Aug. 1, 1939. H. BERNHARD 2,168,188

COLLAPSIBLE UMBRELLA

Filed April 27, 1936 2 Sheets-Sheet 1

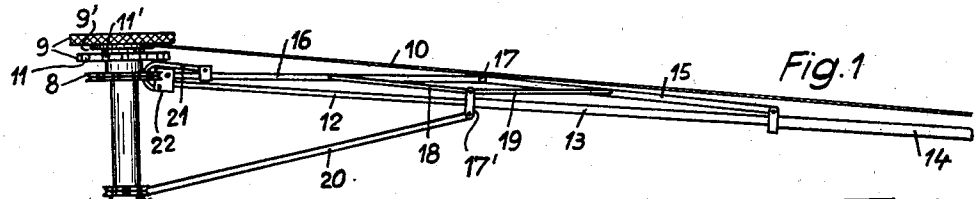


Fig. 1

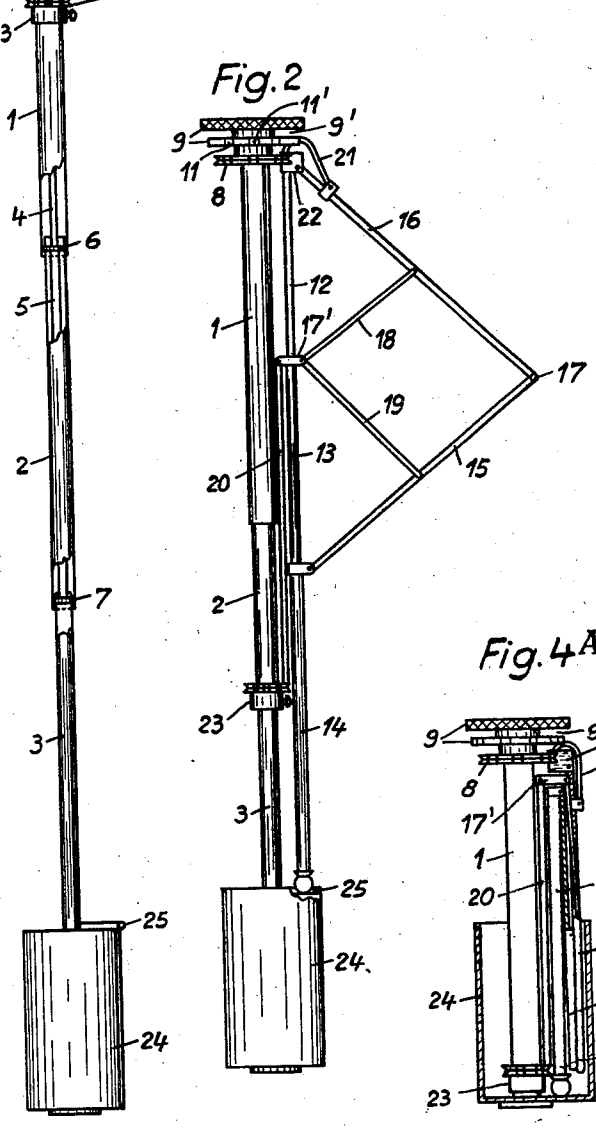


Fig. 2

Fig. 3

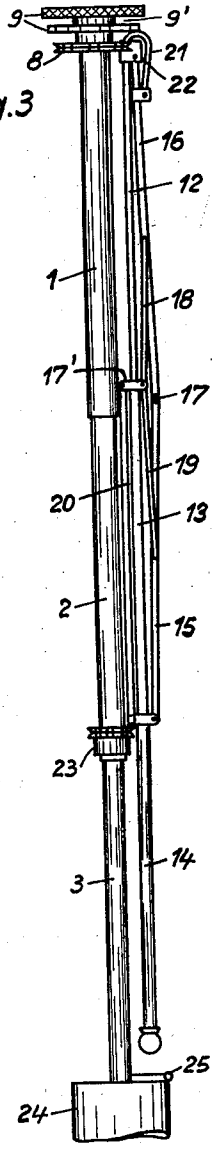


Fig. 4A

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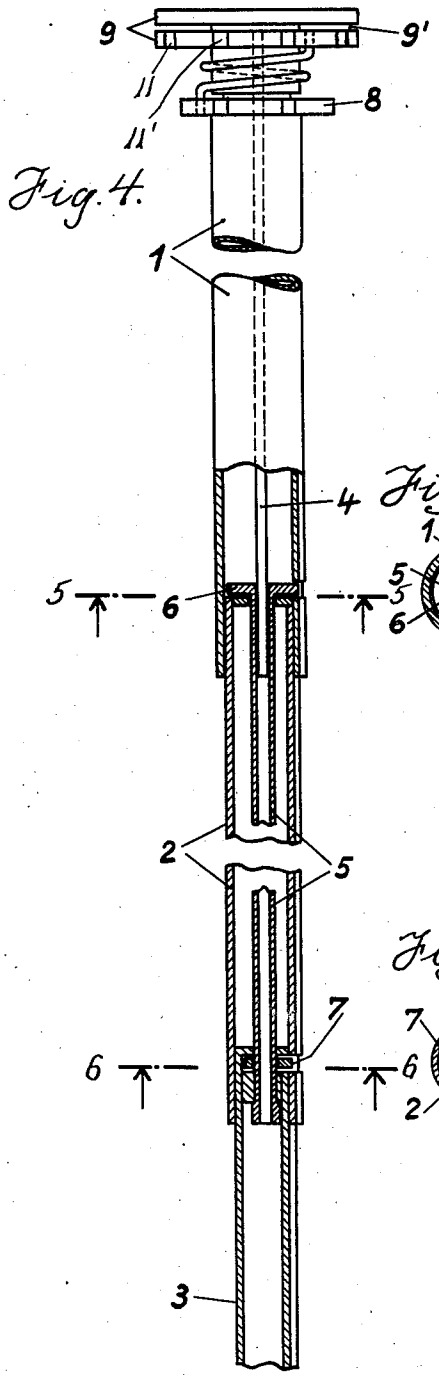


Fig. 4.

Fig. 5.

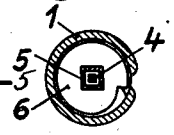


Fig. 5.A

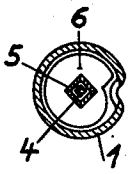


Fig. 6.

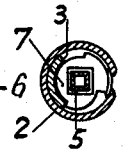
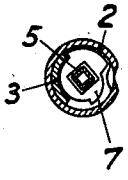


Fig. 6.A



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COLLAPSIBLE UMBRELLA

Hans Bernhard, Zurich, Switzerland

Application April 27, 1936, Serial No. 76,671
In Switzerland November 23, 1935

9 Claims. (Cl. 135—26)

A large number of constructions of umbrellas capable of being shortened are known with telescoping handle and rib elements. Constructions capable of being shortened at least three times, that is to say actual pocket umbrellas, have not been satisfactory in practice as they contain various defects including the following: when shortening the umbrella the covering instead of being folded is only pressed into a ball, consequently it is entangled and easily liable to be torn. Further, previous pocket umbrellas are difficult to manipulate as the constructions thereof are such that the functions do not take place positively as a result of which the umbrellas also become heavy and bulky.

These disadvantages are eliminated by the present invention. It is characterised by an umbrella, capable of being shortened, with telescoping stick and rib elements, while on the latter there are provided supports serving to carry the covering as also for extending the rib elements and for holding these in the operative positions, the supports after collapsing the rib elements being capable of folding in the longitudinal direction of the umbrella. Additional stays which connect the supports to the middle rib element provide for a uniform and positive co-operation of all the ribs with one another.

In the accompanying drawings are illustrated by way of example one form of construction.

