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(54) **UNDERWEAR GARMENT, ESPECIALLY FOR PARACHUTING**

UNTERKLEIDUNG, INSBESONDERE FÜR FALLSCHIRMSPRINGEN

SOUS-VÊTEMENT SPÉCIALEMENT CONÇU POUR LE PARACHUTISME

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(56) References cited:  
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## Description

**[0001]** The present patent application for industrial invention relates to an underwear garment, particularly for parachuting.

**[0002]** The peculiarities and advantages of the invention will become more evident after a brief description of the prior art and its main drawbacks.

**[0003]** Garments defined as "technical" are being designed and marketed more and more frequently, as they have special features that make them suitable for use in specialized sectors, including extreme ones, both in the working and sports fields.

**[0004]** One of the activities that requires the use of such technical garments is certainly parachuting, since it exposes parachutists to quite severe environmental conditions and to situations that are particularly dangerous for their physical safety.

**[0005]** In fact, parachutists have long been aware of the need to wear underwear garments that are not only capable of offering an adequate protection to the trunk and the head in relation to the different weather conditions that may occur during launches, but also of ensuring a high level of comfort and wearability, such that they do not hinder in any way the body movements of their respective users.

**[0006]** In view of the above premises, it should be pointed out that the underwear garments that are currently available on the market do not appear to be entirely satisfactory in relation to the aforementioned typical needs of a parachutist.

**[0007]** In fact, today a parachutist uses a more or less heavy undershirt to protect the trunk, depending on the weather and climatic conditions; whereas, in addition to the traditional helmet, a parachutist uses an under-helmet to protect his or her head, said under-helmet basically consisting of a tight-fitting hood provided with a front opening, otherwise called a "balaclava".

**[0008]** However, the cooperation between these two "separate" garments is not always optimal, not only in terms of protective capacity, but also and especially in terms of comfort and fit.

**[0009]** It is evident, in fact, that the physical separation between the two garments can easily result in the loss of the continuity that is necessary to protect the user's body at best, especially when said garments are used for sports, in such a condition that the air can easily pass through them, causing a serious discomfort for the user.

**[0010]** A typical drawback of traditional under-helmets consists in the discomfort and cumbersomeness that are experienced by the user during the partial lifting of said garment, that is, when the user intends to free his or her face from the annoying presence of said under-helmet for a few moments, perhaps during a short break from his or her activity, without removing the garment completely.

**[0011]** CN107348578 discloses a head cap and a clothes body, and belongs to articles of daily use. Elastic cloth is adopted for connecting the cap edge of the head

cap and a collar to prevent the head cap from being hindered by the collar, thus the head cap can flexibly rotate with the head while the sight is not influenced, and transportation safety is ensued.

5 **[0012]** The purpose of the present invention is to overcome the drawbacks of the prior art by devising the garment according to the invention that is in fact capable of providing potential users with fully satisfactory conditions in terms of protection, comfort and fit.

10 **[0013]** Said new garment is primarily based on the cooperation between an undershirt and a particular under-helmet devised in an innovative and effective manner, by virtue of the features listed in the attached independent claim 1.

15 **[0014]** Additional advantageous embodiments of the invention are described in the dependent claims.

20 **[0015]** For the sake of explanatory clarity, the description of the invention continues with reference to the attached drawings, which only have an illustrative and not limiting value, wherein:

- Fig. 1 is a front view of the garment in question, in the position assumed when it is correctly worn by the respective user;
- 25 - Fig. 2 is a rear view of the garment in the same condition;
- Figs. 3 and 4 are respectively a front view and a side view of the garment of Fig. 1 in a condition in which the respective under-helmet is partially uncoupled from the undershirt;
- 30 - Fig. 5 is a front view of the garment of Fig. 1 in a condition when the under-helmet is partially lifted, in the direction of the user's face.

35 **[0016]** With reference to the aforementioned figures, the garment according to the invention (100) avails itself of the cooperation of an undershirt (1) and an under-helmet (2) that are joined together.

40 **[0017]** In particular, said undershirt (1) comprises a central portion (10) suitable for covering the trunk of the user and an upper opening wherein the neck of the user is suitable for being positioned; it being particularly provided that said opening is defined by a front upper edge (11a) and by a rear upper edge (11b) of the undershirt (1).

45 **[0018]** The under-helmet (2) comprises collar (20) and a hood (25) suitable for covering the head of the user and frontally provided with a hole (26) having a suitable size in such a way to leave uncovered the eyes, and preferably also the mouth and the nose of the user.

50 **[0019]** Said collar (20) provided in the under-helmet (2) comprises a front portion (20a) suitable for covering the front of the user's neck, and a rear portion (20b) suitable for covering the back of the user's neck; it being particularly provided that said rear portion (20b) of the collar (20) is joined to the rear upper edge (11b) of the undershirt (1), that is the one disposed in the center of the shoulders.

55 **[0020]** Furthermore, it must be noted that the garment

according to the invention (100) comprises a front opening (A) which is substantially horizontal and disposed between the undershirt (1) and the under-helmet (2).

**[0021]** More precisely, said opening (A) is superiorly defined by the front portion (20a) of the collar (20) and inferiorly defined by the front upper edge (11a) of the undershirt (1), as shown in Fig. 5.

