

(19)



(11)

EP 2 168 463 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

31.03.2010 Bulletin 2010/13

(51) Int Cl.:

A47G 25/90 (2006.01)

(21) Application number: **09171566.4**

(22) Date of filing: **29.09.2009**

(84) Designated Contracting States:

**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 SE SI SK SM TR**

Designated Extension States:

AL BA RS

(30) Priority: **29.09.2008 NL 1035996**

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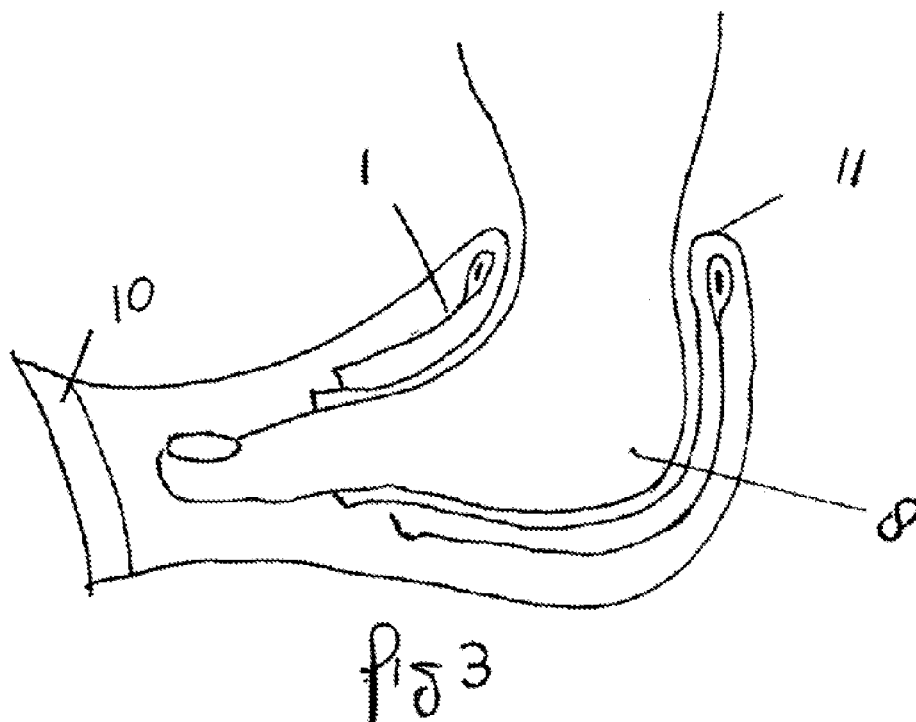
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(54) **Means for taking off elastic stockings**

(57) The invention relates to a method and means for taking off therapeutic elastic stockings and is designed to be used by the wearer of these stockings and/or persons which help these wearers. The means consists

of a sleeve of supple and smooth material which by a permanent mounted elastic strap is temporarily fixated onto the ankle.

The means is simple, has minimum dimensions and is because of that cheap.



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Description

[0001] The invention relates to a means for taking off elastic stockings, in particular therapeutic elastic stockings (also called support stockings). In the first place the invention is designed for people who have little strength to take off the support stocking by themselves. Besides the invention can be used by anyone else to be able to take off a stocking with more convenience and less effort. Also the service life of the stocking is increased.

[0002] It is generally known that taking off stockings requires a substantial effort. During the years many implements and means were designed to make the taking off easier.

[0003] As an example, US-A-5,924,609 discloses that a muff/sack of smooth material is pulled over the stocking and the stocking is folded over this muff/sack. According to this proposal the smooth material however remains insufficient below the folded over stocking and because of that a good eye-hand coordination and fine locomotion are required to use this means.

[0004] Since several years the easy-off is available on the market, a means also relating to a muff/sack of smooth material which is pulled over the stocking and which is temporarily fixated above the ankle by means of a rigid strap or tension strip which by means of Velcro is tightened around the leg into a closed loop. As soon as the stocking is suspended at the ankle, this strap must be removed by pulling loose of the Velcro, to be able to further take off the stocking.

[0005] Also recently a product came onto the market comparable to the easy-off wherein the said strap is made of elastic stretching material while it is not required to untie it during taking off of the stocking.

[0006] According to US2007119882 use is made of an elastic yielding strap for fixation at the calf. This patent document only generally addresses the dimensions of the means.

[0007] Also DE29921662U1 and DE9401036U1 disclose for this subject relevant prior art.

