Dec. 6, 1955

H. HAUPT

2,725,888

COLLAPSIBLE UMBRELLA

Filed March 10, 1953

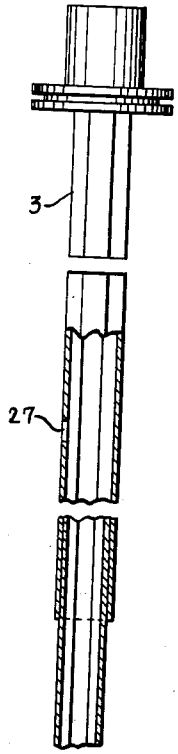


Fig 1

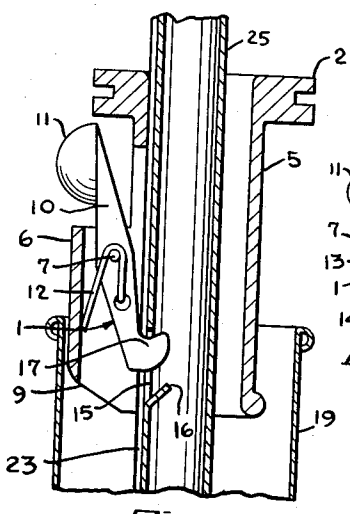


Fig 5

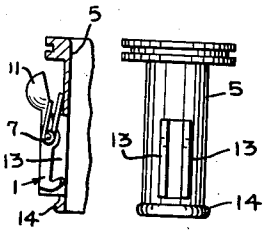


Fig 9

Fig 8

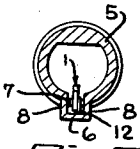


Fig 3

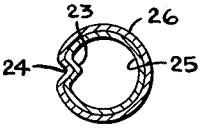


Fig 7

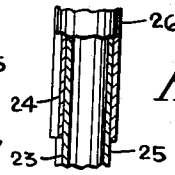


Fig 6

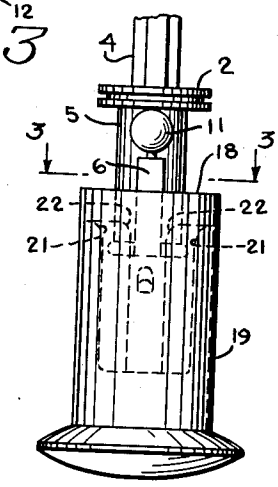


Fig 2

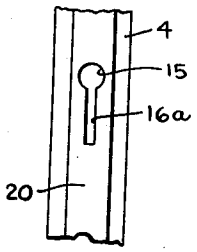


Fig 4

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COLLAPSIBLE UMBRELLA

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11 Claims. (Cl. 135—38)

This invention relates to collapsible unbrellas.

It is customary to secure the slides of these umbrellas in the open and in the collapsed state by spring operated locking ratchets. Suggestions have also been made to provide the slides with ratchets which in the collapsed and and open position of the umbrella cooperate with notches applied to the umbrella sticks. Difficulties, however, often arise with regard to a satisfactory working of the slides and the ratchets whereby the proper functioning of the umbrella is greatly impeded.

These difficulties often arise from the structure of the hitherto customary ratchets, which exert a locking action on both sides of the stick; moreover, during the collapsing of the umbrella the ratchets often get stuck in the notches and, consequently, do not slip into the handle carrying end of the stick.

It is the main object of this invention to secure a satisfactory operation of the umbrella ratchets or catches.

With this purpose in view an inwardly inclined flat plane member may be provided in the tubular stick which in cooperation with a notch forming opening in the hollow stick and upon downward displacement of the umbrella slide forces the ratchet into and from said notch.

This inclined plate-shaped member preferably consists of an inward dent of the wall of the tubular stick. In replacement of this inwardly inclined plate-shaped member an elongated slot may be provided in the tubular stick wall causing the liberation of the tiltable ratchet; simultaneously the slide is prevented to rotate. If in order to prevent weakening of the stick a short slot is used, the thereby caused short displacement of the slide may be used to move a locking spring against the tubular stick and in this manner to lift the same from the ratchet.

