Office de la Propriété Intellectuelle du Canada
Un organisme d'Industrie Canada

Canadian Intellectual Property Office
An agency of Industry Canada

CA 2102364 C 2004/02/10

(11)(21) 2 102 364

(12) BREVET CANADIEN
CANADIAN PATENT

(13) C

(22) Date de dépôt/Filing Date: 1993/11/03

(41) Mise à la disp. pub./Open to Public Insp.: 1994/05/05

(45) Date de délivrance/Issue Date: 2004/02/10

(30) Priorité/Priority: 1992/11/04 (Hei 4-319334) JP

(51) Cl.Int.^{5}/Int.Cl.^{5} A61F 5/03

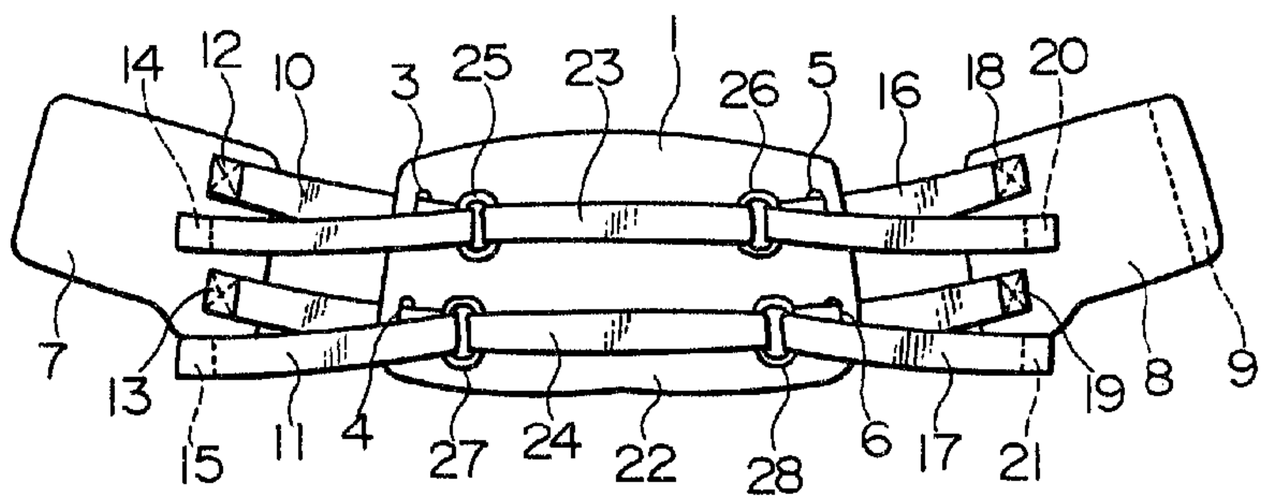
(72) Inventeur/Inventor:
SEKINE, TAKAYUKI, JP

(73) Propriétaire/Owner:
ALCARE CO., LTD., JP

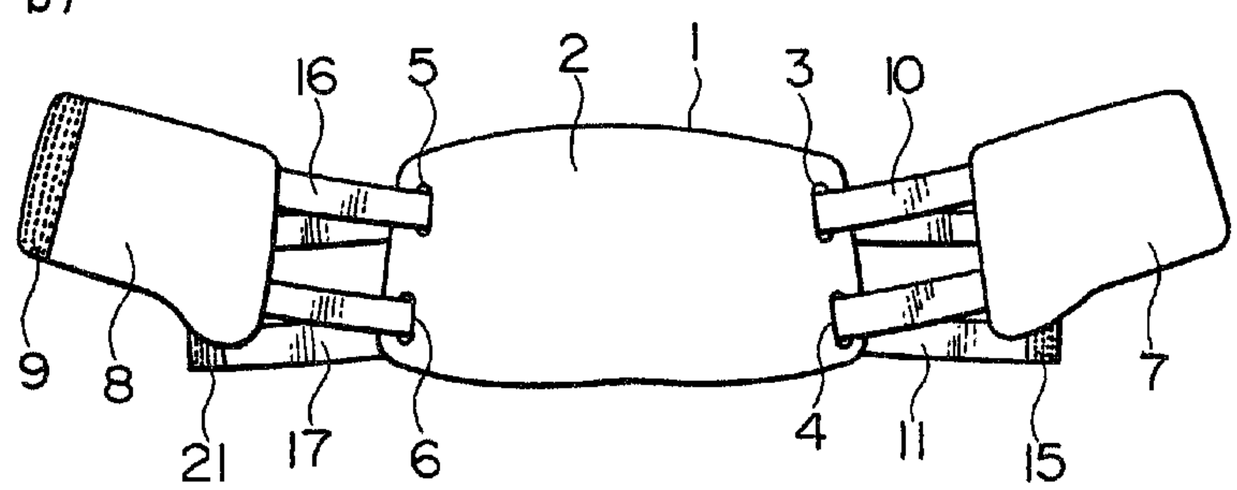
(74) Agent: GOWLING LAFLEUR HENDERSON LLP

