

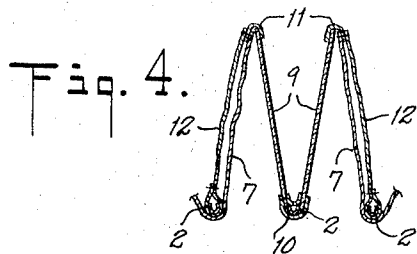
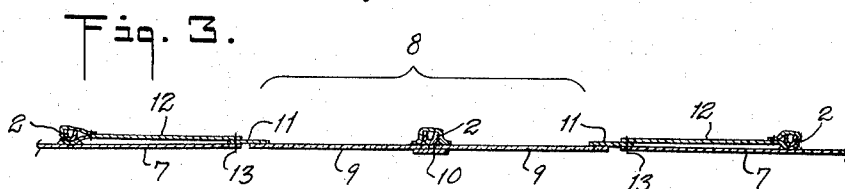
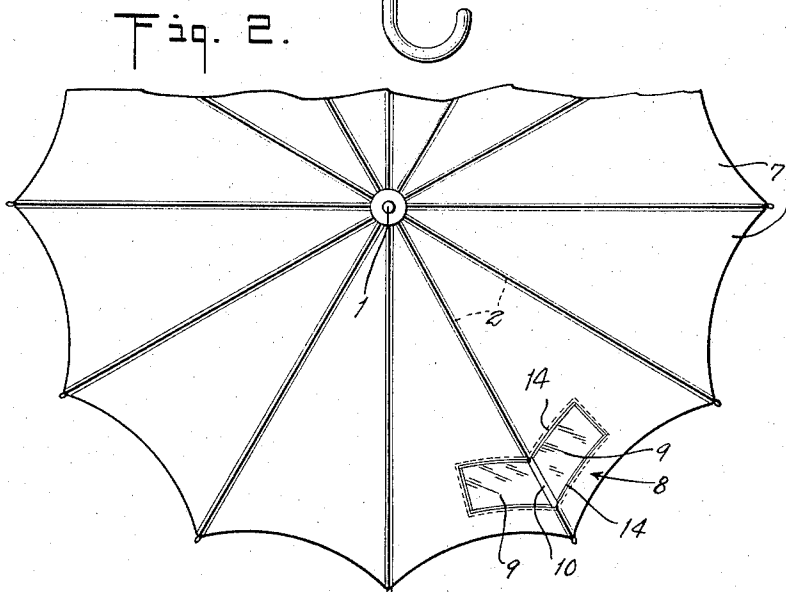
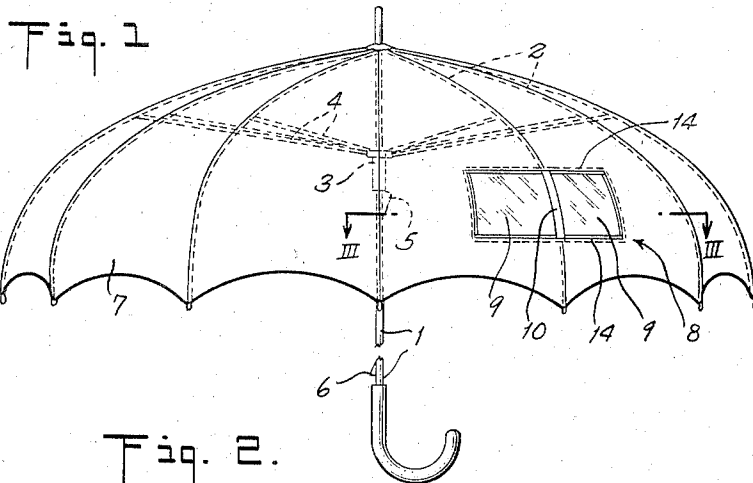
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UMBRELLA

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2,875,772

UMBRELLA

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4 Claims. (Cl. 135—35)

This invention relates to an umbrella with a window constructed so that the user of the umbrella can look ahead while holding the umbrella before his face to protect him from wind and rain.

It has previously been suggested to build an umbrella with a window, but such previous structures have had relatively narrow windows, restricted as to their lateral dimensions by their location between two adjacent ribs of the umbrella. Such narrow windows do not provide sufficient forward and lateral visibility to the user of the umbrella to allow him to avoid collisions.

It has also been proposed to construct umbrellas with canopies of completely transparent material, so that the user may see through substantially all portions of the umbrella. However, the transparent materials currently available, typically plastic materials of various types, are not very satisfactory for such use. The material used in an umbrella canopy must withstand substantial tensile stress when the canopy is spread, at the same time without stretching far enough so that the material develops wrinkles and folds. The material must also be capable of withstanding repeated cycles of unfolding and folding, stretching and releasing. The plastic materials presently available tend to lose their transparency at the regions which are bent or folded and also tend to develop cracks or tears along the folds.

It is an object of the present invention to provide an umbrella with a window construction not limited to the space between the ribs.

A further object is to provide an umbrella having a window construction of the type described which is capable of repeated cycles of folding and unfolding of the umbrella without substantial deterioration.

Other objects and advantages of the invention will become apparent from a consideration of the following description and claims taken together with the accompanying drawing.

