(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 036 918**
A1

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **80302621.0**

(51) Int. Cl.³: **A 45 B 25/18**

(22) Date of filing: **31.07.80**

(30) Priority: **28.03.80 US 134955**

(43) Date of publication of application:
07.10.81 Bulletin 81/40

(84) Designated Contracting States:
DE FR GB IT

(71) Applicant: **Edelkind, Barney**
Atlantic Umbrella Co. 5340 Panola Industrial Blvd
Decatur Georgia(US)

(72) Inventor: **Edelkind, Barney**
Atlantic Umbrella Co. 5340 Panola Industrial Blvd
Decatur Georgia(US)

(74) Representative: **Brown, David Alan et al,**
MATHYS & SQUIRE 10 Fleet Street
London EC4Y 1AY(GB)

(54) Waterproof one-piece cover with design.

(57) A weather protection or like device such as an umbrella (10) has a one-piece cover (32) comprised of a knitted natural or man-made fabric having multidirectional stretch characteristics. The cover (32) is stretched over the ribs (24) of the umbrella frame, and is secured to the ribs in a conventional manner. The one-piece cover (32) is provided with a decorative cohesive design or continuous scene (Figure 6) or message imprinted, transferred or sublimated over the entire cover or over a plurality of rib sections and in its stretched condition is provided with a layer (38) of impervious plastics material positioned between the fabric cover (32) and the frame ribs (24). The invention can be applied to weather protection devices, camouflage covers and play items such as hat-umbrellas.

FIG. 2

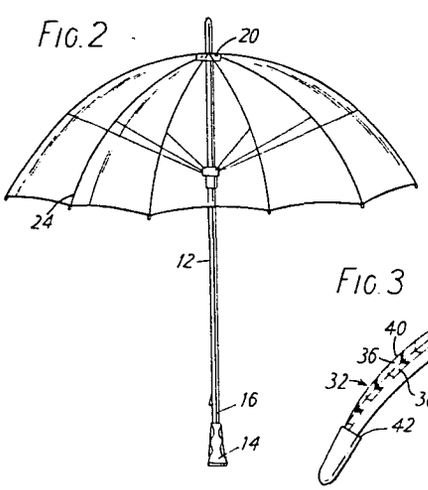
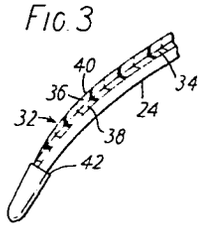


FIG. 3



EP 0 036 918 A1

WATERPROOF ONE-PIECE COVER WITH DESIGN

This invention relates to weather protection or like devices, of the kind having an extendable and collapsible frame and a cover adapted to be connected to the frame.

The invention relates particularly, but not exclusively, to weather protection devices such as umbrellas.

Over the years the structures of hand-carried umbrellas and other weather protection devices have experienced little fundamental change. It seems that the conventional collapsible rib and frame structure has remained unchanged for untold years as well as the segmented umbrella covers.

In particular, the umbrella cover, made from natural or man-made fibres, has been constructed in a sectioned manner. That is, the cover is formed from a plurality of pie-shaped or wedge-shaped members sewn together to form the conventional circular umbrella cover. Ordinarily, the number of seams formed by sewing the wedge-shaped sections together corresponds to the number of ribs that make up the frame. The ribs of the frame open against the seams and overlay the seams to hide them when the umbrella is in the opened position.

Typically, umbrella structures of this type are shown in United States Letters Patent No. 2,039,987, issued to H. Goldman on May 5, 1936. However, in the Goldman patent the fibres of each wedge-shaped segment of the umbrella cover are impregnated with a film forming composition.

For many years, it was thought by those skilled in the art that it would be more desirable to provide a one-piece cover so that the shortcomings of the segmented cover might be eliminated. For example, the segmented cover would often become unstitched at the seams. This defect arose because of the constant stretching of the material at the seams of the wedge-shaped segments and the constant rubbing of the ribs of the frame against the sewn seams. Further, the material itself had a limited stretch factor due to the inherent nature of the weave of the cloth itself.

The customary material used for weather protective covers, i.e., cotton, linen, nylon, acetate or silk had a limited stretch factor and such materials had difficulty standing up to long periods of use due to the delicate nature of the fabric itself which comprised the cover.

