(11) EP 4 321 663 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication: 14.02.2024 Bulletin 2024/07

(21) Application number: 22189848.9

(22) Date of filing: 11.08.2022

(51) International Patent Classification (IPC):

D04B 1/24 (2006.01)

D04B 1/10 (2006.01)

A42B 1/046 (2021.01)

D04B 1/10 (2006.01)

(52) Cooperative Patent Classification (CPC): D04B 1/16; A42B 1/046; D04B 1/108; D04B 1/18; D04B 1/24; D10B 2201/24; D10B 2403/023; D10B 2403/033; D10B 2501/042

(84) Designated Contracting States:

AL 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 RS SE SI SK SM TR

Designated Extension States:

BA ME

Designated Validation States:

KH MA MD TN

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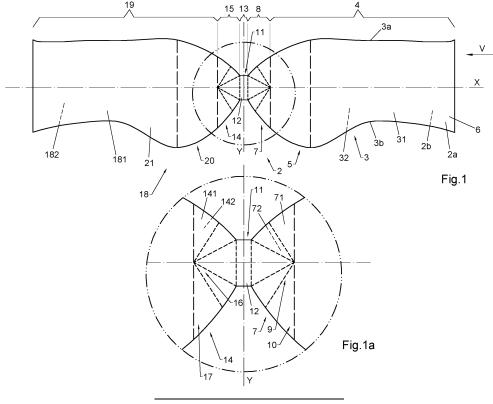
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(54) METHOD FOR MAKING A HEADGEAR, PREFERABLY A BALACLAVA, WITH A DOUBLE LAYER

(57) Method for making a headgear (1), preferably a balaclava (100), with double layer, adapted to cover at least in part the head of a person. The method envisages making a knit fabric element (2) as a single piece, of tubular type and of symmetrical shape with respect to an

axis of symmetry (Y), orthogonal to its longitudinal development axis (X), and folding said tubular knit fabric element (2) on itself at the axis of symmetry (Y), so as to overlap the symmetrical parts of said tubular knit fabric (2).



[0001] The present invention concerns a method for making a headgear, preferably a balaclava, with double layer, adapted to cover at least in part the head of a per-

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[0002] The invention also concerns a headgear, in particular a balaclava, with double layer, obtained by means of the aforesaid method.

[0003] Generally speaking, it is well known that the term "headgear" identifies an item of clothing used to cover at least in part the head of a person.

[0004] This category includes, in detail, rigid and nonrigid headgears, the latter made of various materials, usually by means of a knitting processing, so as to adapt and adhere to the head of a person when worn.

[0005] In particular, as far as such non-rigid headgears are concerned, they may comprise a single layer of knit fabric or, otherwise, they may be composed of two or more layers of knit fabric overlapped between them.

[0006] In addition, the same non-rigid headgears may assume various forms so that only the upper part of the head of a person is covered when they are worn, or they may be able to cover and completely wrap the head and the neck of that person, leaving only the eyes uncovered. [0007] This latter category of non-rigid headgears is usually identified with the term "balaclava".

[0008] It is equally well known that specific categories of people, such as drivers of cars, motorcycles or any motor vehicle, or military or civil corps, such as firefighters, are used to and/or obliged to wear special balaclavas, usually of a flame-retardant type, underneath a protective helmet. This is why the aforesaid specific balaclavas are referred to as "under-helmets" or even more particularly "flame-retardant under-helmets".

[0009] In detail, such flame-retardant balaclavas or under-helmets usually comprise a double layer of knit fabric, at least the outer layer of which is made of filaments of flame-retardant material.

[0010] It is also well known that, in order to produce non-rigid headgears in general, in particular balaclavas, and, even more in detail, this type of flame-retardant under-helmets, it is envisaged, according to the prior art, to make several elements of knit fabric, each defining a portion of the same headgear, for both the inner layer and the outer layer, and then to assemble these elements together as a single body, joining them together by means of seams. However, this prior art technique has some recognized drawbacks. Specifically, a first important drawback of this embodiment technique of the prior art is, disadvantageously, the fact of providing for numerous working steps in sequence, for the finished product to be

[0011] In particular, as mentioned above, it is first necessary to make the individual elements in knit fabric, and then to join them together suitably by means of seams, for the aforesaid finished product to be obtained.

[0012] Further, an even more obvious and important

drawback, which is a direct consequence of the implementation of the aforesaid method for making headgears of the prior art, relates to the fact that the latter have one or more stitching lines, which are necessary for joining the individual knit fabric elements.

[0013] As is well known, the presence of such stitching lines results in an increase in the level of stiffness of the same garment in some areas of the headgear or of the balaclava.

[0014] Consequently, disadvantageously, such stiffness in certain areas of the headgear or of the balaclava increases the friction by rubbing against the skin of the person wearing them, leading in turn to irritations or tears of the skin itself.

[0015] The aforesaid drawback is further amplified, disadvantageously, in the event that such a balaclava is used as an under-helmet. In fact, in the event that a protective helmet is worn above the balaclava, the former contributes to increasing the pressure exerted by the stitching lines on the skin of the person, thus worsening the aforesaid rubbing effect.

