Dec. 17, 1957 H. WÜSTER 2,816,560

SELF-CLOSING UMBRELLA FRAME

Filed May 23, 1956

FIG. 2

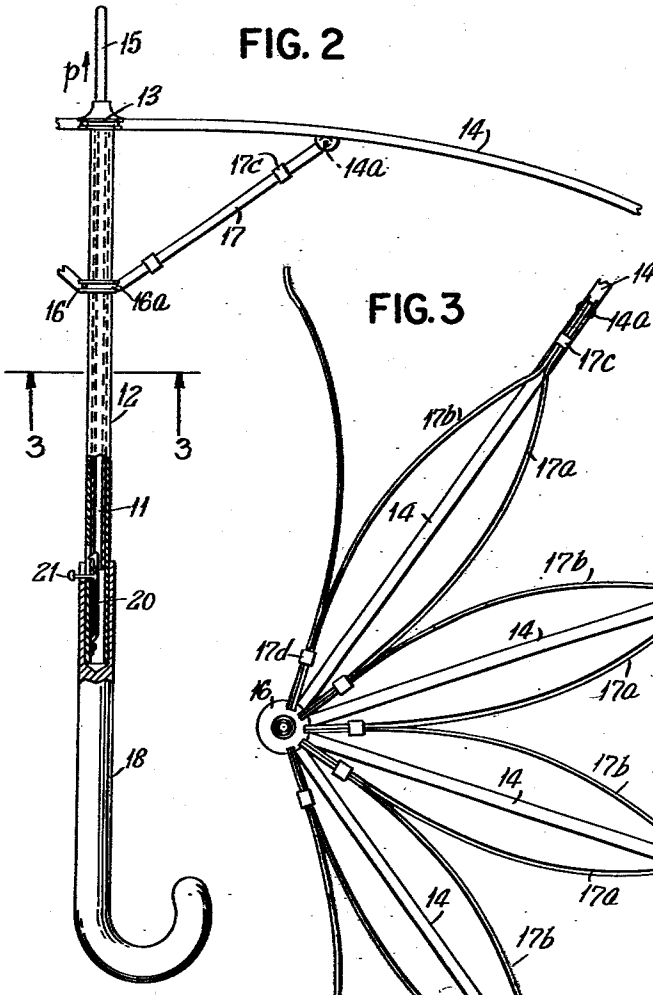


FIG. 3

FIG. 1

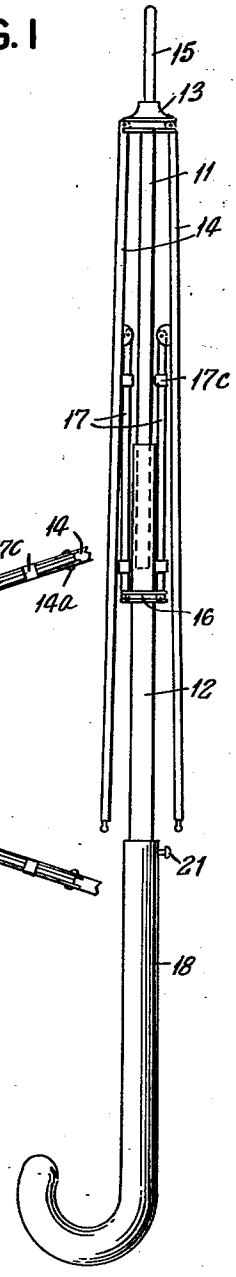
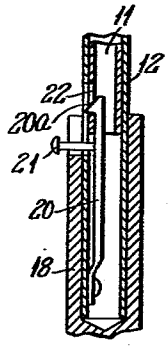


FIG. 4



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SELF-CLOSING UMBRELLA FRAME

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2 Claims. (Cl. 135—23)

My invention relates to umbrella frames with a stick comprising two telescoping members and more particularly to umbrella frames of such type which close automatically upon release of a spring which connects the said stick members and which is held in tensioned state while the frame is open.

In the known frames of that type a helical spring is being used which is mounted in the outer of the two telescoping stick members, such spring being either an extension spring or a compression spring. Such frames containing an extension spring could not be operated with one hand as necessarily both hands had to be used to tension the spring. Frames containing a compression spring, though easier operable, could also hardly be operated with one hand because an actuating sleeve attached to the inner stick member and sliding upon the outer stick member had to be displaced thereupon in order to open the umbrella frame against the force of said spring. In both cases, however, the placement of said spring into the stick members put certain limitations on the selection of a safely operating spring and resulted in unfavorable operating and manufacturing conditions.

