Dec. 27, 1949 F. BRILLAS 2,492,376

UMBRELLA

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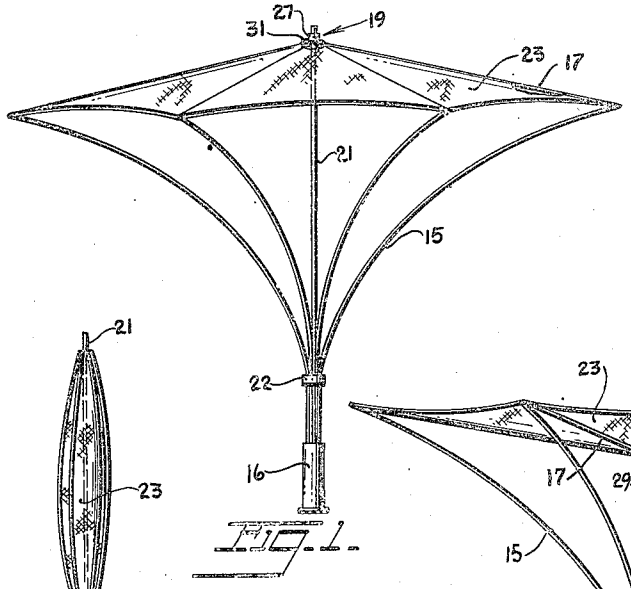


FIG. 1.

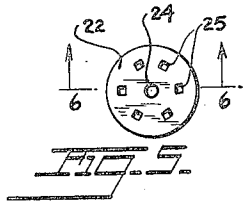


FIG. 5.

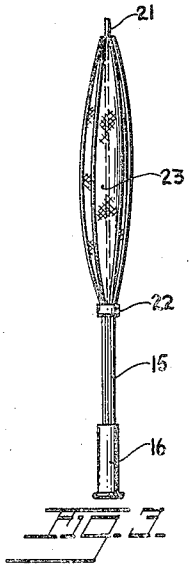


FIG. 3.

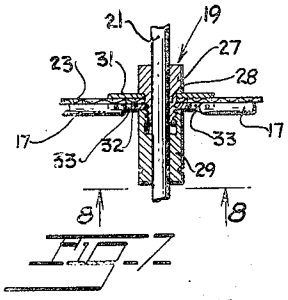


FIG. 7.

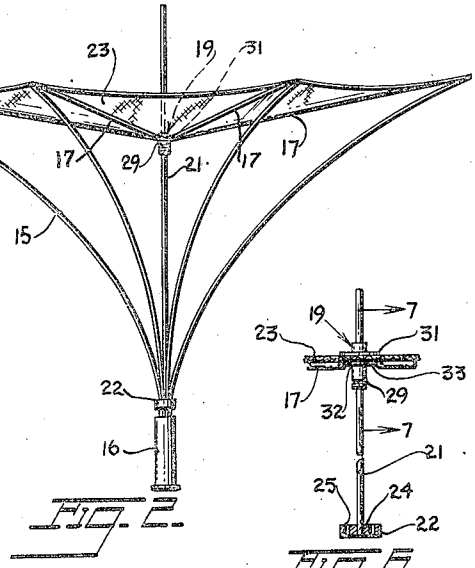


FIG. 2.

FIG. 6.

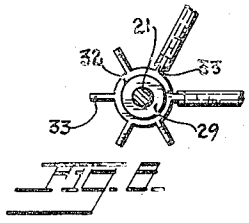


FIG. 8.

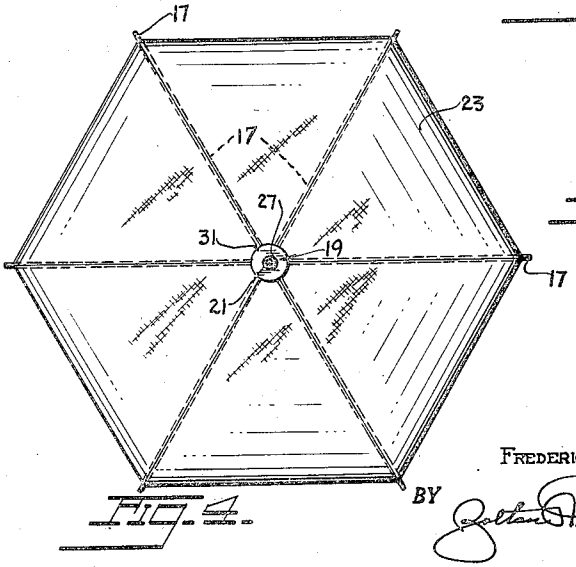


FIG. 4.