**[0022]** Figs. 3 and 4 show that the garment according to the invention (100) also comprises a mouthpiece (23) which is joined inferiorly to the front portion (20a) of the collar (20), and is suitable for being inserted in said opening of the undershirt (1) during use, in such a way to be disposed in contact with the inner surface of the undershirt (1).

**[0023]** In the latter condition, the mouthpiece (23) practically seals the front opening (A) of the garment according to the invention (100), with the practical effect of "sealing" the opening of the undershirt (1) from the external air, thus preventing the user's body from being reached by the cold air that penetrates through said opening.

**[0024]** At the same time, the mouthpiece (23) can be advantageously used as a gripping point when the user intends to remove the under-helmet (2) from his or her head, either completely or partially, as shown in Fig. 5.

**[0025]** Moreover, for a higher reliability and stability during use, the garment according to the invention (100) is provided with the following reinforcing means:

- a reinforcing band (31) disposed between the hood (25) and the front portion (20a) of the collar (20) and suitable for being disposed astride between the front of the neck and the submandibular region of the user.
- a reinforcing strip (32) disposed between the rear upper edge (11b) of the undershirt (1) and the rear portion (20b) of the collar (20) and a reinforcing hem (33) formed on the front upper edge (11a) of the undershirt (1); wherein it is provided that, preferably, said reinforcing hem (33) is seamlessly joined together with said reinforcing strip (32), in such a way to form a single reinforcing loop
- a perimeter reinforcing hem (34) formed on the perimeter edge of the hole (26) of the hood (25).

**[0026]** According to a preferred embodiment of the invention, and in order to increase the performance level of the garment (100), it is provided that all the reinforcing elements (31, 32, 33, 34) are made of Kevlar, that is to say of a highly resistant, lightweight material.

**[0027]** With the aim of increasing the versatility and attractiveness of the garment in question (100), it has been decided to provide two different versions of said garment (100), namely a "winter" version, which is suitable for providing a better protection from the cold, and a "summer" version, which is suitable for providing a better perspiration.

**[0028]** The two aforementioned versions are structurally and conceptually identical, but they are made with a

different type of fabric.

**[0029]** The so-called "winter" version of the garment (100) is made of a fabric comprising:

- 5 A) a meta-aramid yarn (preferably comprising Nomex®), which is present in said fabric in a percentage comprised between 92% and 96%, preferably 94%;
- 10 B) an elastane yarn, which is present in said fabric in a percentage comprised between 1% and 5%, preferably 3%;
- C) a pure silver yarn, which is present in said fabric in a percentage comprised between 1% and 5%, preferably 3%.

15 **[0030]** Instead, the so-called "summer" version of the garment (100) is made of a fabric comprising:

- 20 a) a silk yarn, which is present in said fabric in a percentage comprised between 22% and 27%, preferably 25%;
- b) a bioceramic yarn, which is present in said fabric in a percentage comprised between 65% and 69%, preferably 67%;
- 25 c) an elastane yarn, which is present in said fabric in a percentage comprised between 2% and 6%, preferably 4%;
- d) a pure silver yarn, which is present in said fabric in a percentage comprised between 2% and 6%, preferably 4%.

**[0031]** Numerous variations and modifications may be made to the present embodiment of the invention, within the reach of a person skilled in the art, but still within the scope of the invention as expressed by the appended claims.

**[0032]** Similarly, it must be pointed out that although parachuting has been indicated in the foregoing description as the preferred use of the garment according to the invention, nothing prevents said garment from being equally advantageously used for many different activities, such as skiing, motorcycling, mountaineering, hiking, trekking, etc.

#### 45 Claims

1. Underwear garment (100), particularly for parachuting, comprising an undershirt (1) and an under-helmet (2) that are joined together, wherein:

- 50 - said undershirt (1) comprises a central portion (10) suitable for covering the trunk of a user and an upper opening wherein the neck of a user is suitable for being positioned; said opening being defined by a front upper edge (11a) of said undershirt (1) and by a rear upper edge (11b) of said undershirt (1);
- 55 - said under-helmet (2) comprising a collar (20)

and a hood (25); said hood (25) being suitable for covering the head of the user; said hood (25) comprising a hole (26) having a suitable size in such a way to leave uncovered at least the eyes of the user; wherein the collar (20) comprises a front portion (20a) suitable for covering the front of the user's neck, and a rear portion (20b) suitable for covering the back of the user's neck; - wherein said rear portion (20b) of the collar (20) is joined to the rear upper edge (11b) of the undershirt (1); - wherein said garment (100) comprises a front opening (A) superiorly defined by the front portion (20a) of the collar (20) and inferiorly defined by the front upper edge (11a) of said undershirt (1), which allows the user to easily wear or remove the under-helmet (2);

**characterized in that** it comprises a mouthpiece (23) which is joined inferiorly to the front portion (20a) of the collar (20), and is suitable for being disposed in contact with the inner surface of the undershirt (1), namely the one facing the user's body, through said opening of the undershirt (1) during use.

