

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
4 May 2006 (04.05.2006)

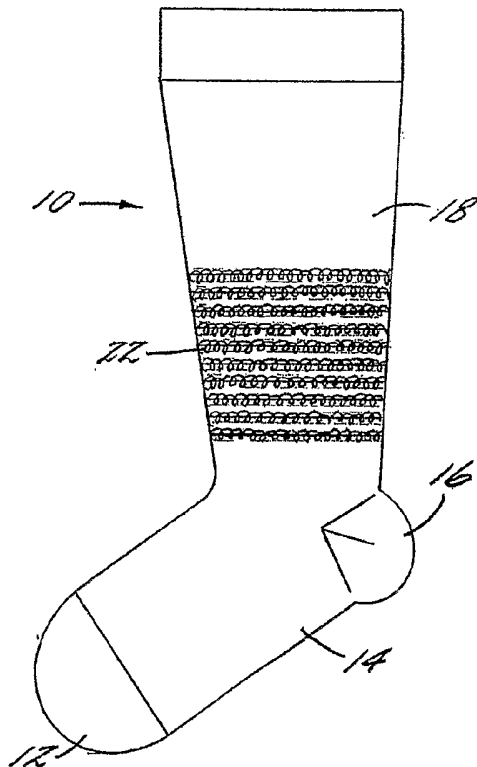
PCT

(10) International Publication Number
WO 2006/047153 A1

- (51) **International Patent Classification:**
A61F 13/08 (2006.01) *D04B 9/52* (2006.01)
D04B 9/46 (2006.01) *D04B 1/26* (2006.01)
- (21) **International Application Number:**
PCT/US2005/037476
- (22) **International Filing Date:** 18 October 2005 (18.10.2005)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
10/973,532 26 October 2004 (26.10.2004) US
- (71) **Applicant (for all designated States except US):**
BSN-JOBST, INC. [US/US]; 5825 Carnegie Boulevard, Charlotte, NC 28209-4633 (US).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** **YAKOPSON, Simon, Myron** [US/US]; 710 36th Avenue, NE, Hickory, NC 28601 (US). **LOVELESS, John, David** [US/US]; 1251 9th Street, N.W., Hickory, NC 28601 (US). **BO-DENSCHATZ, Stefan** [DE/DE]; Beerenbarg 6, 21614 Buxtehude (DE). **GREVE, Juergen, Friederich, Heinz** [DE/DE]; s-Heerenbergerstrasse 101, 46446 Emmerich (DE).
- (74) **Agents:** **LIPSCOMB, Ernest, B., III** et al.; Alston & Bird LLP, Bank of America Plaza, 101 South Tryon Street, Suite 4000, Charlotte, NC 28280-4000 (US).
- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) **Designated States (unless otherwise indicated, for every kind of regional protection available):** ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

(54) **Title:** COMPRESSION GARMENT WITH INTEGRAL DONNING AID



(57) **Abstract:** It has been found that the foregoing objects may be accomplished in accordance with this invention by providing compression garments of this invention having a low friction zone made with the addition of low friction material on the inside surface of a garment in discrete locations to decrease friction between skin and fabric, thus providing easier donning of a compression garments.

WO 2006/047153 A1



European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

— *with international search report*

COMPRESSION GARMENT WITH INTEGRAL DONNING AID

BACKGROUND OF THE INVENTION

This invention relates to a medical compression garment having an integral donning aid. More particularly, this invention relates to compression stockings having a low friction zone made with the addition of or completely from low friction yarns or by coating/laminating of the inside surface of a garment with the low friction materials.

Description of Related Art

Therapeutic medical compression garments have been used on a relatively wide scale to assist in the prevention of venous diseases and/or embolism in a patient. The purpose of such garments is to overcome the elevated internal pressures within a human extremity caused by gravity or disease processes. The pressure gradient garments, such as stockings and their uses are well documented in the literature.

The custom pressure gradient stocking was developed by Conrad Jobst, a sufferer of venous disease. Mr. Jobst found relief from his problem while standing in a swimming pool. Mr. Jobst reasoned that the water pressure in the pool, which increases with depth, cancelled out the internal pressure in the veins of his leg. Jobst and others have identified a need to apply a relatively large compressive force in proximity to the ankle. See, J. Horner, *et al.*, *Br Med J.*, pp. 820-821 (1980) wherein it is stated "the greater the compression gradient between the ankle and calf produced by the stocking, the lower the ambulatory pressures." Cited in U.S. Patent No. 5,823,195.

Therapeutic medical graduated compression stockings are designed to provide sufficient external circumferential counter pressure to maintain the normal

venous and lymphatic pressures at a given level in the extremity, thus assisting the movement of venous blood and lymph from the extremity. Another important effect of compression is the reduction of the venous volume. Reduction of venous volume leads to an increase of the venous flow velocity. H.J.L. van Gerwen,
5 *Pressure gradient tolerance in compression hosiery*. Katholike Universiteit Nijmegen, pp.103-105 (1994).

