

[54] **COLLAPSIBLE UMBRELLA**

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[58] Field of Search135/20, 25, 26, 33 A, 33 C

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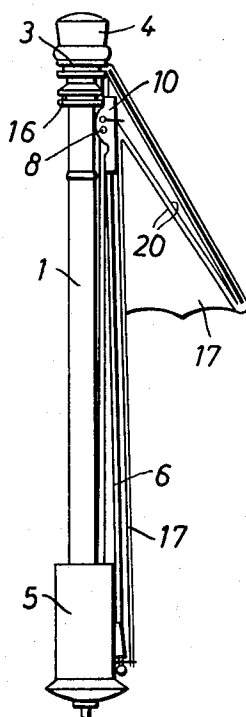
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[57] **ABSTRACT**

Collapsible umbrella having telescoping roof-supporting ribs and stick includes a plurality of rods each extending beneath the roofing material of the umbrella in a direction parallel to a roof-supporting rib thereof and having an upper end located adjacent the upper end of the respective rib. The rods extend from the upper ends thereof, in detelescoped condition of the umbrella, a distance substantially equal to half the distance between the normally upper end of the stick and the upper end of a respective lower telescoping rib portion. The rod and the respective rib are separate from and movable relative to one another.

8 Claims, 14 Drawing Figures



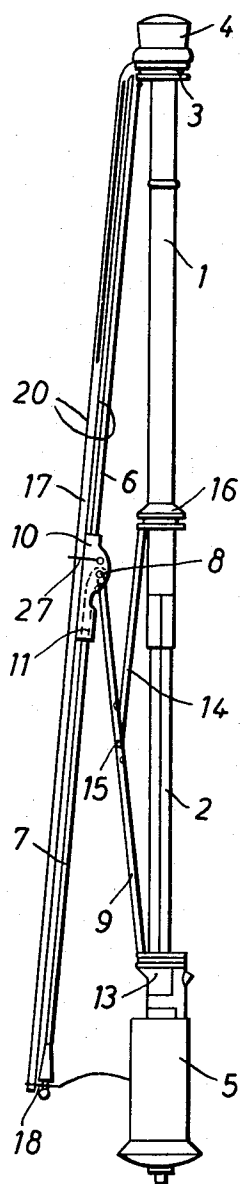


Fig. 1

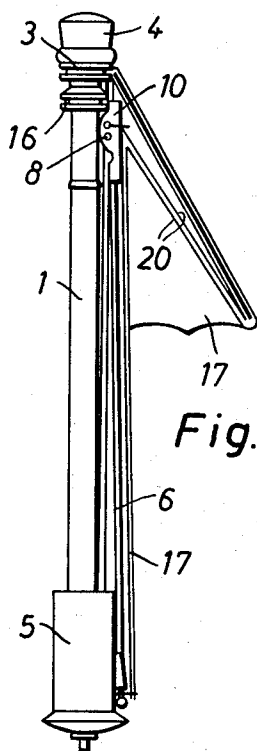


Fig. 2

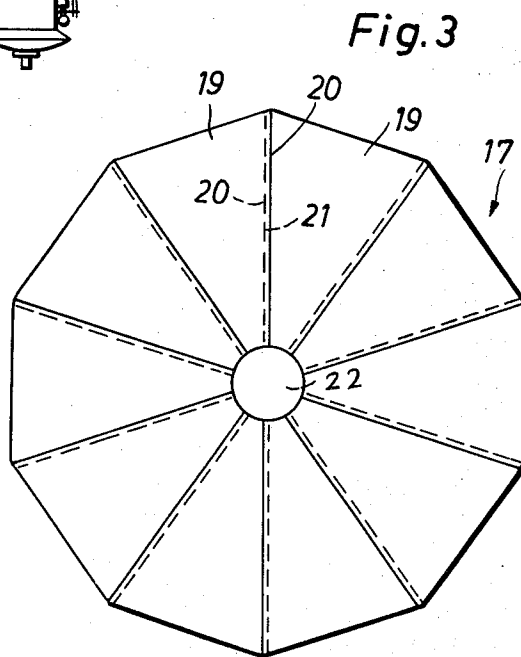
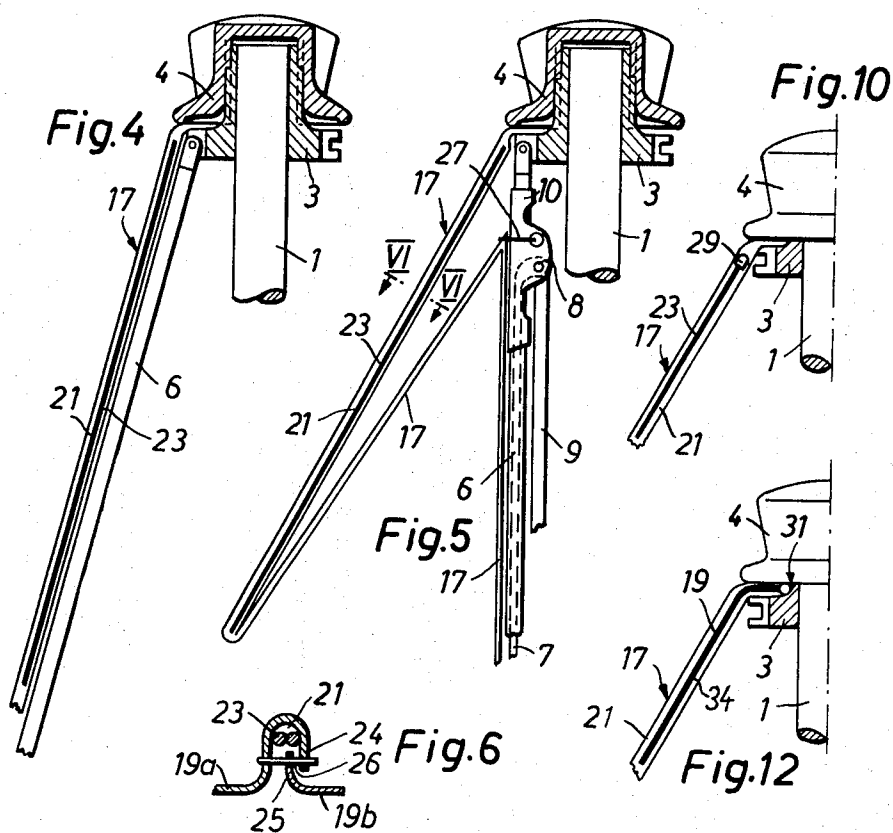
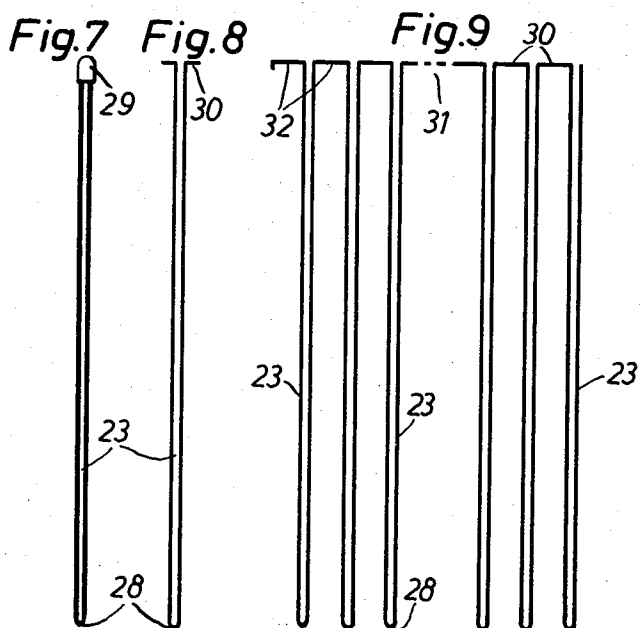
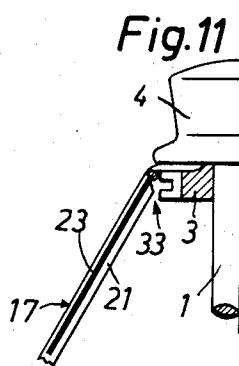


