



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
21.09.2011 Bulletin 2011/38

(51) Int Cl.:
D04B 1/22 (2006.01)

(21) Application number: **11002148.2**

(22) Date of filing: **15.03.2011**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(72) Inventor: **Okuno, Masao**
Wakayama-shi
Wakayama 641-8511 (JP)

(74) Representative: **Wimmer, Hubert**
WAGNER & GEYER
Gewürzmühlstrasse 5
80538 München (DE)

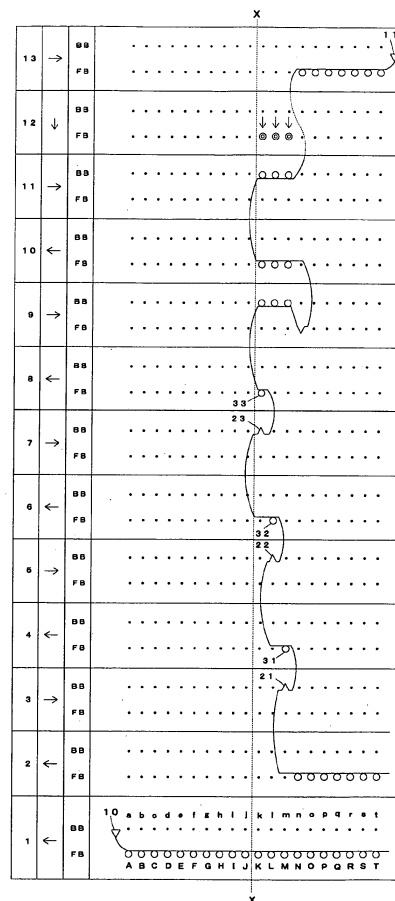
(30) Priority: **15.03.2010 JP 2010058557**

(71) Applicant: **Shima Seiki Mfg., Ltd**
Wakayama-shi,
Wakayama 641-8511 (JP)

(54) **A knitting method for knitting a knitted fabric in which a lateral end part is strengthened, and the knitted fabric**

(57) [Object] The present invention relates to a knitting method for knitting a lateral end part in a knitted fabric for use in a collar, a placket and the like in a clothing or a garment like a sweater, using a flatbed knitting machine, aiming to provide a knitting method for strengthening the lateral end part in the knitted fabric, and the knitted fabric. [Technical Solution] After a twisted stitch is formed on the back side of the knitted fabric, a stitch in the lateral end part in the knitted fabric is formed, first; then a new stitch following the twisted stitch and the stitch on the front side facing the twisted stitch is formed by tubular knitting; and then the stitch on the front side and the stitch on the back side which are formed by the tubular knitting are overlapped with each other, these steps being taken by use of the flatbed knitting machine.

Fig.2



Description

[Technical Field]

5 **[0001]** The present invention relates to a knitting method for knitting a lateral end part in a thick, substantial, and low-stretch, knitted fabric using a flatbed knitting machine.

[Background Art]

10 **[0002]** As to a knitting method for strengthening a lateral end part in a knitted fabric for use in a collar, a placket and the like in a sweater or a garment, using a flatbed knitting machine, the applicant of this application previously disclosed a knitting method for knitting a thick, substantial, and low-stretch, knitted fabric by combination of a plain knit and a transfer knit (See Patent Citation 1, for example).

15 [Prior Art Documents]

[Patent Citation]

20 **[0003]** [Patent Citation 1] Japanese Examined Patent Publication No. Hei 7-37699

[Disclosure of the Invention]

[Technical Problem]

25 **[0004]** The present invention aims to provide a knitting method for strengthening a lateral end part in a knitted fabric in a different process from that of Patent Citation 1 cited above, and to provide the knitted fabric.

[Technical Solution]

30 **[0005]** The present invention provides a knitting method for strengthening a lateral end part in a knitted fabric, using a flatbed knitting machine having at least one pair of front and back needle beds, wherein after a twisted stitch is formed on a back side of the knitted fabric, a stitch in the lateral end part in the knitted fabric is formed, then a new stitch following the twisted stitch and the stitch on the front side facing the twisted stitch is formed by tubular knitting, and then the stitch on the front side and the stitch on the back side which are formed by the tubular knitting are overlapped with each other.

35 **[0006]** In the present invention, the lateral end part in the knitted fabric is formed at each side of a bifurcating part from which the knitted fabric is separated into right and left, and at least a pair of right and left stitches arranged in sandwich relation to the bifurcating part are crossed with each other to form a cross part in the bifurcating part.

40 **[0007]** Also, the present invention provides a knitted fabric knitted using a flatbed knitting machine and having a strengthened lateral end part therein, wherein a twisted stitch is formed on a back side of the knitted fabric before a stitch is formed in the lateral end part in the knitted fabric, a new stitch following the twisted stitch and the stitch on the front side facing the twisted stitch is formed by tubular knitting, and the stitch on the front side and the stitch on the back side which are formed by the tubular knitting are overlapped with each other.

[Advantageous Effects]

45 **[0008]** According to the present invention, the stitch in the lateral end part in the knitted fabric is formed after the twisted stitch is formed on the back side of the knitted fabric, then the new stitch following the twisted stitch and the stitch on the front side positioned to face the twisted stitch is formed by the tubular knitting, and then the stitch on the front side and the stitch on the back side which are formed by the tubular knitting are overlapped with each other. This can provide the result that the lateral end part in the knitted fabric can be increased in thickness and thus in strength. Also, since the lateral end part in the knitted fabric can be increased in strength, the line along which the lateral end part extends can be shaped into a beautiful line. It is to be noted here that the term of the stitch used herein covers not only a knitted stitch but also a tuck stitch or a double stitch.

50 **[0009]** Also, according to the present invention, the lateral end part in the knitted fabric is formed at each side of the bifurcating part from which the knitted fabric is separated into right and left, and at least a pair of right and left stitches positioned in sandwich relation to the bifurcating part are crossed with each other to form a cross part in the bifurcating part. The tubular knitting can provide the result that the tension of the knitting yarn can be relieved so that the stitches used for crossing can be easily transferred without being tensed. This can provide the result that the area of the knitted

fabric at the cross part and closest to the bifurcating part can also be made free from tension, so that the knitted fabric can be beautifully shaped.

