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(54) Gymnastic shoe provided with improved upper.

(57) The invention concerns a sports shoes comprising a sole of elastomeric material and an upper of fabric. This fabric is a composite monolithic fabric having opposite surfaces (21, 22) at separated weaving, wherein each one of the two surfaces of the fabric has weft yarns (222) and warp yarns (221) distinct from those of the other surface and not belonging to this latter, braided together and wherein the yarns of a surface have a colour different from that of the yarns of the other surface.

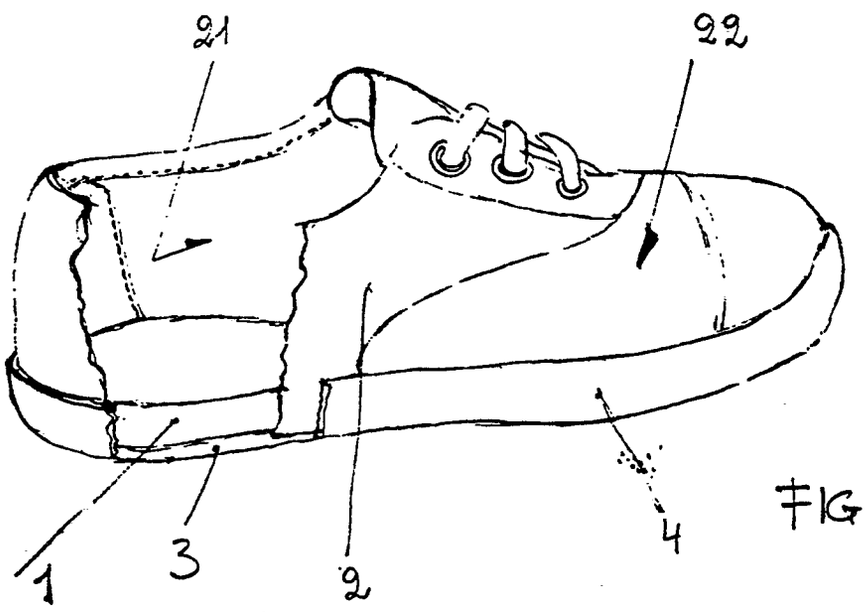

FIG.1

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GYMNASTIC SHOE PROVIDED WITH IMPROVED UPPER

The present invention concerns a gymnastic shoe of the type generally known and widely adopted for sports uses as for instance tennis, besides as light shoe for the free time.

This type of shoe is constituted by an upper of fabric glued and bound, for instance through vulcanization, to an insole of adequate physical characteristics and of suitable thickness, having on its outer surface a sole of elastomeric material for the contact with the ground.

Usually the upper is cut longitudinally at the instep, and the two skirts obtained from said incision are put the one near the other by appropriate and well known closing systems, for instance a shoe-lace passing through the holes provided on said skirts, so that it is easier to wear the shoe.

The fabric of the upper can be of various type; however among the fabrics available those of vegetable fibres, as cotton, flax, hemp are preferred for being able to permit the transpiration maintaining thus the foot in sufficiently comfortable climatic conditions of temperature and damp.

This type of shoe is widely used and appreciated by the consumers for the good qualitative level reached; however, as regards the upper, the Applicant has found that it can be improved still more.

First of all it is noted that the ideal type of fabric for the outer surface of the shoe, for instance because very resistant to abrasion, is not the best also for inside, where there are required high softness qualities (incompatible with a high wear resistance) to safeguard the physical integrity of the foot, and a high porosity to maintain the foot as drier and aired as possible.

Also, usually the fabric is dyed with the more various colours to give a pleasant aesthetic aspect to the shoe so as to stimulate the appreciation of the product on the market. So, it could happen that in some conditions the water coming into contact with the outer surface of the shoe or still more the sweat (usually acid) produced by the foot during the use of the shoe, can deteriorate the above said dyeing, producing decolorizations on the surface of the upper, damaging its aspect.

In order to obtain a more adequate fabric for both the upper surfaces, shoes have been proposed wherein the upper is covered on its inner surface with a lining, so as to create in the shoe a physical separation between the fabric of the outer surface and the fabric of the inner surface.

