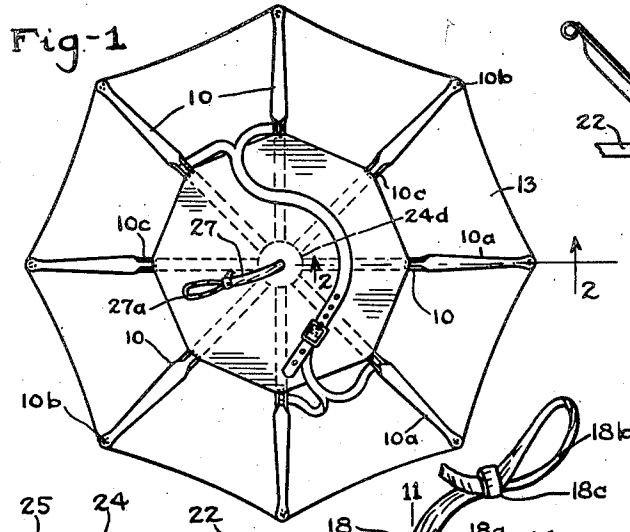
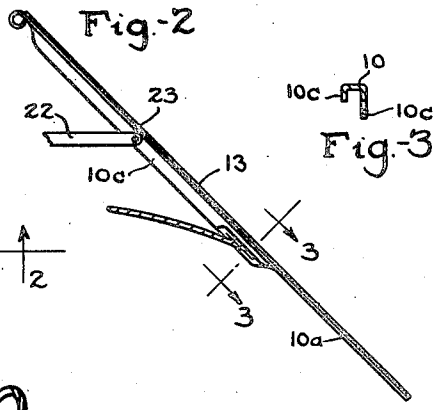
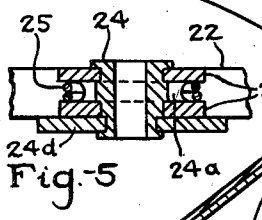
May 8, 1951 L. D. MYERS 2,551,963

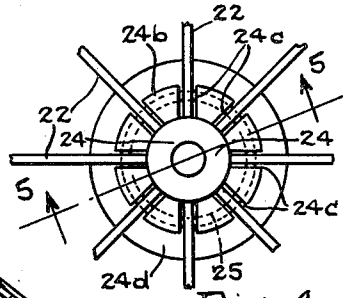
UMBRELLA STRUCTURE

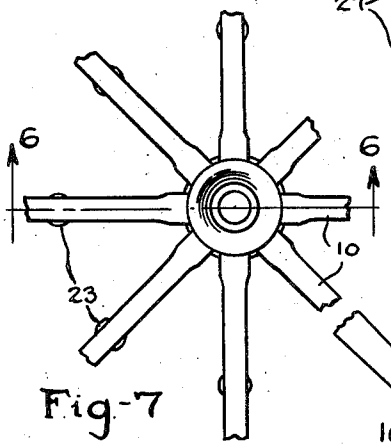
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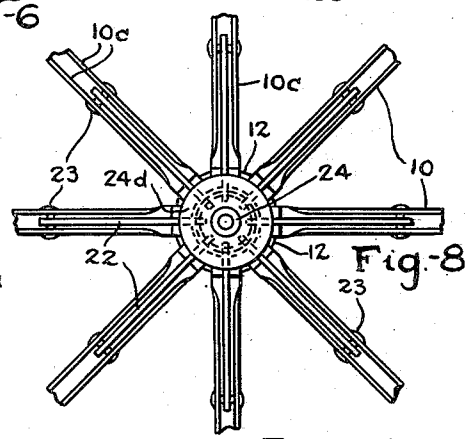


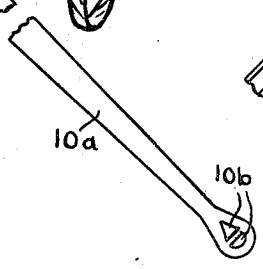












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UMBRELLA STRUCTURE

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2 Claims. (Cl. 135—20)

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This invention relates to an umbrella structure. While the invention is applicable to umbrellas of various types, it particularly is designed for use in such an umbrella as disclosed and claimed in applicant's prior Patent No. 2,140,647, granted December 20, 1938.

