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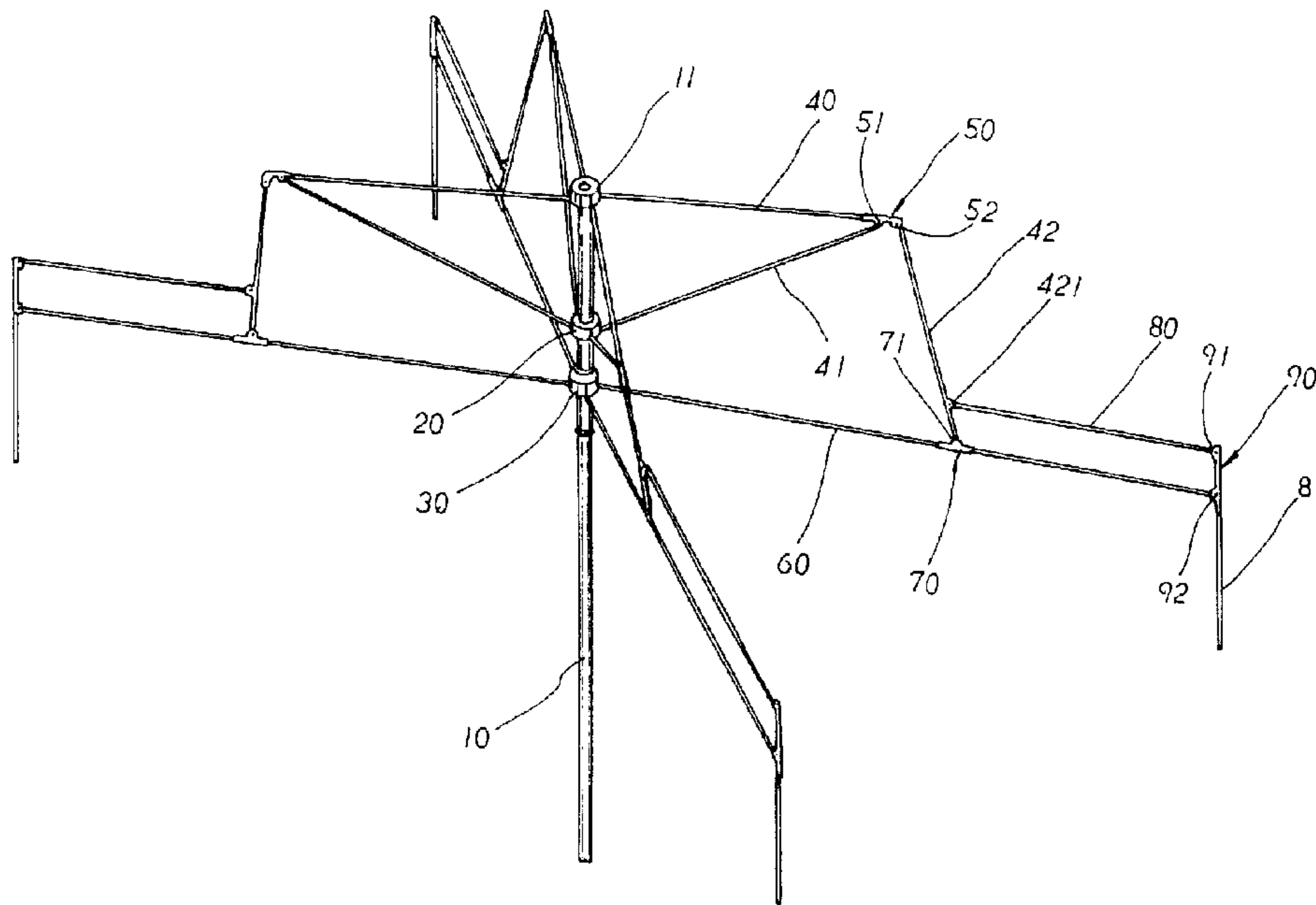
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(54) Titre : ARMATURE DE COUPOLE POUR PARAPLUIES ET PARASOLS DE DIVERSES FORMES

(54) Title: CANOPY FRAME FOR UMBRELLA OF VARIOUS SHAPES



(57) Abrégé/Abstract:

A canopy frame for umbrella has a structure adapted for various shapes, making the appearance of umbrellas dexterous and interesting. The frame has a main shaft, an upper sliding notch, a lower sliding notch, multiple positioning ribs, multiple upper spreaders, upright ribs, upper angle-forming clamps, auxiliary stretchers, lower spreaders and multiple clamping pieces. Two positioning holes are on the main shaft for the fixing of the upper and lower sliding notch and at the top end of the main shaft is disposed the fixed notch. The upper and lower sliding notch mounted consecutively on the main shaft under the fixed notch. One end of each positioning rib is connected to the fixed notch and the other end is associated with an upper angle-forming clamp. One end of each upper spreader is fixed to the upper sliding notch and the other end is engaged with the middle hinge point of the upper angle-forming clamp. One end hinge point of each angle-forming clamp is coupled to one end of each upright rib to which is mounted a clamping piece at the other end. The upright rib has a hinge projection at one end to which one end of each auxiliary rib is connected and the other end is fixed to an end hinge point of a lower angle-forming clamp, and each lower angle-forming clamp is associated with a folding rib. Thereby when a canopy is mounted to the frame, umbrellas of various shapes can be obtained.

ABSTRACT OF THE DISCLOSURE

A canopy frame for umbrella has a structure adapted for various shapes, making the appearance of umbrellas dexterous and interesting. The frame has a main shaft, an upper sliding notch, a lower sliding notch, multiple positioning ribs, multiple upper spreaders, upright ribs, upper angle-forming clamps, auxiliary stretchers, lower spreaders and multiple clamping pieces. Two positioning holes are on the main shaft for the fixing of the upper and lower sliding notch and at the top end of the main shaft is disposed the fixed notch. The upper and lower sliding notch mounted consecutively on the main shaft under the fixed notch. One end of each positioning rib is connected to the fixed notch and the other end is associated with an upper angle-forming clamp. One end of each upper spreader is fixed to the upper sliding notch and the other end is engaged with the middle hinge point of the upper angle-forming clamp. One end hinge point of each angle-forming clamp is coupled to one end of each upright rib to which is mounted a clamping piece at the other end. The upright rib has a hinge projection at one end to which one end of each auxiliary rib is connected and the other end is fixed to an end hinge point of a lower angle-forming clamp, and each lower angle-forming clamp is associated with a folding rib. Thereby when a canopy is mounted to the frame, umbrellas of various shapes can be obtained.