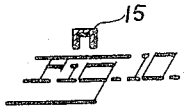


FIG. 10.

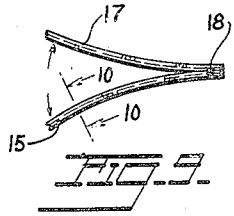


FIG. 9.

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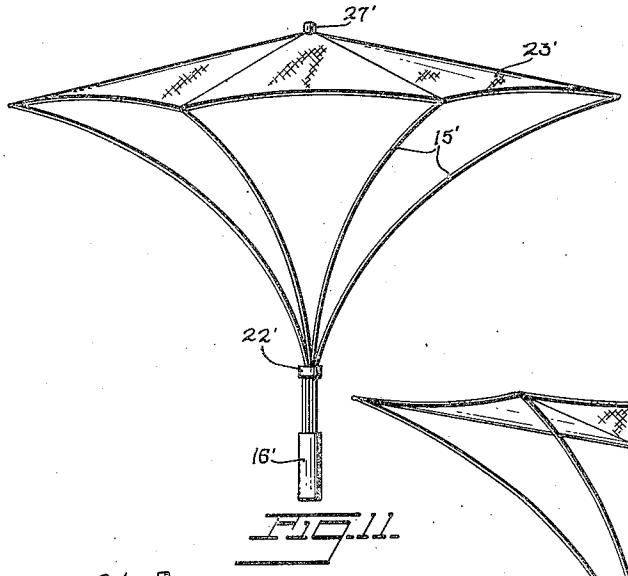


FIG. 11.

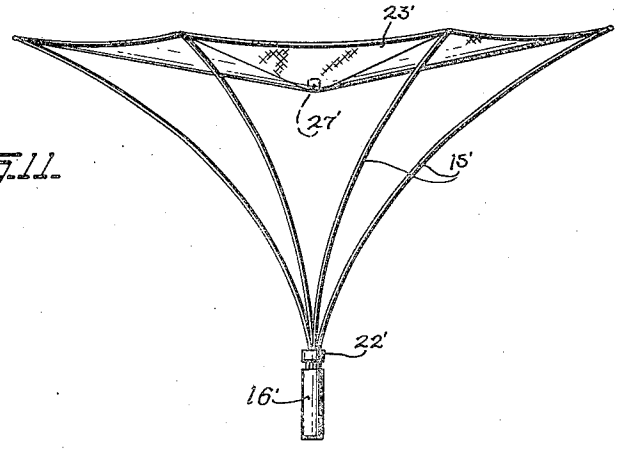


FIG. 12.

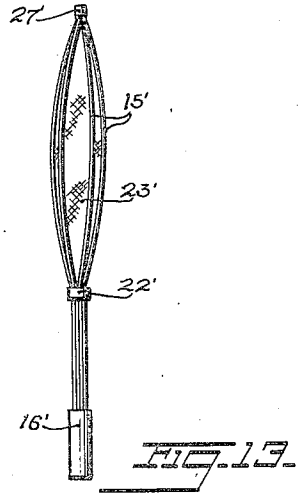


FIG. 13.

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UNITED STATES PATENT OFFICE

2,492,376

UMBRELLA

Frederick Brillas, New York, N. Y.

Application August 2, 1946, Serial No. 687,892

5 Claims. (Cl. 135—23)

1

This invention relates to umbrellas and more particularly to means for retaining the umbrella in its open and extended position.

It is an object of the present invention to simplify the construction of an umbrella and provide an arrangement wherein the possibility of the umbrella getting out of order is kept to a minimum.

It is another object of the invention to provide an umbrella wherein the forces utilized for completing the upward movement and for maintaining the umbrella in its raised position are independent of manual force once the umbrella top is forced through a center position and wherein the forces for accomplishing this result are supplied by the springiness of the vertical stretchers and the ribs themselves.

