Dec. 7, 1937. H. E. RATHBUN 2,101,510

UMBRELLA STRUCTURE

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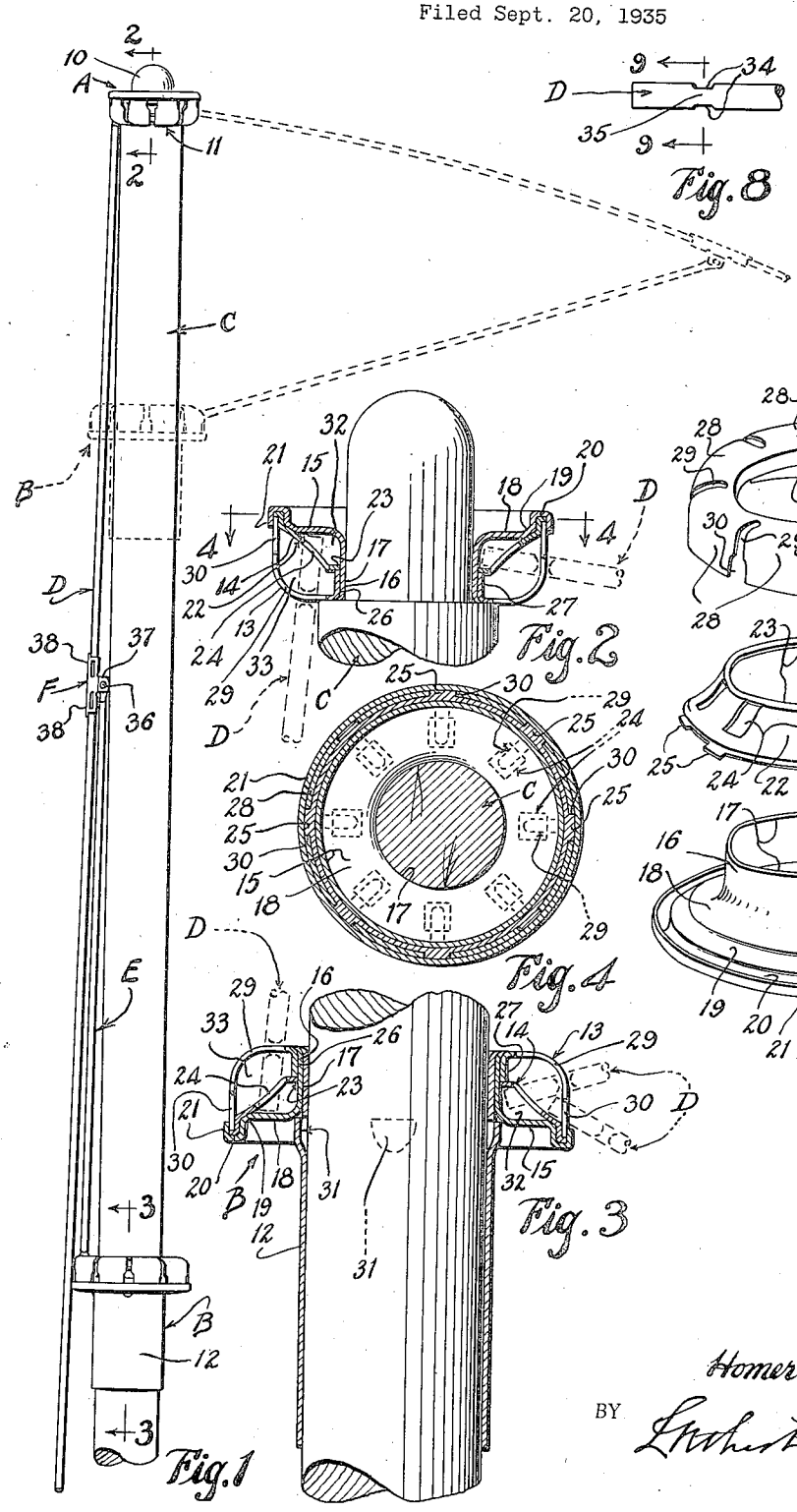


