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(54) **Rolls of tape and method for forming such rolls**

(57) The invention relates to a method for forming a roll (2) of tape, wherein an amount to be wound is predetermined and is wound into a roll (2), wherein the predetermined amount is defined by square meters and to a method of distributing tape, wherein tape is wound into rolls (2) defined by a predetermined number of square meters, such that each roll (2) comprises the same amount of tape. Furthermore a series of rolls (2) of similar or identical tape is disclosed, all comprising the same amount of tape but some having different widths.

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Description

[0001] The invention relates to tape. The invention more specifically relates to a series of tape, wound on cores or without a core.

[0002] Tape is conventionally wound on a core or coreless, in multiple layers. A predetermined length of tape is wound to form a roll. The length may depend on the width of the tape. A series of rolls of tape can be provided, comprising the same length of tape but having different widths. A user can choose a roll having the right width and will get the predetermined length of tape.

[0003] With wider tape it may normally be desirable to get less length than when a narrower tape is used. However, in existing roll the length of tape is equal in the whole set of rolls having the same tape. Another disadvantage is that the length of tape may be difficult to check, especially when the width is not correct on the roll.

[0004] US3944150 described an apparatus and methods for forming individual rolls of paper, slit from a wider sheet of paper. In this description individual rolls are formed from a master roll, all rolls having the same width and length of paper wound onto it.

[0005] WO99/25632 discloses another traditional way of offering rolls of tape to customers, wherein different rolls of tape are cut from one larger master roll, in different widths. In this document it is described to wind a wide sheet of tape onto a core, forming a master roll having a long core length and thus a wide master roll width. Then said master roll is cut transverse to the core length, dividing the master roll into a number of rolls of tape, each having an individual core length smaller than that of the master roll's core. The core lengths of the individual rolls of tape are chosen differently, resulting in rolls of tape having all the same length of tape wound onto the individual cores, but different widths and thus necessarily different square meters of tape wound on the said individual cores. In this known method the length of tape is decisive in the amount of tape wound onto the master tape and thus for the tape provided on the individual rolls. EP1849729 and JP2006136499 describe similar systems for winding tissue paper, forming different rolls having the same length of tissue paper wound, but with different widths.

[0006] US3391876 discloses an apparatus for winding or unwinding rolls of paper, wherein differential means are provided to enable individual rotation of individual roll to be wound or unwound.

[0007] One aim of the present disclosure is to provide rolls of tape having tape wound based on a predetermined amount other than length. Another aim of the present invention is to provide an alternative method for winding tape, especially adhesive tape.

[0008] In a first aspect the present invention can be defined by a method for forming a roll of tape, wherein an amount to be wound is predetermined and is wound into a roll. The predetermined amount is defined by square meters.

[0009] In a second aspect the present invention can be defined by a method for forming a series of rolls of tape, wherein a series of rolls is formed by winding similar or identical tape into rolls. A number of the rolls have different widths of tape and all of the rolls are wound of the same number of square meters.

[0010] In a third aspect the present invention can be defined by a series of rolls of tape, wherein each of the rolls comprises the same number of square meters of tape. At least two of the rolls in the series of roll can have different widths.

[0011] In a fourth aspect the present invention can be defined by a series of rolls of tape, wherein each of the rolls comprise a predetermined number of square meters of tape. At least two of the rolls in the series of roll can have different widths. For each roll the predetermined number of square meters can be defined by N multiplied by S, wherein N is an integer and S is chosen from 0.25, 0.33, 0.5 and 1.

[0012] In the present invention rolls of tape can be formed by individually rolling these rolls. In another embodiment the rolls can be formed by slitting master rolls of tapes into a number of individual rolls of tape, wherein the same tape is wound on different master rolls, to different lengths, such that when individual rolls are formed from the master rolls, all individual rolls formed have the same amount of tape wound, with respect to the square meters of tape. In a further embodiment a number of individual rolls of tape can be wound from a master tape, in which for each individual roll the amount of tape wound is defined on the bases of its width, such that for all rolls formed by the rewinding process the square meters wound is the same, irrespective of the widths of the individual rolls. In all embodiments the tape can be the same for all rolls.