It is an object of this invention to provide an umbrella having a plurality of ribs arranged in radial circumferentially spaced positions about a central axis and adapted to support an umbrella cover, together with novel and efficient means for holding said ribs in diverging position with said umbrella open, together with means for easily and quickly moving said ribs together to close said umbrella.

It is a further object of the invention to provide an umbrella structure comprising a plurality of radially disposed and circumferentially spaced ribs adapted to support an umbrella cover, a member to which the adjacent ends of said ribs are swingingly connected, a plurality of links swingingly connected respectively to said ribs, a second member to which the inner ends of said links are swingingly connected, said second member carrying means adapted to be engaged by the sides of said links when the same are disposed approximately at right angles to said axis to prevent converging movement of said ribs and thus hold said umbrella in open position.

It is more specifically an object of the invention to provide an umbrella structure comprising a plurality of ribs arranged in radially and circumferentially spaced positions about a central axis, a member to which the adjacent ends of said links are swingingly connected, said member preferably having a central opening therethrough, a plurality of links respectively swingingly connected to said ribs at a comparatively short distance from the adjacent ends thereof, a second member to which the inner ends of said links are swingingly connected, said second member preferably having a central opening therethrough, and a plate movable with said second member adapted to be engaged by the lower sides of said links when the same are in positions approximately at right angles to said axis to prevent converging movement of said ribs and thus hold said umbrella in open position.

It is still another object of the invention to provide such a structure as set forth in the preceding paragraph, together with a third member secured to said second member and extending downwardly therefrom, which latter member may be in the form of a tape or cord and may extend through said second member, and a fourth member secured to said first mentioned member, which fourth member may be in the form of a tape or cord and may have means extending through said first mentioned member to connect the same thereto whereby when said third and

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fourth members are held and moved in opposite directions said second member will be moved downwardly and swinging movement of said links and converging movements of said ribs permitted to close said umbrella.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawings in which like reference characters refer to similar parts throughout the several views and in which:

Fig. 1 is a bottom plan view of an umbrella of the type shown in said patent;

Fig. 2 is a vertical section taken substantially on line 2—2 of Fig. 1, as indicated by the arrows;

Fig. 3 is a vertical section taken substantially on line 3—3 of Fig. 2, as indicated by the arrows;

Fig. 4 is a partial end view as seen substantially from line 4—4 of Fig. 6;

Fig. 5 is a partial vertical section taken on line 5—5 of Fig. 4, as indicated by the arrows;

Fig. 6 is a partial vertical section taken substantially on line 6—6 of Fig. 7, as indicated by the arrows;

Fig. 7 is a partial top plan view of Fig. 6 with certain parts removed; and

Fig. 8 is a partial bottom plan view of Fig. 6.

Referring to the drawings an umbrella structure is shown comprising a plurality of ribs 10 arranged in radial and circumferentially spaced relation about a central axis 11—11, as indicated in Fig. 6. While ribs 10 could be variously formed, in the embodiment of the invention illustrated they are shown as made from strips of metal having their remote ends 10*a* flat and provided with apertures 10*b* and having their upper or adjacent portions 10*c* in the form of channels with the sides directly inwardly. The upper or adjacent portions of ribs 10 are flat transversely and have their ends bent around a ring 12 so as to be swingingly connected thereto. Ribs 10 are adapted to support a fabric cover 13 of the umbrella shaped as shown in Fig. 1, and which will be connected by suitable stitching in the apertures 10*b*. A top piece of fabric 14 overlies the upper open end of cover 13 and will be stitched thereto. Ring 12 and the adjacent ends of ribs 10 are carried in a member 15 comprising upper and lower plates 15*a* having central openings and secured together by an annular member 16 having radially extending flanges overlying the remote sides of said plates. Plates 15*a* are bent into diverging relation at their outer portions to form an annular channel in which ring 12 and the adjacent ends of ribs 10 are disposed. A member 18 which may be in the form of a flexible cord or tape is connected to member 15 and while it could be connected in any suitable manner, it is shown as extending through the eyeletted end of a connecting pin 19 and being

