

This Sheet Has Been Replaced



5 Method for the production of labels having an invisible
 bar code on a weaving machine and label produced
 according to such a method

10 The invention relates to a method for the production of labels having an invisible bar code on a weaving machine, according to the preamble of claim 1, and to a label produced according to such a method.

15 A method of the type mentioned is known from EP-A-0 919 650, interconnected labels succeeding one another in the warp direction, each with a figure made by embroidery web threads and with a bar code made by
20 code web threads, being produced in a band with a ground fabric consisting of ground warp threads and ground weft threads. The labels each have a rectangular shape with two longitudinal sides and two narrow sides, the warp threads lying parallel to and the weft threads
25 transversely to the longitudinal sides of the label, and the bar codes being formed by code strips in each case running in the weft direction.

30 In another known method, the labels are produced from a broad fabric which contains a ground fabric made from warp threads and form a ground weft, and also embroidery wefts and code wefts led over the entire web breadth, a repeat being provided for each band. The
35 textile web is subsequently separated in the warp direction into bands having labels, the ground fabric, the embroidery wefts and the code wefts being severed. When the broad fabric is woven from fusible yarns and a thermal cutting device is used to separate the strips, the fusion of the ground fabric, of the embroidery weft threads and of the code weft threads may result, on the longitudinal sides of the labels, in the known hard and rough fusion edges which may be detrimental to comfort



WO 00/73559

PCT/CH00/00234

- 2 -

of wearing an article of clothing provided with such a label. In order to achieve labels with edges which are as soft as possible, it is known to provide in each case a fold on their longitudinal sides having the fusion edges and on their narrow sides.

It is considered to be a disadvantage that the warp threads of the ground fabric, the number of which is fixed, run in the longitudinal direction of the labels, so that only labels of a specific quality can be produced, and that, for folding, the labels have to be woven as a semifinished product with larger dimensions. The folding of the longitudinal sides having the fusion edges formed by the fused ground wefts, embroidery wefts and code wefts leads to very thick and uncomfortable margins on the labels. If end folds are additionally provided on the narrow sides, each label consists of four plies in this region; this is unacceptable to the user and the wearer.

When the broad fabric is separated by means of a mechanical cutting device, it is known to remove a number of longitudinal threads (warp threads) at the separation points by mechanical means, a fringed edge being formed in each case on the longitudinal sides of the labels, a margin of ground fabric likewise having to be provided for each fringed edge. Accordingly, for folding, the labels have to be woven as a semifinished product with larger dimensions. Moreover, further longitudinal threads may come loose at the fringed edges, so that the respective label becomes useless or unsightly.

The known methods for the production of labels with warp threads running parallel to the longitudinal sides and with weft threads running transversely to the longitudinal sides have the disadvantages that, because of the folding of the longitudinal sides, a higher



WO 00/73559

PCT/CH00/00234

- 3 -

outlay in terms of adhesive bonding is necessary, and that, owing to the dimensions of the semifinished product, the weaving breadth of the weaving machine is utilized only to a restricted extent or a relatively large amount of waste occurs. A further major disadvantage in the production of such labels from a broad fabric arises when, for example, during the weaving of invisible bar codes, more than one repeat or pass in the weft direction with an individual code is necessary. The number of code strips (bars) is different, depending on the designation requirement, so that correspondingly different lengths of the bar codes occur in the warp direction. Since the fabric take-up during the insertion of the code weft thread and of the embroidery weft thread is stopped and the same quantity is drawn for all the passes, it is possible to produce individual bar codes only at the expense of a serious impairment in quality and production quantity.

The invention is intended to remedy this. The object on which the invention is based is to provide an improved method of the type initially mentioned for the production of labels, in which the disadvantages mentioned above do not arise.

On the basis of the method according to the CH patent application No. 1999 1011/99 which serves for claiming the right of priority of the present invention, this object is achieved, according to the invention, by means of the characterizing features of claim 1.

The advantages capable of being afforded by the method according to the invention are to be seen essentially in that labels with a different length and breadth can be woven on the same type of weaving machine, and that the longitudinal sides, remaining nonfolded, of the labels are produced with soft and skin-friendly cut edges and, consequently, wearing comfort is appreciably



improved, because the cut edges made through the ground wefts have virtually no brows. The cut edges, occurring during the separation of the broad fabric, of the strips can be covered by the foldable transverse sides of the labels, with the result that the labels are further improved. The code weft threads can be inserted with a weft density selectable within wide limits and can be tied into the ground fabric in order to produce the invisible bar codes, while the code strips running in each case in the warp direction and succeeding one another in the weft direction are formed in each case, according to the desired code pattern, by one or more of the warp threads being tied off. Since the weft threads run parallel to the longitudinal sides of the labels, a uniform appearance is achieved over the entire length of each label, because the ground weft threads and also the embroidery weft threads and code weft threads cover the rear side uniformly.