[0013] The invention shall be further elucidated in the following description, with reference to the drawings. Therein shows:

Fig. 1 a roll of tape;
Fig. 2 an alternative roll of tape;
Fig. 3 a series of rolls of tape;
Fig. 4 three master rolls of tape and cutting outlines for such rolls;
Fig. 5 in plan view an alternative arrangement for winding rolls of tape, from a master roll.

[0014] In this description embodiments of the invention or parts thereof will be described, with reference to the drawings, which embodiments are in no way to be understood as limiting the scope of protection sought. The same or similar parts in the different embodiments have the same or similar reference signs. Combinations of embodiments or parts thereof are also considered to have been disclosed herein. In this description the width of a roll is to be understood, unless specifically stated differently, as the dimension measured in a length direction of a core and/or a dimension perpendicular to a length

direction of a strip or sheet of tape and perpendicular to a diameter direction of the roll. The length direction of a strip or sheet of tape is to be considered, unless specifically stated differently, measured in a direction of winding or unwinding of a roll.

[0015] In a method for forming a roll of tape, an amount to be wound can be predetermined and be wound into a roll. The predetermined amount can be defined by square meters to be wound into a roll, for forming rolls of tape. Square meters are defined by the length of a strip or band of tape multiplied by the width of the strip or band of tape to be wound, both measured in meters. With a method of the present invention a series of rolls of the same tape can be formed, each of the rolls in the series having the same amount of tape, measured in square meters. This means that they can be uniformly priced, and that for a user it is directly clear how much tape he is purchasing. Surprisingly it has been found that for many users the length of tape to be used is directly correlated to the width of the tape, in that larger widths are often used in less length than tape with a smaller width. The present invention accommodates this. In this description the same tape is to be understood as meaning that the tape has substantially the same material properties, including at least type and material of the backing and type of adhesive, as well as substantially the same weight per unit of surface area, i.e. per square meter. Preferably rolls in a series of rolls having the same square meterage are formed from tape made in the same batch and/or on the same appliance at the same time or consecutively without altering the settings of said appliance.

[0016] In the present invention series of rolls of tape can be formed, whereby the amount of tape to be wound on each of the rolls is predetermined in the based of square meters of tape on the actual rolls in stead of the length of the strip of tape on each role. The square meterage for the rolls can be defined first, which can then be divided by the actual widths of the different rolls, resulting in the different winding lengths for each of the individual rolls.

[0017] In fig. 1 a roll 1 is shown, comprising a length L of tape 2, wound into a roll 1 without a core. The layers 2A of tape 2 are schematically indicated by the curved lines 2B. The tape 2 has a width W considerably smaller than the length L. The roll 1 has an inner diameter D_i and an outer diameter D_o. The total amount of tape 2 wound into said roll 1 is defined by L multiplied by W, resulting in a number N of square meters. In the production of the roll the number N can be a predetermined number. The tape 2 preferably is adhesive tape, such as self adhesive tape. The adhesive layer 3 of the tape 2 is preferably facing inward, that is to the centre C of the roll 1.

[0018] In fig. 2 a roll 1 is shown, formed of a length L of tape 2 wound into the roll 1. In this embodiment the tape 2 is wound on a core 4. The roll 1 can be made prior to winding the tape 2. In another embodiment tape can be wound on a core 4 having a width W_{max} significantly larger than the width W of the roll 1. After winding the tape 2 onto the wide core 4, the then formed wide roll 2_{max} can be cut into rolls 2 having the width W.

