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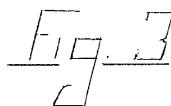
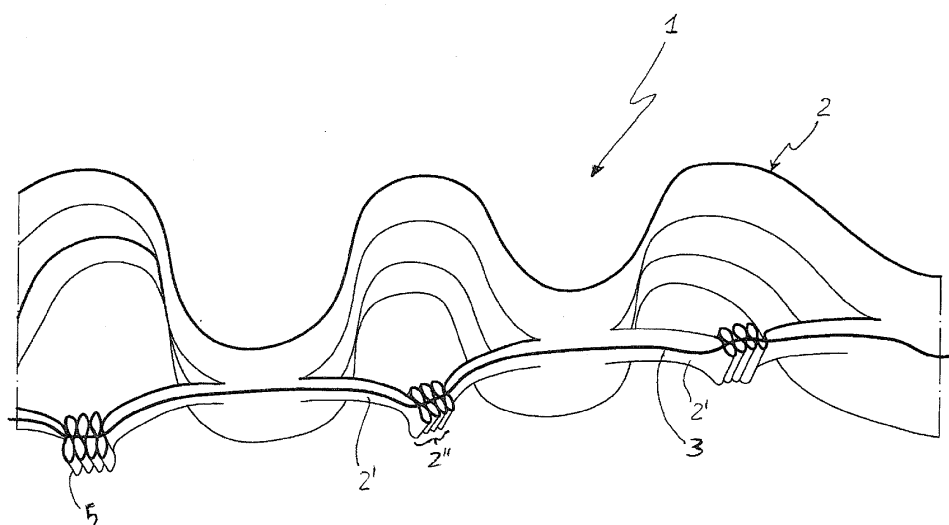
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(54) **Guide tape for curtains and respective manufacturing method**

(57) A guide tape for curtains is described, comprising a backing fabric deformable between a substantially flat arrangement and a substantially sinusoidal arrangement, and at least one string, operable by the user to deform the backing fabric. The backing fabric comprises in its turn a plurality of main guide channels, aligned along a same longitudinal direction and spaced each other according to a predefined pitch, and corresponding intermediate guide channels, longitudinal too, between two

main consecutive guide channels. The string is slidably accommodated in the main guide channels and the intermediate guide channels. Advantageously each of the intermediate guide channels is obtained in a portion at least partly curvable of the backing fabric bounded by two through buttonholes. The through buttonholes are parallel to each other and parallel to the corresponding intermediate guide channel.

A method for realizing a guide tape according to the invention is also described.



Description

[0001] The present invention generally relates to the field of curtains, and especially it concerns a guide tape for curtains, of curtable type, and the respective manufacturing method.

[0002] In the curtains field it is known to associate a guide tape to curtains serving to facilitate the curling and pleating of the curtain itself. It is generally referred to this type of tape with the expression of automatic curling tapes.

[0003] The automatic curling guide tapes can also have a supporting function and generally they are attached to the curtain at its upper edge. The attachment is obtained with seams, or gluing, with buttons, etc. The tapes are mainly made of a synthetic material, such as polyethylene terephthalate (PET) for example, although in the past natural fibers, for example cotton, have been used.

[0004] The automatic curling tape is provided with one or more strings sliding in appropriate guides obtained in the tape itself. By pulling the strings the user causes the tape and its associated curtain to curl. The definitive arrangement of the curled, or pleated, curtain depends on the tape arrangement, that is on the geometrical proportions and the pitch of the guides wherein the strings slide.

[0005] The English Patent Application GB 2298357 describes an automatic curling guide tape provided with two strings. The strings extend parallel in the longitudinal direction, that is in the development direction of the tape and they are slidably accommodated in a plurality of longitudinal guides obtained in the tape itself. When the tape is fully extended, that is when the strings are not pulled, the distance between two consecutive longitudinal guides is about twice the length of each guide. With this arrangement by pulling the strings the curling shown in figure 2 is obtained: the curtain is arranged according to an almost sinusoidal progress. Due to the tape stiffness the curtain portion contacting with the guides of the strings has the tendency to stay flat, that is it does not fold. On the other hand, in many applications it is desirable to obtain a substantially sinusoidal progress of the curtain.

[0006] The applications GB-A-2112273 and GB-A-2097240 disclose similar solutions to the just described one.