Title: CANOPY FRAME FOR UMBRELLA OF VARIOUS SHAPES

BACKGROUND OF THE INVENTION

The present invention relates to an improved canopy frame for use on umbrellas which have their canopies structured in various shapes, making the external appearance of umbrellas dexterous, attractive and interesting. The frame is comprised of a main shaft, an upper sliding notch, a lower sliding notch, multiple positioning ribs, multiple upper spreaders, multiple upright ribs, multiple upper angle-forming clamps, multiple auxiliary stretchers, multiple lower spreaders and multiple clamping pieces. There are two positioning holes on the main shaft for the fixing of the upper and lower sliding notch and at the top end of the main shaft is disposed the fixed notch. The upper and lower sliding notch mounted consecutively on the main shaft under the fixed notch. One end of each positioning rib is connected to the fixed notch and the other end is associated with an end hinge point of an upper angle-forming clamp. One end of each upper spreader is fixed to the upper sliding notch and the other end is engaged with the middle hinge point of an upper angle-forming clamp. One end hinge point of each angle-forming clamp is coupled to one end of each upright rib to which is mounted a clamping piece at the other end. The upright rib has a hinge projection at one end to which one end of each auxiliary rib is connected and the other end is fixed to an end hinge point of a lower angle-forming clamp, and each lower angle-forming clamp is associated with a folding rib. Thereby when a canopy is mounted to the frame, umbrellas of various shapes can be obtained.

The improved canopy frame is easily converted into different kinds of shapes so as to make umbrellas produced in dexterous forms for commercial advertisements or just to be used as common umbrellas, which can better protect people from getting wet by rain.

In general, common umbrellas are all made to have a simple canopy frame including

a main shaft on which a runner is slidably moved to get a frame to stretch open, and a canopy attached to the frame is extended in an arch shape without any variations for decades. Such a structure is not ideal enough to permit commercial advertisements to be printed on the canopy is one aspect, and such an umbrella is not good enough to
5 protect a person under the umbrella from getting wet by rain cast in slant directions.

SUMMARY OF THE INVENTION

Therefore, the primary object of the present invention is to provide an improved canopy frame for umbrellas of various shapes. It has a main shaft having a fixed notch, an upper sliding notch, a lower sliding notch disposed thereon, and a plurality of ribs, spreaders, stretchers of various lengths are associated with the respective notches and a
5 plurality of upper angle-forming clamps and lower angle-forming clamps secured to the respective ribs, spreaders and stretchers whereby various frame structures can be obtained for mounting of corresponding canopies, making umbrellas of various shapes possible.

10 Another object of the present invention is to provide an improved canopy frame which is provided with upright ribs and folding ribs so as to transparent drape panels to be downwardly extended to stop rain cast in slant directions from coming into the covered area of an umbrella without blocking the sight of a user.

BRIEF DESCRIPTION OF THE INVENTION

Fig. 1 is a diagram showing a fully extended canopy frame of the present invention;

Fig. 2 is a diagram showing the canopy frame in a fully collapsed state;

Fig. 3 is a diagram showing the canopy frame applied to a car-shaped umbrella;

5 Fig. 4 is a diagram showing a rectangular frame structure of the second embodiment of the present invention;

Fig. 5 is a diagram showing a canopy frame structure of a traditional Chinese farmer's wide-brimmed rain hat with two shafts;

Fig. 6 is a diagram showing a canopy frame of the fourth embodiment of the present;

10 Fig. 7 is a diagram showing canopy frame of the sixth embodiment of the present invention; and

Fig. 8 is a perspective view of another embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

There are several embodiments of the canopy frame of the present invention disclosed in company with the drawings. Referring to Fig. 1, a canopy frame in the shape of a vehicle is illustrated in a perspective manner. The frame comprises a main shaft 10, an upper sliding notch 20, a lower sliding notch 30, four positioning ribs 40, four upper spreaders 41, four upright ribs 42, four upper angle-forming clamps 50, four lower spreaders 60, four clamping pieces 70, four auxiliary stretchers 80, four folding ribs 81 and four lower angle-forming clamps 90.

At the upper portion of the main shaft 10 is provided with a pair of positioning holes (not shown) for the mounting of the upper sliding notch 20 and the lower sliding notch 30, and a fixed notch 11 is secured to the top end of the main shaft 10.

The upper sliding notch 20 and the lower sliding notch 30 are mounted below the fixed notch 11 consecutively. The four positioning ribs 40 are connected to the fixed notch 11 at one end thereof in a cross manner. At the other end of the each positioning rib 40 is disposed an upper angle-forming clamp 50.

One end of each upper spreader 41 is fixed to the upper sliding notch 20 and the other end thereof is further secured to a middle hinge point 51 on each upper angle-forming clamp 50. One end of the lower spreader 60 is fixed to the lower sliding notch 30 and the other end is fixed to a middle hinge point 92 of the lower angle-forming clamp 90. Near the middle of the lower spreader 60 is disposed a clamping piece 70. An upright rib 42 is connected at its ends to the end hinge point 52 of the upper angle-forming clamp 50 and to the middle hinge point 71 of the clamping piece 70. A hinge projection 421 is disposed adjacent the lower end of the upright rib 42. Each auxiliary stretcher 80 has one end coupled to the hinge projection 421 of the upright rib 42 and the other end connected to the end hinge point 91 of the lower angle-forming clamp 90

which is engaged with a folding rib downwardly.

In a folding state, as shown in Fig. 2, the upper sliding notch 20 and the lower sliding notch 30 are pulled downwardly, all the frame components are withdrawn to collapse in abutment against the main shaft 10 to complete the folding process.

5 Thereby, if a vehicle shaped canopy is mounted onto the frame and the frame is extended, a vehicle shaped umbrella is obtained, as shown in Fig. 3.

Referring to Fig. 4, a second embodiment of a square shaped canopy frame is illustrated. It is made up of a main shaft 10, an upper sliding notch 20, a lower sliding notch 30, four positioning ribs 40, four upper spreaders 41, four upper angle-forming
10 clamps 50, four lower spreaders 60 and eight clamping pieces 70, 70'. The main shaft 10 is provided with a pair of positioning holes for the securing of the upper sliding notch 20 and the lower sliding notch 30 at the upper portion thereof. A fixed notch 11 is secured to the top end of the main shaft 10 and the upper sliding notch 20 and the lower sliding notch 30 are disposed consecutively under the fixed notch 11. One end of each
15 positioning rib 40 is secured to the fixed notch 11 and the other end is fixed to the upper angle-forming clamp 50. Near the middle but slightly shifted toward the fixed notch 11 is disposed a clamping piece 70. One end of the upper spreader 41 is connected to lower sliding notch 30 and the other end thereof is coupled to the a middle hinge point 71 of the clamping piece 70. To the end hinge point 52 of the upper angle-forming clamp
20 50 is connected one upright rib 42 which extends downwardly a distance and has a clamping piece 70' disposed at the middle thereof. To the middle hinge point 71' of the clamping piece 70' is connected one end of the lower spreader 60. The other end of the positioning rib 40 is coupled to the upper sliding notch 20. The length of the positioning rib 40 is identical to that of the lower spreader 60. When extended, each
25 positioning rib 40 and each lower spreader 60 of the canopy frame are horizontally placed in a parallel position and the upright ribs 42 are vertically located. When a

canopy is attached to the frame, a rectangle shaped umbrella is obtained.