[0010] In the knitted fabric of the present invention, since the lateral end part is increased in thickness and thus in strength, a V-neck part of a sweater or an armhole of a vest can be shaped into a beautiful line.

[Brief description of drawings]

[0011]

[Fig.1] Fig. 1 is a view showing a front body 1 of a V-neck vest of a certain embodiment of the present invention,
 [Fig.2] Fig. 2 is a knitting diagram of a bifurcating part 2 of the front body 1 of the embodiment of the present invention,
 [Fig.3] Fig. 3 is a knitting diagram of the bifurcating part 2 of the front body 1 of the embodiment of the present invention,
 [Fig.4] Fig. 4 is a knitting diagram of a cross part of the bifurcating part 2 of the front body 1 and parts following the bifurcating part 2 of the embodiment of the present invention,
 [Fig.5] Fig. 5 is a knitting diagram of the parts following the bifurcating part 2 of the front body 1 of the embodiment of the present invention,
 [Fig.6] Fig. 6 is a knitting diagram of the parts following the bifurcating part 2 of the front body 1 of the embodiment of the present invention, and
 [Fig.7] Fig. 7 is a knitting diagram of the parts following the bifurcating part 2 of the front body 1 of the embodiment of the present invention.

[Mode for Carrying out the Invention]

[0012] In the following, the knitting of a V-neck part of the vest is described as a certain embodiment of the present invention. In the knitting described in the following, a two-bed type flatbed knitting machine is used which comprises a pair of front and back needle beds, the back needle bed of which is capable of being racked relative to the front needle bed, and at least two yarn feeders arranged over the needle beds. For convenience of explanation, a fewer number of knitting needles than they are really used are represented in the knitting diagram.

[Embodiments]

[0013] Fig. 1 is a view showing a front body 1 of a V-neck vest. The front body 1 of the vest knitted in the embodiment is wholly knitted in plain knitting. The front body 1 comprises a full-width part 4 knitted up to a bifurcating part 2 in a direction indicated by an arrow W, a right shoulder part 6 and a left shoulder part 7 which are knitted while being separated into right and left from the bifurcating part 2. Reference numeral 8 indicates an opening, and reference numeral 9 indicates a lateral end part. The full-width part 4 and the right shoulder part 6 are knitted by using a yarn feeder 10, and the left shoulder part 7 is knitted by using a yarn feeder 11. A chain line X-X indicates a boundary line in the bifurcating part 2.
[0014] Figs. 2 and 3 are knitting diagrams showing the knitting of the bifurcating part 2 of the front body 1 shown in Fig. 1. Fig. 4 is a knitting diagram showing the knitting process of a cross part in the bifurcating part 2 taken in the first three steps and the subsequent knitting process of the right shoulder part 6 and the left shoulder part 7 following the bifurcating part 2. Figs. 5-7 are knitting diagrams showing the knitting processes following the knitting process of Fig. 4. Numbers at the left side of the knitting diagrams designate knitting steps (S), and horizontal arrows designate knitting directions and vertical arrows designate stitch-transfer directions. Reference symbols FB and BB designate a front needle bed and a back needle bed, respectively. Alphabetical letters A-T of big letters designate knitting needles of FB, and small letters a-t designate knitting needles of BB. Circles indicate new stitches formed or transferred in the respective knitting steps, Vs indicate tuck or pick-up stitches, and double circles indicate double stitches. Illustration of the stitches which are not involved in the knitting in the knitting steps and remain retained by the knitting needles during the knitting is omitted. A line X-X indicates a boundary line of the bifurcating part 2, as in the case of Fig. 1. The FB side may be represented as the front side and the BB side may be represented as the back side.

[0015] In the following, the knitting steps S1-S28 shown in Figs. 2-4 are described. S1 shows the knitting of the full-width part 4 of the front body 1. The yarn feeder 10 is moved leftwards via a carriage (not shown) and the stitches are formed by the knitting needles T-A of FB. In the subsequent steps from S2, the yarn feeder 10 and the yarn feeder 11 are used for the knitting prior to forming the cross part.

[0016] In the step S2, the yarn feeder 11 is used so that stitches are sequentially formed by the knitting needles T-N in the leftward direction. In the step S3, a stitch is picked up to the right by the knitting needle m, and in the next step S4, a stitch 31 is formed by the knitting needle M of FB. Though these steps, the knitting yarn extending from the knitting needle m to the knitting needle M of FB crosses over the knitting yarn extending from the knitting needle N of FB to the knitting needle m of BB, whereby a twisted stitch 21 is formed at the knitting needle m. Thereafter, the same knitting

steps as S3-S4 are taken in the steps S5-S6 and S7-S8, so that stitches 32 and 33 are formed by the knitting needles L and K, respectively, while also twisted stitches 22, 23 are formed by the knitting needles 1 and m, respectively. In the step S9, new stitches are formed to the right with respect to the twisted stitches 23, 22, 21 formed on the back side of the front body 1 in the steps S3-S8 and also tucked by the knitting needle N of FB. In the step 10, stitches are formed to the left by the knitting needles M-K of FB. In the step 11, stitches are formed to the right by the knitting needles k-m of BB. In the steps S9-S11 mentioned above, tubular knitting is carried out to move in a circular direction, using the knitting needles K-M of FB and the knitting needles k-m of BB, whereby new stitches following the twisted stitches 23, 22, 21 and the stitches 31, 32, 33 positioned to face them are formed, so that the corresponding area of the knitted fabric is joined in a tubular form. Then, in the step S12, the stitches retained by the knitting needles k-m of BB are respectively transferred to and overlapped with the stitches retained by the knitting needles K-M of FB. In the step S13, the yarn feeder 11 is moved leftwards for a while and then stitches are formed by the knitting needles N-T of FB, so as to continue from the stitch at the knitting needle M.