The conventional segmented cover was limited in the selection of material because there were other shortcomings which were readily apparent. High pile or relatively open-weave design fabrics which may be more decorative could not be used because it was difficult to maintain the seams of such material between the segments of the cover. The constant stretching of the material at the sewn seam would cause the seam to open.

Further, the open-weave fabrics were difficult, if not impossible, to make water impervious so that the more attactive fabrics would not be used as covers thereby limiting the ornamental appearance of the cover.

Further, the decorative appearance of the cover was limited because of the segmentation of the cover. Obviously, in order to apply a decorative appearance to a segmented area you would have to perfectly match the segments in order to provide clean lines and an unbroken appearance. This would be particularly true if you wanted to have scenes imprinted, transferred or sublimated on the cover.

One-piece covers were thought not to be practical, however, because the nature of the weave of the material per se was such that the cloth could not stretch in a direction parallel either to the warp or to the woof. The fabric could only stretch on a bias relative to the warp or the woof.

In fact, despite different attempts to orient, particularly knitted fabrics, in such a manner that they would be able to stretch along an angle relative to the warp or woof, these attempts were found to be unsuccessful. Firstly, the material used would not stretch evenly and the amount of stretch in a modern nylon fabric was peculiar to and dictated by the particular weave of the fabric lot. Further, tightly woven fabrics had little or no stretch factors even when the stretching was done on fabric which was oriented in a particular manner. Still further tightly woven materials would not stretch evenly in all directions so that if used for a one-piece umbrella cover, the cover would look unsightly because the fabric would look dimpled, or pulled, leaving stretch ripples.

Attempts have been made to provide one-piece cloth covers which would fit on the conventional umbrella rib structure, but these attempts have not been successful. For example, British Patent No. 128,509, dated June 26, 1919, provides for an umbrella cover of a single unjoined piece of material which may be secured to the conventional umbrella frame ribs in such a manner that the warp and weft of the material, which are at right angles to each other, are

transverse to every rib. As previously discussed, however, such material did not stretch evenly and certainly when tightly woven material was used, the material would not stretch sufficiently to permit its use as an umbrella cover. Even if there were fabric that we sufficiently stretchable that material had to be cut in a particular manner so that the stretch could be obtained without leaving an unsightly cover when the umbrella was in an open position.

A further attempt at a one-piece umbrella cover was also seen in British Patent 256,912 dated August 19, 1926, and issued to George S. Hislop. In this unsuccessful attempt at a one-piece umbrella cover artificial silk fabric was to be used and a layer of rubber was to be vulcanized to the material which was thereby to transform the water pervious material to a waterproof material. The cover material was a woven material. This structure inherently was doomed to failure for several reasons, not the least of which was that in the vulcanizing process the rubber would have to impregnate the material itself thereby totally destroying any design which may have appeared on the fabric itself. The vulcanization process would have made the umbrella cover extremely heavy and, therefore, very uncomfortable

to use and further the umbrella could not possibly have been closed to a narrow cylindrical structure because of the bulkiness of the cover material.

The vulcanized material of this type of cover would have to be stitched to the cover to prevent the movement of the ribs on the interior of the cover. Obviously, the cover material whether vulcanized or not would still have the problem of not being stretchable because the rubberized material could only stretch in accordance with the stretchability of the material being used.

In United States Letters Patent No. 3,576,703, issued to M. Baker on April 27, 1971, it was shown that a multi-directional stretch characteristic material could be made by a process of crimp elongation or a relaxed finishing. The relaxed finishing occurs when the fabric weft is knit in alternate courses of S-twist synthetic staple yarn and Z-twist synthetic staple yard, the yarn having an elongation of a particular percentage.

The stretchable material could also be laminated in a particular manner which could then be used in various applications of products particularly those of a moulded form such as boots, handbags, raincoats and tents. It should be noted that even the asserted multi-directional laminate stretch material of the Baker patent was not suggested

for materials of constant stretch situations.

The United States Letters Patent No. (Fulton) does show a one-piece umbrella cover made of nylon or other synthetic material. However, the material must be interwoven with elasticized materials in order to provide the necessary stretch or elastic qualities to be utilized over the ribs of the umbrella. Fulton, however, by the very nature of the material could not have its elasticized material either laminated or coated with a layer of water impervious plastic material.

