April 4, 1961 W. TRIPPE ET AL 2,977,964

UMBRELLAS

Filed March 27, 1958

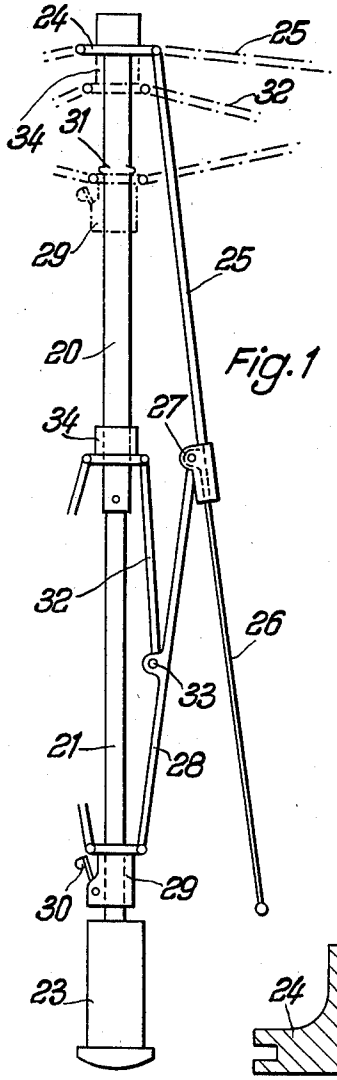


Fig. 1

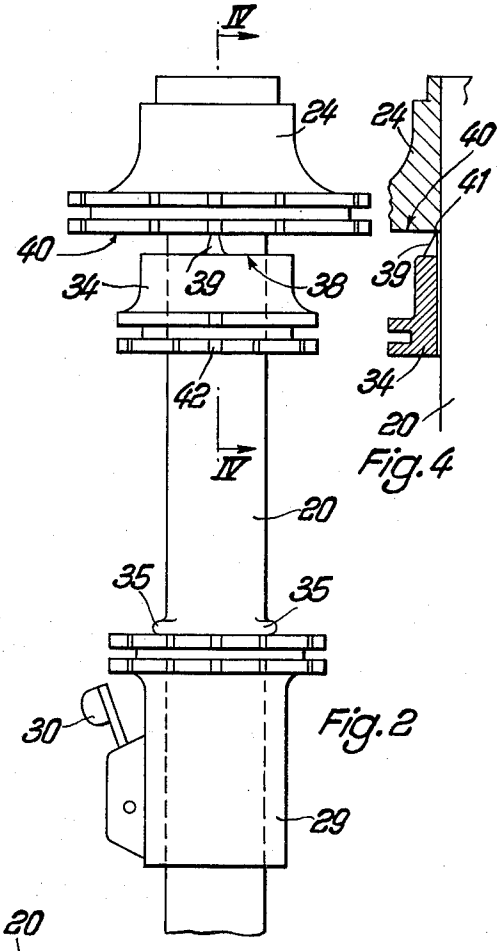


Fig. 2

Fig. 4

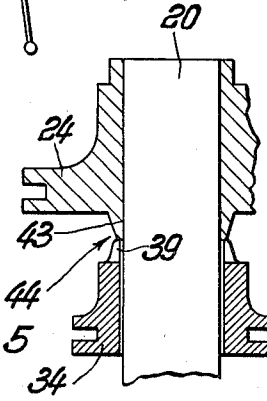


Fig. 5

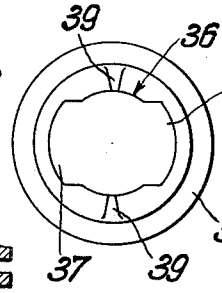


Fig. 3

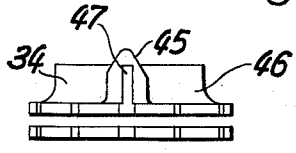


Fig. 6

Inventor:
WALTER TRIPPE
WERNER BREIL
by Mestern & Kollin
ATTORNEYS

United States Patent Office 2,977,964 Patented Apr. 4, 1961

2,977,964

UMBRELLAS

Walter Trippe, Krefeld, and Werner Breil, Solingen-Ohligs, Germany, assignors to Fritz Bremshey and Karl Heinz Eickhorn, trading as the firm: Bremshey & Co.

Filed Mar. 27, 1958, Ser. No. 724,479

Claims priority, application Germany Apr. 18, 1957

5 Claims. (Cl. 135—20)

In collapsible umbrellas in which the cover ribs are supported by main struts and auxiliary struts it may happen, especially if the umbrella is not used with proper care, that the material of the cover is damaged owing to being caught between an auxiliary slider to which the auxiliary struts are connected and the umbrella crown. This is particularly liable to happen if, when the umbrella is to be opened, excessive force is applied to the main slider, so that the frame supporting the cover is telescoped instead of being spread out. When this happens the auxiliary slider moves into its upper end position while the cover is closed and the material of the cover which is still folded together is clamped, if the folds are unsuitably formed, between the auxiliary slider and the crown, and is finally torn when the umbrella is opened by force.