However, also this solution could produce some drawbacks, especially as regards the use of a substantially doubled fabric, as a lined fabric appears, for instance owing to the reduced permeability of the upper and therefore the possibility of transpiration, or to the separation between the two fabrics, or in the end to the presence of adhesives used for glueing the two fabrics, the lining and the upper.

The aim of the present invention is a gymnastic shoe not only for sports uses, but even agonistic uses, that leads to a further qualitative increase of this product, giving at the same time the advantages of the uppers constituted by a sole fabric and those of the lined uppers.

Therefore, the object of the present invention is a gymnastic shoe for sports uses comprising an insole, a sole of elastomeric material arranged on the outer surface of said insole and an upper anchored to said insole and blocked between said insole and said sole, characterized by the fact that said upper is made of a composite monolithic fabric with opposite surfaces at separated weaving, each surface having weft yarns and warp yarns distinct from those of the other surface and not belonging to this latter, braided together, the yarns of a surface having a colour different from that of the yarns of the other surface.

The two opposite surfaces of said upper can suitably differ from each other also for other characteristics, such as for instance the material of the constituent yarn, the count of the yarn, the preventive treatment suffered, their thickness, the way of weaving.

Anyhow, the present invention will be better understood by the aid of the present description and the attached figures, supplied only by way of non-limiting example, of which:

FIGURE 1 - is a perspective view, with parts partially broken away, of the shoe according to the invention;

FIGURE 2 - shows, in straight section, a type of composite monolithic fabric having separated weaving surfaces suitably usable as upper of the shoe according to the invention.

Figure 1 shows a particular type of sports shoe and precisely the model appreciated and well-known on the market for a long time as "tennis-shoe" or "rubber-shoe": however the invention is not limited to this shoe model, but it is suitably applied to a large range of sports shoes.

Therefore the shoe according to the invention comprises an insole 1 apt to bear the weight of the person wearing the shoe and the impact forces produced by the contact between the shoe and the ground during use. Consequently said shoe will have adequate mechanical resistance and behaviour characteristics upon which it is not necessary to enlarge since they are well known to the skilled

in art and do not constitute the object of the present invention.

An upper 2, whose shape depends only on the particular shoe model which is desired to obtain, is fastened around the insole, for example by means of a glueing operation and by folding the edge on the outer surface of the said insole.

The folded portion of said upper is covered with a sole 3 of elastomeric material, subsequently bound to the insole and to the upper, for instance through a vulcanizing process: said sole is apt to suffer the abrasion produced by the crawling of the shoe on the ground.

The shoe is in the end completed with a strip 4 of elastomeric material too, which extends along the periphery of the shoe in correspondence of the above said insole.

So the upper has two surfaces which will be called inner surface 21 that turned towards the foot and outer surface 22 that turned outwardly of the shoe.

In accordance with the invention the fabric constituting said upper is a composite monolithic fabric having opposite surfaces at separated weaving, whose straight section is shown in figure 2.

For a greater precision it is said that figure 2 shows one of the various types of fabric available, in accordance with the directions of the invention, and it is supplied only to permit an easy understanding of the characteristics of the above said fabric, but without any limiting purpose since the skilled in the art will be able to use also other types of fabric in connection with his precise needs, of course provided that they correspond to the stated conditions.

In other words the present invention does not aim to go into the details of the weaving techniques, but only to realize an improved gymnastic shoe as described and claimed here.

The fabric shown in figure 2 has therefore two opposite surfaces, an inner surface 21 and an outer surface 22, physically separated from each other, i.e. the textile elements belonging to one surface do not belong at the same time also to the other surface, so said fabric can be defined a composite fabric.

However the fabric is a monolithic product, i.e. the two distinct surfaces cannot be separated from each other, but they constitute a compact assembly since they are woven at the same time and braided the one with the other.

The outer surface 22 of said fabric comprises a series of warp yarns 221 and weft yarns 222 mutually braided.

