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UNITED STATES PATENTS

[21] Appl. No.: 55,349

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July 25, 1969 GermanyP 19 37 891.7

[58] **Field of Search**.....135/20, 25, 26, 28, 29, 38,
135/39

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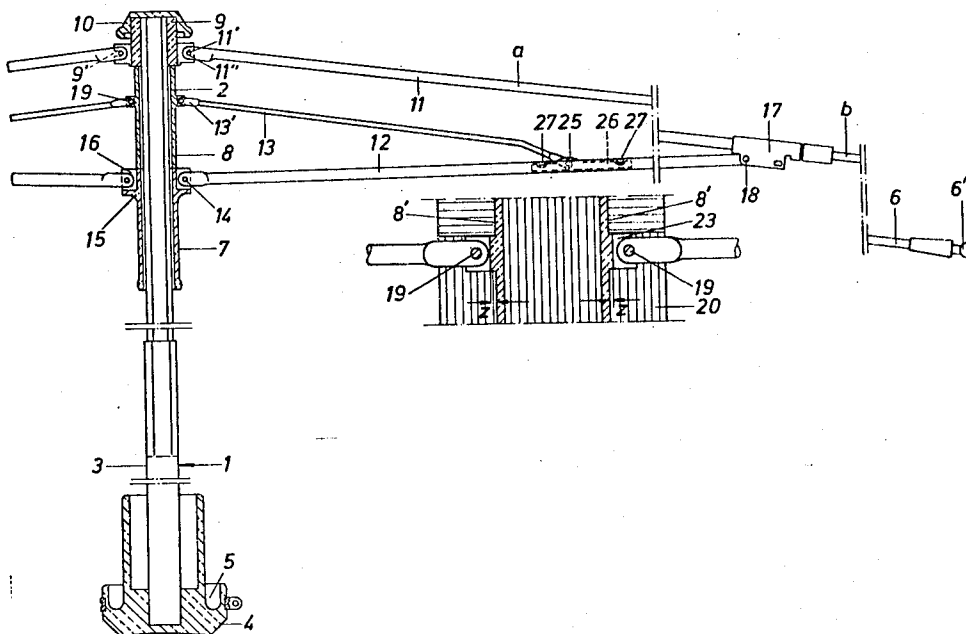
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ABSTRACT

An injection molded runner for an umbrella with an integrally pivoted shaft to which a stretcher member is pivoted.

