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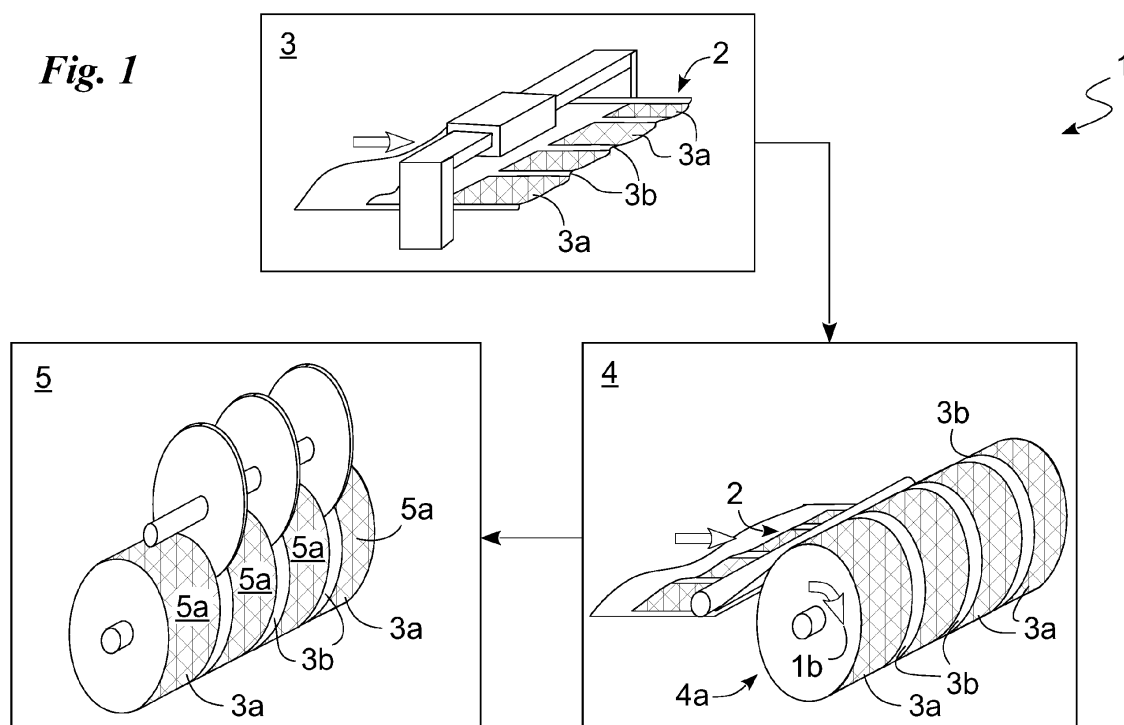
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(54) **Process for making clothes**

(57) A process (1) for making a garment starting from a fabric (2) having a main longitudinal direction of extension (2a) and a transverse direction (2b) perpendicular to the longitudinal direction (2a), said fabric comprising a first elastic thread and a second non-elastic thread, extending substantially together and in the same direction, with a periodicity of two stitches, said procedure comprising: a printing step (3) in which a plurality of print-

ed bands (3a) having placed designs along at least said transverse direction (2b) and having a width, in the transverse direction (3b), proportional to one dimension of the garment, are printed on said fabric (2), a cutting step (5) in which said fabric (2) is cut in correspondence with cutting lines (3c) suitable to reciprocally divide, at least partially, said single printed bands (3a).

**Fig. 1**



## Description

**[0001]** The present invention relates to a process for making clothes of the type as recited in the preamble of Claim 1.

**[0002]** In particular, the invention concerns a particular process suitable for making underwear not in plain colours and, more specifically, characterised by the presence of a printed motif and/or design.

**[0003]** As is known, the manufacture of underwear or other similar garments currently involves the processing of rolls of fabric by performing a specific sequence of operations.