[0019] In fig. 3 a series 5 of rolls 1 of tape 2 is shown, which rolls 1 can be made according to an embodiment of fig. 1 or 2. The rolls 1 in the series 5 or at least a number of the rolls 1 in the series 5 can have been wound from the same type of tape 2, such as the same adhesive tape. Different rolls 1 in the series 5 can have different widths W, in this example e.g. $W_{1\text{-}5}$. Each of the rolls 1 in the series or at least said number of rolls 1 in said series 5 can have the same number N of square meters of tape 2 wound into said rolls 1, different rolls 1 having tape 2 of different widths W. All of the rolls 1 in the series 5 can, if they have the same square metrage of the same tape 2, can be sold for the same price.

[0020] Rolls 1 having different widths W can be weighed in a very easy manner and be compared if they have the same metrage of tape 2, since they will weigh the same, especially if they are wound coreless. If they are wound on cores having the same weight again they can easily be weighed and compared to each other. In another aspect the winding of the tape can be performed on the bases of weight wound, because on each roll 1 the same amount of tape is wound, independent of the width of the roll 1 to be formed. Moreover width differences can be compensated by length differences, in order to ensure that the same amount of tape 2 is sold with each roll 1.

[0021] In an embodiment of the invention a series 5 can comprise rolls 1 having different widths or rolls comprising tape 2 having different widths W, wherein for each roll the number N of square meters to be wound into said rolls 1 is predetermined and complies with the formula M*S, wherein M is an integer and S is chosen from 0.25, 0.33, 0.5 and 1. This means that either the rolls 1 have the same amount of tape 2 or a predetermined series of different number of square meters.

[0022] A method or series of rolls 1 of the invention can be used for selling tape at a unit price, independent of the width of the rolls 1 of tape, since all rolls 1 will comprise the same amount of tape 2. In another embodiment only a limited number of prices shall be used for rolls in the series, since they will comprise each a number of square meters of tape, chosen form a limited number of numbers, e.g. 1, 2 or 3 square meters or 1*X, 2*X or 3*X square meters, wherein X is chosen freely but identical for all rolls 1. X can form example be an integer or a fracture.

[0023] In fig. 3 by way of example only lengths L and widths W of the tape on the rolls 1 in the series 5 have been indicated. Each troll has a number N of square meters which is either 1 or 0.5. Some rolls 1 are combined into one set each having a number N of 0.5, resulting again in a set having one square meter of tape.

[0024] In fig. 4 a set of three master rolls 10 of tape 2 is shown, each of the master rolls 10 having been wound with or from the same tape 2. The same tape 2 has to be understood as that at least the quality, thickness, glue or

adhesive and materials are the same. Preferable the master rolls are provided with identical tape, wound from the same batch of tape or the same tape making equipment. These master rolls 10 in this embodiment differ from each other in diameter Do, not in type of tape 2 provided on them. In fig 4 three master rolls 10 are shown, having the same length W_0 of core, the same tape 2, the same core 4 but different diameters D1, D2 and D3. Moreover the cutting plan P for these three master rolls is different too. In fig. 4 the cutting plan is indicated by lines P_C. As can be seen from these cutting plans P the first master roll 10A shall be cut in eight identical rolls 1A, the second master roll 10B shall be cut in six identical rolls 1B and the third master roll 10C shall be cut into four identical rolls 1C. The widths W_A, W_B and W_C of these rolls 1A, 1B and 1C shall therefore be $W_0/8$, $W_0/6$ and $W_0/4$ respectively. Which means they relate as 3:4:6. The lengths L1, L2, L3 of tape 2 wound on these rolls 1A, B, C relate to each other as 4:3:2, resulting in individual rolls 1A, B, C from all master rolls 10A, B, C having the same square meterage of tape wound on them. Obviously when cutting a master roll 10 in a different number of identical rolls 2, the length L of tape wound has to be amended accordingly, in order to result in the same number of square meters of tape 2 on the roll 1.