For compression garments to be most effective, higher pressures are required in the ankle area. The most difficult part of putting compression garments (stockings) on is to pull the narrowest part of the garment over the wider end of a
10 limb (foot-instep-heel for stockings or hand for arm-sleeves). There are special donning devices made from slick fabric that a patient should put on a leg before donning compression stocking. Use of these devices makes putting stocking on more complicated, sometimes requires help from another person and, also, requires purchase of such additional devices.

15 A variety of therapeutic medical graduated compression stockings are on the market today. Stockings of various descriptions have been proposed. Unfortunately, therapeutic stockings, in order to provide the necessary compression, are often thick and rather unsightly or have other drawbacks. An example of a therapeutic stocking is shown in US Patent No. 3,975,929 which
20 describes a thigh length anti-embolism stocking made with alternating courses of covered spandex yarn on a circular hosiery knitting machine. Another example of a therapeutic stocking is described in U.S. Patent No. 4,069,515 to Swallow, et al., which discloses a non-slip therapeutic stocking having a covered elastomeric yarn (spandex core-nylon covering) inlaid into every other course of the jersey knit
25 stitches made of stretch nylon. In particular, the Swallow patent describes the foot portion as having alternating courses of jersey knit stitches of non-elastomeric yarn.

Because higher compressive forces are used in compression stocking U.S. Patent No. 6,613,007 to Reid, Jr. discloses a multi-layer compression stocking.
30 One of the problems of a multi-layer stocking is that it is difficult to coordinate the compressive pressures applied by each layer to achieve a desired pressure. Reid proposed to solve this problem by including in the layers alignment markings to

assist a wearer in positioning the layers on the leg. There is disclosed a stocking comprising a plurality of layers including an under-layer and at least one over-layer, each of which have predetermined amounts of compressive stress at discrete locations. The under-layer may include yarns with high strength and low coefficient of friction properties incorporated into the fabric. Areas of the stocking including the toe, top of the instep and heel may be reinforced in such a manner to reduce the chance of skin breakdown and to reinforce the stocking fabric with yarns of high strength and low coefficient of friction properties. Several individual stockings are necessary to produce the multi-layered system which increases production costs and price to the customer. Also it is difficult to provide an exact match of the different zones especially for dark colored fabrics, avoid wrinkling and shifting of the underlying stocking, while pulling the upper stocking over it.

U.S. Patent No. 6,415,449 to Duplock discloses a survival garment made of high stretch elastomer designed to protect the wearer from the effects of immersion in cold water. The garment has "skin tight" fittings at the cuffs and sleeves that may be made from an elastic material that comprises a high stretch elastomer coated with a material of low friction, such as neoprene, for allowing easy donning and doffing of the garment.

A patch of low friction coefficient material placed either on the skin or on the surface that will be next to the skin in locations where sheer trauma is likely to occur is disclosed in U.S. Patent No. 6,362,387 to Carlson *et al.* Therein is disclosed a patch of low friction material such as a film of polytetrafluoroethylene sized to provide an area of low friction support for a portion of a human body relative to an object such as a shoe or prosthetic sock. The layer of low friction material is adhered to the surface of the object that bears on the skin and faces the skin such as a sock fabric. In a preferred embodiment PTFE is bonded to a fabric layer of Lycra.

U.S. Patent No. 5,829,057 to Gunn discloses an article such as clothing, footwear and the like which incorporate fabrics or chemicals having low coefficient of friction. The patent notes that some material fibers inherently have a low coefficient of friction, such as TEFLON[®], KYNAR[®] and GORTEX[®]. In addition, the use of chemicals to treat material fibers or finished materials that do

not inherently have a low coefficient of friction is taught. The articles incorporating fabrics with chemicals with a low coefficient of friction are intended to minimize the development of irritations, blisters and calluses including gloves, shoes and sportswear.

5

BRIEF SUMMARY OF THE INVENTION

It is an object of the present invention to provide a medical compression garment having an integral donning aid.

Another object of the present invention is to provide a compression
10 garments having a low friction zone made with the addition of or completely from low friction yarns or by coating/laminating of the inside surface of a garment with the low friction materials.

Yet another object of the present invention is the provision of an easy
15 donning aid embedded in a stocking at discrete locations that provides more comfort for the patient and increases compliance and use of medical compression garments.

It has been found that the foregoing objects may be accomplished in
accordance with this invention by providing compression garments of this
invention having a low friction zone made with the addition of low friction
20 material on the inside surface of a garment in discrete locations to decrease friction between skin and fabric, thus providing easier donning of compression garments.