**[0004]** This sequence preferably involves first of all dyeing the fabric to give it a uniform colour.

**[0005]** The fabric is then appropriately printed using specific printing machines.

**[0006]** In particular, there are two kinds of printed designs.

**[0007]** A first type of design is known as "all-over" design. All-over designs consist of a repeated pattern, for instance small motifs, dots, squares, flowers or the like or other patterns the position of which on the finished garment is not relevant. This category also includes uniform colours that are not printed but simply dyed.

**[0008]** A second type of design is known as "placed" designs. Placed designs are designs the position of which on the garment is important, in particular large-scale designs or other motifs.

**[0009]** The dyed fabric thus undergoes a finishing process and is then cut, using cutting dies or other means, according to the shape of the garment to be made. The portion of fabric may then be sewn to obtain the garment.

**[0010]** The prior art described above has several significant drawbacks.

**[0011]** A first important drawback in the prior art processes is that they are lengthy and highly complex and, as a consequence, very expensive.

**[0012]** In particular, owing to the excessive cost of the final printing process, said garments are generally made with all-over designs.

**[0013]** In this situation the technical purpose of the present invention is to develop a process for making clothes able to substantially overcome the inconveniences mentioned above.

**[0014]** Within the sphere of said technical purpose one important aim of the invention is to provide a process for making clothes that is simple and economical even in the presence of placed designs.

**[0015]** A further purpose of the invention is to obtain a process for making clothes that can be used to manufacture low-cost garments.

**[0016]** The technical purpose and specified aims are achieved with a process for making clothes as claimed in the appended Claim 1.

**[0017]** Preferred embodiments are described in the dependent claims.

**[0018]** The characteristics and advantages of the in-

vention are clearly evident from the following detailed description of a preferred embodiment thereof, with reference to the accompanying drawings, in which:

**Fig. 1** is a schematic illustration of the process for making clothes according to the invention; and  
**Fig. 2** illustrates a portion of fabric obtained with the process according to the present invention.

**[0019]** With reference to said drawings, reference numeral **1** globally denotes the process for making clothes according to the invention.

**[0020]** The process is suitable for use to manufacture garments, preferably underwear, in particular bras, underpants and panties, bodysuits, swimwear and the like featuring placed designs. As described above, placed designs are designs for which the position on the finished garment is important, in particular motifs that must be in a fixed position on the surface of the garment.

**[0021]** The production process 1 is performed on a ladder-proof fabric **2** suitable to have raw-cut edges. Ladder-proof refers to a fabric obtained on weaving machines having a loom of the type for ladder-proof working and made up of a first elastic thread, Lycra® for example, and a second non-elastic thread, such as polyamide, which extend substantially together and in the same direction, with an advantageous periodicity of two stitches and forming preferably open loops. In greater detail, the elastic fabric is present in a percentage of between 15% and 45%, and more preferably of between 20% and 41%, while the non-elastic fabric makes up the remainder. Preferably, this material is a Sensitive® fabric, produced by Eurojersey.

**[0022]** The fabric 2 is generally wound in rolls and thus defines a longitudinal direction **2a**, i.e. the main direction of extension, and a transverse direction **2b**, i.e. the width of the fabric corresponding to the height of the roll round which it is wound.

**[0023]** The process 1 preferably comprises, in brief, a dyeing step; a printing step **3** in which the fabric 2 is printed; a finishing step, in which the print is fixed and the fabric 2 washed; a winding step **4** in which the fabric 2, after being printed, is appropriately wound in printed rolls 4a; and a cutting step **5** in which the fabric 2 is cut.

**[0024]** Advantageously, during the printing step 3 a plurality of printed bands **3a** extending mainly in a direction parallel to the longitudinal direction 2a are obtained.

**[0025]** Advantageously, the printed bands 3a have placed designs along at least the transverse direction 2b, meaning motifs the position of which on the finished garment is important at least in the transverse direction 2b, which corresponds to the direction perpendicular to the main direction of extension of the bands 3a, as illustrated in Fig. 2. Preferably along the longitudinal direction 2a the printed bands 3a have designs that are not placed designs. Alternatively the motifs may be placed in both directions.