In the drawing:

Fig. 1 is an elevational view of an umbrella constructed in accordance with the present invention;

Fig. 2 is a fragmentary top plan view of the umbrella of Fig. 1;

Fig. 3 is a cross-sectional view taken on the line III—III of Fig. 1, on an enlarged scale, showing the details of the window construction; and

Fig. 4 is a view similar to Fig. 3, showing the window construction when the umbrella is folded.

Referring to the drawing, there is shown an umbrella comprising a stick 1, on the upper end of which are provided a plurality of ribs 2 of conventional form. Means are provided for spreading the umbrella, including a slider 3 movable along the stick and a plurality of stretchers 4, extending from the slider to the ribs. Spring latches 5 and 6 are provided for holding the slider 3 in either its folded or unfolded positions.

The frame structure comprising the ribs 2 is covered by a canopy 7 which may be constructed of conventional

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umbrella materials, as for example, waterproof silk. In one side of the canopy 7 there is illustrated a window, generally indicated by the reference numeral 8, which window structure is the particular novel feature of the present invention. As best seen in Fig. 3, the window 8 comprises two panes 9. These panes are formed of a plastic material which is not readily stretchable, but which is of sufficient strength and thickness to withstand the stresses to which it is likely to be subjected. Such materials are usually sufficiently rigid so that they will not bend or fold easily, and the panes 9 may be constructed of such rigid materials. It should be noted that the panes 9 are located on opposite sides of one of the ribs 2 and extend side by side. The abutting sides of the panes 9 are connected by a plastic hinge 10, which, as shown in the drawing, extends the full length of the panes 9. The hinge 10 may be of any suitable material which may be readily bonded to the panes 9. The hinge 10 should be sufficiently elastic so that it will stretch when folded as illustrated in Fig. 4. It may desirably be transparent, but it is not necessary that the hinges 10 be transparent.

The panes extend laterally slightly less than one-half the distance between the ribs. At their edges opposite the central hinge 10, the panes 9 are connected on their inner sides to the adjacent material of the canopy 7 by two hinge structures 11. The hinge structures 11 may be similar to the hinge 10. In back of the canopy 7, between the hinges 11 and the next adjacent ribs 2, there are provided reinforcing panels 12. The canopy 7, the hinges 11 and the panels 12 may be sewn together with stitches such as those diagrammatically indicated at 13. These reinforcing panels are provided to give added strength to the canopy adjacent the windows. The upper and lower edges of the panes 9 may be sealed to the adjacent portions of the canopy by means of straps of waterproof tape 14. The tape straps 14 should also be elastic, like the hinges 10 and 11.

It will be readily recognized that the umbrella may be provided with more than one window of the type described, and that the location of such windows is not limited by the presence of the ribs. The window structure may even extend completely around the periphery of the umbrella. The transparent portions of the window are not subjected to stresses, since these portions are relatively rigid and the stress and strain due to stretching is all taken by the hinges 10 and 11, the waterproof tapes 14, and the reinforcing panels 12. All the hinges and tapes must, of course, be of waterproof material.

While I have shown and described one embodiment of my invention, other modifications thereof will readily occur to those skilled in the art, and I therefore intend my invention to be limited only by the appended claims.

I claim:

1. In an umbrella including a stick, a plurality of ribs pivoted at one end on said stick, a canopy attached to said ribs, and stretcher means for spreading and collapsing the canopy, the improvement comprising a window in said canopy including a pane of relatively rigid transparent material, means attaching said pane to said canopy with one edge of the pane parallel to and adjacent to a rib, said means including a first elongated strip of flexible elastic material bonded to the margin of said pane throughout the length of said one edge, extending across said rib, and a second elongated strip of flexible elastic material bonded to and connecting the edge of said pane farthest from said rib and the adjacent portion of the canopy.

2. An umbrella as defined in claim 1, including a reinforcing panel underlying said adjacent portion of the canopy and extending between and attached to said second

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strip of elastic material and the rib next adjacent to the first-mentioned rib.

3. In an umbrella including a stick, a plurality of ribs pivoted at one end on said stick, a canopy attached to said ribs, and stretcher means for spreading and collapsing the canopy, the improvement comprising a window in said canopy including two panes of relatively rigid transparent material, means attaching each of said panes to said canopy with one edge of each pane parallel to and adjacent to a rib, said means including a first elongated strip of flexible elastic material bonded respectively to one edge of each of said panes adjacent said rib and throughout the length of said one edge, extending across said rib, and a second elongated strip of flexible elastic material bonded to each pane and connecting the edge of each pane farthest from said rib and the adjacent portion of the canopy.

4. In an umbrella including a stick, a plurality of ribs pivoted at one end on said stick, a canopy attached to said ribs, and stretcher means for spreading and collapsing the canopy, the improvement comprising a window in said canopy including two panes of relatively rigid transparent material, means attaching each of said panes

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to said canopy with one edge of each pane parallel to and adjacent to a rib, said means including a first elongated strip of flexible elastic material bonded respectively to one edge of each of said panes adjacent said rib and throughout the length of said one edge, extending across said rib, a second elongated strip of flexible elastic material bonded to each pane and connecting the edge of each pane farthest from said rib and the adjacent portion of the canopy, and a reinforcing panel underlying said adjacent portion of the canopy and extending between and attached to said second strip of elastic material and the rib next adjacent to the first-mentioned rib.

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