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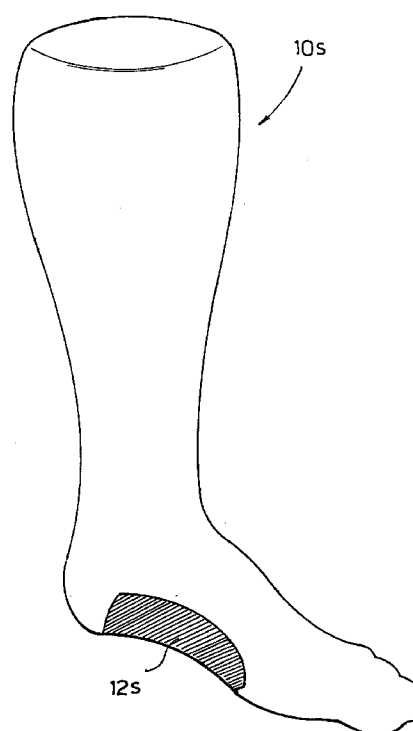
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(54) **Socks with a differentiated structure according to the anatomy of the right and left feet**

(57) A pair of socks comprises two socks with an area of reinforcement (12) in pre-established positions coinciding with corresponding anatomical areas on one and the other foot, in particular coinciding with the plantar arch and/or one or both malleoli of each leg. In particular the plantar reinforcement (12) is placed asymmetrically in the single sock with reference to a median plain longitudinal to said sock. The reinforcements have a protective and/or sweat absorbing function and are generally obtained by insertion of an additional yarn.

FIG. 1



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Description

A variety of knitted socks can currently be found on the market for sports and other uses. The socks on the market have parts that are reinforced in various ways. All have an identical shape for the right foot and the left foot. For the most part they have a reinforced part at the toe, a reinforced part at the heel, and possibly a longitudinal reinforced part with parallel sides in the plantar area, this part being substantially symmetrical with respect to an imaginary longitudinal plane of symmetry for the sock. Although these types of socks present numerous advantages, it is nevertheless clear that they do not respect the anatomy of the foot and the leg or ankle on which they must be worn.

The aim of this application is to create socks which, by respecting the anatomy of the foot that must wear them, adapt better to it and prove more comfortable.

This aim is achieved according to the present invention with a pair of socks as stated in claim 1. A reinforcement for the plantar area is provided on one and the other sock in positions anatomically corresponding to the actual position of the plantar arch, that is to say in specular positions on one and the other sock. In particular the plantar reinforcement on each sock will be situated in an asymmetrical position with respect to an imaginary median longitudinal plane of the sock itself. The plantar reinforcement is obtained, in a per se known manner, therefore not described, by adding a reinforcing yarn, for example a particularly strong and/or particularly absorbent yarn, to provide a supporting and/or sweat absorbing function.

According to another characteristic of the present invention, an area of reinforcement is provided at the inner and/or external malleolus of each leg. In each sock the reinforced area in the ankle area may or may not be symmetrical to a longitudinal median plane of the sock.

Since they correspond more precisely to the anatomical features of the feet and ankles, the new socks with a differentiated structure allow better user comfort in that they give better protection from knocks, better sweat absorption, and better support. They have a shock-absorbing and stabilizing role that is useful in that it makes for more agile walking.

Exemplary embodiments of the invention will be described below by way of non-limiting example with reference to the attached drawings in which:

- Figure 1 is a side view of a sock according to the invention, for a left foot;
- Figure 2 is a side view of a sock from the same pair of socks as the previous one, but intended for the right foot;
- Figure 3 is a bottom view of two socks as in Figures 1 and 2, shown worn on the respective feet;
- Figure 4 is a side view of a left sock with a reinforced area coinciding with a malleolus;

Figure 5 is a side view of a right sock with a reinforced area coinciding with the plantar arch and a malleolus;

Figure 6 is a side view of a left sock provided with reinforced areas according to the present invention in addition to the usual reinforced areas normally present in the socks on the market.

