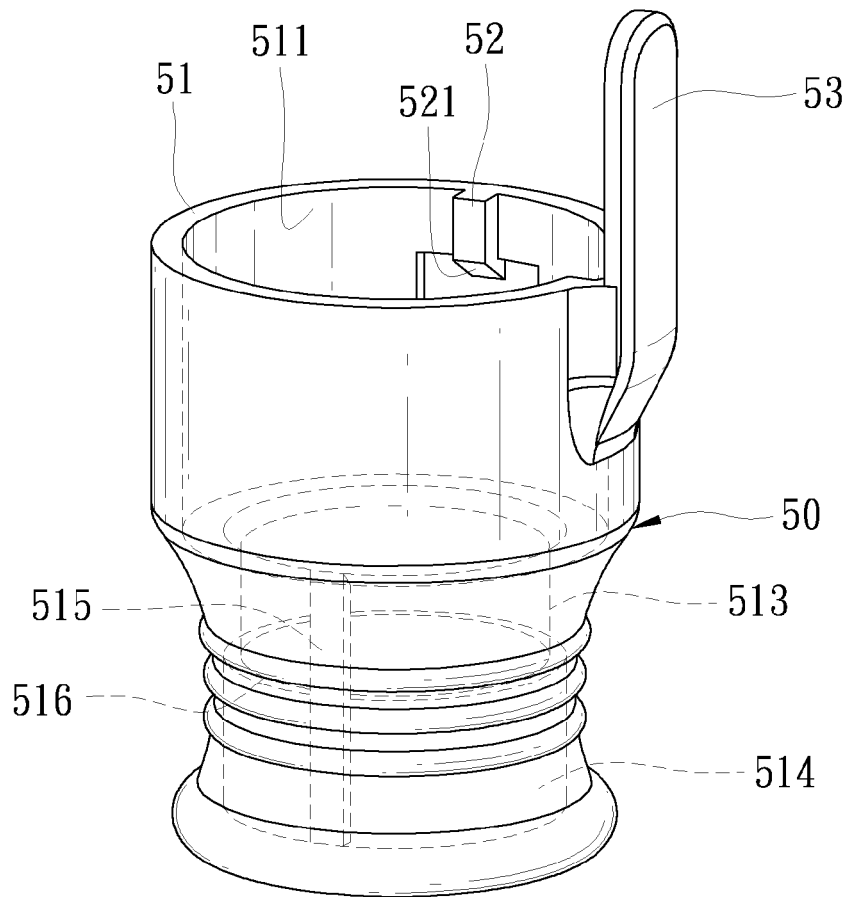
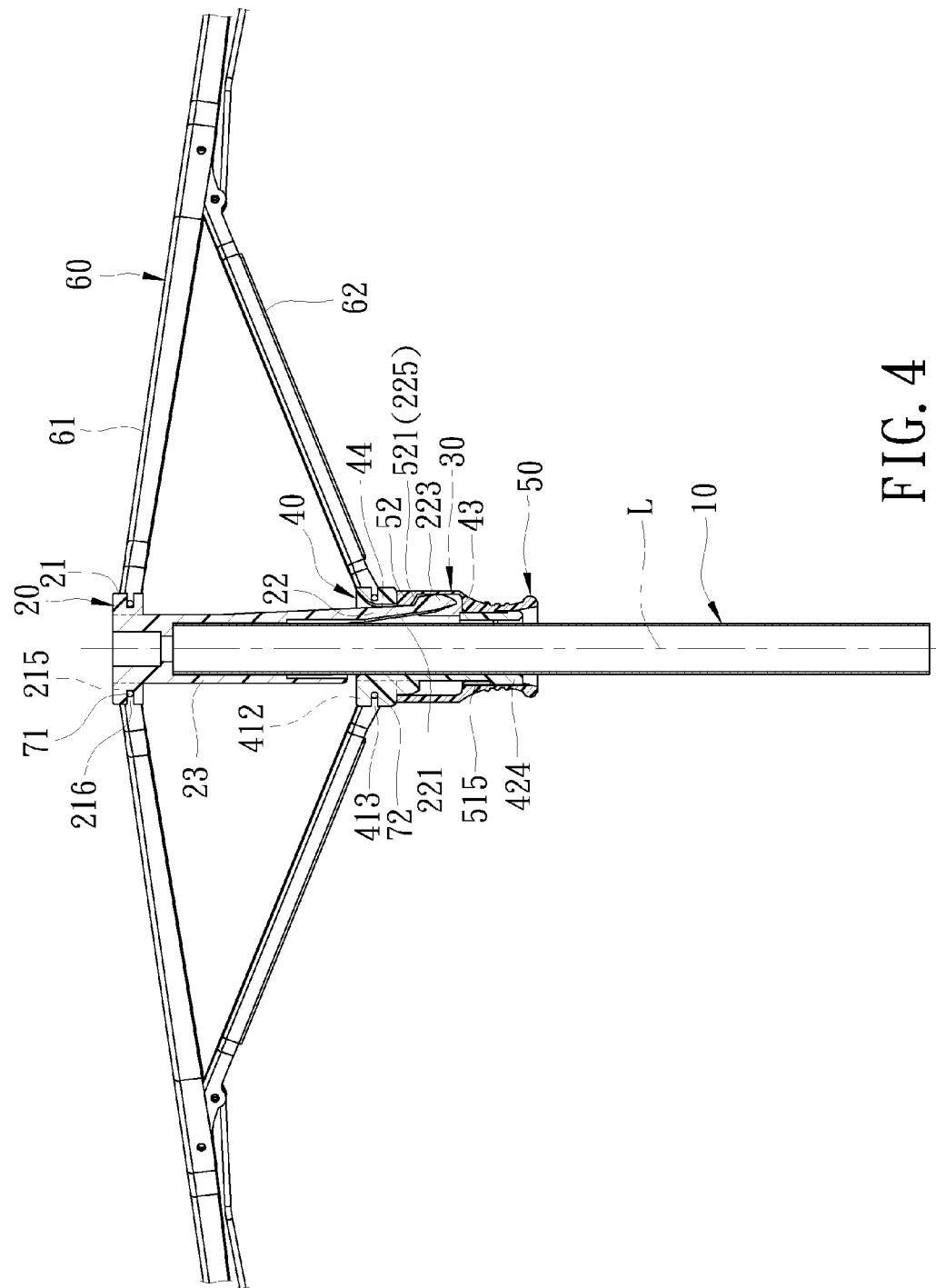