[0007] The European patent application EP-A-1498056 discloses an automatic curling guide tape allowing to obtain a substantially sinusoidal spatial progress of the respective curtain, supported by a horizontal pole. The guides in which the strings slide are not directly obtained in the tape, but they are obtained in two additional parallel bands sewed onto the tape. Such bands can be curled at an intermediate portion between two points of attachment to the tape; on the contrary at the attachment points the guides are obtained in which the strings, that can be pulled by user, can slide. The curled curtain arrangement is shown in figure 2. The si-

nusoidal progress can be obtained due to the fact that only one intermediate portion of the additional bands can be curled.

[0008] The current automatic curling guide tapes allowing to obtain a substantially sinusoidal progress of the curtain are complicated to manufacture. The positioning of the additional bands on the tape must be as accurate as possible in order to prevent unevenness in the curling of the curtain. Further the seams provided for the attachment of the additional bands to the tape must be accurate and resist to washings. These criticalities force the tape manufacturers to apply expensive quality control requirements negatively affecting the production costs, which on the contrary must be minimum for this kind of product.

[0009] It is therefore an object of the present invention to provide a guide tape for curtains allowing to obtain a substantially sinusoidal progress of the curtain and at the same time resulting easy in its structure, strong and cost effective.

[0010] In its first aspect, therefore the invention relates to a guide tape for curtains according to claim 1.

[0011] In particular, the invention relates to a guide tape for curtains, comprising a backing fabric attachable to a curtain and deformable between a substantially flat arrangement and a substantially sinusoidal arrangement, and at least one string, operable by the user to deform the backing fabric. The backing fabric comprises in its turn a plurality of main guide channels, aligned along a same longitudinal direction and spaced each other according to a predefined pitch, and corresponding intermediate guide channels, longitudinal too, between two main consecutive guide channels. The string is slidably accommodated in the main guide channels and the intermediate guide channels. Advantageously each of the intermediate guide channels is obtained in a portion at least partly curtable of the backing fabric bounded by two through buttonholes, that is two windows obtained in the backing fabric. The through buttonholes are parallel to each other and parallel to the corresponding intermediate guide channel.

[0012] Advantageously the guide tape does not provide sewed portions on the backing fabric. The intermediate guide channels are obtained at a portion of the backing fabric itself. Differently from what it is provided in the solutions known to the art, the tape according to the present invention does not provide portions arranged or sewed on the backing tape; in other terms the curtable portions of the tape are made in a single piece with the backing fabric, that is they are part of the fabric.

[0013] It will be evident to the person skilled of the art that the main and intermediate guide channels are consecutively arranged in longitudinal direction to form at least one series. The backing fabric can comprise a second, a third, etc., series of main and intermediate guide channels, parallel to the corresponding main and intermediate guide channels of other series. The pitch between the main guide channels is constant.

[0014] Preferably the guide tape comprises two or

more parallel strings and it comprises, for each string, corresponding main guide channels and intermediate guide channels. In the preferred embodiment the strings are two and they extend along the backing fabric parallel one to each other. The application of a suitable tension on strings, by the user, causes the curling of some portions of the backing fabric; the backing fabric is deformed by changing from a substantially flat arrangement to a substantially sinusoidal, or curled, or pleated arrangement. The deformation is clearly reversible when the tension on the strings ceases.

[0015] Preferably the through buttonholes of each couple of through buttonholes extend from opposite sides with respect to the at least one string. The extension of the buttonholes in longitudinal direction is preferably equivalent to the extension of the corresponding intermediate guide channels.

[0016] In circumstances wherein the tape comprises two strings parallel one to each other, and therefore two series of main and intermediate guide channels, the through buttonholes preferably extend parallel to the strings and from opposite sides with respect to these. In circumstances wherein the tape comprises three strings parallel one to each other, and therefore three series of main and intermediate guide channels, the through buttonholes, for example, extend parallel to the strings and from opposite sides with respect to these. In circumstances wherein the tape comprises four strings parallel one to each other, and therefore four series of main and intermediate guide channels, the through buttonholes preferably are three and two strings extend between two parallel adjacent through buttonholes.

[0017] The through buttonholes preferably do not extend at the main guide channels; in other terms the fabric is not crossed by the above through buttonholes at the main guide channels.

