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Method and installation for producing patterned
textile labels

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Technical Field

The invention relates to a method for producing patterned textile labels, according to the preamble of claim 1, and to an installation for carrying out the method, according to claim 28.

Prior Art

15 A method and an installation of the type initially mentioned are known, for example, from DE 36 27 315 A or WO 00/73 559. The labels produced there have, in addition to a regular pattern, individual pattern parts for which spaces provided with basic designs of specific configuration are reserved in a specific region (space holders). Design pattern parts, that is to say finished design parts, are inserted into the space regions automatically from an electronic store. These pattern parts may be variable. The finished design parts already possess all the information for controlling the production machine, for example a Jacquard weaving machine.

It is relatively difficult, however, in the case of a continuous production of labels, to provide each label with a markedly different individual pattern part. At all events, the spaces where variable data can be inserted are fixed and limited. A further difficulty is that the pattern parts have to be prefabricated, therefore it is not possible in a simple way to change, for example, the width, the length or another parameter. There has to be a fundamental redesign, thus incurring high costs. Furthermore, the transitions from



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one pattern part to another must be coordinated exactly with one another in terms of weave, which is difficult to implement. Moreover, there is no safety against wrongly assigning an individual pattern part many
5 times.

Presentation of the invention

The object of the invention is to improve a method and
10 an installation of the type initially mentioned in such a way that labels having pattern parts individually different from one another can be produced continuously in a simple and reliable way.

15 The object is achieved, according to the invention:

- a) as regards the method initially mentioned, by means of the characterizing features of claim 1;
- b) as regards the installation initially mentioned,
20 by means of the characterizing features of claim 28.

Since the virtual label consisting of N individual labels distributed over the width and length of the virtual label and having a pattern and N individual
25 pattern parts different from label to label is produced, and the virtual label thus produced is subdivided into N individual labels, this ensures that the individual labels produced in the batch size N are also actually different from one another.

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Advantageous embodiments of the method are described in claims 2 to 27 and, with regard to the installation, in claims 29 to 35.

35 According to claim 2, the width of the virtual label corresponds to the number of warp threads used in a production machine, for example a weaving machine.

N may be of any desired size. Preferably, however, according to claim 3, a length is used which corresponds to the length of a cloth web capable of being wound on a winding beam. According to claim 4,
5 the batch size N may also depend on the labels capable of being packaged in a packaging unit.

According to claim 5, the labels may in each case be provided with at least one second pattern part which,
10 according to claim 6, may be a continuous numbering which may be distributed continuously, preferably in the longitudinal direction of the virtual label, in rows lying next to one another. The individual pattern parts may also be, according to claim 7, a bar code or,
15 according to claim 8, counterfeit-proof additional code which can be generated by a random generator. According to claim 9, pattern parts may also be various graphic figures, such as images, logos or the like. Other individual pattern parts may also be envisaged, such as
20 various forenames and/or family names. The individual pattern part may also consist of a series of objects, plants, animals or the like.

According to claim 10, the virtual label is provided at
25 the start and at the end with identifying information, in order, for example, to identify or inscribe a batch size. According to claim 11, pattern-free intermediate zones for subdividing the virtual labeling to individual labels or label webs are provided between
30 the individual labels in the virtual label V in the longitudinal direction and/or in the width direction. According to claim 12, these intermediate zones may be formed by a pattern-free ground fabric part. According to claim 13, the intermediate zones may also be formed
35 in the longitudinal direction by fabric-free zones, in that the virtual label is produced in longitudinal strips distributed over the width.

According to claim 14, the virtual label is first produced in the design mode and only then converted by means of a converter into a pattern mode capable of being processed by the production machine. These
5 individual pattern parts may be generated manually according to claim 15, semiautomatically according to claim 16 and fully automatically according to claim 17. Particularly in the latter case, it is advantageous if a computer-controlled pattern device with a CAD system
10 having design software and with at least one generator for generating the individual pattern parts is used for the design mode.

According to claim 19, the pattern device may be
15 arranged independently of the production machine, and data transfer to the production machine may take place by means of a data line or preferably by means of a data carrier. In this case, the pattern device may preferably be arranged advantageously even
20 independently of the user of the production machine, on the premises of the manufacturer. The person operating the production machine can then transmit the desired pattern and the desired individual pattern parts as a model to the operator of the pattern device who then
25 sets up the necessary control program, what is known as the master program, the control signals for the production machine, then determines returns it to the user for controlling the production machine.