A first series of yarns 301 (first weft of service) maintains the warp yarns 221 separated from a series of warp yarns 302 (intermediate warp) and a second series of yarns 303 (second weft of service) maintains the yarns of intermediate warp separated from the series of warp yarns 211 belonging to the inner surface 21.

Of course also the warp yarns 211 are braided with a plurality of weft yarns 212 to constitute the above said inner surface 21.

The connection between the inner surface 21 and the outer surface 22, that makes the fabric monolithic, is given by the intermediate warp that is braided contemporaneously with the weft yarns 222 and 212.

Now it is clear that the textile elements (weft and warp yarns) belonging to a surface do not belong also to the opposite surface, so the two surfaces are separated from each other confirming the definition given of "fabric having opposite surfaces at separated weaving".

The shoe according to the invention is characterized, first of all by the fact that the weft and warp yarns of the outer surface 22 have a colour different from that of the yarns of the inner surface 21.

The use of yarns coloured before the weaving operation permits to obtain a fabric having colours different on the two opposite faces, so that the colour of the shoe results to be that of the yarns of the outer surface of the upper. The separation between the two opposite faces makes possible the use of colourings of different type for said faces, conforming the type to the specific use required and moreover prevents the causes of possible deterioration of the colour acting on one of the two surfaces (for instance rain and/or mud on the outer surface, sweat on the inner surface) from producing their negative effects on the opposite surface.

According to an advantageous embodiment of the shoe forming the object of the present invention, only the yarns of the outer surface 22 are coloured, while the yarns of the inner surface 21 and of the other service elements (intermediate warp, service weft) are left in the raw state maintaining thus the natural colour of the fiber forming them.

According to a further advantageous embodiment of the above said shoe also the material constituting the yarns is different for the two surfaces: in fact materials very resistant to abrasion and not very absorbent as polyamide or polyester fibers are used for the yarns of the outer surface, while very soft natural fibers as cotton, flax, silk and other ones are used for the inner surface.

But also in the ambit of the same type of fibers it is possible to have different couplings as for instance cotton for the outer surface, flax for the inner surface.

Of course, on combining the couplings, the skilled in the art will have to take account of the physical and mechanical characteristics of the dif-

ferent yarns and in case to subject certain yarns to a preventive treatment, for instance a drawing treatment as in the case in which polyamide or polyester fibers are used, in order to obtain a fabric having a behaviour as more anysotropic and uniform as possible.

Of course in addition to this it will be possible to subject the yarns also to other treatments (chemical, thermal, mechanical) before being woven in order to provide the yarns of a surface with specific properties not important or not desired for the other surface (for instance water-repellent properties for the outer surface, bactericide properties for the inner surface) of course having care to ascertain that the above said treatments do not impede the successive glueing and binding of the upper to the sole and the insole.

Now it is clear that the aestethic characteristics (density, and uniformity of the colouring) and the barrier characteristics of a surface with respect to the other depend on the compactness of the surface. In other words a surface with yarns mutually spaced from one another would permit to see indistinctly the yarns of the intermediate structure or also those of the opposite surface (of different colour) giving a discontinuous and punctiform aspect to the surface in question and would not be effective in impeding the passage of foreign elements towards the opposite surface. Said compactness of surface is conveniently obtained in the shoe of the invention by acting on the count and thickness of the yarns of each surface at the same time.

To this purpose the Applicant has found advantageous to use counts comprised between 12/n and 36/n with thicknesses comprised between 15 and 70 yarns/cm for the warp and between 10 and 30 yarns/cm for the weft. According to a particularly advantageous embodiment of the shoe of the invention the fabric used for the upper is a cotton fabric with the same weft and warp yarns equally arranged on the two opposite surfaces which have for the warp yarns a thickness equal to 20 yarns/cm and a count equal to 24/3 and for the weft yarns a thickness equal to 10 yarns/cm and a count equal to 24/3.

It is also evident that being the two surfaces of the upper of the invention separated from each other they can be woven in a different manner, although within the limitations given by the fact of being in any case connected to each other in a monolithic fabric: this different type of weaving, for instance "square" on the outer surface and "twill" on the inner surface can originate different functional and/or aestethic characteristics on the two surfaces.