Furthermore, it would be impossible to apply a scenic design to the elasticized material, and this factor alone is very important to the saleability of modern umbrellas and certainly forms an important part of the present.

Obviously, the aforementioned teachings of the prior art patents cannot be combined because their teachings are mutually exclusive.

The old wedge-shaped material or fabric umbrella covers were limited in their ornamental designs and were relatively expensive to manufacture. The labour factor in sewing the wedge-shaped pieces together is a significant cost factor which could be eliminated by a one-piece umbrella cover construction.

Other prior art umbrellas have been designed utilizing thin sheets of plastics for covers. The covers were formed from a single sheet of plastics. However, this type of umbrella cover is also relatively expensive to manufacture and to a large segment of umbrella users is unattractive and considered less appealing than the cloth cover. These umbrella covers could not have scenic designs applied thereto because of that nature of the materials used and the methods of application of the designs.

It is toward the elimination of these problems that the present invention is directed.

The present invention consists in a weather protection or like device, in which the cover is formed from one piece of material, the one-piece of material being stretchable over the frame when the device is in an opened condition and having an upper surface and a bottom surface, and a coating is applied to the upper and/or bottom surface so that the cover is water impervious.

The material of the cover is preferably a knitted fabric, which may be cotton or a synthetic fabric such as polyester, nylon, nylon tricot, Fortrel, Quiana, acetate or rayon.

The one-piece cover may have imprinted, transferred or sublimated on its entire surface or parts thereof, cohesive (continuous) scenic designs or other physical designs.

The invention may be applied to an umbrella or to other weather protection devices or to similar devices such as camouflage covers.

The invention will now be described, by way of example, with reference to the accompanying drawings, in which:

FIGURE 1 is a perspective view of an umbrella in accordance with the invention, showing the one-piece cover construction design;

FIGURE 2 is a side elevation of an umbrella showing the one-piece cover with the placement of the ribs;

FIGURE 3 is a cross sectional view of the one-piece umbrella cover;

FIGURE 4 is a top view of the one-piece cover shown in its opened position;

FIGURE 5 is a perspective view of the interior of the opened umbrella; and

FIGURE 6 is a top view of the one-piece cover showing the application of a scenic design thereon.

Generally, an umbrella is constructed in accordance with the teachings of the present invention as identified in FIGURE 1 by the reference numeral 10. The umbrella structure is of a conventional configuration having an elongated rod 12 and a handle 14 at its lower end 16. At the upper end 18 of the elongated rod 12 there is provided a disc-like member 20 to which is pivotably attached to one end 22 of a plurality of ribs 24 which are adapted to extend radially from the disc-like member 20 when the umbrella 10 is in the opened position as shown in FIGURE 5.

The conventional structure of the umbrella also provides a slidable cylindrical carriage 26 to which are attached pivotally mounted struts 28 which are pivotally connected to the ribs 24. One strut 28 is connected to one rib 24 in order to open and/or collapse the rib structure 30.

The above-identified structure is intended to describe the conventional structure and operation of an ordinary umbrella which is adapted to utilize a generally round or circular configured umbrella cover 32. In the interest of brevity, the present invention is described with respect to an umbrella. However, it will be understood that the present invention may be used on

weather protection device covers of many descriptions as well as camouflage covering and play items such as hat umbrellas.

In accordance with the invention, the umbrella is provided with a one-piece umbrella cover comprised of polyester, nylon, nylon tricot, Quiana (a registered trademark), acetate, rayon, Fortrel (a registered trademark) or any one of the closely knitted synthetic fibre materials which may have been formed such that the fabric has the capability of multi-directional stretching. Preferably, a fabric with a stretch factor of no more than fifty (50%) percent is utilized.

As previously mentioned the one-piece cover 32 is cut into the configuration shown in FIGURE 4 thus eliminating the pie-like structure of the prior art umbrella covers.

