(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 009 154 A1**

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
31.12.2008 Bulletin 2009/01

(21) Application number: **06832543.0**

(22) Date of filing: **13.11.2006**

(51) Int Cl.:
D02G 3/06 *(2006.01)*

(86) International application number:
PCT/JP2006/322531

(87) International publication number:
WO 2007/110994 (04.10.2007 Gazette 2007/40)

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK RS

(30) Priority: **28.03.2006 JP 2006088128**

(71) Applicant: **Aura, Incorporated**
Shimogyo-ku
Kyoto-shi,
Kyoto 600-8411 (JP)

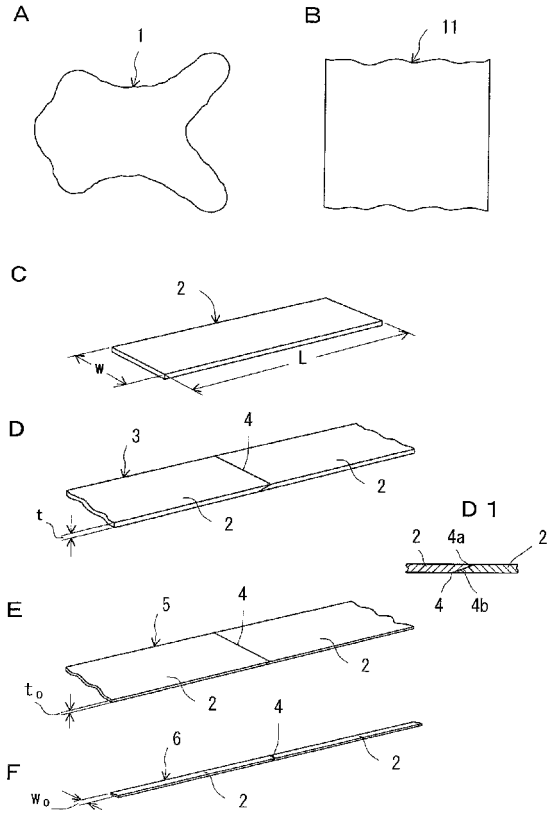
(72) Inventor: **NONOMURA, Michinobu**
Kyoto-shi, Kyoto 600-8411 (JP)

(74) Representative: **Gritschneder, Martin et al**
Abitz & Partner - Patentanwälte
Hörselbergstrasse, 5
81628 München (DE)

(54) **CONTINUOUS LEATHER YARN AND LEATHER YARN FABRIC MAKING USE OF THE SAME**

(57) A continuous leather yarn capable of being applied to an existent loom, and being continuously inwoven alternately as wefts from both end sides of the weaving width direction, and being inwoven as a warp continuing in the weaving longitudinal direction, and a very innovative leather yarn textile woven by using the continuous leather yarn are provided. The continuous leather yarn is formed by cutting a leather sheet material 1, 11 processed to have a desired thickness dimension t into cut pieces 2 having a width dimension w and a length dimension L; joining the cut pieces in their longitudinal direction to form a cut-piece-joined continuous body 3; press-compressing the cut-piece-joined continuous body to have a thickness dimension to; and slitting it to have a width dimension wo.

Fig. 1



EP 2 009 154 A1

Description

[Technical Field]

[0001] The present invention relates to a continuous leather yarn obtained from a leather sheet material of natural leather, artificial leather, synthetic leather or the like, and to a leather yarn textile produced by inweaving the continuous leather yarn.

[Related Background Art]

[0002] Conventionally, for example, as is disclosed in Patent Document 1, such a technique is provided that a leather sheet material is slit into small-width shapes to form a narrow-width leather yarn, and the narrow-width leather yarn is inwoven as a weft to weave a leather textile. According to the conventional technique, as for natural leather, only its scarcity value is appreciated because there is a limit of its dimension (size), and when such a material is used in the fashion industry and the interior furniture industry, it may be used exclusively in design and designing for which such size limit is perceived beforehand.

[0003] For example, in the technique disclosed in Patent Document 1, a sheet-like material 10 having a defined lateral dimension as shown in Fig. 7 (a) is prepared, and an ear member 11 made of paper or synthetic resin film is attached to both right and left ends in the lateral dimension of the sheet-like material 10 as shown in Fig. 7 (b), followed by slitting into small-width shapes in the direction traversing the ear member 11 to form a band-like member 4, and the band-like member 4 is exclusively applied as a weft of textile.

[0004] In brief, the invention described in Patent Document 1 claims the technical idea of inweaving the band-like member 4 as an only weft in inweaving the band-like member 4 of leather material into a textile, and inweaving in an arrangement of as neat as possible, and does not claim to inweave it continuously as a weft, or to inweave the band-like member 4 as a warp.

