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(54) Umbrella with sliding connection between ribs and stretchers

(57) An umbrella includes a plurality of ribs (10) pivoted to a ferrule (300) on a stem (200), and a plurality of stretchers (40) pivoted to a runner (400) which is slidably sleeved on the stem (200). Each interconnecting member (20) includes a first portion (21) mounted on the respective rib (10), and a second portion (43) mounted on the respective stretcher (40) and connected to and retainingly slidable relative to the first portion (21) along the length of the rib (10) so as to provide a buffering action to the rib (10) once the latter is subjected to an upwardly blowing force of wind.

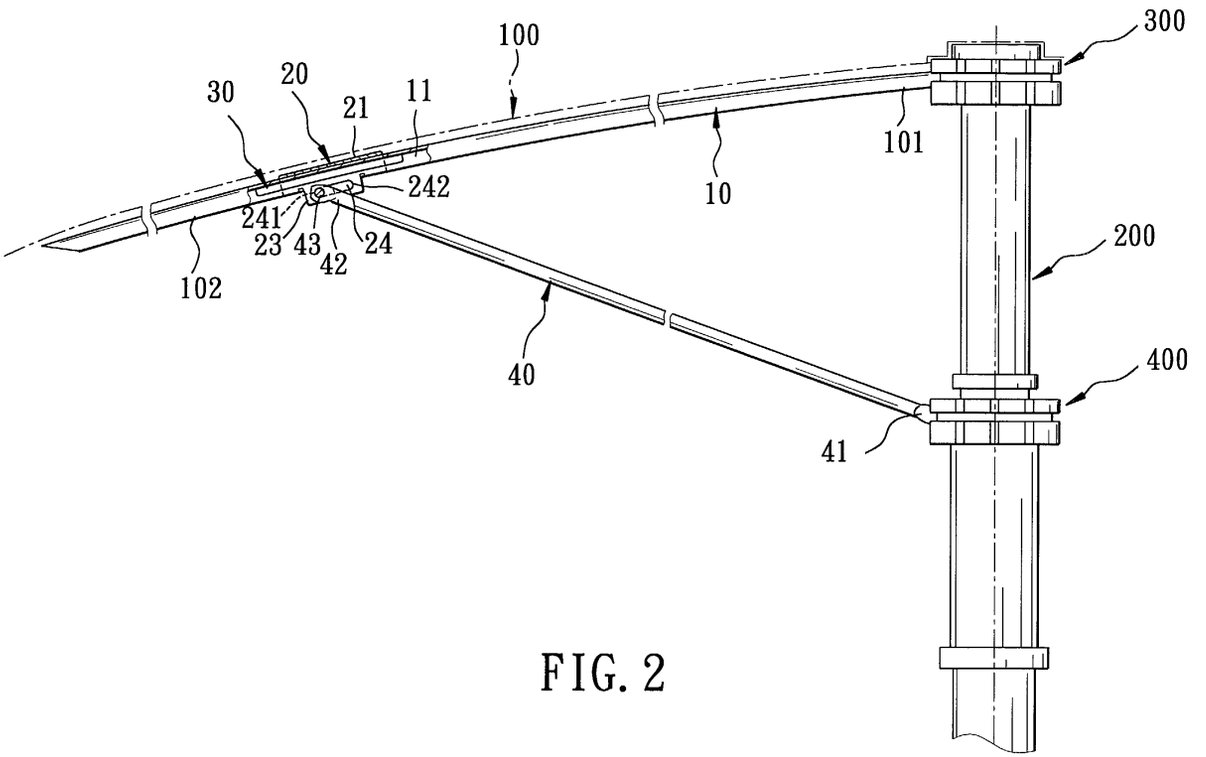

FIG. 2

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Description

[0001] This invention relates to an umbrella, more particularly to an umbrella in which a buffering action can be provided to ribs thereof to protect the same against an upwardly blowing force of wind.