Fig. 1 shows a side elevation of the rib structure of the extended umbrella restricted to a single rib.

Fig. 2 is a side elevation of the shortened umbrella.

Fig. 3 is a side elevation of the extended umbrella.

Fig. 4A is a side elevation of the completely shortened umbrella, the handle **24** being shown in section.

Fig. 4 is an enlarged detail elevation and part section of a portion of the invention.

Figs. 5 and 5A are sections on the line **5—5** of Fig. 4, showing respectively the two positions, one where the sections **1** and **2** of the stick are "locked" and the other where the sections are "unlocked".

Figs. 6 and 6A are sections on the line **6—6** of Fig. 4 showing the "locked and unlocked" positions respectively of the sections **2** and **3**.

1, **2** and **3** indicate the telescoping stick elements which can be withdrawn and telescoped in a non-rotatable manner. **4** and **5** are also telescoping elements which are rotatable and carry discs **6** and **7** respectively, which discs serve for locking the extended stick parts **1**, **2** and **3**. The uppermost stick part carries the umbrella top **8**. **9** indicates a knob which can be turned through a number of degrees and is always again turned into its initial position by a spring. The knob **9** is provided with a groove **9'** for the reception of the cover material **10** and on the part thereof turned towards the umbrella top **8** is provided with notches **11**, **11'** and so on according to the number of ribs. The member **4** which serves to hold the stick elements in the extended position is also secured to the knob **9** and is actuated thereby. **12**, **13** and **14** indicate three telescoping members of the ribs. **15** and **16** indicate the cover carriers movably mounted on the rib elements **12**, **13** and **14** and hinged together at **17**. Two connecting stays **18** and **19**, which are mounted on the head member **17'** at the end of the middle rib element **13** nearest the umbrella top **8**, together with the lateral rib stays **20**, are also hingedly connected to the cover carriers **15** and **16** and serve to push the outer rib elements **15** positively outwards when the stick elements **1**, **2** and **3** are extended. This occurs by reason of the fact that the rib stays **20** are at the same time drawn out by means of the slide **23** to which they are hingedly connected and which is connected to the stick element **2** by a releasable catch. The extending of the stick elements **1**, **2** and **3** therefore also causes the rib elements **13** and **14** to be extended or pushed out, that is to say the umbrella is moved from the position shown in Fig. 4 into the position shown in Fig. 3, Fig. 2 being a position during the closing.

A strap **21** is rotatably mounted at one end in the hinged head **22** while the other end slides on the cover carrying element **16**. When the lower face of the knob **9** presses against the strap **21** this cannot move away from the hinge head **22** as a result of which the cover carriers **15** and **16** are prevented from collapsing but the rib elements **13** and **14** telescope freely when swung down. **24** indicates the umbrella handle, which is hollow and which is releasably held by a pawl **25** in an outer position and when the umbrella is collapsed can be passed over this as shown in Fig. 4.

The sections **1**, **2** and **3** of the stick are telescopingly movable relatively to each other without being rotatable. This is accomplished by providing the sections **1** to **3** of the stick with grooves which register. Within the interior of the section **1** there is a rod **4** of square cross-section united with the rotatable plate **9**. Within the section **2** there is a tube of square cross-sec-

tion, as indicated at 5, the square rod 4 being slidable in said square tube 5. Two discs provided with a recess as indicated at 6 and 7 are positively connected with the square tubing 5. The disc 6 is secured to the top end of the tubular section 2 of the stick, and the disc 7 is rotatably mounted at the upper end of the tubular section 3. By means of plate 9, the discs 6 and 7 may, therefore, be rotated through the elements 4 and 5. A spring applied to the plate 9 serves for retaining the discs 6 and 7 continuously in the same position or to bring them back into this position. The arrangement is made such that the disc 6 engages a cut-out portion or recess of each of the sections 1 and 2, whereby these two sections are locked to each other. These cut-outs or recesses which are engaged by the disc 6 are located within the grooves of the sections 1 and 2 of the stick. The same locking arrangement also locks the stick sections 2 and 3 to the disc 7. If it is desired to release the locking condition of the sections to 3, the plate 9 is turned. This will cause the discs 6 and 7 also to turn so that the recesses of the same reach the height of the grooves of the sections 1 to 3, whereby the discs 6 and 7 are pulled out of the recesses or cut-outs in the sections 1 to 3. Stops are provided for holding the discs 6 and 7 in the proper positions.