Fig. 3



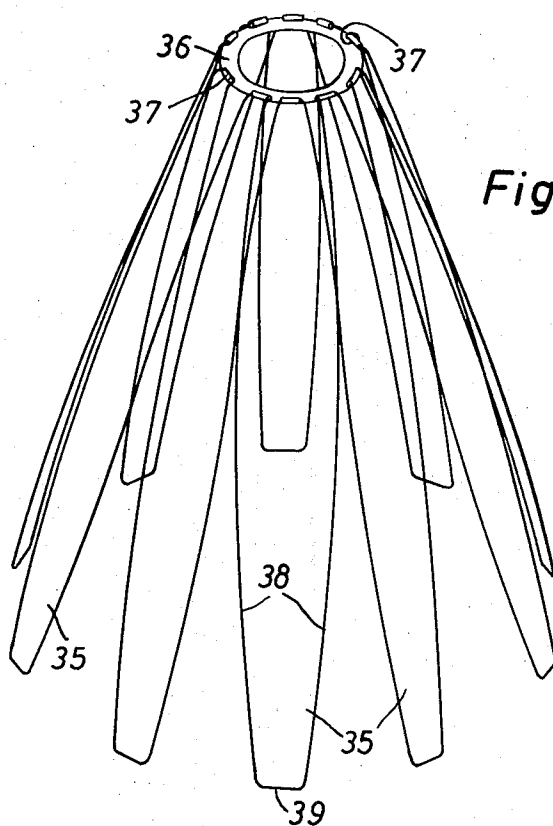


Fig. 13

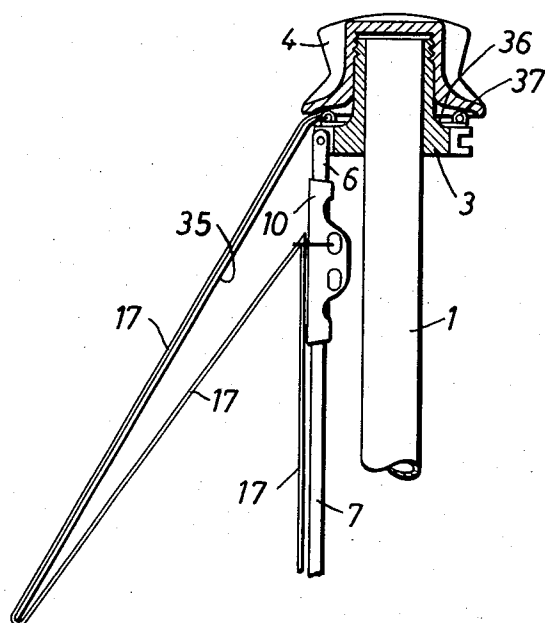


Fig. 14

generally known and have often been illustrated and described in various publications.

The roofing material 17 of an umbrella constructed in the foregoing manner is sewn together from as many panels 19 of flexible material as there are ribs in the umbrella. A cover of this type is shown in FIG. 3 in flattened or spread-out form, i.e. before it is secured to the roof frame of the umbrella which comprises the ribs 6, 7 thereof. As shown specifically in FIG. 3 the roof material 17 is suitable for an umbrella having 10 ribs. The cover 17 consequently consists of 10 panels 19 of suitable flexible covering material such as textile or plastic, for example, each of which has the general shape of a triangle or sector of a circle. The individual sectors 19 are connected to one another by means of two parallel lines of stitching or double seams 20 which lie in turn parallel to the ribs 6, 7. Each double seam forms a tubular portion 21 of the panel 19 which is significant for at least one embodiment of the invention. The contours formed by the seams 20 are indicated in FIGS. 1 and 2. The covering 17 has a central hole 22 by means of which it can be slipped from above over the stick and placed between the umbrella crown 3 and the threaded cap 4.

When the umbrella, as shown in FIG. 1, is collapsed care must be taken that the covering 17 folds together into the mushroom shape shown in FIG. 2. This requires some skill and is occasionally done improperly. The danger arises that the cover 17 may become clamped between portions of the umbrella frame and be damaged. As aforementioned, a primary object of the invention of this application is to prevent this from occurring.

In order to produce an umbrella which automatically forms the mushroom shape, in accordance with the construction shown in FIGS. 4 to 6, a rod 23, which is more or less stiff, is inserted in each tube 21 formed by the seams 20 in the panels 19 of the covering material 17. Several details of the invention may be best observable from FIG. 6 which shows that a material panel 19a is placed so that its edge 24 is located over the edge 25 of the adjacent material panel 19b and is connected by sewn stitches 26 to the edge 25. The hollow space of tubes 21 which is closed on all sides and which is defined by the panel 19a and the stitches 26 can serve consequently for receiving the rod 23.