[0008] All above cited inventions make use of the principle that it takes less effort to move two bodies across each other if the friction resistance between these bodies is lowered. Apart from that there are means for taking off stockings with which external force is applied, see e.g. NL 1014263 and NL 9300731, wherein the stocking is heavily loaded mechanically such that the chance for damaging and/or early compression loss is big. This invention is not directed to this type of means.

[0009] This invention is made to remove the disadvantages of the known means. The object of the invention is versatile. The invention is, according to one aspect, based on the recognition that for proper functioning the correct ratio between the general size of the means, the size of the elastic strap and the stiffness of the strap is probably essential.

[0010] The inventor has determined the following shortcomings of the prior art: In US2007119882 no men-

tion is made about the dimensions relating to the strap. When taking off the stocking it is difficult to untie the strap at the right moment. When the strap is too tightly tightened, the muff/sack does not function. When the strap is too weakly tightened, the muff/sack does not remain below the folded over stocking. To put on and tighten the strap a proper eye-hand coordination is required, plus the understanding to remove the strap at the right time. With many elderly which are in particular the users of elastic stockings, the fine eye-hand coordination is absent and also the understanding to carry out several operations in the correct order.

[0011] The invention is as disclosed in the attached claims.

[0012] The invention will be further described by way of an in the drawing illustrated example.

Fig. 1 shows the means in a perspective view and in sectional view according to line II-II.

Fig. 2 shows the means in the ready for use state, slid across a stocking around a foot, in side view.

Fig. 3 shows the means around a foot at the time the stocking is almost taken off, in a sectional side view.

[0013] The means 1 (viz. fig. 1) has the shape of a supple, possibly cylindrical tube, sleeve, sheath, sack or muff 2, open at the lower 3 and upper side 4. The sleeve 2 can also have the shape of a truncated cone, to save material. The lower side 3 could possibly be closed.

[0014] The sleeve 2 is made of a supple pliable and preferably not yielding and stretch free material with a low coefficient of friction, such as e.g. rayon (artificial silk), silk, spinnaker cloth, a nylon cloth with Teflon coating or a cloth of the company Eriks with the name Chem-glass PTFE glass fabric 100-3, or another preferably textile or cloth like material.

[0015] At the top 4 of the sleeve 2 and fixed thereto there is an around the sleeve extending border or tunnel 5 which forms a passage. The border 5 is of the same material as the sleeve 2 and is an integral part of the sleeve 2.

[0016] The border 5 provides a channel containing an elastic yielding loop, ring or wire 6 of which the circumference measures between approximately 45 and 55% of the circumference of the sleeve 2 at the level of the top side 4 (differently spoken the length of the border 5). The circumference of the loop 6 can not be changed other than by stretching of its material. The loop 6 has a yield of at least 100% and a stiffness of approximately 1, 6 N/m and can freely move within the border 5. The cross section of the wire of the loop 6 has a diameter of approximately 2 millimetres.

[0017] The sleeve 2 preferably has a length of 20 centimetres and the top side 4 a circumference of 44 centimetres.

[0018] As an alternative the loop 6 can be fixed within the border 5, e.g. by stitches. It is preferred that the loop 6 can not or hardly displace in the direction parallel to

the direction from the lower side 3 towards the top side 4 of the sleeve. For a proper functioning it is preferred that the loop 6 is completely surrounded by the material of the sleeve and/or the loop 6 is evenly along its length connected to the sleeve 2, e.g. with spacing along its length.

[0019] To pull off the stocking 10, the procedure is as follows (viz. fig. 2). First the sleeve 2 with the border 5 at the top is pulled over the foot 7 and heel 8 such that the border 5 is present at the thinnest part of the ankle 9. Subsequently the stocking 10 is held at the top and in a single layer folded over the heel 8, such that the in fig. 3 illustrated situation is obtained.

[0020] Due to the correct ratio between the diameter of the sleeve 2, the diameter of the loop 6 and the correct stiffness of the loop 6, the means stays suspended from the ankle while the stocking 10 slides with little effort across the sleeve 2. From the time that the folded part 11 of the stocking 10 arrives at the border 5, the stocking will take the means 1 with it. Since the loop 6 can sufficiently yield elastically, the means 1 will follow across the ankle with only a small additional effort and will not obstruct the stocking during unrolling across ankle 9, heel 8 and foot 7.

[0021] For a proper functioning it is required that the means 1 is available in several sizes. The variation is determined by the diameter of the sleeve 2 with the corresponding diameter of the loop 6. The ratio between heel-instep size (cY) and the ankle (cB) is critical. With two or three diameters the biggest part of the users can be supplied.