**[0026]** The printed bands 3a have a width, in the trans-

verse direction 3b, substantially proportional, preferably substantially equal, to a dimension of the garments to be made and, thus, to the size and the type and/or shape of the garment to be made. For example, if the garments to be made are bras or underpants or panties, said printed bands 3a have a width similar or equal to the height of said bras or underpants or panties. In particular the width of each printed band 3a approximates a dimension of the garments to be made with a precision of more than 90%.

[0027] The printed bands 3a may also be of different sizes or have different motifs as required.

[0028] Alongside said printed bands 3a there are preferably one or more dividing borders 3b each of which is arranged between two printed bands 3a and, possibly, two peripheral borders 3d arranged at the ends of the fabric 2, preferably having a width that is half that of the dividing borders 3b.

[0029] In detail, the dividing borders 3b are bands or strips of unprinted, plain fabric or with an all-over design, as described previously.

[0030] Furthermore, the dividing borders 3b have a width perpendicular to the main direction of extension, of less than 10 cm and, preferably equal to 5 cm.

[0031] Once the printing step 3 and said finishing step have been completed, the process 1 consists of a winding step 4 in which the printed fabric 2 is wound, preferably, into a printed roll 4a. The printed roll 4a is preferably covered with a protective film, preferably made of PVC or other similar material.

[0032] The subsequent step in the process 1 is a cutting step 5 in which the fabric 2 is cut at least in correspondence with cutting lines 3c suitable to reciprocally divide, at least partially, the single printed bands 3a. The latter are made along the edges of the printed band 3a, or, if present, along the dividing borders 3b. The cutting step 5 preferably also envisages the cutting of the protective film and of the roll holder, which results in significant advantages in terms of speed of production.

[0033] The cutting step is also made possible by the particular fabric described previously which, due to its intrinsic properties, is not subject to curling along the peripheral portions next to the cutting lines 3c.

[0034] When the cutting step 5 has been performed, pre-finished rolls 5a are obtained, each having a single printed band 3a preferably having a portion of dividing border 3b along each of the lateral edges.

[0035] When the pre-finished rolls 5a have been obtained, the garment is made in a finishing step, in which a portion of fabric 2 from a pre-finished roll 5a and, more precisely, a portion of printed band 3a is cut out, sewn, heat-sealed, glued or subject to other known operations.

[0036] The profile of the finished garment has, as mentioned previously, at least one dimension that is very similar to the width of the printed band 3a from which it was obtained.

[0037] This last finishing step may be performed completely separately from the previous steps, for example by another company, and even several months later. This

is possible, despite the fact that the single rolls 5a are not sewn, heat-sealed or glued along the edges, because the fabric 2 is of the ladder-proof type and suitable to be left with raw-cut edges, as described previously.

[0038] The invention achieves some important advantages.

[0039] A first important advantage lies in the fact that the process 1 is cheaper to implement than the processes known in the prior art.

[0040] In particular, there is no need to align the printed fabric with the cutting die of the garment 1 and no other expensive operations are necessary.

[0041] The use of pre-finished rolls 5a characterised by a single printed band 3a having a placed design and dimensions very similar to one dimension of the finished garment means that the final machining process can be performed quickly and economically and makes it possible to obtain said placed design.

[0042] Said advantage is particularly evident when comparing the process 1 with the prior art processes. With the process 1 the print is always perfectly centred, whereas with the prior art processes lengthy and complex operations have to be performed for each garment in order to align the print with the garment. Moreover, with the process 1 almost all of the fabric is used so that the amount of waste is reduced to a minimum, unlike with the prior art processes involving the use of placed designs.

[0043] Said advantages are further enhanced by the use of the specific fabric 2 which allows the use of raw-cut edges so that, once the rolls have been obtained, there is no deterioration of the fabric 2 or subsequent wasting of material, as mentioned previously.

[0044] Moreover, the use of the specific fabric that is not subject to curling, means that the rolls can be cut without any problem.

[0045] Another important advantage lies in the fact that, owing to the presence of the protective film, the pre-finished rolls 5a can be stored easily without the risk of the fabric 2 deteriorating.