[0005] [Patent Document 1] Japanese Patent Application Laid-open Publication No.2005-23467 (Abstract, Fig. 7)

DISCLOSURE OF THE INVENTION

[0006] The present invention is made to solve the problem found in the conventional technique as described above, and provides a continuous leather yarn capable of being applied to an existent loom, and being continuously inwoven alternately as a weft from both end sides of the weaving width direction irrespective of the width of the piece goods, and being inwoven as a warp continuing in the weaving longitudinal direction, at once, and provides a very innovative leather yarn textile woven by using the continuous leather yarn.

[0007] In the present invention, in order to achieve the above object, an invention disclosed in Claim 1 is a continuous leather yarn which is formed by cutting a leather sheet material processed to have a desired thickness dimension t into cut pieces having a width dimension w and a length dimension L; joining the cut pieces in their longitudinal direction to form a cut-piece-joined continuous body; press-compressing the cut-piece-joined continuous body to have a thickness dimension to; and slitting it to have a width dimension wo.

[0008] Further, in the present invention, an invention of claim 2 is the continuous leather yarn according to claim 1, wherein the leather sheet material is natural leather, artificial leather or synthetic leather.

[0009] Furthermore, in the present invention, an invention of claim 3 is the continuous leather yarn according to claim 1 or claim 2, wherein the thickness dimension to of the press-compressed continuous leather yarn is about 0.1 to 1 mm, and the width dimension wo of the continuous leather yarn is about 1 to 8 mm.

[0010] Furthermore, in the present invention, an invention of claim 4 is the continuous leather yarn according to any one of claim 1 to claim 3, wherein a surface finishing treatment layer is provided on a front face and/or a back face of the continuous leather yarn.

[0011] Furthermore, in the present invention, an invention of claim 5 is a leather yarn textile inweaving a continuous leather yarn formed by cutting a leather sheet material processed to have a desired thickness dimension t into cut pieces having a width dimension w and a length dimension L; joining the cut pieces in their longitudinal direction to form a cut-piece-joined continuous body; press-compressing the cut-piece-joined continuous body to have a thickness dimension to; and slitting it to have a width dimension wo,

wherein the continuous leather yarn is inwoven as a weft into ground warps, and the continuous leather yarn has a front-back inversed part where front and back are inversed in the weaving width direction.

[0012] Furthermore, in the present invention, an invention of claim 6 is a leather yarn textile inweaving a continuous leather yarn formed by cutting a leather sheet material processed to have a desired thickness dimension t into cut pieces having a width dimension w and a length dimension L; joining the cut pieces in their longitudinal direction to form a cut-piece-joined continuous body; press-compressing the cut-piece-joined continuous body to have a thickness dimension to; and slitting it to have a width dimension wo,

wherein the continuous leather yarn is inwoven as a warp into ground wefts, and the continuous leather yarn is arranged in parallel along the weaving longitudinal direction.

[0013] Further, in the present invention, an invention of claim 7 is a leather yarn textile inweaving a continuous leather yarn formed by cutting a leather sheet material processed to have a desired thickness dimension t into cut pieces having a width dimension w and a length dimension L; joining the cut pieces in their longitudinal di-

rection to form a cut-piece-joined continuous body; press-compressing the cut-piece-joined continuous body to have a thickness dimension to; and slitting it to have a width dimension wo,
wherein the continuous leather yarn is inwoven as a warp into ground wefts, and the continuous leather yarn has a front-back inversed part where front and back are inversed in the weaving longitudinal direction.

[0014] Further, in the present invention, an invention of claim 8 is a leather yarn textile inweaving a continuous leather yarn formed by cutting a leather sheet material processed to have a desired thickness dimension t into cut pieces having a width dimension w and a length dimension L; joining the cut pieces in their longitudinal direction to form a cut-piece-joined continuous body; press-compressing the cut-piece-joined continuous body to have a thickness dimension to; and slitting it to have a width dimension wo,
wherein the continuous leather yarn is inwoven as a warp and a weft, and the continuous leather yarn has a front-back inversed part where front and back are inversed in at least one of the weaving longitudinal direction or the weaving width direction.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015]

Fig. 1 depicts a production sequence of a continuous leather yarn according to the present invention, in which Fig. 1A is a schematic plan view showing an original sheet made of natural leather, Fig. 1B is a schematic plan view showing an original sheet made of artificial leather or synthetic leather, Fig. 1C is a schematic perspective view showing a cut piece (wXL) cut into such a size that facilitates subsequent processes, Fig. 1D is a schematic perspective view of a cut-piece-joined continuous body in which the above cut pieces are continuously joined in the longitudinal direction, Fig. 1D1 is a schematic section view showing the joint part in close-up, Fig. 1E is a schematic perspective view in which the cut-piece-joined continuous body is press-compressed to have a thickness dimension of to, Fig. 1F is a schematic perspective view showing a form of a continuous leather yarn according to the present invention as a result of slitting.

Fig. 2 is a flow chart for explaining a sequence of producing a continuous leather yarn according to the present invention.