According to the invention, the umbrella comprises a handle, six vertically extending stretchers of small channel cross section circumferentially spaced from one another, ribs connected to the upper ends of the stretchers and having a springiness tending to separate themselves upwardly from the stretchers, a central structure adapted to retain the covering at a central point and the inner ends of the ribs in such fashion as to permit a flexure with respect thereto, and a ring slidable on the lower ends of the stretchers toward and away from the handle to either tighten or draw the stretchers together to give to the stretchers a force acting inwardly upon the ribs, thereby to maintain the umbrella in the raised position and upon being released to permit the easy collapse of the umbrella. In order to guide the flexible covering and the ribs upon its collapsing movement, there is provided on the slidable element or ring, a rod on which the central slidable structure can slide as the umbrella is collapsed.

Once the ring has been lowered the umbrella top can be collapsed and thereafter the ring can be raised to project the rod externally of the end of the umbrella to guard the ends of the ribs and stretchers as the umbrella is used as a walking stick. The ring slid upwardly along the stretchers will hold the umbrella in the closed position. The central structure has a portion depending from the bottom of the covering to a sufficient extent so as to provide a handle by which the umbrella top can be grasped to throw the top through a center position as upon extending the same to an open position or when closing the umbrella.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

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In the accompanying drawing forming a material part of this disclosure:

Fig. 1 is an elevational view of my umbrella in its extended or open position.

Fig. 2 is an elevational view of my umbrella collapsed at the top in readiness to effect either immediate closing of the umbrella or the final opening of the umbrella.

Fig. 3 is a view of the umbrella in its closed position with the ring for retaining the ribs extended outwardly from the handle.

Fig. 4 is a top plan view of the umbrella in its open position.

Fig. 5 is a top plan view of the sliding ring notched internally to receive and maintain the ribs against circumferential displacement.

Fig. 6 is an enlarged view of the ring and the guide rod thereon taken along the line 6—6 of Fig. 5 and looking in the direction of the arrows thereof.

Fig. 7 is an enlarged fragmentary view, in section, of the sliding parts secured to the center of the umbrella covering and showing the attachment of the ribs thereto, the view being taken along the line 7—7 of Fig. 6 looking in the direction of the arrows thereof.

Fig. 8 is a bottom sectional plan view of the slidable structure, showing the spider member to which the inner end of the ribs are attached and taken on line 8—8 of Fig. 7 looking in the direction of the arrows thereof.

Fig. 9 is a fragmentary side elevational view of one rib and adjacent stretcher illustrating how they are connected together.

Fig. 10 is a cross sectional view through one of the stretchers showing the same to be of channel section, a similar view would appear if a section were taken through one of the ribs.

Fig. 11 is an elevational view of a modified form of the invention.

Fig. 12 is an elevational view similar to Fig. 11 showing the umbrella in a partially collapsed condition.

Fig. 13 shows the modified form of the invention in its closed condition.

Referring now to the figures, there will be seen in Fig. 1 the umbrella extended to its open position and ready for use by the carrier. This umbrella comprises generally six stretchers 15 of spring material nested together at their bottom ends and secured within a handle 16. Connected to the upper ends of the stretchers 15 there are ribs 17 also of spring material tensioned to separate themselves from their respective stretchers, as illustrated in Fig. 9. Both the stretchers and the ribs are of channel section as shown in Fig. 10 and are connected to one another at their ends by disposing their web portions in back to back relation and welding them together at their ends as indicated at 18.

The ribs 17 are connected together upon a central structure 19 having an opening therethrough so that it may be slid over a guide rod 21 carrying a slidable ring 22 on the lower ends of the stretchers 15. As the ring 22 is raised upwardly so as to apply an inward force to the lower ends of the stretchers, these stretchers and the ribs are drawn inwardly. The center of the umbrella having had its slidable structure 19 on the rod 21 moved upwardly to the snapped over position for the ribs 17, an upward and inward force will be applied to the central structure 19 by the ribs 17, thereby keeping the central structure stretched upwardly and restrained only by a covering 23 fitted over the tops of the ribs and secured thereto by strings or other means to hold the same in place while permitting a certain amount of sliding movement of the covering along the ribs.

Referring now to Figs. 5 and 6, there is shown the ring 22 and its guide rod 21 thereon more in detail. The guide rod 21 is rigidly secured to the center of the ring 22 as indicated at 24 as by a tight fit connection or by welding. Circumferentially spaced about the rod 21 are six holes 25 for receiving the lower ends of the stretchers 15 for maintaining them in circumferentially spaced relationship while tightening or loosening the ring upon them. The upper end of the rod 21 will always remain centrally of the umbrella structure since it is retained against lateral displacement at its upper end by the slidable structure 19. When the ring 22 is slid up and down the rod 21 will simply slide through the slidable structure 19. If the ring 22 is moved up to the position shown in Fig. 1, a tension is applied to the stretchers 15 tending to draw them inwardly to keep the umbrella raised or lowered.