In the umbrella according to the invention the clamping of the material of the cover at the place mentioned is prevented without the radial dimensions of the auxiliary slider having to be altered at all, or to any substantial extent. The invention proposes three alternative arrangements for solving the problem of preventing the material of the cover from being caught between the auxiliary slider and the umbrella crown.

The first solution consists in constructing the auxiliary slider and a stop which limits its upward movement towards the umbrella crown in such a way that they make substantially point contact with one another, preferably at two opposite places. The limitation to point contact makes the probability of the material becoming clamped so small that this occurrence which, moreover, only rarely takes place even in known umbrellas, is practically excluded. Further, if the points of contact at the periphery of the auxiliary slider are aligned with the pivots of the auxiliary struts, the probability of the cover being clamped is practically nil, because then every point of contact is situated in the plane in which one of the ribs swings and the rib then prevents the material from reaching the point of contact. Further, two opposite points of contact can be displaced by an angle of 90° relative to the actuating member of the locking device for the main slider. Then, when the umbrella is to be opened and is held as usual in a horizontal position, the actuating member will, as a rule, be on the upper side of the stick, so that the stops are situated on both sides of the stick where there is practically no danger of the material of the cover falling between the ribs.

The second solution of the above-mentioned problem consists, in accordance with the invention, in constructing the auxiliary slider and the stop for limiting its upward movement in such a way that they make approximately edge contact close to the surface of the stick. This solution is based on the consideration that an edge sliding along the surface of the stick does not have any tendency to clamp material between itself and the crown of the umbrella or a fixed stop on the stick.

In carrying this solution into practical effect, a problem

arises when a stop which limits the upward movement of the main slider is provided and the auxiliary slider must pass over this stop. In the usual construction the internal width of the auxiliary slider is considerably greater than the external diameter of the stick. An auxiliary slider which is constructed in this way could not have an edge forming a stop which slides directly along the surface of the stick. This difficulty is obviated by the invention in that the stop for limiting the travel of the main slider extends only around a part of the periphery of the stick, and the auxiliary slider has a recess which permits it to slide past the stop for the main slider. Outside the range of the stop for the main slider the auxiliary slider may then be made so narrow that its stop edges bear directly on the surface of the stick.

The two above-mentioned solutions can also be combined. In this case instead of providing a stop edge which slides along the stick, the auxiliary slider may be provided with separate projections which make approximately point contact and are disposed close to the stick.

A third solution of the above-mentioned problem is to make the stop for limiting the upward movement of the auxiliary slider in the form of a locking nose on the inner surface of the auxiliary slider, which nose under spring action enters into a recess in the wall of the stick. When the stop is formed in this way the material of the cover can only be clamped if it enters the recess in the wall of the stick which will practically never happen.

Further details of the invention will be seen from the accompanying description of a number of examples which are illustrated in the accompanying drawings, in which—

Fig. 1 is a diagrammatic view of the frame of a collapsible umbrella in which the invention can be used;

Fig. 2 is an elevation of the upper part of the stick with the crown and sliders on a larger scale showing the first constructional form of the invention;

Fig. 3 is a plan from above of the auxiliary slider shown in Fig. 2;

Fig. 4 is a longitudinal section on the line IV—IV of Fig. 2;

Fig. 5 is a view similar to Fig. 4 showing a modification of the construction shown in Figs. 2–4; and

Fig. 6 is a further modification of the construction shown in Figs. 1–4.

Referring to Fig. 1 of the drawings, the umbrella illustrated has, as usual, a stick consisting of two parts **20** and **21** which can be pushed one into the other, a handle **23**, and a crown **24** to which the ribs **25** and **26**, which can also be pushed one into the other, are pivotally connected. The main struts **28** are pivotally connected at **27** to the inner ends of the ribs **26**. The main struts **28** are also pivotally connected to a main slider **29** which is movable along the stick. The main slider **29** can be locked to the stick in its upper and lower end positions. For this purpose there is provided a hand-operated spring locking pawl **30** which, in its locking positions, engages in notches in the stick which are not shown in the drawing. The upward movement of the main slider **29** is limited by a stop **31**. Auxiliary struts **32** are provided for supporting the main struts **28**. The auxiliary struts **32** are pivoted at **33** to the main struts and all of them are pivotally connected to an auxiliary slider **34** which is movable along the stick. The path of the auxiliary slider along the stick extends beyond the stop **31** and the slider is so constructed that the stop **31** does not impede its movement. Its upward movement is limited either by the crown **24** or by a stop disposed closely below the crown. The umbrella cover, which is not shown, may get caught in the manner previously described between the auxiliary slider **34** and the crown

24 or the above-mentioned stop. This is avoided by the arrangements which will now be described.

In Figs. 2–6, for the sake of clearness, only the stick, the sliders and the umbrella crown are indicated and the struts and ribs pivoted to the sliders and the crown are omitted.