Low friction yarns may be positioned in a specific pattern or plated
together with other yarns, or used in combination with other yarns, preferably with
highly stretchable spandex yarns to compensate for low elongation of PTFE yarns.
25 Depending on the manufacturing methods, circular or flat-bed knitted, the low friction area should be positioned at the inside of the garment. To provide better contact with the patient's skin it is advantageous to use covered spandex with low friction yarns, "so called" inlay yarn in circular knitted products.

In a first embodiment, the medical compression garments (stocking, arm
30 sleeve, gauntlet, glove, or other) of this invention have an integral donning aid that is knitted into the main portion of the garment that contains elastic yarns and exerts pressure on the corresponding body part. There is at least one integral donning

area defining a low friction zone strategically located on the internal surface of the garment (e.g. at the narrowest and critical for donning process parts of the garment) to facilitate donning of the garment and improve patients' compliance.

5 BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S)

Having thus described the invention in general terms, reference will now be made to the accompanying drawings, which are not necessarily drawn to scale, and wherein:

FIG. 1 illustrates a side view of an embodiment of a garment of the present invention showing courses of low friction yarn encircling the foot between the heel and the calf in a discrete area of the instep;

FIG. 2 illustrates a side view of another embodiment of a garment of the present invention showing courses of low friction yarn encircling the foot between the heel and the calf;

15 FIG. 3 illustrates a side view of an embodiment of a garment of the present invention showing courses of inlaid yarn covered with PTFE yard encircling the area from just above the ankle to the lower calf;

FIG. 4 illustrates a side view of an embodiment of a garment of the present invention showing courses of knitting yarn made of spandex covered with PTFE yard encircling the calf area just above the ankle;

FIG. 5 illustrates a side view of another embodiment of a garment of the present invention showing strips of low friction material attached to the inside surface of the knitted fabric in specific areas;

25 FIG. 6 illustrates a side view of an embodiment of a garment of the present invention showing dots of low friction material attached to the inside surface of the knitted fabric;

FIG. 7 illustrates a side view of an embodiment of a garment of the present invention showing a patch of elastic fabric containing low friction yarn sewn to the inside of a garment;

30 FIG. 8 illustrates a side view of an embodiment of a garment of the present invention showing a low friction coating applied to the inside of a garment, such as a stocking;

FIG. 9 illustrates the inner side of a flat knitted stocking before sewing the sides together having a low friction zone in the ankle, heel and foot areas;

FIG. 10 illustrates the inner side of a flat knitted stocking before sewing the sides together showing a low friction zone in a discrete portion of the ankle area;
5 and

FIG. 11 illustrates the inner side of a flat knitted stocking before sewing the sides together showing a low friction zone surrounding the ankle.

DETAILED DESCRIPTION OF THE INVENTION

10 The present inventions now will be described more fully hereinafter with reference to the accompanying drawings, in which some, but not all embodiments of the invention are shown. Indeed, these inventions may be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided so that this disclosure will satisfy
15 applicable legal requirements. Like numbers refer to like elements throughout.

The compression garments of this invention have a low friction zone made with the addition of or completely from low friction yarns or by coating/laminating of the inside surface of a garment with the low friction materials to decrease friction between skin and fabric, thus providing easier donning of compression
20 garments. Medical compression garments can be produced as seamless garments using circular knitting machines, or seamed knitted garments made using flat-bed knitting machines, or sewn from elastic fabric using proportional design to provide necessary compression level at specified positions on the limb or body. The design of compression garments of this invention needs to combine two opposite
25 requirements: provide easy donning and at the same time prevent sliding during wearing. Therefore, it is important to understand that low friction material can be used only at specified locations, because using material through the complete garment will result in sliding of the garment from the limb and losing of its therapeutic effect.

30 In a first embodiment, the medical compression garments (stocking, arm sleeve, gauntlet, glove, or other) of this invention have an integral donning aid that is knitted into the main portion of the garment that contains elastic yarns and exerts

pressure on the corresponding body part. There is at least one integral donning area defining a low friction zone strategically located on the internal surface of the garment (e.g. at the narrowest and critical for donning process parts of the garment) to facilitate donning of the garment and improve patients' compliance.

5 FIGs. 1 and 2 illustrates an embodiment of a compression stocking 10 of the present invention that includes a toe area 12, a foot area 14, a heel area 16 and calf area 18. The compression stocking 10 includes courses of low friction yarn forming a zone 20 encircling the foot and another zone 22 encircling the lower calf. The low friction zone is extended from just above the heel to approximately

10 the point where the Achilles tendon joins to the calf muscle. This point is known as position b1 in compression hosiery terminology. Such configuration allows reducing friction at the most critical zones of the highest compression while at the same time providing correct fixation of the product at the toe and heel and sufficient grip at the calf to prevent the stocking from sliding. It should be

15 understood that zone 22, while shown in FIG. 1 as encircling the calf, may also be limited to partially encircling the calf as will be appreciated by those skilled in the art. In FIG. 1 there is provided a discrete zone of low friction yarn located between the ankle and the knee area, covering the upper side of the instep in the zone 24. A smooth transition in construction may be accomplished, for example,

20 by programming a knitting machine to include the low friction yarns. While stocking 10 is depicted as knee length, stocking of other lengths may also be utilized in accordance with the present invention.