In order to provide an ornamental appearance to the umbrella cover, particularly now that a one-piece cover is utilized, the invention provides for the imprinting, transferring or sublimating thereto or thereon a highly decorative design such as continuous scenes, sporting events, colourful products, continuous pictures, messages

and the like over the entire cover or parts thereof. Standard application techniques may be utilized and applied to the material either after the material has been pre-cut or done on a continuous roll and thereafter cut to size.

In order to render the one-piece umbrella cover with or without the decorative design thereon water impervious, the top or bottom surface 34 of the fabric 36 may be provided with a light coating 38 of water impervious material such as polyvinyl chloride polyurethane, Tuftane (a registered trademark of the B.F. Goodrich Co.), polyethylene and polypropylene or other plastics based materials which would not significantly reduce the stretchability of the fabric on which it is coated. The light coating of the bottom surface of the fabric 36 is designed to render the one-piece umbrella cover 32 waterproof so that the user of the umbrella will not be reached by the rain, through the cover 22.

The coating of the fabric 36 may be accomplished by applying the coating 38 to the top or bottom surface 34 by heat and pressure or the coating may be applied by applicators in a well known and commercially approved manner. The method of applying the coating 38 to the top or bottom surface of the fabric 36 is to make the cover 32 water

impervious and, therefore, need not be applied to excessive amounts. Indeed excessive application of the coating 38 to the top or bottom surface of the one-piece umbrella cover 32 would be unnecessary.

It should be particularly recognized by those skilled in the art that the alternative invention may include the coating of the upper surface 40 of the fabric 36. The upper surface 40 of the one-piece umbrella cover may have a design applied thereto or a design which may be already imprinted in the fabric and a coating will not distort, disfigure or have the colour changed by the application of the coating 38.

The one-piece umbrella cover may be attached to the free ends 42 of the ribs 24 in a manner well known to those skilled in the art, at the outer periphery 44 of the cover 32.

It should be noted that with the one-piece construction so described above, it is no longer necessary to stitch the ribs 24 in place against the seams as with the prior art umbrella covers. It was previously noted that the ribs 24 are generally stitched to the cover of the umbrella so that the unsightly seams are covered by the ribs 24. If the ribs 24 are stitched in registry to

the seams then the seams remain covered. With the present invention such stitching is not required.

In another embodiment of the invention, there is provided a camouflage cover, i.e. a device which can be used, for example, by a hunter to prevent his being seen by game which he is hunting. The device has a one-piece cover to which may be applied a suitable camouflage pattern. The cover is stretched over a frame as in the above-described embodiment.

It may be seen by those skilled in the art that the invention above described in detail is accomplished by providing a multi-directional stretchable fabric one-piece cover which may or may not be provided with colourful and decorative designs such as scenes and which is coated with a water impervious material on the top or bottom surface of the fabric and then is applied to the frame of the weather protection or like device in a conventional manner, thereby to provide a device having a one-piece fabric cover, which is totally waterproof.

CLAIMS

1. A weather protection or like device having an extendable and collapsible frame and a cover adapted to be connected to the frame, in which the cover is formed from one piece of knitted fabric material, the one-piece of material being stretchable over the frame when the device is in an opened condition and having an upper surface and a bottom surface, and a coating is applied to the upper and/or bottom surface so that the cover is water impervious.

2. A device as claimed in claim 1, wherein a cohesive decorative design is provided on the upper surface of the cover.

3. A device as claimed in claim 1 or claim 2, in which the fabric is a natural fibre such as cotton.

4. A device as claimed in claim 1 or claim 2, wherein the fabric is a synthetic fabric such as polyester, nylon, nylon tricot, Fortrel, Quiana, acetate or rayon.

5. A device as claimed in any preceding claim, wherein the coating is selected from the group consisting of polyvinylchloride, polyurethane, polyethylene and polypropylene.

