ABSTRACT

A longitudinally collapsible umbrella having a rectangular configuration when closed, collapsed and stored; including a power spring interposed axially between primary and auxiliary slides; the primary slide including a depending sleeve and having a T-shape in elevation; the primary slide including beneath its wings a pair of finger-receiving notches, one of the notches including a pivotal latch lever; the sleeve having a polyangular, lower cross section generally defining the points of an ellipse, and the handle of the umbrella having lateral compartments for receiving the tips of umbrella dome-ribs when the umbrella is collapsed, and the handle also including a tubular tunnel having a bore correspondingly receiving the primary slide sleeve and orienting the primary slide wings and dome-rib tips in an optimum position.

7 Claims, 7 Drawing Figures
AUTOMATICALLY OPENED, LONGITUDINALLY COLLAPSIBLE UMBRELLA WITH IMPROVED HANDLE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to umbrellas, and more particularly to an improved, longitudinally collapsible umbrella.

2. Description of the Prior Art Generally

Longitudinally collapsible umbrellas are known as are those which are urged toward an open position by a power-storage spring assisting to automatically open the umbrella.

SUMMARY OF THE INVENTION

Primary objects of the invention are to provide an umbrella which is longitudinally collapsible and which generally has a rectangular cross section when collapsed, an improved primary slide which includes improved gripping means to facilitate manipulation of the slide especially when closing the umbrella; further it is an object of the invention to provide an improved handle element in which the depending sleeve of the main guide of the umbrella is removably received in a cooperating tunnel of a handle element and in which the handle element includes portions orienting the primary slide during both opening and closing of the umbrella; and to provide in an umbrella of the character involved a power spring interposed between an umbrella crown and primary slide and disposed about the umbrella stick and passing axially through an auxiliary slide; and to provide in a handle element recess portions particularly adapted to orient dome-rib tips laterally of a tunnel receiving the sleeve of the primary slide; and to provide a tubular sleeve of a primary slide with a notch in diametrical opposition to a latch, and in which the sleeve has a polygonal external cross section and in which the handle element has an internal, elliptical bore for removably receiving the sleeve.

Further and more specific objects and advantages will become apparent from a consideration of the following description when taken in conjunction with the drawing forming a part thereof in which:

FIG. 1 is a perspective view looking into an open umbrella;
FIG. 2 is an enlarged fragmentary side elevation of the open umbrella, with portions broken away, and showing structural details;
FIG. 3 is a bottom plan view of the primary slide of FIG. 2;
FIG. 4 is a side elevational view of the folded and collapsed umbrella, on an enlarged scale, with portions broken away and sectioned to show details;
FIG. 5 is a fragmentary, side elevational view, similar to a lower portion of FIG. 4 and showing another slightly modified lower handle element;
FIG. 6 is an end elevation of FIG. 5 i.e., looking from right to left at FIG. 5, for example; and
FIG. 7 is a top plan view of the handle element of FIG. 5, showing the tubular sleeve of the primary slide in phantom lines.

DESCRIPTION OF PREFERRED EMBODIMENTS

Referring to the drawing in detail, and first considering FIG. 1, an "open," longitudinally collapsible umbrella U includes a stick 1, comprised of telescopically related, graduated sections 2, 3 and 4 retained in extended relation by means of suitable, spring-urged detents 5; the sections 2-4 are preferably polygonal in cross section; hexagonal, for example.

Suitably secured to the upper section 2 is a rectangular headpiece 6 having a peripheral, skirt-groove receiving a pivot wire, and conventional, foldable or telescopic dome ribs 9 are pivotally mounted at one or the other of the narrow ends 7 or 8 or the headpiece.

