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(54) Foldable screen

(57) Foldable screen, comprising a cloth and a frame, which frame comprises a stem and ribs, and the cloth being releasably connected to the frame by fastening means, in which the fastening means with which the cloth is connected along the ribs each comprise an element (1) with a cylindrically shaped wall with a groove (2) through the wall, parallel to the axis of the element, the width of the groove being smaller than the diameter of a rib, the cylindrically shaped wall enclosing a rib and the fastening means being unreleasably connected to the cloth on the side of the cloth on which the ribs are situated.

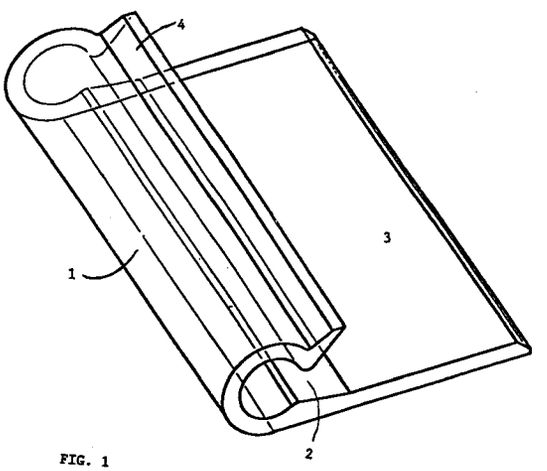

FIG. 1

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Description

The invention relates to a foldable screen, comprising a cloth and a frame, which frame comprises a stem and ribs, and the cloth being releasably connected to the frame by fastening means.

Examples of foldable screens are, inter alia, umbrellas and parasols, such as for example garden parasols or parasols for use in pavement cafes. The cloth of a foldable screen of this kind is generally connected to the frame by fastening means at that end of each rib which is furthest removed from the stem and along the ribs, for example in the centre of each rib. Furthermore, the cloth may be connected to the frame at the location of the stem, generally in the centre of the foldable screen.

Foldable screens are generally known. For example, foldable screens are known in which the cloth comprises segments which, in the unfolded state of the screen, each span the area between two adjacent ribs. The cloth is then connected to the frame by the ribs being incorporated in the hems which connect the segments.

The assembly of a foldable screen of this kind is very involved and time-consuming. Furthermore, the cloth is not releasably connected to the frame, so that the cloth cannot be removed therefrom without damage. This is disadvantageous, for example, if repairs have to be carried out on the cloth or if the cloth has to be cleaned.

A foldable screen is also known in which the cloth is connected to the frame by bending a metal strip around the hem and around the ribs at various points along the ribs. The cloth is not releasably connected to the frame.

In another embodiment of the foldable screen, the ribs are only incorporated in the hem or a different type of releasable fastening means, such as a sleeve, at those ends of the ribs which are furthest removed from the stem. Furthermore, the cloth is connected along the ribs, for example in the centre of each rib, by strips of barbed tape. Although the cloth is releasably connected to the frame in this manner, the assembly of a foldable screen is very time-consuming due to the use of barbed tape, and there is a need to connect the cloth to the ribs more firmly.

WO 92/13470 discloses a foldable screen in which the segments of the cloth are not connected together, but are connected separately and releasably to the ribs, so that the segments can be removed from the frame.

To this end, slots are present in the longitudinal direction of the ribs. The cloth is fixed in the slots by clamping force by means of wedges.

Although a foldable screen of this kind is durable and the cloth can be removed from the frame, many drawbacks are associated with the screen. The screen contains many complex components, the assembly of the screen is involved and time-consuming and it is not possible to remove the cloth from the frame in a simple manner. Furthermore, the cloth may not be tensioned uniformly along the ribs when the screen is unfolded, so that, after the screen has been unfolded, there may be creases and folds in the cloth.

The invention aims to provide a foldable screen which is durable and in which the cloth can be removed from the frame in a simple manner.

This object is achieved by the fact that the foldable screen according to the invention, comprising a cloth and a frame, which frame comprises a stem and ribs, and the cloth being releasably connected to the frame by fastening means, is characterized in that the fastening means with which the cloth is connected along the ribs each comprise an element with a cylindrically shaped wall, with a groove through the wall, parallel to the axis of the element, the width of the groove being smaller than the diameter of a rib, the cylindrically shaped wall enclosing a rib and the fastening means being unreleasably connected to the cloth on the side of the cloth on which the ribs are situated.