Each rod 23 extends from the umbrella crown 3 for a distance which is substantially the same as half the distance between the crown 3 and the location at which the covering 17 is connected with the sleeve 10 by means of several sewn stitches 27 (FIG. 5). If the umbrella provided with the rod in the aforementioned manner is collapsed, only longitudinal folds and no transverse folds are able to be formed in the region of the material covering 17 above which the rod 23 extends. The formation of the mushroom shape is thereby ensured.

The rods 23 can consist of plastic material. However, rods of thin corrosion-resistant steel wire are essentially better suited, three examples of such rods being shown in FIGS. 7 to 9. In all of the three embodiments shown in FIGS. 7 to 9, each rod consists of a two-legged wire spring whose free leg ends extend in a direction toward the umbrella crown. Consequently, at the end of the rods opposite their free ends, a curve 28 is formed

which ensures the fact that the rod will not tear a hole in the cover material 17.

It is generally unnecessary to secure the rods 23 against displacement in the tubes 21 because the natural friction between the material of the cover and the wire is sufficient to prevent relative displacement thereof.

In the embodiment of FIG. 7, the free upper ends of the legs, as viewed in the figure, are provided with a common cap 29 consisting preferably of thin sheet metal, which prevents the wire ends from damaging the cover material.

In the embodiment of FIG. 8, the ends 30 of the legs are bent outwardly for the same purpose of preventing damage to the cover material. In the embodiment of FIG. 9, all the rods are bent from a single wire 31 with the formation of cross pieces 32 which connect the legs of adjacent rods one to another.

FIG. 10 shows a rod 23, with a cap 29 of the type shown in FIG. 7, which is inserted in the tube 21 of a seam. A corresponding view is shown in FIG. 11 of an embodiment in which a rod 23, having the construction shown in FIGS. 8 and 9, is inserted in the tube 21. In order to provide space for the bent ends 30 or the cross pieces 32 of the rods 23 shown respectively in FIGS. 8 and 9, the seams 20 are cut open at the indicated location 33 in FIG. 11.

In the embodiments described hereinbefore, the rods 23 extend only to the direct vicinity of the umbrella crown 3. The rods thus act as stiffening elements only for these embodiments. Two additional embodiments of the invention differ from the preceding described embodiments in that the rods thereof, extending into the tubes of the cover material panel and serving for forming the mushroom shape, not only have a stiffening action but also have a spring action. This causes the rods to be clamped at the umbrella crown.

In the embodiment of FIG. 12, rods 34 which can have the form of the rods 23 of FIGS. 7 to 9, are clamped as at 31 between the umbrella crown 3 and the threaded cap 4. The rods 34 are inserted in the tubes 21 only for such a distance that they protrude at the top thereof for a predetermined distance out of the tube. After the rods have been inserted in this manner and the threaded cap 4 is screwed tightly onto the suitably threaded crown 3, the rods naturally project radially outwardly at right angles to the axis of the umbrella stick. They are then bent downwardly so that they assume the position illustrated in FIG. 12.

In the case of the embodiment shown in FIG. 12, the insertion of the rod is not very simple particularly when the individual rod types shown in FIGS. 7 and 8 are being used. This difficulty does not apply to the embodiments of FIGS. 13 and 14.

In the embodiment of FIG. 13, a system of wire loops 35 is produced initially and secured to a sheet metal ring 36. Each loop consists of two legs 38 which are joined to one another at the bottom as shown in FIG. 13 by a cross piece 39. The cross piece 39 has the same purpose and effect of the curves 28 provided on the rod 23 shown in FIGS. 7 to 9. The number of wire loops 35 is the same as the number of the roof ribs of the umbrella and each loop 35 extends parallel to a rib after assembly thereof. For the purpose of connecting the loops 35 with the sheet metal ring 36, the latter is pro-

COLLAPSIBLE UMBRELLA

My invention relates to a collapsible umbrella whose frame can be shortened by telescoping so that the umbrella, when completely collapsed, is small enough to be carried in a brief bag or lady's pocketbook, for example.