Fig. 1

Fig. 8

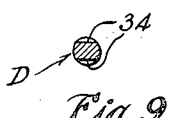


Fig. 9

Fig. 2

Fig. 4

Fig. 3

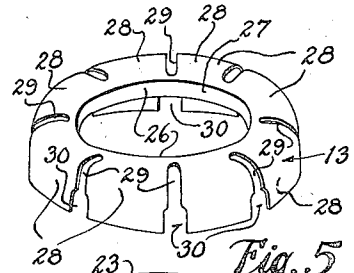


Fig. 5

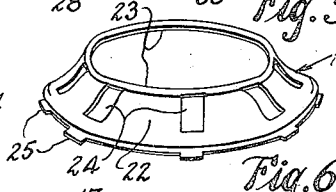


Fig. 6

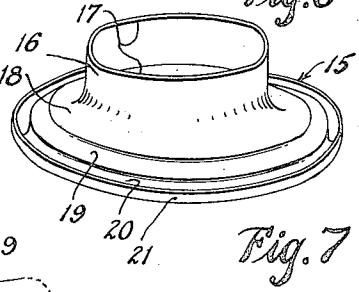


Fig. 7

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UMBRELLA STRUCTURE

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9 Claims. (Cl. 135—28)

This invention relates to umbrella structures particularly of the type adapted for outdoor use at resorts and an object is to provide a simple, economical and efficient structure, or frame, including a runner and a top notch of similar design and ribs and braces readily attachable to and detachable from the runner and top notch, so as to simplify the assembling and disassembling of the frame and reduce the manufacturing cost to a minimum while providing a maximum of rigidity and durability.

To this end I have provided a top notch and runner each of which is composed of three members similarly secured together as permanent units and provided with means at their peripheries for detachably locking the ends of the ribs or braces, as the case may be, thereto, one of said members having means for limiting the movement of the ribs or braces in opposite directions so as to prevent the disengagement of the ribs or braces at least when the frame is opened completely.

In the accompanying drawing I have shown a preferred form of structure, subject to modification within the scope of the appended claims, without departing from the spirit of my invention.

In said drawing:

Fig. 1 is an elevation of a portion of an umbrella frame embodying my improvements and with the several elements thereof operatively arranged;

Fig. 2 is an enlarged sectional elevation on line 2—2 of Fig. 1;

Fig. 3 is a similar section on line 3—3 of Fig. 1;

Fig. 4 is a sectional plan on line 4—4 of Fig. 2;

Figs. 5, 6, and 7 are, respectively, perspective views of the outer, intermediate and inner members which combine to form the top notch and runner units;

Fig. 8 is a fragmentary view of a rib or brace; and

Fig. 9 is a section of the same on line 9—9 of Fig. 8.

The structure of the umbrella frame as usual includes a top notch A and a runner B which are, respectively, fixed to and slidable on a pole C and are adapted to extensibly support a plurality of ribs D and braces E which ribs and braces may be termed frame rod in such a manner as to hold a cover (not shown) thereon. Braces E are hingedly connected at their outer ends to ribs D by means of geats F and at their lower and inner ends to the runner B, while the upper ends of ribs D are hingedly connected to the top notch A.

Top notch A and runner B are similar in construction and parts with respect to the means provided for attaching the ribs and the braces, respectively. The upper end 10 of the pole C is reduced to provide a shoulder against which the bottom of the top notch A rests and to which end the top notch may be suitably secured against removal when and if necessary. Runner B is provided with an elongated sleeve 12 which is slidable on the central portion of pole C for extending and contracting the frame.

Units A and B each include an outer member 13, an intermediate member 14 and an inner member 15 which are formed of sheet metal stampings and are adapted to interlock and to be permanently secured together so as to hingedly and detachably support the ends of the ribs D and braces E, respectively.

Member 15 forms a base in each case for said units and has a central hub 16 with an opening 17 therein and a continuing annular flange with an inner annular flat portion 18, an intermediate annular bevelled portion 19, an outer annular groove 20 and an annular rim 21. Member 14 has a bevelled body 22 with a central opening 23 adapted to receive the hub 16 of member 15, a plurality of uniformly spaced radial apertures 24 on the inclined body 22 and a plurality of peripheral lugs 25 alined with the apertures 24 and adapted to seat in the annular groove 20 of member 15.