2. The underwear garment (100) according to claim 1, comprising a reinforcing band (31) disposed between the hood (25) and the front portion (20a) of the collar (20) and suitable for being disposed astride between the front of the neck and the submandibular region of the user.
3. The underwear garment (100) according to any one of the preceding claims, comprising a reinforcing strip (32) disposed between the rear upper edge (11b) of the undershirt (1) and the rear portion (20b) of the collar (20).
4. The underwear garment (100) according to any one of the preceding claims, comprising a reinforcing hem (33) formed on the front upper edge (11a) of the undershirt (1).
5. The underwear garment (100) according to claim 3 and 4, wherein said reinforcing hem (33) and said reinforcing strip (32) are seamlessly joined together, defining a single reinforcing loop.
6. The underwear garment (100) according to any one of the preceding claims, comprising a perimeter reinforcing hem (34) formed on the perimeter edge of the hole (26) of the hood (25).
7. The underwear garment (100) according to any one of the preceding claims, wherein said undershirt and said under-helmet are made of a fabric comprising:

A) a meta-aramid yarn;

B) an elastane yarn; and  
C) a pure silver yarn.

8. The underwear garment (100) according to claim 7, wherein:
  - said meta-aramid yarn is present in the fabric in a percentage comprised between 92% and 96%, preferably 94%;
  - said elastane yarn is present in the fabric in a percentage comprised between 1% and 5%, preferably 3%;
  - said pure silver yarn is present in the fabric in a percentage comprised between 1% and 5%, preferably 3%.
9. The underwear garment (100) according to any one of claims 1 to 6, wherein said undershirt (1) and said under-helmet (2) are made of a fabric comprising:
  - a) a silk yarn;
  - b) a bioceramic yarn;
  - c) an elastane yarn;
  - d) a pure silver yarn.
10. The underwear garment according to claim 9, wherein:
  - said silk yarn is present in the fabric in a percentage comprised between 22% and 27%, preferably 25%;
  - said bioceramic yarn is present in the fabric in a percentage comprised between 65% and 69%, preferably 67%;
  - said elastane yarn is present in the fabric in a percentage comprised between 2% and 6%, preferably 4%;
  - said pure silver yarn is present in a percentage comprised between 2% and 6%, preferably 4%.
11. The underwear garment (100) according to any one of the preceding claims, wherein said hole (26) of the hood (25) has a suitable size in such a way to leave uncovered not only the eyes, but also the nose and mouth of the user.

#### Patentansprüche

1. Unterwäsche (100), insbesondere für den Fallschirmsport, umfassend ein Unterhemd (1) und einen Unterhelm (2), die miteinander verbunden sind; wobei:
  - das Unterhemd (1) einen mittleren Abschnitt (10) umfasst, der dazu bestimmt ist, den Rumpf eines Benutzers zu bedecken, und eine obere Öffnung umfasst, in der der Hals eines Benut-

zers positioniert zu werden bestimmt ist; wobei die Öffnung durch einen vorderen oberen Rand (11a) des Unterhemds (1) und einen hinteren oberen Rand (11b) des Unterhemds (1) begrenzt wird;

- der Unterhelm (2) einen Kragen (20) und eine Kapuze (25) umfasst; wobei die Kapuze (25) dazu bestimmt ist, den Kopf des Benutzers zu bedecken; wobei die Kapuze (25) ein Loch (26) umfasst, das eine derartige Größe aufweist, dass es mindestens die Augen des Benutzers unbedeckt lässt; wobei der Kragen (20) einen vorderen Abschnitt (20a) umfasst, der dazu bestimmt ist, die Vorderseite des Halses des Benutzers zu bedecken, und einen hinteren Abschnitt (20b), der dazu bestimmt ist, die Hinterseite des Halses des Benutzers zu bedecken;

- wobei der hintere Abschnitt (20b) des Kragens (20) mit dem hinteren oberen Rand (11b) des Unterhemds (1) verbunden ist;

- wobei die Unterwäsche (100) einen vordere Öffnung (A) umfasst, die oberseitig von dem vorderen Abschnitt (20a) des Kragens (20) und unterseitig von dem vorderen oberen Rand (11a) des Unterhemds (1) begrenzt wird, die es dem Benutzer erlaubt, den Unterhelm (2) leicht an- oder ausziehen;

**dadurch gekennzeichnet, dass** sie ein Mundstück (23) umfasst, das unterseitig mit dem vorderen Abschnitt (20a) des Kragens (20) verbunden ist und dazu bestimmt ist, bei Gebrauch im Kontakt mit der Innenfläche des Unterhemds (1), namentlich jener, die dem Körper des Benutzers zugewandt ist, durch die Öffnung des Unterhemds (1) angeordnet zu werden.

2. Unterwäsche (100) nach Anspruch 1, umfassend ein Verstärkungsband (31), das zwischen der Kapuze (25) und dem vorderen Abschnitt (20a) des Kragens (20) angeordnet ist und dazu bestimmt ist, sich zwischen der Vorderseite des Halses und dem Unterkinnbereich des Benutzers zu positionieren.
3. Unterwäsche (100) nach einem der vorstehenden Ansprüche, umfassend einen Verstärkungsstreifen (32), der zwischen dem hinteren oberen Rand (11b) des Unterhemds (1) und dem hinteren Abschnitt (20b) des Kragens (20) angeordnet ist.
4. Unterwäsche (100) nach einem der vorstehenden Ansprüche, umfassend einen Verstärkungssaum (33), der auf dem vorderen oberen Rand (11a) des Unterhemds (1) herausgearbeitet ist.
5. Unterwäsche (100) nach den Ansprüchen 3 und 4, wobei der Verstärkungssaum (33) und der Verstärkungsstreifen (32) nahtlos miteinander verbunden

sind und ein einzige Verstärkungsschleife definieren.