More specifically, my invention relates to a collapsible umbrella frame comprised of a stick formed of telescoping portions, a handle located at one end of the stick, a system of roof-supporting ribs each consisting of an upper rib portion pivotally connected to the other and normally upper end of the stick and at least another rib portion telescoping the upper rib portion, a runner or slider displaceable along the stick, a plurality of struts, each of which is pivotally linked with the runner and with one of the roof-supporting ribs, means for locking the runner when the umbrella roof is opened and closed, and flexible roofing material located on the outside of said ribs, said roofing material being secured to the other end of the stick and the free ends of the ribs and with the upper end of at least one of the rib portions telescoping the upper rib portion. When an umbrella of this construction is collapsed, care must be taken that the roofing material is folded in an orderly manner and thereby assumes the well-known mushroom-like shape of umbrellas. This requires some skill and the umbrella occasionally fails to open or close properly. The danger consequently arises that the covering material may become jammed between components of the umbrella frame and be damaged.

It is accordingly an object of my invention to provide a collapsible umbrella of the foregoing type which avoids the aforementioned disadvantages of the known umbrellas of this type and more particularly avoids jamming of the covering material between the ribs and struts.

With the foregoing and other objects in view, I provide such a collapsible umbrella with a system of rods, each of the rods extending beneath the roof covering in a direction parallel to a rib of the umbrella, and having its upper end adjacent the upper end of the respective rib. The rods extend a distance from the upper end thereof which is substantially equal to half the distance between the upper end of the stick and the upper end of the respective telescoping rib portion which forms the free end of the rib in the extended or de-telescoped condition of the umbrella.

In accordance with further features of my invention, I provide an umbrella of the aforementioned type wherein each rod is formed of a U-shaped, bowed, two-legged wire or leaf spring which is spread away from the stick and the ribs when the umbrella is closed, and has free ends that are clamped at the upper end of the stick.

Other features which are considered as characteristic for the invention are set forth in the appended claims.

Although the invention is illustrated and described herein as embodied in a collapsible umbrella, it is nevertheless not intended to be limited to the details shown, since various modifications and structural changes may be made therein without departing from the spirit of the invention and within the scope and range of equivalents of the claims.

The construction and method of operation of the invention, however, together with additional objects and

advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

FIGS. 1 and 2 are longitudinal views of part of a collapsible umbrella constructed in accordance with the invention in extended and collapsed or telescoped conditions respectively for illustrating the folding of the roof covering material.

FIG. 3 is a top plan view of the umbrella showing the roofing material as employed in the embodiment of FIGS. 1 and 2;

FIG. 4 is a longitudinal section through an upper portion of the umbrella in the extended condition shown in FIG. 1;

FIG. 5 is a cross-sectional view of the upper part of the umbrella in the collapsed condition shown in FIG. 2;

FIG. 6 is a cross-sectional view of a portion of the umbrella as shown in FIG. 5, taken along the line VI—VI in the direction of the arrows;

FIGS. 7 to 9 are diagrammatic views of components of the invention shown in FIGS. 1 to 5;

FIG. 10 is a schematic longitudinal section of the upper portion of the umbrella of FIGS. 4 and 5 which includes the components of FIG. 7;

FIG. 11 is a modification of the embodiment shown in FIG. 10 wherein the component shown in FIGS. 8 and 9 is substituted for the component of FIG. 7 therein;

FIG. 12 is a further embodiment of the umbrella structure shown in FIGS. 10 and 11;

FIG. 13 is a perspective view of another component for use with a further embodiment of the invention; and

FIG. 14 is a cross-sectional view of the upper portion of an embodiment of the invention constructed with the component of FIG. 13.

Referring now to the drawings and first particularly to FIGS. 1 and 2 thereof, there is shown a collapsible umbrella having a stick consisting of two telescoping components 1 and 2. The component 1 carries at the top thereof, as viewed in FIGS. 1 and 2, an umbrella crown 3 and a threaded cap 4 suitably secured thereon and serving for gripping or clamping the covering material 17. At the bottom end of the stick component 2, a handle 5 is secured for holding the umbrella. Each umbrella rib consists of two telescoping portions 6 and 7, all the portions 6 of which are pivotally connected at the upper end thereof to the umbrella crown 3. The lower portions 7, which form the free ends of the ribs, are slidable telescopically into the portions 6 which are connected to the crown 3. Each rib portion 7 is hinged to a main strut 9 and is guided by means of a sleeve 10 on a respective rib portion 6. The outward displacement of the sleeve 10 and strut 9 is limited by a bushing 11 secured to the lower end of the rib portion 6.