Member 13 is cup shaped and has a central opening 26 formed within an inwardly bent annular flange 27 and a plurality of outwardly extended segments 28 of arcuate cross section and having their extremities parallel with the axis of the member and adapted to seat in the groove 20 of member 15 above the lugs 25 of member 14. Segments 28 are spaced apart by means of a plurality of radially extended slots 29 with substantially widened open ends 30 adapted to fit over the lugs 25 when the unit is assembled, so as to hold the slots 29 in registration with the apertures 24 of member 14.

As shown in Figs. 2 and 3, when the top notch and runner units are assembled the edge of hub 16 of member 15 is rolled over the outer end of member 13 adjacent the opening 26 therein, thereby permanently attaching the three members of each unit together for use. In the case of the runner B the upper end of sleeve 12 is similarly rolled over the rolled end of hub 16 for holding the runner unit on said sleeve against a

plurality of outwardly extended humps or lugs 31 on the sleeve.

The units A and B thus formed have annular recesses 32 beneath the inclined body of the intermediate member 14 and similar but larger annular recesses 33 between the members 13 and 14. The ribs D and the braces E are similarly formed at their upper and lower ends, respectively, by notching the same on opposite portions of their peripheries as at 34 so that the portions 35 between the notches will correspond in thickness to the width of the slots 29, the width of the portions 30 of said slots and of the apertures 24 being substantially the same as the diameter of the ribs and braces.

Thus, the ends of the ribs D and braces E may be inserted in the portions 30 of slots 29 and in the apertures 24 and then swung upwardly or downwardly, as the case may be, until the portions 35 engage the slots 29. This operation is usually effected by bending the ribs and braces sufficiently to seat their ends in the top notch and runner units, respectively, and thereafter the ends of the apertures 24 will prevent an overmovement of the ribs and braces sufficient to cause their detachment, said apertures forming guides for the ends of the ribs and braces, and the inner ends of the ribs and braces thus are movable in the recesses 32 and 33 while the notches 34 engage the sides of the slots 29 and prevent the withdrawal of said elements longitudinally. The apertures 24 and slots 29 also prevent a horizontal swinging of the ribs D.

As shown in Fig. 2, I have illustrated at the right hand side a rib D in broken lines in its uppermost position and at the left hand side thereof a rib in its lowermost position, with the ends in each case limited by engagement with the ends of the apertures 24 of member 14. It will be noted that units A and B are reversed in their positions and that member 13 forms a base for supporting unit A while member 15 forms a base for unit B.

The upper ends of the braces E are hinged at 36 to lugs 37 inwardly extended from the geats F and said geats have elongated tubular extensions 38 on opposite sides of said lugs which are suitably pressed onto or otherwise secured to the ribs and braces.

When the structure is assembled for use the top notch A and runner B are first independently assembled and then placed on the pole C whereupon the ribs and braces are sprung into position thereon, after the braces have been hinged to the ribs.

It will now be seen that I have provided novel umbrella structure units for attaching the frame rods (ribs or braces) to the pole.

What I claim, is:

1. A rib or brace attaching unit for umbrella structures comprising: a base having a flanged body and an axially extended hub, a cover member mating therewith and having an arcuately formed wall and a central opening encompassing said hub, said cover member having a plurality of uniformly spaced radially disposed slots of greater width at points near their extremities than throughout the major portions thereof, whereby rods of an umbrella frame may be inserted through said wider portions and interlocked with said narrow portions, and means intermediate said members for engagement with the ends of the rods so as to limit the swinging movement thereof in opposite directions.

2. An attaching unit for umbrella structures comprising: a base having a flanged body and an axially extended hub, a cover member mating therewith and having an arcuately formed wall and a central opening encompassing said hub, said cover member having a plurality of uniformly spaced radially disposed slots of greater width at points near their extremities than throughout the major portions thereof, whereby the rods of an umbrella frame may be inserted through said wider portions and interlocked with said narrow portions, and means intermediate said members for engagement with the ends of such rods so as to limit the swinging movement thereof in opposite directions, said means including an apertured intermediate member locked in position between said base and said cover members.

