This invention relates to an umbrella assembly. An object of this invention is to provide an improved assembly which is so constructed that the parts thereof may be easily and cheaply manufactured and assembled and will provide a strong assembly wherein the rib wires are eliminated and wherein one or more ribs may be removed or broken off at the pivoted points thereof without affecting the remaining ribs.

Another object of this invention is to provide an assembly of this kind including a pair of telescoping rib supporting elements and means for removable securing the elements together and each element being formed with an annular slotted collar and the collars being disposed in confronting position to retain the ribs therebetween.

A further object of this invention is to provide a runner and cap structure for umbrellas which may be formed by stamping so as to thereby permit quicker assembly and elimination of a number of operations now performed in the assembly of such structures.

To the foregoing objects and others which may hereinafter appear, the invention consists of the novel construction, combination and arrangement of parts as will be more specifically referred to and illustrated in the accompanying drawing, but it is to be understood that changes, variations and modifications may be resorted to which fall within the scope of the invention as claimed.

Figure 1 is a vertical section, partly broken away, of a runner and cap structure for an umbrella constructed according to an embodiment of this invention.

Figure 2 is a detail top plan of the cap structure. Figure 3 is a sectional view taken on the line 3—3 of Figure 1.

Figure 4 is a detail side elevation of one portion of the cap.

Figure 5 is a detail side elevation of another portion of the cap.

Figure 6 is a detail side elevation of the runner with the rib retaining element removed therefrom.

Figure 7 is an enlarged vertical section of a portion of the runner structure.

Referring to the drawing the numeral 10 designates generally an umbrella staff of conventional construction which has secured to the upper portion thereof a cap structure, generally designated as 11 and a runner structure generally designated as 12 is sidally mounted on the staff 10 below the cap 11.

The cap structure or assembly 11 comprises an inner cylindrical sleeve 13 which has formed integral with the lower end thereof, an annular flange 14 which is formed with a plurality of radially arranged slots 15 within which the upper end portions 16 of ribs 17 are adapted to loosely engage. The sleeve 13 adjacent the upper portion thereof, as shown in Figure 4, is provided with a plurality of circumferentially spaced apart upwardly extending bendable retaining or clamping fingers 18 which are struck from the body of the sleeve 12, the sleeve 13 being formed with parallel slits 19 extending from the upper end thereof and terminating at a point above the lower end thereof. An outer rib retaining member, including a sleeve 20, is adapted to telescope over the inner sleeve 13 and is formed at its lower end with an annular flange 21 provided with a plurality of radially arranged slots 22 within which the upper end portion 18 of the rib 17 may engage. The slots 22 are adapted to register with the slots 15 and preferably an annular washer or spacing member 23 is disposed about the inner sleeve 13 below the lower end of the sleeve 20 and holds the flange 21 in spaced relation to the flange 14 so that the upper end portion 16 of the rib 17, which have transversely extending pivot pins 23a extending therethrough may freely rock in the space between the two flanges, 14 and 21.

The upper end portion of the outer sleeve 20 is provided with a plurality of circumferentially spaced apart recesses or notches 24 within which the retaining fingers 18 are adapted to engage. As shown in Figure 1 the fingers 18 are adapted to be bent right angularly outwardly as shown at 25 and then bent downwardly as at 26. The downwardly bent portion 26 engages against the periphery or outer side of the sleeve 20 and the right angular portion 25 is adapted to seat in a notch or recess 24. In this manner the bent fingers 18 hold the two sleeves 13 and 20 against endwise movement and also hold these two sleeves against rotary or circumferential movement, one relative to the other.

The flange 14, at its outer edge, is formed with a right angular annular flange 27 which is formed with notches corresponding to the notches or slots 15 and the flange 21, formed integral with the outer sleeve 20, is adapted to snugly engage within the interior of the annular flange 21. The flange 21, at its upper edge, is rounded off, as at 28, so that when the umbrella cover is secured to the cap 20 the upper edge of the flange 21 will not cut into the material.