[0017] S14-S25 are in a symmetrical relation to the knitting of S2-S13 mentioned above with respect to the line X-X. In the step S14, the yarn feeder 10 is used so that stitches are sequentially formed to the right by the knitting needles A-G. In the step S15, a stitch is picked up to the left by the knitting needle h, and in the next step S16, a stitch is formed by the knitting needle H of FB. As a result of this, a twisted stitch is formed at the knitting needle h of BB. Thereafter, the same knitting steps as S15-S16 are taken in the steps S17-S18 and S19-S20, so that stitches are formed by the knitting needles I and J, respectively, while also twisted stitches are formed by the knitting needles i and j, respectively. In the step S21, new stitches are formed to the left with respect to the twisted stitches formed on the back side of the front body 1 in the steps S15-S20 and also tucked by the knitting needle G of FB. In the step S22, stitches are formed to the right by the knitting needles H-J of FB. In the step S23, stitches are formed to the left by the knitting needles j-h. In the steps S21-S23 mentioned above, tubular knitting is carried out to move in a circular direction, using the knitting needles H-J of FB and the knitting needles h-j of BB, whereby new stitches following the twisted stitches and the stitches positioned to face them are formed, so that the corresponding area of the knitted fabric is joined in a tubular form. Then, in the step 24, the stitches retained by the knitting needles h-j of BB are respectively transferred to and overlapped with the stitches retained by the knitting needles H-J of FB. In the step S25, the yarn feeder 10 is moved rightwards for a while and then stitches are formed by the knitting needles G-A of FB, so as to continue from the stitch at the knitting needle H.

[0018] S26-S28 are the steps of crossing the stitches beyond the boundary of the bifurcating part 2. In this embodiment, the stitch on the front side, arranged in sandwich relation to the bifurcating part 2, is transferred to and overlapped with the stitch on the back side formed next to the twisted stitch, so that it is crossed beyond the boundary of the bifurcating part 2. In the step S26, the stitches at the knitting needles J and K are respectively transferred to and overlapped with the stitches at the knitting needles j and k. In the step S27, the double stitch retained by the knitting needle k is transferred to the knitting needle J beyond the boundary of the bifurcating part 2. In the step S28, the double stitch retained by the knitting needle j is transferred to the knitting needle K beyond the boundary of the bifurcating part 2. The crossing of the stitches in the bifurcating part 2 is completed in the manner as mentioned above.

[0019] Since in the steps S9-S11 and S21-S23, the tubular knitting is provided following the twisted stitches and the stitches positioned to face them, the area near the cross part can be strengthened by a thick and substantial knitted fabric.

[0020] Although in the illustrated embodiment, the cross part is formed by the stitch-transfer process in the steps S26-S28, the cross part may be formed by an alternative overlapping and crossing process, without being limited to such an illustrated process. For example, as an alternative process, the stitches on the front side, positioned in sandwich relation to the boundary of the bifurcating part 2, are crossed with each other first, and, then, the stitches on the back side may be transferred to across the boundary of the bifurcating part 2 and overlapped with the stitches on the front side. In this alternative process, the stitches may be overlapped in a different positional relation from that in the embodiment. Also, in this alternative process, a known holding technique may be used (See Japanese Patent No. 2995464, for example). In the case where a four-bed type flatbed knitting machine is used, an upper needle bed may be used for that process. The stitch-transfer process described in the embodiment is more advantageous than those alternatives in that the number of processes can be lessened.

[0021] Next, the knitting of the right shoulder part 6 and left shoulder part 7 following the bifurcating part 2 is described with reference to Fig. 4 showing the steps subsequent to S29 and Figs. 5-7. After the stitches are crossed in the bifurcating part 2, as mentioned above, the narrowing process is carried out so that while the knitted fabric of the right shoulder part 6 and the knitted fabric of the left shoulder part 7 are knitted, respectively, the lateral end parts 9R, 9L on their side facing the boundary of the bifurcating part 2 can gradually increase in distance from the boundary of the bifurcating part 2. By this knitting process, an opening 8 of the V-neck part is formed.

[0022] The knitting steps S29-S36 are fundamentally the same as the steps S2-S13 mentioned above, although they are different in number of twisted stitches formed and in presence or absence of the stitch-transfer process. In the step S29, the yarn feeder 11 is used so that stitches are sequentially formed to the left by the knitting needles T-N. In the step S30, a stitch is picked up to the right by the knitting needle m, and in the next step S31, a stitch 51 is formed by

the knitting needle M of FB. As a result of this, a twisted stitch 41 is formed at the knitting needle m of BB. Likewise, in the step S32, a stitch is picked up to the right by the knitting needle 1, and in the next step S33, stitches 52, 53 are formed by the knitting needles L and K. As a result of this, a twisted stitch 42 is formed at the knitting needle 1. In the step S34, new stitches are formed to the right with respect to the twisted stitches 42, 41 formed on the back side of the front body 1 in the steps S30-S33 and also tucked by the knitting needle N of FB. In the step S35, stitches are formed to the left by the knitting needles M-K of FB. In the step S36, the tubular knitting is done, forming stitches by the knitting needles 1 and m of BB, and then stitches are formed by the knitting needles N-T. In the step S37, the stitches at the knitting needles K-R are transferred to the knitting needles k-r, so that double stitches are formed at the knitting needles 1 and m. In the step S38, the stitches at the knitting needles k-r are transferred to the knitting needles L-S, for the narrowing. As a result of this, the lateral end part 9L in the left shoulder part 7 increases in distance from the boundary of the bifurcating part 2. Although in the process mentioned above, a twisted stitch is not formed at the knitting needle k in the steps S33-S34, the twisted stitch may be formed in the same manner as in the steps S30-S31. As an alternative to the stitches 51, 52, 53 which are knitted stitches formed by the knitting needle M in the step S31 and by the knitting needles L, K in the step S33, tuck stitches may be formed. The tucking can tighten up the lateral end part 9L to produce a further strengthened lateral end part.

[0023] The knitting of S39-S48 is in a symmetrical relation to the knitting of S29-S38 mentioned above with respect to the line X-X. In this regard, however, the yarn feeder 10 is used. By the narrowing in the step S48, the lateral end part 9R in the right shoulder part 6 is gradually increased in distance from the boundary of the bifurcating part 2.