[0016] The present invention intends to overcome the aforesaid drawbacks of the prior art.

[0017] In particular, a first object of the invention is to propose a method for making a headgear with double layer that provides for an easier and faster execution than the realisation methods proposed by the prior art.

[0018] Another object of the invention is to propose a method for making a headgear with double layer that makes it possible to obtain a more comfortable and convenient item of clothing than the headgears obtained with the known techniques.

[0019] The aforesaid objects are achieved with the method for making a headgear with double layer, in accordance with the main claim to which reference will be made.

[0020] Further characteristics of the method of the invention are described in the dependent claims.

[0021] The headgear with double layer obtained by means of the method of the invention in accordance with claim 10 is also part of the invention.

[0022] The aforesaid objects, together with the advantages that will be better mentioned hereinafter, will be highlighted during the description of a preferred embodiment of the invention which is given, by way of nonlimiting example, with reference to the attached drawings, where:

- fig. 1 depicts in plan view a tubular knit fabric element obtained with the method of the invention;
- fig. 1a depicts in plan view a detail of the tubular knit fabric element of fig. 1;
- fig. 2 depicts in axonometric view the tubular knit fabric element of fig. 1;
- fig. 3 depicts in axonometric view the tubular knit fabric element of fig. 1, during the step of folding on itself, as envisaged by the method of the invention;
- fig. 4 depicts in axonometric view the tubular knit

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fabric element of fig. 1, completely folded on itself, as envisaged by the method of the invention;

- fig. 5 depicts in axonometric view a headgear, in particular a balaclava, obtained by means of the method of the invention;
- fig. 6 depicts in axonometric view the headgear, in particular the balaclava of fig. 5, worn by a person.

[0023] The method of the invention, for making a headgear **1**, preferably a balaclava **100**, with double layer, visible in fig. 5 and in fig. 6, adapted to cover at least in part the head of a person, is described below according to a preferred embodiment.

[0024] However, before proceeding to the above description, it is considered appropriate to define some specific expressions and terms, which are used below.

[0025] In particular, in the present context, the expression "knit fabric element made as a single piece" means a knit fabric element obtained by means of a continuous knitting process, implemented with a knitting machine.

[0026] The term "row", in the field of knitting processes and in the present context, refers to each horizontal row of knit stitches of a knit fabric element, each of these rows being orthogonal with respect to the direction of advancement of the same knit fabric element being processed.

[0027] With regard to the expression "processing of the type with retained stitches", it is intended hereby that at least one non-end knit stitch of a single row is not performed, i.e. the thread of the specific row being processed is not inserted into at least one stitch defined in the thread of the previous row. In other words, this stitch of the previous thread is retained for the possible insertion of the threads of rows subsequent to the row that is currently being processed.

[0028] A "drop" or "decrease" processing is defined as a reduction in the number of knit stitches performed consecutively for a row with respect to the number of consecutive knit stitches performed for the previous row.

[0029] On the other hand, the "increase" processing is defined as the increase in the number of knit stitches performed consecutively for a row with respect to the number of consecutive knit stitches performed for the previous row.

[0030] Both of these processings, as is known, allow the longitudinal edges of the knit fabric element being processed to be shaped.

[0031] Returning now to the method of the invention, it provides for sequentially performing the steps described below.

[0032] Firstly, the method of the invention provides for making a knit fabric element **2** as a single piece, of tubular type and of symmetrical shape with respect to an axis of symmetry **Y**, orthogonal to its longitudinal development axis **X**.

[0033] A representation of such a knit fabric element **2**, according to the preferred embodiment of the method of the invention, is presented in figs. 2 and 3.

[0034] According to the preferred embodiment of the

invention, said knit fabric element **2** is obtained by means of a knitting process implemented with a double needle bed straight knitting machine, even more particularly by means of a double needle bed straight knitting machine **V**.

[0035] According to this preferred embodiment, therefore, the tubular shape of the knit fabric element **2** is obtained by making, for each row, a front part **2a** that provides for the activation exclusively of the needles of the front needle bed when the carriage of the knitting machine is moved according to a forward direction, and a consecutive rear part **2b** that provides for the activation exclusively of the needles of the rear needle bed when the same carriage is moved according to a return direction, opposite to the forward direction.

[0036] It is not excluded, however, that according to alternative embodiments of the method of the invention such a tubular shape for the knit fabric element 2 can be obtained by means of a different processing, of the type known per se. With regard, in particular, to the method for making the knit fabric element 2, it provides for obtaining, according to a direction of advancement V along the aforesaid longitudinal development axis X, as depicted in fig. 1, a first tubular knit portion 3, comprising a plurality of consecutive rows 4, wherein for each row 4 all the adjacent knit stitches are performed consecutively, that is, the thread of the aforesaid row 4 is inserted into all the stitches defined in the thread of the previous row, possibly excluding the end stitches of the row in order to perform, if required, a drop processing.

[0037] Preferably, in said first tubular knit portion **3**, according to the preferred embodiment of the invention, "stockinette" type knit stitches are made.