[0022] The Total length of the sleeve 2 is such that the part between the thinnest part of the ankle 9 and at least the mid of the foot 7 is covered by the means. In most cases 20 centimetres suffices.

[0023] Also different embodiments of the invention are feasible, such as an embodiment wherein the loop is not inside a border but in maximum stretched state circular or partly circular stitched or differently mounted to the end of the sleeve, such that the border 5 can be absent. The border 5 can also be located remote from the ends of the sleeve 2, e.g. midway the length of the sleeve 2 such that during taking off the stocking from the time the stocking takes the means with it the effort becomes even lower since in this state even two smooth parts of the slang 2 slide across each other.

[0024] The invention is not limited in use in different situations or application. All described or in the drawing illustrated measurements determine as such or in arbitrary combination the subject matter of the invention, also independent from their combination in the claims or their references.

Claims

1. A method for taking off support stockings wherein a means is used which is temporary fixated at the level

of the ankle by means of an elastic belt which is mounted within or at the means.

2. A means for taking off support stockings comprising a circular tube or sleeve (2) open at the lower (3) and/or top side (4) and preferably wherein at the top side there is a circular tunnel of border (5) providing a free passage and being an integral part with the cylindrical tube.
3. A means according to claim 2, wherein the tunnel contains an elastic belt or wire (6) which can move freely within the tunnel and has a circumference between 45 and 55 % of the circumference of the cylindrical tube.
4. A means according to any of claims 2-3 wherein it has an elastic belt or wire (6) with a yield of more than 100% and a stiffness of approximately 1,6 N/m
5. A means according to any of claims 2-4 wherein the cylinder (2) is made of a supple, thin, non elastic material with a coefficient of friction which is as low as possible between the material of the cylinder and the material of the stocking.
6. A means according to any of claims 2-5, wherein it comprises one or more of the following measurements:

- de wire (6) is permanently mounted to the see (2);
- de wire is completely surrounded by the sleeve.
- de wire (6) is part of or makes a closed loop of fixed dimension, apart from elastic yield;
- at the location where the loop is present at the sleeve, the wire or loop has a circumference with a dimension at least 10% smaller than the circumference of the sleeve, preferably between approximately 40 and 60%, more preferably between approximately 45 and 55% of the circumference of the sleeve (2) ;
- the wire or loop has an elastic yield of at least 50% or 100% or 125% or 150%
- the wire or loop has a stiffness of 5 N/m at the most, such as between 1 and 2 N/m, e.g. approximately 1,6 N/m;
- the cross section of the wire of the loop (6) has a diameter of 5 or 10 millimetres at the most, e.g. approximately 2 millimetres;
- the wire is located within a border or channel at the sleeve;
- the wire is evenly along its length mounted to the sleeve;
- if the sleeve is slid across the foot ready for use, the wire is stretched around the ankle of the foot;
- the sleeve (2) has, measured from an end to

the wire, a length between 10 and 30 centimetres, e.g. approximately 20 centimetres;
- the sleeve (2) has at the location where the loop is present at the sleeve a circumference between 40 and 50 centimetres, e.g. approximately 44 centimetres.