All of the struts 9 are pivotally connected to a slider or runner 13 which is displaceable on the stick 1, 2. Auxiliary struts 14, which serve to support the open umbrella roof, are pivotally connected at one end 15 to the main strut 9 and are all secured at the upper ends thereof to an auxiliary runner 16. The roofing material 17 is attached at the umbrella crown 3 and to the free ends 18 of all the ribs and, furthermore, to all of the sleeves 10. Umbrellas of this type of construction are

vided with bent-over sheet metal ears 37 which are distributed uniformly over the periphery of the sheet metal ring. The connection of the loops 35 to the sheet metal ring 36 at the bent-over extensions 37 thereof can be ensured by soldering, welding or the like.

All of the loops 35 can be bent out of a single length of wire so that manufacture thereof can be greatly simplified.

The system of wire loops 35 with the sheet metal rings 36 is shown assembled in the umbrella in FIG. 14. The ring 36 is clamped between the umbrella crown 3 and the threaded cap 4 beneath the roofing material 17 of the umbrella. The loops 35 of the embodiments shown in FIGS. 13 and 14 are not inserted within seams of the cover material of the umbrella which connect the individual panels of the material to one another. Rather, they extend freely at the underside of the covering material. Therefore the spacing of the legs 38 of each loop 35 can be made greater than is possible with the embodiments in FIGS. 7 to 9.

The wire loop 35 is preferably and most suitably made of non-rusting spring steel. The individual loops 35 can be provided with covering of plastic material to enhance their appearance.

I claim:

1. Collapsible umbrella comprising a stick formed of portions adapted to be telescoped within one another in telescoped condition of the umbrella and to be extended in alignment with one another in de-telescoped condition of the umbrella, a handle located at a normally lower end of said stick, a system of roof-supporting ribs each including an upper rib portion pivotally linked to the normally upper end of said stick at least another lower rib portion telescoping said upper rib portion, and a sleeve secured to the upper end of said lower rib portion for telescopically guiding said lower rib portion along said upper rib portion, a runner displaceable along said stick, a plurality of struts each pivotally linked with said runner and with one of said roof-supporting ribs at said sleeve thereof, means for locking said runner in open and closed condition of the umbrella, flexible roofing material located on the outside of said ribs, said material being secured to said normally upper end of said stick, to the free ends of said ribs and, through said sleeve, to the upper end of said lower telescoping rib portions, and a plurality of rods each extending beneath said roofing material in a

direction parallel to and spaced from a roof-supporting rib respectively, each of said rods having an upper end located adjacent the upper end of the respective roof-supporting rib, said rods extending from said upper ends thereof, in the detelescoped condition of the umbrella, a distance substantially equal to half the distance between the normally upper end of the stick and the upper end of the respective lower telescoping rib portion, said rod and said respective roof-supporting rib being separate from one another, said rod being constrained to move substantially in its entirety away from said respective roof-supporting rib, in the telescoped condition of the umbrella so as to provide increased space between said rod and said respective rib for receiving therein a folded portion of said roofing material.

2. Collapsible umbrella according to claim 1, wherein each rod is formed of a U-shaped two-legged wire spring adapted to be spread away from said stick and said roof-supporting ribs in the closed condition of the umbrella, the free ends of said wire spring being clamped at a location substantially near the upper end of said stick.

3. Collapsible umbrella according to claim 1, wherein all of said rods are formed of a single length of wire.

4. Collapsible umbrella according to claim 1, wherein said rods are equal in number to said roof-supporting ribs.

5. Collapsible umbrella according to claim 1, wherein said rods are connected to said roofing material.

6. Collapsible umbrella according to claim 1, wherein said roofing material comprises a plurality of sector-shaped panels connected to one another by stitching so as to define tubular pockets therebetween, said rods being received in said tubular pockets.

7. Collapsible umbrella according to claim 1, wherein both said rod and said respective roof-supporting rib are movable, and said rod is firmly connected to said roofing material.

8. Collapsible umbrella according to claim 2, including an umbrella crown located at said upper end of said stick and a threaded cap threadedly mounted on said crown, said free ends of said wire spring being fixedly clamped between a part of said threaded cap and a part of said umbrella crown.

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