[0002] Referring to Fig. 1, a conventional umbrella is shown to include an elongate stem 1 with a ferrule 2 which is fixed on an upper end thereof. A tubular runner 3 is sleeved slidably on a middle portion of the stem 1. A plurality of ribs 4 (only one is shown) have proximate ends which are mounted pivotally on the ferrule 2, and distal ends which extend outwardly from the proximate ends so as to support and mount a canopy (not shown). A plurality of stretchers 5 (only one is shown) interconnect pivotally the runner 3 and the distal ends of the ribs 4 to permit stretching and retracting of the ribs 4 when the runner 3 is moved along the stem 1. Each rib 4 has a coupling member 6 with two lugs 601 which are clamped on the distal end of the rib 4 by a pressing force such that a pivot pin 502 is journalled on the lugs 601 and the distal end 501 of a respective one of the stretchers 5 that is disposed between the lugs 601.

[0003] However, once wind blows the distal ends of the ribs 4 upwardly when the ribs 4 are in a stretched state, deformation of the ribs 4 is likely to occur.

[0004] The object of the present invention is to provide an umbrella in which a buffering action can be provided to ribs thereof to protect the same against an upwardly blowing force of wind.

[0005] According to this invention, the umbrella includes an elongate stem which extends along an axis, and which has an upper end, a lower end, and a middle portion therebetween. A ferrule is fixed on the upper end of the stem. A canopy is mounted on the ferrule. A plurality of ribs are disposed on the ferrule underside of the canopy, and are displaced angularly from each other about the axis. Each of the ribs includes a first proximate end portion which is pivotally mounted on the ferrule, and a first distal end portion which extends from the first proximate end portion in a first direction radial to the axis so as to support the canopy in a spread-out position and in a collapsed position. A tubular runner is sleeved on and is slidable along the middle portion of the stem relative to the ferrule between upper and lower positions which correspond to the spread-out and collapsed positions. A plurality of stretchers are disposed angularly from each other about the axis. Each of the stretchers includes a second proximate end portion which is pivotally mounted on the runner, and a second distal end portion which extends from the second proximate end portion in a second direction radial to the axis. Each of a plurality of interconnecting members is disposed between and interconnects the first and second distal end portions to permit a respective one of the stretchers to stretch or retract a respective one of the ribs so as to put the canopy in the spread-out position or the collapsed position when the runner is moved to the upper position or the lower position, respectively. Each of the interconnecting members has a first portion which is mounted on the first distal end portion, and a second portion which is mounted on the second distal end portion and which is connected to and which is retainingly slidable relative to the first portion in the first direction between proximate and distal positions respectively proximate and distal to the first proximate end portion. Once wind blows a respective one of the ribs upwardly when the canopy is in the spread-out position, a sliding movement of the second portion relative to the first portion from the distal position toward the proximate position provides a buffering action to the first distal end portion of the respective one of the ribs against blowing force of the wind.

[0006] 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 a schematic view of a portion of a conventional umbrella in a stretched state;

Fig. 2 is a schematic view of a preferred embodiment of a portion of an umbrella according to this invention;

Fig. 3 is an exploded perspective view showing an interconnecting member and a reinforcing rod of the preferred embodiment; and

Fig. 4 is a schematic view showing the preferred embodiment when subjected to an upwardly blowing force of wind.

[0007] Referring to Fig. 2, the preferred embodiment of the umbrella according to the present invention is shown to comprise an elongate stem 200, a ferrule 300, a canopy 100, a plurality of tubular ribs 10 (only one is shown), a tubular runner 400, a plurality of stretchers 40 (only one is shown) , and a plurality of interconnecting members 20.