[0018] Preferably the portion of the backing fabric, in which the intermediate guide channels are obtained, is curtable at a length equidistant from the corresponding main guide channels. The curling is obtained, for example, by folding the backing fabric portion in edges overlapped one to each other. For example, the curling of the curtable portion of the backing fabric is obtained by combining each string with the backing fabric such that the string bypasses the corresponding intermediate guide channel and crosses a plurality of said overlapped edges.

[0019] Preferably the main guide channels and the intermediate guide channels are woven as tubular in the backing fabric, by using a corresponding warp thread.

[0020] Preferably in the substantially sinusoidal arrangement of the backing fabric the curtable portion of the fabric itself does not adopt the substantially sinusoidal progress of the remaining portion of the backing fabric. The curled portion keeps a determined stiffness preventing it from following the deformation adopted by other portions of the backing fabric.

[0021] Generally in the substantially flat arrangement of the backing fabric the main guide channels each have

a length between 2 cm and 5 cm; the pitch between the main guide channels is comprised in the range of 2÷4 times the length of the main guide channels.

[0022] Preferably in the substantially flat arrangement of the backing fabric the main guide channels each have a length of about 3 cm, the intermediate guide channels each have a length of about 19 cm and such a length corresponds to the pitch between two main consecutive guide channels.

[0023] It is still an object of the present invention to provide a method for realizing a guide tape for curtains allowing to solve the drawbacks of the traditional solutions.

[0024] In its second aspect the invention relates to a method, according to claim 10, for realizing a guide tape for curtains.

[0025] Specifically, the invention relates to a method for realizing a guide tape for curtains, of the type comprising a substantially flat backing fabric deformable according to a substantially sinusoidal arrangement and comprising at least one string operable by the user to deform the backing fabric, the method comprising the steps of:

- a) providing the backing fabric with a plurality of main guide channels, aligned along the same longitudinal direction and spaced according to a predefined pitch, and
- b) providing a portion at least partly curtable of the backing fabric with corresponding longitudinal intermediate guide channels between two main consecutive guide channels,
- c) slidably accommodating the at least one string in said main guide channels and the corresponding intermediate guide channels, characterized by the further step of
- d) bounding each portion of the backing fabric provided with at least one intermediate guide channel by two through buttonholes parallel to each other and parallel to the respective intermediate guide channel.

[0026] Advantageously the method does not provide a step of seaming on the backing fabric a binding containing the intermediate guide channels; on the contrary the method according to the present invention provides the intermediate guide channels to be directly obtained in the backing fabric, preferably during the weaving step.

[0027] Preferably the method comprises the further steps of:

- e) realizing the backing fabric with a weft and at least one first warp (i.e. at least one warp thread),
- f) realizing the main guide channels and the intermediate guide channels with a warp, differing from the first one, and
- g) providing one or more strings with yet another warp.

[0028] Even more preferably, in the step e) a weft and three warps (three warp threads) a first warp defining the portion of the backing fabric intermediate between each couple of through buttonholes, a second warp defining the portion of the backing fabric on the left of each couple of through buttonholes and a third warp defining the portion of the backing fabric on the right of each couple of through buttonholes and the portions of the backing fabric comprising the main guide channels.

[0029] For example the backing fabric of the tape is realized by a loom and the through buttonholes are obtained using three distinct warp threads on the same weft.

[0030] In an alternative embodiment, the through buttonholes are obtained die cutting the backing fabric. For example, the through buttonholes are obtained passing the backing fabric through a die cutting roll and a counter-die cutting roll.

[0031] The guide tape according to the present invention is simple in its structure while being strong. The tape is preferably made with PET, and it is therefore light and washing - resistant. The tape structure allows its continuously realization directly by the loom, with evident advantages relating to the productivity and cost effectiveness.

[0032] Further characteristics and advantages of the present invention will be more evident from the following description of its preferred embodiment, made herein below, for illustration purposes only and without limitation, with reference to the attached figures, wherein:

- figure 1 is a plane view of a first embodiment of the guide tape according to the present invention, in a first arrangement;
- figure 2 is a plane view of a second embodiment of the guide tape according to the present invention;
- figure 3 is a perspective view of the tape shown in figure 1, in a second arrangement;
- figure 4 is a principle scheme of the method according to the present invention.