An auxiliary slide is indicated generally at 13 and is an inverted T-shape in elevation; see FIG. 2; having diametrically opposed wings 12 to which are pivoted primary dome-struts 14 which are terminally articulated to intermediate portions of the dome-struts 10. The sleeve 19 of the auxiliary slide 13 has an inwardly directed flange 19' at its upper end, and is engaged by one end of an axially disposed coil or compression spring 18, passing through the sleeve 19 and engaging the upper surface of the primary slide 14; the coil spring is circumposed about the umbrella stick, and normally loads the dome toward upward or an open position; and when the umbrella is collapsed, the spring is compressed, and until the ribs are substantially extended radially, the full force and effect of the compression or power spring is not exerted to "open" the dome of the umbrella. Still further, the coil spring is of such a length and exerts a force to maintain the dome "open" or extended. As is conventional, in order to "close" the umbrella, the primary slide is pulled downwardly in the direction x as shown on FIG. 2; the spring 18 is compressed when the umbrella is fully opened and initially exerts a downward force when the umbrella is being closed.

As seen in FIG. 2, the primary slide includes a depending sleeve 17 having at one side an inwardly extending notch, groove or channel 22 which diverges from beneath wing 16 on a shallow arc terminating laterally above the bottom 17' of the sleeve 17. Formed at the diametrically opposed side of the sleeve 17 is a notch 23, beneath wing 15, and in which is disposed a pivotal latch-lever 21 (which is releasably engageable with cooperating portions on the umbrella stick as conventional). The latch lever 21 is confined for pivotal movement in a slot or channel 20; see FIG. 3, and the outer cross section of the sleeve 17 is preferably polygonal, i.e., an elongated octagon, and having intersecting side edges 25, generally defining an elliptical configuration at the bottom of the sleeve 17 of slide 14; note end surfaces 27 are generally shorter in length than surfaces 26; the former lying along the minor axis y'-y' and surfaces 28 lying along the major axis y-y; as previously mentioned, the intersections of the sides 26-28 define a basic elliptical shape which is conveniently grasped when both opening and closing the umbrella.

Referring to FIG. 4, the umbrella is shown in its collapsed or folded condition. The dome-ribs 9 will be conventional, either the foldable or telescopic types; for example, the foldable type being illustrated. Intermediately of the ribs 9 are hinge-plate elements 31 defining tips disposed downwardly and generally at the lowermost portion of the folded or collapsed umbrella.

Suitably secured to the lower end of stick element 4, is a handle element 29 (preferably molded) which constitutes a component of the inventive construction functioning in cooperation with the major slide 14. The handle 29 includes diametrically opposed, upwardly opening recesses or compartments 32 which removably receive and orient tips 31. Note in FIG. 4 that sleeve 17 of the primary slide 14 depends to an upstanding mounting sleeve element 29' disposed between and generally defining the opposed recesses 32. The sleeve element receives the lower end of the stick element 4, being connected thereto by a transverse pin element 29'', for example.

Referring to FIGS. 5 and 6, an alternate handle element 29a is shown, and reference numerals similar to those previously used will be used to identify corresponding similar structure.

The handle 29a includes a tubular hollow sleeve or tunnel 30 which has an inner bore cross section; see FIG. 6, defining an ellipse which correspondingly accommodates the polygonal external cross section of the sleeve 17. The sleeve of slide 14 substantially fills the tunnel bore and thus the tips or hinge plates 31 of the dome ribs cannot enter into the tunnel.

Further, the external surface of the tunnel 30 is also polygonal defining lateral, angular surfaces 33 forming one side of the lateral chambers 32 for the dome ribs tips 31; orienting and locating these tips; and their rib, in generally spaced, parallel relation when the umbrella is folded and collapsed. The tunnel
30 includes upwardly diverging side surfaces 35 which engage the wings 15, 16 of the primary slide 14, and guide the slide into proper orientation for subsequent opening of the umbrella; the surfaces 35 defining transverse grooves or notches 34 into which the respective slide wings 15, 16 are removably received.

If desired, the notch 22 in the sleeve 17 may be provided with transverse serrations or ribs at 22' to facilitate gripping the slide 14 when raising or lowering the umbrella dome.