[0038] Furthermore, according to the invention, said first tubular portion 3 provides for an end section 5, according to the aforesaid direction of advancement V, in which a processing of progressive drop of the knit stitches is carried out, so as to adapt the shape of the first tubular portion 3 to the decrease in the diameter of the head of the person who will be wearing the headgear 1.

[0039] More specifically, this drop processing is carried out on both the longitudinal edges **3a** and **3b** of the first tubular portion **3**, both during the realization of the front part **31** of the latter, by means of the front needle bed, and during the realization of the rear part **32**, by means of the rear needle bed.

[0040] According to the preferred embodiment of the invention, described herein, said first tubular knit portion 3, prior to the aforesaid end section 5, provides for a further section 6 of suitable length in order to be able to also cover the lower part of the head and the neck of a person, when the headgear 1 is completed and is worn by said person. In particular, according to the method of the invention, it is provided to carry out on this section 6 a series of increase and drop processings so as to adapt the shape of the first tubular knit portion 3 also to the features of the aforesaid lower part of the head and of the neck of the person. In other words, the headgear 1,

obtained by executing the preferred embodiment of the method of the invention under consideration, is a balaclava **100**.

[0041] However, it cannot be excluded that, according to an alternative embodiment of the method of the invention, said first tubular knit portion 3 would exclusively comprise this end section 5 in which the aforesaid processing of progressive drop is envisaged. In this way, the headgear 1 obtained by carrying out such an alternative embodiment of the method of the invention is a cap adapted to cover exclusively the upper part of the head of a person.

[0042] Returning to the preferred embodiment of the method of the invention, it provides, by means of the aforesaid knitting process, for performing, subsequent to the first tubular knit portion **3**, a second tubular shaped portion **7** with processing with retained stitches comprising a plurality of consecutive rows **8**.

[0043] In particular, this processing with retained stitches provides that for each row 8 the knit stitches 9 located centrally with respect to the side knit stitches 10 are retained, so as to give the second tubular portion 7 a substantially hemispherical course.

[0044] In particular, according to the preferred embodiment of the invention, which envisages using a double needle bed straight knitting machine, with which a front part 71 and a rear part 72 are also defined for the second tubular portion 7, the processing with retained stitches provides for performing, for each row 8 of said front 71 and rear 72 parts, the retention of the knit stitches 9 located centrally with respect to the side knit stitches **10**. [0045] Furthermore, in order to obtain this substantially hemispherical course effect of the second tubular portion 7, the preferred embodiment of the invention provides, for the plurality of rows 8, belonging to the same second tubular portion 7, to progressively increase the number of knit stitches 9 retained and located centrally with respect to the side knit stitches 10, according to the direction of advancement V considered.

[0046] According to the preferred embodiment of the invention, said second tubular portion 7 is made by envisaging two or more consecutive processings with retained stitches, for each of which a progressive increase in the number of knit stitches 9 retained and located centrally with respect to the side knit stitches 10 is provided. [0047] Furthermore, always according to the preferred embodiment of the method of the invention, in conjunction with such processing with retained stitches at the second tubular portion 7, it is also provided for the execution of a processing with progressive drop of the knit stitches, in a continuous manner with respect to the first tubular portion 3, so as to also adapt the shape of the second tubular portion 7 to the decrease in the diameter of the head of the person who will be wearing the headgear 1, as shown in fig. 6.

[0048] The method of the invention provides, subsequent to the realization of the second tubular portion **7**, to shape a third portion **11** so as to define a closing edge

12 of the aforesaid second previous tubular portion 7, as depicted in the detail of fig. 1a. In other words, the purpose of said third portion 11 is to interrupt the tubular shape of the aforesaid second tubular portion 7 and furthermore, as will be understood shortly, its purpose is also to interrupt the tubular shape of the subsequent fourth tubular portion 14. According to the preferred embodiment of the invention, which envisages using a double needle bed straight knitting machine, this interruption effect is obtained by simultaneously activating the needles of the front needle bed and of the rear needle bed during both the forward and return movements of the carriage of the aforesaid machine.

[0049] Even more preferably, said third portion **11** is made with a processing defined in technical jargon as "interlock".

[0050] Further, according to the preferred embodiment of the invention, said third portion **11** is made so as to comprise a limited number of rows **13**.

[0051] In fact, advantageously, as will be seen later, since said third portion 11 will correspond to the section of the headgear 1 that will be arranged in the upper part of the head of a person, the fewer the number of rows 13 that constitute said third portion 11 will be, the less its stiffness will be, and, consequently, the less the possible effect of rubbing against the skin of said person will be. According to the preferred embodiment of the method of the invention, it is also provided to use an elastic filament to obtain at least part of the rows 13 of the third portion 11. This feature, advantageously, makes it possible to avoid any damages to the tubular knit fabric element 2 during its processing, in particular during the realization of the subsequent fourth tubular portion 14, which is described shortly. In other words, the elasticity of the tubular knit fabric element 2 at said third portion 11, guaranteed by the use of said elastic threads, prevents any possible tensions on the same knit fabric element 2, during the subsequent processing steps.