30 According to claim 20, the production machine may be a printing machine, on which a textile web is printed with the virtual label. It is appreciably more advantageous, according to claim 21, to use a Jacquard weaving machine for producing the virtual label.
35 According to claim 23, the virtual label may be woven with a selvedge on a multi-section Jacquard needle ribbon weaving machine without fabric-width repeat repetition. Higher performances can be achieved by

means of a method according to claim 22, when the virtual label is produced on a Jacquard broad-weaving machine without fabric-width repeat repetition.

5 The virtual label, then, may be produced continuously on such a production machine as a ribbon or broad web and, according to claim 26, subdivided into individual labels, independent of the production machine, and at all events also folded to the final shape in a folding
10 machine. According to claims 24 and/or 25, however, it is also possible for the virtual label to be cut in the longitudinal and/or width direction during production on the production machine.

15 It is advantageous if the virtual label is produced for a production machine which, according to claim 27, has a production counter, in order to detect the number of labels produced for the most diverse possible applications, such as a check of the batch size
20 produced for a customer for the labels, and/or for licence accounting for the machine and/or software manufacturer.

Brief description of the drawings

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Exemplary embodiments of the invention are designed in more detail below with reference to the drawings in which:

30 figure 1 shows a plan view of an individual label;
figure 2 shows a diagrammatic illustration of a Jacquard broad-weaving machine, partially in a graphic illustration and
35 partially as a block diagram;
figure 3 shows a plan view of a further individual label;
figure 4 shows a virtual label consisting of the

individual labels of figure 3; and
figure 5 shows a diagrammatic illustration of a
three-section needle ribbon weaving
machine.

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Ways of implementing the invention

Figure 1 shows a label E consisting of a ground fabric
2 which is produced from ground warp threads 4 and
10 ground weft threads 6. Figure weft threads 8 serve for
generating a pattern M and individual pattern parts T,
the latter being different from one another from label
to label.

15 Figure 2 shows a diagram of a preferred production
machine, preferably designed as a Jacquard
broad-weaving machine, with a Jacquard device 10 which,
via heddles and heddle eyes 14, opens the warp threads
4 to a shed 16, into which, on the one hand, the ground
20 weft threads 6 and, on the other hand, the figure weft
threads 8 are shut and tied off with the ground fabric
2 and also the patterns M and the pattern parts T.

The Jacquard broad-weaving machine contains a control
25 device 18 which at all events has a production counter
20. The control device 18 is fed by a pattern device 22
which either may be connected directly to the control
device or may be arranged separately from the Jacquard
broad-weaving machine, for example in a pattern center.
30 In the latter case, the data of the pattern device 22
may be transmitted via a data carrier, for example a
diskette, or via a data line, for example a CAM
network.

35 The pattern device 22 contains a design part 22a with a
CAD system 23a, in which a desired pattern is prepared,
furthermore first control means 23b and, if
appropriate, further control means 23c which are, for

example, generators, in order to prepare one or more individual pattern parts T. Furthermore, the pattern device comprises a converter 22b (design device) which converts the virtual label V prepared in a design part
5 22a into a machine-readable form which can be processed by the control device 18 of the production machine 10, in the present example the Jacquard device of a weaving machine. The control means 23b, 23c may be manually actuated devices, semiautomatic devices or fully
10 automatic devices, the latter, in particular, containing corresponding software.

By means of the control program generated in the pattern device 22, that is known as the master program,
15 the Jacquard broad-weaving machine can be controlled and the cloth web W indicated in figure 2 can be produced. This cloth web has woven in it individual labels E_1 to E_3 which lie next to one another and have in each case a common pattern M and pattern parts T_1 to
20 T_3 individual from one another. Such individual rows of labels are lined up with another in the warp direction. A virtual label V determined by the master program is obtained, containing N individual labels E, which have pattern parts T_1 to T_N which are, however, different
25 from one another. The labels are separated in the width direction through intermediate zones 25 which consist of ground fabric. The virtual label V thus produced may be subdivided in the longitudinal direction, by means of a first severing device 24, into individual strips
30 which are then cut into individual labels E along the intermediate zone 25 by means of a second severing device 28. In the example shown, the first severing device 24 is made of thermal cutting elements 28 which may consist of a resistance wire or of an ultrasonic
35 device. The second severing device 26 may be designed in a similar way to the first severing device 24. In the example shown, indicated by the scissors 30 that the second severing device 26 operates mechanically.