- 5 6. Unterwäsche (100) nach einem der vorstehenden Ansprüche, umfassend einen peripheren Verstärkungssaum (34), der auf dem peripheren Rand des Lochs (26) der Kapuze (25) herausgearbeitet ist.
- 10 7. Unterwäsche (100) nach einem der vorstehenden Ansprüche, wobei das Unterhemd und der Unterhelm aus einem Textilgewebe hergestellt sind, umfassend:
  - 15 A) ein Meta-Aramidgarn;
  - B) ein Elastangarn; und
  - C) ein Garn aus echtem Silber.
- 20 8. Unterwäsche (100) nach Anspruch 7, wobei:
  - 25 - das Meta-Aramidgarn in dem Textilgewebe in einem Prozentsatz von 92 % bis 96 %, vorzugsweise von 94 % vorhanden ist;
  - das Elastangarn in dem Textilgewebe in einem Prozentsatz von 1 % bis 5 %, vorzugsweise von 3 % vorhanden ist;
  - 25 - das Garn aus echtem Silber in dem Textilgewebe in einem Prozentsatz von 1 % bis 5 %, vorzugsweise von 3 % vorhanden ist.
- 30 9. Unterwäsche (100) nach einem der Ansprüche 1 bis 6, wobei das Unterhemd (1) und der Unterhelm (2) aus einem Textilgewebe hergestellt sind, umfassend:
  - 35 a) ein Seidengarn;
  - b) ein Biokeramikgarn;
  - c) ein Elastangarn;
  - d) ein Garn aus echtem Silber.
- 40 10. Unterwäsche nach Anspruch 9, wobei:
  - 45 - das Seidengarn in dem Textilgewebe in einem Prozentsatz von 22 % bis 27 %, vorzugsweise von 25 % vorhanden ist;
  - das Biokeramikgarn in dem Textilgewebe in einem Prozentsatz von 65 % bis 69 %, vorzugsweise von 67 % vorhanden ist;
  - das Elastangarn in dem Textilgewebe in einem Prozentsatz von 2 % bis 6 %, vorzugsweise von 4 % vorhanden ist;
  - 50 - das Garn aus echtem Silber in dem Textilgewebe in einem Prozentsatz von 2 % bis 6 %, vorzugsweise von 4 % vorhanden ist.
- 55 11. Unterwäsche (100) nach einem der vorstehenden Ansprüche, wobei das Loch (26) der Kapuze (25) eine derartige Größe aufweist, dass nicht nur die Augen, sondern auch die Nase und der Mund des

Benutzers unbedeckt sind.

## Revendications

1. Sous-vêtement (100), notamment pour parachutisme, comprenant un tricot (1) et un sous casque (2) unis entre eux ; où :
- ledit tricot (1) comprend une portion centrale (10) apte à recouvrir le corps de l'utilisateur et une ouverture supérieure à l'intérieur de laquelle le col d'un utilisateur peut se positionner ; ladite ouverture étant délimitée par un bord supérieur antérieur (11a) du susdit tricot (1) et par un bord supérieur postérieur (11b) du susdit tricot (1) ;
  - ledit sous casque (2) comprenant un col (20) et un capuchon (25) ; ledit capuchon (25) étant destiné à couvrir la tête de l'utilisateur ; ledit capuchon (25) comprenant un orifice (26) ayant des dimensions telles qu'au moins les yeux de l'utilisateur sont découverts ; où le col (20) comprend une portion antérieure (20a) apte à couvrir la partie antérieure du col de l'utilisateur et une portion postérieure (20b) apte à couvrir la partie postérieure du col de l'utilisateur ;
  - où la portion postérieure (20b) du col (20) est reliée au bord supérieur postérieur (11b) du tricot (1) ;
  - où le susdit sous-vêtement (100) comprend une ouverture frontale (A), délimitée supérieurement par la portion antérieure (20a) du col (20) et inférieurement par le bord supérieur antérieur (11a) du susdit tricot (1) et qui permet donc à l'utilisateur d'enfiler et d'enlever aisément le sous casque (2) ;
- caractérisé en ce qu'il** comprend une embouchure (23) qui est reliée inférieurement à la portion antérieure (20a) du col (20) et destinée, pendant l'usage, à se disposer en contact avec la surface interne du tricot (1), celle tournée vers le corps de l'utilisateur, à travers la susdite ouverture du tricot même (1).
2. Sous-vêtement (100) selon la revendication 1, comprenant une bande de renfort (31) disposée entre le capuchon (25) et la portion antérieure (20a) du col (20), destinée à se positionner à cheval entre la partie antérieure du col et la région sous-mandibulaire de l'utilisateur.
3. Sous-vêtement (100) selon l'une quelconque des revendications précédentes, comprenant un bandeau de renfort (32) disposé entre le bord supérieur postérieur (11b) du tricot (1) et la portion postérieure (20b) du col (20).
4. Sous-vêtement (100) selon l'une quelconque des revendications précédentes, comprenant un ourlet de renfort (33) réalisé sur le bord supérieur antérieur (11a) du tricot (1).
5. Sous-vêtement (100) selon les revendications 3 et 4, où ledit ourlet de renfort (33) et ledit bandeau de renfort (32) sont unis entre eux sans couture en définissant un anneau unique de renfort.
6. Sous-vêtement (100) selon l'une quelconque des revendications précédentes, comprenant un ourlet périmétral de renfort (34) réalisé sur le bord périmétral de l'orifice (26) du capuchon (25).
7. Sous-vêtement (100) selon l'une quelconque des revendications précédentes, où ledit tricot et ledit sous casque sont réalisés dans un tissu comprenant :
- A) un fil à base de méta-aramide ;
  - B) un fil d'élasthanne ; et
  - C) un fil d'argent pur.
8. Sous-vêtement (100) selon la revendication 7, où :
- ledit fil à base de méta-aramide est présent dans le tissu dans un pourcentage compris entre 92% et 96%, préférablement 94% ;
  - ledit fil d'élasthanne est présent dans le tissu dans un pourcentage compris entre 1% et 5%, préférablement 3% ;
  - ledit fil d'argent pur est présent dans le tissu dans un pourcentage compris entre 1 % et 5%, préférablement 3%.
9. Sous-vêtement (100) selon l'une quelconque des revendications de 1 à 6, où ledit tricot (1) et ledit sous casque (2) sont réalisés dans un tissu comprenant :
- a) un fil de soie ;
  - b) un fil en céramique biocompatible ;
  - c) un fil d'élasthanne ;
  - d) un fil d'argent pur.
10. Sous-vêtement selon la revendication 9, où
- ledit fil de soie est présent dans le tissu dans un pourcentage compris entre 22% et 27 %, préférablement 25% ;
  - ledit fil en céramique biocompatible est présent dans le tissu dans un pourcentage compris entre 65% et 69%, préférablement 67% ;
  - ledit fil d'élasthanne est présent dans le tissu dans un pourcentage compris entre 2% et 6%, préférablement 4% ;
  - ledit fil d'argent pur est présent dans le tissu