[0046] Modifications and variations may be made to the invention described herein without departing from the scope of the present invention. All the elements as described and claimed herein may be replaced with equivalent elements and the scope of the invention includes all other details, materials, shapes and dimensions.

## Claims

1. A process (1) for making a garment starting from a fabric (2) having a main longitudinal direction of extension (2a) and a transverse direction (2b) perpendicular to the longitudinal direction (2a), said fabric comprising a first elastic thread and a second non-elastic thread, which extend substantially together and in the same direction, with a periodicity of two stitches, said process being characterised in that

it comprises: a printing step (3) in which a plurality of printed bands (3a) having placed designs along at least said transverse direction (2b) are printed on said fabric (2), a cutting step (5) in which said fabric (2) is cut in correspondence with cutting lines (3c) suitable to reciprocally divide, at least partially, said single printed bands (3a), and **in that** said printed bands (3a) have a width, in said transverse direction (3b), proportional to a dimension of said garment.

2. The process (1) as claimed in claim 1, wherein in said printing step (3) said printed bands (3a) have placed designs exclusively along said transverse direction (2b). 5
3. The process (1) as claimed in one or more of the preceding claims, wherein said printed bands (3a) have a width, in said transverse direction (3b), which approximates a dimension of said garment with a precision of more than 90%. 10
4. The process (1) as claimed in the preceding claim, wherein said printed bands (3a) have a width, in said transverse direction (3b), substantially equal to a dimension of said garment. 15
5. The process (1) as claimed in one or more of the preceding claims, wherein in said printing step (3) dividing borders (3b) are printed each of which is arranged between two of said printed bands (3a). 20
6. The process (1) as claimed in claim 5, wherein said cutting lines (3c) are arranged along said dividing borders (3b). 25
7. The process (1) as claimed in one or more of the preceding claims, wherein in said cutting step (5) said fabric (2) is cut to obtain portions of fabric (2) including a single one of said printed bands (3a). 30
8. The process (1) as claimed in one or more of the preceding claims, comprising a winding step (4) in which said fabric (2) is wound to obtain at least one printed roll (4a), said winding step (4) being performed after said printing step (3) and before said cutting step (5). 35
9. The process (1) as claimed in the preceding claim, wherein in said winding step (4) said printed roll (4a) is preferably covered with a protective film, and wherein in said cutting step (5) said protective film is also cut. 40
10. The process (1) as claimed in one or more of the preceding claims, wherein said printed roll (4a) is wound on a roll holder, and wherein in said cutting step (5) said roll holder is also cut. 45

11. The process (1) as claimed in one or more of the preceding claims, suitable to make underwear garments.

5 12. The process (1) as claimed in one or more of the preceding claims, suitable to make swimwear.

13. The process (1) as claimed in one or more of the preceding claims, wherein said threads of said fabric preferably form open loops. 10

14. The process (1) as claimed in one or more of the preceding claims, wherein said elastic thread is present in a percentage substantially comprised between 15% and 45% and wherein said non-elastic thread makes up the remainder. 15