(54) Titre : BANDE DE LUMBAGO
(54) Title: LUMBAGO BAND

a)



b)



(57) Abrégé/Abstract:
(Object) To provide a lumbago band which can well fit the body line of a patient and which is light in weight and can stand a continuous use thereof for a long time. (Constituion) A fixing plate 1 formed in such a manner that a molding material composed of a soft base fabric impregnated with a water hardenable resin is hardened in such a shape as to correspond to the shape of the waist portion of the patient is coupled to bellybands 7 and 8 by means of belts 10, 11, 16, 17, 23 and 24.

PATENTANWALTSBÜRO
KIYOSHI TOMIMURA

ABSTRACT

(Object) To provide a lumbago band which can well fit the body line of a patient and which is light in weight and can stand a continuous use thereof for a long time.

(Constituion) A fixing plate 1 formed in such a manner that a molding material composed of a soft base fabric impregnated with a water hardenable resin is hardened in such a shape as to correspond to the shape of the waist portion of the patient is coupled to bellybands 7 and 8 by means of belts 10, 11, 16, 17, 23 and 24.

(Selected Drawing) Figure 1.

PATENTANWALTSBÜRO
KIYOSHI TOMIMURA

P-14290

LUMBAGO BAND

(Industrial field of Utilization)

The present invention relates to a lumbago band used in a state fixed onto the waist portion of a patient or the like for the therapy or prevention of lumbago.

(Prior art)

There are known various methods for the therapy or prevention of lumbago. One of such methods is the method of binding tight the waist portion of the patient with a lumbago band so as to securely settle his waist portion. This lumbago band is made in such a manner that an elastic material and a nonstretchable material are suitably combined into a band; and, in order to enhance the fitness of said lumgago band and provide a sure fixing force thereto, stays are inserted into suitable portions thereof, or the materials thereof and the sewing method employed therefor are suitably changed. In order to have said lumbago band perfectly fit the curved surface of the waist portion of the patient's body, it is necessary to work the stays so as to conform to the body line of each patient and to select such a combination of materials or members and such a sewing method as to be suited for the body of each patient. However, for accurately measuring the body line of the patient and to work the materials or members as mentioned above, skilled experts are needed; and thus, a relatively long time is spent for the manufacture of such a lumbago band, and the manufacturing cost is increased, but, notwithstanding, the lumbago band thus manufactured is not necessarily satisfactory in respect of the fitness and fixing function thereof. For the purpose of removing this