Referring now to Figs. 7 and 8, it will be seen that the slidable structure 19 comprises a top sleeve 27 with a downward threaded extension 28 to which is attached an internally threaded sleeve 29. Between the connection of the sleeves there is disposed a cap 31 of heavy flexible material secured to the covering 23 about its top opening thereof and a metal or flexible spider element 32 having spider arms 33 to which the inner ends of the ribs 17 are secured. As the two sleeves 27 and 29 are tightened together all of the parts will be rigidly retained. The ribs 17 will be permitted to flex with respect to their connection with the spider element or through the flexure of the individual spider arms. The opening through the sleeves is of somewhat greater diameter than that of the rod to provide a certain amount of looseness and free play of the slidable structure upon the rod. The sleeve 29 depends sufficiently from the spider element 32 to provide a handle by which the top structure can be drawn upon closing the umbrella or pushed outwardly upon opening the umbrella to pass the slidable structure 19 through a point of dead center which is in a plane which extends through the point of attachment of the ribs 17 to the ends of the stretchers 15.

Referring now to Fig. 2, the umbrella top is located in the position so that its top has become dished downward, which is a position intermediate the fully open position shown in Fig. 1 and the fully closed position shown in Fig. 3. If it is to be opened, the slidable structure 19 is grasped by extending a hand through the stretcher elements 15 and pushing outwardly thereon to pass the slidable structure 19 and the ends of the ribs 17 attached thereto outwardly past the dead center to extend and stretch the covering 23 thereof. At the same time the rod 21 may be grasped to slide it outwardly to move the ring 22 upward on the lower ends of the stretcher 15 so that inward pressure will be applied to the stretchers to retain the slidable structure 19 outward past the point of dead center.

If it is desired to fully close the umbrella from the position shown in Fig. 2 to that shown in Fig. 3, the slidable structure 19 is pulled downwardly along the rod so that the ribs 17 are brought parallel to the stretchers 15 and the tension of the stretchers will have become sufficient to close the stretchers 15 and ribs 17 in a clustered fashion about the upper end of the rod 21. Thereafter and to hold the ribs 17 and the stretchers 15 in their fully closed positions, the ring 22 is slid upwardly along the stretchers to the position shown in Fig. 3 so as to retain the stretchers 15 and the ribs 17 collapsed. The slidable structure 19 will then be lowered to its fully down position. The covering 23 and ribs will accordingly be folded fully inwardly.

It will now be apparent that there has been provided an umbrella of simple construction wherein the forces found in the connected ribs and stretchers is utilized for maintaining the umbrella in its raised position and the exertion necessary to effect the final opening of the umbrella merely requires sufficient force to pass the central structure of the umbrella top through a point of dead center.

In the form of the invention shown in Figs. 11 to 13 the stretchers 15' are secured directly to the outer periphery of the covering 23', while the sections which combine to form covering 23' are secured and held at a central position by cap 27'. Ring 22' serves to hold stretchers 15' in either the open or collapsed condition. Stretchers 15' are held together at their lower ends by handle 16'. This modified form of the invention makes possible a temporary type of umbrella economical to manufacture yet practical for use in case of an emergency.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. In an umbrella, a handle, a plurality of stretchers having one of their ends attached to said handle radially of the center and adjacent the periphery thereof and extended axially from said handle, a ring slidably mounted on said stretchers and normally positioned adjacent said handle, a plurality of ribs one for each of said stretchers and being slightly shorter than said stretchers, each of said ribs being extended along one side of its respective stretcher and having its one end adjacent the other end of the receptive stretcher securely attached to the other end of its respective stretcher in face contact, a central structure disposed between said stretchers and to which the other ends of said ribs are pivotally attached to be extendible radially therefrom, whereby said central structure may be forced axially away from said handle causing said ribs to pivot and extend radially outward from said central structure and spread the other ends of said stretchers until said central structure snaps

past the other ends of said stretchers after which said ring is urged away from said handle on said stretchers to draw inward on the other ends of said stretchers and hold said ribs and central structure extended.

