

- [54] **POCKET UMBRELLA**
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- [51] Int. Cl. .... **A45b 25/14, A45b 25/16**
- [58] Field of Search ..... **135/20-26**

- [56] **References Cited**
- UNITED STATES PATENTS**
- |           |        |                    |          |
|-----------|--------|--------------------|----------|
| 2,047,711 | 7/1936 | Siers .....        | 135/23   |
| 2,076,525 | 4/1937 | Bouma .....        | 135/25 R |
| 3,467,115 | 9/1969 | Brooks et al. .... | 135/25 R |

3,672,381 6/1972 Kida..... 135/24 X

**FOREIGN PATENTS OR APPLICATIONS**

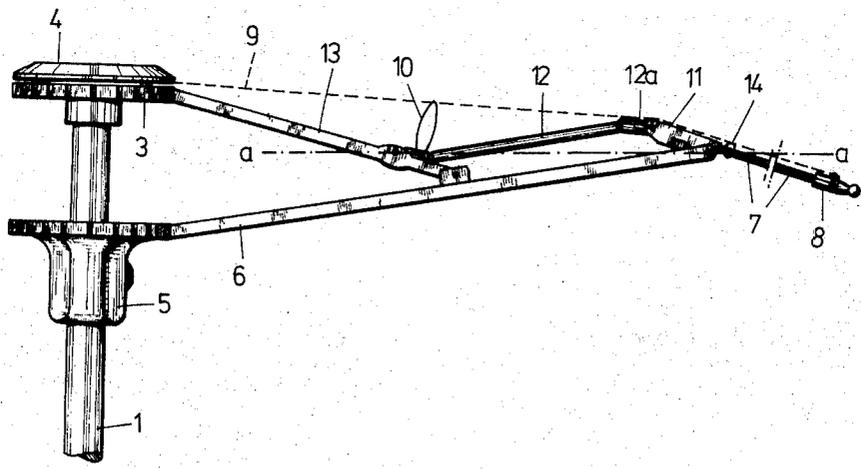
677,607 8/1952 Great Britain..... 135/25

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[57] **ABSTRACT**

A pocket umbrella with a runner having linked thereto the inner ends of main stays the outer ends of which are respectively pivotally connected to roof bars the inner ends of which are by means of a connecting bar pivotally connected to a roof stay having one end pivotally connected to the umbrella crown and having its other end pivotally connected to the respective adjacent main stay. Each respective pivotally interconnected unit formed by roof and connecting bars and roof and main stays forming an articulated quadrangle and each of the connecting bars having that end thereof which is adjacent to a double hinge pertaining to the respective adjacent roof bar bent in the direction toward the respective adjacent roof bar and linked to the respective adjacent double hinge.