Fig. 3 is a schematic perspective view of a first embodiment of a leather yarn textile woven by using a continuous leather yarn according to the present invention.

Figs. 4A and 4B are schematic perspective views of a second and a third embodiments of a leather yarn textile woven by using a continuous leather yarn according to the present invention.

Figs. 5A, 5B and 5C are schematic perspective views of a fourth to a sixth embodiments of a leather yarn textile woven by using a continuous leather yarn according to the present invention.

[Explanation of Reference Numerals]

[0016]

1	Original sheet made of natural leather
2	Cut piece
3	Cut-piece-joined continuous body
4	Joint part
4a, 4b	Slant cut face
5	Compressed continuous body
6	Continuous leather yarn
11	Original sheet made of artificial leather or synthetic leather
21	Tanning process
22	Paper-making process
23	Cutting process
24	Joining process
25	Press process
26	Back-face film process
31	Leather yarn textile according to a first embodiment
32	Leather yarn textile according to a second embodiment
33	Leather yarn textile according to a third embodiment
34	Leather yarn textile according to a fourth embodiment
35	Leather yarn textile according to a fifth embodiment
36	Leather yarn textile according to a sixth embodiment
41	Ground warp
42	Ground warp
43	Ground warp
51	Front-back inversed part

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0017] In the following, a continuous leather yarn according to the present invention and a leather yarn textile using the same will be described in detail based on concrete embodiments shown in drawings. Fig. 1 depicts a sequence of producing a continuous leather yarn according to the present invention, in which Fig. 1A is a schematic plan view showing an original sheet made of natural leather, Fig. 1B is a schematic plan view showing an original sheet made of artificial leather or synthetic leather, Fig. 1C is a schematic perspective view of a cut piece (wXL) cut into such a size that facilitates subsequent processes, Fig. 1D is a schematic perspective view showing a cut-piece-joined continuous body in which the above cut pieces are continuously joined in the longitudinal direction, Fig. 1D1 is a schematic section view

showing the joint part in close-up, Fig. 1E is a schematic perspective view in which the cut-piece-joined continuous body is press-compressed to have thickness dimension of to, Fig. 1F is a schematic perspective view showing a form of a continuous leather yarn according to the present invention as a result of slitting. Fig. 2 is a flow chart for explaining a sequence of producing a continuous leather yarn according to the present invention.

[0018] Based on Fig. 1 and Fig. 2, a sequence of producing a continuous leather yarn according to the present invention will be specifically described. First, in the case of an original sheet 1 of natural leather as shown in Fig. 1A, in the step of a tanning process 21, by treating the leather itself with water-repellent or oil-repellent (antifouling) solvent such as fluorine or silicon, the leather having tanned process and dried will result in antifouling leather in which natural texture is not impaired. This tanned leather is subjected to a paper-making process 22 into desired thickness dimension t. In the present invention, as the natural leather, any leathers including of cow, goat, sheep, deer, crocodile, kangaroo, and ostrich are usable, and there is no limitation for coloring.

[0019] As an original sheet 11 made of artificial leather or synthetic leather as shown in Fig. 1B, for example, the majority has such a structure that polyurethane is coated on the surface of a base fabric of polyester or nylon, and for those having such a structure, the tanning process 21 and the paper-making process 22 as described above are omitted, and substantially processed and prepared to have a thickness dimension t when it is still the original sheet 11.

[0020] In the present invention, the original sheet 1 of natural leather, and the original sheet 11 of artificial leather or synthetic leather having subjected to the tanning process 21 and the paper-making process 22 is subjected to a cutting process 23 into a cut piece 2 having such a size that facilitates the subsequent processes (width dimension w, length dimension L) (see Fig. 1C), and in a subsequent joining process 24, the cut pieces are joined in the longitudinal direction to form a cut-piece-joined continuous body 3 (see Fig. 1D). In joining the cut pieces 2 in the longitudinal direction, end parts in the longitudinal direction of the cut piece 2 are formed as slat cut faces 4a, 4b, and the cut faces 4a, 4b are joined by an appropriate adhesive or by means of fusion while they are overlapped with each other (see Fig. 1D1).

[0021] The cut-piece-joined continuous body 3 joined in this manner is press-compressed in a press process 25, to have a thickness dimension to of about 0.1 to 1 mm, and formed as a compressed continuous body 5 (see Fig. 1E). In this press process 25, bonding between molecules in the inner structure of the leather is enhanced by the press compression, to increase the tensile strength. Additionally, by a back-face film process 26 as shown in Fig. 2, special resin or paint may be applied on the back face by intermolecular binding or nanotechnology technique. In this stage, the front face and/or the back face of the compressed continuous body 5 may be provided with a surface finishing treatment layer to improve the decorativity of front face and back face of the continuous leather yarn 6 finished into a band-like shape.