[0033] Referring to the attached figures 1 and 3, a guide tape 1 is shown according to the present invention comprising a backing fabric 2, attachable to a curtain, and a string 3 intended to be pulled by the user to deform the backing fabric 2, and therefore its associated curtain, from the flat arrangement shown in figure 1 to the substantially sinusoidal arrangement shown in figure 3.

[0034] The backing fabric is preferably, but not necessarily, made of polyethylene terephthalate (PET) with one weft and more warp threads, as it will be described in detail in connection with the method according to the present invention. The string 3 also is preferably made of in polyethylene terephthalate (PET) with an appropriate warp thread.

[0035] The tape 1 is substantially composed of a modular portion 11 repeated many times in succession, that is the tape 1 comprises a plurality of side by side modular portions 11. In the attached drawings only two consecu-

tive portions 11 are shown for simplicity; the tape can clearly be composed of more consecutive portions 11.

[0036] Each modular portion 11 comprises a length of the backing fabric 2, that is a strip of the backing fabric 2 extending along a longitudinal direction, and, in the embodiment shown in figures 1 and 3, a string 3. The string 3 also extends in longitudinal direction, that is parallel to the development direction of the strip of backing fabric.

[0037] At each modular portion 11 the backing fabric 2 has two discontinuities 4 consisting of through openings through the backing fabric 2 itself, defined as buttonholes. The buttonholes 4 have an elongate shape and they develop along the longitudinal direction parallel to the string 3.

[0038] In each modular portion 11 of the backing fabric 2 the buttonholes 4 are arranged in parallel couples, such as two rails, and they extend for a length smaller than the length of the modular portion 11; therefore at the virtual connection between two consecutive modular portions 11 the backing fabric 2 does not have buttonholes 4, that is it is continuous for its full length.

[0039] The portion of the backing fabric 2 included between the two buttonholes 4 is referred with the reference number 2'.

[0040] With the reference number 21 the main guide channels, within which the string 3 is slidingly accommodated, are meant. The guide channels 21 are shaped as tubular pockets of the backing fabric 2 and they are preferably obtained during the weaving step with an appropriate warp thread.

[0041] With the reference number 22 the intermediate guide channels, within which the string 3 is slidingly accommodated, are meant. The intermediate guide channels 22 represent the natural extension of the main guide channels 21, but differently from the main guide channels 21 extending at the portion of the backing fabric not comprised between the buttonholes 4, the intermediate guide channels 22 extend only between two parallel buttonholes 4 at the portion 2'. The intermediate guide channels 22 are shaped as tubular pockets of the backing fabric 2 and they are preferably obtained during the weaving step with an appropriate warp thread.

[0042] As shown in figure 1, the guide channels 21 and 22 alternate in succession along the development of the string 3.

[0043] The portion 2' of the backing fabric 2 is at least partly curtable at its half. Referring particularly to figure 1, the folding lines 5 of such a portion 2' are shown. The string 3 passes alternatively over and under the portion 2' of the backing fabric 2 and the folding lines 5 are intermediate between the crossing points.

[0044] The structure of the tape 1 allows the user to easily obtain the sinusoidal progress of the curtain combined with the backing fabric 2.

[0045] Figure 3 shows the tape 1 in a deformed arrangement of the backing fabric 2. The string 3 has been pulled by the user; thereby the portions 2' have been

curled (or folded, or pleated), and this causes a partial stiffening of the portions 2' themselves. The remaining side of the backing fabric 2 is forced to adopt the sinusoidal progress shown in figure 3.

[0046] Figure 2 shows an alternative embodiment of the tape 1 comprising two parallel strings 3, accommodated in corresponding main guide channels 21 and corresponding intermediate guide channels 22 developing between the buttonholes 4.

[0047] Generally the strings 3 can be more than two, for example three, four, five, etc. For example if the strings are four, the buttonholes 4 are three.

[0048] Preferably the buttonholes 4 are obtained during the weaving step of the backing fabric 2, but alternatively they can be die cut.

[0049] In the substantially flat arrangement of the backing fabric 2 shown in figures 1 and 2, the main guide channels 21 have a length of about 3 cm, the intermediate guide channels 22 have a length of about 19 cm corresponding to the pitch (always constant) between two consecutive main guide channels 21.

[0050] Generally the intermediate guide channels 22 can be shorter than the pitch between the main guide channels 21.