[0052] Furthermore, the use of the elastic threads in said portion of the tubular knit fabric element **2** allows the headgear **1**, once completed, to assume a shape suitable for the head of a person.

[0053] According to the invention, which provides for a symmetrical shape of the tubular knit fabric element **2**, the aforesaid axis of symmetry **Y** can be identified exactly at said third portion **11**.

[0054] In consideration of this, continuing with the description of the preferred embodiment of the method of the invention, this provides for making, subsequent to the third portion 11, a fourth tubular portion 14 specular to the second tubular portion 7, in consideration of the aforesaid axis of symmetry Y. This means that said fourth tubular portion 14 will have substantially the same number of rows 15 as the second tubular portion 7, or at least, if threads of evidently different thickness were used for the realization of the fourth tubular portion 14 with respect to the second tubular portion 7, these portions must have substantially the same length, according to

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the direction defined by the aforesaid longitudinal development axis ${\bf X}$.

[0055] Furthermore, the fact that the fourth tubular portion **14** is made in a specular manner with respect to the second tubular portion **7** means that also said fourth tubular portion **14** is made, according to the method of the invention, with one or more processings with retained stitches so as to give the latter a substantially hemispherical course, as described extensively above.

[0056] In this case, however, in order to respect the aforesaid specularity, in consideration of the direction of advancement V, indicated by the arrow in fig. 2, and in order to obtain this substantially hemispherical course effect of the fourth tubular portion 14, it is provided, for the plurality of rows 15, belonging to the same fourth tubular portion 14, to progressively decrease the number of knit stitches 16 retained and located centrally with respect to the side knit stitches 17.

[0057] Furthermore, in order to respect this specularity, the fourth tubular portion 14 is made so as to provide for a processing of progressive increase in the knit stitches at the side edges of both the front part 141 and of the rear part 142 of said fourth tubular portion 14, so that the shape assumed by the latter is substantially superimposable to the shape assumed by the second tubular portion 7

[0058] Finally, the method of the invention provides for making, subsequent to the fourth tubular portion 14, a fifth tubular portion 18, comprising a front part 181 and a rear part 182 and specular to the first tubular portion 3, in consideration of the aforesaid axis of symmetry Y. [0059] This means, therefore, that also the fifth tubular portion 18 is made so as to comprise a plurality of consecutive rows 19, where for each row all adjacent knit stitches are performed consecutively.

[0060] In particular, said fifth tubular portion 18 will have substantially the same number of rows 19 as the first tubular portion 3, or at least, if threads of evidently different thickness were used for the realization of the fifth tubular portion 18 with respect to the first tubular portion 3, these portions must have substantially the same length according to the direction defined by the aforesaid longitudinal axis X.

[0061] Furthermore, always in order to respect the aforesaid specularity, the fifth tubular portion 18 is made so as to comprise an initial section 20, according to the aforesaid direction of advancement V, in which a processing of progressive increase in the knit stitches is carried out, in continuity with the fourth tubular portion 14 and substantially superimposable to the drops of the end section 5, so as to adapt the shape of the fifth tubular portion 18 itself to the decrease in the diameter of the head of the person who will be wearing the headgear 1. Again, according to the preferred embodiment of the method of the invention, said fifth tubular portion 18 provides a further section 21, subsequent to the initial section 20, of adequate length to cover also the lower part of the head and of the neck of a person, when the headgear 1

is completed and is worn by that person. In particular, according to the method of the invention, it is envisaged to perform on said section 21 a series of increase and drop processings, substantially superimposable on the increase and drop processings envisaged for the section 6 of the first tubular portion 3, so as to adapt also the shape of the fifth tubular portion 18 to the features of the aforesaid head and of the neck of a person.

[0062] According to the preferred embodiment of the method of the invention, in order to obtain a headgear corresponding to a balaclava (or also defined as a underhelmet) 100 of a flame-retardant type, it is envisaged using, at least in part, a flame-retardant thread to make the first tubular portion 3 and the second tubular portion 7, while it is envisaged using a viscose thread to make the fourth tubular portion 14 and the fifth tubular portion 18.

[0063] However, it cannot be excluded that, according to different embodiments of the invention, the threads used for the realization of the various portions of the tubular knit fabric element **2** are of a different nature from those just described.

[0064] Furthermore, always according to the preferred embodiment of the method of the invention, it is provided that during the realization of the first tubular portion 3, of the second tubular portion 7, of the fourth tubular portion 14 and of the fifth tubular portion 18 an elastic thread is inserted along both side edges, between the front part and the rear part that constitute each of these tubular portions.

[0065] This feature allows to ensure that the shape of the headgear **1** is maintained, once obtained, and its adherence to the features of the person who will wear it is increased.

[0066] Returning to the method of the invention, after obtaining the tubular knit fabric element 2 as a single piece, in the manner described so far, the same method provides for folding said tubular knit fabric element 2 on itself, as depicted by the arrow R in fig. 3, at the third portion 11, i.e. at the aforesaid axis of symmetry Y, so as to overlap the first tubular portion 3 to the fifth tubular portion 18 and so as to overlap the second tubular portion 7 to the fourth tubular portion 14, as depicted in fig. 4.