In the figures 10s indicates a sock for the left foot-left leg of a pair of socks 10 in which 10d indicates the sock destined to be worn on the right foot-right leg. The socks 10s and 10d, which are generally knitted, each have, according to the invention, an area of reinforcement 12, respectively 12s for sock 10s and 12d for sock 10d, coinciding with the plantar arch. The area 12d can have any desired shape and, as can be seen better in Figure 3, is situated asymmetrically with respect to a hypothetical median plane of the sock indicated by a chain for each sock in said drawing and indicated by a for the right sock and b for the left sock. The area 12d, 12s preferably has an outline with rounded corners and is preferably obtained by adding to the yarn making up the rest of the fabric of the sock an extra yarn that provides reinforcement and/or has particular absorption characteristics. A particularly strong area is thus obtained in the sock such as to lend a certain support to the plantar arch. In addition an area with greater sweat absorption is created to coincide with an area of the foot where the need is particularly felt because of the presence of numerous sweat glands.

The variant of the sock illustrated in figure 4, and indicated by 20s for the left foot, comprises an area of reinforcement coinciding with the malleolus; the area is indicated by reference number 24s and has a downward tapering shape. It can be disposed symmetrically with respect to the longitudinal median plane of the sock, or asymmetrically, so as to protect only one malleolus, as can be useful in some sports.

In Figure 5 a right sock 30d is illustrated, made with reinforced areas 32d and 34d. The area of reinforcement 32d extends over the plantar arch and is situated asymmetrically with respect to a longitudinal median plane of the sock such as, for example, the plane a in Figure 3; area 34d is an area of protection for the malleolus similar to the area 24s described with reference to Figure 4.

Lastly the sock 40s, illustrated in the variant for the left foot in Figure 6, comprises an area of reinforcement 42s similar to the areas 32 and 12 stated above, coinciding with the plantar arch; and a further area of reinforcement 44s, similar to the area defined with reference to Figure 4 for the area of the malleoli. These areas are provided in addition to and possibly completely or partially overlapping with the normal areas of reinforcement indicated by 43, 45 and 47 as found in the socks currently on the market, situated at the heel, the toe and, longitudinally and symmetrically, along the whole sole of the foot. The areas of reinforcement

according to this invention are generally obtained by adding at least one further reinforcing and/or absorbent yarn to the yarn used to form the rest of the sock or the usual reinforced areas 43, 45 and 47. This addition can easily be made during manufacturing by setting the electronic controls of the knitting machine in a manner accessible to an expert in the field with normal experience, which therefore will not be described in greater detail here. 5

The socks according to the invention can be produced as sports socks, or as socks intended for normal non-sports use (stockings, short stockings and similar, e.g.). 10

Claims 15

1. A pair of socks characterised in that the socks of the pair comprise areas with a differentiated structure for one and the other sock corresponding to the different anatomical structure of the right and left feet and/or of the right and left ankles. 20
2. A pair of socks according to claim 1, characterized in that said areas comprise a plantar area (12, 32, 42) on each sock, situated asymmetrically on each sock with respect to a longitudinal median plane (a,b) of the sock and situated to coincide with the plantar arch of the foot. 25
3. A pair of socks according to claim 1, characterised in that said areas comprise areas of reinforcement coinciding with one or both malleoli. 30
4. A pair of socks according to claim 3, characterized in that the area of reinforcement for the malleoli has a downward tapering shape at each malleolus. 35
5. A pair of socks according to claim 1, characterized in that said areas with a particular structure are obtained by adding to the knit a yarn with particular reinforcing or absorbent properties. 40
6. A pair of socks according to claim 1, characterized in that it is produced as sports socks. 45
7. A pair of socks according to claim 1, characterized in that it is produced as socks intended for normal use. 50