[0051] Figure 4 shows a principle scheme relating to the weaving of the backing fabric 2; the scheme helps to understand how the buttonholes 4 are formed.

[0052] The backing fabric 2 is realized with a weft and a warp thread O1 guided by a closed yarn guide needle 7, termed closed sickle. The length of the backing fabric 2 varies from a minimum (portion on the right of the right buttonhole 4) and a maximum (portion free of buttonholes 4).

[0053] The fabric portion on the left of the left buttonhole 4 is realized by braiding the weft with a second warp thread O2 and the intermediate portion 2' between the buttonholes 4 is obtained by braiding the weft with a third warp thread O3. The warp threads O2 and O3 are guided by an open yarn guide needle 6, termed open sickle.

[0054] The open sickle 6 takes the wefts that are fitted within two heddles and goes on weaving with the warps O2 and O3.

[0055] The three warp threads O1-O3 are bounded with the outer weft of the closed sickle 7 starting from the warp thread O3 till the warp thread O1. With the references A1, A2 and A3 the yarn guide needles of corresponding warp threads are referred.

[0056] For the guide channels 21 and 22 one more warp thread is used (not shown in fig. 4). Also the strings 3 are obtained by feeding the corresponding warp threads (not shown in fig. 4).

Claims

1. Guide tape (1) for curtains, comprising a backing fabric (2) attachable to a curtain and deformable between a substantially flat arrangement and a sub-

stantially sinusoidal arrangement, and at least one string (3), operable by the user to deform the backing fabric (2), wherein the backing fabric (2) comprises a plurality of main guide channels (21), aligned along the same longitudinal direction and spaced according to a predefined pitch, and corresponding longitudinal intermediate guide channels (22) between two main consecutive guide channels (21), wherein the at least one string (3) is slidably accommodated in said main guide channels (21) and said intermediate guide channels (22), **characterized in that** each of said intermediate guide channels (22) is obtained in a portion (2') at least partly curvable of the backing fabric (2) bounded by two through buttonholes (4), said through buttonholes (4) being parallel to each other and parallel to the intermediate guide channel (22).

2. Guide tape (1) according to claim 1, comprising two or more parallel strings (3) and comprising, for each string (3), corresponding main guide channels (21) and intermediate guide channels (22).

3. Guide tape (1) according to claim 2, wherein the through buttonholes (4) of each couple of through buttonholes extend from opposite sides with respect to one or more strings (3).

4. Guide tape according to any one of the claims 1-3, wherein said through buttonholes (4) does not extend at said main guide channels (21).

5. Guide tape (1) according to any one of the claims 1-4, wherein the portion (2') of the backing fabric (2), in which the intermediate guide channels (22) are obtained, is curvable at a length equidistant from the corresponding main guide channels (21).

6. Guide tape (1) according to any one of the claims 1-5, wherein each string (3) bypasses the corresponding intermediate guide channel (22) and crosses a plurality of pleats of the curly backing fabric (2) at the curvable portion (2') of the backing fabric (2).

7. Guide tape (1) according to any one of the claims 1-6, wherein said main guide channels (21) and said intermediate guide channels (22) are woven as tubular fabrics in the backing fabric (2).

8. Guide tape according to any one of the claims 1-7, wherein in the substantially sinusoidal arrangement of the backing fabric (2) the curvable portion (2') of the fabric itself does not adopt a substantially sinusoidal progress.

9. Guide tape according to any one of the claims 1-8, wherein in the substantially flat arrangement of the backing fabric (2) said main guide channels (21)

each have a length of about 3 cm, said intermediate guide channels (22) each have a length of about 19 cm and said length corresponds to the pitch between two main consecutive guide channels (21).

10. Method for realizing a guide tape (1) for curtains, of the type comprising a substantially flat backing fabric (2) deformable according to a substantially sinusoidal arrangement and comprising at least one string (3) operable by the user to deform the backing fabric, the method comprising the steps of:

a) providing the backing fabric (2) with a plurality of main guide channels (21), aligned along the same longitudinal direction and spaced according to a predefined pitch, and

b) providing a portion (2') at least partly curtable of the backing fabric (2) with corresponding longitudinal intermediate guide channels (22) between two main consecutive guide channels (21),

c) slidably accommodating the at least one string (3) in said main guide channels (21) and the corresponding intermediate guide channels (22),

characterized by the further step of

d) bounding each portion (2') of the backing fabric (2) provided with at least one intermediate guide channel (22) by two through buttonholes (4) parallel to each other and parallel to the respective intermediate guide channel (22).