[0067] According to the preferred embodiment of the invention, this folding must be carried out in such a way as to maintain the first tubular portion **3** and the second tubular portion **7**, i.e. the flame-retardant portions, outwards, whereas the fourth tubular portion **14** and the fifth tubular portion **18** in viscose are arranged inwards.

[0068] Further, the method of the invention, according to the preferred embodiment described herein, envisages, following said folding operation, joining, preferably by means of seams 23, the two free ends of the overlapped knit fabric element, i.e. the two free ends 33 and 183 of the first tubular portion 3 and of the fifth tubular portion 18, respectively.

[0069] This ensures that the aforesaid overlap and the shape of the headgear 1, in particular of the balaclava

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100, are maintained.

[0070] The method of the invention, according to the preferred embodiment described herein, further provides for making an opening **22** at the first tubular portion **3** and the fifth tubular portion **18**, overlapped between them, so as to allow the vision to the person who will be wearing the headgear **1**, in particular the balaclava **100**.

[0071] As mentioned above, the headgear 1, preferably the balaclava 100, even more in detail the flame-retardant under-helmet, made according to the preferred embodiment of the method of the invention, including all the variants explicitly described or implicitly deductible from the previous discussion, is also part of the invention. [0072] Based on the foregoing, therefore, the method of the invention achieves all the predetermined purposes. [0073] In particular, it is achieved the object to propose a method for making a headgear with double layer that provides for an easier and faster execution than the re-

[0074] Another object achieved is that of proposing a method for making a headgear with double layer that allows to obtain a more comfortable and convenient item of clothing than the headgears obtained with the known techniques.

alisation methods proposed by the prior art.

[0075] In particular, advantageously, the minimization, if not the total elimination, of seams between the various parts that make up the headgear obtained by the method of the invention contributes to making the same headgear undoubtedly more comfortable than the headgears, in particular the balaclavas, obtained with the known embodiment techniques.

Claims

- Method for making a headgear (1), preferably a balaclava (100), with double layer, adapted to cover at least in part the head of a person, said method being characterized in that it provides for the steps of:
 - a) making a knit fabric element (2) as a single piece, of tubular type and of symmetrical shape with respect to an axis of symmetry (Y), orthogonal to its longitudinal development axis (X), said knit fabric element (2) comprising in sequence, according to a direction of advancement (V), along said longitudinal development axis (X):
 - a first tubular knit portion (3) comprising a plurality of consecutive rows (4), wherein for each row (4) all the adjacent knit stitches are performed consecutively and wherein at least for an end section (5) of said first tubular portion (3), according to said advancement direction (V), a progressive drop of the knit stitches is performed, so as to adapt the shape of said first tubular portion

- (3) to the decrease in the diameter of the head of said person;
- a second tubular knit portion (7) with processing with retained stitches comprising a plurality of consecutive rows (8), said processing with retained stitches providing for each row (8) the retention of the knit stitches (9) located centrally with respect to the side knit stitches (10), so as to give said second tubular portion (7) a substantially hemispherical course;
- a third tubular knit portion (11) made so as to define a closing edge (12) of at least said previous second tubular portion (7), said axis of symmetry (Y) being identified at said third tubular portion (11);
- a fourth tubular knit portion (14) made specularly with respect to said second tubular portion (7) according to said axis of symmetry (Y);
- a fifth tubular knit portion (18) made specularly with respect to said first tubular portion (3) according to said axis of symmetry (Y);
- b) folding said tubular knit fabric element (2) on itself at said third tubular portion (11), so as to overlap said first tubular portion (3) with said fifth tubular portion (18) and so as to overlap said second tubular portion (7) with said fourth tubular portion (14).
- 2. Method according to claim 1, characterized in that said tubular knit fabric element (2) is made by means of a knitting process implemented with a double needle bed straight knitting machine and wherein:
 - said tubular shapes of said first tubular portion (3), said second tubular portion (7), said fourth tubular portion (14) and said fifth tubular portion (18) are obtained by making, for each row (4, 8, 15, 19), a front part (31, 71, 141, 181) that provides for the activation exclusively of the needles of the front needle bed when the carriage of said knitting machine is moved according to a forward direction, and a consecutive rear part (32, 72, 142, 182) that provides for the activation exclusively of the needles of the rear needle bed when said carriage is moved according to a return direction, opposite to said forward direction; - for said front part (31, 181) and for said rear part (32, 182) of each row (4, 19) of said first tubular portion (3) and of said fifth tubular portion (18) all adjacent knit stitches are performed consecutively:
 - said third tubular portion (11) is made by simultaneously activating said needles of the front needle bed and of the rear needle bed during