The bolt, which in the usual manner carries the ratchet, must be reliably supported, because the ratchet during its displacement and its locking action extends in an oblique direction relatively to the axis of the umbrella stick whereby strong radial forces are exerted upon the bolt which carries the ratchet. If, for instance, the ratchet reaches into its lowermost notch, which is located next to the lower stick portion and has a smaller diameter than the upper stick portion, the ratchet will assume a steep position relative to the stick axis; its removal from the notch is therefore difficult and the pressure exerted upon the bolt is correspondingly increased. These conditions are not considered in the hitherto customary constructions of the ratchets for collapsible umbrellas; but, they indeed cause frequent trouble, which is eliminated by the invention.

In conformity with the same a ratchet carrying bolt is provided in a portion of the slide walls and rearwardly projects from the latter. The bolt supporting wall portion of the slide may be formed by a small lateral bulge of the slide. In this case, the bulge covers the ratchet carrying bolt; this is very recommendable, as in this case injury to the umbrella cover is eliminated. The space enclosed by this bulge is not separated from the inner space of the slide; accordingly, the ratchet has a large

operative capacity. The bulge is open at its lower end, which simplifies its application.

Upon telescoping the umbrella the catch or ratchet which has been displaced towards the lower end of the umbrella must again be moved into the notch of the stick since otherwise the roof rods connected with the slide may not be automatically pulled out.

In order to securely enable this procedure the stick has a flat outside portion wherein the notch is located, which leads to the handle and forms a slide track underneath the notch.

It is particularly advantageous to provide in this case a longitudinal groove for the catch in the lower stick portion, the notch being formed by a break-through of the groove bottom. Since the notch should have a small size only to prevent a weakening of the stick and since on the other hand the rotation of the slide at the lower end of the umbrella due to the large distance from the umbrella crown is rather substantial, guide faces are provided at the hollow umbrella handle in conformity with the invention. The lower portion of the notch is located within the hollow handle to prevent entrance of humidity.

The invention will now be described with reference to the attached drawings.

In the drawings—

Fig. 1 is a longitudinal sectional view of the umbrella stick, the slide being shown in a position just before the termination of the umbrella closure;

Fig. 2 is a side view of the lower part of the umbrella stick;

Fig. 3 is a sectional view on line III to III;

Fig. 4 is a side view of a modification of the lower stick portion;

Fig. 5 is a longitudinal sectional view of the lower portion of the stick in a further modification of the invention;

Fig. 6 is a longitudinal sectional view of the middle portion of the umbrella stick shown in Fig. 5;

Fig. 7 is a cross sectional view of a detail shown in Fig. 6;

Fig. 8 is a side view of a further modification of the umbrella slide, and

Fig. 9 is a longitudinal sectional view of umbrella slide shown in Fig. 8 turned at an angle of 90°, the ratchet not being shown on this figure.

The ratchet **1**, which secures the slide **2** on the stick **3**, **4**, is supported in the sleeve **5** of the slide. A lateral extension **6** is provided of the slide for the purpose to house the ratchet **1** in such a manner that the bolt **7** supporting the same is properly carried in bores of the lateral walls of the extension **6**. This extension preferably has an opening **9** at its lower end. The ratchet **1**, which is located in the extension **6**, may therefore be easily mounted and may perform a large tilting movement; moreover, the building-in of the extension **6** is thus made easier. Only a short piece of the lever arm **10** of the ratchet **1** projects from the preferably open end of the extension **6**. The end of the arm **10** has the shape of a half-circular cap **11**. The ratchet **1** is influenced by spring **12**.

In conformity with Figs. 8 and 9 the extension **6** is replaced by two ledges **13**. The lower rim of the ratchet **1** is in this case preferably provided with a circular reinforcement **14**.

The above described ratchet **1** satisfactorily fulfills the object to release the slide without any manual cooperation. This automatically operable release of the ratchet **1** is of particular importance with the collapsible umbrellas, as it enables a farther downward displacement of the slide towards the lower stick, as hitherto customary.

The automatic release of the ratchet **1** takes place, as follows.

In the lower hexagonal stick member **4** a notch **15** and an inclined flat member **16** are provided by an impression into the wall of the lower stick member **4**. Upon collapsing the umbrella the locking nose or catch **17** of the ratchet **1** hits upon this inclined flat member **16** and is thus released.

The inclined plane may be replaced, see Fig. 4, by a slot-shaped elongation **16a** of the notch **15** into which the ratchet **1** slides upon shortening of the umbrella.