[0022] The compressed continuous body 5 is slit to have a width dimension wo in a slitting process 27 and finished into a band-like continuous leather yarn 6. This width dimension wo is about 1 mm to 8 mm depending on the use purpose of the continuous leather yarn 6. Length dimension of the continuous leather yarn 6 may be appropriately set as is necessary, and for example, may be 30 m at maximum.

[0023] Next, concrete embodiments of leather yarn textile using the continuous leather yarn 6 finished into a band-like shape according to the process sequence as described above will be explained based on Figs. 3 to 5. Fig. 3 is a schematic perspective view showing a first embodiment of a leather yarn textile woven by using a continuous leather yarn according to the present invention. Figs. 4A and 4B are schematic perspective views showing a second and a third embodiments of a leather yarn textile woven by using a continuous leather yarn according to the present invention. Figs. 5A, 5B and 5C are schematic perspective views showing a fourth to a sixth embodiments of a leather yarn textile woven by using a continuous leather yarn according to the present invention.

[0024] First, a leather yarn textile 31 according to the first embodiment shown in Fig. 3 uses the continuous leather yarn 6 as a weft, and the continuous leather yarn 6 is inwoven as a weft into a ground warp 41. In this case, the continuous leather yarn 6 is continuously inwoven as a weft alternately from both end sides of the width direction by a shuttle of an existent loom. Concretely, the continuous leather yarn 6 is set in a similar manner for a usual fiber yarn in a shuttle of loom, and at this time, by setting the yarn while twisting intentionally, the twisting is inwoven while rotated at random irrespective of the front or back side of the continuous leather yarn 6 in entangling with the warp 41, so that the weft forms a front-back inversed part 51 and is fixed by the warp. As a result, it is possible to finish into a textile providing fluctuation like a spun yarn. In this case, a weaving width W of the textile 31 is not particularly limited.

[0025] Leather yarn textiles 32, 33 according to the second and the third embodiments shown in Fig. 4A and Fig. 4B use the continuous leather yarn 6 as a warp, and the continuous leather yarn 6 is inwoven into ground wefts 42, 43. In this case, the continuous leather yarn 6 serving as a warp may be arranged in parallel along the weaving longitudinal direction as is the case of the second embodiment shown in Fig. 4A or may form the front-back inversed part 51 in which front and back are inversed in the weaving longitudinal direction as is the case of the third embodiment shown in Fig. 4B.

[0026] The leather yarn textiles 34, 35, 36 according to the fourth, fifth and sixth embodiments shown in Fig. 5A, Fig. 5B and Fig. 4C represent structural examples in which the continuous leather yarn 6 is inwoven both as

a warp and a weft. In this case, the continuous leather yarn 6 inwoven as a warp and a weft may form the front-back inversed part 51 in which front and back are inversed in the weaving width direction only for the side of weft as is the case of the fourth embodiment shown in Fig. 5A, or may form the front-back inversed part 51 in which front and back sides are inversed in the weaving longitudinal direction only for the side of warp as is the case of the fifth embodiment shown in Fig. 5B, or may form the front-back inversed part 51 in which front and back are inversed for both the side of warp and the side of weft as is the case of the sixth embodiment shown in Fig. 5C. Any of these leather yarn textiles 31 to 36 forms a completely specific surface pattern not seen in conventional leather textiles, and hence is an extremely novel.

[Industrial Applicability]

[0027] In the above configuration, the continuous leather yarn according to the present invention is a continuous leather yarn produced by forming a predetermined size of a cut piece from a leather sheet material; joining the cut pieces in their longitudinal direction to form a cut-piece-joined continuous body; press-compressing the cut-piece-joined continuous body; and slitting it into a width corresponding to a width dimension of a final yarn. For example, when there is a size (dimensional) limit as is the case of natural leather, even when a leather yarn is obtained by slitting, its longitudinal dimension is limited, so that the design and designing should be made while the dimensional limit is perceived in producing a textile using the same. In this point, the continuous leather yarn according to the present invention as described above is very effective in that when the continuous leather yarn is used in a textile, it becomes possible to continuously inweave a weft alternately from both ends in the weaving width direction, and to inweave as a continuous warp in the weaving longitudinal direction simultaneously, and as a result a very novel leather yarn textile can be provided.

Claims

1. A continuous leather yarn which is formed by cutting a leather sheet material processed to have a desired thickness dimension t into cut pieces having a width dimension w and a length dimension L; joining the cut pieces in their longitudinal direction to form a cut-piece-joined continuous body; press-compressing the cut-piece-joined continuous body to have thickness dimension to; and slitting it to have a width dimension wo.

2. The continuous leather yarn according to claim 1, wherein the leather sheet material is natural leather, artificial leather or synthetic leather.

3. The continuous leather yarn according to claim 1 or claim 2, wherein the thickness dimension to of the press-compressed continuous leather yarn is about 0.1 to 1 mm, and the width dimension wo of the continuous leather yarn is about 1 to 8 mm.

4. The continuous leather yarn according to any one of claim 1 to claim 3, wherein a surface finishing treatment layer is provided on a front face and/or a back face of the continuous leather yarn.