2. In an umbrella, a handle, a plurality of stretchers having one of their ends attached to said handle radially of the center and adjacent the periphery thereof and extended axially from said handle, a ring slidably mounted on said stretchers and normally positioned adjacent said handle, a plurality of ribs one for each of said stretchers and being slightly shorter than said stretchers, each of said ribs being extended along one side of its respective stretcher and having its one end adjacent the other end of the respective stretcher securely attached to the other end of its respective stretcher in face contact, a central structure disposed between said stretchers and to which the other ends of said ribs are pivotally attached to be extendible radially therefrom, whereby said central structure may be forced axially away from said handle causing said ribs to pivot and extend radially outward from said central structure and spread the other ends of said stretchers until said central structure snaps past the other ends of said stretchers after which said ring is urged away from said handle on said stretchers to draw inward on the other ends of said stretchers and hold said ribs and central structure extended, and a guide rod attached at one end to said ring and having its other end slidably extended through said central structure for guiding axial movements of said central structure.

3. In an umbrella, a handle, a plurality of stretchers having one of their ends attached to said handle radially of the center and adjacent the periphery thereof and extended axially from said handle, a ring slidably mounted on said stretchers and normally positioned adjacent said handle, a plurality of ribs, one for each of said stretchers and being slightly shorter than said stretchers, each of said ribs being extended along one side of its respective stretcher and having its one end adjacent the other end of the respective stretcher securely attached to the other end of its respective stretcher in face contact, a central structure disposed between said stretchers and to which the other ends of said ribs are pivotally attached to be extendible radially therefrom, whereby said central structure may be forced axially away from said handle causing said ribs to pivot and extend radially outward from said central structure and spread the other ends of said stretchers until said central structure snaps past the other ends of said stretchers after which said ring is urged away from said handle on said stretchers to draw inward on the other ends of said stretchers and hold said ribs and central structure extended, said central structure comprises a sleeve formed with a threaded extension facing the handle, a second sleeve internally threaded for receiving said threaded extension of said first sleeve, and a spider clamped between said sleeves and to which the said other ends of said ribs are pivotally attached.

4. In an umbrella, a handle, a plurality of stretchers having one of their ends attached to said handle radially of the center and adjacent the periphery thereof and extended axially from said handle, a ring slidably mounted on said stretchers and normally positioned adjacent said handle, a plurality of ribs, one for each of said stretchers and being slightly shorter than

said stretchers, each of said ribs being extended along one side of its respective stretcher and having its one end adjacent the other end of the respective stretcher securely attached to the other end of its respective stretcher in face contact, a central structure disposed between said stretchers and to which the other ends of said ribs are pivotally attached to be extendible radially therefrom, whereby said central structure may be forced axially away from said handle causing said ribs to pivot and extend radially outward from said central structure and spread the other ends of said stretchers until said central structure snaps past the other ends of said stretchers after which said ring is urged away from said handle on said stretchers, to draw inward on the other ends of said stretchers and hold said ribs and central structure extended, said central structure comprises a sleeve formed with a threaded extension facing the handle, a second sleeve internally threaded for receiving said threaded extension of said first sleeve, and a spider clamped between said sleeves and to which the said other ends of said ribs are pivotally attached, said sleeves and spider having their peripheral surfaces flush, and said spider being formed with short arms extended radially beyond said flush surfaces and to which the said other ends of said ribs are pivotally attached.

5. In an umbrella, a handle, a plurality of stretchers having one of their ends attached to said handle radially of the center and adjacent the periphery thereof and extended axially from said handle, a ring slidably mounted on said stretchers and normally positioned adjacent said handle, a plurality of ribs, one for each of said stretchers and being slightly shorter than said stretchers, each of said ribs being extended along one side of its respective stretcher and having its one end adjacent the other end of the respective stretcher securely attached to the other end of its respective stretcher in face contact, a central structure disposed between said stretchers and to which the other ends of said ribs are pivotally attached to be extendible radially therefrom, whereby said central structure may be forced axially away from said handle causing said ribs to pivot and extend radially outward from said central structure and spread the other ends of said stretchers until said central structure snaps past the other ends of said stretchers after which said ring is urged away from said handle on said stretchers to draw inward on the other ends of said stretchers and hold said ribs and central structure extended, said ring being formed with a hole for each of said stretchers, and said holes being disposed radially of the center of said ring and arranged in a circle concentric with the center of said ring.

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