[0024] The steps S49-S57 are substantially the same as the steps S29-S38 mentioned above. In this regard, however, since the narrowing is done in the step S38, the knitting needles are each shifted rightwards from usual position by one. In the step 57, the stitches at the knitting needles m and n are transferred to and overlapped with the stitches at the knitting needles M and N, without using the narrowing in the step S38.

[0025] The knitting of S58-S66 is in a symmetrical relation to the knitting of S49-S57 mentioned above with respect to the line X-X. In this regard, however, the yarn feeder 10 is used.

[0026] In the knitting processes subsequent to S66, the processes including the narrowing in the steps S29-S48 and the processes not including the narrowing in the steps S49-S66 may be alternated every predetermined course by being repeated for example in an alternate order, to form the opening 8 in the V-neck part.

[0027] In the knitting processes subsequent to S29 of Fig. 4, the knitting yarn connecting between the stitches on the front side and on the back side of the knitted fabric on the side closest to the boundary in the bifurcating part 2 is produced by the tubular knitting and also the stitch on the front side formed by the tubular knitting and the stitch on the back side are overlapped with each other, whereby the area around the opening of the V-neck is increased in thickness and thus in strength. As a result of this, since the area around the opening can be prevented from undulating or curling, the V-shaped opening can be beautifully contoured. Also, the forming of the twisted stitch and the tubular knitting following it are provided, as in the case of the knitting of the stitches to form the cross part shown in S1-S28. Therefore, substantially the same visual attractiveness and substantially the same thickness of the knitted fabric can be provided to the area around the opening of the V-neck including the bifurcating part.

[0028] Although in the illustrated embodiment, the tubular knitting after the forming of the twisted stitches rounds in a single direction, as shown in e.g. the steps S2-S13, the tubular knitting is not limited to this process. For example, as an alternative, after a final tuck in the step S9, the knitting may be reversed in direction to turn around at that final tuck so that the stitches may be formed in the order of the knitting needles m, 1, k on the back side and the knitting needles K, L, M on the front side.

[0029] Although in the illustrated embodiment, the knitting needles, two or three at each side, are used for forming the twisted stitch, the number of knitting needles used may be varied to e.g. one at each side or three or more at each side. Also, the number of knitting needles used for the tubular knitting following the forming of the twisted stitch may be varied properly according to such variation.

[0030] Although in the illustrated embodiment, the knitting of the front body 1 using the two-bed type flatbed knitting machine has been disclosed, the present invention is applicable to known tubular knitting that a tubular body whose front body and back body are joined at both lateral sides thereof is knitted on the flatbed knitting machine. Although in the illustrated embodiment, the knitting of the bifurcating part in the V-neck front body is illustrated as one example, the present invention is not limited to the illustrated embodiment but is applicable to e.g. the knitting of a vest having a placket formed to extend straight, without using the narrowing technique as shown in e.g. the steps S38 and S48.

[Explanation of References]

[0031]

1	Front body
2	Bifurcating part

	6	Right shoulder part
	7	Left shoulder part
	8	Opening
	9	Lateral end part
5	10, 11	Yarn feeder
	21, 22, 23, 41, 42	Twisted stitch
	31, 32, 33, 51, 52, 53	Stitch

10 Claims

1. A knitting method for strengthening a lateral end part in a knitted fabric, using a flatbed knitting machine having at least one pair of front and back needle beds, wherein after a twisted stitch is formed on a back side of the knitted fabric, a stitch in the lateral end part in the knitted fabric is formed, then a new stitch following the twisted stitch and the stitch on the front side facing the twisted stitch is formed by tubular knitting, and then the stitch on the front side and the stitch on the back side which are formed by the tubular knitting are overlapped with each other.
2. The knitting method for the lateral end part in the knitted fabric according to Claim 1, wherein the lateral end part in the knitted fabric is formed at each side of a bifurcating part from which the knitted fabric is separated into right and left, and at least a pair of right and left stitches arranged in sandwich relation to the bifurcating part are crossed with each other to form a cross part in the bifurcating part.
3. A knitted fabric knitted using a flatbed knitting machine and having a strengthened lateral end part therein, wherein a twisted stitch is formed on a back side of the knitted fabric before a stitch is formed in the lateral end part in the knitted fabric, a new stitch following the twisted stitch and the stitch on the front side facing the twisted stitch is formed by tubular knitting, and the stitch on the front side and the stitch on the back side which are formed by the tubular knitting are overlapped with each other.