[0025] In fig. 5 an embodiment is shown in which a master roll 10 is provided, having a sheet of tape 2 wound on a core 4' it having a width W_0. This master roll 10 can be formed directly from an apparatus for forming the tape 2, especially after applying adhesive to at least one side of the tape 2, or can be formed from a larger roll or batch of such tape. In this embodiment the master roll 10 is unwound, the tape being cut into stripes or bands 11 of different widths W_{A-D}, which strips or bands 11 are wound onto separate cores 4 for forming rolls 1 of tape 2. For each roll 1 the length L of the strip or band 11 of tape 2 is defined by the relevant width W of the band or strip 11, such that on each of the roles 1 the same amount of square meters of tape 2 is wound (L_x*W_x=C, wherein L_x and W_x are the relevant length and width for a strip 11, and C is a constant for the series of rolls 1 formed). After the required length of tape 2 is wound onto a core 4, the formed roll 1 is removed and replaced by a next empty core, for forming a next role. Alternatively for each width of band or strip 11 of tape 2 to be wound a separate master role 10 can be provided, as schematically shown in fig. 5 by the dotted lines 12. These master roles 10 can have the same diameters or different diameters D, e.g. depending on the width W of the rolls 1 to be formed from them and/or the number of rolls to be formed from them after each other and/or next to each other. Such alternative has the advantage that the exchange of rolls and master rolls can be done separately for all sizes of rolls, without having to stop winding of rolls of other widths. Moreover, the size of the master rolls can easily be adapted for the specific rolls to be formed there from.

[0026] The present invention is by no means limited to the embodiments disclosed and described herein. Various amendments are possible within the scope of the claims, which are also considered to have been disclosed herein. Although adhesive tape has been described, other types of tape could be used in the same manner. Cores having different diameters can be used, for example providing rolls having the same outer diameter Do, still having the same amount of tape 2. Other means for forming master rolls and/or the actual rolls of tape can also be used. These will be directly clear to a person skilled in the art.

Claims

1. Method for forming a roll of tape, wherein an amount to be wound is predetermined and is wound into a roll, wherein the predetermined amount is defined by square meters.

2. Method according to claim 1, wherein a number of square meters is predetermined and cut from a larger roll or sheet in a predetermined width and wound into a roll.

3. Method for forming a series of rolls of tape, preferably using a method according to claim 1 or 2, wherein a series of rolls is formed by winding similar or identical tape into rolls, a number of the rolls having different widths of tape and all of the rolls are wound of the same number of square meters.

4. Method for forming a series of rolls of tape according to any one of claims 1-3, wherein a sheet of tape having a relatively large width is wound into a roll, where after said roll is cut into a series of rolls having the same widths, smaller than the width of the relatively wider roll.

5. Method for forming a series of rolls of tape, said tape being wound on one or more cores.

6. Series of rolls of tape, wherein each of the rolls comprise the same number of square meters of tape and wherein at least two of the rolls in the series of roll have different widths.

7. Series of rolls of tape, wherein each of the rolls comprise a predetermined number of square meters of tape and wherein at least two of the rolls in the series of roll have different widths, wherein for each roll the predetermined number of square meters is defined by M multiplied by S, wherein M is an integer and S is chosen from 0.25, 0.33, 0.5 and 1.

8. Method of distributing tape, wherein tape is wound into rolls defined by a predetermined number of square meters, such that each roll comprises the same amount of tape and are sold at the same price.

9. Method according to claim 4, wherein a series of said sheet is rolled into a master roll, wherein a number of master rolls is formed from said sheet or sheets of substantially identical tape, where after the different master rolls are cut into rolls of tape, all rolls formed from one master batch having the same width, different from rolls cut from at least one of the other master rolls, wherein all of the rolls cut from the master rolls comprise the same square meters of tape.

10. Method according to any one of claims 1 - 5 or 9, wherein sheets of tape are wound into master rolls, where after tape from the master rolls is unwound, cut and rewound into rolls having all the same square meters of tape, at least a number of the rolls having different widths.

11. Method according to any one of claims 1 - 5, 9 or 10, wherein all rolls formed in a series are formed from substantially the same tape.