11. Method according to claim 10, comprising the step of bringing (2) two or more parallel cords (3) together with the base fabric, each of which being accommodated in a corresponding main guide channels (21) and aligned intermediate guide channels (22), and wherein in said step d) the two through buttonholes (4) extend from opposite sides with respect to one or two or more cords (3).

12. Method according to claim 10 or claim 11, comprising the steps of:

e) manufacturing said backing fabric (2) with at least one weft and at least one warp (O1),

f) manufacturing said main guide channels (21) and said intermediate guide channels (22) with a warp, and

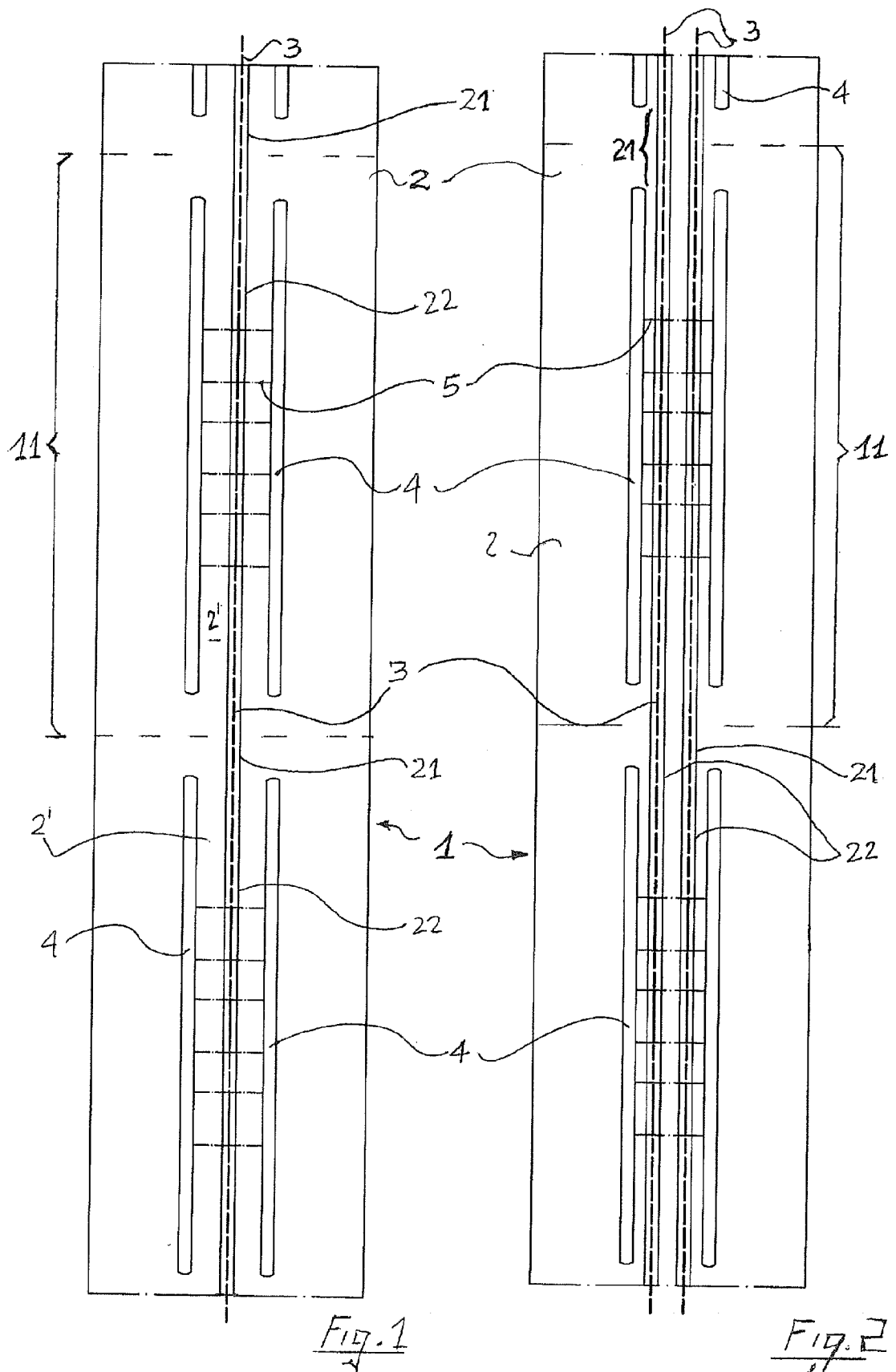
g) providing one or more strings (3) with a warp.