PATENTANWALTSBÜRO
KIYOSHI TOMIMURA

drawback, a lumbago band manufactured in such a manner that a thermoplastic resin plate which is softened by heating to become moldable and hardened when it is cooled to room temperature to exhibit a sufficient strength is mounted onto a winding base member; the thermoplastic resin plate is heated to be softened and then applied onto the part of the waist portion of the patient, bound tight and securely settled with the winding base member, the whole surface of the thermoplastic resin plate is pressed onto the patient's body by operator's hands to thereby deform it into a shape corresponding to the patient's body line, and then the thermoplastic resin plate is cooled to harden, has been proposed by the present applicant (Japanese Unexamined Utility Model Publication No. Sho 61-145523). In case of this lumbago band, the thermoplastic resin plate is modeled by using the patient's body directly as a mold, and therefore, the lumbago band can be made to accurately fit the patient's body and surely fixed thereto in a very short time, but, since the thermoplastic resin plate is made to fulfil the function of stays as well, said thermoplastic resin plate must have a strength and, accordingly, must have a certain thickness, as a result of which the lumbago band becomes bulky and, in addition, considerably heavy. Further, the thermoplastic resin plate itself is not permeable to air at all; and if, as a countermeasure, a large number of air-permeable perforations are provided in the theremoplastic resin plate, the waist portion of the patient on which the lumbago band is applied will unavoidably become hot and stuffy if he wears it for a long time, which makes him feel uncomfortable.

PATENTANWALTSBÜRO
KIYOSHI TOMIMURA

(Problems that the invention is to solve)

It is the object of the present invention to provide a lumbago band which well fits the body line of a patient and is light in weight yet can stand a continuous use thereof for a long time.

(Means of solving the problems)

In orde to achieve the above-mentioned object, the lumbago band according to the present invention comprises a fixing plate applied onto the waist portion of a patient, and bellybands coupled to the right and left sides of said fixing plate through adjustable belts, wherein said fixing plate is composed of a molding material made in such a manner that a soft base fabric is impregnated with a water hardenable resin, and the thus formed molding material is hardened in such a shape as to correspond to the shape of said waist portion.

(Operation of the invention)

According to the present invention, the molding material is dipped into water, applied onto the waist of the patient, and modeled by use of operator's hand so as to bring said molding material into a shape corresponding to the external shape of said waist portion, and left to stand for some time so as to allow said molding material to harden, whereby the fixing plate is formed. The thus formed fixing plate is coupled to bellybands through adjustable belts, with which the lumbago band is completed. The fixing plate thus obtained has a contour conformed to the external shape of the patient's body modeled, and, due to the porosity of the base fabric of the molding material, the thus hardened fixing plate also possess a porosity.

PATENTANWALTSBÜRO
KIYOSHI TOMIMURA

BRIEF EXPLANATION OF THE DRAWINGS:

Fig. 1(a) and (b) are a front view and a rear view of an embodiment of the present invention, respectively, and Fig. 2 shows in schematic diagrams the steps of manufacturing the fixing plate according to the present invention.

(Working examples)

An embodiment of the present invention will now be described by reference to the drawings.

Fig. 1(a) and (b) are a front view and a rear view of an embodiment of the present invention. Numeral 1 denotes a fixing plate, which is of a size sufficient to almost completely cover the waist portion of a patient, and the skin-side surface 2 of said fixing plate 1 has projections and depressions corresponding to those of the surface of said waist portion. Numerals 3, 4, 5 and 6 denote belt-insertion holes provided near the right and left side ends of the fixing plate 1. Numerals 7 and 8 denote bellybands coupled to the right and left sides of the fixing plate 1 by means of belts. On the inner surface of the end portion at

the opposite side, with reference to the fixing plate 1, of the bellyband 8, a flat fastener 9 such as Velcro is provided, while the outer surface of the bellyband 7 is made of a material which can be engaged with said flat fastener 9.