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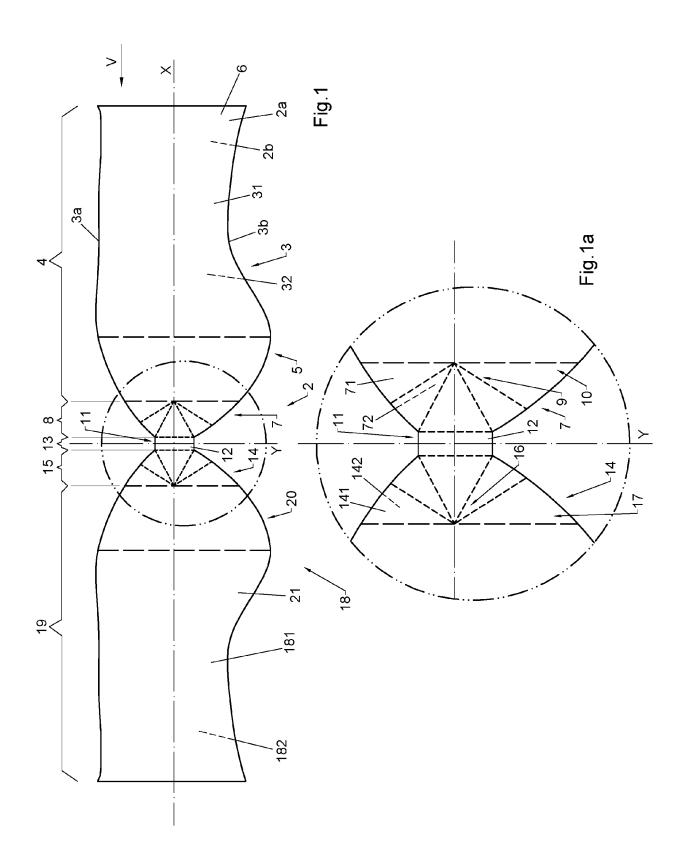
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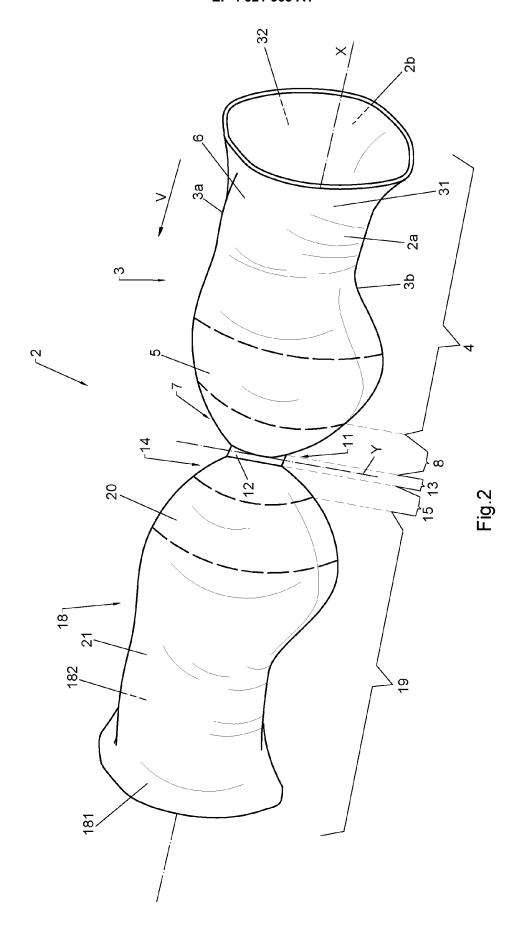
both forward and return movements of said carriage:

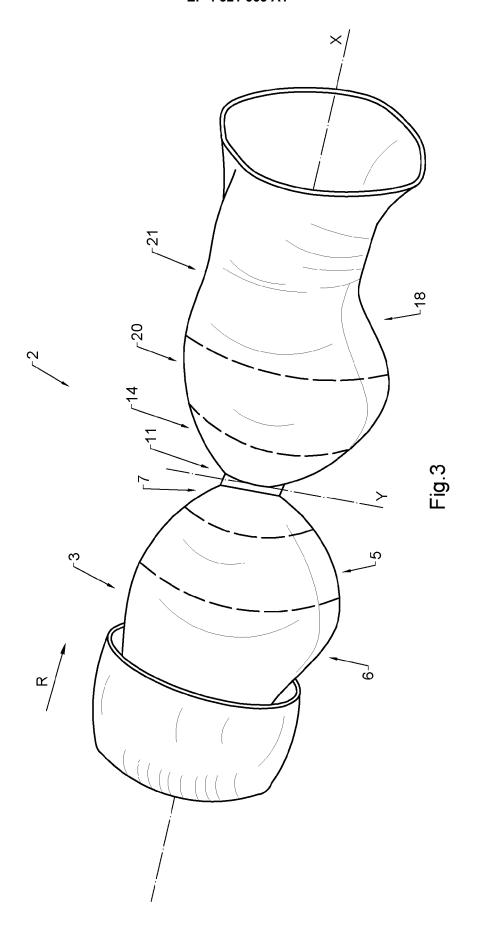
- said processing with retained stitches provides for both the front part (71, 141) and the rear part (72, 142) of each row (8, 15) of said second tubular portion (7) and of said fourth tubular portion (14) the retention of the knit stitches (9, 16) located centrally with respect to the side knit stitches (10, 17).
- Method according to any one of the preceding claims, characterized in that according to said direction of advancement (V), along said longitudinal development axis (X):
 - for said plurality of rows (8) of said second tubular portion (7), said processing with retained stitches provides for progressively increasing the number of knit stitches (9) retained and located centrally with respect to the side knit stitches (10);
 - for said plurality of rows (15) of said fourth tubular portion (14), said processing with retained stitches provides for progressively decreasing the number of knit stitches (16) retained and located centrally with respect to the side knit stitches (17).
- **4.** Method according to any one of the preceding claims, **characterized by** providing, following said folding operation, for a sewing operation of the two free ends (33, 183) of said overlapped tubular knit fabric element (2).
- 5. Method according to any one of the preceding claims, characterized in that an opening (22) is made at said first tubular portion (3) and said fifth tubular portion (18), overlapped between them, so as to allow the vision to said person, when wearing said headgear (1).
- 6. Method according to any one of the preceding claims, characterized in that according to said direction of advancement (V), along said longitudinal development axis (X):
 - said first tubular portion (3) provides for an end section (5) in which a processing with progressive drop of the knit stitches is carried out;
 - said fifth tubular portion (18) provides for an initial section (21) in which a progressive increase processing in the knit stitches is carried out.
- 7. Method according to claim 6, **characterized by** providing for one or more processings with drop or increase at least at one section (6, 21) of said first tubular portion (3) and of said fifth tubular portion