The cloth of the foldable screen according to the invention can be removed easily from the frame by pushing the ribs, which are enclosed by the cylindrically shaped wall, through the groove in the wall, so that the wall no longer encloses the ribs.

A further advantage of the screen according to the invention is that the screen can be assembled in a simple manner.

Yet more advantages are that the screen is durable and that a firm connection is obtained between the cloth and the frame. Furthermore, the assembly of the foldable screen is readily automatable.

Although US-5,305,772 discloses a foldable screen with fastening means for the cloth which comprise a hollow cylindrical body with a groove on one side, it is not clear from US-5,305,772 whether the cloth can be removed from the frame. Furthermore, the fastening means are not unreleasably connected to the cloth, but rather the fastening means are used with a cloth to which the fastening means cannot be unreleasably connected. Also, the fastening means are arranged around the ribs over the cloth, so that the fastening means clamp round the cloth and in this way can damage it, which is not the case with the foldable screen according to the invention. Furthermore, the cloth of the foldable screen according to the invention can be attached to the frame in a more simple manner, because the fastening means for the cloth are already unreleasably connected to the cloth at the point which is suitable for this purpose, whereas when the cloth is being attached to the frame of the foldable screen of US-5,305,772 the cloth has to be positioned on the frame extremely accurately, after which the positions at which the fastening means are to be arranged around the ribs over the cloth have to be determined accurately. Furthermore, the fastening means of the foldable screen of US-5,305,772 have to be very dimensionally accurate, because they have to clamp round the rib and the cloth correctly and the dimension has to be adjusted accurately to the diameter of the rib and the thickness of the cloth, whereas in the

case of the foldable screen according to the invention the dimensional accuracy is of less importance and the thickness of the cloth has no effect, because the fastening means does not enclose the cloth, but is unreleasably connected to the cloth itself.

The cloth can be releasably connected to the frame at the ends of the ribs and optionally at the location of the stem, use being made of the means which are known for this purpose.

The invention likewise relates to a foldable screen, comprising a cloth and a frame, which frame comprises a stem and ribs, and the cloth being releasably connected to the frame by fastening means, in which the cloth is connected at that end of each rib which is furthest removed from the stem, use being made of fastening means which each comprise a first element with a cylindrically shaped wall, with a groove through the wall, parallel to the axis of the element, the width of the groove being smaller than the diameter of a rib, the cylindrically shaped wall enclosing a rib and the fastening means being unreleasably connected to the cloth on the side of the cloth on which the ribs are situated, which fastening means furthermore comprise a second element in order to enclose the end of a rib.

The advantage of this is that a firm connection is achieved between the cloth and the ribs. Furthermore, the cloth can be attached very simply. After a rib has been pressed through the groove of the first element, the rib is situated in a fixed position with respect to the second element. By simply moving the fastening means along the rib, the second element is made to enclose the rib. Preferably, the second element comprises a sleeve which is closed at one of the ends. Very good results are achieved if the cross-section of the sleeve has a non-round, for example an oval, shape. This ensures that a rib with a round cross-section, the diameter of which is between the largest and the smallest axial length of the cross-section of the sleeve, can be pushed in a clamping manner into the sleeve.

The advantage of this is that the fastening means remains firmly connected to the rib even if the cloth is not tensioned, for example in the folded-up state of the screen.

Preferably, the fastening means comprise an element for connecting the fastening means unreleasably to the cloth. An advantage is that an element of this kind can be designed especially for producing a strong connection to the cloth, it being possible to take into account the manner in which the connection is brought about.

Very good results are achieved if the element for unreleasably connecting the fastening means to the cloth is plate-shaped. A plate-shaped element of this kind can be unreleasably connected to the cloth easily and firmly, for example by welding or adhesive bonding.

Preferably, the fastening means are connected to the cloth by sewing, the fastening means being pierced by a needle. As a result, a firm connection is achieved using a simple technique. Yet another advantage is produced if the cloth is composed of segments, because then the fastening means can be connected to the cloth at the same time as the segments are sewn together.

Since the needle of a sewing machine can pierce and sew on the fastening means at a more or less arbitrary location, but preferably in the plate-shaped element, it is not necessary to position the fastening means very accurately before sewing it on. As a result, it is, for example, readily possible to automate the sewing on of the fastening means.

Preferably, the groove is situated at such a position in the cylindrical wall that the cloth can be connected to the frame by moving the cloth, placed on the frame, in the plane of the cloth and perpendicularly to the ribs.