6. A device as claimed in any preceding claim, wherein the coating is applied to the upper surface of the cover.

7. A device as claimed in any one of claims 1 to 5, wherein the coating is applied to the bottom surface of the cover.

8. A device as claimed in any preceding claim wherein the device is an umbrella having a rod.

9. A device as claimed in any one of claims 1 to 8, wherein the device is a camouflage cover.

FIG. 1

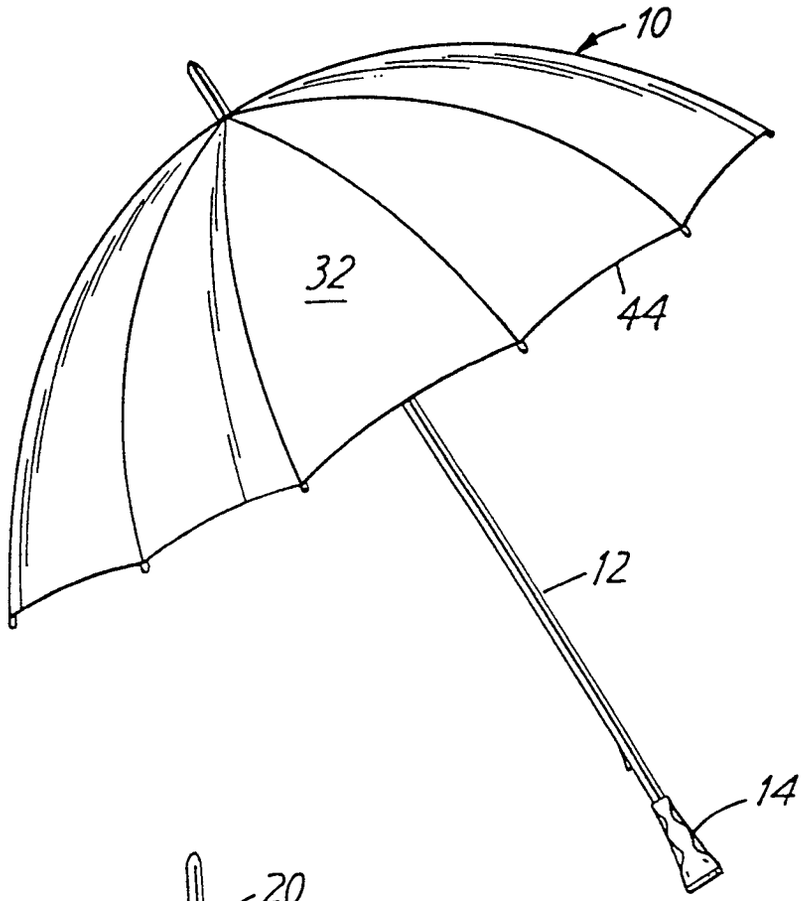