- (18), respectively distinct from said end section (5) and from an initial section (20), so as to adapt the shape of said first tubular portion (3) and of said fifth tubular portion (18) also to the decrease of the lower part of said person's head and neck, when said person is wearing said headgear (1).
- 8. Method according to any one of the preceding claims, characterized in that said first tubular portion (3) and said second tubular portion (7) are made by means of flame-retardant type threads, while said fourth tubular portion (14) and said fifth tubular portion (18) are made by means of viscose threads.
- Method according to claim 2, characterized in that while making said first tubular portion (3), said second tubular portion (7), said fourth tubular portion (14) and said fifth tubular portion (18) an elastic thread is inserted along both side edges between said front part (31, 71, 141, 181) and said rear part (32, 72, 142, 182).
 - 10. Method according to any one of the preceding claims, characterized in that said third tubular portion (11) is made at least by using an elastic thread.
 - **11.** Headgear (1), preferably a balaclava (100), **characterized in that** it is made by means of the method according to any one of the preceding claims.

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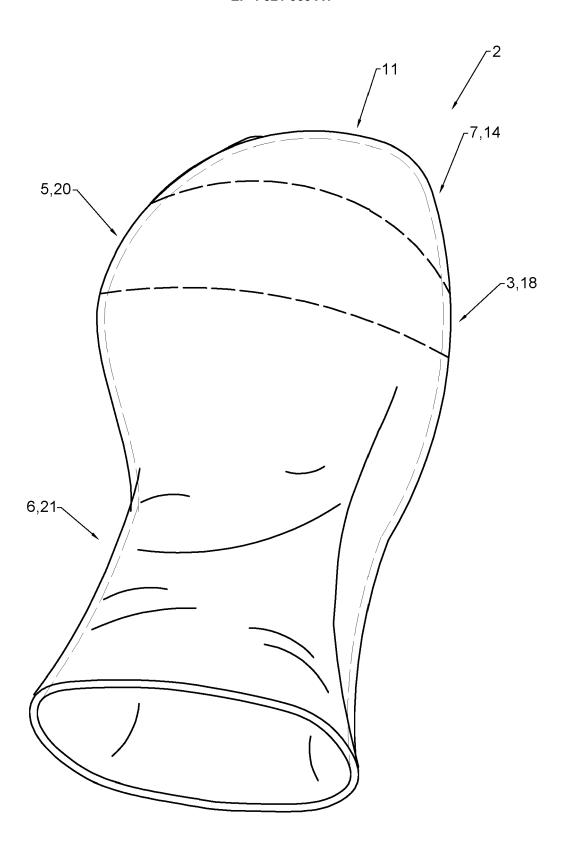
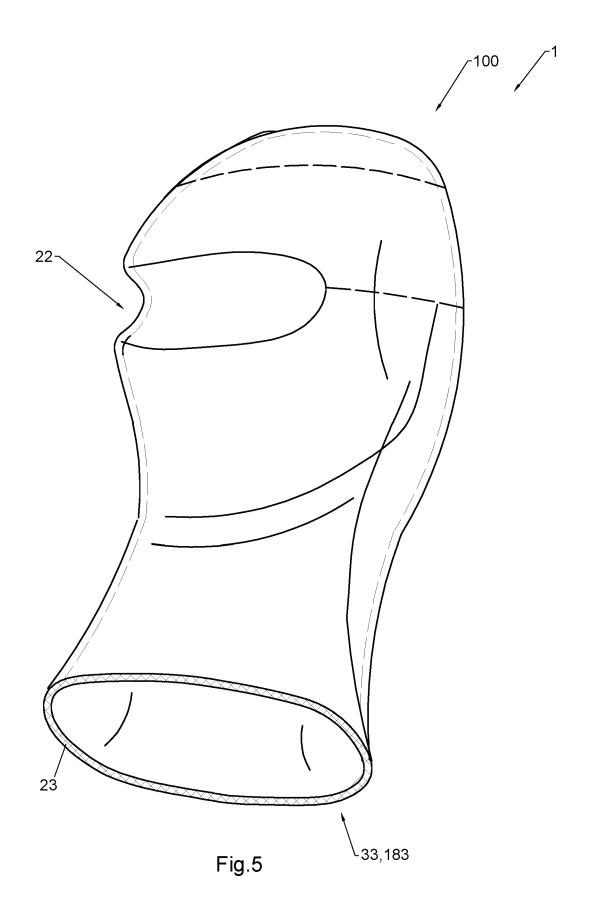
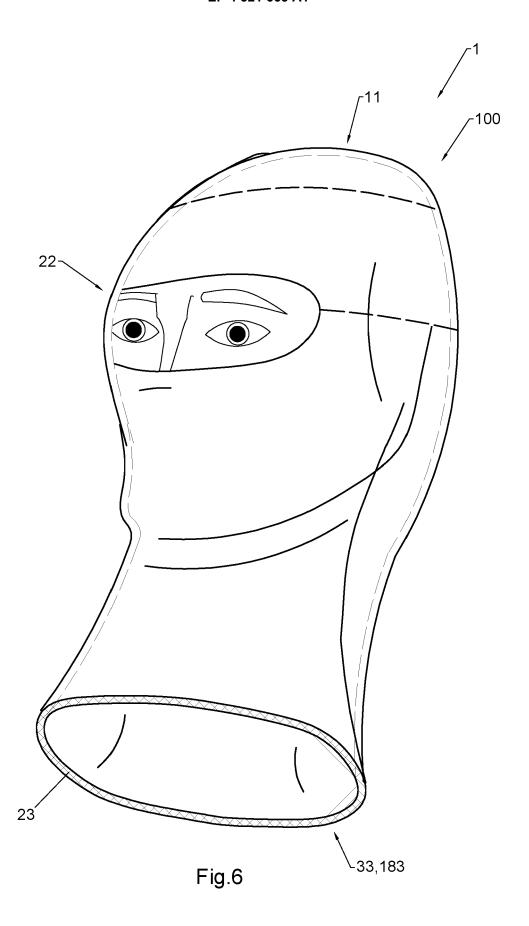