Low friction yarns made of different materials can be used, including but not limited to polytetrafluoroethylene (PTFE) homopolymer yarns: Profilen

25 (Lenzing), Tenara and/or Rastex (Gore) Teflon (DuPont); melt spun fluoropolymeric fibers made of hexafluoropropylene and of tetrafluoroethylene-hexafluoropropylene copolymers (DuPont U.s. patent No. 6,048,481), polyamide yarns modified with ultra-high molecular weight silicone and known as Freelon™ fiber, yarns made of physical blends of polyamide or polyester with PTFE or with

30 meltable fluoropolymers, nylon and polyester yarns with surface modified with silicone, and other yarns with the coefficient of friction at least 30% lower than that of the other yarns used to make a garment, i.e. nylon, polyester, cotton, or the

like. Other materials applicable for the purpose of this invention include, but are not limited to, low friction tapes, films and liquids, including PTFE suspensions, capable of creation of necessary patterns on specified low friction zones of the garment and made of PTFE, polychlorotrifluoroethylene (PCTFE),
5 poly(vinylidene) fluoride, poly(vinyl) fluoride copolymer, fluorinated ethylene propylene and other copolymer and blends of fluoro- containing polymers, and silicone polymers and copolymers.

The low friction material is applied in such a way that it will not affect stretch and compression characteristics of the garment. In one embodiment, low
10 friction material is integrally knitted in the garment or woven in the fabric. Low friction yarns may be positioned in a specific pattern or plated together with other yarns, or used in combination with other yarns, preferably with highly stretchable spandex yarns to compensate for low elongation of PTFE yarns. Depending on the manufacturing methods, circular or flat-bed knitted the low friction area should be
15 positioned at the inside of the garment. To provide better contact with the patient's skin it is advantageous to use low friction yarns, as knitting or "so called" inlay yarn in circular and flat-bed knitted products.

Another embodiment of a stocking **10** of the present invention is shown in FIG. 3 wherein courses of inlaid yarn covered with low friction material encircles
20 the calf area in zone **22** just above the ankle. To provide easier donning, but prevent the stocking from sliding, the zone is extended from just above the heel to the point where the Achilles tendon joins to the calf muscle known as position b1. FIG. 4 illustrates an embodiment of the present invention showing a stocking **10** having courses of low resistance yarn made of spandex covered with PTFE
25 encircling the ankle area in zone **22** immediately above the heel.

In another embodiment a low friction permanent finishing on the inside surface of the fabric, or a narrow strips or dots of low friction material (tape, film, fabric) is attached to the garment by coating, laminating, or any other applicable method. An example of such garment is shown in FIG. 5 wherein strips **30** of low
30 friction material are attached to the inside surface of a stocking **10**. FIG. 6 illustrates an embodiment of a garment of the present invention showing dots **40** of low friction material attached to the inside surface of a stocking **10**.

Another embodiment of the garments of the present invention provides sewing a patch 50 of low friction material to the inside of a garment 10 such as shown in FIG. 7. Further, an embodiment of the present invention showing a low friction coating applied to the inside of a garment is shown in FIG. 8 wherein
5 stocking 10 has a low friction coating applied to the inside of the foot zone 60 and the zone encircling the lower calf above the ankle 62.

Although a preferred method of making the garments of the present invention is on a circular knitting machine, it should be understood that other methods of manufacturing may be used, such as flat-bed knitting. Examples of the
10 garments of this invention using flat-bed knitting are shown in FIGs. 9-11. For example, in another embodiment, that shown in FIG. 9 illustrates the inner side of a flat knitted stocking 70 before sewing the sides together having a low friction zone 72 in the ankle, heel and foot areas.

In FIG. 10 there is illustrated the inner side of a flat knitted stocking 70
15 before sewing the sides together showing a low friction zone 74 in a discrete portion of the ankle zone. FIG. 11 illustrates the inner side of a flat knitted stocking 70 before sewing the sides together showing a low friction zone 76 surrounding the ankle.

Many modifications and other embodiments of the inventions set forth
20 herein will come to mind to one skilled in the art to which these inventions pertain having the benefit of the teachings presented in the foregoing descriptions and the associated drawings. Therefore, it is to be understood that the inventions are not to be limited to the specific embodiments disclosed and that modifications and other
embodiments are intended to be included within the scope of the appended claims.
25 Although specific terms are employed herein, they are used in a generic and descriptive sense only and not for purposes of limitation.