FIG. 2

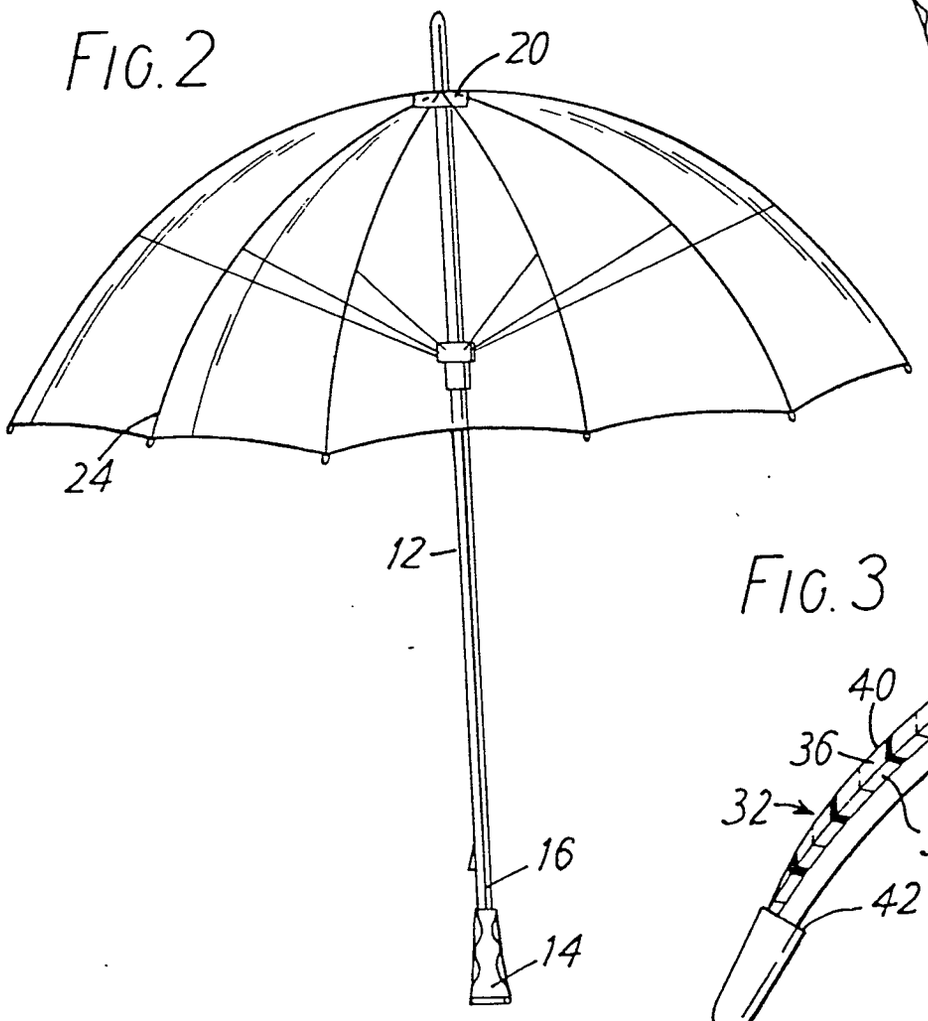


FIG. 3

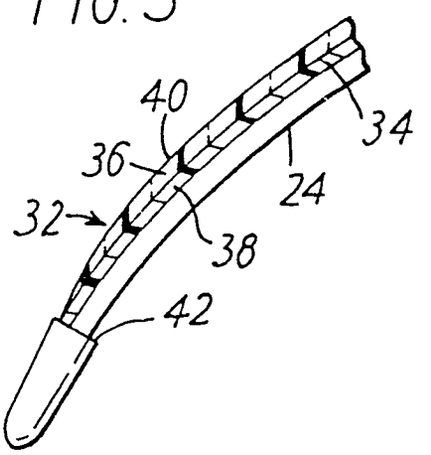


FIG.4

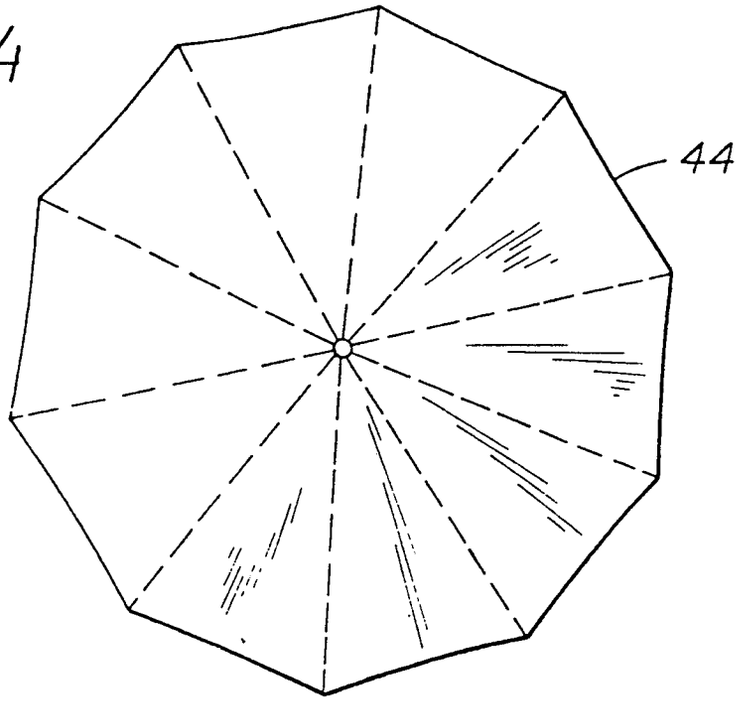


FIG.5

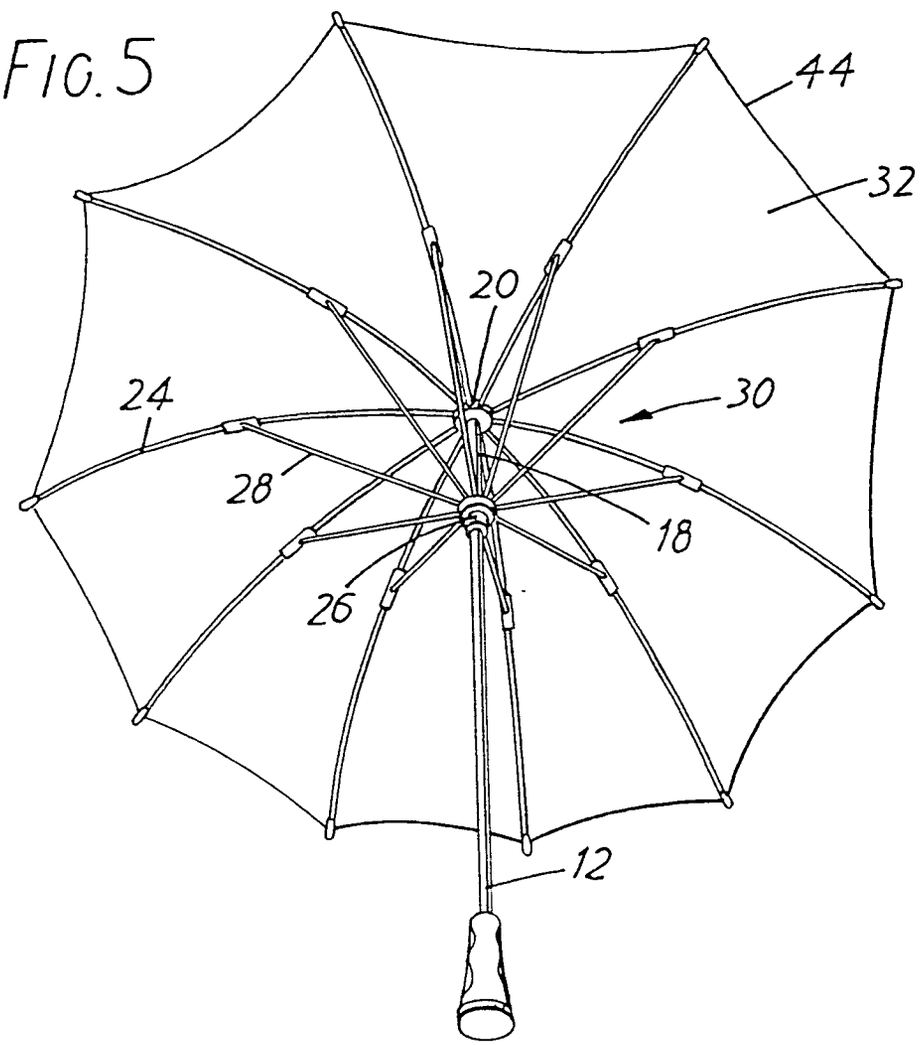
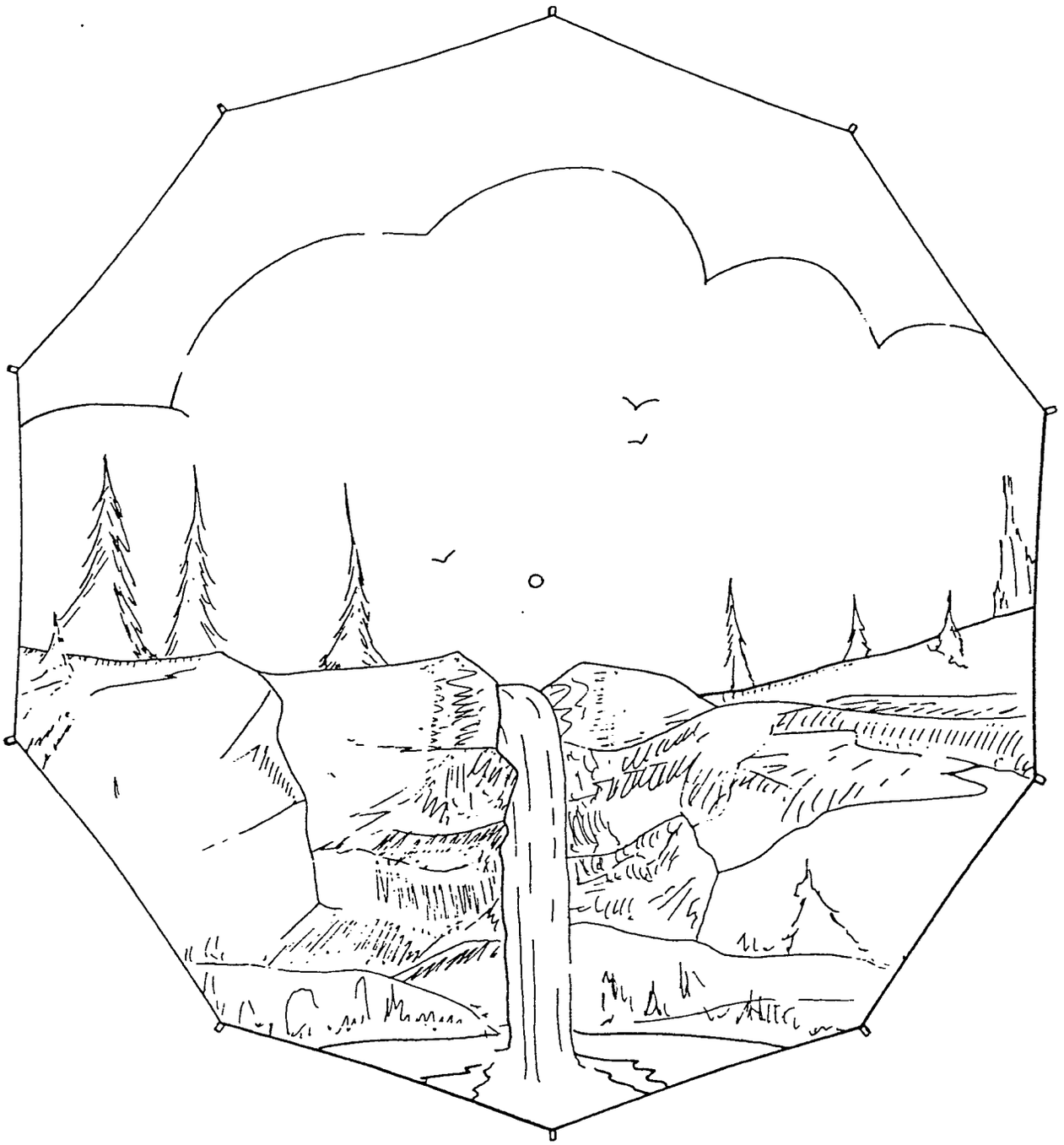