3. An attaching unit for umbrella structures comprising: a base having a flanged body and an axially extended hub, a cover member mating therewith and having an arcuately formed wall and a central opening encompassing said hub, said cover member having a plurality of uniformly spaced radially disposed slots of greater width at points near their extremities than throughout the major portions thereof, whereby the rods of an umbrella frame may be inserted through said wider portions and interlocked with said narrow portions, means intermediate said members for engagement with the ends of such rods so as to limit the swinging movement thereof in opposite directions, and an elongated sleeve extending through all of said other members and interlocked therewith.

4. An attaching unit for umbrella structures comprising: a base having a flanged body and an axially extended hub, a cover member mating therewith and having an arcuately formed wall and a central opening encompassing said hub, said cover member having a plurality of uniformly spaced radially disposed slots of greater width at points near their extremities than throughout the major portions thereof, whereby the rods of an umbrella frame may be inserted through said wider portions and interlocked with said narrow portions, and means intermediate said members for engagement with the ends of such rods so as to limit the swinging movement thereof in opposite directions. the hub of said base being expanded at its end so as to overlie the end of said cover member, for locking said members together.

5. An attaching unit for umbrella structures comprising: a base having a flanged body and an axially extended hub, a cover member mating therewith and having an arcuately formed wall and a central opening encompassing said hub, said cover member having a plurality of uniformly spaced radially disposed slots of greater width at points near their extremities than throughout the major portions thereof, whereby the rods of an umbrella frame may be inserted through said wider portions and interlocked with said narrow portions, and means intermediate said members for engagement with the ends of such rods so as to limit the swinging movement thereof in opposite directions, said means including an apertured intermediate member locked in position between said base and said cover members, the hub of said base being expanded at its end so as to overlie said cover member, for locking said members together.

6. An attaching unit for umbrella structures comprising: a base having a flanged body and an axially extended hub, a cover member mating

therewith and having an arcuately formed wall and a central opening encompassing said hub, said cover member having a plurality of uniformly spaced radially disposed slots of greater width at points near their extremities than throughout the major portions thereof, whereby the rods of an umbrella frame may be inserted through said wider portions and interlocked with said narrow portions, means intermediate said members for engagement with the ends of such rods so as to limit the swinging movement thereof in opposite directions, said means including an apertured intermediate member locked in position between said base and said cover members, the hub of said base being expanded at its end so as to overlie said cover member, for locking said members together, and a sleeve extended through said hub and expanded at its end so as to overlie the end of said hub, for locking said sleeve to said attaching unit.

7. An umbrella structure comprising: a frame rod attaching unit, frame rods hingedly connected with said attaching unit, said unit embodying an outer member having an arcuate wall with radially disposed slots therein and an inner member secured thereto, said rods having their inner ends notched and interlocked with said slots, and means intermediate said outer member and said inner member for limiting the swinging movement of said rods.

8. An umbrella structure comprising: a frame rod attaching unit, frame rods hingedly connected with said attaching unit, said unit embodying an outer member having an arcuate wall with radially disposed slots therein and an inner member secured thereto, said rods having notched portions interlocked with said slots, and a third member intermediate the inner and outer member of said attaching unit having radially disposed apertures for receiving and guiding the inner ends of said rods and capable of limiting the movement thereof in opposite directions.

9. An umbrella structure comprising: a frame rod attaching unit, frame rods hingedly connected with said attaching unit, said unit embodying an outer member having an arcuate wall with radially disposed slots therein and an inner member secured thereto, said rods having notched portions interlocked with said slots, and a third member intermediate the inner and outer member of each of said attaching units having radially disposed apertures for receiving the inner ends of said rods and adapted to guide and limit the movement thereof in opposite directions, said intermediate member having peripheral extensions in registration with the apertures therein and adapted to engage in the slots of said outer member for holding said apertures in registration with said slots.

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