dans un pourcentage compris entre 2% et 6%,  
préférentiellement 4%.

11. Sous-vêtement (100) selon l'une quelconque des revendications précédentes, où ledit orifice (26) du capuchon (25) a des dimensions telles à laisser découverts non seulement les yeux mais également le nez et la bouche de l'utilisateur.

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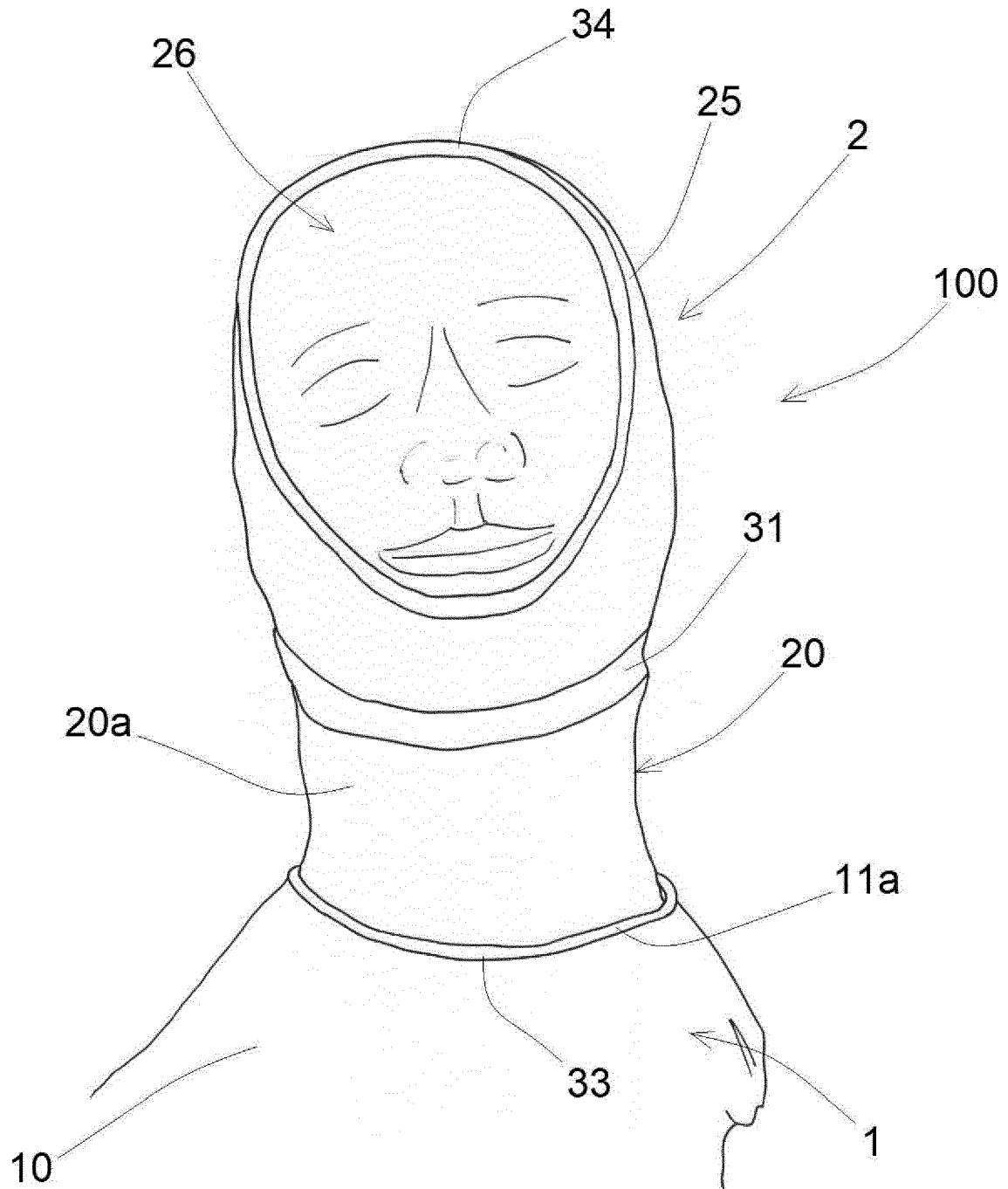