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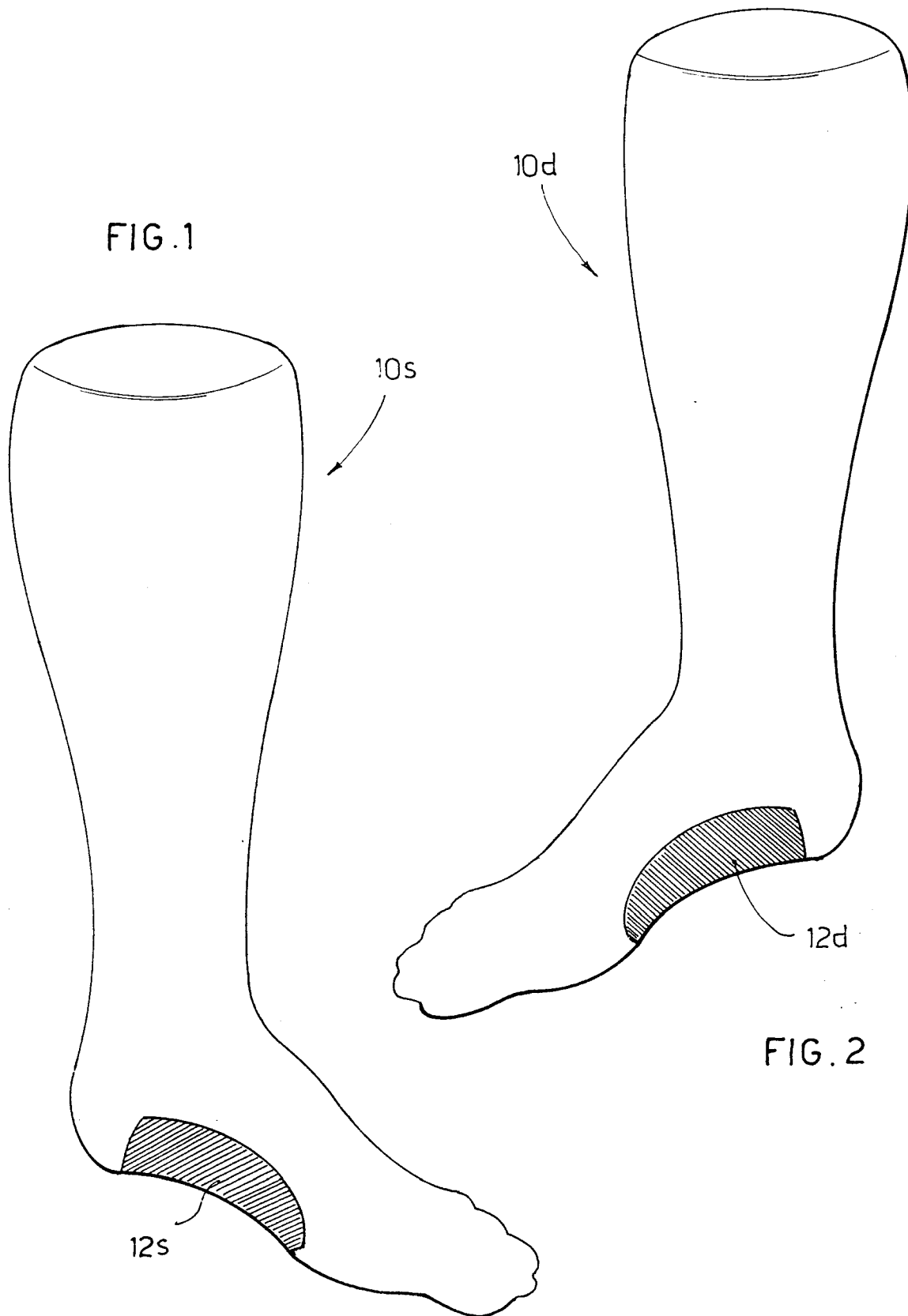