12. Series of rolls according to any one of claims 6 or 7, or in a method of claim 8, wherein the rolls in a series comprise substantially the same tape.

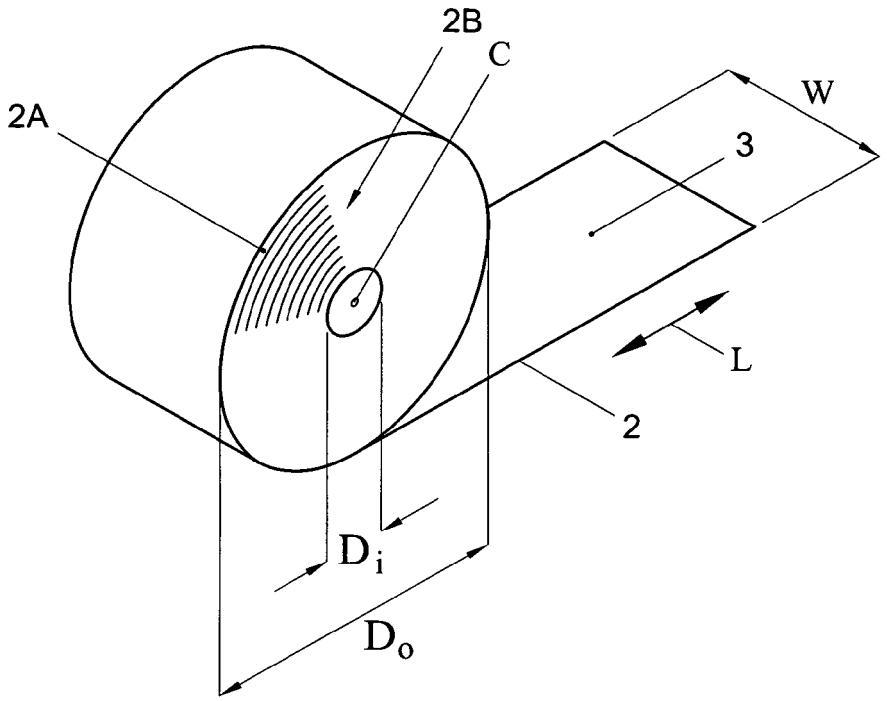

Fig. 1

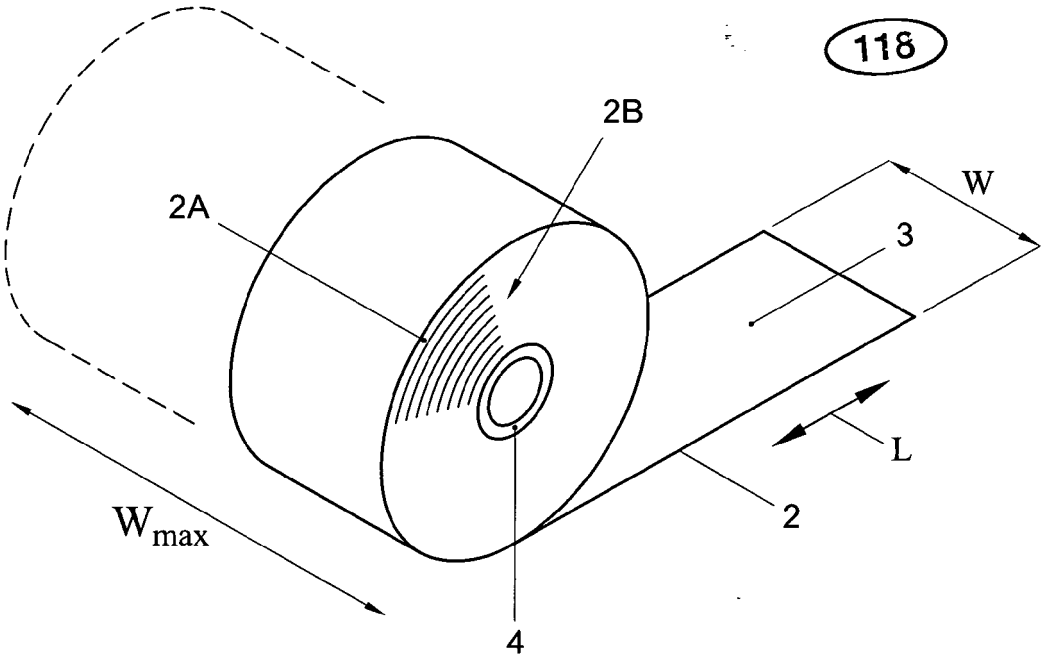

Fig. 2