[0008] The elongate stem 200 extends along an axis, and has an upper end, a lower end, and a middle portion therebetween. The ferrule 300 is fixed on the upper end of the stem 200, The canopy 100 is mounted on the ferrule 300. The ribs 10 are disposed on the ferrule 300 underside of the canopy 100, and are displaced angularly from each other about the axis. Each rib 10 includes a first proximate end portion 101 which is pivotally mounted on the ferrule 300 in a known manner, and a first distal end portion 102 which extends from the first proximate end portion 101 in a first direction radial to the axis so as to support the canopy 100 in a spread-out position and in a collapsed position. The tubular runner 400 is sleeved on and is slidable along the middle portion of the stem 200 relative to the ferrule 300 between upper and lower positions which correspond to the spread-out and collapsed positions. The stretchers 40 are disposed angularly from each other about the ax-

is. Each stretcher 40 includes a second proximate end portion 41 which is pivotally mounted on the runner 400, and a second distal end portion 42 which extends from the second proximate end portion 41 in a second direction radial to the axis. Each interconnecting member 20 is disposed between and interconnects the first and second distal end portions 102, 42 of the respective rib 10 and stretcher 40 to permit the stretcher 40 to stretch or retract the rib 10 so as to put the canopy 100 in the spread-out position or the collapsed position when the runner 400 is moved to the upper position or the lower position, respectively. The construction as described above is similar to that of the conventional umbrella. The improvement of this invention will now be described with reference to the following paragraphs.

[0009] As shown in Fig. 3, each interconnecting member 20 has an arcuate first portion 21 which is wrapped tightly on the first distal end portion 102. Two lugs 23 are formed integrally on and extend downwardly from the first portion 21, and are aligned with each other in a transverse direction transverse to the first direction and the axis. The lugs 23 respectively have elongate slots 24 which are aligned with each other in the transverse direction and which extend through the lugs 23 in the transverse direction. Each slot 24 extends in the first direction, and has proximate and distal limits 242,241 respectively proximate and distal to the first proximate end portion 101 of the respective rib 10. The interconnecting member 20 further includes a second portion with a pivot pin 43. The pivot pin 43 is journalled on the second distal end portion 42 of the respective stretcher 40 which is disposed between the lugs 23, and is inserted through and is retainingly slidable along the elongate slots 24 in the lugs 23 to be in a key-and-keyway engagement between a proximate position, where the pivot pin 43 engages the proximate limits 242 of the slots 24, and a distal position, where the pivot pin 43 engages the distal limits 241 of the slots 24.

[0010] Preferably, a plurality of reinforcing rods 30 are made of a glass-fiber material, and are received in holes 11 in the first distal end portions 102 of the ribs 10 adjacent to the interconnecting member 20, and extend in the first direction so as to strengthen the first distal end portions 102 of the ribs 10.

[0011] As shown in Fig. 4, once wind blows a respective one of the ribs 10 upwardly (as indicated by arrows) when the canopy 100 is in the spread-out position, the pivot pin 43 is slidable along the elongate slots 24 from the distal limits 241 toward the proximate limits 242 so as to provide a buffering action to the first distal end portion 102 of the respective rib 10 against blowing force of the wind, thereby preventing deformation of the distal end portion 102 of the rib 10. In addition, the presence of the reinforcing rod 30 can further strengthen the structure of the rib 10.

Claims

1. An umbrella comprising:

an elongate stem (200) extending along an axis, and having an upper end, a lower end, and a middle portion therebetween;
a ferrule (300) fixed on said upper end of said stem (200);
a canopy (100) mounted on said ferrule (300);
a plurality of ribs (10) disposed on said ferrule (300) underside of said canopy (100), and displaced angularly from each other about the axis, each of said ribs (10) including a first proximate end portion (101) pivotally mounted on said ferrule (300), and a first distal end portion (102) extending from said first proximate end portion (101) in a first direction radial to the axis so as to support said canopy (100) in a spread-out position and in a collapsed position;
a tubular runner (400) sleeved on and slidable along said middle portion of said stem (200) relative to said ferrule (300) between upper and lower positions which correspond to the spread-out and collapsed positions; and
a plurality of stretchers (40) disposed angularly from each other about the axis, and each including a second proximate end portion (41) pivotally mounted on said runner (400), and a second distal end portion (42) extending from said second proximate end portion (41) in a second direction radial to the axis, **characterized by**:

a plurality of interconnecting members (20), each disposed between and interconnecting said first and second distal end portions (102,42) to permit a respective one of said stretchers (40) to stretch or retract a respective one of said ribs (10) so as to put said canopy (100) in the spread-out position or the collapsed position when said runner (400) is moved to the upper position or the lower position respectively, each of said interconnecting members (20) having a first portion (21) which is mounted on said first distal end portion (102), and a second portion which is mounted on said second distal end portion (42) and which is connected to and which is retainingly slidable relative to said first portion (21) in the first direction between proximate and distal positions respectively proximate and distal to said first proximate end portion (101), such that once wind blows a respective one of said ribs (10) upwardly when said canopy (100) is in the spread-out position, a sliding movement of said second portion relative

to said first portion (21) from the distal position toward the proximate position provides a buffering action to said first distal end portion (102) of the respective one of said ribs (10) against blowing force of the wind.

2. The umbrella of Claim 1, **characterized in that** said first portion (21) of each of said interconnecting members (20) has a keyway extending in the first direction and having proximate and distal limits (242,241), said second portion of each of said interconnecting members (20) having a key extending through said second distal end portion (42) of a respective one of said stretchers (40), and inserted into and movable along said keyway between the proximate position where said key engages said proximate limit (242), and the distal position where said key engages said distal limit (241).

3. The umbrella of Claim 2, **characterized in that** said keyway is an elongate slot (24) extending through said first portion (21) in a transverse direction transverse to the first direction and the axis, said key being a pivot pin (43) journalled on said second distal end portion (42) and slidably movable in said elongate slot (24) between the proximate and distal positions.

4. The umbrella of Claim 1, **characterized in that** said first distal end portion (102) of each of said ribs (10) is tubular, said umbrella further comprising a plurality of reinforcing rods (30), each of which is received in said first distal end portion (102) of a respective one of said ribs (10) and extends along the first direction so as to strengthen said first distal end portion (102).

5. The umbrella of Claim 4, **characterized in that** each of said reinforcing rods (30) is made of a glass-fiber material.