**3 Claims, 12 Drawing Figures**



SHEET 1 OF 3  
Fig.1

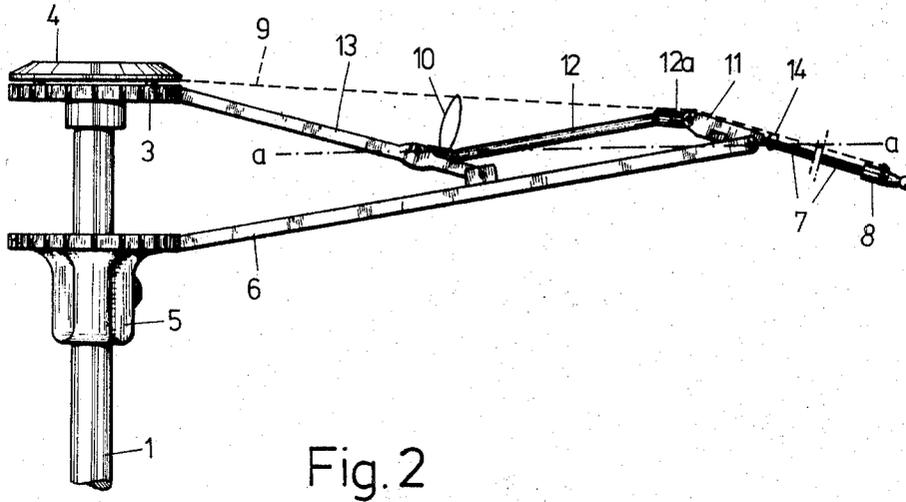


Fig. 2

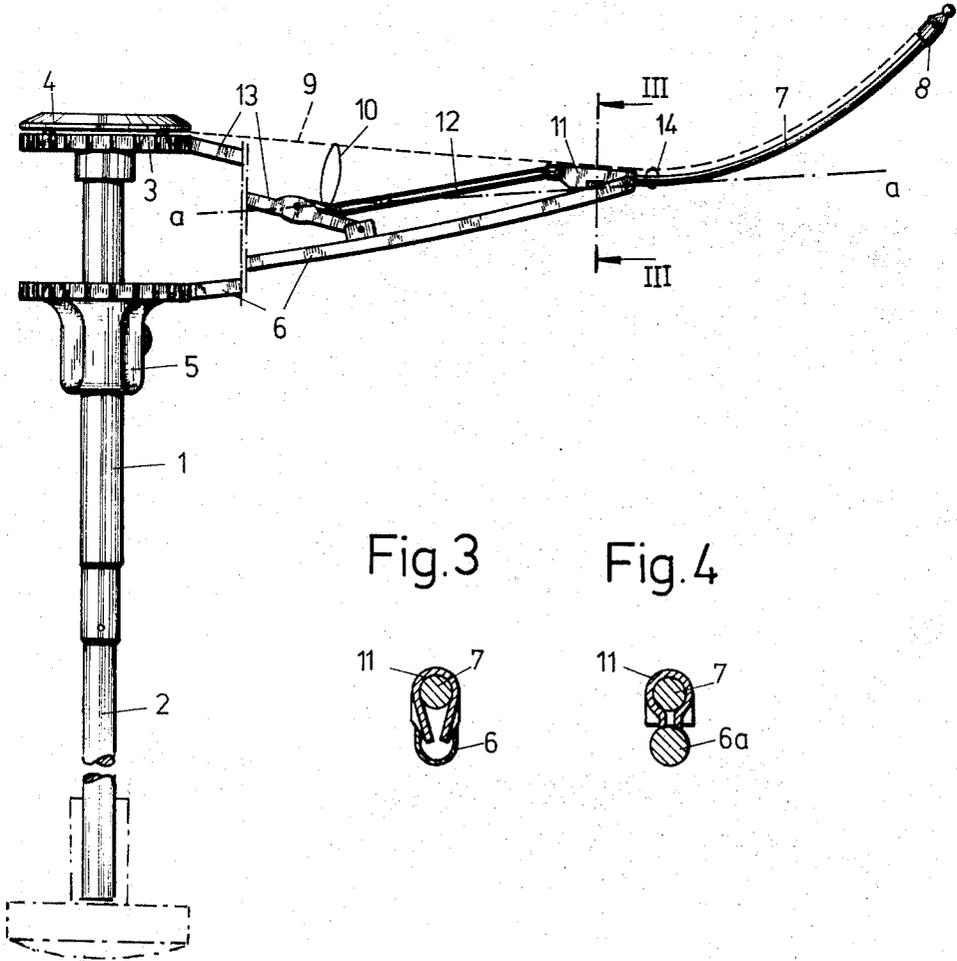


Fig. 3

Fig. 4

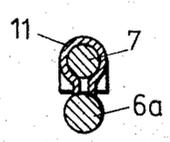
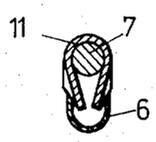