By a length reduction of the slot the displacement of the catch **17** in the slot may be used to force cap **11** applied to the ratchet arm against the upper rim **18** of the handle **19**, see Fig. 2, and to thereby cause the release of the catch **17** from the slot **16a**.

If the umbrella is extended the catch **17**, which has been moved towards the lower stick end, will enter into the recess **15** in spite of the fact that the slide **2** during the stretching and elongation of the umbrella is not guided manually. This entrance of the catch **17** is particularly difficult if the lower stick section **4** has a smaller diameter than the upper section and consequently the free space between the slide **2** and the stick member **4** is comparatively large. Therefore, the notch or recess **15** is located in a flat section **20**, see Fig. 4, of the lower stick member **4**, which has a smaller diameter than the upper stick member **3**; this flat section is extended beyond the recess or notch **15** towards the outer end of the handle whereby a safe sliding face is created for the catch **17** during its displacement.

In conformity with the embodiment of the invention illustrated in Figs. 1–3 guiding faces **21** are provided for the slide **2** in the hollow handle **19** which move the handle against the pressure exerted by the spring **12**, into a center position relative to the stick member **4**, Figs. 1, 5; moreover, guide faces **22** are provided, along which the extension **6**, Fig. 2, of the slide **2** moves, whereby, if necessary, the slide may be rotated into the correct position relative to the stick member **4**.

In the embodiment of the invention shown in Figs. 5–7 the catch **17** is guided in the grooved portions **23, 24** of the stick members **25, 26** the notch **15** being formed by an opening in the bottom of the grooved portion **23**.

The notch or recess **15** is located within the hollow handle **19** for protection against moisture. In the opened state of the umbrella the nose **17** enters into a notch **27** of the upper slide member.

Since certain changes may be made in the above article and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. In a collapsible umbrella a handle and a stick composed of displaceable hollow upper and lower stick members, an umbrella slide applied to said stick and a tiltable ratchet carried by said slide, a notch in the wall of said lower stick member, said tiltable ratchet adapted to enter said notch, means to cause an automatic withdrawal of said ratchet from said notch upon the final shortening of the umbrella stick and to thereby enable the movement of said slide into the lower end portion of the umbrella handle.

2. In a collapsible umbrella according to claim 1, an inwardly and upwardly inclined flat member located at the lower end of said notch, a locking nose applied to the lower end of said tiltable ratchet, said nose being shaped to downwardly slide onto and in contact with said inclined flat member and to thereby cause the automatic withdrawal of said ratchet from the umbrella stick upon the shortening of the umbrella.

3. In a collapsible umbrella according to claim 2, said notch extending into a slot-shaped elongation provided in the wall of the lower stick member and adapted to receive said locking nose during the shortening of the umbrella.

4. In a collapsible umbrella according to claim 2, said lower stick member being provided with a flat surface portion and said notch being arranged in said flat surface portion, the latter downwardly extending beyond said notch towards the handle to provide a safe guide for the locking nose during the displacement of the slide within the range located underneath said notch.

5. In a collapsible umbrella according to claim 4, a longitudinal outside groove applied to the lower stick member for the guidance of the locking nose of the ratchet, and a recess in said groove accommodating portion of the stick member to form said notch.

6. In a collapsible umbrella according to claim 5, guide faces applied to said hollow handle to direct the slide during its displacement into said handle and to prevent its rotation.

7. In a collapsible umbrella according to claim 6, the notch to receive said tiltable ratchet being located at the lower end of the stick member.

8. In a collapsible umbrella according to claim 1, an inner rim in said umbrella handle, said tiltable ratchet being provided with an upper arm and adapted upon displacement of said locking nose in said slot to hit upon the inner rim of the umbrella handle whereby said locking nose is lifted from said slot.

9. In a collapsible umbrella according to claim 1, a bolt to tiltably support said ratchet, two opposite lateral walls projecting from said slide to support said bolt said walls consisting of one and the same piece with said slide and the wall enclosed spaced being in communication with the inner space of said slide.

10. In a collapsible umbrella according to claim 9, the bolt carrying walls forming a lateral outwardly closed extension of the slide and a one piece structure with the same.

11. In a collapsible umbrella according to claim 10, said extension being open at the lower end.

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