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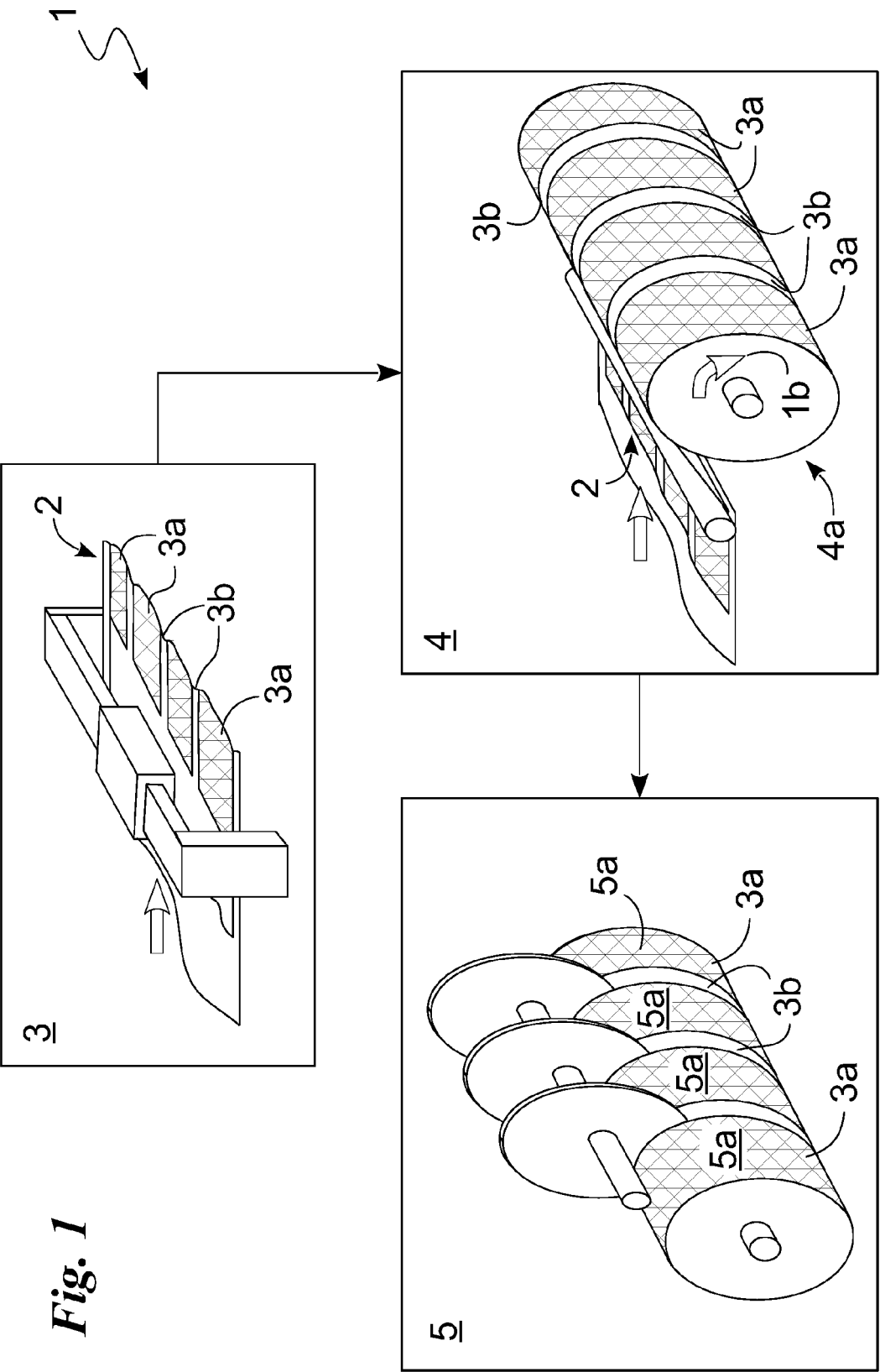
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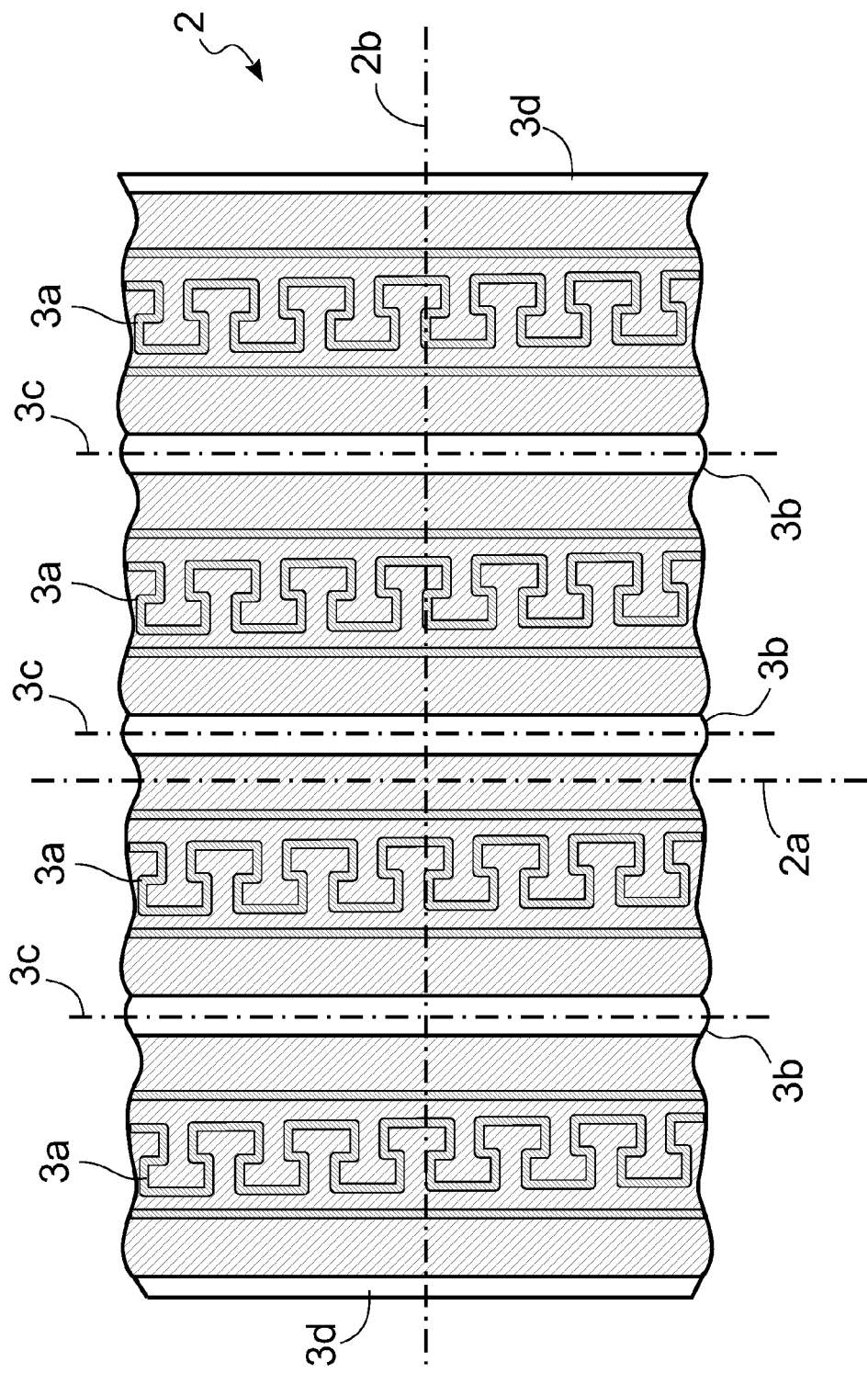


Fig. 2



## EUROPEAN SEARCH REPORT

Application Number  
EP 12 19 1526

| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                   |                                                   |                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-----------------------------------------|
| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Citation of document with indication, where appropriate, of relevant passages                                                                                                                     | Relevant to claim                                 | CLASSIFICATION OF THE APPLICATION (IPC) |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | JP 2007 182638 A (SEIREN CO LTD)<br>19 July 2007 (2007-07-19)<br>* paragraph [0025] - paragraph [0032];<br>figure 1 *<br>* paragraph [0013] - paragraph [0022] *<br>* paragraph [0059] *<br>----- | 1-14                                              | INV.<br>A41H3/08<br>A41H42/00           |
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| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | * column 3, line 30 - column 5, line 16;<br>figures 2,3A, *                                                                                                                                       | 8-14                                              |                                         |
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| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                   |                                                   |                                         |
| Place of search<br>The Hague                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                   | Date of completion of the search<br>12 March 2013 | Examiner<br>Simpson, Estelle            |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document<br>T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding document |                                                                                                                                                                                                   |                                                   |                                         |

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EPO FORM 1503 03 82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
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EP 12 19 1526

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
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12-03-2013

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