5 Claims, 3 Drawing Figures



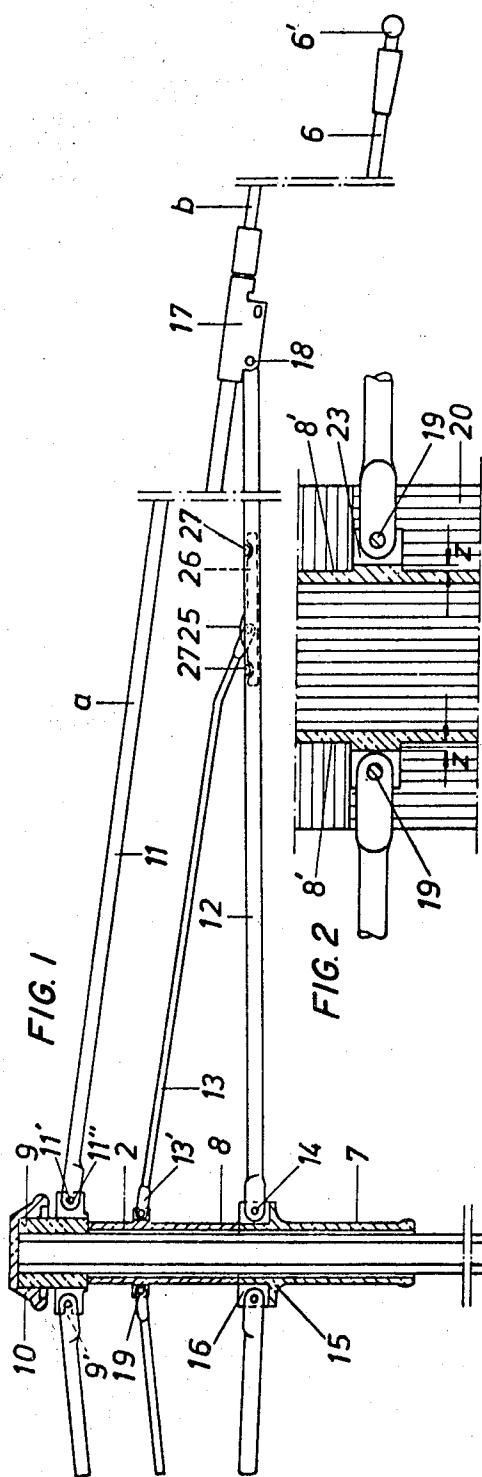


FIG. 1

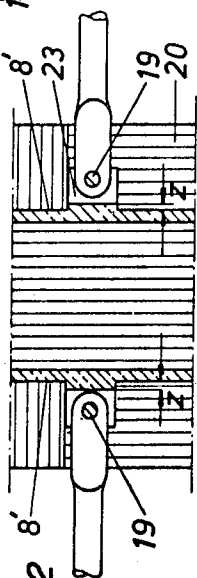


FIG. 2

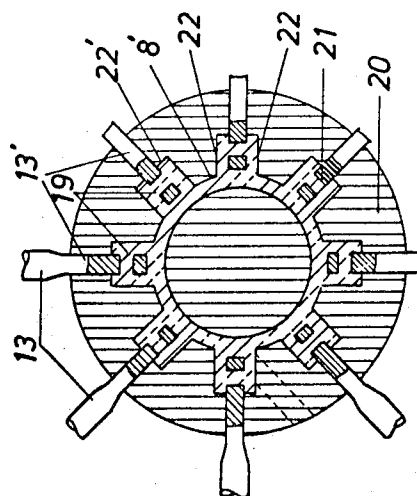


FIG. 3

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UMBRELLA

BACKGROUND OF INVENTION

1. Field of Invention

The present invention relates to umbrellas and particularly to the rib hinging accessories of the umbrella such as the crown and runners.

2. Description of Prior Art

In known umbrellas, the dome ribs and the dome rib support structure are hinged to the crown and runners respectively by means of a wire which is threaded consecutively through the hinge lugs and bearing apertures at the individual hinge locations, and is secured by twisting the ends together. This is inconvenient and time-consuming.

Individual hinge pins are also used in the manufacture of umbrellas and these are secured by riveting. This is of course expensive and also time-consuming.

SUMMARY OF INVENTION

It is the aim of the invention to simplify the manufacture of umbrellas while retaining the compact structural shape of the components in order to obtain a high degree of radial foldability and stability in use.

According to the invention, this aim is accomplished in that the hinge shafts are formed integrally around the ends of the rib and through the aperture when the ribs are projected into the injection-mold.

Finally, another favorable characteristic of the invention is that the hinge shafts are subtended between individual lugs projecting from the runner.

This substantially simplifies the manufacture of umbrellas of this type and also requires less time. Hinging of the dome ribs, stretcher members and in the case of a telescopic umbrella also a strut is effected simultaneously with the production of the crown, the main runner and the auxiliary runner respectively. The individually prefabricated assemblies may be easily and quickly assembled. The respective ribs and struts are introduced into the mold at the desired angular spacing. In the region of the hinge location to be produced, the ribs stretchers or struts are provided with a bearing aperture. When the hinge shaft is formed in the injection-molding process, this aperture is filled with plastic. The mold is designed in such a manner that the individual lugs forming the bearing brackets are molded at the same time, thus ensuring material homogeneity between the hinge shafts the individual lugs, runners and the crown. This makes it possible to keep the hinge locations very small, thus providing an extremely slender umbrella frame, if use is made of a compact system of nesting dome ribs.

BRIEF DESCRIPTION OF THE DRAWINGS

Having thus generally described the nature of the invention particular reference will be made to the accompanying drawings illustrating a preferred embodiment thereof and in which:

FIG. 1 is a fragmentary elevation of the umbrella in the open position and with an auxiliary runner;

FIG. 2 is an enlarged partial view of the auxiliary runner shown with the injection mold;

FIG. 3 is a plan view of the auxiliary runner shown in the injection mold.

In the present embodiment a telescopic umbrella is shown having a telescoping umbrella stick 1 comprising tubular sections 2 and 3, of which 2 is the internal tube. The sections 2 and 3 may be secured in their extended position by the usual ball and spring catch.

Located at the end of the tubular section 3 is a carrying handle 4 provided with an annular recess 5 for the accommodation of free ends 6' of outer dome rib parts 6.