THAT WHICH IS CLAIMED:

1. A medical compression garment having an integral donning aid comprising a knitted or sewn main portion of elastic yarns and exerting pressure on the corresponding body part and having at least one integral low resistance donning zone strategically located on the internal surface of the garment to facilitate donning of the garment.

2. The medical compression garment according to Claim 1, wherein said garment is a compression stocking and said low resistance donning zone is located between the ankle and the knee area.

3. The medical compression garment according to Claim 1, wherein said garment is a compression stocking and said low resistance donning zone is located between the ankle and the knee area, covers the upper side of the instep.

4. The medical compression garment according to Claim 1 wherein at least one low friction yarn is knit or woven into the fabric.

5. The medical compression garment according to Claim 1 wherein said low resistance zone includes courses of inlay yarn covered with PTFE yarn.

6. The medical compression garment according to Claim 1 wherein said knitted yarn is made of spandex covered with PTFE.

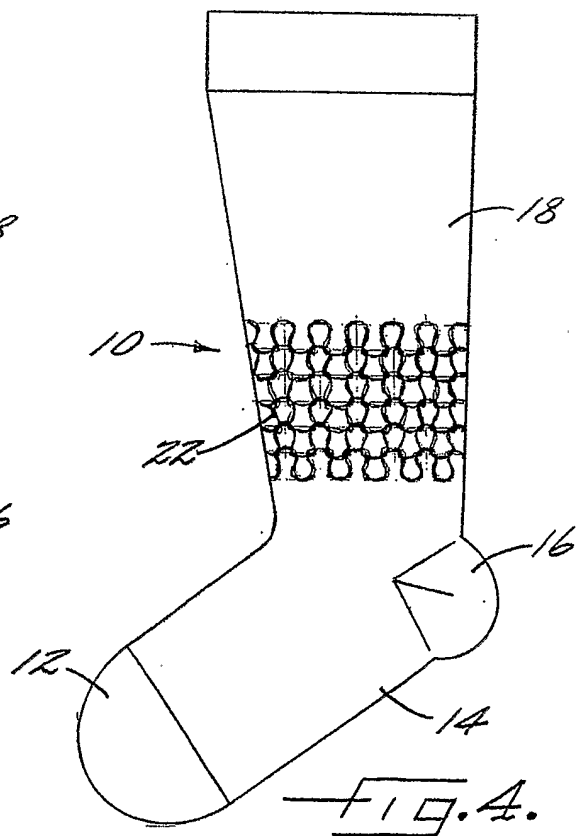
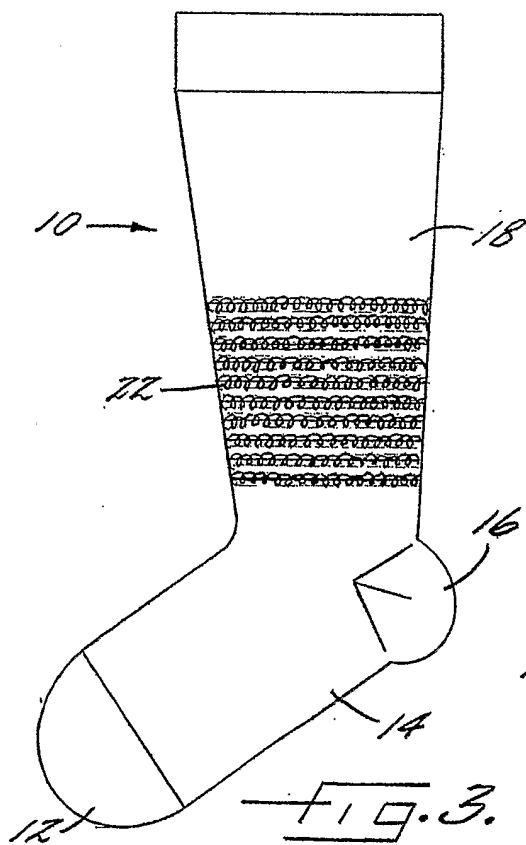
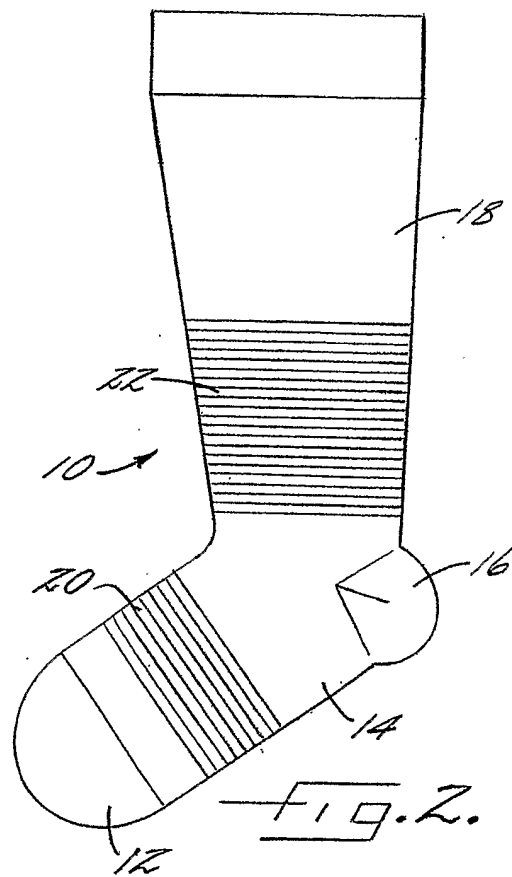
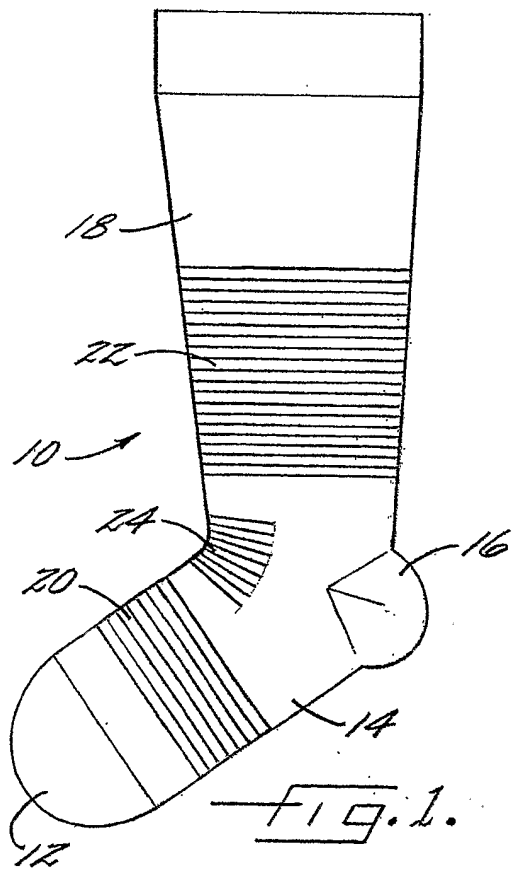
7. The medical compression garment according to Claim 4 wherein said low resistance zone comprises strips of low friction material adhered to the inside of said garment.