FIG. 6



European Patent Office

EUROPEAN SEARCH REPORT

Application number
EP 80 30 2621

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
X	GB - A - 1 136 477 (MUIR, YOUNG & MARTIN) * page 1, lines 9-80 * --	1,4,8
	CH - A - 176 170 (SCHALTEGGER-HESS) * the whole document * --	1,2,7
D	GB - A - 256 912 (HISLOP) * the whole document * --	1,3,7,8
D	US - A - 2 039 987 (GOLDMAN) * page 1, column 1, line 35 to column 2, line 47; figures 1-4 * --	1,3,6,7,8
	GB - A - 1 558 960 (SHOICHI NAGAE) * the whole document * --	1,4,5,8
	GB - A - 1 493 389 (FULTON) * the whole document * --	1,4
	FR - A - 2 257 239 (BREMSHEY) * page 4, lines 1-9; claims 5,8 * & US - A - 3 957 070 -- ./.	6,7

CLASSIFICATION OF THE APPLICATION (Int. Cl.³)

A 45 B 25/18

TECHNICAL FIELDS SEARCHED (Int. Cl.³)

A 45 B
A 45 F

CATEGORY OF CITED DOCUMENTS

X: particularly relevant
A: technological background
O: non-written disclosure
P: intermediate document
T: theory or principle underlying the invention
E: conflicting application
D: document cited in the application
L: citation for other reasons

&: member of the same patent family, corresponding document

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	06-07-1981	SIGWALT

European Patent Office

EUROPEAN SEARCH REPORT

Application number
EP 80 30 2621

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl.³)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
	US - A - 3 374 798 (SAMUELSON) * column 2, lines 12-59; figures 1-5 * ------	9	TECHNICAL FIELDS SEARCHED (Int. Cl.³)