

21 November 2003

- 1 -

Woven label made from fusible thread material

Technical field

The invention relates to a label according to the
5 preamble of claim 1.

Prior art

A method for the production of said label is known from
EP-A-0 919 650, interconnected labels succeeding one
10 another in the warp direction, each with a figure made
by embroidery web threads and with a bar code made by
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
15 shape with two longitudinal sides and two narrow sides,
the warp threads lying parallel to and the weft threads
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 and consisting of
20 one or more parallel code weft threads. One
disadvantage is that the cut longitudinal sides have
rough edges which are detrimental to wearing comfort
and may cause injuries to persons and damage to the
wearing support.

25
EP-A-0 328 320 discloses a label in which the code
strips are formed from one or more parallel threads in
a similar way to EP-A-0 919 650. No further particulars
on the make-up of the fabric and of the code strips can
30 be gathered from EP-A-0 328 320.

The production of labels having usable cut longitudinal
sides is a problem which has existed for a long time.

21 November 2003

In the first place, in principle, the labels are produced in such a way that the longitudinal edges are oriented parallel to the warp threads, so that the embroidery weft threads are relatively short and a
5 stable formation of the label is obtained. If the label were oriented transversely to the warp threads, the embroidery weft threads would run over a greater length of the label, which would lead to a more unstable formation of the label, particularly in cases where the
10 embroidery weft threads are led in a floating manner. A person skilled in the art therefore selects the arrangement of the labels from fundamental considerations in such a way that their longitudinal side runs in the warp direction and refrains from
15 arranging the labels with their longitudinal sides transverse to the warp direction. 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.

20

The person skilled in the art has made great endeavors, in many different directions, to make the longitudinal edges of the labels usable:

25 In WO 93 02246, an attempt is made to achieve this aim by shaping the undesirable fusion edges on the longitudinal sides of the labels in a noncutting manner by means of a pressing and/or vibrating tool.

30 In EP-A 0 389 793, it is expressly pointed out in column 1, lines 42 to 54, that experimentation at the fusion edges is useless. Instead, a complicated two-stage method for producing the labels is defined. In a first method stage, a semifinished product with cut
35 longitudinal sides and a greater breadth is produced.

21 November 2003

In a second method stage, the semifinished product is folded along the margin to the final breadth and the folded margins are adhesively bonded on the rear side, in order to obtain a soft label. This is therefore an
5 extremely complicated and costly method.

In EP-A-0 427 933 and, in a similar way, in DE-A 41 15 800, webs, produced on a broad weaving machine and lying next to one another, of labels lying
10 one behind the other in their longitudinal direction are produced. In order to avoid rough fusion brows, in a first method step the embroidery weft threads floating between adjacent webs are removed mechanically or thermally and the ground fabric is severed only in a
15 second method step. This is still not considered sufficient, however, since, according to EP-A-0 546 485, in a third method step the warp threads are also removed from the region of the ground fabric, so that fringed edges are obtained on the longitudinal
20 sides. This is likewise a complicated and costly method for the production of labels with soft edges on the longitudinal sides.

Presentation of the invention

25 The object of the invention is improvement of labels with an invisible bar code, so that such labels have soft longitudinal sides.

The advantages capable of being achieved by means of
30 the label according to the invention are to be seen essentially in that the longitudinal sides, remaining nonfolded, of the labels are produced with soft and skin-friendly cutting edges and, consequently, wearing comfort is appreciably improved, because the cut edges
35 made by the ground wefts have virtually no brows.

Moreover, such labels can be woven with a different length and breadth on the same type of weaving machine. The cut edges, occurring during the separation of the broad fabric, of the strips can be covered by the
5 foldable narrow 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,
10 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
15 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.

20

Embodiments of the invention are specified in the dependent claims.

Labels with a weaving repeat can be woven in the broad
25 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
30 machine. The embroidery weft threads and the code weft threads can be removed in the marginal region of the strips, so that the end folds become advantageously thin.

35

Brief description of the drawings

Exemplary embodiments of the invention are explained below by means of drawings in which:

- 5 figure 1 shows a three-dimensional illustration of a label;
- figure 2 shows a three-dimensional illustration of a modified version of the label according to
10 the invention shown in figure 1;
- figure 3 shows a section along the line III-III in figure 2 on a larger scale;
- 15 figure 4 shows a section along the line IV-IV in figure 2;
- figure 5 shows a section along the line V-IV in figure 2;
20
- figure 6 shows side view of the label according to figure 2 with a) nonfolded and b) folded transverse sides;
- 25 figure 7 shows a side view of a modified version of the label according to figure 2, with a) nonfolded and b) folded transverse sides;
- figure 8 shows a diagrammatic illustration of a method
30 for the production of the labels according to the invention;
- figure 9 shows one application of the label according to the invention.
35

Ways of implementing the invention

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

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 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 in the form of a bar code which is "invisible" when observed invisible 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.

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 of the label 22, a margin 14 of ground fabric 11 being present

21 November 2003

- 6a -

~~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

- 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

- 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 woven label made from fusible thread material,
with a ground fabric (11) formed from ground warp
5 threads (4) and ground weft threads (5) and
containing nonfolded longitudinal sides (1) and
foldable narrow sides (2), and with code weft
threads (10) which make an invisible bar code and,
when observed in visible light, are essentially
10 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 and which are tied in the ground
fabric (11), characterized in that the
15 longitudinal sides (1) are oriented transversely
to the ground warp threads (4) and the code weft
threads (10) run parallel to and at a distance
from the longitudinal sides (1), said code weft
threads floating below the ground fabric (11) and
20 being led onto the top side of the ground fabric
in order to form a bar code.
2. The label as claimed in claim 1, characterized in
that it has embroidery weft threads (12) which
25 form a figure and run parallel to and at a
distance from the longitudinal sides (1), said
embroidery weft threads floating below the ground
fabric and being led upward to form the figure.
- 30 3. The label as claimed in claim 1 or 2,
characterized in that the floating weft threads
are removed in the margin regions (18) of the
narrow sides (2) of the label.

21 November 2003

- 10 -

4. The label as claimed in one of claims 1 to 3, characterized in that it has marginal regions (18) folded on the narrow sides (2).