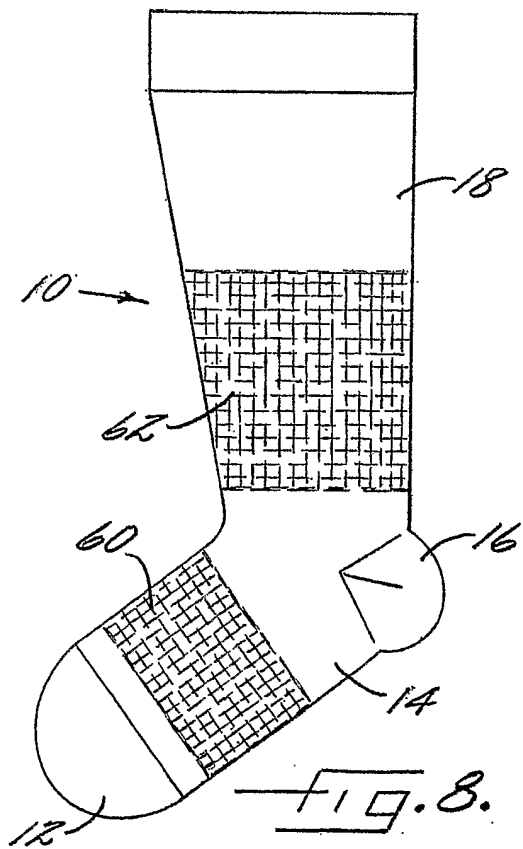
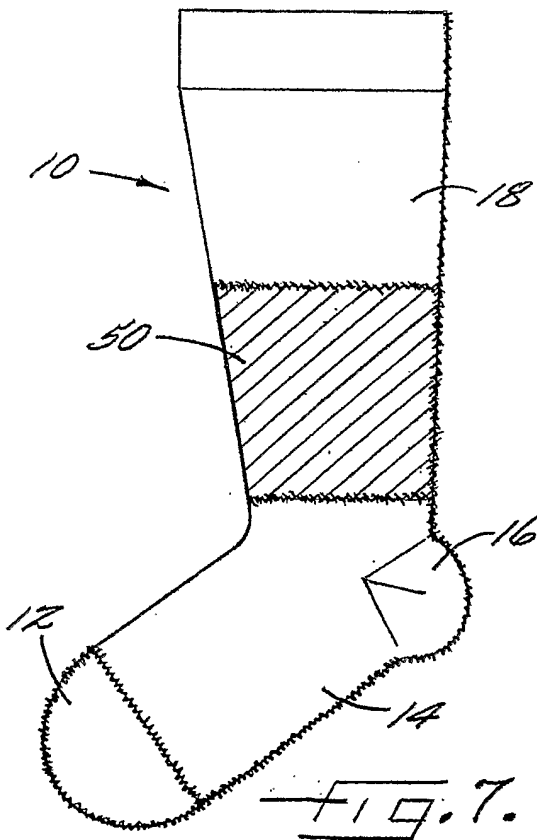
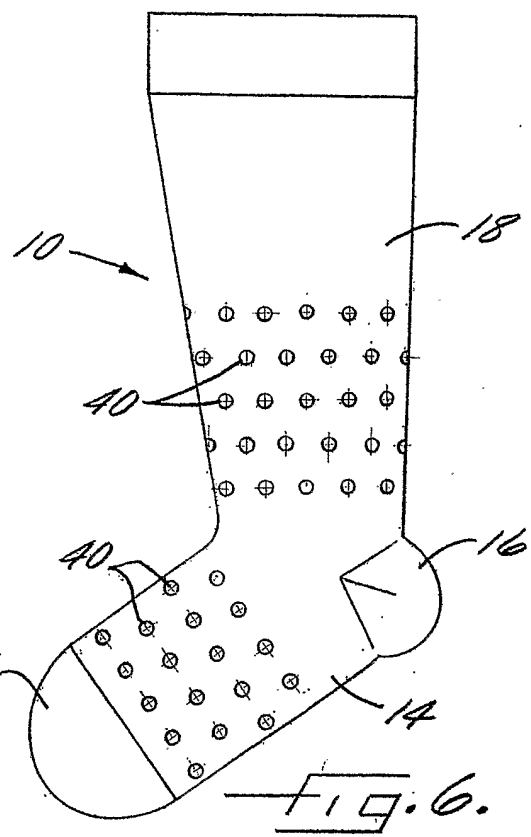
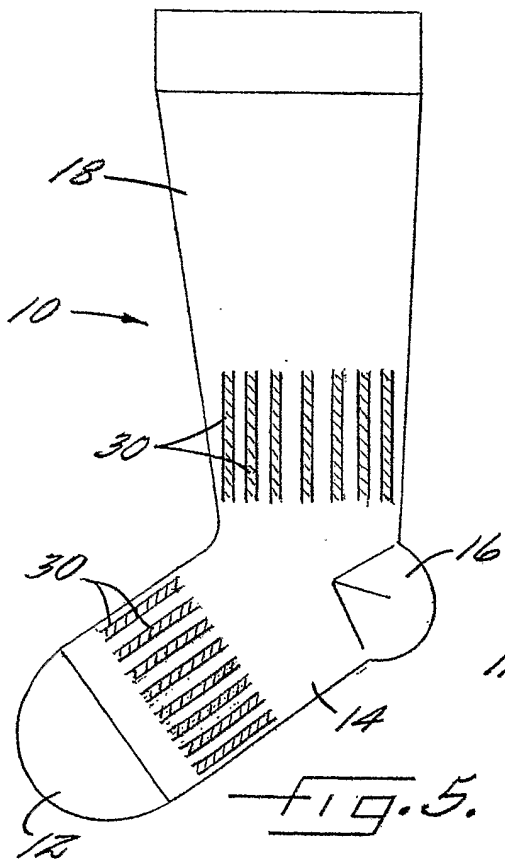
8. The medical compression garment according to Claim 4 wherein said low resistance zone comprises dots of low friction material adhered to the inside of said garment.

