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(54) **Cloth for a flag or the like and method for its manufacture**

(57) A cloth for a flag (2) or the like is made of a knitted or woven fabric. The cloth comprises a uniformly dense pattern (3) over its entire surface area, and only at least one edge thereof comprises an integrally woven or knitted strip (4) of a different, in particular a more open pattern. In the method for forming said cloth, said weav-

ing or knitting is carried out in an at least substantially uniformly dense pattern over the entire surface area, with the exception of at least one edge, where a strip comprising a different, in particular a more open pattern is integrally woven or knitted. In this manner a cloth for a flag is formed which is remarkable for its resistance to wear at the edge.

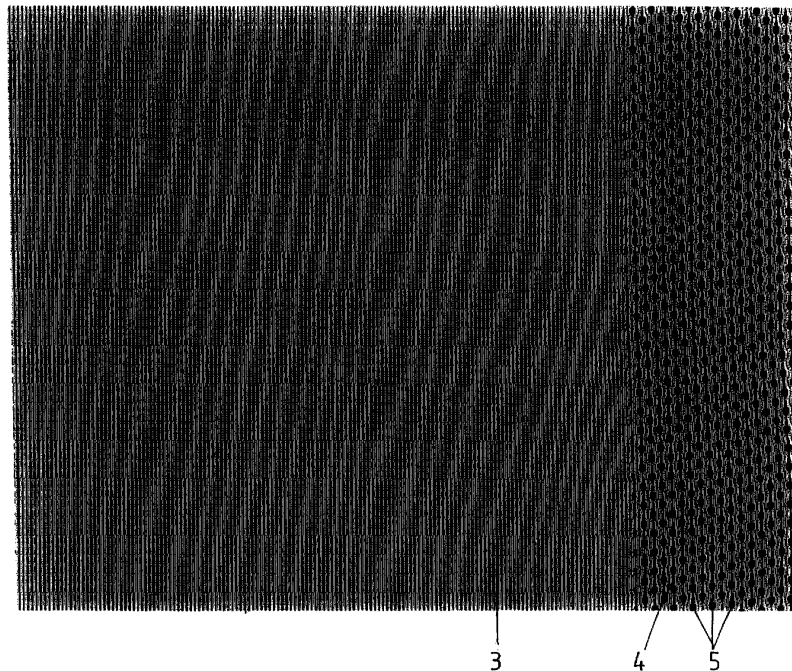


fig. 2

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Description

[0001] The invention relates to a cloth for a flag or the like, which cloth is made of a knitted or woven fabric or the like.

[0002] There are known several patent publications which occupy themselves with cloth for flags and the like, which cloth is to distinguish itself by being weather-resistant and resistant to fraying. Examples are EP-A-0 198 101, EP-A-0 693 745, DE-A-26 29 085, DE-A-35 07 006, EP-A-0 798 688 and DE-A 196 26 932. Said patent publications disclose special woven or knitted fabrics that are to provide said favourable properties. EP-A-0 693 745 discloses a woven fabric, which is characterized by alternating reinforced zones of increased fabric weight and air permeable zones of a lighter material weight. This was considered to be an improvement over a cloth comprising an air permeable pattern in its entirety. Nevertheless, both cloth types have the drawback that the open pattern of the fabric has a negative effect on the appearance of the cloth, and in particular of the print that is present thereon.

[0003] The object of the present invention is to provide a cloth which constitutes an improvement in particular as regards this point.

[0004] In order to accomplish that objective, according to a first aspect of the invention the cloth is characterized in that the cloth comprises an at least substantially uniformly dense pattern over its entire surface area, and that only at least one edge thereof comprises an integrally woven or knitted strip of a different, in particular a more open pattern.