As a result, the cloth can be connected to the frame in an even more simple manner by connecting the ribs to the cloth at the ends and then moving the cloth in the above-mentioned direction, so that the ribs are pressed through the groove of the fastening means. To this end, the plane which is defined by the axis of the element with the cylindrically shaped wall and the centre line of the groove runs parallel or practically parallel to the cloth.

One skilled in the art can choose a suitable material for the fastening means of the foldable screen according to the invention, taking account of the demands which are placed on a foldable screen and the way in which the foldable screen is assembled.

Good results are achieved if the fastening means consist of a plastic. This results in good resistance to the effects of weather and to moisture, for example. Furthermore, the fastening means made of plastic can readily be sewn on, since a needle of a sewing machine can easily pierce the plastic. Preferably, a semi-crystalline plastic is used, such as for example nylon 6.6, nylon 6, high-density polyethylene, polyethylene terephthalate and polypropylene. Polypropylene is preferably used, since this plastic is tough, very flexible and very resistant to fatigue, so that the cloth can be attached to and removed from the frame simply and repeatably.

The thickness of the cylindrically shaped wall is preferably 0.8-2.0 mm. This results in a firm connection between the cloth and the frame, and the cloth can also easily be attached to the frame without having to exert much force on it.

The thickness of the element for fastening the fastening means unreleasably to the cloth may be of the same thickness as the cylindrical wall. Preferably, the thickness of the element is 0.8-1.3 mm. As a result, the fastening means can easily be sewn onto the cloth, due to the fact that the needle of a conventional sewing machine can pierce the element.

Preferably, the element with the cylindrically shaped wall has an internal diameter which is equal to or greater than the diameter of the rib. As a result, the fastening means can move along the rib, in the longitudinal direction thereof, with little resistance, so that the cloth can be tensioned uniformly along the rib when the foldable screen according to the invention is unfolded.

The invention is illustrated with reference to the drawing, without being limited thereto.

Fig. 1 is a perspective depiction of a fastening means of the foldable screen according to the invention.

Fig. 2 shows a cross-section of the fastening means from Fig. 1, perpendicular to the axis of the element with the cylindrical wall.

Fig. 3 shows a fastening means of the foldable screen according to the invention.

The fastening means of Fig. 1 comprises an element (1) with a cylindrical wall. A groove (2) of a width which is smaller than the diameter of a rib, is situated in the wall. Furthermore, the element with the cylindrically shaped wall extends into a plate-shaped element (3) for connecting the fastening means to the cloth. Furthermore, the fastening means comprises a lip (4) which, when the cloth is being fastened to the frame, assists in guiding the rib and in opening the groove by the rib by the fact that the rib is pressed against the lip (4) and the plate-shaped element (3). After the rib has passed through the groove, the rib is accommodated in the cavity which is enclosed by the cylindrical wall.

Fig. 2 shows the element with the cylindrical wall (1), the plate-shaped element (3) and the lip (4). The thickness of the wall and of the plate-shaped element is approximately 1 mm and the fastening means consists of polypropylene. The fastening means can be sewn to the cloth, through the plate-shaped element, by means of standard equipment.

Fig. 3 shows a fastening means for the cloth at that end of a rib which is furthest removed from the stem. The fastening means comprises an element with a cylindrically shaped wall (1) and a lip (4), comparable to the fastening means of Fig. 1.

Furthermore, the fastening means comprises an element (5) for enclosing the end of a rib. The element (5) is sleeve-shaped, has a non-round cross-section and is closed at the end (6).

Claims

1. Foldable screen, comprising a cloth and a frame, which frame comprises a stem and ribs, and the cloth being releasably connected to the frame by fastening means, characterized in that the fastening means with which the cloth is connected along the ribs each comprise an element with a cylindrically shaped wall (1), with a groove (2) through the wall, parallel to the axis of the element, the width of the groove being smaller than the diameter of a rib, the cylindrically shaped wall enclosing a rib and the fastening means being unreleasably connected to the cloth on the side of the cloth on which the ribs are situated.

2. Foldable screen, comprising a cloth and a frame, which frame comprises a stem and ribs, and the cloth being releasably connected to the frame by fastening means, characterized in that the cloth is connected to the ribs at that end of each rib which is furthest removed from the stem, use being made of fastening means which each comprise a first element with a cylindrically shaped wall (1), with a groove (2)through the wall, parallel to the axis of the element, the width of the groove being smaller than the diameter of a rib, the cylindrically shaped wall enclosing a rib and the fastening means being unreleasably connected to the cloth on the side of the cloth on which the ribs are situated, which fastening means furthermore comprise a second element (5)in order to enclose that end of a rib which is furthest removed from the stem.