connected to said end by a knot 18*a* formed thereon. Pin 19 has a portion extending through the opening in member 16 and through a washer 20 disposed below member 16, member 19 being provided with a head 19*a* extending about the opening in washer 20. Member 18, as shown in Fig. 6, extends through a slit in member 14 and is preferably formed with a loop 18*b* at its end which can be done by forming therein the knot 18*c*. Secured to each of the ribs 10 a comparatively short distance from their adjacent ends, is a link 22. Links 22 are swingingly connected to ribs 10 by pivot members 23 extending through the sides of portions 10*c*. A member 24 is provided having an annular groove 24*a* formed therein between spaced plates or washers 24*b* which are respectively secured in grooves in member 24. A ring 25, which may be formed as shown by a plurality of strands of a small rod or wire, is disposed in groove 24*a*. Plates 24*b* are provided with slots 24*c*, as shown in Fig. 4, and the adjacent ends of links 22 are disposed respectively in slots 24*c* and are apertured to have passed therethrough the ring 25. The inner ends of links 22 are thus swingingly connected to ring 25 and member 24. Member 24 also has secured thereto a third plate 24*d*, the same being suitably secured in an annular groove in said member below the lower plate 24*b*. Plate 24*d* is of a diameter to be contacted by the lower sides of the links 22 when they are in positions approximately at right angles to axis 11—11. Member 24 has a central opening therethrough and a member 27 which may be in the form of a tape or cord is connected to member 24, the same being shown as passing through the central opening therein and being provided with a knot 27*a* at its upper end, which knot is too large to pass through said opening and thus engages the top of member 24. Member 27 extends downwardly centrally for some distance and is preferably formed into a loop 27*a* at its lower end which may be produced by forming the knot 27*b* in member 27.

In operation when the umbrella is to be opened, member 24 will be pushed upwardly toward the top member 15. This will move links 22 outwardly and when the links reach a position slightly above the position at which they are right angles to axis 11—11, the lower sides thereof engage plate 24*d*, as shown in Fig. 6. The links 22 are then slightly over the dead center position and further upward swinging movement of the inner ends of the links is prevented by plate 24*d*. The ribs 10 are now held in their outer positions with the umbrella in open position and the ribs cannot be moved together by any pressure inwardly thereon. The links 22 thus lock slightly across the right angle or dead center position and the umbrella is held in open position. When it is desired to close the umbrella this can very easily and quickly be done by pulling downward on member 27. This pulls downwardly on member 24 and swings the inner ends of links 22 downwardly thus permitting the ribs 10 to converge and the umbrella to close. Member 15 must be held stationary relatively to member 24 and while this could be done by holding one of the ribs 10 or otherwise, it most conveniently is done by holding member 18 in one hand and pulling on member 27 with the other hand. The umbrella is in this manner very quickly brought to closed position.

From the above description it will be seen that I have provided a very simple, efficient and easily operated means for moving the umbrella to open position and locking it in such open position. Means are also provided which can be very quickly and easily operated for moving the umbrella to closed position. The parts of the device are comparatively few and simple and can be easily and inexpensively made. The device has been amply demonstrated in actual practice, found to be very successful and efficient and is being commercially made.

It will of course be understood that various changes may be made in the form, details, arrangement and proportions of the parts, without departing from the scope of applicant's invention, which generally stated, consists in a device capable of carrying out the objects above set forth, in the parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:

1. An umbrella structure having in combination, a plurality of ribs arranged in radially and circumferentially spaced relation about a central axis, an upper central member to which said ribs are pivotally connected having a central opening therethrough, a cover supported on and disposed when extended in a surface defined by the top surfaces of said ribs, a plurality of links pivotally connected respectively at intermediate points on said ribs, a lower central member having a central opening therethrough, means pivotally connecting the inner ends of said links to said lower member, said lower member being movable downwardly away from said upper member, the inner ends of said links being movable downwardly therewith, a plate carried by said lower member forming a stop for the inner ends of said ribs when extending slightly upwardly at their inner ends, a third member secured to said upper member and having a portion extending through said opening therein adapted to be grasped by the operator and a flexible member extending through said opening in said lower member and having means engaging the top thereof, said flexible member being adapted to be grasped by the operator simultaneously with said third member to move said lower member downwardly to swing said ribs downwardly and toward each other to extend said structure.

2. The structure set forth in claim 1, said portion of said third member being flexible and said flexible member depending from said lower member and having a lower handle portion.

LLOYD D. MYERS.

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