9. The medical compression garment according to Claim 4 wherein said low friction material is coated to the inside of the garment.

5

10. The medical compression garment according to Claim 4 wherein said garment is a knee length stocking.





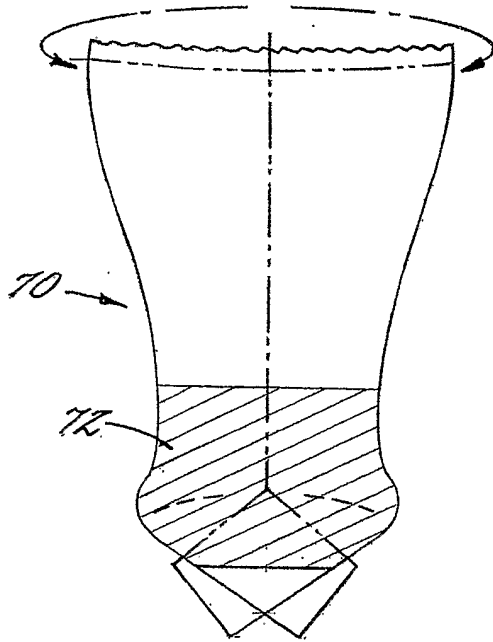


FIG. 9.

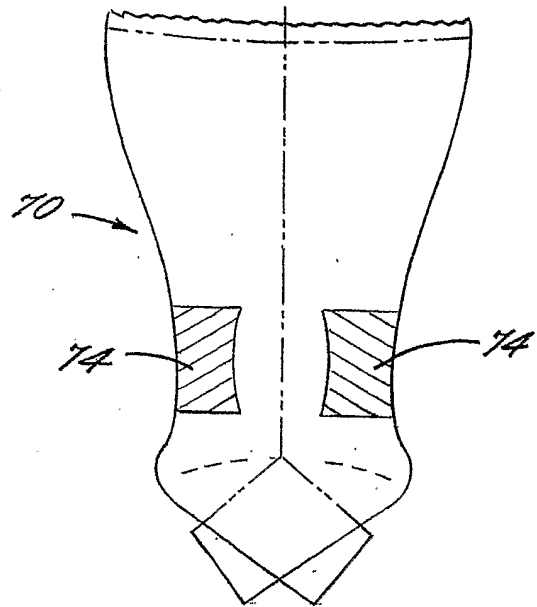


FIG. 10.

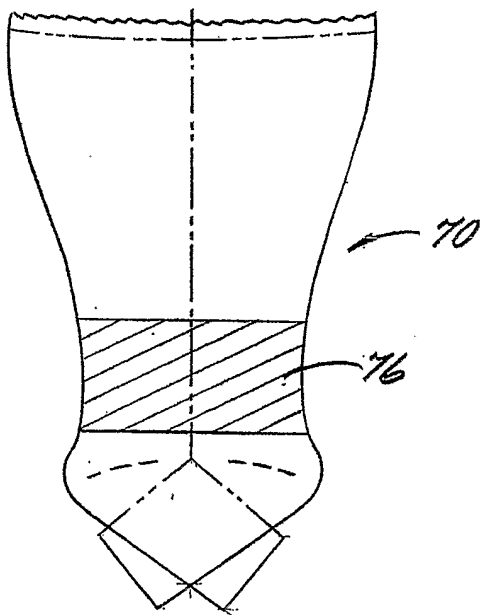


FIG. 11.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2005/037476

A. CLASSIFICATION OF SUBJECT MATTER
 A61F13/08 D04B9/46 D04B9/52 D04B1/26

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)
 A61F D04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
 EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 02/064073 A (COMPRESSION GARMENT TECHNOLOGIES PTY LIMITED; DUFFY, BRAD) 22 August 2002 (2002-08-22) page 8, line 15 - page 19, line 23; figures	1-10
X	WO 03/056084 A (JEONG, CHANG-MIN) 10 July 2003 (2003-07-10) page 6, paragraph 3 - page 14, paragraph 3; figures	1-10
X	EP 0 884 036 A (S.S.I. SPORT SOCKS INTERNATIONAL S.R.L.) 16 December 1998 (1998-12-16) column 2, line 9 - column 3, line 12; figures	1-4, 7-10
	----- -/--	

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 document 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
9 February 2006	17/02/2006

Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Boccignone, M
---	---

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2005/037476

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	BE 637 374 A (ALAMANCE INDUSTRIE INC.) 13 March 1964 (1964-03-13) page 5, line 6 - page 13, line 25; claims 1,2; figures -----	1-10
A	US 6 523 729 B1 (GARDON-MOLLARD CHRISTIAN) 25 February 2003 (2003-02-25) the whole document -----	1-10

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2005/037476

Patent document cited in search report	A	Publication date	Patent family member(s)	Publication date
WO 02064073	A	22-08-2002	NONE	
WO 03056084	A	10-07-2003	AU 2002359996 A1	15-07-2003
EP 0884036	A	16-12-1998	CA 2237585 A1	13-12-1998
			HU 9801345 A2	28-04-2000
			IT BS970054 A1	14-12-1998
			JP 11070140 A	16-03-1999
			PL 326744 A1	21-12-1998
			US 6012177 A	11-01-2000
BE 637374	A		NONE	
US 6523729	B1	25-02-2003	AT 251878 T	15-11-2003
			AU 743484 B2	24-01-2002
			AU 2629399 A	20-09-1999
			BR 9908461 A	14-11-2000
			CA 2320847 A1	10-09-1999
			CN 1291876 A	18-04-2001
			DE 69912104 D1	20-11-2003
			DE 69912104 T2	15-04-2004
			DK 1059907 T3	23-02-2004
			EP 1059907 A1	20-12-2000
			ES 2209400 T3	16-06-2004
			FR 2775431 A1	03-09-1999
			WO 9944558 A1	10-09-1999
			JP 2002505158 T	19-02-2002
			OA 11618 A	09-09-2004
			PL 342611 A1	18-06-2001
			PT 1059907 T	31-03-2004
			RU 2212872 C2	27-09-2003