As shown in FIG. 5, a canopy frame structure of a traditional Chinese farmer's wide-brimmed rain hat with two shafts is illustrated. The frame comprises a main shaft 10, an upper sliding notch 20 having a spiral spring 21, a lower sliding notch 30, eight positioning ribs 40, eight upper spreaders 41, eight upright ribs 42, eight upper angle-forming clamps 50, eight lower spreader 60, eight clamping pieces 70, eight end support ribs 82 and eight angle-forming clamps 90. There are two positioning holes on the main shaft 10 for securing of the upper sliding notch 20 and the lower sliding notch 30. At the top of the main shaft 10 there is disposed a fixed notch 11, the upper sliding notch 20 and the lower sliding notch 30 are sleeved consecutively on the main shaft 10, the spiral spring 21 is sleeved between the fixed notch 11 and the upper sliding notch 20, the upper spreaders 41 have one end of each couple to the upper sliding notch 20 and the other end to the middle hinge point 51 of an upper angle-forming clamp 50, the end hinge point 52 of the upper angle-forming clamp 50 is coupled to the upright rib 42 which has its top position sleeved to a clamping piece 70, and the lower end of the upright rib 42 is connected to a , other end is connected to the lower angle-forming clamp 90, the lower spreader 60 has one end connected to the lower sliding notch 30, while the other end of the lower spreader 60 is connected to the middle hinge point 71 of the clamping piece 70, and the end support rib 82 has also one end connected to the middle hinge point 92 of the lower angle-forming clamp 90, upon fixing a canopy to the frame, the umbrella with a wide brimmed rain hat of Chinese farmers is formed.

Referring to Fig. 6, a fourth embodiment of the present invention is illustrated. The frame is comprised of a main shaft 10, an upper sliding notch 20, a lower sliding notch 30, eight positioning ribs 40, eight upper spreaders 41, eighth upright ribs 42, eight upper angle-forming clamps 50, eight lower spreaders 60 and eight clamping pieces 70. There are two positioning holes (not shown) on the main shaft 10 for the fixing of the

upper and lower sliding notch 20, 30 and at the top end of the main shaft 10 is disposed the fixed notch 11. The upper and lower sliding notch 20, 30 mounted consecutively on the main shaft 10 under the fixed notch 11. One end of each positioning rib 40 is connected to the fixed notch 11 and the other end is associated with an end hinge point 52 of an upper angle-forming clamp 50. One end of each upper spreader 41 is fixed to the upper sliding notch 20 and the other end is engaged with the middle hinge point 51 of an upper angle-forming clamp 50. One end hinge point 52 of each angle-forming clamp 50 is coupled to one end of each upright rib 42 to which is mounted a clamping piece 70 at the other end with a section of the upright rib 42 extended further downwardly. Each lower spreader 60 slightly shorter than each positioning rib 40 has one end connected to the lower sliding notch 30 and the other end coupled to the middle hinge point 71 of a clamping piece 70. A canopy is mounted to the frame to obtain a cone shaped umbrella.

Referring to Fig.7, a fifth embodiment of a common umbrella with a wide brimmed type of the present invention is illustrated. The frame is comprised of a main shaft 10, an upper sliding notch 20, a lower sliding notch 30, eight positioning ribs 40, eight upper spreader 41, eight upright ribs 42, eight upper angle-forming clamps 50, eight lower spreaders 60 and eight clamping pieces 70. There are two positioning holes (not shown) on the main shaft 10 for the fixing of the upper and lower sliding notch 20, 30 and at the top end of the main shaft 10 is disposed the fixed notch 11. The upper and lower sliding notch 20, 30 mounted consecutively on the main shaft 10 under the fixed notch 11. One end of each positioning rib 40 is connected to the fixed notch 11 and the other end is associated with an end hinge point 52 of an upper angle-forming clamp 50. One end of each upper spreader 41 is fixed to the upper sliding notch 20 and the other end is engaged with the middle hinge point 51 of the upper angle-forming clamp 50. One remaining end hinge point 52 of each angle-forming clamp 50 is coupled to one end of each upright rib 42 to which is mounted a clamping piece 70 at the other end with a section of the upright rib 42 extended further downwardly. Each lower spreader 60 has one end

connected to the lower sliding notch 30 and the other end coupled to the middle hinge point 71 of a clamping piece 70. When extended, the lower spreaders 60 stretch the upright ribs 42 outwardly in a slant manner, just like a common umbrella. A canopy is mounted to the frame to obtain an umbrella with a wide brimmed shape.

5 Referring to Fig. 8, another embodiment of an umbrella with a wide brimmed type of the present invention is illustrated which comprises a main shaft 10, an upper sliding notch 20, a lower sliding notch 30 having a slidable notch 31 and a spiral spring 32, eight positioning ribs 40, eight upper spreader 41, eight upright ribs 42, eight upper angle-forming clamps 50, eight lower spreaders 60, eight pulling spreaders 61 and eight
10 clamping pieces 70. On top of the main frame 10, there is a fixture notch 11 to facilitate installation of the upper sliding notch 20 and the lower sliding notch 30 on the main frame 10, the spiral spring 32 is sleeved in between the lower sliding notch 30 and the slidable notch 31, one end of each positioning rib 40 are connected to the fixture notch 11 while the other end connected to the upper angle-forming clamps 50,
15 respectively. The upper spreader 41 having also one end connected to the middle hinge point 51 of the upper angle-forming clamp 50 which has its end hinge point 52 connected to the upright ribs 42. The upper position of the upright ribs 42 are secured with the clamping pieces 70. The lower spreaders 60 has one end connected to the lower sliding notch 30 while the other end connected to the middle hinge point 71 of the clamping
20 piece 70. The pulling spreaders 61 are connected with their lower ends to the lower sliding notch 30, respectively, while the other ends of which are connected to the middle hinge point 71 of the clamping piece 70. The pulling spreads 61 has one ends connected to the inner centered position of the lower spreaders 60, while the other ends of the pulling spreads 61 are connected to the upper position of the slidable notch 31.
25 By means of the elastic force of the spiral spring 32, the canopy frame will be open, and the lower spreaders 60 push the eight upright ribs 42 outwardly in an inclined position. Mounting a canopy on the frame and a wide brimmed umbrella is formed.

It can be apparently seen that the canopy frames of the present invention have the following advantages in practical use:

1. The main shaft 10 is provided with an upper sliding notch 20 and a lower notch 30 and the positional variation of the upper angle-forming clamps 50, the lower angle-forming clamps 90 and the clamping pieces 70, and the length of each kind of ribs and spreaders, umbrellas of various kinds of shapes can be produced;
2. The upright ribs 42 and the folding ribs 81 can be downwardly extended in a vertical manner, permitting the periphery of an umbrella to be better protected from rain cast in slant directions.