5. A leather yarn textile inweaving a continuous leather yarn formed by cutting a leather sheet material processed to have a desired thickness dimension t into cut pieces having a width dimension w and a length dimension L; joining the cut pieces in their longitudinal direction to form a cut-piece-joined continuous body; press-compressing the cut-piece-joined continuous body to have a thickness dimension to; and slitting it to have a width dimension wo,
wherein the continuous leather yarn is inwoven as a weft into ground warps, and the continuous leather yarn has a front-back inversed part where front and back are inversed in the weaving width direction.

6. A leather yarn textile inweaving a continuous leather yarn formed by cutting a leather sheet material processed to have a desired thickness dimension t into cut pieces having a width dimension w and a length dimension L; joining the cut pieces in their longitudinal direction to form a cut-piece-joined continuous body; press-compressing the cut-piece-joined continuous body to have a thickness dimension to; and slitting it to have a width dimension wo,
wherein the continuous leather yarn is inwoven as a warp into ground wefts, and the continuous leather yarn is arranged in parallel along the weaving longitudinal direction.

7. A leather yarn textile inweaving a continuous leather yarn formed by cutting a leather sheet material processed to have a desired thickness dimension t into cut pieces having a width dimension w and a length dimension L; joining the cut pieces in their longitudinal direction to form a cut-piece-joined continuous body; press-compressing the cut-piece-joined continuous body to have a thickness dimension to; and slitting it to have a width dimension wo,
wherein the continuous leather yarn is inwoven as a warp into ground wefts, and the continuous leather yarn has a front-back inversed part where front and back are inversed in the weaving longitudinal direction.

8. A leather yarn textile inweaving a continuous leather yarn formed by cutting a leather sheet material processed to have a desired thickness dimension t into cut pieces having a width dimension w and a length

dimension L; joining the cut pieces in their longitudinal direction to form a cut-piece-joined continuous body; press-compressing the cut-piece-joined continuous body to have a thickness dimension to; and slitting it to have a width dimension wo,

wherein the continuous leather yarn is inwoven as a warp and a weft, and the continuous leather yarn has a front-back inversed part where front and back are inversed in at least one of the weaving longitudinal direction or the weaving width direction.