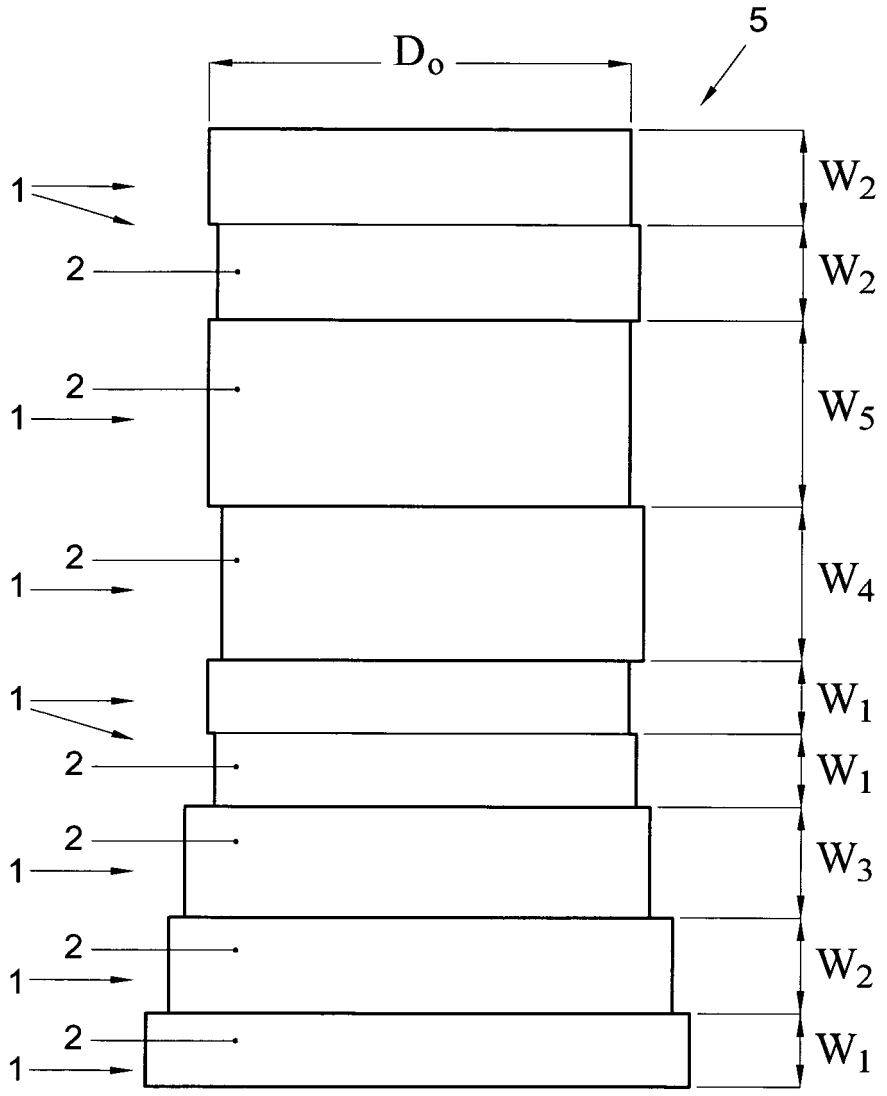

Fig. 3

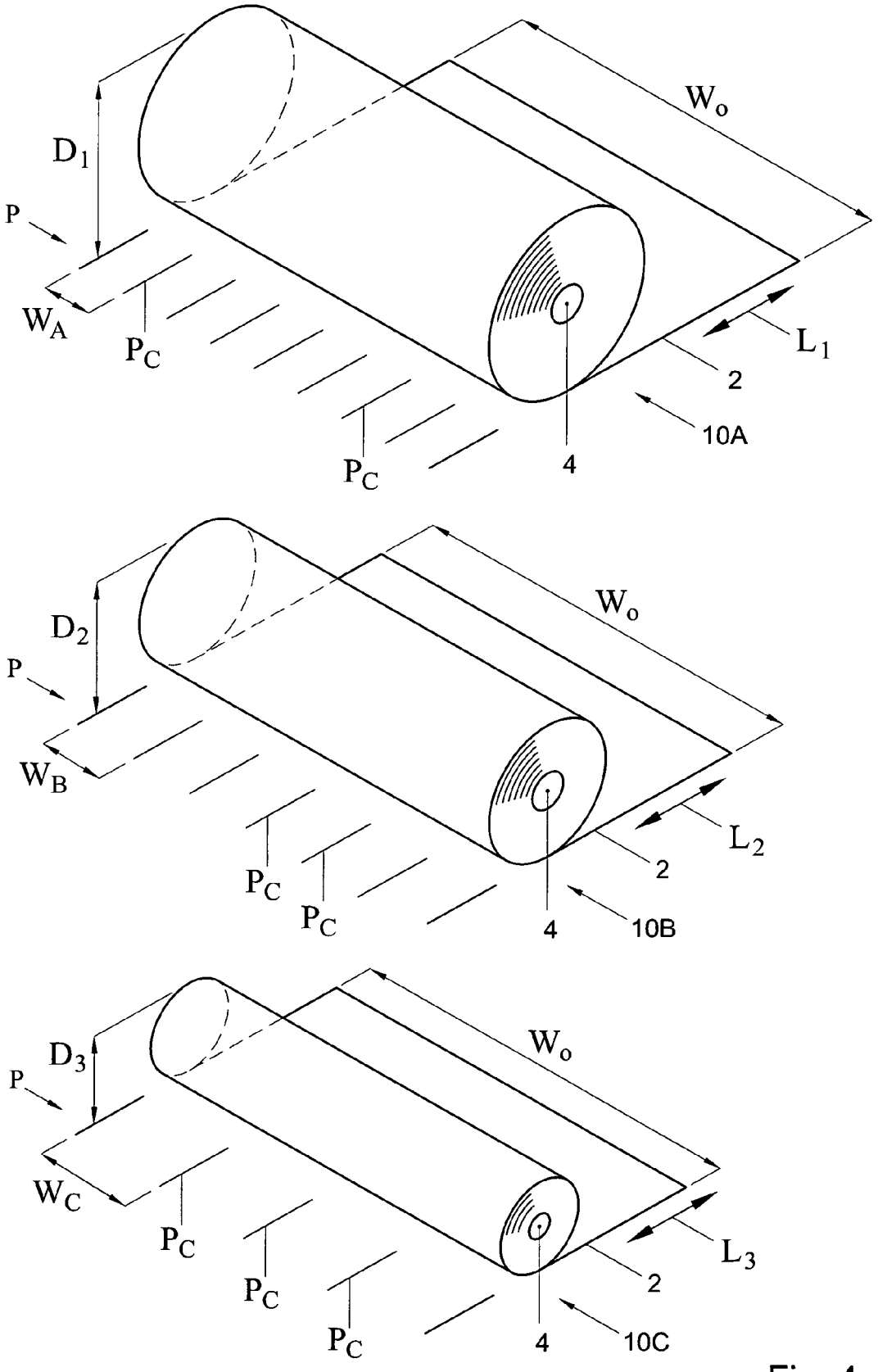
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Fig. 4