I claim:

1. An improved canopy frame for umbrella, comprising:

a main shaft, an upper sliding notch, a lower sliding notch, multiple positioning ribs, multiple upper spreaders, multiple upright ribs, multiple upper angle-forming clamps, multiple lower spreaders, multiple clamping pieces, multiple auxiliary stretchers, multiple folding ribs and multiple lower angle-forming clamps, at the top of said main shaft being disposed a fixed notch; said frame being characterized by that:

at an upper portion of said main shaft being provided with a pair of positioning holes for the mounting of said upper sliding notch and said lower sliding notch, and said fixed notch being secured to the top end of said main shaft; said upper sliding notch and said lower sliding notch being mounted below said fixed notch consecutively; said positioning ribs are connected to said fixed notch at one end thereof; at the other end of each said positioning rib being disposed an upper angle-forming clamp;

one end of each said upper spreader being fixed to said upper sliding notch and the other end thereof being further secured to a middle hinge point on each said upper angle-forming clamp; one end of said lower spreader being fixed to said lower sliding notch and the other end being fixed to a middle hinge point of each said lower angle-forming clamp; near a middle point of said lower spreader being disposed a clamping piece; an upright rib being connected at its ends to an end hinge point of said upper angle-forming clamp and to a middle hinge point of said clamping piece; a hinge projection being disposed adjacent a lower end of said upright ribs; each said auxiliary stretcher having one end coupled to said hinge projection of said upright rib and the other end connected to one end hinge point of said lower angle-forming clamp which is engaged with a folding rib downwardly.

2. The improved canopy frame for umbrella as claimed in claim 1 wherein said fixed

notch at the top of said main shaft is pivotally connected to one end of four said positioning ribs, and to the other end of each said positioning rib is secured one said upper angle-forming clamp and near middle point of each said positioning rib is fixed one clamping piece; one end of each said upper spreader is pivotally fixed to said lower sliding notch and the other end thereof is coupled to a middle hinge point of said clamping piece of each said positioning rib; to one end hinge point of each said upper angle-forming clamp is fixed one said upright rib which has a clamping piece at a lower portion thereof with said upright rib further extended downwardly a proper length; said lower spreader as long as said positioning rib is connected to said upper sliding notch and the other end is fixed to a middle hinge point of one said clamping piece of said upright rib whereby when said canopy frame is extended, said positioning ribs and said lower spreaders are parallel with one each other on a horizontal plane and said upright ribs extend vertically downward to make the canopy frame in a square shape.

3. The improved canopy frame for umbrella as claimed in claim 1 wherein said fixed notch of said main shaft and said upper sliding notch having a spiral spring, and said eight positioning rib being defined by said fixed notch of said main shaft said fixed notch having an upper angle-forming clamp at the top end, each said upper spreader having one end connected to said upper sliding notch, while the other end of said upper spreader being coupled to the middle hinge point of said upper angle-forming clamp, the lower end of said upper angle-forming clamp having connected to an upright rib which upper end being connected to said clamping piece while the lower end of which being connected to another angle-forming clamp, said middle hinge point of said angle-forming clamp having connected to said end support rib, said lower spreader having one end coupled to said lower sliding notch, while the other end of which being connected to a middle hinge point of said clamping piece.

4. The improved canopy frame for umbrella as claimed in claim 1 wherein said fixed notch is connected to one end of said eight positioning ribs and the other end of each said positioning rib is coupled to an end hinge point of an upper angle-forming clamp, one end of each said upper spreader is coupled to a middle hinge point of said upper angle-forming clamp and the other end thereof is connected to said upper sliding notch; said lower spreader is engaged with said lower sliding notch at one end and a clamping piece is secured to a point at a distance from the center of said lower spreader; each upright rib is pivotally fixed to an end hinge point of an upper angle-forming clamp and a middle hinge point of a clamping piece whereby a canopy fixed to the frame is then shaped like a wide brimmed rain hat of Chinese farmers.
5. The improved canopy frame for umbrella as claimed in claim 1 wherein said fixed notch of said main shaft is connected respectively to one end of 8 positioning ribs and to the other end of each said positioning rib is secured an upper angle-forming clamp; one end of each said upper spreader is fixed to said upper sliding notch and the other end is engaged with the middle hinge point of said upper angle-forming clamp; one end hinge point of each angle-forming clamp is coupled to one end of each upright rib to which is mounted a clamping piece at the other end with a section of the upright rib extended further downwardly; each lower spreader slightly shorter than each positioning rib has one end connected to the lower sliding notch and the other end coupled to a middle hinge point of a clamping piece; whereby canopy is mounted to the frame to obtain a cone shaped umbrella.
6. The improved canopy frame for umbrella as claimed in claim 1 wherein one end of each of 8 said positioning ribs is connected to said fixed notch and the other end thereof is associated with of an upper angle-forming clamp; one end of each said upper spreader is fixed to said upper sliding notch and the other end is engaged with

the middle hinge point of one said upper angle-forming clamp; one remaining end hinge point of each angle-forming clamp is coupled to one end of one said upright rib to which is mounted a clamping piece at the other end with a section of each said upright rib extended further downwardly; each said lower spreader has one end
5 connected to said lower sliding notch and the other end coupled to the middle hinge point of a clamping piece; whereby when extended, said lower spreaders stretch said upright ribs outwardly in a slant manner, just like a common umbrella; a canopy is mounted to the frame to obtain a general umbrella.

7. The improved canopy frame for umbrella as claimed in claims 1, 2, 3, 4, or 5
10 wherein said main frame are sleeved with said upper sliding notch, said lower sliding notch, and said slidable notch, said lower sliding notch and said slidable notch comprises a spiral spring, the inner center position of said lower pulling spreads 61 and said slidable notch has connected with pulling spreads, in operation, the elastic force said spiral spring will urge said umbrella frame to open.