FIG. 3



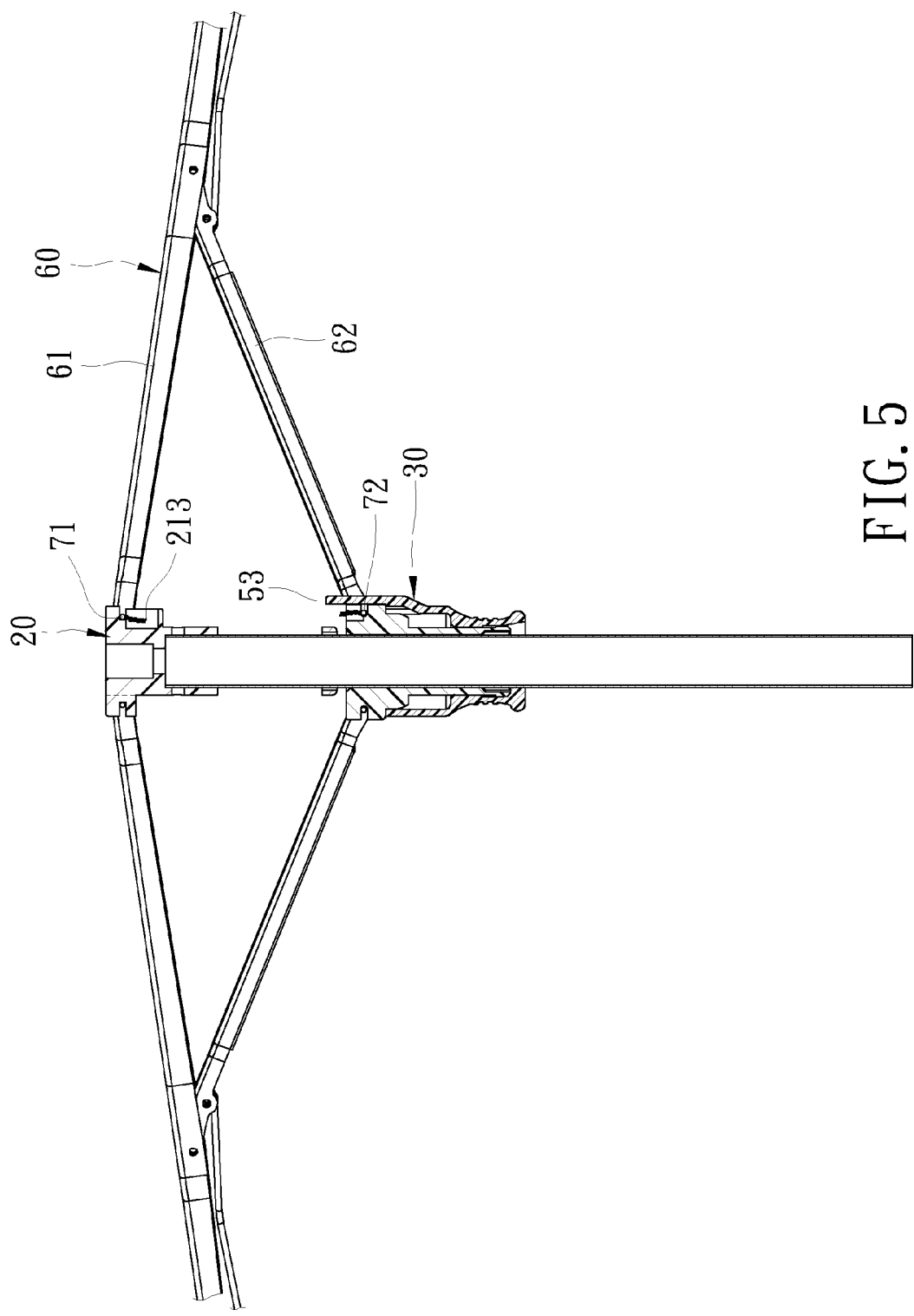