The manipulation of the umbrella is as follows:

In order to move the shortened umbrella into the position of use the handle 24 is withdrawn from the folded cover 10 and then locked by the spring pawl 25. The knob 9 is then turned to the stop and the umbrella is pulled at both ends. By turning the knob 9 the notches 11, 11' and so forth therein come into register with the straps 21, that is to say the latter are exposed, so that the cover supporting element 16 can open out without obstruction as during this movement straps 21 are free in the notches 11, 11' and so forth. By further pulling out the stick elements 1, 2 and 3 the rib stays 20 are also moved as these are connected to the slide 23, which is locked to the stick element 2. As the rib stays 20 are also drawn out there are also drawn out the rib elements 13 which are hingedly connected to the latter, the cover supports 15 and 16 are opened out by reason of the connection with the stays 18 and 19. As the cover supports 15 are hingedly connected to the rib elements 14 the latter are also drawn out. When the stick elements 1, 2 and 3 have been extended fully the rib elements 12, 13 and 14 are also completely extended or pushed out so that the knob 9 can be released. When this has returned into its initial position the straps 21 are again covered so that the rib elements 13 and 14 can no longer collapse as the straps 21 are no longer capable of moving away from the hinge heads 22. During the return movement of the knob 9 the discs 6 and 7 also turn in the interior of the stick so that the stick elements 1, 2 and 3, which are provided with grooves, are relatively locked by the engagements of the discs 6 and 7 with these grooves. By pushing up the slide 23, after this has been released by pressing on its catch by which it is locked to the stick element 2, the umbrella is opened out and locked in the known manner. The straps 21 slide under the knob 9 during the opening so that it is impossible for the rib elements 13 and 14 to collapse.

In order to again bring the umbrella into its shortened form, the cover is closed whereupon the slide 23 is again locked at the lower end of the stick element 2. The knob 9 is thereupon again turned so that the stick element catches 6 and 7 are released and the straps 21 exposed. The two ends of the umbrella are now pushed together whereupon by pressure upon the ends of the rib elements 14 all the movable parts pass through the same movements, but in the reverse direction as when extended. The cover supports 15 and 16 rise outwardly and then fold upon one another together with the stays 18 and 19, as shown in Fig. 4, in such a manner that they also bear snugly against the collapsed rib elements 12, 13 and 14. The cover 10 is thus folded in such a manner that the outer portion of the cover comes to lie upon the remaining material thereof. Finally the catch 25 is released and the handle 24 is pushed over the cover 10.

While the invention has been described more particularly in connection with an umbrella it will be understood that it is also applicable to sun-shades, parasols and the like.

I claim:

1. In a collapsible umbrella, or the like, a stick composed of telescoping sections, ribs each composed of telescoping sections, stays connected by floating elements to the ribs and connected with the stick, and means connected with the several rib sections for mechanically telescoping or extending the sections as the stick sections are telescoped or extended respectively, said means also serving as a cover support and to assist in holding the ribs in the position of use.

2. In a collapsible umbrella, or the like, a stick composed of telescoping sections, ribs each composed of telescoping sections, stays connected by floating elements to the ribs and connected with the stick, and means connected with the several rib sections for mechanically telescoping or extending the sections as the stick sections are telescoped or extended respectively, said means also serving as a cover support and to assist in holding the ribs in the position of use, and means carried by the stick for holding the sections thereof in their extended positions.