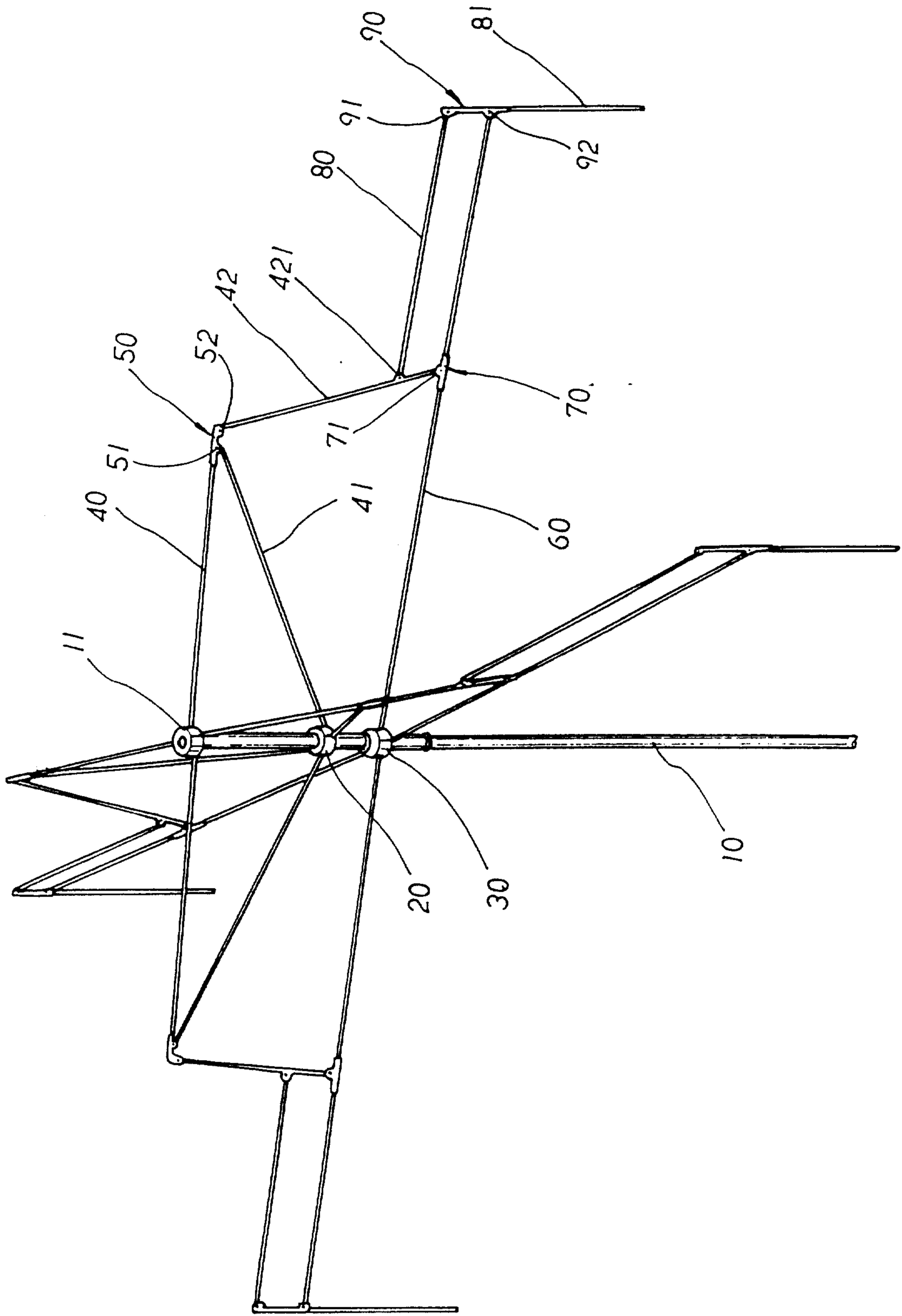


FIG. 1

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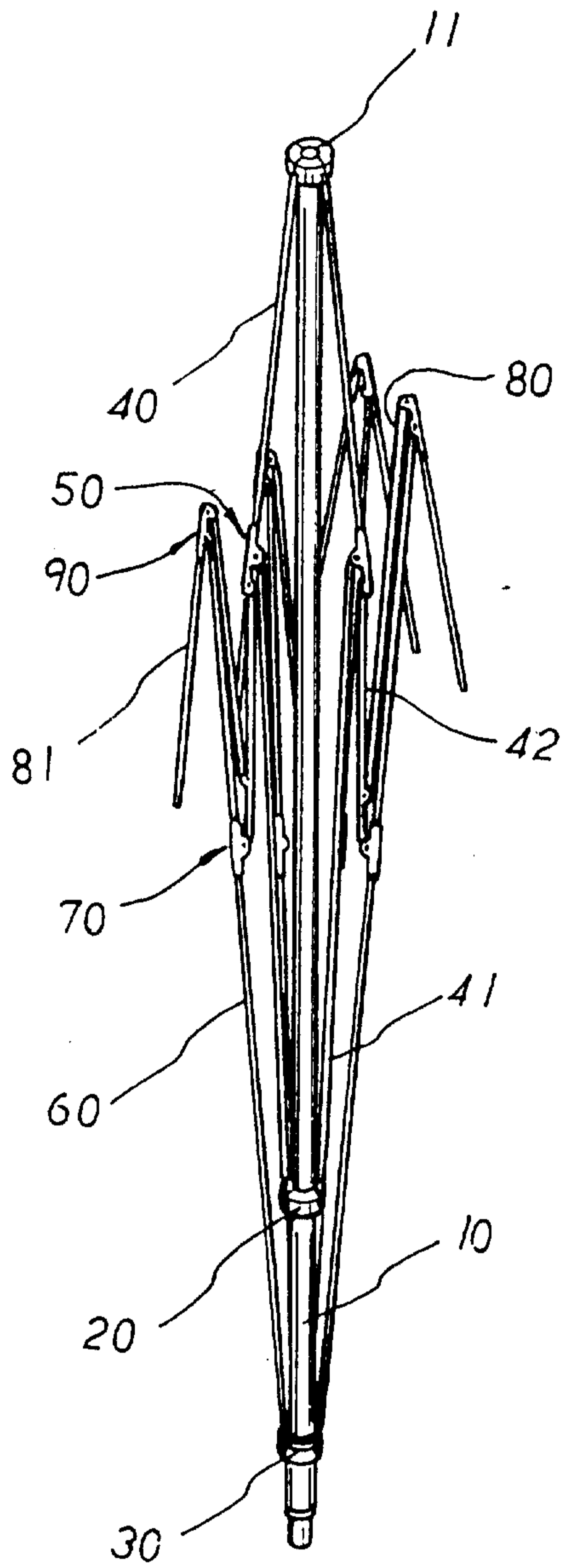


FIG. 2

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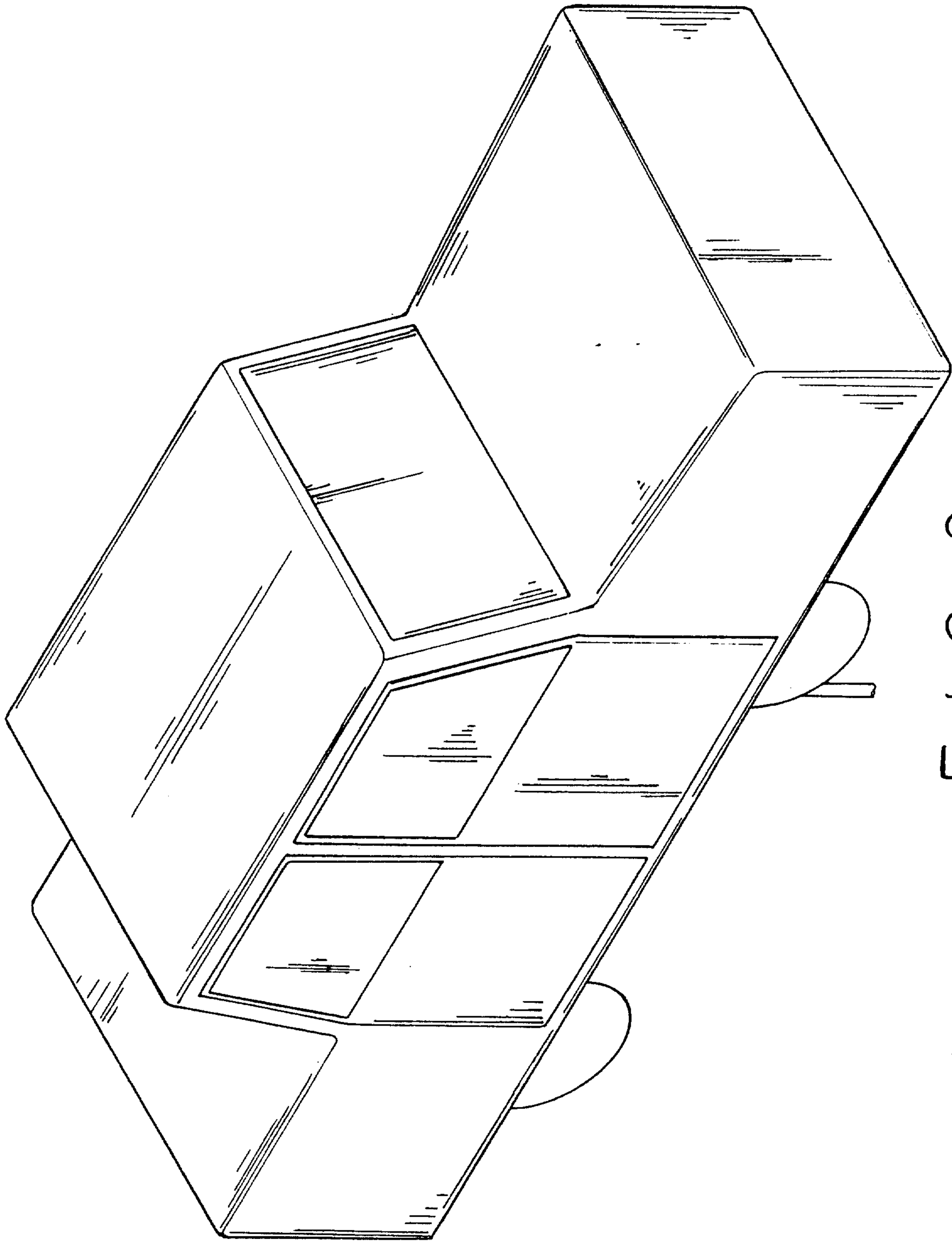