[0005] Since the different, in particular more open pattern is provided only in an edge strip of the cloth, the appearance of the cloth and of the print that is present thereon is hardly affected, if at all. Nevertheless the cloth is properly resistant to fraying, since the most vulnerable area of the cloth, that is the edge, comprises the special pattern that prevents the cloth from fraying. If the pattern is more open at the edge, the wind will have less grip on the cloth at that location, and consequently the forces and the load being exerted on the cloth will be reduced. Instead of using a more open pattern, it is also possible to form the edge of a strip which has been woven or knitted from stronger yarns, which likewise leads to a stronger edge. Furthermore it is possible to form the edge strip with a more elastic pattern. Also combinations of the aforesaid possibilities are conceivable, of course. Since the edge strip is woven or knitted integrally with the rest of the cloth, no separate operations are required for strengthening the edge zone of the cloth, whereas this is necessary with DE-A-196 26 932, for example.

[0006] Preferably, said strip is only present at one edge of the cloth. When the cloth is used as a flag or the like, said strip will form the free edge (the flapping side). This is the edge of the cloth which is loaded most heavily and which will generally become frayed. In this embodiment, the cloth can be formed as a continuous woven,

knitted or woven/knitted fabric, which is subsequently divided into pieces in transverse direction for the purpose of forming separate flags or the like.

[0007] According to an additional aspect of the cloth according to the invention, a plurality of inlaid yarns of greater strength than the other yarns is provided in a direction at least substantially transversely to the aforesaid strip. Said additional yarns, which are preferably distributed over the entire area, provide additional resistance against ripping or tearing of the edge strip, in particular because the wind energy that is exerted on the strip is transmitted to the rest of the cloth.

[0008] The invention furthermore relates to a method for forming a cloth to be used for flags or the like, wherein said cloth is knitted or woven, which method is characterized in that said weaving or knitting is carried out in an at least substantially uniformly dense pattern over the entire surface area, with the exception of at least one edge, where a strip comprising a different, in particular a more open pattern is integrally woven or knitted.

[0009] The invention will now be explained in more detail with reference to the drawing, which schematically shows an exemplary embodiment of the invention.

[0010] Fig. 1 is a schematic side elevational view of a flag which has been manufactured in accordance with the present invention.

[0011] Fig. 2 is a larger-scale view of the detail II in Fig. 1.

[0012] Fig. 3 shows a computer-generated pattern of a part of the detail of Fig. 2.

[0013] Fig. 4 shows the path of a wale and of a course in the pattern of Fig. 3.

[0014] Fig. 1 shows a flag 2 on a flagpole 1, which flag has been manufactured in accordance with the invention. Within the framework of the present invention, the term flag should be broadly interpreted, and it includes also pennants, advertising banners and all kinds of other banners that are hung in the open air. Flag 2 has been formed of a cloth consisting of a woven or knitted fabric, a knitted fabric in the present embodiment. Said knitted fabric comprises a first, at least substantially uniform, dense pattern 3 and a second, more open pattern 4. First pattern 3 extends over substantially the entire surface area of flag 2, whilst only a strip at the free edge of the flag comprises said second, more open pattern 4.

[0015] Fig. 2 shows the detail II of the flag of Fig. 1 on a larger scale, which makes it possible to discern that the first pattern 3 is densely knitted, whilst the second pattern 4 in the edge strip is more open, with clearly distinguishable holes 5. The pattern is more dense around said holes, due to the concentration of yarns. As a result of the presence of said holes 5, the edge strip is more permeable to air and also more elastic than the cloth portion that comprises the first pattern 3, as a result of which the flag is better protected against fraying at the free edge thereof than a cloth comprising said first pattern, whilst the flag can nevertheless be readily provided with a print and, due to the integration of the edge strip,

no additional manufacturing steps for the edge strip are required.

[0016] Figs. 3 and 4 show on an even larger scale a computer-generated representation of patterns 3 and 4, wherein Fig. 3 shows the entire knit of the various yarns, whilst Fig. 4 shows the path of the various kinds of yarn. The illustrated knitted fabric has been formed on a warp-knitting machine in this embodiment, whereby it should be considered that the invention can also be used with Raschel machines, circular knitting machines and flat-bed knitting machines. The warp-knitting machine used for the illustrated knitted fabric comprises three warp beams and a number of stump bars. Fig. 4 shows a yarn 6 which forms part of the wales in the warp direction of the fabric, whilst yarns 7 and 8 form part of the courses in the weft direction, that is, in the transverse direction of the knitted fabric, and that at the location of second pattern 4. In said pattern, the yarns of the courses are diverted round holes 5, as it were, as a result of which yarns of the wales 6 are locally unconnected, which leads to holes 5 being formed. The pattern thus formed exhibits a honeycomb-like woven or knitted structure comprising numerous elevated and deepened portions (50 - 80 per cm²).

