Dec. 29, 1942. N. E. LUCAS 2,306,706

UMBRELLA

Filed July 29, 1941

Fig. 3.

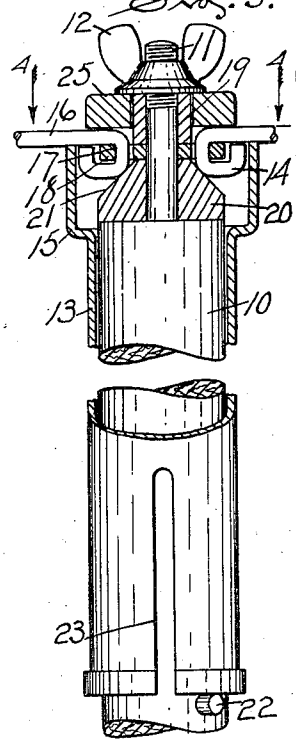


Fig. 1.

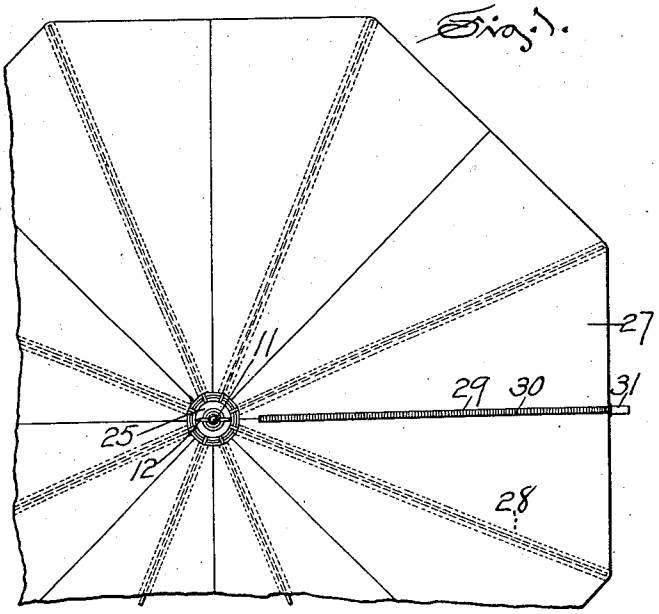


Fig. 2.

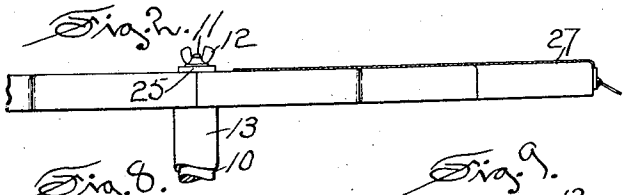


Fig. 6.

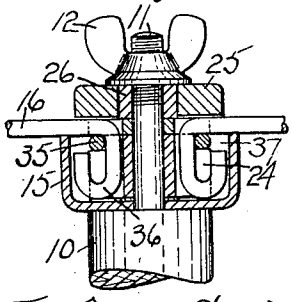


Fig. 8.

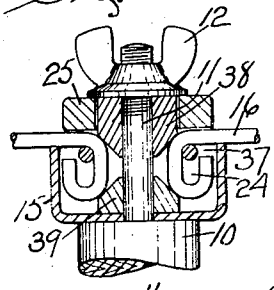


Fig. 9.

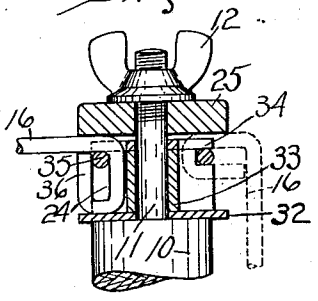


Fig. 7.

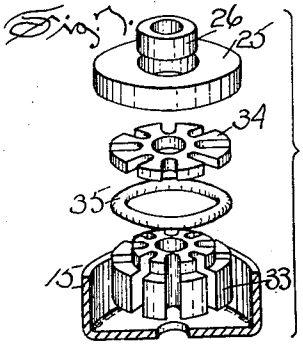


Fig. 5.