FIG. 3

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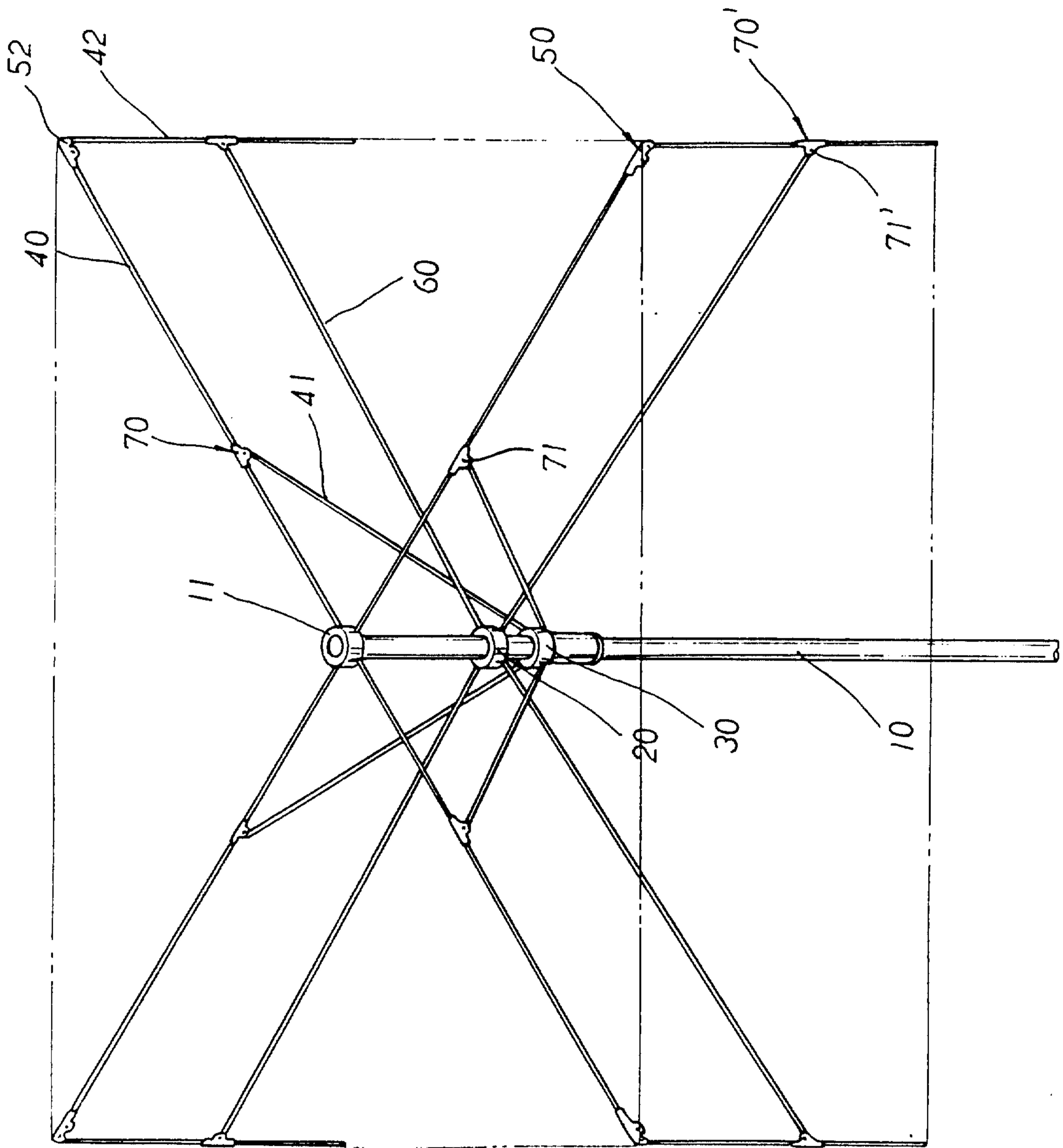