Figures 3 and 4 show a further label E with a pattern M and with a first pattern part T and a second pattern part Z which has a length l of, for example, 70 mm and a width b of, for example, 30 mm. The control program then, is then designed, for example, in such a way that 10 labels E_1 to E_{10} are arranged so as to be distributed in a longitudinal row in the longitudinal direction of the cloth web W, and these are followed, over the width, by further rows with continuous numbering E_{11} to E_{20} , E_{21} to E_{30} , and so on and so forth, up until E_N , the virtual label V thus being formed, which has a length L and a width B. The width B of the virtual label V corresponds to a repeat width of the Jacquard weaving machine. If a label has a length of $l = 70$ mm and width $b = 30$ mm and 10 rows are arranged next to one another, then, in the case of a batch size of $N = 50,000$, a virtual label with the length $L = 150$ m and the width $B = 0.3$ m is obtained. The length L of the virtual label V is expediently selected at most as large as the length of the cloth web capable of being wound on a cloth beam. The rows of labels may in each case be wound up into a roll in which the labels carry continuous numbering.

The second pattern part Z of the label of figures 3 and 4 contains coded additional information (Z) which can be generated at the control means 23c of the pattern device 22 of figure 23c. The control means 23c contain a random generator which assigns a coded sign Z_x for every label E_1 to E_N , in addition to the continuous number T_1 to T_N , as is indicated in figure 4, in order to give a product provided with such a label, for example, copyright protection, multi-theft security or the like.

Figure 5 illustrates a further individual label V which is produced on a three-section needle ribbon weaving

machine. The individual labels are in this case distributed to the individual weaving points 32_1 , 32_2 , 32_3 . Thus, the labels E_1 to E_a are generated at the first weaving point 32_1 , the labels E_{a+1} to E_b at the
5 weaving point 32_2 and the remaining labels E_{b+1} to E_N at the third weaving point 32_3 , in each case strips are connected to one another in terms of content only by means of mutually coordinated numbering and arrangement of the pattern parts T_1 to T_N . Moreover, the labels have
10 an additional coded pattern part Z_x .

According to the present method and by means of the present installation, for example, a customer can send the graphics of his label in Tif format to a pattern
15 center, with an indication of the position of the pattern part, for example a numbering. This pattern center prepares, for the arrangement and shape of the pattern part and for the design and arrangement of the individual pattern part, a master program which is then
20 sent back, for example in the form of a programmed diskette, to a customer, for example the weaver, in order to process it in a Jacquard weaving machine.

List of reference symbols

	E	label
5	M	pattern
	T	pattern part
	V	virtual label
	W	cloth web
	Z	pattern part (addition)
10	L	length of the virtual label
	B	width of the virtual label
	l	length of the label
	b	width of the label
15	2	ground fabric
	4	ground warp thread
	6	ground weft thread
	8	figure weft thread
	10	Jacquard device
20	12	heddle
	14	heddle eye
	16	shed
	18	control device
	20	production counter
25	22	pattern device
	22a	design part
	22b	converter (design device)
	23a	CAD device
	23b	control means
30	23c	control means
	24	first severing device
	25	intermediate zone
	26	second severing device
	28	thermal cutting element
35	30	scissors
	32	weaving point

Patent Claims

1. A method for producing patterned textile labels,
5 the labels (E_1 to E_N) being provided with a pattern (M)
identical for all the labels and with pattern parts (T_1
to T_N , Z_1 to Z_N) different from one another by means of
a production machine controlled by a pattern device
10 (22), characterized in that a virtual label (V)
consisting of N individual labels (E_1 to E_N) is
produced, said individual labels being distributed over
the width (B) and the length (L) of the virtual label
(V) and having N individual pattern parts (T_1 to T_N , Z_1
15 to Z_N) that differ from one another, and virtual label
(V) thus produced is subdivided into individual labels
(E_1 to E_N).

2. The method as claimed in claim 1, characterized in
that the width corresponds to a number of warp threads
20 (4) used for a production machine.

3. The method as claimed in claim 1 or 2,
characterized in that the length (L) of the virtual
label (V) is selected according to the cloth web (W)
25 which is capable of being wound on a winding beam of a
production machine.

4. The method as claimed in one of claims 1 to 3,
characterized in that the number N of labels (E) of the
30 virtual label (V) is selected according to the number
of labels capable of being packaged in a packaging
unit.

5. The method as claimed in one of claims 1 to 4,
35 characterized in that the labels (E_1 to E_N) are provided
in each case with at least one second pattern part (Z_1
to Z_N) which is different from label to label.