Fig. 5

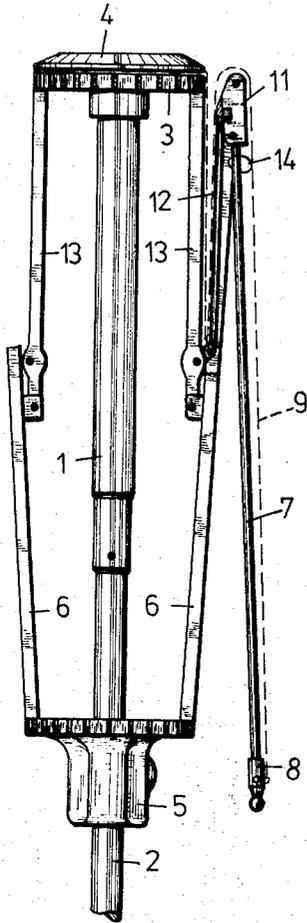


Fig. 8

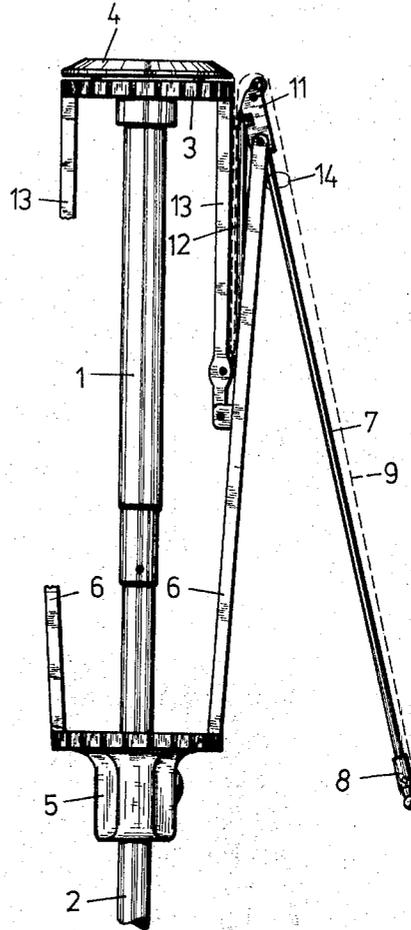


Fig. 6

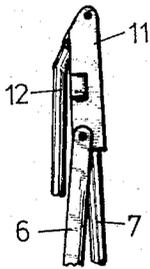


Fig. 7

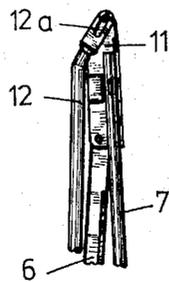
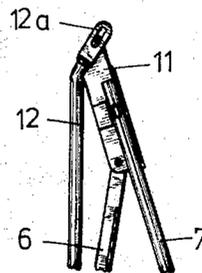