FIG. 4

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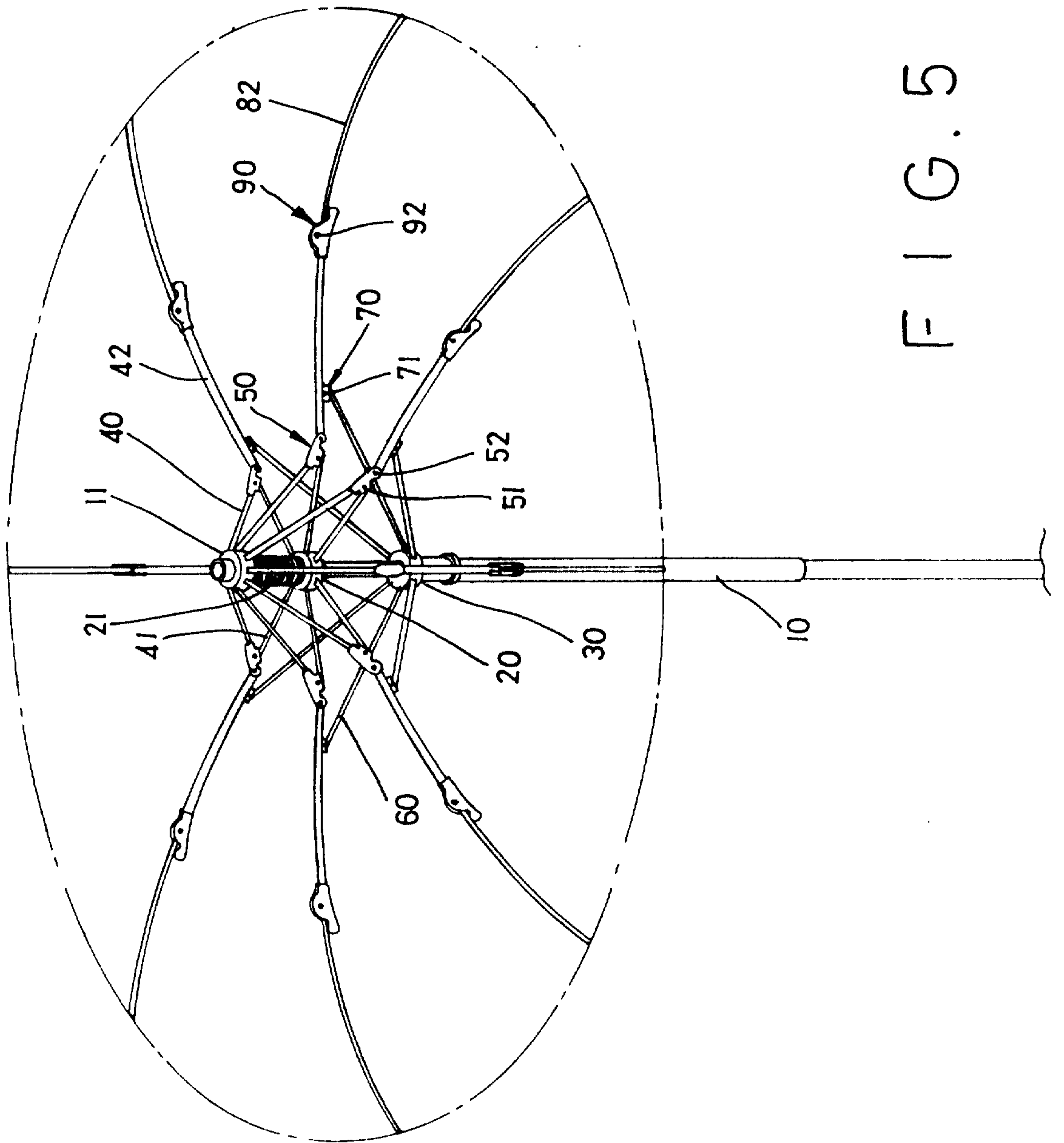


FIG. 5

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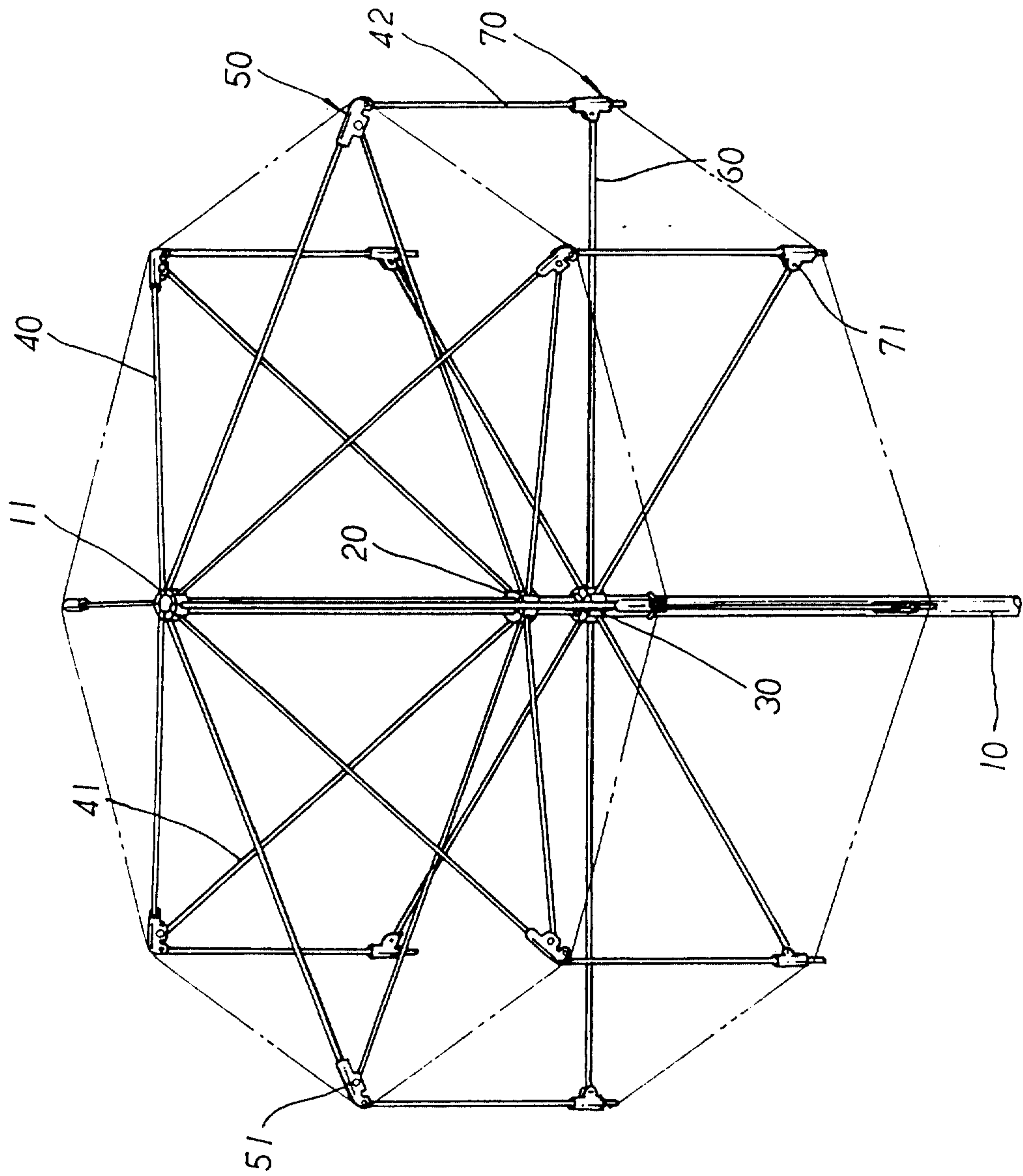