3. Foldable screen according to Claim 1 or 2, characterized in that the fastening means comprise an element (3) for connecting the fastening means unreleasably to the cloth.

4. Foldable screen according to Claim 3, characterized in that the element for unreleasably connecting the fastening means to the cloth is plate-shaped.

5. Foldable screen according to one of Claims 1 to 4, characterized in that the fastening means are connected to the cloth by sewing.

6. Foldable screen according to one of Claims 1-5, characterized in that the groove is situated at such a position in the cylindrical wall that the cloth can be connected to the frame by moving the cloth in the plane of the cloth and perpendicularly to the ribs.

7. Foldable screen according to one of Claims 2-6, characterized in that the element for enclosing the end of a rib is a sleeve having a non-round cross-section.

8. Cloth for a foldable screen according to any one of claims 1-7.

9. Fastening means for a foldable screen according to any one of claims 1-7.

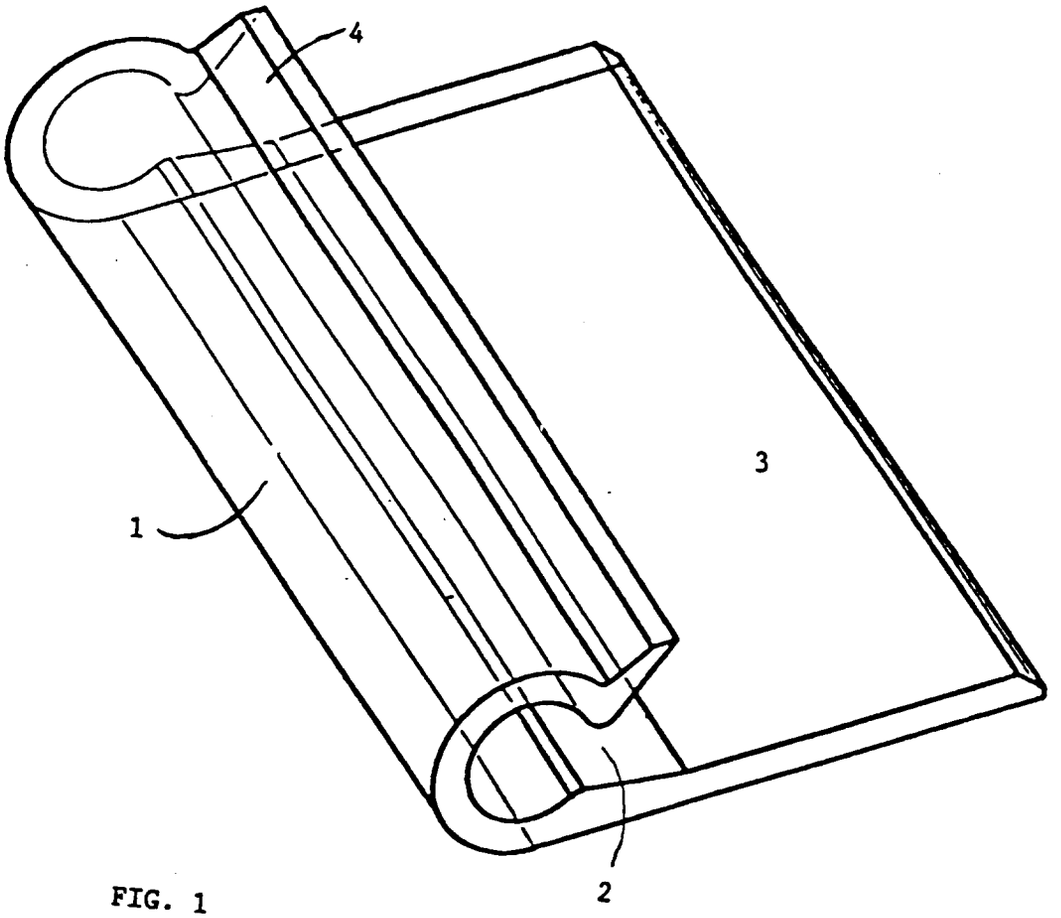

FIG. 1

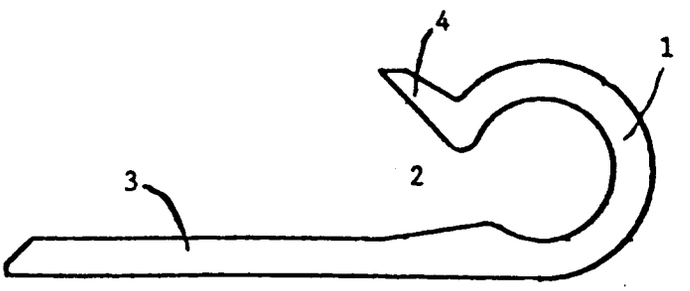

FIG. 2

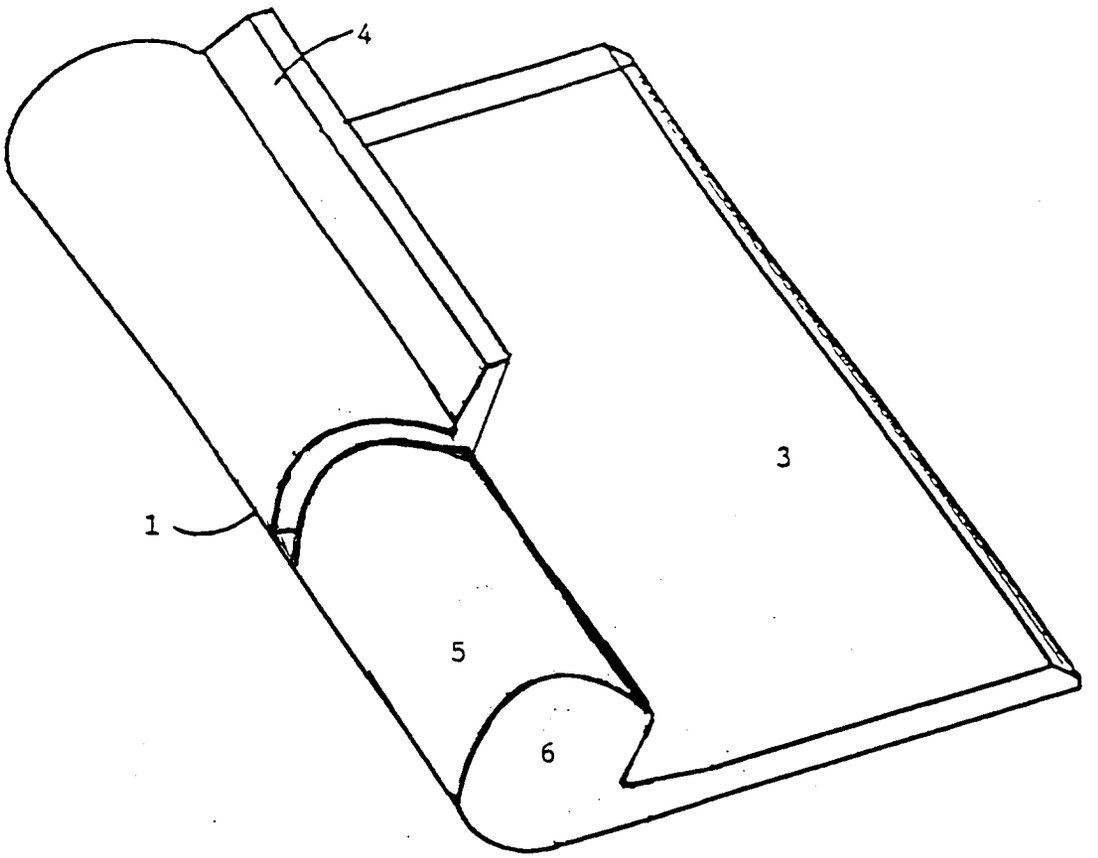

FIG. 3

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 96 20 3320

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	DE 12 27 210 B (NEUMANN) 20 October 1966 * the whole document *	1-9	A45B15/00
A	FR 1 431 627 A (GORROCHATEGUI ALONSO) 11 March 1966 * figures 4-6 *	1-5,8,9	
A	US 1 492 725 A (HENRY) 6 May 1924 * page 2, right-hand column, line 103 - line 121; figures 1,5 *	1-5,8,9	
A	FR 2 473 282 A (PURCHA) 17 July 1981 * page 5, line 14 - line 35; figure 5 *	1-5,7-9	
D,A	WO 92 13470 A (GLATZ) 20 August 1992		
A	FR 443 613 A (FRENER) 28 September 1912		
A	US 3 660 872 A (KAWANO) 9 May 1972		

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

A45B
E04H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	1 April 1997	Sigwalt, C

CATEGORY OF CITED DOCUMENTS

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