Fig. 9



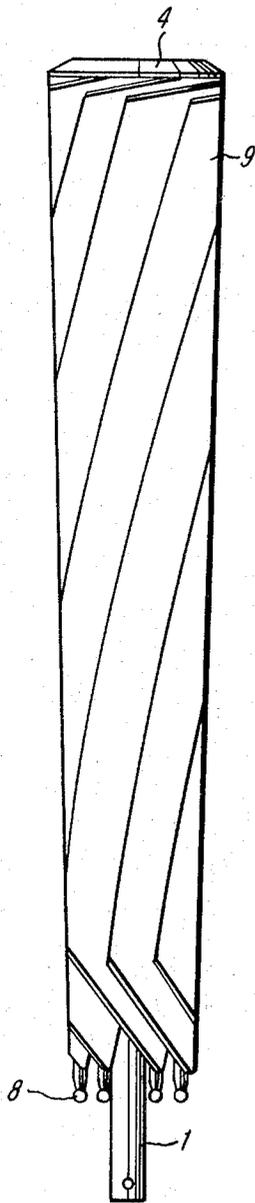


FIG-10

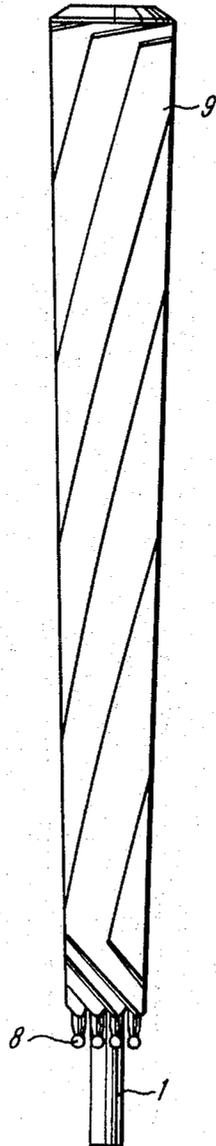


FIG-11

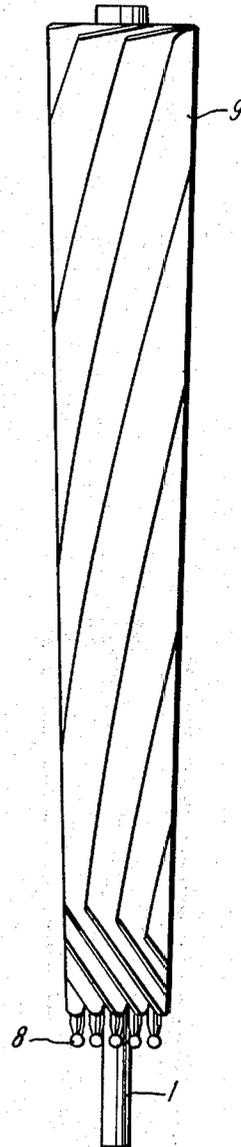


FIG-12

## POCKET UMBRELLA

The present invention relates to a pocket umbrella with a multi-sectional stick having connected thereto a crown and a handle while equipped with at least one runner on said stick. Hinged to said runner are the inner ends of mainstays, the outer ends of which are respectively connected with roof bars having their inner end hinged to a roof stay through the intervention of a connecting rod, which latter has its end hinged to the crown or the respective pertaining mainstay in such a way that the connecting bar, that portion of the roof stay which is located between the hinge of the connecting bar and the mainstay, that part of the mainstay which is located between the hinge of the roof bar and the roof stay, and that part of the roof stay which is located between the hinge of the mainstay and the connecting bar form an articulated quadrangle in the manner of a parallelogram.

Pocket umbrellas of the above mentioned type are known. Such pocket umbrellas have the advantage over the customary pocket umbrella that the umbrella cover forming the umbrella roof will automatically fold itself together when the umbrella is closed, so that the folding of the umbrella cover heretofore customary with pocket umbrellas and requiring some skillfulness will not be necessary. In spite of this advantage, the above described pocket umbrellas which have been known for several decades have heretofore not resulted in a major production because they have inherent thereto a decisive drawback. When with heretofore known umbrella constructions, the roof bars are turned over or outwardly by excessive stresses, especially by a gust of wind so that the umbrella cover loses its ordinary mushroom-shaped form and the roof bars bend outwardly and upwardly, a customary closing of the umbrella by moving the runner toward the handle, automatically distorts and buckles the stays. This destructive handling of the umbrella frame could heretofore not be prevented with heretofore known constructions because the stays will, with the inverted umbrella roof, have its linkage or hinge points occupy a kind of beyond dead center position.

It is, therefore, an object of the present invention to provide an umbrella of the above mentioned type, the umbrella frame of which will also from the inverted condition be closeable without the danger of damaging the umbrella, by sliding the runner toward the umbrella handle.

These and other objects and advantages of the invention will appear more clearly from the following specification, in connection with the accompanying drawings, in which:

FIG. 1 is a side view of an opened pocket umbrella according to the invention.

FIG. 2 shows a side view of the umbrella of FIG. 1, according to which the roof bar is shown as being inverted due to excessive forces, for instance, wind pressure acting upon the umbrella roof.

FIG. 3 is a cross section through the double hinge used in connection with the present invention, said section being taken along the line III—III of FIG. 2.

FIG. 4 shows a cross section similar to that of FIG. 3, but modified thereover.

FIG. 5 is a side view of a closed pocket umbrella according to the invention.

FIG. 6 shows the double hinge of FIG. 5, but on a somewhat larger scale than that of FIG. 5.

FIG. 7 shows the hinge of FIG. 6 with one element removed.

FIG. 8 is a side view of FIG. 5 showing the umbrella during the initial opening phase.

FIG. 9 is a view similar to that of FIG. 7, but in a position corresponding to the umbrella position of FIG. 8.

FIG. 10 illustrates a pocket umbrella corresponding to the position of the umbrella as shown in FIG. 5, but with an umbrella cover thereon.

FIG. 11 shows the umbrella of FIG. 10, but turned relative thereto by 90° about the umbrella axis.

FIG. 12 is an illustration of an umbrella corresponding to that of FIG. 5 with an umbrella cover in which, however, the crown, the runner, and the tip are round.

The above outlined object has been realized by a pocket umbrella which is characterized primarily in that at least the outer end of a connecting rod which connects a roof stay with the roof bar is bent in the direction of the roof bar and is hinged to a double hinge which is connected to the end of the roof bar and to which is simultaneously hinged the mainstay. The hinging of the connecting bar to the double hinge is, in conformity with a further development of the invention, effected by an oblong hole connection.