Fig.1

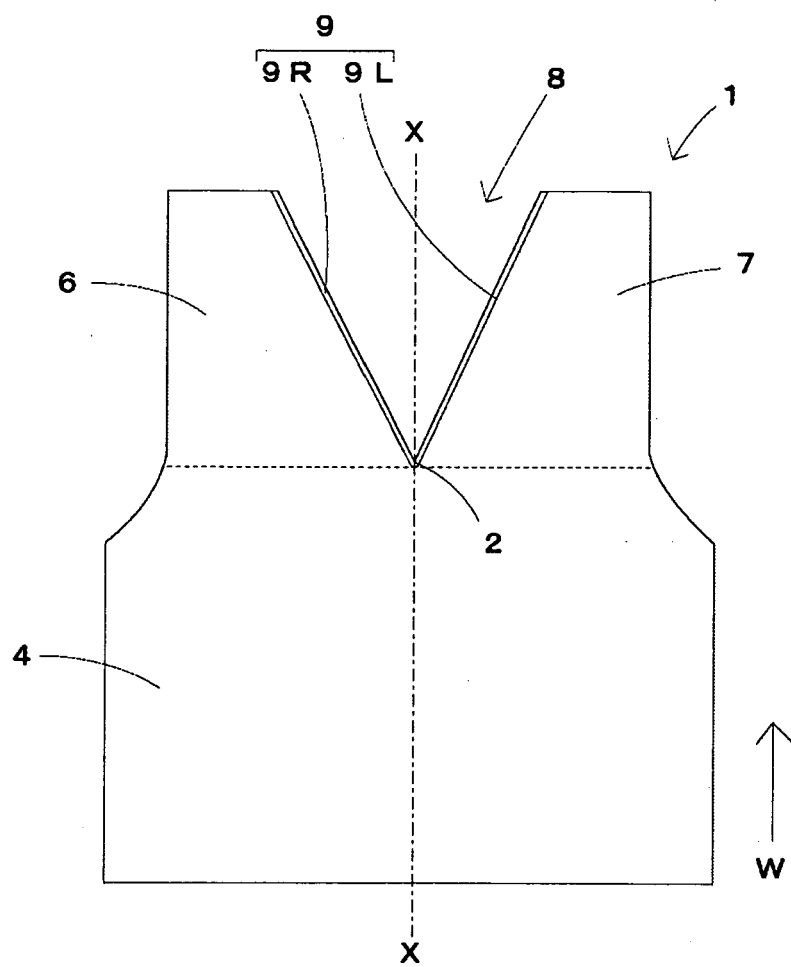


Fig.2

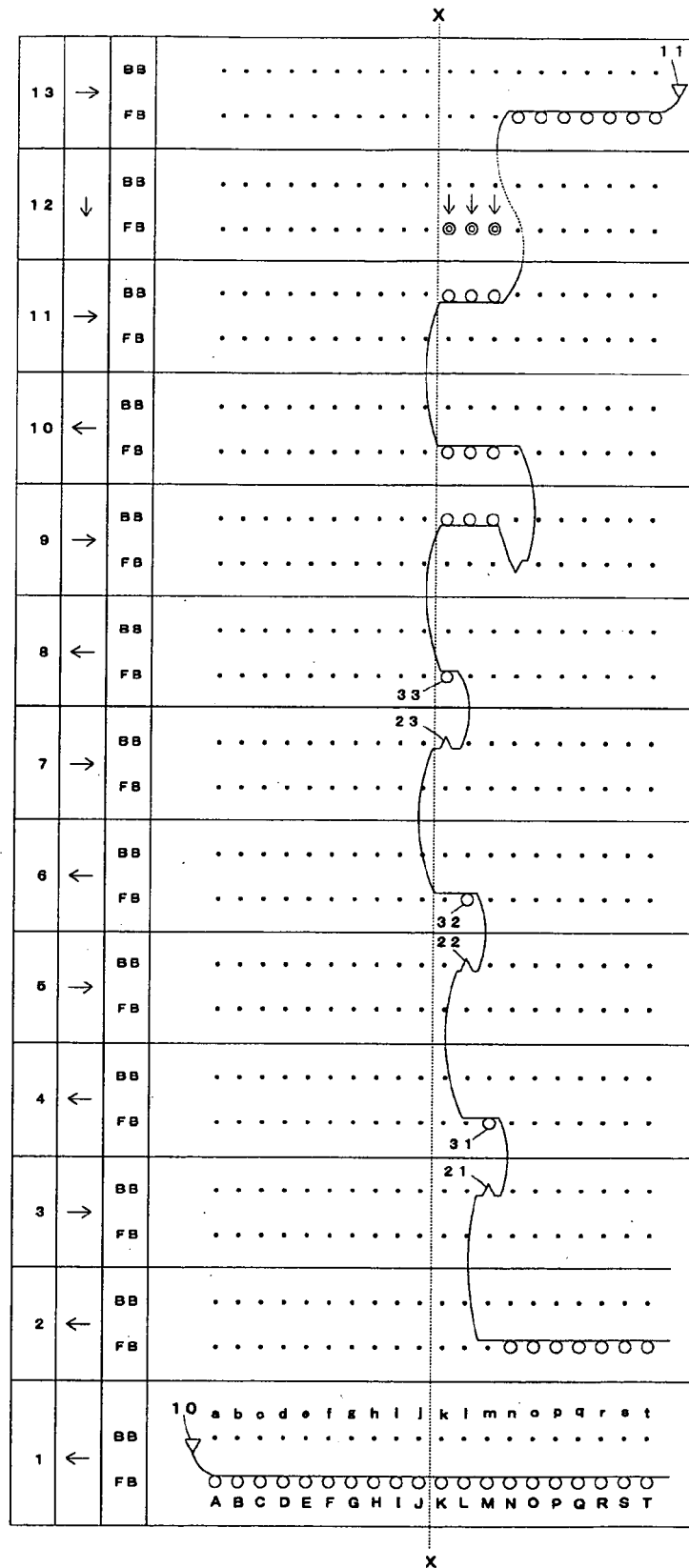


Fig.3

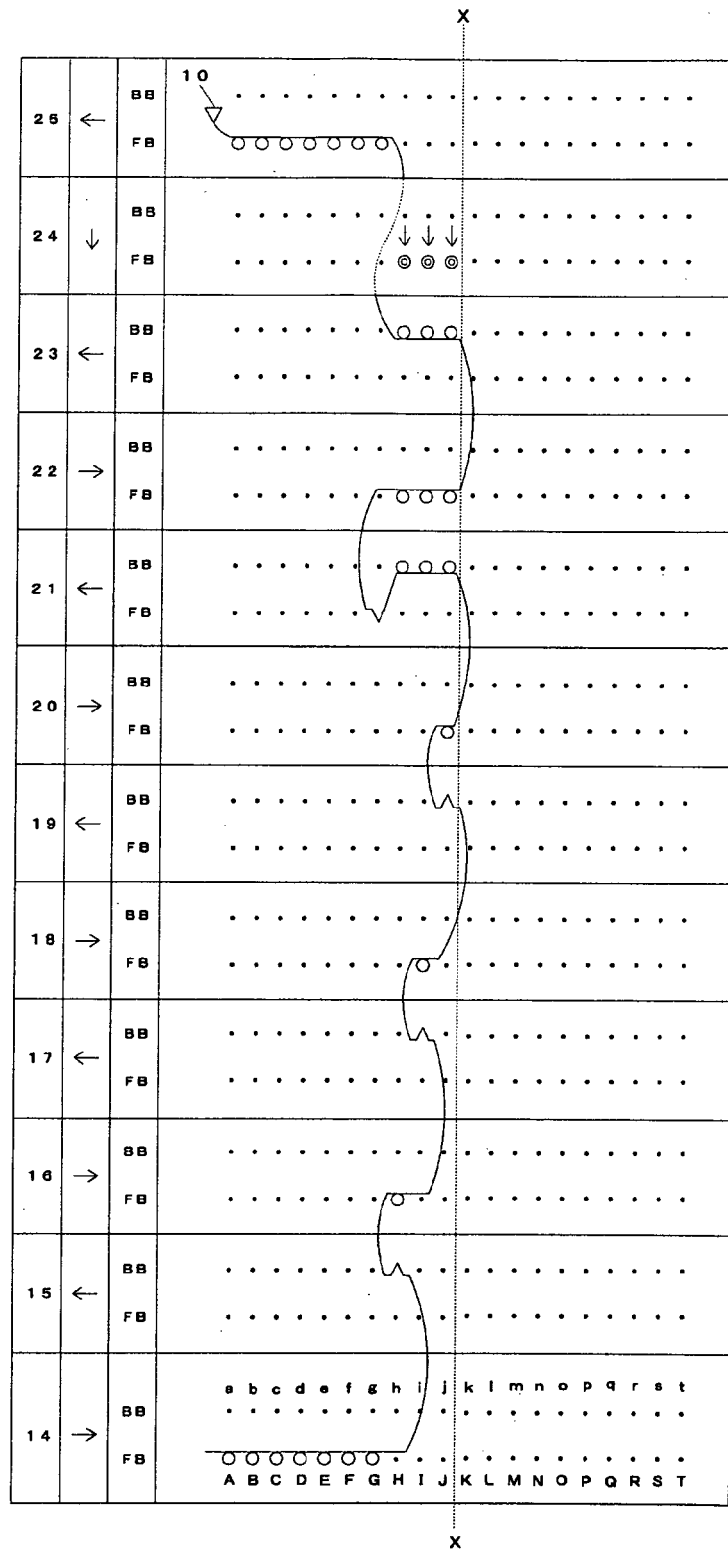


Fig.4

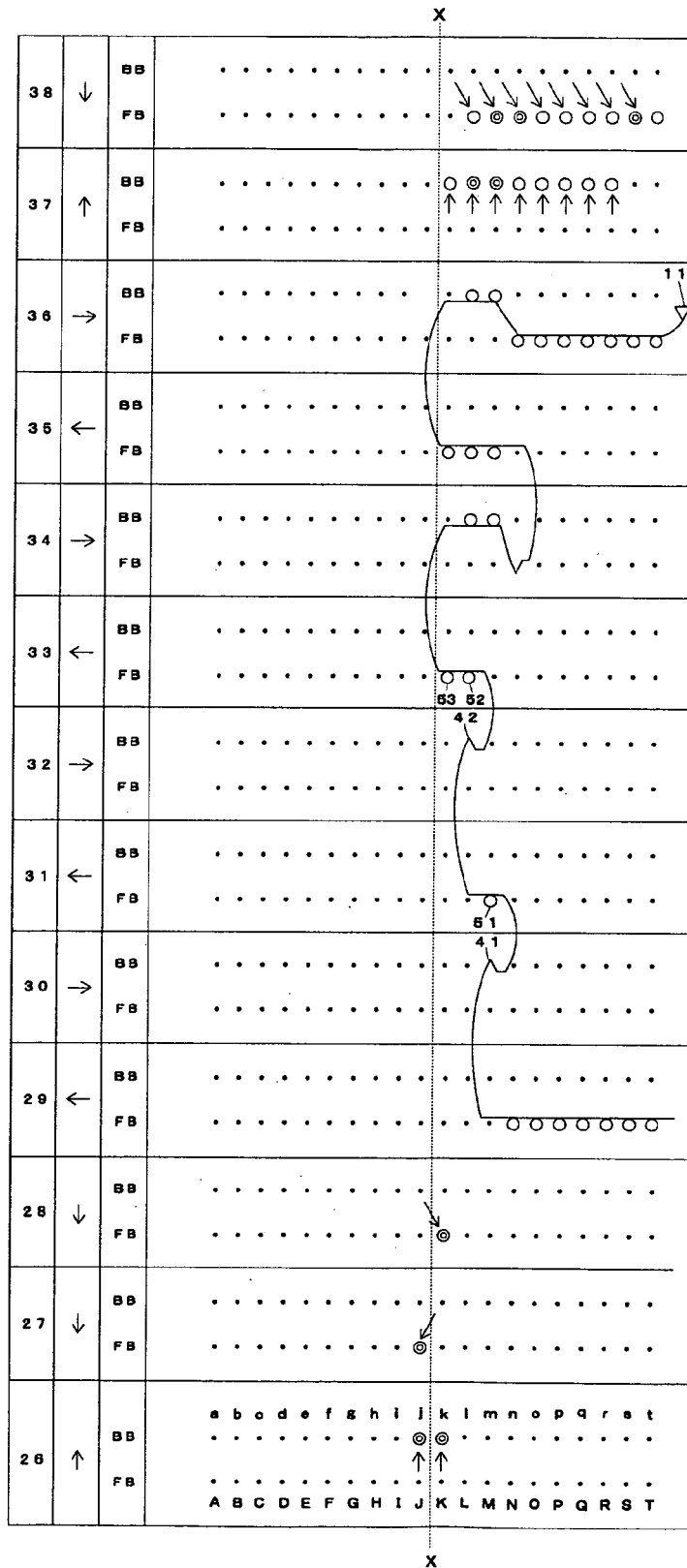


Fig.5

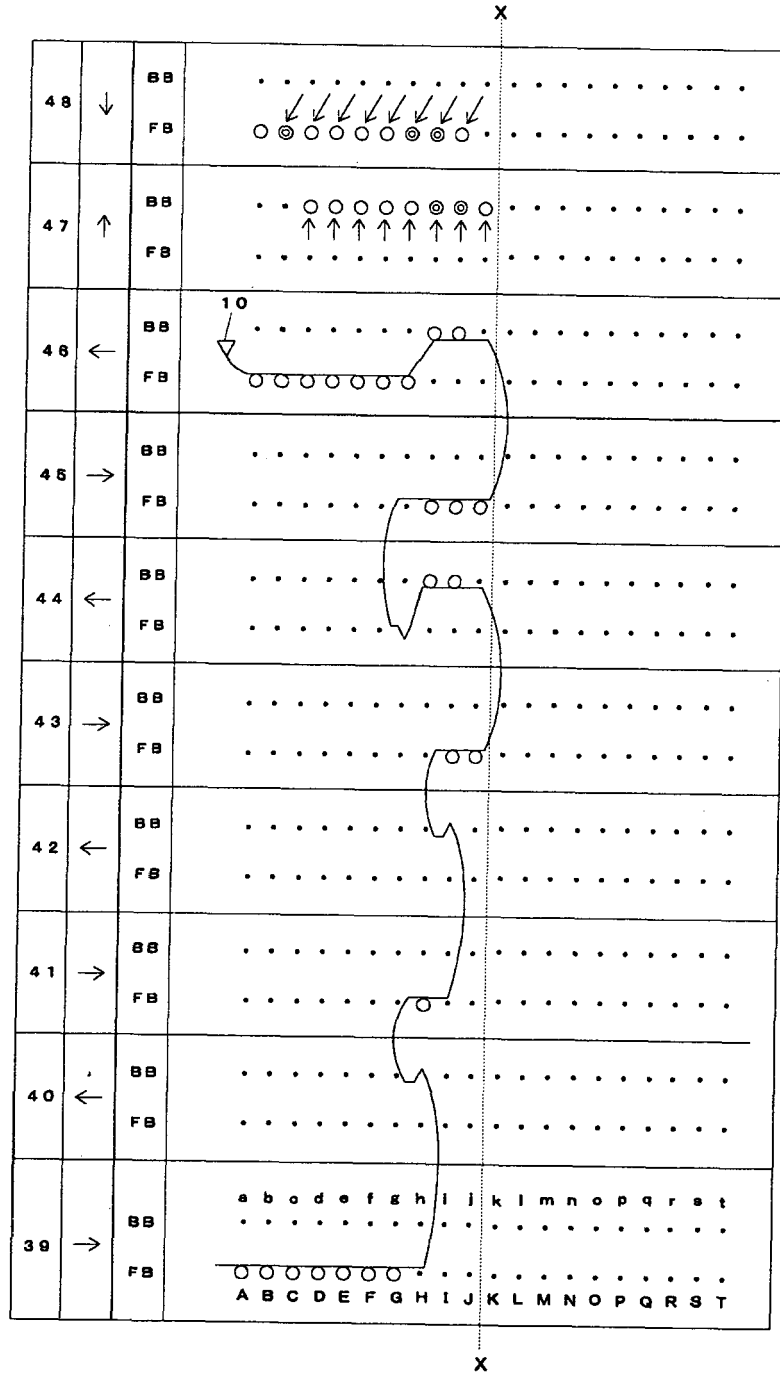


Fig.6

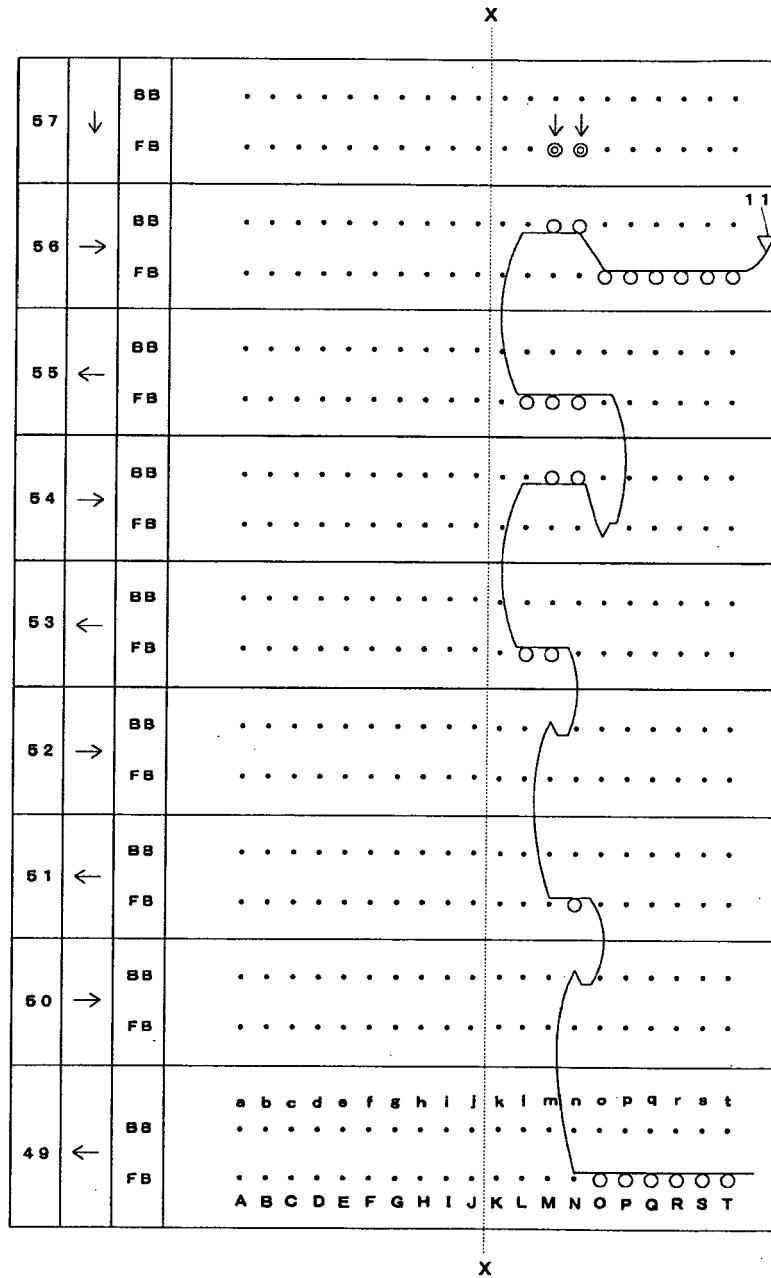
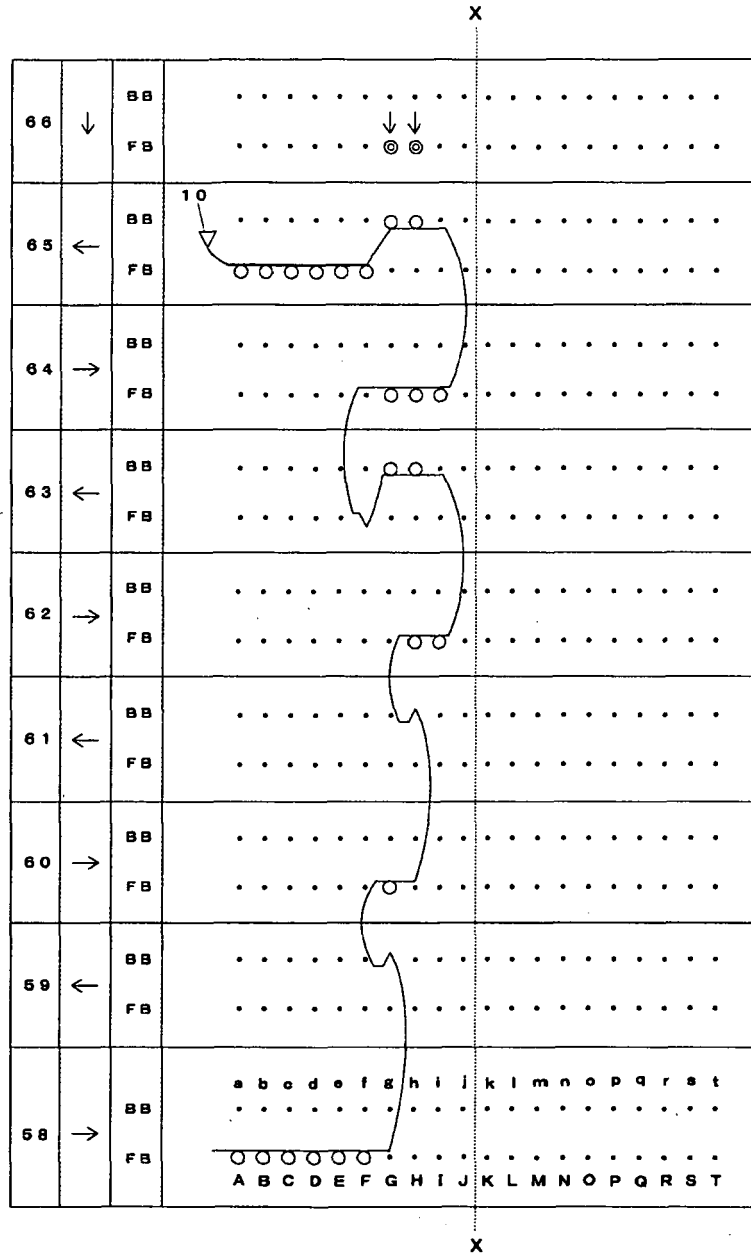


Fig.7





EUROPEAN SEARCH REPORT

Application Number
EP 11 00 2148

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	EP 0 972 870 A2 (SHIMA SEIKI MFG [JP]) 19 January 2000 (2000-01-19) * paragraphs [0013] - [0016], [0 19]; claims 1-3; figures 3-5 *	1,3	INV. D04B1/22