[0017] During the manufacture of the fabric, holes 5 have a slot-like shape, which becomes more open after knitting and upon stretching of the cloth on a tenter, which shape is retained during the drying and fixing stage, as can be seen in Fig. 2.

[0018] In most cases, a cloth having an open pattern 4 at both longitudinal edges will be knitted, after which said continuous cloth is divided into two halves in the longitudinal direction. Said two halves are then divided into pieces, wherein each piece is formed into a flag or the like, at the free end of which said strip comprising the open pattern 4 is present.

[0019] Instead of using a more open pattern comprising holes, it is also possible, according to an alternative embodiment of the invention, to form the edge strips with a pattern 4 of stronger yarns, so that a greater resistance against fraying is thus provided in the edge strip. Furthermore, the edge strip may be knitted or woven more elastically so as to increase the resistance against fraying.

[0020] Another additional aspect of the invention is to knit or weave a number of additional inlaid yarns into the fabric, which yarns are distributed over the entire area of the flag and which extend transversely to the strip comprising the second pattern 4 (i.e., generally from the flagpole to the flapping side). If the strip extends in the warp direction, the inlaid yarns will extend in the weft direction, and one inlaid yarn, for example, may be incorporated in each course (the structure will comprise three warp yarns and one weft yarn in that case). Said inlaid yarns may be thicker or thinner than the other yarns, but in any case they will generally be stronger than the yarns in the first pattern 3. Said additional inlaid yarns strengthen the entire woven or knitted fabric and

provide additional protection against ripping of the edge strip, or against said strip being torn off the rest of the flag.

[0021] It is possible to use polyester, for example, as the material for the cloth according to the invention, because polyester is strong and environmentally friendly, absorbs little moisture and does not yellow. Also all kinds of other materials are conceivable, of course. It is possible to select polyester of different grades for the various patterns and any additional inlaid yarns.

[0022] From the foregoing it will be apparent that the invention provides a cloth which is remarkable for its resistance to the influences of the wind and its simplicity of manufacture.

[0023] The invention is not restricted to the embodiments as described above and illustrated in the drawing, which can be varied in several ways without departing from the scope of the invention. Thus the cloth may also be a woven/knitted fabric or a knitted/woven fabric (Magazinschuß).

Claims

1. Cloth for a flag or the like, which cloth is made of a knitted or woven fabric or the like, **characterized in that** said cloth comprises a uniformly dense pattern over its entire surface area, and that only at least one edge thereof comprises an integrally woven or knitted strip of a different, in particular a more open pattern.
2. Cloth according to claim 1, wherein said strip is only present at one edge of the cloth.
3. Cloth according to claim 2, wherein said different pattern exhibits a greater elasticity than the dense pattern.
4. Cloth according to claim 1, 2 or 3, wherein said more open pattern comprises a regular pattern of holes in said woven or knitted fabric.
5. Cloth according to claim 4, wherein said cloth is made of a knitted fabric that has been formed on a warp-knitting machine, wherein the holes in the open pattern are formed by diverting course yarns.
6. Cloth according to any one of the preceding claims, wherein inlaid yarns of greater strength than the other yarns are provided in a direction at least substantially transversely to the aforesaid strip, which yarns are preferably evenly distributed over the length of said strip.
7. Method for forming a cloth to be used for flags and the like, wherein said cloth is woven or knitted, **characterized in that** said weaving or knitting is

carried out in an at least substantially uniformly dense pattern over the entire surface area, with the exception of at least one edge, where a strip comprising a different, in particular a more open pattern is integrally woven or knitted.