6. The method as claimed in claim 5, characterized in that a continuous numbering is selected for at least one individual pattern part (T_1 to T_N , Z_1 to Z_N) and is distributed continuously, preferably in the longitudinal direction of the virtual label (V), in rows lying next to one another.
7. The method as claimed in claim 5, characterized in that bar codes different from label to label are selected for at least one individual pattern part (T_1 to T_N , Z_1 to Z_N).
8. The method as claimed in claim 5, characterized in that counterfeit-proof additional codes which are different from label to label and are preferably generated by means of a random generator are selected for an individual pattern part (Z_1 to Z_N).
9. The method as claimed in claim 5, characterized in that graphic figures, such as images, logos or the like, which are different from label to label are selected for an individual pattern part (T_1 to T_N , Z_1 to Z_N).
10. The method as claimed in one of claims 1 to 9, characterized in that the virtual label (V) is provided at the start and at the end with identifying information.
11. The method as claimed in one of claims 1 to 10, characterized in that pattern-free intermediate zones (25) for subdividing the virtual label into individual labels or label webs are arranged in the virtual label (V) between the individual labels in the longitudinal direction and/or in the width direction.
12. The method as claimed in claim 11, characterized in that the intermediate zones are formed by a

pattern-free ground fabric part.

13. The method as claimed in claim 11, characterized in that the intermediate zones are formed in the longitudinal direction by fabric-free zones, in that the virtual label is produced in longitudinal strips distributed over the width.

14. The method as claimed in one of claims 1 to 13, characterized in that the virtual label (V) is first prepared in the design mode and is then converted by means of a converter (22b) into a pattern mode capable of being processed by the production machine.

15. The method as claimed in claim 14, characterized in that the individual pattern parts (T_1 to T_N , Z_1 to Z_N) are generated manually in the design mode.

16. The method as claimed in claim 14, characterized in that the individual pattern parts (T_1 to T_N , Z_1 to Z_N) are generated semiautomatically in the design mode.

17. The method as claimed in claim 14, characterized in that the individual pattern parts (T_1 to T_N , Z_1 to Z_N) are generated fully automatically in the design mode.

18. The method as claimed in one of claims 14 to 17, characterized in that a computer-controlled pattern device (22) with a CAD system (23a) having design software and with at least one control means (23b, 23c) for generating the individual pattern parts (T_1 to T_N , Z_1 to Z_N) is used for the design mode.

19. The method as claimed in one of claims 1 to 18, characterized in that the pattern device (22) is arranged independently of the production machine and carries out the data transfer to the production machine by means of a data line or preferably by means of a

data carrier.

20. The method as claimed in one of claims 1 to 19,
characterized in that the production machine used is a
5 printing machine.

21. The method as claimed in one of claims 1 to 19,
characterized in that the production machine used is a
Jacquard weaving machine.

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22. The method as claimed in claim 21, characterized
in that the virtual label (V) is woven on a Jacquard
broad-weaving machine without fabric-width repeat
repetition.

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23. The method as claimed in claim 21, characterized
in that the virtual label (V) is produced on a
multi-section Jacquard needle ribbon weaving machine
without fabric-width repeat repetition.

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24. The method as claimed in one of claims 1 to 22,
characterized in that the virtual label (V) is
subdivided at least in the longitudinal direction on
the production machine, preferably by thermal cutting.

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25. The method as claimed in one of claims 1 to 24,
characterized in that the virtual label (V) is
subdivided in the width direction on the production
machine, preferably by thermal cutting.

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26. The method as claimed in one of claims 1 to 25,
characterized in that the subdivision of the virtual
label (V) is carried out independently of the
production machine.

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27. The method as claimed in one of claims 1 to 26,
characterized in that the virtual label (V) is produced
on the production machine which has a production

counter (20) for the individual labels which is preferably capable of being loaded with an instruction for the number of labels to be produced.

5 28. An installation for carrying out the method as claimed in one of claims 1 to 27, with a pattern device (22) and with a production machine, characterized in that the pattern device (22) has control means for generating a virtual label (V) which has N individual
10 labels (E_1 to E_N) distributed over the width (B) and the length (L) of the virtual label and having N individual pattern parts (T_1 to T_N , Z_1 to Z_N) different from one another.

15 29. The installation as claimed in claim 28, characterized in that the pattern device (22) is arranged independently of the production machine.

20 30. The installation as claimed in claim 29, characterized in that the pattern device (22) has output means for generating a data carrier for data exchange with the production machine.

25 31. The installation as claimed in one of claims 28 to 30, characterized in that the production machine has a production counter (20) for detecting the number of individual or single labels produced.

30 32. The installation as claimed in one of claims 28 to 31, characterized in that the production machine is a printing machine.

35 33. The installation as claimed in one of claims 28 to 31, characterized in that the production machine is a Jacquard weaving machine.

34. The installation as claimed in claim 33, characterized in that the Jacquard weaving machine is a

broad-weaving machine.

35. The installation as claimed in claim 33,
characterized in that the Jacquard weaving machine is a
5 multi-section needle ribbon weaving machine.