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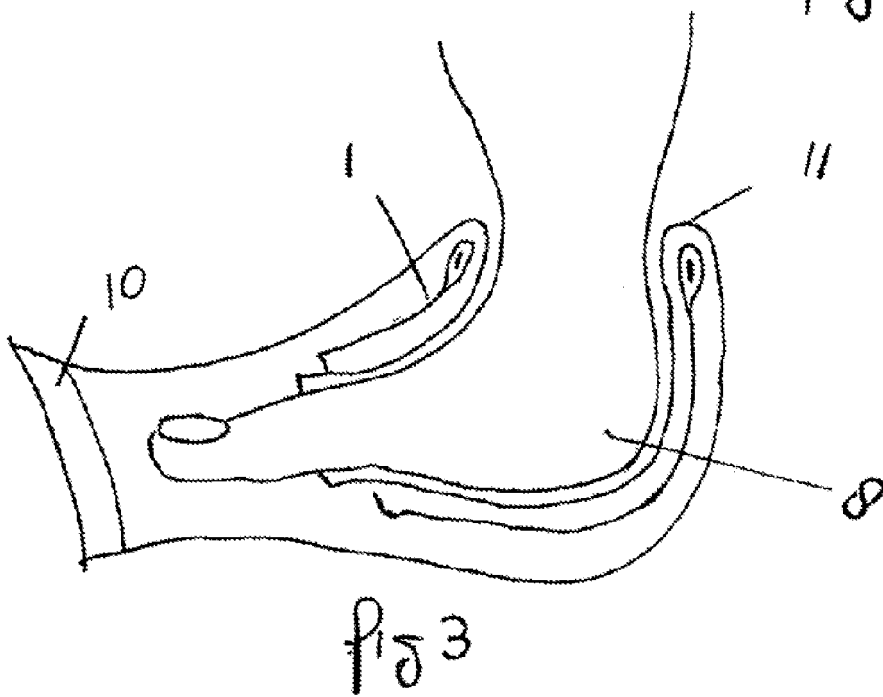
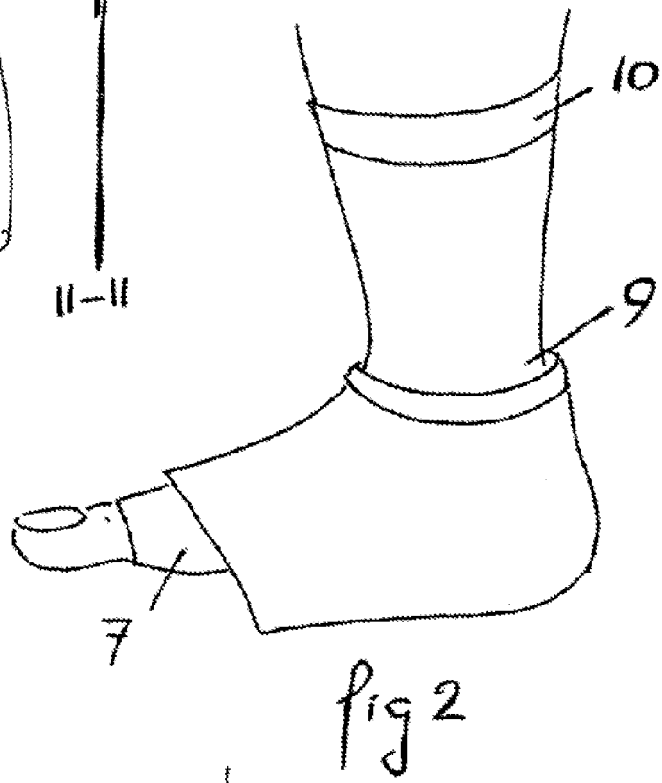
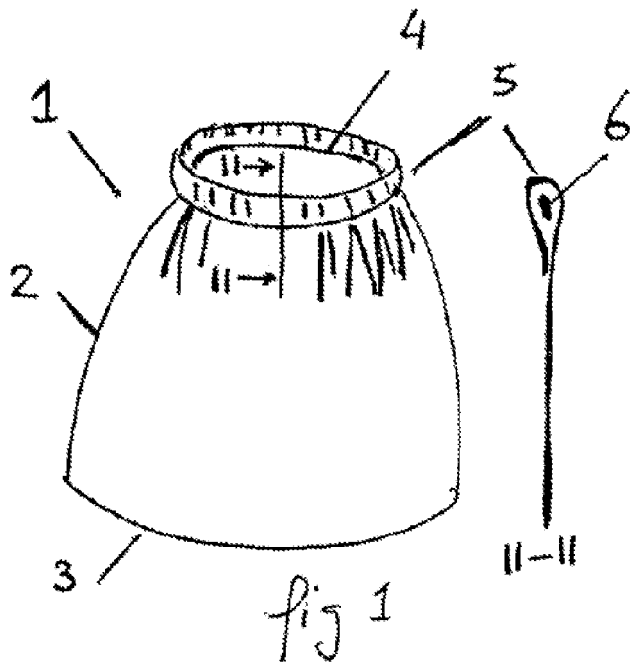
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EUROPEAN SEARCH REPORT

Application Number
EP 09 17 1566

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2007/119882 A1 (SCOTT) 31 May 2007 (2007-05-31) * paragraph [0043]; figures 1,2,14-16 * -----	1-6	INV. A47G25/90
X	DE 299 21 662 U1 (ROTH) 2 March 2000 (2000-03-02) * the whole document * -----	1-2,5-6	
X	DE 94 01 036 U1 (HEYMANN) 24 May 1995 (1995-05-24) * page 3, line 5 - line 9; figures * -----	1-2,5-6	
			TECHNICAL FIELDS SEARCHED (IPC)
			A47G
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 16 November 2009	Examiner Beugeling, Leo
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	

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EPO FORM 1503 03.92 (P04C01)

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

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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
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16-11-2009

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007119882 A1	31-05-2007	NONE	
DE 29921662 U1	02-03-2000	NONE	
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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.

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