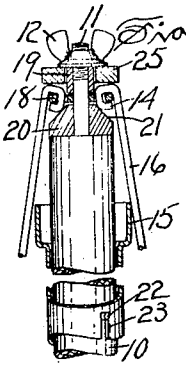
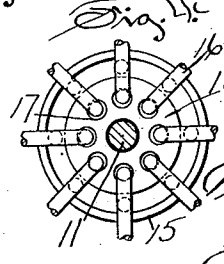


Fig. 4.



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UNITED STATES PATENT OFFICE

2,306,706

UMBRELLA

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Application July 29, 1941, Serial No. 404,463

16 Claims. (Cl. 135—20)

My invention relates to the class of devices which are employed for sheltering purposes as against the sun, rain, and other elements, and an object of the invention, among others, is the production of a device of this type that shall be extremely sturdy and rigid, one that may be readily raised and unfolded or lowered and placed in a folded condition, and one that when raised and unfolded shall be extremely stable.

One form of an umbrella embodying my invention and in the construction and use of which the objects herein set out, as well as others, may be attained is illustrated in the accompanying drawing, in which—

Figure 1 is a plan view showing a portion of my improved umbrella in its raised condition.

Figure 2 is an edge view of the same.

Figure 3 is a view in central vertical section of the upper end of the rod or stick and parts attached thereto and broken away in central section to show construction.

Figure 4 is a view of said parts on a plane denoted by the broken line of 4—4 of Fig. 3.

Figure 5 is a view similar to Fig. 3 on reduced scale but illustrating the supporting sleeve lowered to release the parts.

Figure 6 is a view of the upper end of a stick and parts attached thereto cut away in central vertical section to show construction of a modification.

Figure 7 is a view of the structure of Fig. 6 but with the parts separated in relative positions for assembly.

Figure 8 is a view similar to Fig. 6 but showing another modification.

Figure 9 is a view similar to Fig. 8 but showing still another modification.

While my improved umbrella forming the subject matter of this application is not confined to the uses to which it may be put, it is particularly designed for use as a "beach umbrella" or shade and as such uses are liable to be under somewhat severe strains the parts are constructed in a rigid and sturdy manner, the numeral 10 denoting in the drawing herein the rod or stick which is preferably composed of wood although metal may be employed, and which, owing to the severe conditions that may be encountered, is of somewhat larger diameter as compared with the rod or stick of an ordinary umbrella or shade. A post 11 projects from the end of the stick and is threaded at its outer end to receive a thumb nut 12 or similar fastening. A rib supporting sleeve 13 is slidably mounted on the upper end of the rod or stick 10, the upper end of this sleeve being formed into cup shape to constitute a rib support 15 for ribs 16 the ends of which are formed into loops 14 pivotally engaged with holes 17 in an anchoring plate 18 loosely mounted upon the post 11, as shown in Fig. 3. A bushing 19 loosely encircles the post 11 between the thumb nut 12 and the anchoring plate 18, this plate resting against the end of a bearing tip 20 seated upon the end of the stick 10. This tip is composed of some substance, as fibrous material or extremely hard wood that will resist wear and it is beveled at 21 to afford a bearing for the loops 14 of the ribs 16 during the pivotal actions of the latter as the umbrella is raised and lowered. The sleeve 13 is held in its raised position by a pin 22 to support the ribs when the umbrella is open, a slot 23 in the sleeve permitting the latter to be lowered to close the umbrella when the slot and pin register one with the other in a manner that will be readily understood. A retaining washer 25 is loosely mounted on the bushing 19 in position to be placed against the loops 14 on the ribs 16, said bushing being of a length slightly greater than the distance from the upper surface of the anchoring plate 18 to the upper surface of the washer 25 so that when the thumb screw 12 is in engagement with the bushing 19 the washer will be loose and free to turn so that binding action upon the ribs 16 is prevented.

A cover 27 may be fastened upon the ribs 16 in any suitable manner common to umbrella construction, as herein shown sheaths 28 composed of fabric being employed extending radially along the under side of the cover and into which the ribs extend, the outer ends of the sheaths being preferably closed so that the ribs will not project out at these ends. However, as this feature of itself comprises no part of the present invention a more complete and detailed showing and description are omitted herein.

The cover 27 is divided radially on one side creating an opening 29 which is closed by a "zipper" fastening 30 of well-known construction and which has been patented.