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8. Method according to claim 7, wherein said cloth is knitted on a warp-knitting machine.

9. Method according to claim 8, wherein said edge strip is formed on both side edges of the knitted fabric, whilst said fabric is divided into two halves in the longitudinal direction for the purpose of forming flags or the like, which two halves are divided into pieces, wherein each piece is formed into a flag or the like, at the free end of which the aforesaid strip is present.

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10. Method according to any one of the claims 7 - 9, wherein said knitted fabric is stretched on a tenter and fixed at an elevated temperature, whereby the holes in the more open pattern obtain their final shape.

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11. Flag made from the cloth according to any one of the claims 1 - 6.

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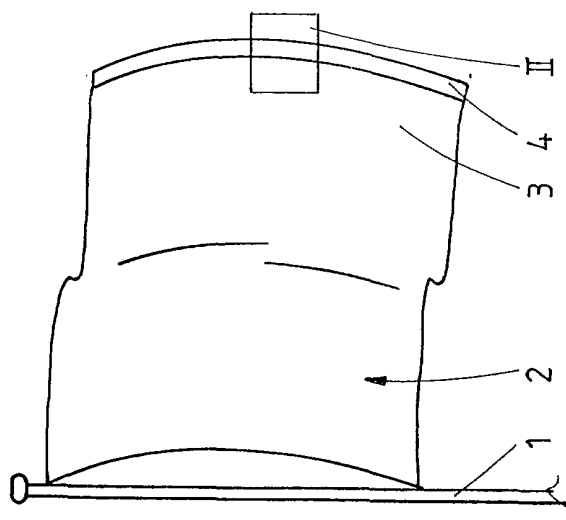