Fig. 1

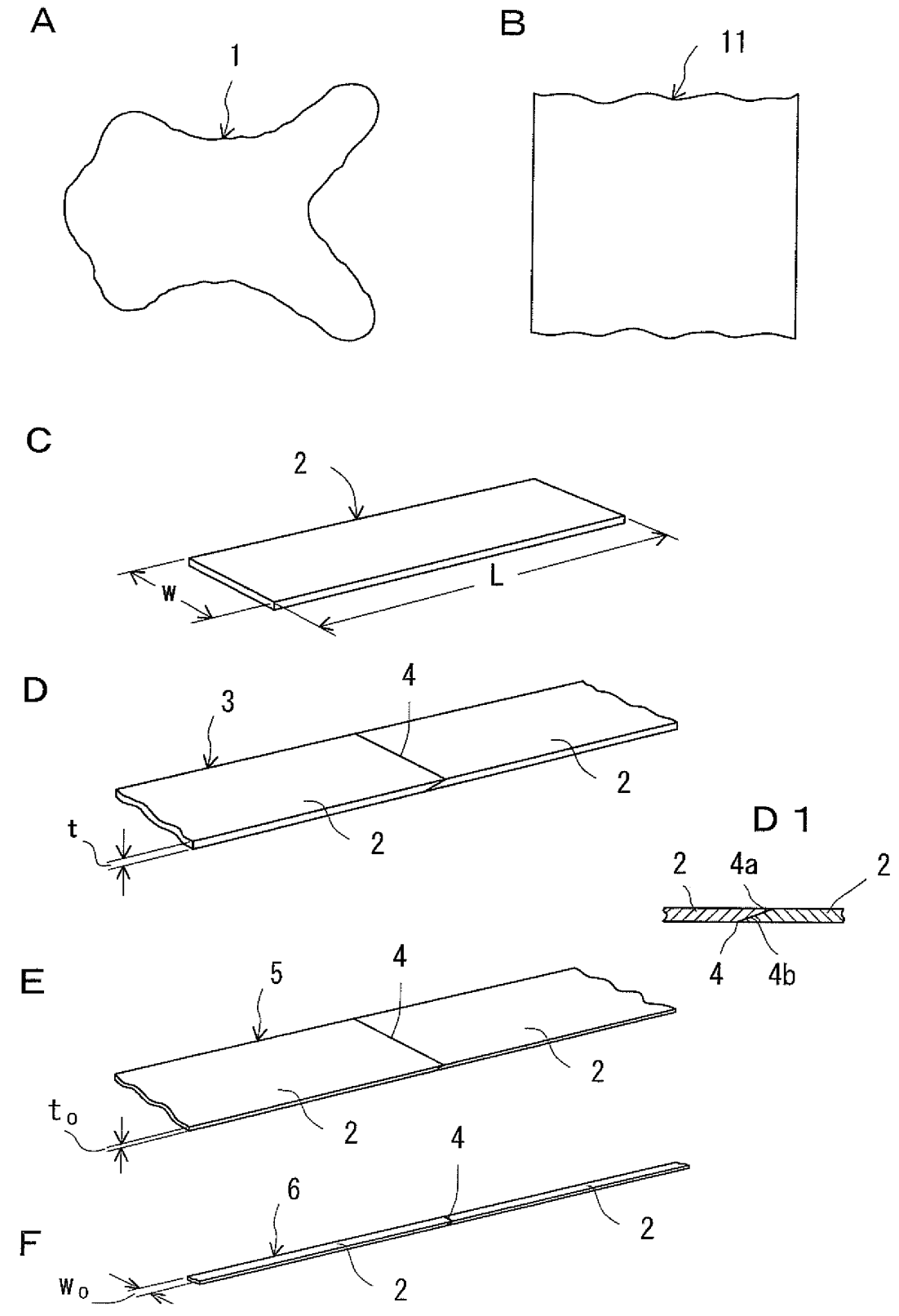


Fig. 2

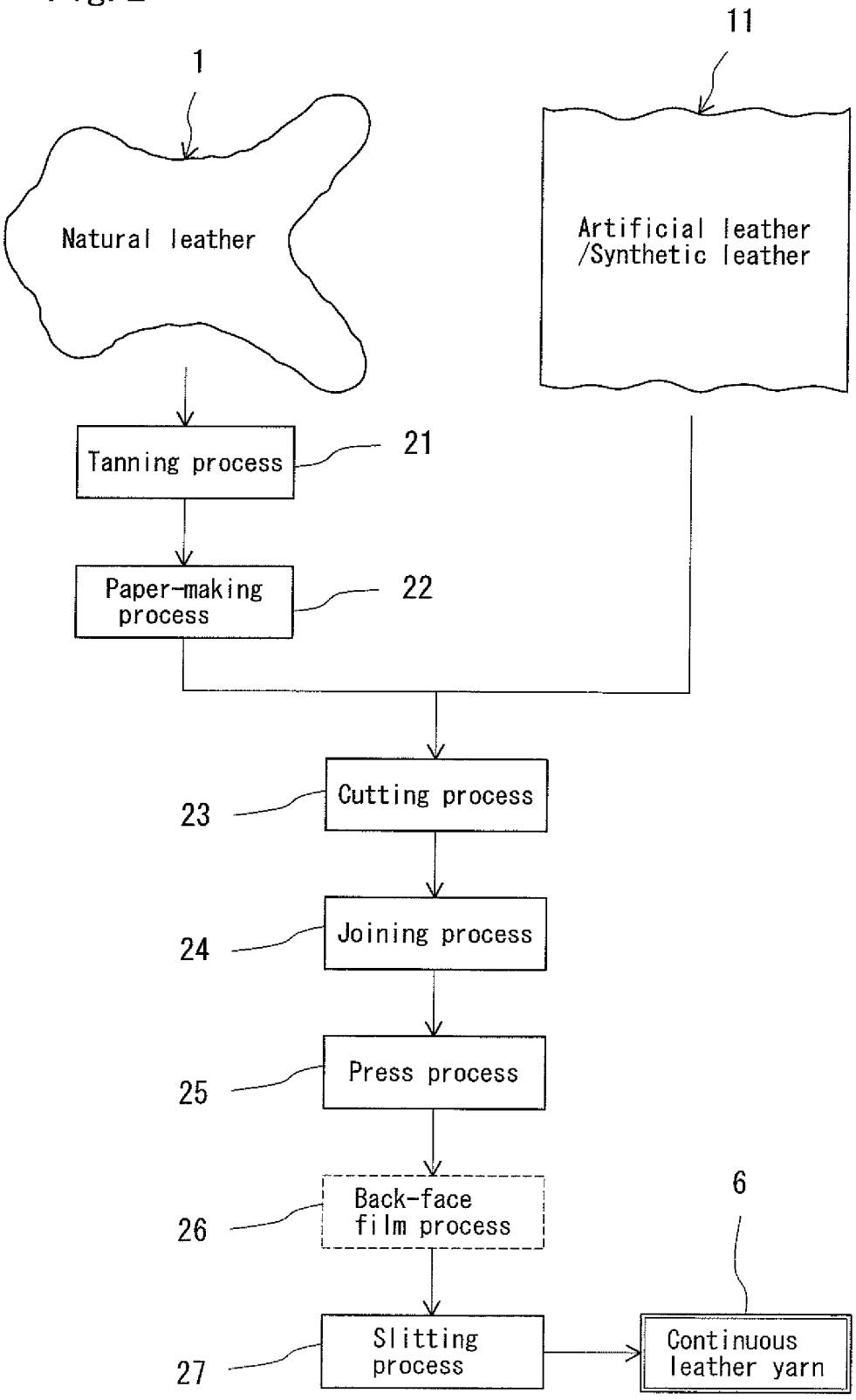

1
Natural leather
11
Artificial leather
/Synthetic leather
Tanning process
21
Paper-making
process
22
23
Cutting process
24
Joining process
25
Press process
26
Back-face
film process
6
27
Slitting
process
Continuous
leather yarn