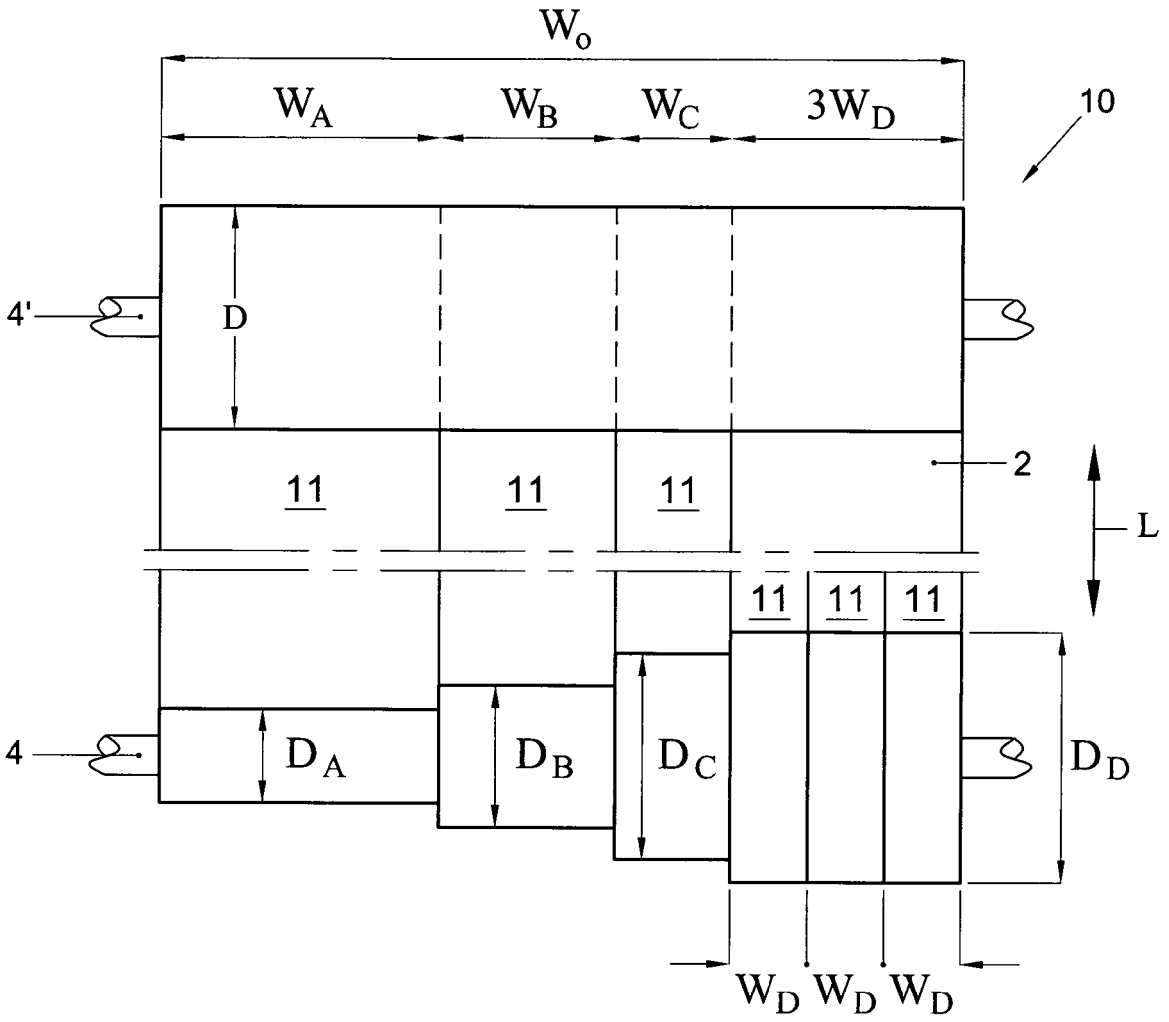

Fig. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 10 15 7238

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	9 July 2010	Haaken, Willy

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 10 15 7238

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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