A	EP 0 675 219 A1 (SHIMA SEIKI MFG [JP]) 4 October 1995 (1995-10-04) * page 6, line 45 - page 7, line 4; claim 1; figures 9, 10 *	1,3	
A	GB 1 236 579 A (COURTAULDS LTD [GB]) 23 June 1971 (1971-06-23) * page 2, lines 80-117; claims 1, 4; figures 1, 2 *	1	
A,D	EP 0 416 800 A2 (SHIMA SEIKI MFG [JP]) 13 March 1991 (1991-03-13) * column 4, lines 36-42; figures 1-4 *	3	
			TECHNICAL FIELDS SEARCHED (IPC)
			D04B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 5 August 2011	Examiner Sterle, Dieter
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

 1
EPO FORM 1503 03.82 (P04001)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 11 00 2148

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

05-08-2011

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0972870 A2	19-01-2000	DE 69934172 T2	24-05-2007
		JP 3650268 B2	18-05-2005
		JP 2000034654 A	02-02-2000
		KR 20000011498 A	25-02-2000
		TW 436540 B	28-05-2001
		US 6119487 A	19-09-2000
EP 0675219 A1	04-10-1995	CN 1116667 A	14-02-1996
		DE 69503083 D1	30-07-1998
		DE 69503083 T2	05-11-1998
		ES 2117830 T3	16-08-1998
		US 5537843 A	23-07-1996
GB 1236579 A	23-06-1971	BE 724706 A	02-05-1969
		CH 518389 A	31-01-1972
		DE 1811027 A1	17-07-1969
		ES 360906 A1	01-08-1970
		FR 1593859 A	01-06-1970
		SE 351243 B	20-11-1972
		US 3581325 A	01-06-1971
EP 0416800 A2	13-03-1991	AU 632358 B2	24-12-1992
		AU 6196390 A	14-03-1991
		DE 69019271 D1	14-06-1995
		DE 69019271 T2	09-11-1995
		ES 2071776 T3	01-07-1995
		JP 2020259 C	19-02-1996
		JP 3097945 A	23-04-1991
		JP 7037699 B	26-04-1995
		PL 286795 A1	23-09-1991
		PT 95239 A	22-05-1991
		US 5174134 A	29-12-1992

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 HEI737699 B [0003]
- JP 2995464 B [0020]