fig.1

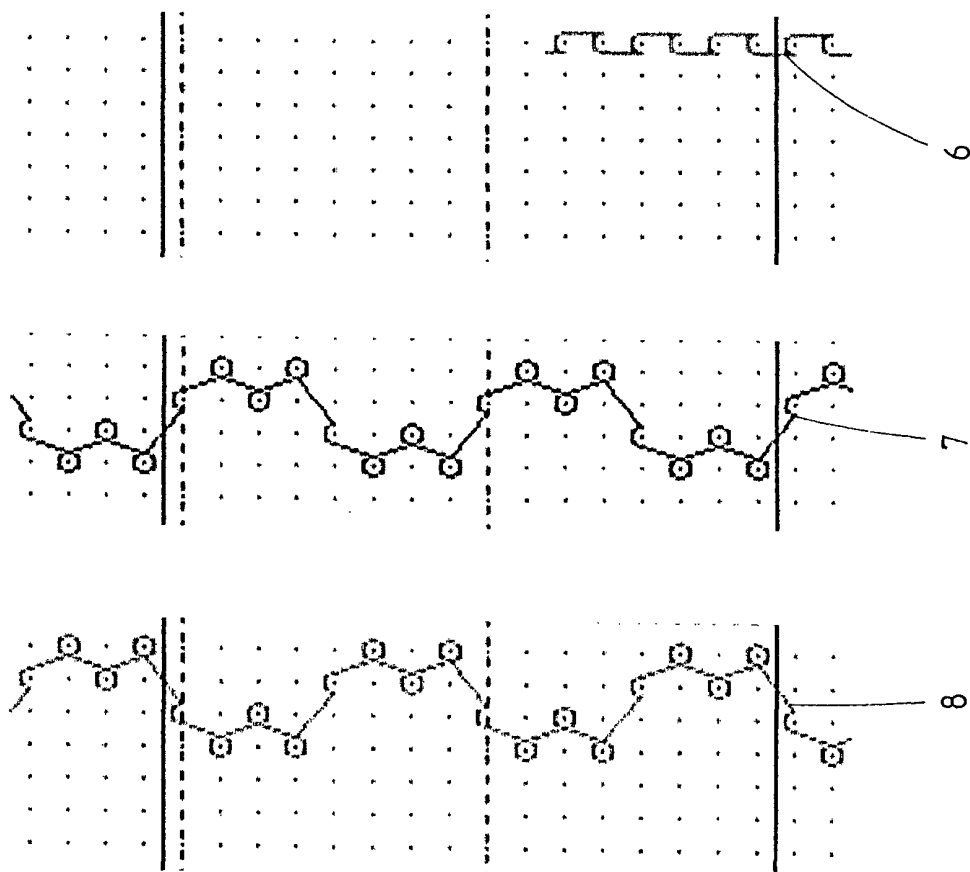


fig.4

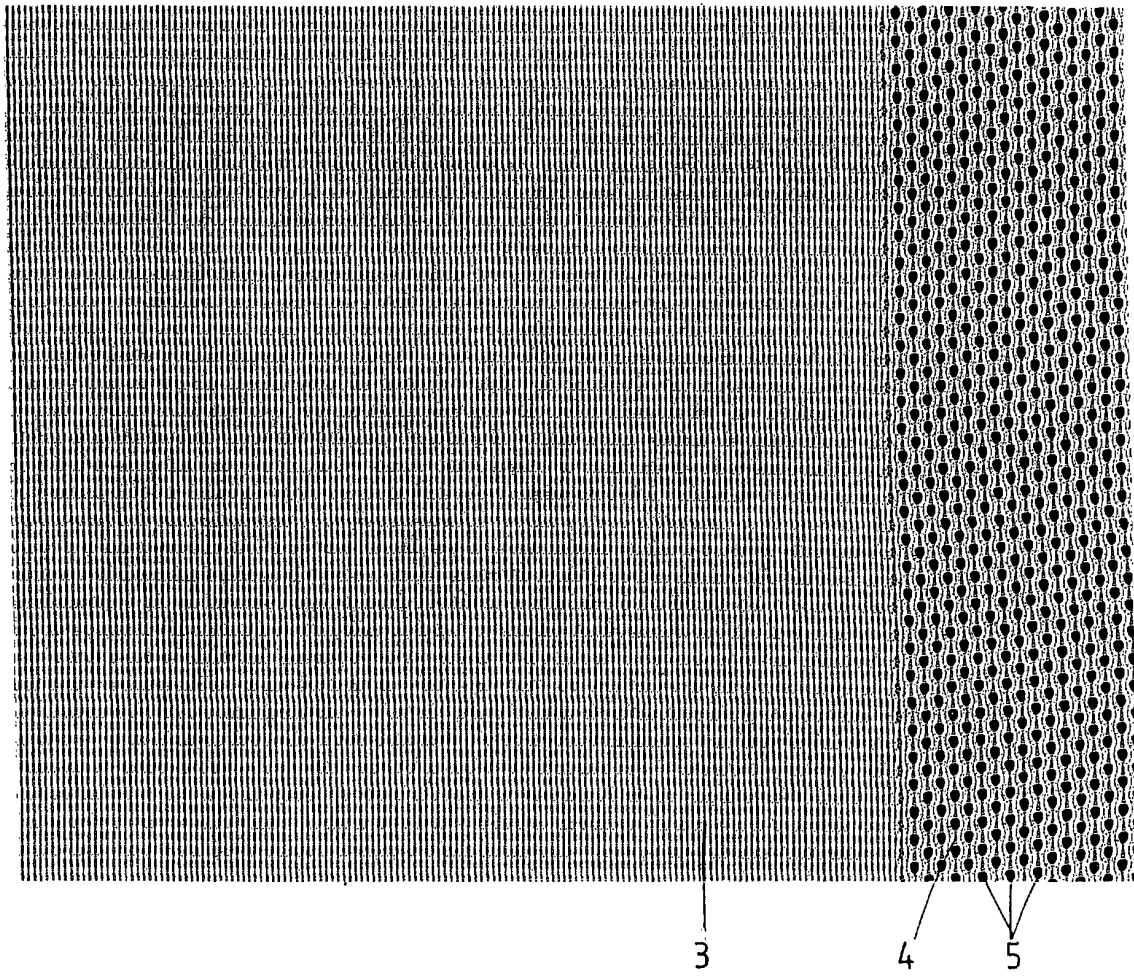