It is evident that the shoe of the invention could have any combination of the characteristics singly shown hereinbefore.

So it can be stated that the shoe of the invention has solved completely the set problem. In fact the fabric constituting the upper owing to the fact of being a composite monolithic fabric, maintains practically unchanged the transpiration properties typical of the conventional fabrics of the state of the art realizing a very aired and consequently dry and comfortable shoe while the separation between the two opposite surfaces permits to specialize each one of the two surfaces expressly for a well precise purpose without the relative precautions involving the opposite surface, specialized on its turn for different purposes.

Also it will be apparent that the present invention has been described only by way of non-limiting example; therefore it includes all those modifications and variants, even if not explicitly mentioned, that are easily deducible from the present inventive idea by the skilled in the art.

Claims

1. Gymnastic shoe for sports use comprising an insole (1), a sole (3) of elastomeric material arranged on the outer surface of said insole and an upper (2) anchored to said insole and blocked between said sole and said insole, characterized by the fact that said upper is made of a composite monolithic fabric having opposite surfaces (21, 22) at separated weaving, each surface having weft yarns (222) and warp yarns (221) distinct from those of the other surface and not belonging to this latter, braided together, the yarns of the outer surface having a colour different from that of the yarns of the inner surface.

2. Shoe according to claim 1, characterized by the fact that the yarns of said inner surface (21) are in the raw state.

3. Shoe according to claim 1, characterized by the fact that the yarns of said outer surface (22) are made of a material different from that of the yarns of said inner surface.

4. Shoe according to claim 3, characterized by the fact that the yarns of said outer surface are made of an artificial fiber chosen in the group comprising polyamide and polyester, while those of said inner surface are made of natural fibers chosen in the group comprising cotton, flax and silk.

5. Shoe according to claim 1, characterized by the fact that said warp yarns (221, 211) of said opposite surfaces have a thickness comprised between 15 and 70 yarns/cm.

6. Shoe according to claim 1, characterized by the fact that said weft yarns (222, 212) in said opposite surfaces have a thickness comprised between 10 and 30 yarns/cm.

7. Shoe according to claim 1, characterized by the fact that the characteristics of the yarns of at least one of said opposite surfaces have been modified with respect to those of the original yarn before being woven.

8. Shoe according to claim 1, characterized by the fact that said opposite surfaces in said upper (2) have suffered a different type of weaving the one from the other.