With this suggestion according to the invention which applies not only to pocket umbrellas which when closed are in round condition, but also applies to a flat cross-sectional shape of the umbrella when the latter is in folded together condition, it will be assured that with the opened umbrella an undue stress of the roof bars will bring about that the double hinge will rest against the mainstay. This engagement of the double hinge is brought about on one hand by the connection between the connecting bar and the double hinge, and on the other hand by the short distance between this joint and the linkage connection of the mainstay to the double hinge. The short distance between the joints of the double hinge is made possible by bending the connecting bar in the direction toward the roof bar. This engagement of the mainstay by the double hinge will thus with the inverted umbrella prevent the joints of the umbrella frame from occupying a beyond dead center position. The pocket umbrella according to the invention therefore can also with inverted roof, by means of a movement of the runner toward the handle, be closed in a simple manner and without the danger of causing damage.

In order to assure a safe engagement of the mainstay by the double hinge, it is possible when employing U-shaped mainstays, according to a further feature of the invention to make the side stays of the double hinge at least partially narrower than the U-profile of the mainstays. The legs of the U-profile of the mainstays will in this way assure a safe guiding of the double hinge which engages the mainstay. If the mainstays of the pocket umbrella are to be designed solid, it is advantageous when the lateral stays of the double hinge surround the roof bars in the clamping region over an area of approximately 360° so that the closely adjacent lateral stays will, in case of an undue stress exerted upon the roof bars, safely hit upon the solid mainstay.

With a pocket umbrella having an automatically folding umbrella cover, it is known to provide a double

hinge on the roof bar for hinging the mainstay and the connecting bar. However, with this design, in view of the exchange position of mainstay and connecting bar, a nonfavorable situation is created which will prevent the occurrence of the effect which is otherwise obtained by the employment of a double hinge.

Referring now to the drawings in detail, the pocket umbrella illustrated therein comprises a telescopically arranged stick which includes an upper stick 1 and a lower stick 2 and has a crown 3 with crown top 4 arranged on the upper stick 1. The lower stick 2 carries a handle (not shown in the drawing). Guided on the stick 1 is a runner 5 having hinged thereto a plurality of mainstays 6. Each mainstay 6 has its outer end articulated to a roof bar 7. Arranged on the outer end of the roof bar 7 are tips 8 which are adapted to be slipped upon the bars and to which the corners of an umbrella cover 9 may be connected. The umbrella cover 9 is, at its center, fixed to the crown 3 by means of the crown top 4. In addition thereto, the umbrella cover 9 is, by loops 10, also connected to the umbrella frame.

The hinging of the roof bar 7 to the mainstay 6 is effected by means of a double hinge 11 which is firmly clamped to the roof bar 7. This double hinge 11 connects the inner end of the roof bar 7 furthermore with a connecting bar 12 which at its other end is linked to a roof stay 13. The roof stay 13 has one end linked to the crown 3 and has its other end linked to the mainstay 6.

That end of the connecting bar 12 which is linked to the roof bar 7 is bent off in the direction of the roof bar 7 and is, by means of an oblong hole 12a, linked to double hinge 11. This design is particularly clearly shown in FIGS. 7 and 9. From FIGS. 1 and 2 it will be seen that the double hinge 11, the connecting bar 12, that portion of the roof stay 13 which is located between the linkage point of the connecting bar 12 with stay 13 and linkage point of stay 13 with the mainstay 6 (the length of this portion coincides with the length of the double hinge 11), as well as that part of the mainstay 6 which is located between the linkage point of stay 6 with roof bar 7 and the linkage point of stay 6 with roof stay 13 together form an articulated quadrangle in the manner of a parallelogram. The articulated quadrangle differs from a parallelogram inasmuch as the connecting bar 12 is bent toward the roof bar 7. The difference in movement which will occur as a result of the bending off is made possible by the oblong hole 12a at the end of the connecting bar 12.

When the roof bars 7 of the pocket umbrella illustrated in FIG. 1 are subjected to an upwardly directed force, which always occurs when the bottom side of the umbrella cover 9 connected to the tips 8 is acted upon by a high wind pressure, the roof bars 7 are bent upwardly, as shown in FIG. 2. As a result thereof, the umbrella cover 9 is turned upwardly. The umbrella in this condition may be termed "an inside-out turned umbrella." In order with such inside-out turned umbrella, to permit a normal closing of the umbrella frame by moving the runner 5 in the direction toward the umbrella handle, it is necessary to see to it that the linkage connection of the connecting bar or strut 12 with the roof bar 7 will, with regard to the linkage points of the connecting bar 12 with the roof stay 13 and the mainstay 6 on the roof bar 7, not occupy a beyond dead center position. In FIGS. 1 and 2, the dead center position is indicated by a dot-dash line *a-a*.