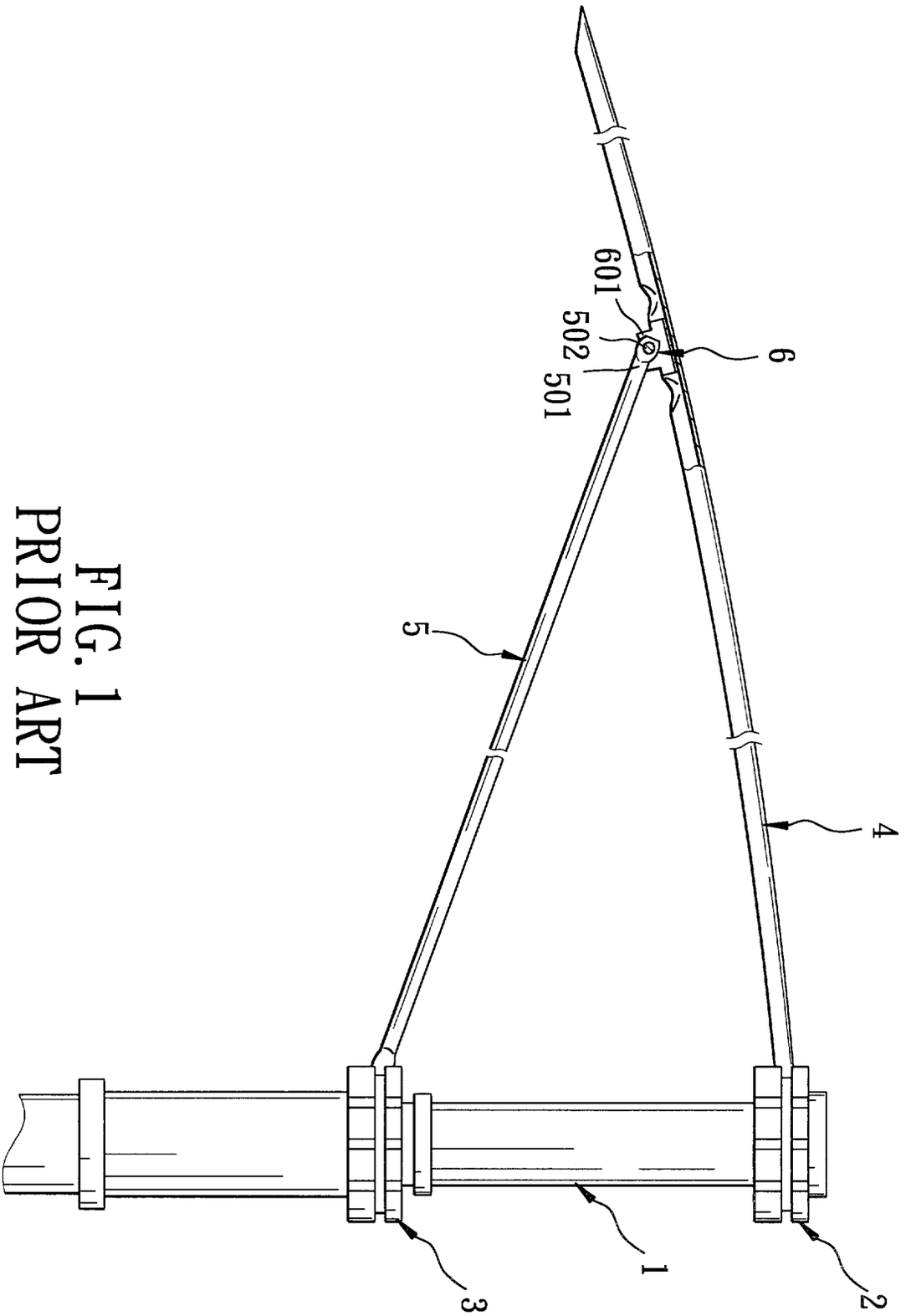

FIG. 1
PRIOR ART

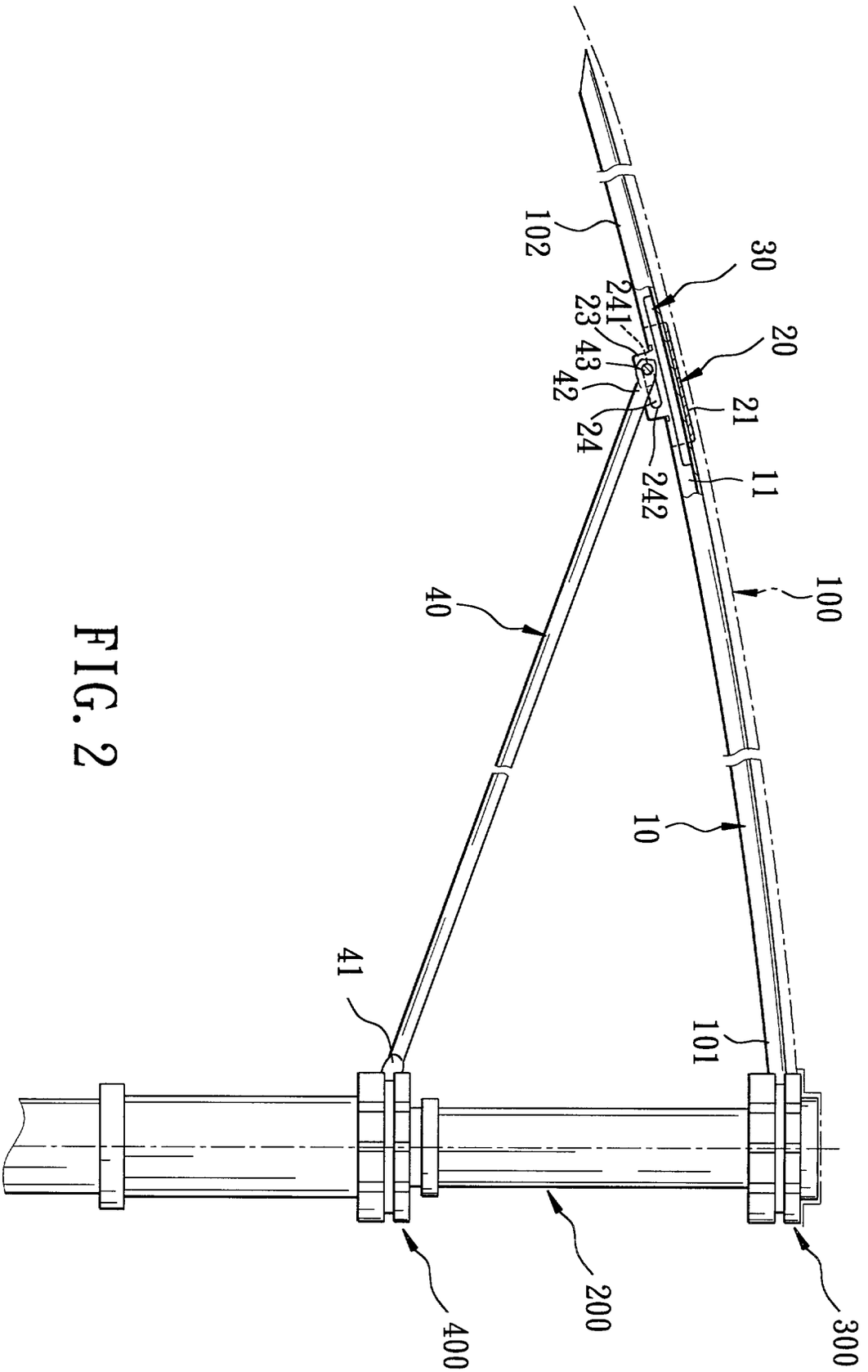

FIG. 2

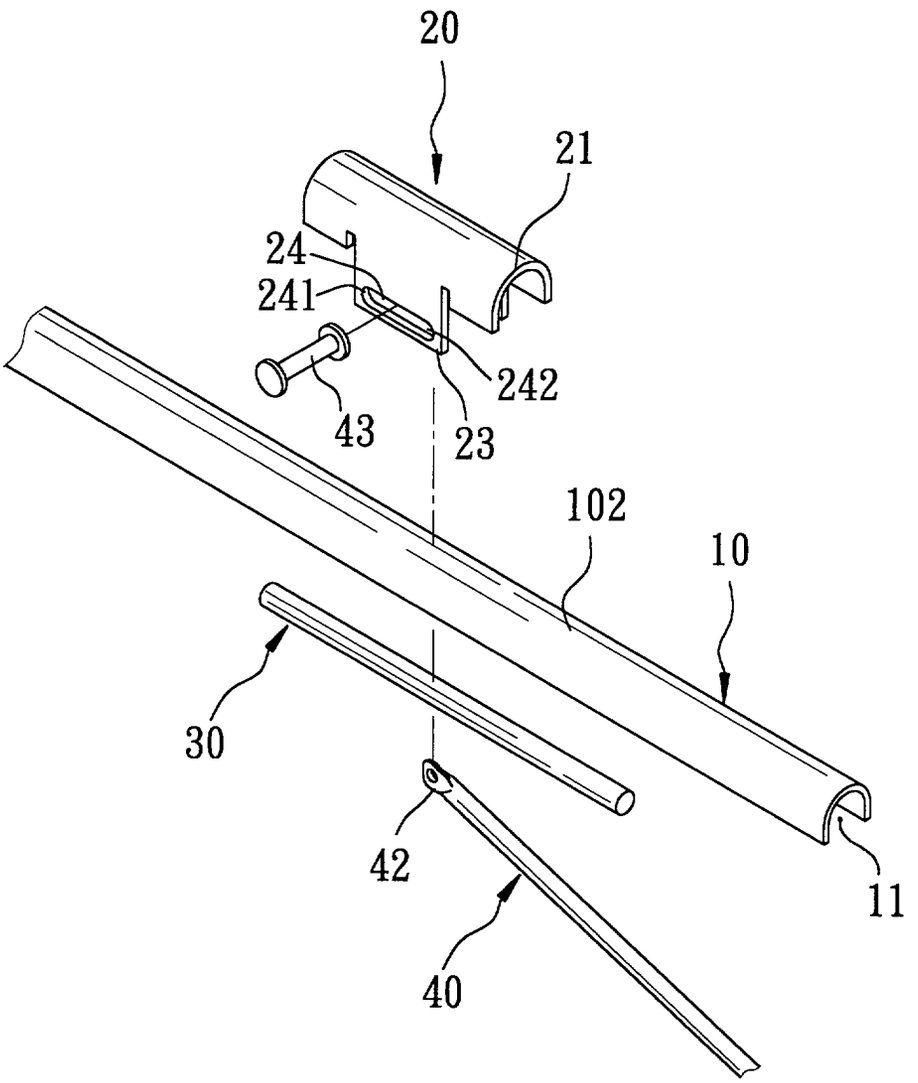

FIG. 3