13. Method according to claim 12, wherein in said step e) a weft, a warp (O3) defining the portion (2') of the backing fabric (2) intermediate between each couple of said through buttonholes (4), a warp (O2) defining the portion of the backing fabric (2) on the left of each couple of said through buttonholes (4) and a warp (O1) defining the portion of the backing fabric (2) on

the right of each couple of said through buttonholes (4) and the portions of the backing fabric comprising said main guide channels (21), are used.

14. Method according to any one of the preceding claims 10-13, wherein the tape is realized by a loom and said through buttonholes (4) are obtained using three distinct warp threads (O1, O2, O3) on the same weft.

15. Method according to any one of the preceding claims 10-13, wherein said through buttonholes (4) are obtained die cutting the backing fabric.



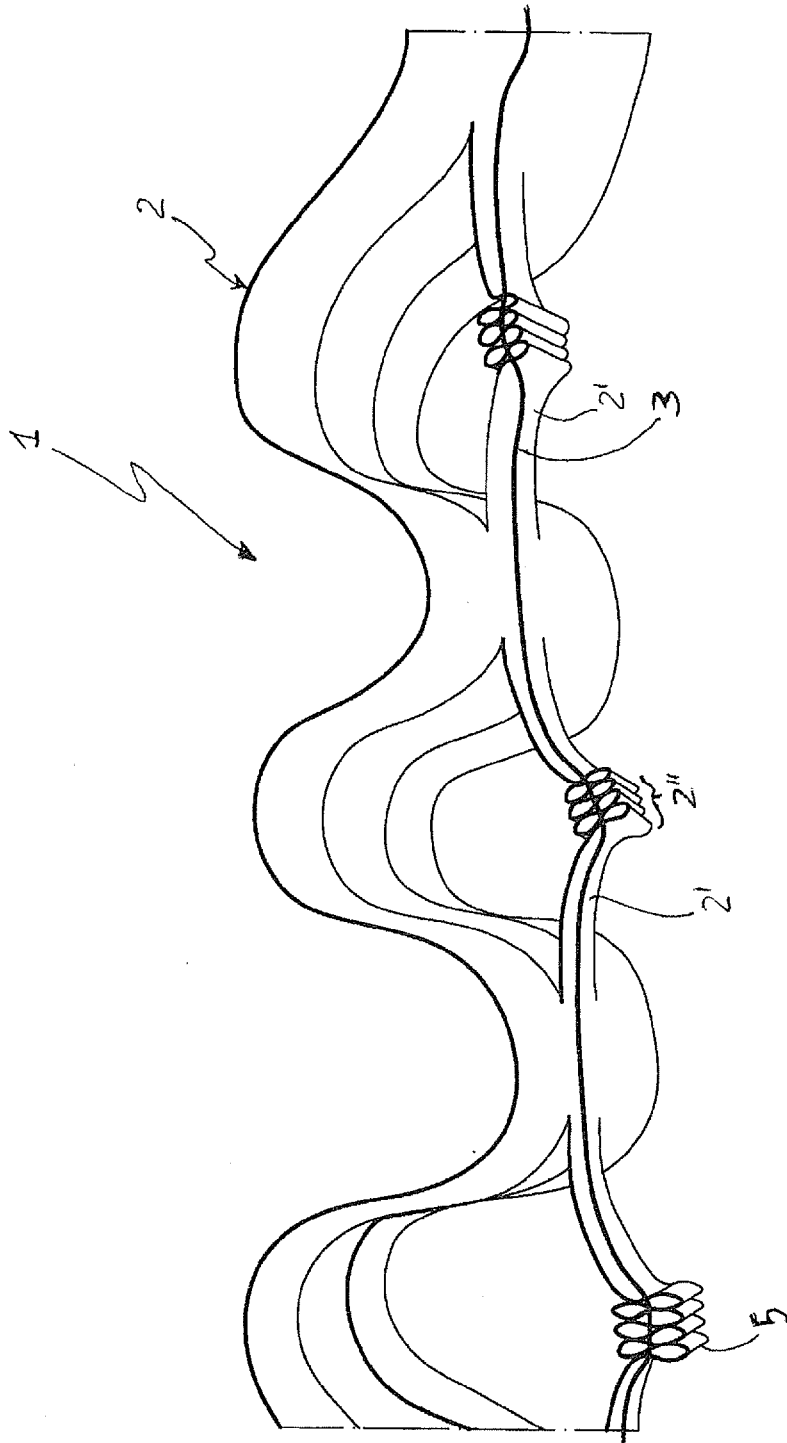


Fig. 3

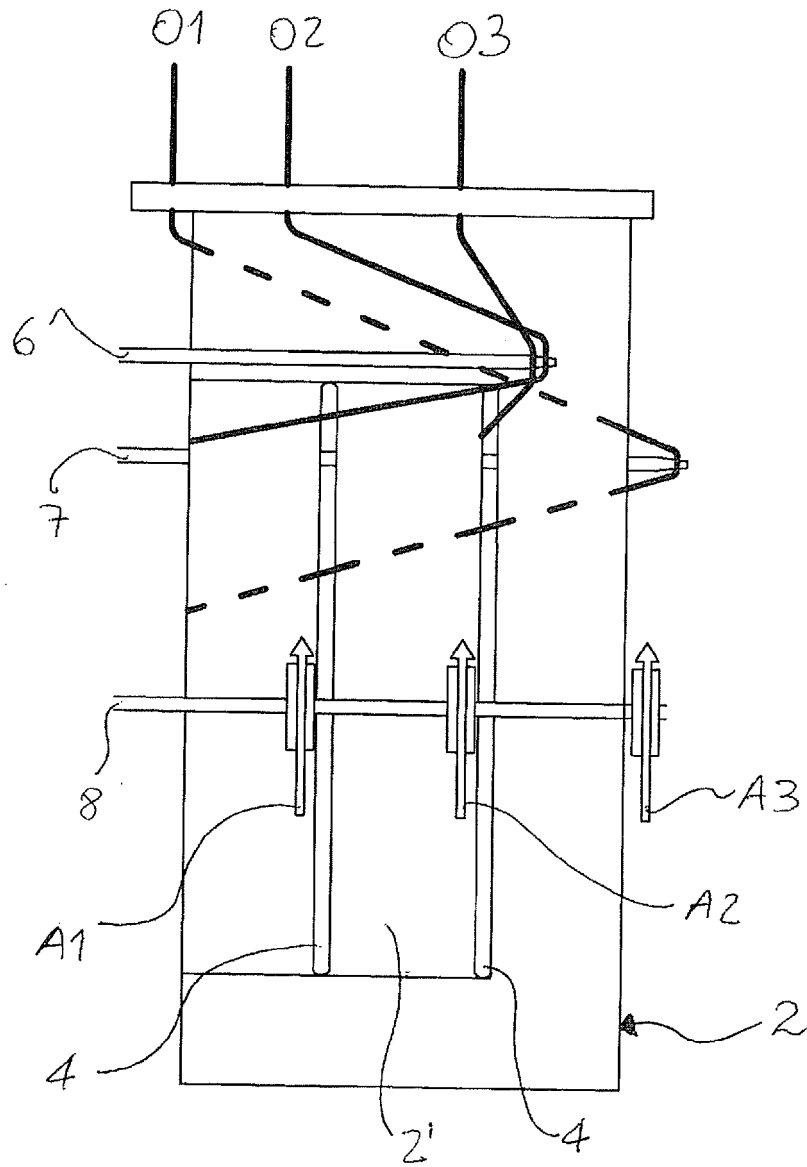


Fig. 4



EUROPEAN SEARCH REPORT

Application Number
EP 12 16 2676

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	AT 9 889 U1 (BANDEX VERWALTUNGS GMBH [AT]) 15 May 2008 (2008-05-15) * abstract; figures 2,3 * -----	1,10	INV. A47H13/16
			TECHNICAL FIELDS SEARCHED (IPC)
			A47H
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 21 September 2012	Examiner Peschel, Gerhard
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REFERENCES CITED IN THE DESCRIPTION

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