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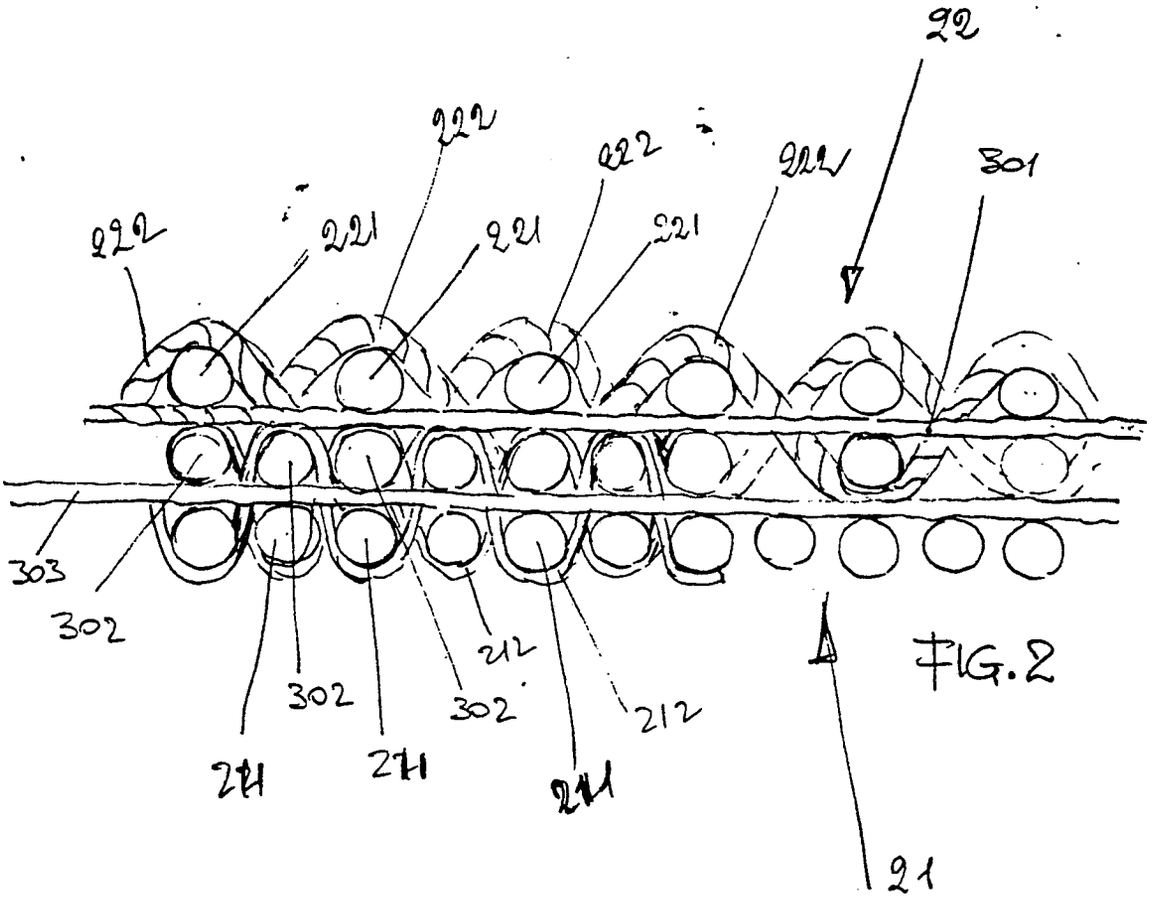

FIG.2

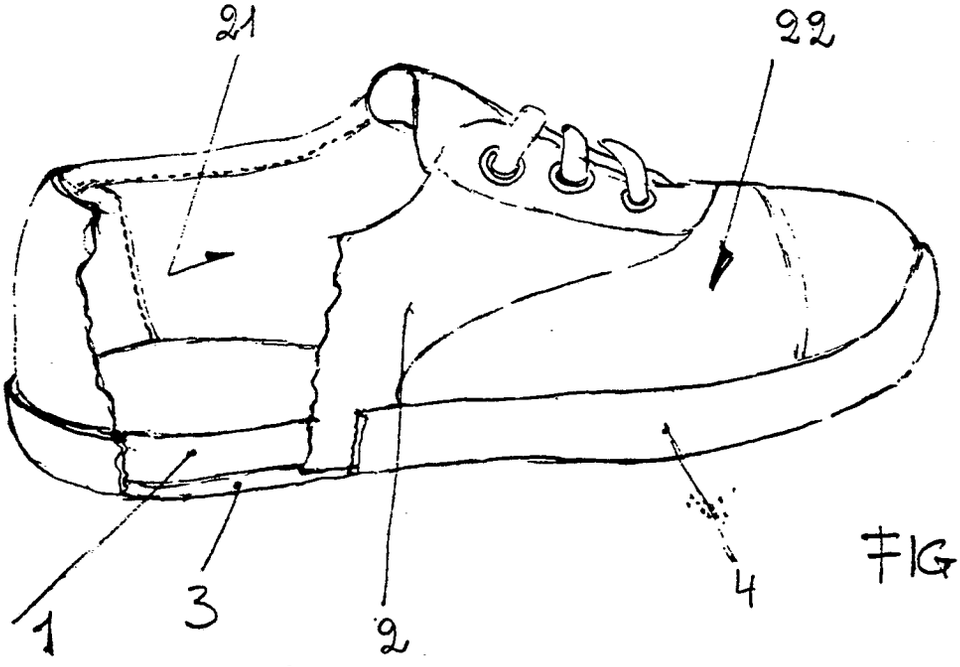

FIG.1