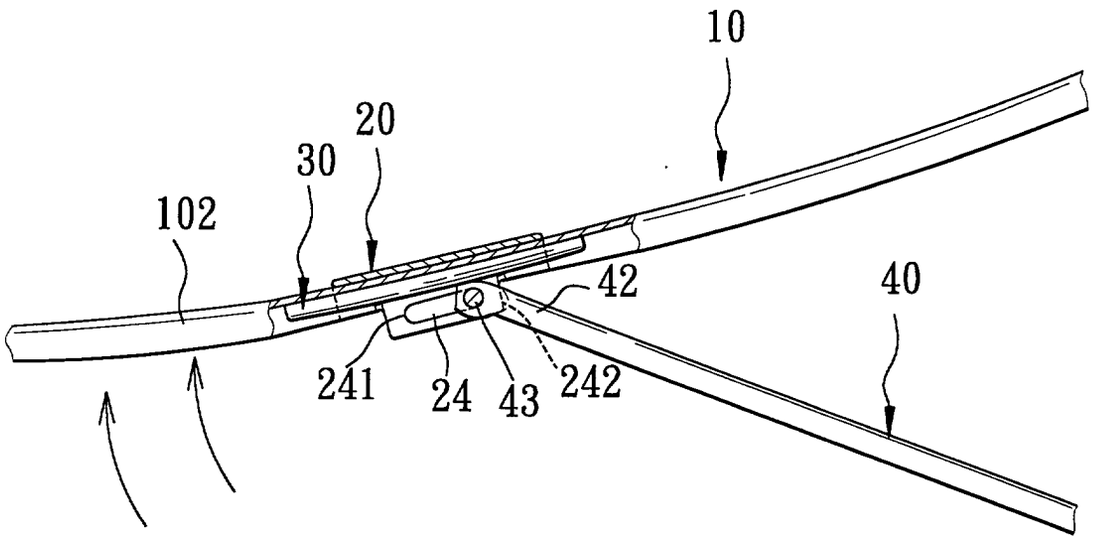

FIG. 4

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EUROPEAN SEARCH REPORT

Application Number
EP 01 30 2604

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	9 August 2001	Koob, M

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 01 30 2604

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