Fig. 3

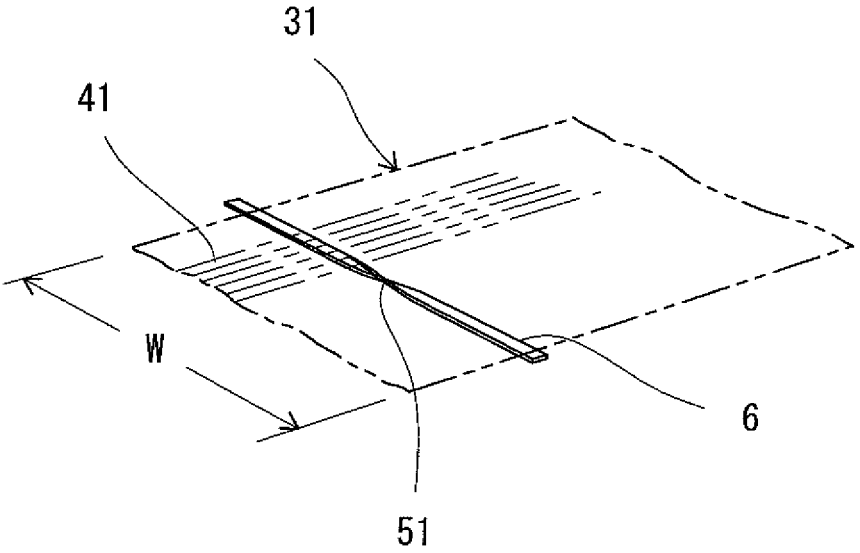
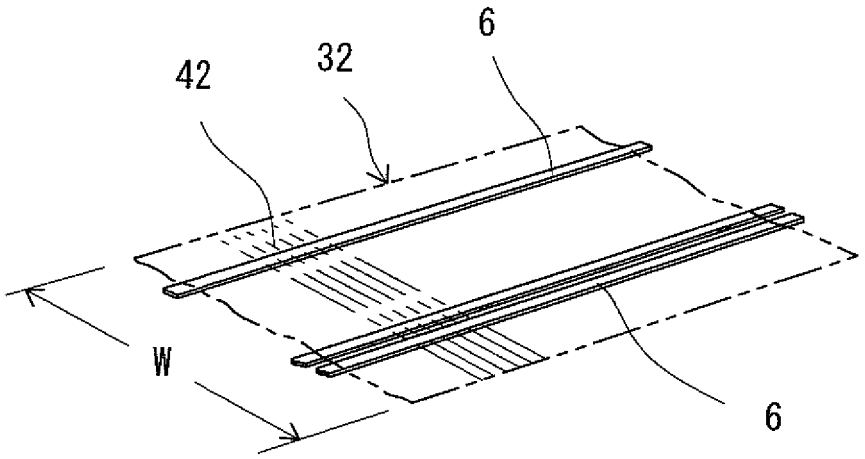


