June 22, 1948. W. L. MAPPIN 2,443,772

COLLAPSIBLE UMBRELLA

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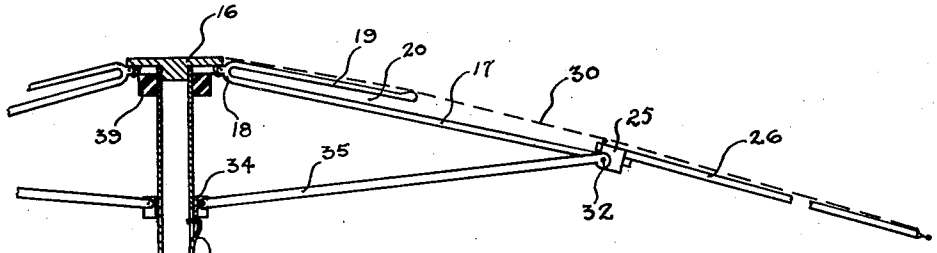

Fig. 1.

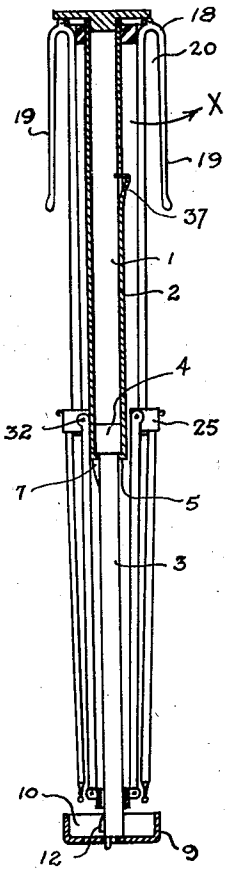

Fig. 2.

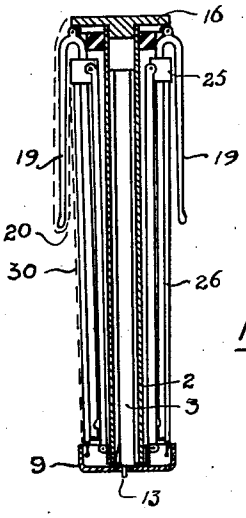

Fig. 3.

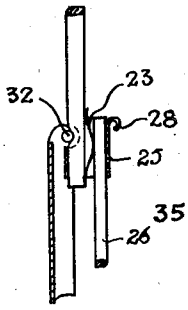

Fig. 4.

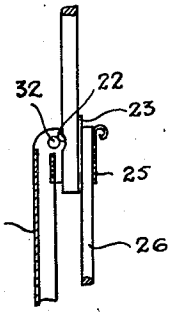

Fig. 5.

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COLLAPSIBLE UMBRELLA

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3 Claims. (Cl. 135—26)

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My invention relates to improvements in collapsible umbrellas. The objects of the invention are to provide means whereby a collapsible umbrella may be opened by ordinary movement with both hands, but without the need of thrusting a part of the frame against a wall or other obstruction to ensure that the frame parts assume their appropriate position. A further object is to provide means whereby all the fabric covering is neatly held within the length of the contracted umbrella stem. To provide a structure in which the frame members can be set for telescopic movement by the simple circumferential grasping of the strut members adjacent their upper ends.

Referring to the drawings:

Fig. 1 is a sectional view of the invention showing only one complete rib structure, the umbrella being in "open" position.

Fig. 2 is a sectional view with the stem extended and the frame in position for opening.

Fig. 3 is a sectional view showing the umbrella fully closed.

Fig. 4 is a fragmentary detail view showing the connection between upper rib, rib extension and strut following the initial part of the umbrella closing movement.

Fig. 5 is a similar view showing the connection when the rib extension is inwardly pressed to permit said rib extension to be telescoped.

In the drawings like characters of reference indicate corresponding parts in each figure.

The numeral 1 indicates generally a stem consisting of a tubular upper portion and a telescopic lower extension portion 3. The stem extension portion 3 is fitted with an enlargement 4 which butts against an internal flange 5 formed at the base of the upper portion 2. Adjacent the enlargement 4 is a latch 7 of the usual type for the purpose of retaining the portions 2 and 3 in extended position as shown in Figures 1 and 2.

At the lower extremity of the lower stem portion 3 is a grip 9 having a cylindrical recess 10 in its upper side. A latch 12 is provided in the stem portion 3, this latch has a downward extension 13 which propects through a slot 14 in the grip to facilitate the depression of said latch into the stem portion 3 when the umbrella is fully closed and the latch 12 is engaging the internal flange 5 of the upper stem portion 2.