FIG. 6

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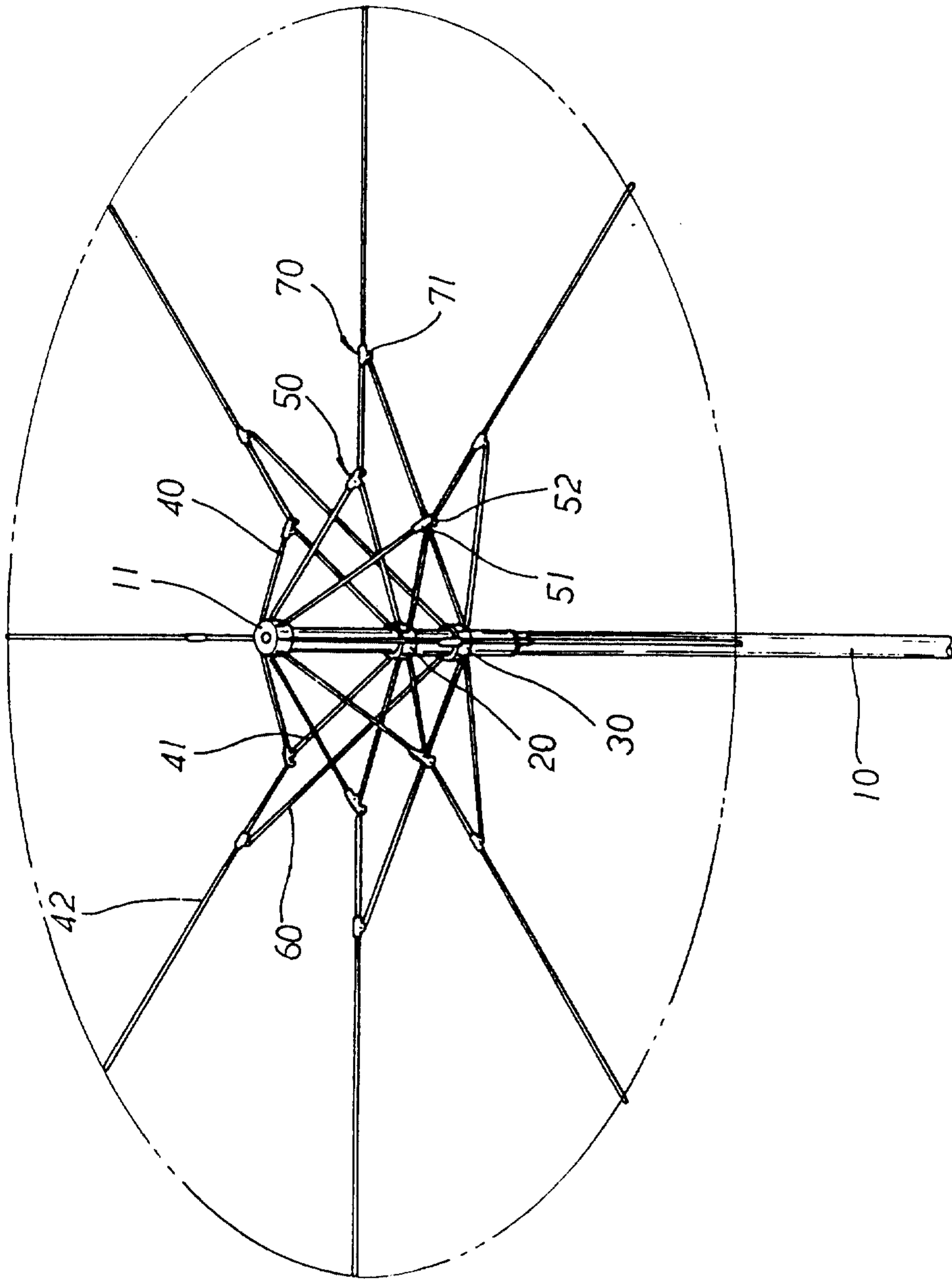


FIG. 7

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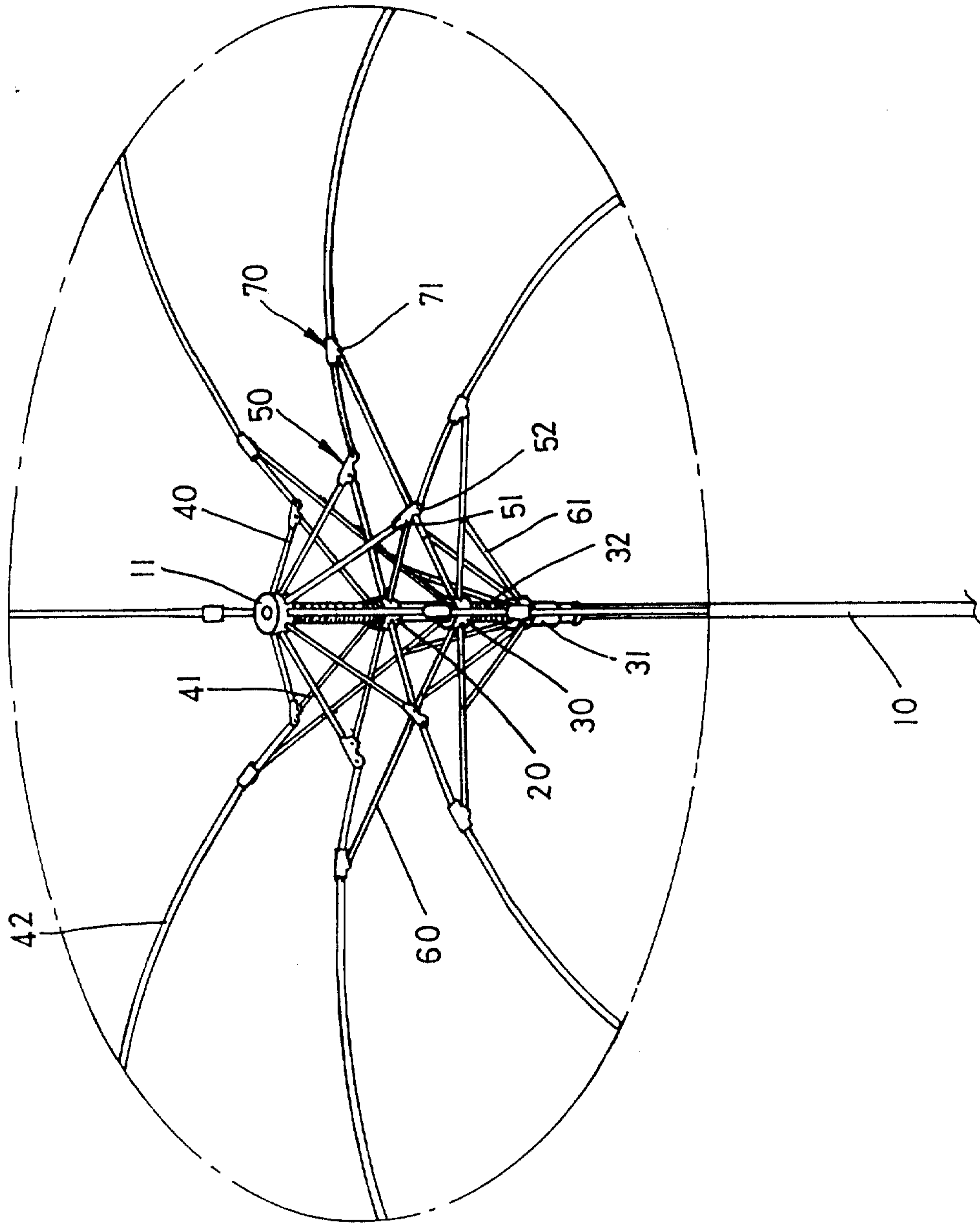


FIG. 8

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