When the umbrella is in its folded condition the slide 31 of the "zipper" fastener will be at the inner end of the opening 29 and the thumb nut 12 will be loose and the ribs with the cover thereon will be in their closed positions against the stick or rod. To spread or raise the umbrella it may be placed upside down with the thumb nut 12 resting upon the floor or ground. The ribs together with the cover will fall into open position and therefore be loosely spread.

The sleeve 13 is now moved into holding posi-

tion, as shown in Fig. 3 and turned to disengage the pin 22 from the slot 23 and thereby secure the sleeve to hold the ribs extended. The stick may now be turned and the thumb nut 12 resting against the floor will be held from turning and consequently the parts will be secured in place. In this position the ribs while being extended are loosely engaged with the anchoring plate 18 and the edge of the rib support 15 by reason of the looseness of the retaining washer 25. The slide 31 of the zipper fastener 30 now being moved outwardly the cover 27 will be made taut and all of the parts will now be tightly secured with the umbrella in its open position. To close the umbrella the steps in the operation just described are reversed.

In the structure shown in Figs. 6 and 7 the parts are quite similar to those just described and the same numerals are therefore applied to the similar parts. In this form of the device the sleeve 13 of the structure shown in Fig. 3 is omitted and the rib support 15 is separately formed and seated against the end of the stick 10. A rib holder is mounted upon the post 11, this holder comprising a notched hub 33, a notched retaining disk 34, and a retaining ring 35. One end of the hub is reduced in size and the ring is placed upon this reduced end and in a groove that is closed on one side by the disk 34 as shown in Figs. 6 and 7. The retaining washer 25 is employed in this form of the device and the bushing 26 is used, this bushing being located in the hole in the washer and seated against the disk 34 the latter being seated upon the hub 33, the thickness comprising the hub, the disk and the bushing being slightly greater than the distance between the inner surface of the bottom of the rib support 15 and the top of the retaining washer 25 so that when, as hereinbefore explained, the thumb nut 12 is turned against the bushing the washer 25 will be somewhat loose to allow a slight play of the ribs, and a washer may be placed under the hub 33 if desired to accomplish this purpose and as shown in Fig. 6.

The method of raising and lowering the umbrella comprising the structure of Figs. 6 and 7 is similar to that hereinbefore described, when the umbrella is closed the slide 31 of the zipper fastener being at the inner end of the opening or slit 29 and the thumb nut 12 being unscrewed thereby causing all of the parts at this end of the stick to be in a loose condition, the ribs will lie along the stick. The umbrella may now be inverted and the thumb nut 12 placed upon the floor when the ribs will automatically fall into the open position as shown in Fig. 6. The stick 10 being now turned to tighten the thumb nut 12 which is held against the floor, tightening of said thumb nut will cause the ribs 16 to be maintained in an extended position, but all of the parts at this end of the stick, by reason of the washer 25 being slightly loose, are in a semi-loose condition, that is, they are not taut. The slide 31 being now moved to the edge of the cover thereby closing the opening 29, all of the parts are caused to be tightened and placed in a taut condition, the tightening of the cover by means of the slide accomplishing this purpose.

The ribs 16 have loops 36 with elongated openings 24 within which the retaining ring 35 is engaged, gaps 37 into the elongated openings 24 being provided to receive the edge of the rib support when the ribs are turned to their lowered positions.

The operation of raising and lowering the umbrella is similar to that hereinbefore described with respect to the structure of Figure 3 except that the rib support 15 does not have to be positioned as it is continually in place.

The structure shown in Fig. 8 is similar to that shown in Fig. 6 with the exception that the loops of the ribs 16 are held between the facing beveled surfaces of hubs 33—39, the latter being seated against the bottom of the cup-shaped rib support 15, as shown in Fig. 8 of the drawing. It is contemplated that either one only of these hubs 33—39 may be employed, at the top as shown in this figure or at the bottom as shown in Fig. 3. These loops have elongated openings 24 and gaps 37 as in the structure of Fig. 6.

The structure of Fig. 9 is similar to those hereinbefore described with the exception that the loops 36 of the ribs are clamped between the washer 25 and a plate 32 seated against the end of the stick 10, said loops being pivotally attached to a retaining ring 35 seated in an annular groove formed by a reduced portion of the notched hub 33 of the disk 34, as in the structure shown in Figs. 6 and 7.