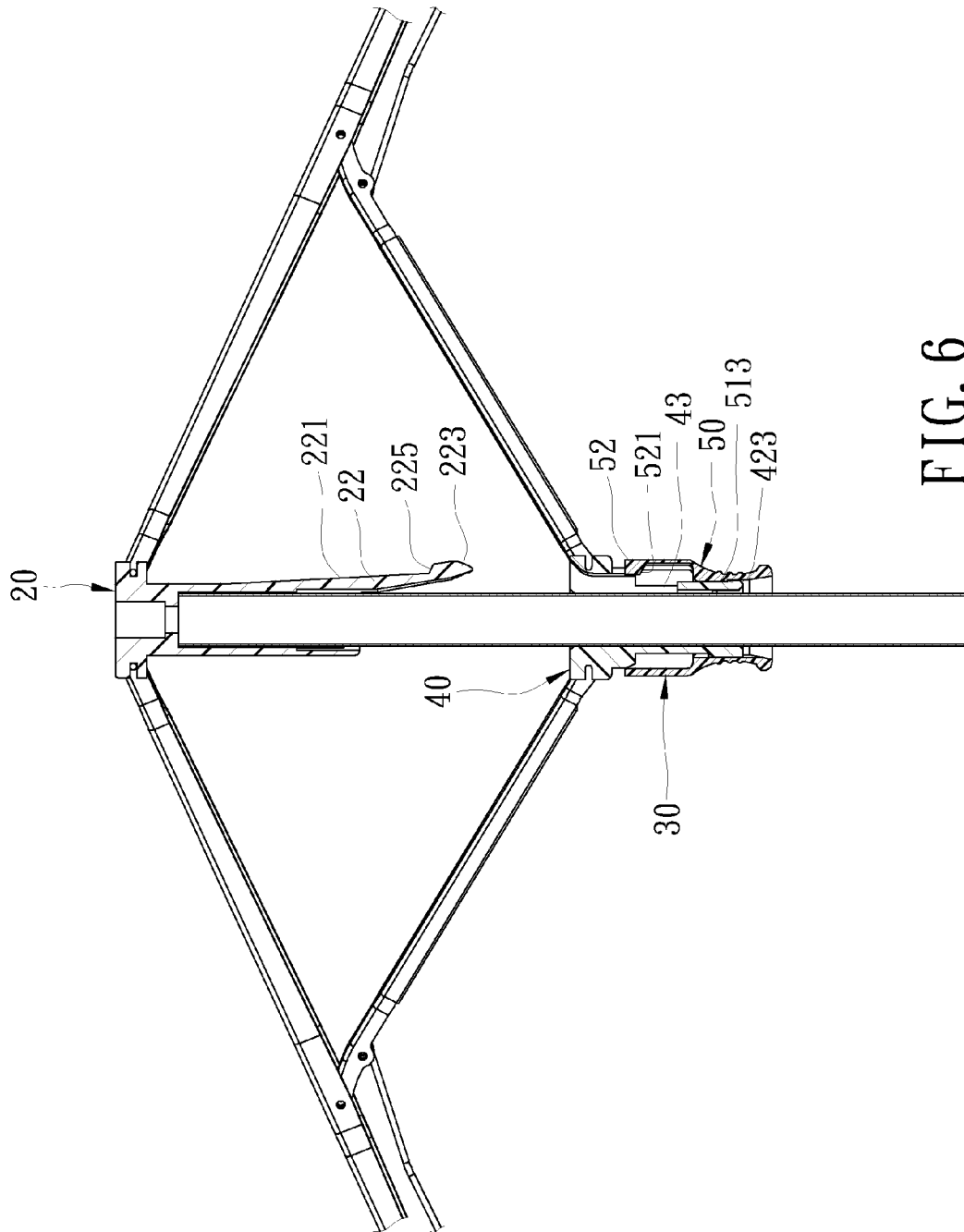