The runner 12 comprises an elongated tubular
member 23 which is adapted to slidably engage on the staff 10 below the cap structure 11. The sleeve 29 is formed with an elongated opening 30 with which the conventional runner latching member, which is carried by the staff 10, is adapted to engage. The runner sleeve 29, at a point downwardly from the upper end thereof, is formed with an annular bead 31 which is struck outwardly from the sleeve 29 and forms an annular seat for an annular flange or ring 32. The flange or ring 32 is pressed tightly on the sleeve 29 so that this flange will not rotate relative to the sleeve 29 and the bead 31 holds the flange 32 against downward movement with respect to the sleeve 29. The flange or ring 32 is formed with a plurality of radially arranged slots 33 through which the inner end portions 34 of bracing members 35 are adapted to loosely engage. The inner end portions 34 of the bracing members 35 have transversely extending pivot pins 36 extending therethrough which are adapted to pivotally engage on the upper side of the flange or ring 32. The flange or ring 32 is also formed with an upstanding annular flange 37 which provides a retaining means for retaining the pivot pin 36 against outward movement.

The sleeve 29 has telescoping about the upper end portion thereof an outer retaining sleeve 39 which, at its lower end, is formed with an annular flange 38. The flange 38 is formed with a plurality of radially arranged slots 40 adapted to register with the slots 33. The flange 38 is maintained in upwardly spaced relation with respect to the flange or ring 32 by means of a spacing washer 41 interposed between the two flanges 32 and 38. The outer diameter of the washer 32 is substantially less than the Inner diameter of the annular or cylindrical flange 37 so that the pivot pins 36 may freely rock in the space between the two flanges 32 and 38. The outer sleeve 38, at its upper end, is formed with a plurality of circumferentially spaced apart recesses or notches 42 and the upper end portion of the inner sleeve 29 has formed integral therewith a plurality of circumferentially spaced apart bendable retaining or clamping fingers 43. The fingers 43 are similar to the fingers 18 and the upper portion of the sleeve 29 is split as at 44 downwardly from the upper end of the sleeve 29 so that the fingers 43 may be bent inwardly of the sleeve 29 when it is desired to release the outer sleeve 38. The fingers 43, as shown in Figure 1, are adapted to be bent right angularly and outwardly as at 45 and then bent downwardly as at 46 along the outer side of the outer sleeve 38. The right angular portion 45 is adapted to seat in a recess or notch 42 so as to thereby hold the outer sleeve 38 against circumferential movement with respect to the inner sleeve 29. This outwardly extending portion 45 also holds the two sleeves 29 and 38 against both endwise and rotary movement one relative to the other.

The runner and cap assembly hereinbefore described may be stamped out of suitable metal and by reason of this stamping the cost of constructing these assemblies may be materially reduced and in addition the cost of putting the several parts of each assembly together is also very materially reduced.

In addition to this the construction of the cap and runner hereinbefore described permits a quicker assembly of the several parts forming each element and in the use of the umbrella the ribs will not break any portion of the cap or runner assembly as has been heretofore the practice where a wire has been used as a pivot and retaining member for the ribs and the rib braces. When one rib or bracing member is broken, as hereinbefore described, the user of the umbrella may readily break off the rib or brace adjacent the cap or runner and still use the umbrella as the runner and cap assembly will not come apart when a rib or brace breaks.

If it is desired to replace a broken rib or brace it is only necessary to bend the retaining fingers upwardly and inwardly a distance sufficient to permit the outer sleeve to be moved upwardly a short distance whereupon the broken rib or brace may be removed and a new rib or brace replaced. The inwardly bent clamping fingers may then be returned to their normal clamping position.