Embodiments of the invention are specified in the dependent claims.

Thus, the labels can each be produced with longitudinal sides running outside the region of the figure and of the bar code and consequently can be singled out merely by means of cuts made in the ground fabric, the longitudinal sides forming soft and at the same time dimensionally stable cut edges and the comfort of wearing the labels being further improved. Labels with a weaving repeat can be woven in the broad fabric up to a weaving breadth of approximately 115 cm, so that only a small amount of waste occurs. The weft density in the ground fabric may be selected so that labels with simulated weaves, such as taffeta, half satin and satin, are produced on the same weaving machine. The embroidery weft threads and the cold weft threads can be removed in the marginal region of the strips, so that the end folds become advantageously thin.



WO 00/73559

PCT/CH00/00234

- 5 -

A label produced by the method according to the invention is the subject of claim 12.

The invention is explained below by means of the
5 accompanying drawings in which:

fig. 1 shows a three-dimensional illustration of a version of a label produced by the method according to the invention;

10

fig. 2 shows a three-dimensional illustration of a modified version of the label according to the invention shown in fig. 1;

15 fig. 3 shows a section along the line III-III in fig. 2 on a larger scale;

fig. 4 shows a section along the line IV-IV in fig. 2;

20 fig. 5 shows a section along the line V-V in fig. 2;

fig. 6 shows a side view of the label according to fig. 2 with a) nonfolded and b) folded transverse sides;

25

fig. 7 shows a side view of a modified version of the label according to fig. 2, with a) nonfolded and b) folded transverse sides;

30 fig. 8 shows a diagrammatic illustration of a method according to the invention for the production of labels, and

35 fig. 9 shows one application of the label according to the invention.

Figure 1 shows a label 22 according to the invention, from the illustration of which the difference from the



WO 00/73559

PCT/CH00/00234

- 6 -

known labels in respect of warp direction and weft direction can be seen clearly and which is explained by the following description with reference to figures 2 to 5.

5

The label 22 has, as is customary, a quadrangular shape with two nonfolded longitudinal sides 1 and two foldable transverse sides 2 which, according to the illustration, are designed as narrow sides. The label 10 22 consists of a ground fabric 11 made from ground warp threads 4 and ground weft threads 5 and of a plurality of embroidery weft threads 12, which make a figure in a region 13 of the label, and of a plurality of code weft threads 10, which in the region 13 make a code pattern 15 in the form of a bar code which is "invisible" when observed in visible light and which is formed in each case by code strips 23 running in the warp direction and succeeding one another in the weft direction.

20 The label 22 is woven in such a way that the ground warp threads 4 run transversely and the ground weft threads 5 parallel to the longitudinal sides 1 of the label 22, a margin 14 of ground fabric 11 being present on the longitudinal sides 1, and the embroidery weft 25 and code wefts being tied off in a floating manner on the rear side of the label 22. The code weft threads 10 are obtained or treated in such a way that, when observed in visible light, they are essentially visually identical to the ground weft threads 5 and can 30 be distinguished from these in the light of electromagnetic radiation taking effect outside the visible range or of fluorescent radiation. In the version illustrated, the transverse sides 2 of the label 22 which are cut by a thermal cutting device each 35 have a cut edge, along which the ground fabric 11 and the embroidery weft threads 12 and code weft threads 10 floating on the rear side of the label are fused with one another and a fusion edge 15 is formed. The label



WO 00/73559

PCT/CH00/00234

- 7 -

22 can be folded on the transverse sides 2 in order to cover the fusion edge 15. The longitudinal sides 1 of the label 22 which are cut by a cutting device run through the ground fabric 11 and each have a cut edge 16 which, as already mentioned, is advantageously soft and skin-friendly.

Reference is made to figures 6 and 7. As fig. 6a shows, the label 22 consists of a ground fabric 11 and of a plurality of embroidery weft threads 12 and code weft threads 10 which make a figure or a bar code in the region 13 of the label 22 and which are tied off in a floating manner on the rear side of the label. According to fig. 6b, the label 22 is folded on the transverse sides 2. Fig. 7a shows a corresponding label, in which, in the region of the transverse sides 2, the floating embroidery weft threads 12 and code weft threads 10 are removed on the rear side, so that in each case a portion 18 of the ground fabric 11 is exposed. These portions 18 are folded according to fig. 7b, so that a very thin label is achieved.