FIG. 5



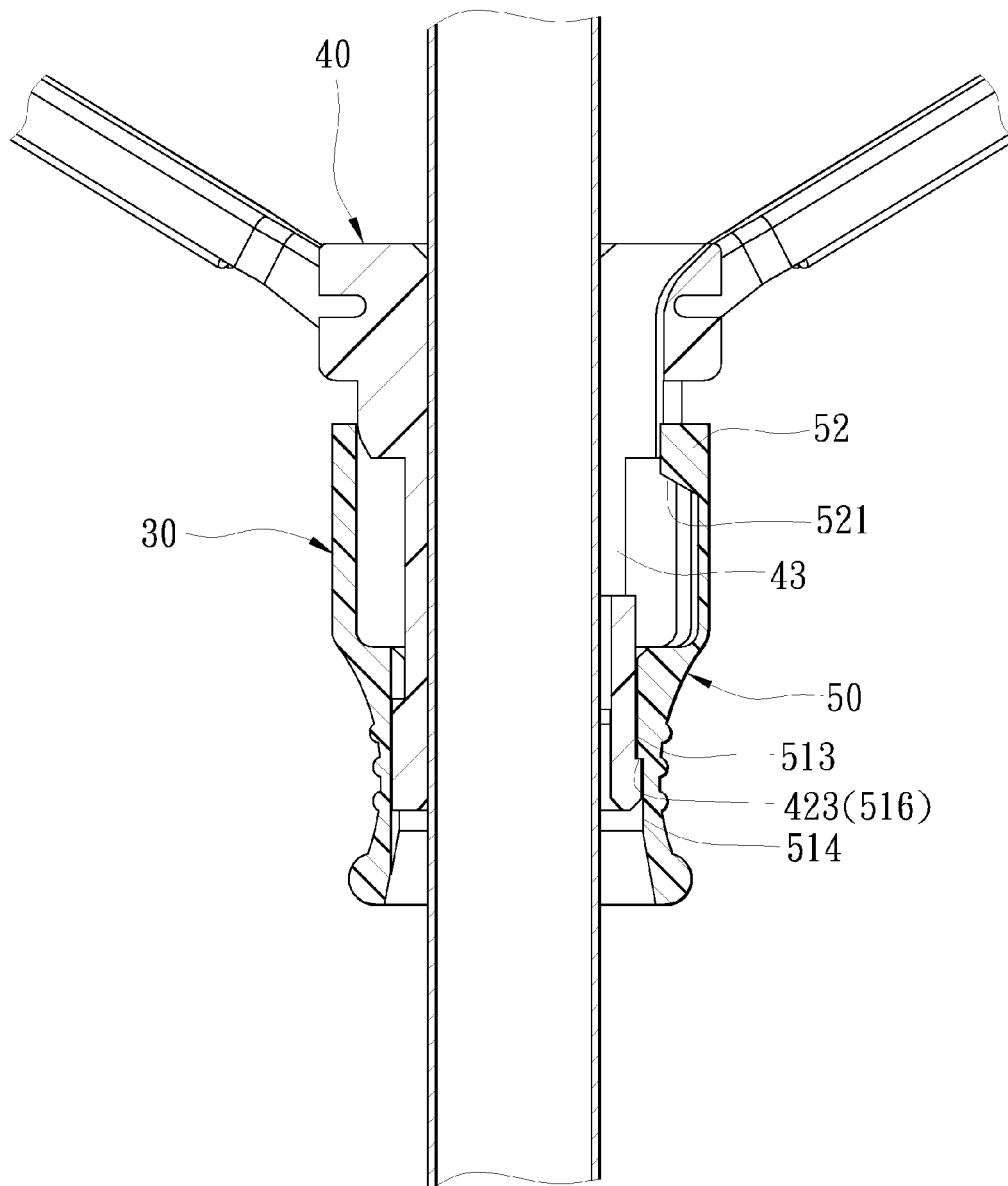


FIG. 7



EUROPEAN SEARCH REPORT

Application Number
EP 12 17 0641

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	CN 2 882 345 Y (ZHANG SHUMIN [CN]) 28 March 2007 (2007-03-28) * figures 1-3 *	1,3,7	INV. A45B25/08
Y	----- US 2005/055957 A1 (HUANG LU TSAI [TW]) 17 March 2005 (2005-03-17) * paragraphs [0025] - [0036]; figures 1-7 *	1,3,5-8	
Y	----- US 2007/240745 A1 (WANG MAX [TW]) 18 October 2007 (2007-10-18) * paragraphs [0015] - [0021]; figures 2-4 *	1,3,5-8	

			TECHNICAL FIELDS SEARCHED (IPC)
			A45B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		20 November 2012	Ionescu, C
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 12 17 0641

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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20-11-2012

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
CN 2882345	Y	28-03-2007	NONE	
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REFERENCES CITED IN THE DESCRIPTION

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- US 5964235 A [0002]