Résumé

From the structure disclosed, it is evident that the primary slide 14 includes opposed notches 22, 23 which facilitate opening and closing of the umbrella; yet permitting the slide to be constructed as a relatively small and inconspicuous element; this is particularly desirable in the case of power-operated umbrellas where the spring 18 exerts particularly great force at certain attitudes of opening, and when the spring must be compressed during closing to store energy for subsequent opening; compactness is important in collapsible umbrellas of the generally rectangular cross section when collapsed; further, it is important that the parts are properly oriented during both opening and closing to minimize inadvertent rubbing of ribs, dome and slides, so that wear on the parts is minimized; further, as the umbrella is opened and closed, the sleeve 17 is gripped at 22, 23, and fingers disposed in the latter notch 23 result in operation (opening) of the latch-lever 21; retaining the slide 14 for free reciprocable movement on the umbrella stick; additionally, the elliptical or polygonal configuration of sleeve 17 as well as tunnel 30 externally facilitate gripping of the slide and handle, respectively; further, the fingers disposed below wings 15, 17, when closing the umbrella, absorb the considerable force imposed by spring 18 on slide 14 when the latch-lever 21 is released; additionally, the elliptical shape of the sleeve 17 and tunnel 30 conform generally to the rectangular shape of the umbrella crown and slides, the longer axis of the ellipse extending in the direction common to the longer side of the rectangle; and further, the wider bottom of the sleeve 17 (formed by notches 22, 23) conveniently and comfortably conform to the user's hand making the umbrella comfortable to manipulate with minimum effort.

I claim:

1. A longitudinally collapsible umbrella having a collapsible dome and including a telescopic stick, dome and stretcher ribs in combination with a crown piece and auxiliary and primary slides each constructed and arranged to provide a generally rectangular cross section when collapsed, and a handle assembly at the lower end of said stick for aiding in forming said rectangular cross section, the improvement characterized in that the primary slide is generally T-shaped when viewed in side elevation and includes a generally rectangular head in top plan, the head including diametrically opposed wings and a depending tubular sleeve, said sleeve including at least one laterally opening notch extending inwardly below one wing and diverging downwardly and outwardly and terminating above the lowermost end of said sleeve to provide a hand grip for facilitating opening and closing of the umbrella, said sleeve including a polygonal cross section adjacent the lower end below said notch, said handle comprising a lower, inverted T-shaped element including an upwardly opening hollow tunnel removably receiving and positioning said polygonal portion of said sleeve.

2. The structure as claimed in claim 1 in which said tunnel includes an inner, elliptical cross section linearly engageable by intersecting edges of the polygonal sleeve.

3. The structure as claimed in claim 2 in which said tunnel includes a symmetrical, polygonal external cross section.

4. The structure as claimed in claim 1, including a manually displaceable latch including a portion releasably engageable with said stick, said latch being pivoted on said sleeve in diametrically opposed relation to said notch and immediately below said other wing.

5. A longitudinally collapsible umbrella having a collapsible dome and including a telescopic stick, dome and stretcher ribs in combination with a crown piece and auxiliary and primary slides each constructed and arranged to provide a generally rectangular cross section when collapsed, and a handle assembly at the lower end of said stick for aiding in forming said rectangular cross section, the improvement characterized in that the primary slide is generally T-shaped when viewed in side elevation and includes a generally rectangular head in top plan, the head including diametrically opposed wings and a depending tubular sleeve, said sleeve including at least one laterally opening notch extending inwardly below one wing and diverging downwardly and outwardly and terminating above the lowermost end of said sleeve to provide a hand grip for facilitating opening and closing of the umbrella, including a manually displaceable latch including a portion releasably engageable with said stick, said latch being pivoted on said sleeve in diametrically opposed relation to said notch and immediately below said other wing, said handle assembly including an upwardly diverging notch substantially complimentary to said wings for guidingly and removably receiving the same.

6. The structure as claimed in claim 1 in which said inverted T-shaped handle element includes a pair of diametrically opposed, upwardly opening recesses flanking the base of said tunnel for removably receiving tips of the dome ribs when the umbrella is closed.

7. The structure as claimed in claim 1 in which said auxiliary runner is tubular, a compression spring circumposed about said stick and extending through the auxiliary runner, said spring having opposite ends respectively engaged with the undersurface of the crown and the upper end of said primary runner for automatically expressing the umbrella dome toward an open condition.

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