3. In a collapsible umbrella, or the like, a stick composed of telescoping sections, ribs each composed of telescoping sections, stays connected by floating elements to the ribs and connected with the stick, and means connected with the several rib sections for mechanically telescoping or extending the sections as the stick sections are telescoped or extended respectively, said means also serving as a cover support and to assist in holding the rib in the position of use, said means comprising an articulated arm for each rib, said arm being connected at its ends to the sections of the rib, and stays connecting the arm articulations with the mid-section of the rib with which the arm is associated.

4. In a collapsible umbrella or the like, a stick composed of telescoping sections, means, including a rotatable knob, telescoping elements and holding discs carried by the stick for securing the sections of the stick in their extended positions, a top secured to the stick, ribs hingedly connected radially to the top, each rib composing telescoping sections and means mechanically actuating automatically to extend and telescope the rib sections accordingly as the stick sections are extended or telescoped.

5. In a collapsible umbrella or the like, a stick composed of telescoping sections, means, including a rotatable knob, telescoping elements and

holding discs carried by the stick for securing the sections of the stick in their extended positions, a top secured to the stick, ribs hingedly connected radially to the top, each rib composing telescoping sections and means mechanically actuating automatically to extend and telescope the rib sections accordingly as the stick sections are extended or telescoped, said means comprising for each rib, an articulated arm and a pair of stays, the ends of the arm being connected to the end section of the rib and the stays being connected together at one end to the mid-section of the rib while the other ends of the stays are connected to the end sections of the rib.

6. In a collapsible umbrella or the like, a stick composed of telescoping sections, means, including a rotatable knob, telescoping elements and holding discs carried by the stick for securing the sections of the stick in their extended positions, a top secured to the stick, ribs hingedly connected radially to the top, each rib composing telescoping sections and means mechanically actuating automatically to extend and telescope the rib sections accordingly as the stick sections are extended or telescoped, a chambered handle for the stick, into the chamber section of which, the telescoped rib sections may in part project when the stick and ribs have been telescoped.

7. In a collapsible umbrella or the like, a stick composed of telescoping sections, means including a rotatable knob, telescoping elements and holding discs carried by the stick for securing the sections of the stick in their extended positions, a top secured to the stick, ribs hingedly connected radially to the top, each rib composing telescoping sections and means mechanically actuating automatically to extend and telescope the rib sections accordingly as the stick sections are extended or telescoped, said means comprising for each rib, an articulated arm and a pair of stays, the ends of the arm being connected to the end section of the rib and the stays being connected together at one end to the mid-section of the rib while the other ends of the stays are connected to the end sections of the rib, a chambered handle for the stick, into the chamber section of which, the telescoped rib sections may in part project when the stick and ribs have been telescoped.

8. In a collapsible umbrella or the like, a stick composed of telescoping sections, means, including a rotatable knob, telescoping elements and holding discs carried by the stick for securing the sections of the stick in their extended positions, a top secured to the stick, ribs hingedly connected radially to the top, each rib composing telescoping sections and means mechanically actuating automatically to extend and telescope the rib sections accordingly as the stick sections are extended or telescoped, and means carried in part by each rib and in part by said knob for holding the extended or opened up rib from collapsing automatically.

9. In a collapsible umbrella or the like, a stick composed of telescoping sections, means, including a rotatable knob, telescoping elements and holding discs carried by the stick for securing the sections of the stick in their extended positions, a top secured to the stick, ribs hingedly connected radially to the top, each rib composing telescoping sections and means mechanically actuating automatically to extend and telescope the rib sections accordingly as the stick sections are extended or telescoped, said means comprising for each rib, an articulated arm and a pair of stays, the ends of the arm being connected to the end section of the rib and the stays being connected together at one end to the mid-section of the rib while the other ends of the stays are connected to the end sections of the ribs, and means carried in part by each rib and in part by said knob for holding the extended or opened up rib from collapsing automatically.

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