The principal object of my invention is to overcome the above mentioned disadvantages and to provide a self-closing umbrella frame which is reliable and easy to operate particularly opened or closed with one hand and which is of simple construction. According to my invention I use in my umbrella frame spring or French stretchers which are jointed with one end to the conventional ribs of the frame and with their other ends to the inner or upper portion of the outer stick member each of said spring or French stretchers comprising a pair of flat counter springs which are substantially parallel to the extended stick members when the frame is closed and which are being tensioned while being moved into increasingly inclined positions relative to the stick members when the same are telescoped into each other by exerting an axial pressure upon the inner stick member in order to open the frame and which are being tensioned by compression when the outer stick member is being telescoped over the inner stick member to open the frame.

The said and other objects of my invention will be more fully understood from the following specification when read with the accompanying drawing in which one embodiment is illustrated.

In the drawing my new umbrella frame is shown in Fig. 1 in a side view in closed position and in Fig. 2 in a side view partly in section in open position; Fig. 3 shows a cross sectional view along line 3—3 of Fig. 2 and Fig. 4 the locking means in a sectional view in larger scale.

The same reference numerals indicate the same parts in all figures of the drawing.

As shown in the drawing the umbrella frame comprises a stick composed of two telescoping tubular stick members namely an inner or upper member **11** and an outer or lower member **12**. The latter is provided with a customary handle **18**. The inner or upper stick member **11**

is provided with a customary crown **13** adapted to pivotably support a plurality of ribs **14**, and with a tip or end piece **15**. The telescoping stick members **11** and **12** are in elongated position when the frame is closed (Fig. 1) and in shortened position when the frame is open (Fig. 2). In such open position the upper end of the outer stick member **12** advantageously abuts against the crown **13** to limit its upward movement. A collar **16** secured to the outer stick member **12** supports pivotably a plurality of struts or stretchers **17** which with their other ends at **14***a* are jointed to a middle portion of their respective rib **14**.

The telescoping stick members **11** and **12** are held in extended position while the frame is open as shown in Fig. 2 by a locking device illustrated in detail in Fig. 4. The locking device comprises a spring latch **20** secured within the lower end of the outer stick member **12** and provided with a hook **20***a* adapted to fall into a groove or hole **22** arranged near the lower end of the inner stick member **11**. The said hook **20***a* is being disengaged from said groove or hole **22** by depressing the actuating knob **21** upon said latch **20**.

In accordance with my invention the struts or stretchers **17** are constituted by compression springs which are in substantially untensioned state when the frame is closed (Fig. 1) and in tensioned state after the frame has been opened (Fig. 2). In the shown embodiment each stretcher **17** is composed of a pair of flat counter springs **17***a*, **17***b* which are substantially parallel when untensioned and which form a more or less oval loop when tensioned by being compressed in their longitudinal direction. It is advantageous to connect the paired springs **17***a*, **17***b* near their outer ends at **17***c* and also adjoining springs **17***a*, **17***b* of neighbouring spring pairs at their inner ends at **17***d*. Such connection may be effected by soldering or by sleeves, collars, clamps or the like made of metal or preferably of plastics which are self-binding by pressure or heat.

My umbrella frame operates as follows:

Suppose the open umbrella frame as shown in Fig. 2 is being held by a user grasping the handle **18** in one hand. In said position the elastic struts **17** are in tensioned state as illustrated in Fig. 3. If the user of the umbrella by depressing the knob **21** with its other hand released the spring latch **20** the tensioned struts **17** will force the inner stick member **11** to telescope upwardly in the direction of arrow *p* from the outer stick member **12** until the closed position of the frame shown in Fig. 1 is reached. The umbrella frame has thus been closed automatically.

If it is desired to reopen the frame the tip **15** is set against the ground or a wall or other support and by pressing against handle **18** in axial direction of the stick members the outer stick member **12** is telescoped over the inner stick member **11** into the position shown in Fig. 2 until the hook spring **20** engages the hole **22** thus holding the frame in open position.

While one embodiment of my invention has been shown and described in detail to illustrate the application of the principles of my invention, it will be well understood that the same may be otherwise embodied without departing from such principles and without avoiding the scope of the appended claims.

What I claim as my invention is:

1. An umbrella frame comprising in combination a telescoping stick including an inner stick member and an outer tubular stick member, the outward end of the outer stick member being adapted to receive a handle; releasable detent means on the outward end of said outer stick member adapted to engage the inner stick member when said stick members are telescoped into each other while the frame is open; a crown mounted upon the out-

ward portion of the inner stick member; a plurality of ribs radially extending from said crown and pivoted thereto; a collar secured to the inner end portion of the outer stick member; and a plurality of French stretchers jointedly connecting said collar and said ribs at an intermediate portion thereof, each French stretcher comprising a pair of flat counter springs which are substantially parallel to the extended stick members while the frame is closed and which are tensioned while being moved into increasingly inclined positions relative to the stick members when the same are telescoped into each other by exerting an axial pressure upon the inner stick member in order to open the frame.

2. A self-closing umbrella according to claim 1 wherein the said collar is secured to the outer stick member at such distance from the outer or upper end thereof that the outer stick member abuts against said crown when the frame is open.

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