The operation of raising and lowering the structure shown in Figs. 8 and 9 is substantially the same as that hereinbefore described with respect to the structure of Figs. 6 and 7, the parts operating in substantially the same manner to open the umbrella and being secured in the open position by means of a tightening or thumb nut 12. It will be understood that when the umbrella has been opened a reversal of operation will be employed to close it.

In accordance with the provisions of the patent statutes I have described the principles of operation of my invention, together with the device which I now consider to represent the best embodiment thereof; but I desire to have it understood that the device shown is only illustrative and that the invention may be carried out by other means and applied to uses other than those above set out.

I claim:

1. An umbrella including a supporting stick, a rib anchoring member supported by said stick at the end thereof, ribs flexibly attached to said anchoring member, a cover attached to said ribs, an opening extending radially along said cover, and a slidable closing member attached to said cover to close said opening and thereby tighten the frame comprising said ribs and the anchoring means therefor.

2. An umbrella including a supporting stick, a rib anchoring member supported by said stick at the end thereof, ribs pivotally attached to said anchoring member, a cover attached to said ribs, an opening extending radially along said cover, and a slidable closing member attached to said cover to close said opening and thereby tighten the frame comprising said ribs and the anchoring means therefor.

3. An umbrella including a supporting stick, a rib anchoring member supported by said stick at the end thereof, ribs pivotally attached to said anchoring member, a cover attached to said ribs, an opening extending radially along the cover from the outer edge thereof, and a slidable closing member affixed to said cover to close said opening and thereby tighten the frame comprising said ribs and the anchoring means therefor.

4. An umbrella including a supporting stick, a rib anchoring member supported by said stick at the end thereof, ribs pivotally mounted on said anchoring member for positioning in closed or

open conditions, retaining means engageable with said ribs to retain them when in opened positions, a cover attached to said ribs, an opening extending radially along said cover, and a slidable closing member attached to said cover to close said opening and thereby tighten the frame comprising said ribs and the anchoring means therefor.

5. An umbrella including a supporting stick, a rib anchoring member supported by said stick at the end thereof, ribs pivotally mounted on said anchoring member for positioning in closed or open conditions, said ribs each having a straight retaining surface, retaining means engageable with said retaining surfaces to retain the ribs in opened positions, a cover attached to said ribs, an opening extending radially along said cover, and a slidable closing member attached to said cover to close said opening and thereby tighten the frame comprising said ribs and the anchoring means therefor.

6. An umbrella including a supporting stick, a rib anchoring member supported by said stick at the end thereof, ribs pivotally mounted on said anchoring member and having slotted loops engaged with pivots on said anchoring member for movement into open or closed positions, a cover attached to said ribs, an opening extending radially along said cover, and a slidable closing member attached to said cover to close said opening and thereby tighten the frame comprising said ribs and the anchoring means therefor.

7. An umbrella including a supporting stick, a rib anchoring member supported by said stick at the end thereof and having guide slots therein, ribs pivotally attached to said anchoring member by loops located in said guide slots for movement of said ribs into opened or closed positions, a cover attached to said ribs, an opening extending radially along said cover, and a slidable closing member attached to said cover to close said opening and thereby tighten the frame comprising said ribs and the anchoring means therefor.

8. An umbrella including a supporting stick, a rib anchoring member supported by said stick at the end thereof, a cup shaped member supported on said stick and having an upwardly extending supporting flange, ribs pivotally attached to said anchoring member and extending across said flange when in their opened positions, means for retaining the ribs in opened positions, a cover attached to said ribs, an opening extending radially along said cover, and a slidable closing member attached to said cover to close said opening and thereby tighten the frame comprising said ribs and the anchoring means therefor.

9. An umbrella including a supporting stick, a supporting plate mounted on said stick, a retaining disk spaced from said supporting plate, an anchoring member located in the space between said plate and disk, ribs pivotally attached to said anchoring member between said plate and disk and having straight surfaces for use in retaining the ribs in open positions, means for moving said retaining disk into engagement with the retaining portions of said ribs, a cover attached to said ribs, an opening extending radially along said cover, and a slidable closing member attached to said cover to close said opening and thereby tighten the frame comprising said ribs and the anchoring means therefor.