FIG. 4

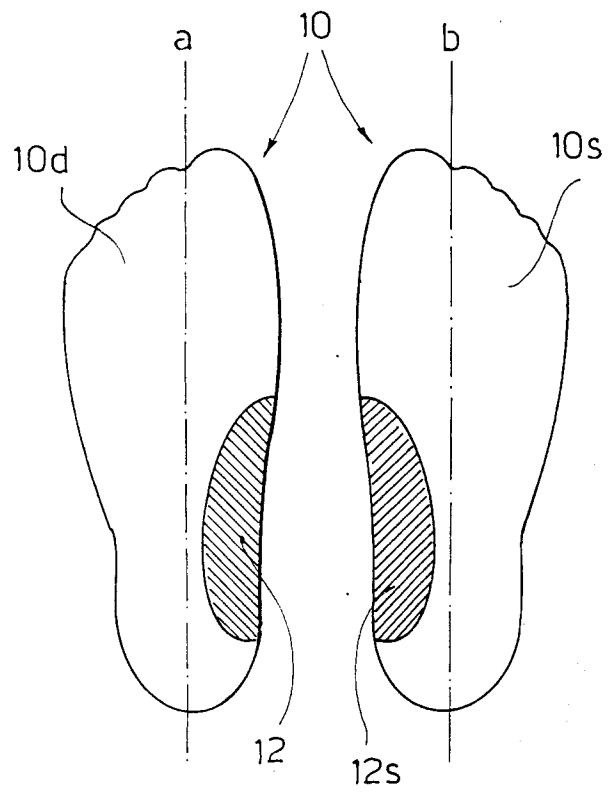
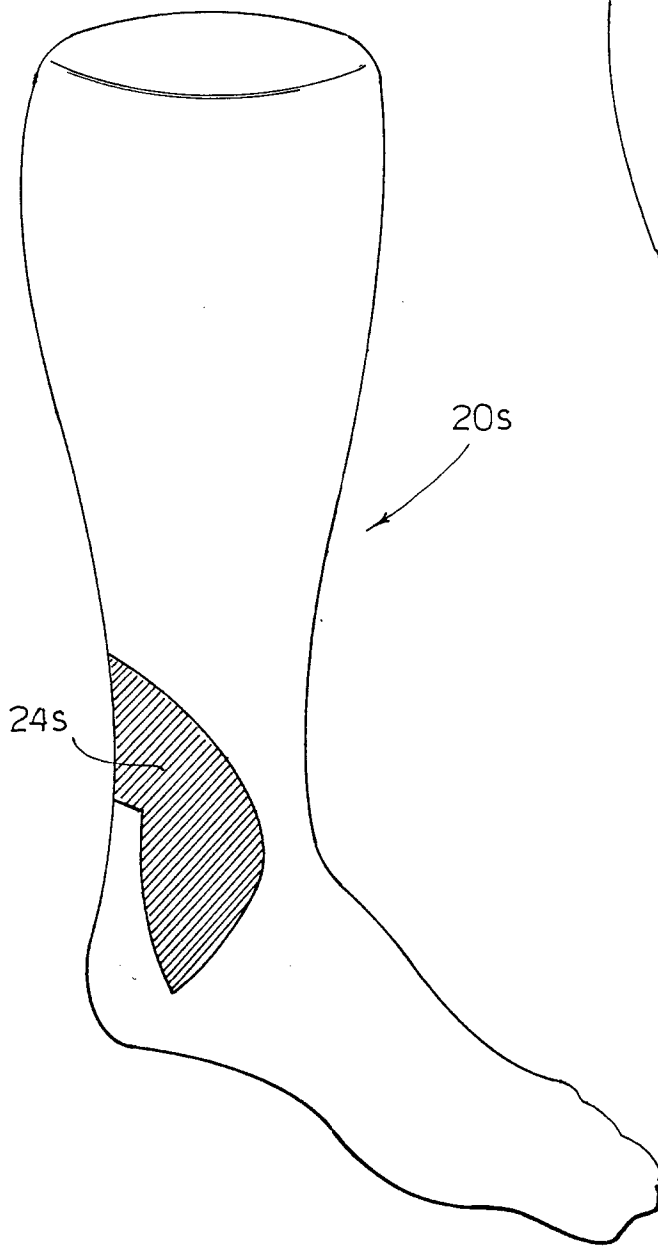
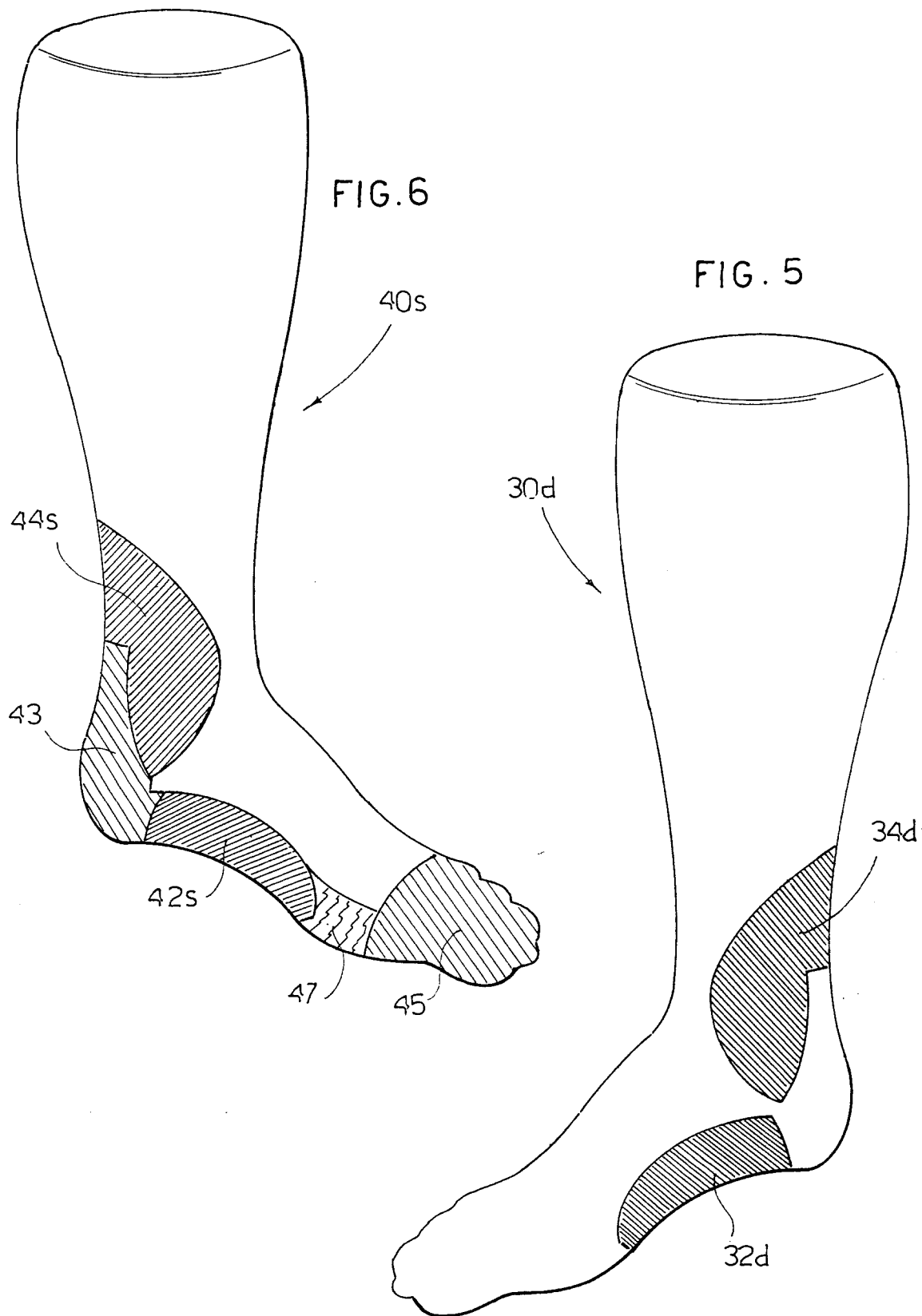


FIG. 3





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EUROPEAN SEARCH REPORT

Application Number
EP 96 11 2226

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	GB-A-2 247 395 (PRIMO CORTINOVIS) * page 2, line 1 - page 4, line 7 * * page 4, line 25 - page 6, line 5 * * page 7, line 14 - line 22 * * figure 1 *	1,3,5-7	A44B11/00 A41B11/02 A41B11/00
Y	---	2,4	
Y	US-A-4 277 959 (J. L. THORNBURG) * column 2, line 18 - line 30 * * figures 1-4 *	2	
Y	---	4	
Y	FR-A-2 706 914 (SKIS ROSSIGNOL) * page 8, line 26 - page 9, line 11 * * figure 1 *		
A	---		
A	DE-U-295 02 182 (THOMAS FRÜHWEIN) -----		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.6) A44B A41B D04B
Place of search THE HAGUE		Date of completion of the search 24 October 1996	Examiner Fairbanks, S
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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