In the construction, according to Figs. 2–4, the upward path of the main slider 29 is limited by a stop consisting of two oppositely situated segments 35 which are pressed out of the wall of the stick. The internal width of the auxiliary slider 34, apart from the necessary clearance, is equal to the outer diameter of the stick part 20. In the inner wall 36, however, there are provided two recesses 37 which permit the auxiliary slider to pass freely over the segments 35.

On the upper surface 38 of the auxiliary slider there are two projections 39 which are opposite one another and are off-set relative to the recesses 37. When the auxiliary slider is in its upper end position, the projections 39 abut against the under surface 40 of the crown 24. The projections 39 are so narrow that they make substantially point contact at 41 with the surface 40. Moreover, the points of contact, as will be seen from Fig. 4, are close to the wall of the stick.

Even if the projections were at some distance from the wall of the stick the probability of the material of the umbrella cover being clamped between one of the projections 39 and the crown 24 would be small. This probability is reduced by the following further measures. Thus, as shown in Fig. 2, the projections 39 are disposed above one of the slots 42 in which the auxiliary struts 32 are pivoted. They, therefore, each lie in one of the planes in which the umbrella ribs move. The ribs, however, in the region of these planes, hold the material of the cover away from the stick and, therefore, from the projections 39. Further, as shown in Fig. 2, the projections 39 are displaced by an angle of 90° relative to a pawl 30 on the main slider 29. If the umbrella is opened in the usual way with the stick approximately horizontal, the pawl 30 will generally be uppermost, and the projections 39 at the side. However, when the projections are at the side, the danger of a fold of the cover between two ribs entering the dangerous region between the auxiliary slider and the umbrella crown is practically negligible.

In the modification shown in Fig. 5, the lower surface of the crown 24 is not used as an abutment for the projections 39 but, instead of this, there is provided on this surface a thin downwardly projecting tapering extension 43 which lies closely against the stick. By this means the probability of the cover being clamped at the place 44 is greatly reduced, so that, if desired, both the above-mentioned arrangements can be dispensed with.

In the modification shown in Fig. 6 a projection 45, which is similar in shape and arrangement to the stop 39, is prolonged downwardly over the outer surface 46 of the auxiliary slider 34 and is provided with a vertical groove 47 in which the twisted ends of the wire used for securing the auxiliary struts 32 are disposed and thereby protected so that they cannot damage the cover.

We claim:

1. A shortenable umbrella comprising a telescopic stick and ribs, main struts supporting the ribs and pivotally connected to main slider movable along the stick, auxiliary struts pivotally connected at points intermediate the ends of the main struts and pivotally connected to an auxiliary slider movable along the stick between the main slider and a crown to which said ribs are pivotally connected, and stop means for limiting the movement of said auxiliary slider towards said crown, said stop means projecting from the upper edge of said auxiliary slider and making substantially point contact with said crown.

2. A shortenable umbrella comprising a telescopic stick and ribs, main struts supporting the ribs and pivotally connected to a main slider movable along the stick, auxiliary struts pivotally connected at points intermediate the ends of the main struts and pivotally connected to an auxiliary slider movable along the stick between the main slider and a crown to which said ribs are pivotally connected, and stop means for limiting the movement of said auxiliary slider towards said crown, said stop means having points of contact approximately coinciding with the outer surface of said stick.

3. A shortenable umbrella comprising a telescopic stick and ribs, main struts supporting the ribs and pivotally connected to a main slider movable along the stick, auxiliary struts pivotally connected at points intermediate the ends of the main struts and pivotally connected to an auxiliary slider movable along the stick between the main slider and a crown to which said ribs are pivotally connected, and stop means for limiting the movement of said auxiliary slider towards said crown, said stop means having points of contact disposed at two diametrically opposite places relative to the axis of said stick.

4. A shortenable umbrella comprising a telescopic stick and ribs, main struts supporting the ribs and pivotally connected to a main slider movable along the stick, auxiliary struts pivotally connected at points intermediate the ends of the main struts and pivotally connected to an auxiliary slider movable along the stick between the main slider and a crown to which said ribs are pivotally connected, and stop means for limiting the movement of said auxiliary slider towards said crown, said stop means having points of contact disposed in a plane containing the axis of said stick and one of said ribs.

5. A shortenable umbrella comprising a telescopic stick and ribs, main struts supporting the ribs and pivotally connected to a main slider movable along the stick, auxiliary struts pivotally connected at points intermediate the ends of the main struts and pivotally connected to an auxiliary slider movable along the stick between the main slider and a crown to which said ribs are pivotally connected, stop means for limiting the movement of said auxiliary slider towards said crown, said stop means having points of contact for engaging the crown, and releasable locking means for locking said main slider to said stick, said locking means being offset at an angle of approximately 90° to said points of contact.

References Cited in the file of this patent

UNITED STATES PATENTS

180,719	Kirkham	Aug. 8, 1876
474,467	Batzel	May 10, 1892
1,067,435	McNamara	July 15, 1913
1,824,192	Bouma	Sept. 22, 1931
2,173,305	Marx	Sept. 19, 1939
2,833,297	Tibony	May 6, 1958

FOREIGN PATENTS

7,459	Great Britain	Mar. 28, 1898