10. An umbrella including a supporting stick, a rib anchoring member supported by said stick at the end thereof, a hub supported on said stick and having a beveled surface opposite said anchoring member, ribs pivotally mounted on said anchoring member and having loops engageable with said beveled surface, a retaining disk engageable with said loops to retain them in engagement with said beveled surface, means for moving the retaining disk against said loops, a cover attached to said ribs, an opening extending radially along said cover, and a slidable closing member attached to said cover to close said opening and thereby tighten the frame comprising said ribs and the anchoring means therefor.

11. An umbrella including a supporting stick, a rib anchoring member supported by said stick at the end thereof, ribs flexibly attached to said anchoring member, a cover having means engaged with said ribs to secure the cover to the ribs, an opening extending radially along said cover from the edge thereof, and a slidable closing member attached at the edges to said opening to close the opening and thereby maintain the ribs and cover in opened positions and thereby tighten the frame comprising said ribs and the anchoring means therefor.

12. An umbrella including a supporting stick, a rib anchoring member supported by said stick at the end thereof, a rib supporting sleeve mounted for lengthwise sliding movement upon said stick, means for maintaining said sleeve to support the ribs in raised positions, a cup-shaped member supported by the sleeve at one end thereof, ribs pivotally attached to said anchoring member and extending across the edge of said cup-shaped member when in their opened positions, means for retaining the ribs in open positions, a cover attached to said ribs, an opening extending radially across said cover, and a slidable closing member attached to said cover to close said opening and thereby tighten the frame comprising said ribs and the anchoring means therefor.

13. An umbrella including a supporting stick, a rib anchoring member supported by said stick at the end thereof, a rib supporting sleeve mounted for lengthwise sliding and rotatable movement upon said stick and having a lengthwise slot therein, a stop projecting from the stick in position to enter said slot for lowering movement of the sleeve and to engage the end of the sleeve to maintain it in rib extended supporting position, ribs pivotally attached to said anchoring member and extending across the edge of said rib supporting sleeve when in their opened positions, means for retaining the ribs in open positions, a cover attached to said ribs, an opening extending radially along said cover, and a slidable closing member attached to said cover to close said opening and thereby tighten the frame comprising said ribs and the anchoring means therefor.

14. An umbrella including a supporting stick, a rib anchoring member supported by said stick at the end thereof, a hub supported on said stick and having a beveled surface extending around the hub opposite said anchoring member, ribs pivotally mounted on said anchoring member and having loops engageable with said beveled surface, a rib supporting member to support said ribs in extended positions, a retaining disk engageable with said loops to hold them against said rib supporting member and thereby engage them with said beveled surface, means for holding the retaining disk loosely against said loops, a cover attached to said ribs, an opening extending radially along said cover, and a slidable closing member attached to said cover to close said opening and thereby tighten the frame comprising said ribs and the anchoring means therefor.

15. An umbrella including a supporting stick, a rib anchoring member supported by said stick at the end thereof, ribs pivotally mounted on said anchoring member by means of loops engaged with said member, a hub supported on said stick underneath said loops and having a beveled surface extending around the hub opposite said anchoring member, a rib supporting member to support said ribs in extended positions, a retaining disk engageable with said ribs to engage the loops thereon with said rib supporting member and thereby with said beveled surface, means for engaging the clamping disk against said loops, a cover attached to said ribs, an opening extending radially along said cover, and a slidable closing member attached to said cover to close said opening and thereby tighten the frame comprising said ribs and the anchoring means therefor.

16. An umbrella including a supporting stick, a rib anchoring member supported by said stick at the end thereof, ribs pivotally mounted on said anchoring member and having loops engaged with said anchoring member, a hub supported on said stick above said loops and having a beveled surface extending around the hub opposite said anchoring member, a rib supporting member to support said ribs in extended positions, a retaining disk movable against said loops to engage them against the rib supporting member, means for moving said retaining disk and said hub against the loops to hold the ribs in extended positions, a cover attached to said ribs, an opening extending radially along said cover, and a slidable closing member attached to said cover to close said opening and thereby tighten the frame comprising said ribs and the anchoring means therefor.

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