What I claim is:

1. In an umbrella a rib retaining structure comprising an inner cylindrical member, a slotted flange carried by said member, an outer cylindrical member telescoping over said inner member, a slotted flange carried by said outer member and disposed in confronting position relative to said first flange, said outer member being formed with at least one recess in an end thereof, and at least one bendable finger carried by said inner member engaging in said recesses for locking said members together, and a washer about said inner member engageable in said recesses for locking said members together, and a washer about said inner member and interposed between said flanges.

2. In an umbrella a rib retaining structure comprising an inner cylindrical member, a slotted flange carried by said member, an outer cylindrical member telescoping over said inner member, a slotted flange carried by said outer member and disposed in confronting position relative to said first flange, said outer member being formed with a plurality of circumferentially spaced apart recesses in one end thereof, a plurality of locking fingers carried by said inner member engageable in said recesses for locking said members together, and a washer about said inner member and interposed between said flanges.

3. In an umbrella a rib retaining structure comprising an inner cylindrical member, a slotted flange carried by said member, an outer cylindrical member telescoping over said inner member, a slotted flange carried by said outer member and disposed in confronting position relative to said first flange, said outer member being formed with a plurality of circumferentially spaced apart recesses in one end thereof, a plurality of locking fingers carried by said inner member engageable in said recesses for locking said members together, and a washer about said inner member and substantially less than the outer diameters of said flanges.

4. In an umbrella a rib retaining structure comprising an inner cylindrical member, a slotted flange carried by said member, an outer cylindrical member telescoping over said inner member, a slotted flange carried by said outer member and disposed in confronting position relative to said first flange and engaging within said cylindrical flange, said outer member being formed with a plurality of circumferentially spaced apart recesses in one end thereof, a plurality of locking fingers carried by said inner member engageable in said recesses for locking said members together, and a washer about said inner member and interposed between said flanges.
5. In an umbrella a rib runner comprising a cylindrical runner member, an annular bead carried by said member intermediate the ends thereof, an annular slotted flange carried by said member and seating against said bead, a cylindrical slotted flange carried by said first flange, a sleeve telescoping said runner above said first flange, an annular slotted flange carried by said sleeve, engaging in said cylindrical flange, said sleeve having a plurality of recesses in one end thereof, and a plurality of bendable fingers integral with said runner member engageable in said recesses for holding said sleeve and runner member against endwise and circumferential movement relative to each other.

6. In an umbrella a rib runner comprising a cylindrical runner member, an annular bead carried by said member intermediate the ends thereof, an annular slotted flange carried by said member and seating against said bead, a cylindrical slotted flange carried by said first flange, a sleeve telescoping said runner above said first flange, an annular slotted flange carried by said sleeve, engaging in said cylindrical flange, said sleeve having a plurality of recesses in one end thereof, a washer interposed between said annular flanges, and a plurality of bendable fingers integral with said runner member engageable in said recesses for holding said sleeve and runner member against endwise and circumferential movement relative to each other.

7. In an umbrella a cap comprising an inner cylindrical member, an annular slotted flange fixed relative to the lower end of said member, a cylindrical slotted flange carried by said flange, a sleeve telescoping said cylindrical member, an annular flange fixed relative to the lower end of said sleeve and engaging within said cylindrical flange, said sleeve having a plurality of recesses in the upper end thereof, and a plurality of outwardly projecting locking members carried by said cylindrical member and engageable in said recesses for holding said cylindrical member and sleeve against circumferential and endwise movement relative to each other.

8. In an umbrella a cap comprising an inner cylindrical member, an annular slotted flange fixed relative to the lower end of said member, a cylindrical slotted flange carried by said flange, a sleeve telescoping said cylindrical member, an annular flange fixed relative to the lower end of said sleeve and engaging within said cylindrical flange, said sleeve having a plurality of recesses in the upper end thereof, a washer interposed between said annular flanges and having an outer diameter less than the inner diameter of said cylindrical flange, and a plurality of outwardly projecting locking members carried by said cylindrical member and engaging in said recesses for holding said cylindrical member and sleeve against circumferential and endwise movement relative to each other.

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