Main runner 7 and auxiliary runner 8 slide on umbrella stick

1.

Tubular section 2 carries crown 9 to which the cover cap 10 is secured.

Dome ribs 11 are hinged to crown 9. In this embodiment, the crown is shown as conventional whereby the hinge shaft consists of a wire ring 11' which passes through bearing holes 11'' of the ribs and lies in a groove 9' in the crown 9.

Stretchers 12 and struts 13 are parts of the support system which spreads and folds the dome ribs 11.

Stretchers 12 extend from main runner 7 to which they are attached by means of hinge pins 14.

The flattened ends of main runner 12 lie in recesses 16 of a thickened portion 15 of the runner 12. The stretchers are connected to dome ribs 11 by means of a geats 17. The corresponding hinge pin is indicated at 18. This also constitutes the hinge location for the inner end of dome rib outer section 6. Each dome rib 11 consists of two sections of approximately the same length, namely inner section "a" close the crown and the dome rib section "b." Section "a" consists of a U-profile open towards the umbrella stick, while dome rib section "b" which is guided therein is made of material of circular cross section.

Hinge shafts 19 for hinging strut 13 are made from plastic material integral with auxiliary runner 7.

This hinge axis 19 is obtained by injection molding around the flattened ends 13' of struts 13 which project into injection mold 20. These flattened ends are provided with corresponding bearing holes 21. Individual lugs 22 are provided on both sides of the auxiliary strut ends 13' forming the core of the mold. The lugs 22 are forked and are parallel with each other and form a pivot recess 23 for strut 13. The hinge shaft is spaced a distance from the outermost edges 22' of lugs 22. This provides a hinge guide of the largest possible area. Depending upon the stresses to be anticipated, the hinge shaft extending in the form of a homogeneous material bridge between the forked lugs may have its cross section increased.

Moreover lug recess 23 is at a distance "z" in front of outer wall 8' of auxiliary runner 8. This provides a thickened and therefore stabilized zone of material in the region of the lugs 22. Auxiliary runner 8, which is tubular also assumes the function of a spacer in order to define the spread of the ribs by retaining the main runner.

The other free end of the auxiliary strut is hinged to the stretcher 12 by means of a hinge shaft 25. In order to avoid weakening this strut, and to ensure satisfactory assembly, no direct hinging to the stretcher is provided. Instead, an intermediate piece 26 is provided, which is also U-shaped and is anchored in the U-shaped opening in the stretcher profile. This anchoring may be effected by the indentations 27 shown in the drawing. The U-legs of intermediate piece 26 are provided with corresponding indentations.

Of course both the main runner 7 and the crown 9 could be constructed with integral pivot shafts in the same manner as the runner 8.

I claim:

1. An umbrella comprising a stick, a crown at one end and a handle at the other end, dome ribs hinged to the crown, a runner slidable on the stick, stretcher means connected to the runner and to the dome ribs for opening and closing the umbrella, the end of the stretcher means connected to the runner defining an aperture, the runner being injection-molded around said end of said stretcher means whereby a pivot shaft is formed through said aperture and said pivot shaft is integral with said runner.

2. An umbrella as defined in claim 1 wherein there is provided an auxiliary runner between the crown and the runner and strut members are connected to said auxiliary runner in the same manner as the stretcher means is connected to the runner and the other ends of the strut members are connected to the stretcher means.

3. In an umbrella comprising a stick, a crown at one end of the stick and a handle at the other end thereof, dome ribs hinged to the crown, a runner slidable on the stick, stretcher means connected to the runner and to the dome ribs for opening and closing the umbrella, the improvement characterized in that the end of the stretcher means connected to the runner

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includes a portion defining an aperture, the runner being molded around the portion of said stretcher means defining said aperture and comprising a pivot shaft extending through said aperture and integral with said runner.

4. A runner as defined in claim 3 wherein the runner is formed with pairs of lugs projecting from the body thereof and said pivot shaft is subtended integrally between the lugs.

5. A method for assembling umbrella components including the steps of providing an aperture in the flattened end of an

umbrella support member, inserting the apertured end into an injection mold, the injection mold being cut to the shape of a runner for the umbrella, injecting a plastic material into the injection mold about the end of the umbrella and through the aperture whereby a runner is formed with a pivot shaft extending through the aperture of the end of the support member, curing the plastic material and removing the runner and connecting support member from the mold.

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