The method for the production of labels is described below. As shown in fig. 8, to produce the labels, in a first step a broad fabric 21 consisting of fusible thread material is made, which has a number of labels 22 lying next to one another and which is woven continuously according to a repeat extending over the weaving breadth. It goes without saying that, as seen over the repeat breadth, each label can be designed differently. The broad fabric 21 is woven (fig. 5) by the woven fabric technique with ground warp threads 4 and ground weft threads 5 for a ground fabric 11 and also with a plurality of embroidery weft threads 12 for the figure and a plurality of code weft threads 10 for a bar code, the embroidery wefts and the code wefts being woven in in a region 13 of each label. In a second step, the broad fabric 21 is separated into a



WO 00/73559

PCT/CH00/00234

- 8 -

set of strips 25 which contain labels 22 succeeding one another in the longitudinal direction of the strips and lying transversely. For separation, a thermal cutting device 26 is provided, which either is arranged on the
5 weaving machine or is a separate device. If the broad fabric 21 is divided into strips 25, the strips 25 are wound up for further processing. If the broad fabric 21 is not divided into strips, the broad fabric 21 is wound onto a cloth beam (not illustrated). The strips
10 25 are, in terms of the labels, a semifinished product.

In a third step, the strips 25 may be folded in a folding device along their lateral margins formed by the fusion edges 15, the lengths of the labels 22 being
15 determined and the transverse sides 2 of the labels being formed. At the same time as the folding, the folded portion is fixed, known methods being used. The folded strips 25 are separated by means of mechanical, thermal or ultrasonic devices 27, in such a way that
20 the labels 22 are singled out, at the same time the breadth of the respective label 22 being determined and the cut edges 16 running through the ground fabric 11.

Fig. 9 shows the use of a label 22. The label 22 is
25 stitched with the folded transverse sides 2 onto an article of clothing, so that the fusion edges 15 lie underneath the label 22 and the longitudinal sides 1 with the soft edges are exposed.

Patent claims

1. A method for the production of labels having an invisible bar code on a weaving machine, in particular a Jacquard weaving machine, by the woven fabric technique, with a plurality of ground warp threads (4) and at least one ground weft thread (5) for a ground fabric (11), if appropriate with pattern warp threads and/or embroidery weft threads (12) for making a figure, and with at least one code weft thread (10) which makes the bar code and, when observed in visible light, is essentially visually identical to the ground weft thread (5) and can be distinguished from the latter in the light of radiation taking effect outside the visible range, the code weft thread (10) in each case being inserted in a combination with a ground weft thread (4) and being tied into the ground fabric (11), characterized in that the labels are produced in a broad fabric (21) which is woven in such a way that a plurality of labels (22) with nonfolded longitudinal sides (1) lying next to one another in the weft direction and with foldable transverse sides (2) lying next to one another in the warp direction are made, and the invisible bar codes are formed in each case by code strips (23) running in the warp direction and succeeding one another in the weft direction, and in that, after weaving, the broad fabric (21) is separated by cutting along the transverse sides (2) into a set of strips (25) lying next to one another, in order to make bands in each case with labels (22) succeeding one another in the running direction of the broad fabric (21) and lying transversely.





WO 00/73559

PCT/CH00/00234

- 10 -

2. The method as claimed in claim 1, characterized in that the broad fabric (21) is made from fusible thread material.
- 5 3. The method as claimed in claim 1 or 2, characterized in that the labels (22) are produced with longitudinal sides (1) running through the ground fabric (11), and in that the embroidery weft threads (12) and the code weft threads (10) are inserted at a distance from the longitudinal sides (1) and are tied into the ground fabric (11).
- 10 4. The method as claimed in one of the preceding claims, characterized in that the broad fabric (21) is woven according to at least one weaving repeat.
- 15 5. The method as claimed in one of the preceding claims, characterized in that the ground fabric (21) of the labels (22) is made with a predetermined warp density and with a freely adjustable weft density.
- 20 6. The method as claimed in one of the preceding claims, characterized in that the embroidery weft threads (12) and/or the code weft threads (10) are removed in the marginal regions (18) of the strips (25).
- 25 7. The method as claimed in claim 6, characterized in that the embroidery weft threads (12) and/or the code weft threads (10) are removed in the marginal regions (18) by means of thermal or mechanical devices.
- 30 8. The method as claimed in one of the preceding claims, characterized in that, after cutting, the
- 35



* C L M S *

- 11 -

strips (25) are folded in the marginal regions (18), in order to make labels (22) with a predetermined length.

5 9. The method as claimed in one of the preceding claims, characterized in that the labels (22) are singled out by the ground fabric (11) being cut along their longitudinal sides (1), in order to make labels (22) with a predetermined breadth.

10

10. The method as claimed in claim 9, characterized in that the labels (22) are singled out by cutting by means of thermal, mechanical or ultrasonic devices.

15

11. The method as claimed in one of the preceding claims, characterized in that the cutting of the strips (25) is carried out by means of a thermal, mechanical or ultrasonic device.

20

12. A label produced according to the method as claimed in one of claims 1 to 11.

25

13. The label as claimed in claim 12, characterized in that the code weft thread (10) contains a material which is fluorescent in the light of radiation taking effect outside the visible range.