Fig. 4

A



B

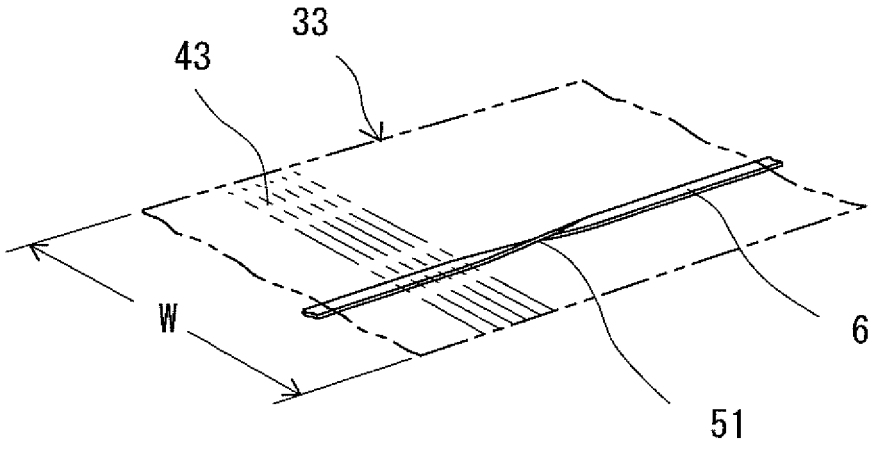
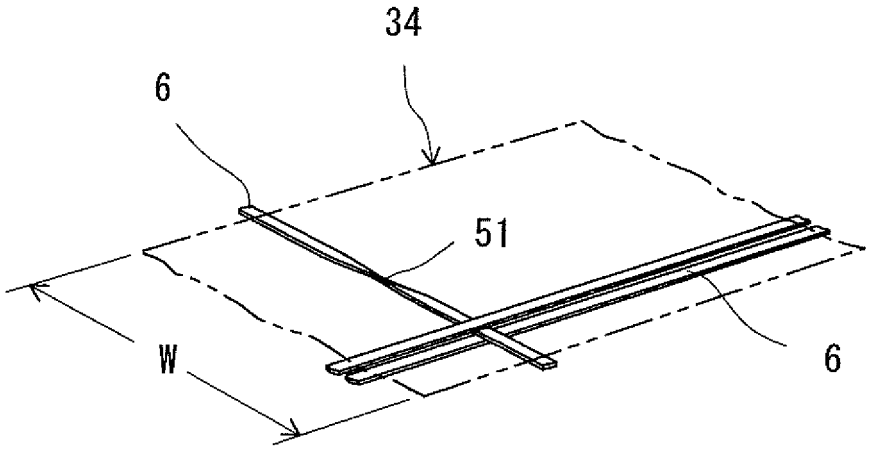
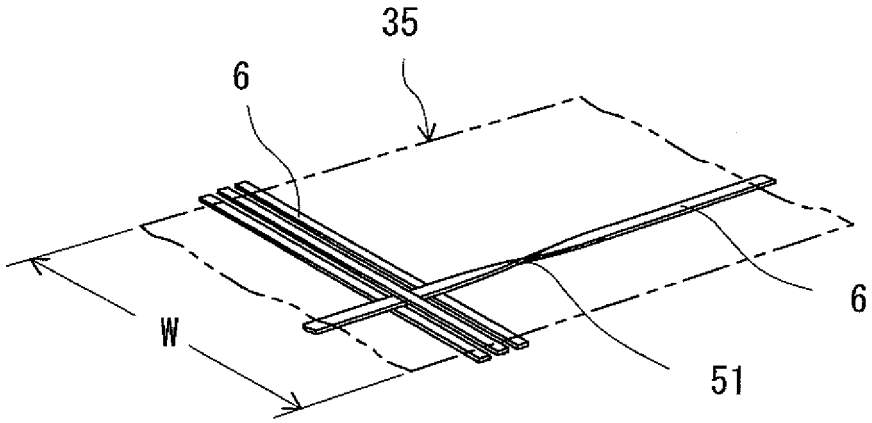


Fig. 5

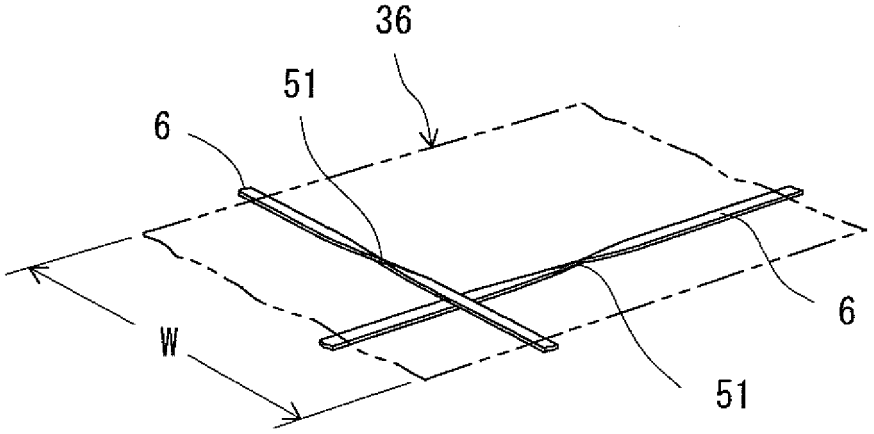
A



B



C



INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2006/322531

A. CLASSIFICATION OF SUBJECT MATTER
D02G3/06(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
D02G1/00-3/48, D02J1/00-13/00, C14B1/00-21/00, C14C1/00-15/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2007
Kokai Jitsuyo Shinan Koho 1971-2007 Toroku Jitsuyo Shinan Koho 1994-2007

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
WPIL

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4606182 A (Herman S. Krehm), 19 August, 1986 (19.08.86), Column 2, lines 33 to 66; column 3, lines 22 to 23; Figs. 1 to 3 (Family: none)	1-8
Y	JP 10-108709 A (Oji Paper Co., Ltd.), 28 April, 1998 (28.04.98), Par. No. [0021] (Family: none)	1-8

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
01 February, 2007 (01.02.07)	13 February, 2007 (13.02.07)
Name and mailing address of the ISA/ Japanese Patent Office Facsimile No.	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (April 2005)

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- JP 2005023467 A **[0005]**