FIG. 1

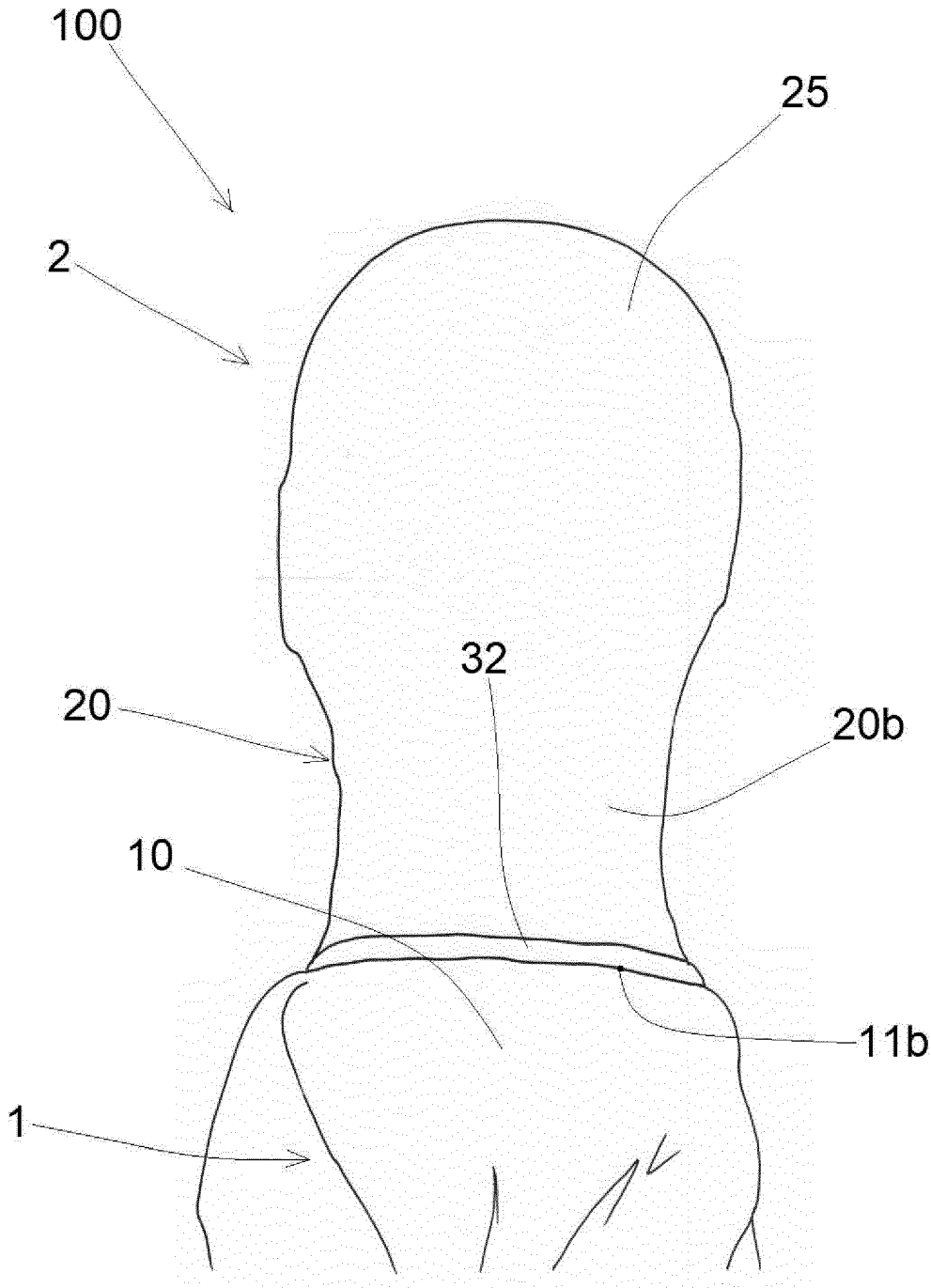


FIG. 2

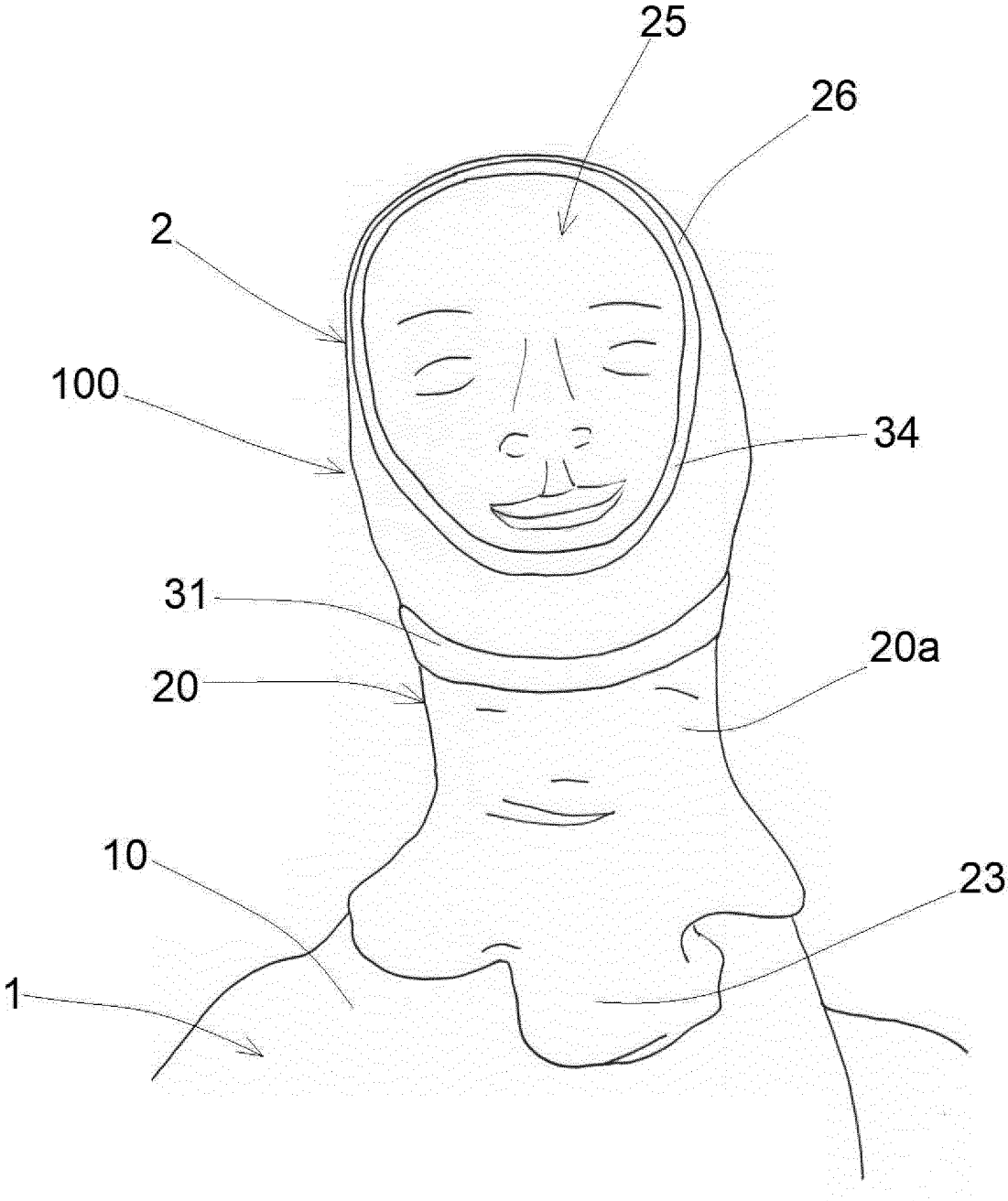


FIG. 3