The upper extremity of the stem 1 is provided with a disc 16 about which a plurality of ribs 17 are hingedly mounted in the usual way. Each rib has a U-shaped bend 18 at its upper extremity and a light spring retainer 19 extending substantially parallel to the rib to define a gap 20. Ad-

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jacent the outer end of each rib 17 and on its inner edge a substantially semi-circular notch 22 is formed, see Figures 4 and 5 and at the lower extremity of the rib a light leaf spring 23 is fitted. A slide 25 is mounted on each rib 17 and secured to each slide is a rib extension 26 which has a movement along the rib 17 to an innermost position where the slide 25 will rest adjacent the U-shaped bend 18, see Figure 3. The slide is provided with an eye 28 for the purpose of attaching a fabric cover 30, indicated in dotted line in Figures 1 and 3 only, and is also provided with a pivot pin 32 capable of entering the notch 22 of the rib 17 from the pressure exerted by the spring 23 when the rib extension 26 is at its outermost position as shown in Figures 1 and 2.

A runner 34 is slidably mounted upon the stem and struts 35 are hingedly connected thereto in the usual manner. The struts are preferably of the conventional U-shaped section as indicated in Figures 4 and 5 and are hingedly connected to the slides 25 by their pivot pins 32. The runner 34 is supported in raised position as in Figure 1 by a latch 37 in the upper tubular portion 2 of the stem 1.

When it is desired to open the umbrella from the closed position shown in Figure 3, the extension 13 of the latch is moved towards the centre of the grip 9 to release the portion 3 of the stem, so that it can be withdrawn from the portion 2 to the position shown. If the runner 34 does not follow the grip automatically, it is drawn down by hand until it again approaches the grip as in Figure 2. This downward runner movement through the struts 35 brings the pivot pins 32 of the slides opposite the notches 22 of the ribs 17 and the springs 23 then between the opposing extremities of the ribs 17 and rib extensions 26 forces the pivot pins into said notches to prevent further endwise movement between said ribs and rib extensions. When the pivot pins are so seated an upward movement of the runner 34 will extend the ribs and their extensions to support the fabric 30 in open position as shown in Figure 1.

To close the umbrella, the latch 37 is depressed and the runner moved downwards until the ribs and struts are substantially parallel to the stem 1, when in this position a slight outward thrust, in the direction of the arrow X Figure 2, is exerted against each of the ribs 17 by a rubber collar 39 which is secured immediately below the disc 16. The thrust prevents the lower ends of the ribs from freely contacting the stem so that by grasping the umbrella around either the struts or the outside of the cover adjacent the slides

25 the slides will compress the springs 23 and force the pivot pins 32 out of the notches 22 and allow the struts, the slides and the rib extensions 26 to be pushed upwardly into the position shown in Figure 3. As the umbrella is collapsed as above described, that annular portion of the cover 30 which lies between the free ends of the retainers 19 and the mid length of the rib extensions 26 will be tucked into the gaps 20 so that no portion of the fabric will be hanging in loose and untidy folds outside the frame of the umbrella. By affixing the spring 23 to the outer end of the rib 17 the endwise movement of the slide 25 upwards along the rib 17 is not restrained after said slide has moved the length of said spring, consequently this disposition of said spring is preferred, but it will be obvious that the spring could be affixed on the inner side of the rib extension as a modification without departing from the spirit of the invention.

What I claim as my invention is:

1. A collapsible umbrella comprising a stem having a plurality of ribs and rib extensions, each rib extension having a slide surrounding a rib, said slide having a transverse pin, said rib having a notch adjacent its outer end into which the pin is adapted to move, a runner slidable along the stem and having hingedly connected struts, each strut being connected at its outer end to the transverse pin of one of said slides, and spring means for urging the pin into the notch in the rib.

2. A collapsible umbrella comprising a telescopic stem having ribs hingedly connected thereto, a rib extension having a slide at one end, said rib extension being slidably connected to each rib, a cover for the ribs and extensions, a runner slidable upon the stem having struts hingedly connected thereto and to the respective slides, means extending parallel to each rib and carried thereby adjacent the upper end of said rib defining an open ended gap, the gaps so defined being adapted to receive an annular portion of the cover when said umbrella is in collapsed position.

3. A collapsible umbrella comprising a telescopic stem having ribs hingedly connected thereto, a rib extension having a slide at one end, said rib extension being slidably connected to each rib, a cover for the ribs and extensions, a runner slidable upon the stem having struts hingedly connected thereto and to the respective slides, and a member connected to one end of each rib and engaging the cover to retain the inner annular portion of said cover folded and in close relation to the ribs when the umbrella is in collapsed position.

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