fig. 2

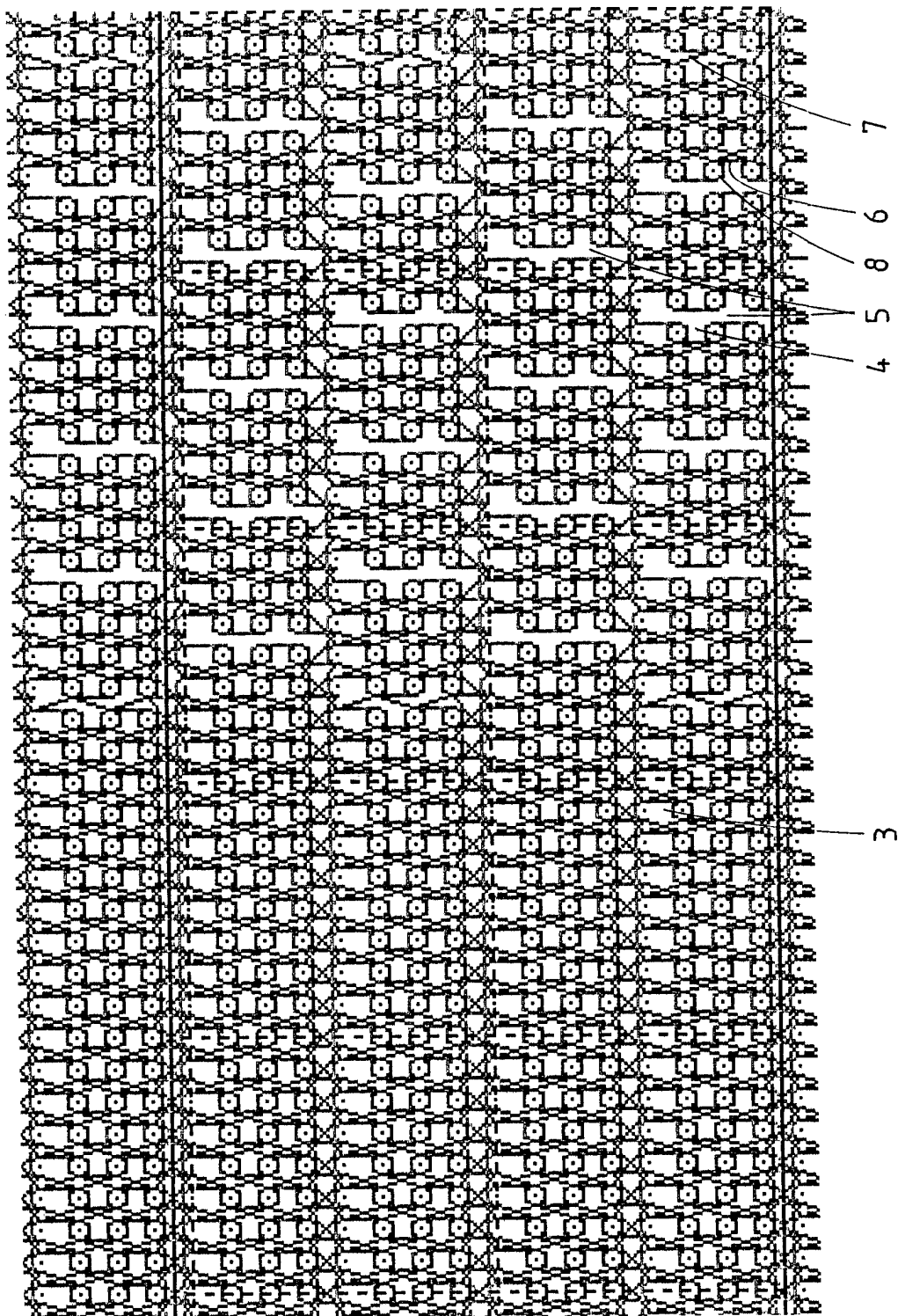


fig. 3