FIG. 2 clearly shows that a beyond dead center position of the linkage point of the connecting bar 12 with the double hinge 11 is prevented by the hinge 11 engaging the mainstay 6. The enlarged showing in FIG. 3 illustrates how the lateral webs of the double hinge 11 rests against the mainstay 6, which latter has a U-shaped profile. When employing a mainstay 6a with a round solid profiling, it is expedient to have the lateral webs of the double hinge 11 surround the roof bar 7 within the clamping range over an angle of nearly 360° so that an engagement of the mainstay 6a by the double hinge 11 will be assured as it is illustrated in FIG. 4 in cross section.

If it is intended to open up the above described pocket umbrella from its closed position shown in FIG. 5, it is merely necessary to move the runner 5 in the direction toward the crown 3. In this connection, according to FIG. 8, the roof bars 7 are separated and the umbrella cover 9 is opened until the pocket umbrella has occupied the position shown in FIG. 1. During the spreading of the umbrella frame, the pin which serves for linking the connecting bar 12 to the double hinge 11 moves from the FIG. 7 position within the longitudinal bore 12a into the position of FIG. 9. The oblong hole 12a will also, when a load acts upon the roof bar 7 as shown in FIG. 2, make possible a safe engagement of the mainstay 6 by the double hinge 11.

When closing the umbrella from the opening position of FIG. 1, the loops 10, which are arranged in the vicinity of the point where the connecting bar 12 is linked to the roof stay 13, bring about that the umbrella cover 9 is automatically folded together so that when in closed position the umbrella cover will occupy the position shown in FIG. 5 by dash lines. In order to prevent the umbrella cover 9 from slipping, it may be held to the roof bar 7 by loops 14.

It is, of course, to be understood that the present invention is, by no means, limited to the particular showing in the drawings, but also comprises any modifications within the scope of the appended claims.

What we claim is:

1. A folding umbrella which includes a multi-sectional umbrella stick having its sections telescopically arranged one within the other, said stick having opposed upper and lower ends; a handle connected to the lower end of said stick; a crown connected to the upper end of said stick; a runner slidably mounted on said stick between said handle and said crown;
- a plurality of mainstays, each having opposed inner and outer ends, said mainstays being distributed around said runner and each of said mainstays having their inner end pivotally connected to said runner;
- a plurality of elongated double hinge members, each having a pair of opposed inner and outer ends, said outer ends of each of said hinge members being pivotally connected to an outer end of a respective one of each of said mainstays;
- a plurality of roof bars, each having opposed inner and outer ends, said inner ends of said roof bars each being frictionally engaged in a respective one of said double hinge members;
- an umbrella cover connected to said crown and extending between said crown and said outer ends of said roof bars;

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a plurality of tips on the outer ends of said roof bars for holding said cover in place against said roof bar when said cover is in extended condition;

a plurality of roof stays each having opposed inner and outer ends, said inner ends of said roof stays being pivotally connected to said crown and distributed therearound, said outer ends of each of said roof stays being pivotally connected to a respective mainstay, intermediate the ends of said respective mainstay;

a plurality of connecting bars, each having opposed inner and outer ends, said inner ends of each of said connecting bars being pivotally connected to a respective one of said roof stays intermediate the ends of said respective roof stays, said outer ends of each of said connecting bars being slidably and pivotally connected to said inner end of a respective one of said double hinges, said outer ends of each of said connecting bars being bent in a direction toward the respective roof bar engaged in the

respective one of said double hinges, so that said roof bars can flex upwardly without damage to the umbrella by virtue of the pivotal and sliding connection between said inner ends of each of said hinges and said outer ends of each of said connecting bars when wind pressure is exerted against the bottom of the umbrella cover to assist in spilling air to prevent damage to the umbrella.

2. A pocket umbrella in combination according to claim 1, in which the mainstays have a U-shaped cross section, and in which each of said double hinges has lateral web means at least partially narrower than the U-shaped profile of said mainstays.

3. A pocket umbrella in combination according to claim 1, in which said mainstays are solid, and in which each of said double hinges has lateral web means clamped around the pertaining mainstay over an angle of approximately 360°.

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