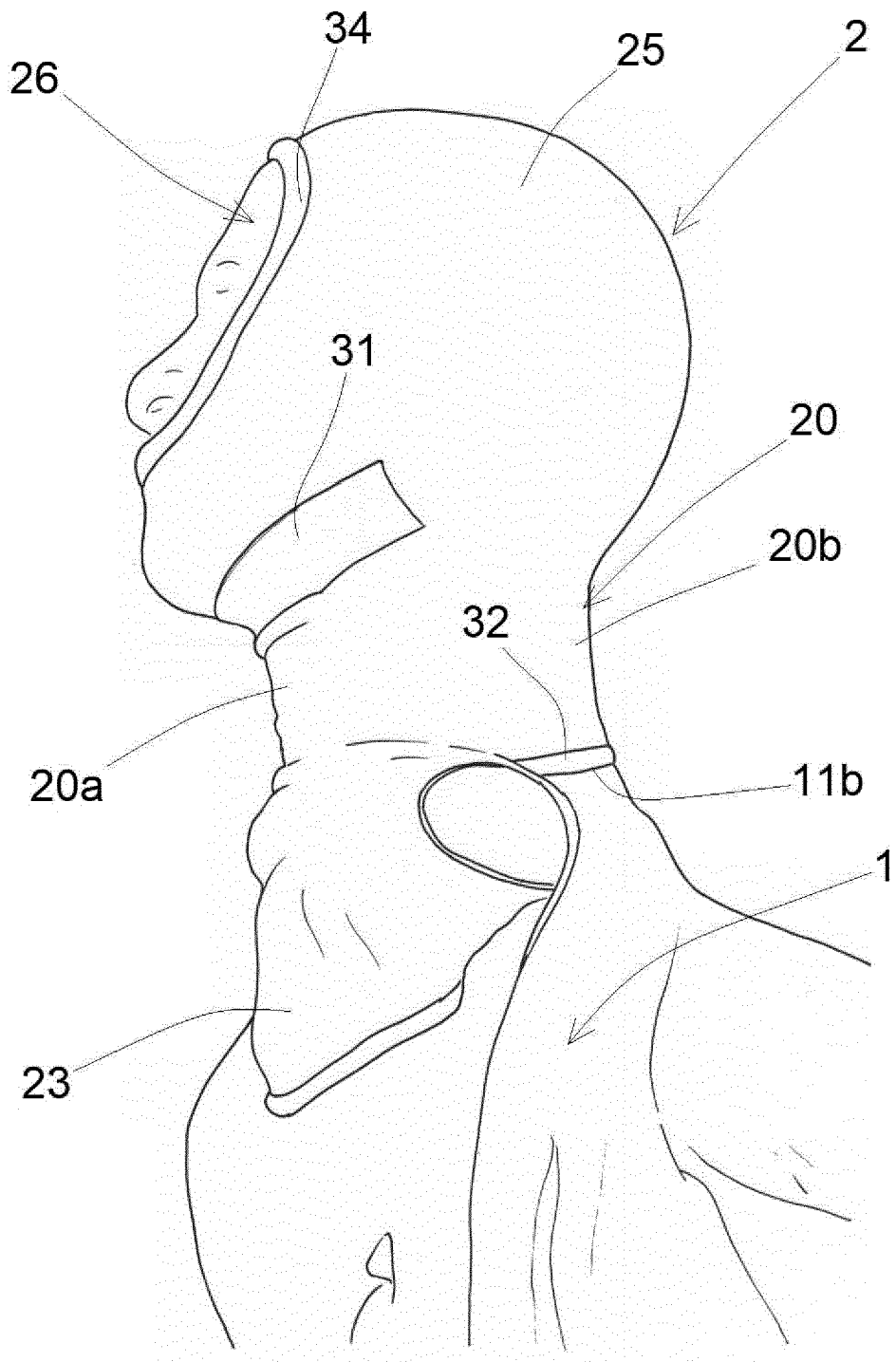


FIG. 4

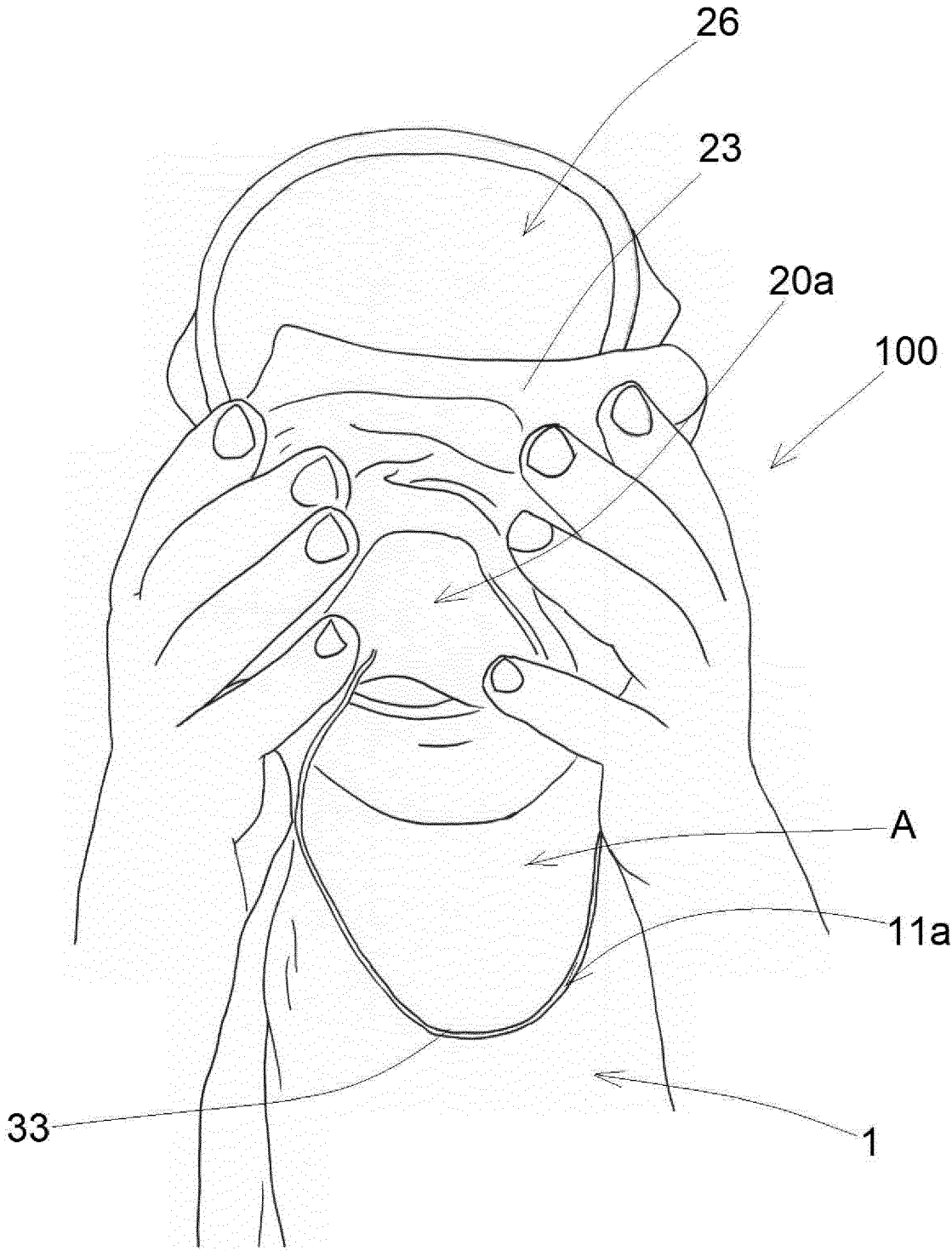


FIG. 5

**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

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