Fig.4





DOCUMENTS CONSIDERED TO BE RELEVANT



EUROPEAN SEARCH REPORT

Application Number

EP 22 18 9848

5

10

15

20

25

30

35

40

45

50

55

Category	Citation of document with indication of relevant passages	on, where appropriate,	Rele to cla			
A	US 3 740 767 A (SCHUESS 26 June 1973 (1973-06-2 * column 2, line 48 - c figures 1,6-9 *	6)	1-11	INV. D04B1/24 A42B1/046 D04B1/10		
A	DE 60 2004 005908 T2 (I TEXTILE ET D [FR]) 20 December 2007 (2007- * paragraphs [0001], [[0020] - [0030]; figure	12-20) 0005] - [0008]				
A	US 3 531 952 A (CHESEBR 6 October 1970 (1970-10 * column 2, lines 14-70	-06)				
A	US 3 271 781 A (SHELDON 13 September 1966 (1966 * column 2, line 45 - c figures 1,2,4 *	-09-13) column 3, line	74;			
				TECHNICAL FIELDS SEARCHED (IPC)		
				D04B A42C A42B		
	The present search report has been d	·				
Place of search Munich		Date of completion of the s		Examiner Wendl, Helen		
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		T : theory of E : earlier p	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 8: member of the same patent family, corresponding			

EP 4 321 663 A1

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

EP 22 18 9848

5

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 The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

18-01-2023

10		Patent document cited in search report			Publication date	Patent family member(s)			Publication date
		US	3740767	A	26-06-1973	AT	332136	В	10-09-1976
						BE	772688	A	17-01-1972
45						CA	935251	A	16-10-1973
15						CH	539401	A	31-07-1973
						DE	2143854		31-08-1972
						DK	128632	В	10-06-1974
						FI	50759		31-03-1976
						FR	2125836		29-09-1972
20						GB	1295389		08-11-1972
						JP	S5533998	U	05-03-1980
						NL	7113072	A	21-08-1972
						NO	129182	В	11-03-1974
						SE	375686	В	28-04-1975
25						US	37 4 0767	A	26-06-1973
		DE	602004005908	Т2	20-12-2007	AT	360113	т	15-05-2007
							602004005908		20-12-2007
						EP	1462554		29-09-2004
						ES	2283938		01-11-2007
30						FR	2852976	A1	01-10-2004
		US	3531952	A	06-10-1970	NON			
		US	3271781	A	13-09-1966	NON			
35									
40									
45									
45									
50									
	621								
	N P02								
55	FORM P0459								

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