To the end portion at that side of the bellyband 7 which faces the fixing plate 1, one end 12;13 of each of belts 10 and 11 is fixed, while on the other end portions of said belts 10 and 11, flat fasteners 14 and 15 are provided, respectively. Further, to the end portion at that side of the bellyband 8 which faces the fixing plate 1, one end 18;19 of each of belts 16 and 17 is fixed, while on the other end protions of said belts 16 and 17, flat fasteners 20 and 21 are provided, respectively. On the outer surface 22 of the fixing plate 1, belts 23 and 24 are disposed. At both ends of the belt 23, ring-shaped fittings 25 and 26 are mounted. Through the ring-shaped fitting 25, the free end of the belt 10 on which the flat fastener 14 is provided is inserted after passing through the belt insertion hole 3 of the fixing plate 1 from the skin side to the outer side, while through the ring-shaped fitting 26, the free end of the belt 16 on which the flat fastener 20 is provided is inserted after being passed through the belt insertion hole 5 of the fixing plate 1 from the skin side to the outer side. On the other hand, at both ends of the belt 24, similarly ring-shaped fittings 27 and 28 are provided, respectively. Through the ring-shaped fitting 27, the free end of the belt 11 which has passed through a belt insertion hole 4 of the fixing plate 1 is inserted, while through the ring-shaped fitting 28, the free end of he belt 17 which has

passed through the belt insertion hole 6 of the fixing plate 1 is inserted.

Next, the method of manufacturing the fixing plate 1 will be described. As shown in Fig. 2(a), numeral 201 denotes a molding material, which comprises a soft base fabric impregnated with a water hardenable resin and is enclosed in a container which is not permeable to water. First, the molding material 201 is taken out from the cotnainer, cut to a required size, and dipped into water, and then, after the excessive portion of the water is removed, said molding material is applied onto the waist portion 202 of a patient as shown in Fig. 2(b), and pushed by operator's hands along the shape of the waist portion to thereby perform a modeling. The resin penetrated into the base fabric begins to harden, and soon, the whole of the molding material is hardened to such a hardness that it is not defomed any more. Then, the molding material is detached from the waist portion. Thus, a molded body 203 as shown in Fig. 2(c) is obtained. On the peripheral edge portion of the thus obtained molded body 203, an edge 204 is formed by the hardened fiber. This endge 204 is removed by a suitable treatment. Subsequently, the belt insertion holes 5, 6, 7 and 8 are bored in the portions near the right and left side ends of the molded body 203 as shown in Fig. 2(d). The molded body 203 thus treated is covered with a cover 205 made of a thin fabric which readily gets to fit the skin, whereby the fixing plate 1 is completed as shown in Fig. 2(e).

The lumbago band according to the present invention is

put on as follows: The patient applies the fixing plate 1 onto his waist portion, brings the bellybands 7 and 8 round to the front portion of his waist so as to lay the bellyband 8 on the bellyband 7, and couples both bellybands 7 and 8 to each other by means of the flat fastener 9, and pulls the respective free ends of the belts 10, 11, 16 and 17 toward his belly side by holding said free ends with his hands and fixes said free ends onto the outer surfaces of the bellybands 7 and 8, by means of the respective flat fasteners 14, 15, 20 and 21, at positions where a suitable compressive force is applied. If, in this case, a suitable compressive force is not obtained, then the patient adjusts the position at which the bellybands 7 and 8 are coupled to each other and, further, reajust the fixing positions of the belts 10, 11, 16 and 17.

Next, the concrete examples of the respective constituent portions of the lumbago band according to the present invention will be described. As the soft base fabric constituting the fixing plate, there can be used a tape formed by warp-knitting a fiber such as glass fiber, polyester fiber, aramid fiber, polypropylene fiber, or the like which has a relatively high rigity. Of the abovementioned material fibers, the use of a polyester fiber is preferable since a base fabric of a three-layer structure formed by the interlock stitching of a polyester fiber is advantageous in respect of the modelability, strength, air permeability, and operability. A further advantageous base fabric is a tape of an interlock-stitched three-layer structure formed in such a manner that the front surface and the rear surface layers are formed by processing polyester

threads, and the center layer portion is formed by relatively thick polyester yarns with a high rigity. The size of the base fabric is, for instance, 15 to 50 cm in width and 30 to 80 cm in length but can be optionally selected depending on the patient's body portion where the lumbago band is used, his phisique, etc.

As the water hardenable resin with which the base fabric is impregnated, there can be used resins, which harden upon contact with water, such as for instance polyurethane prepolymers (resins obtained by the reaction between polyols and excess polyisocyanates). Many of said polyurethane prepolymers are disclosed in Japanese Examined Patent Publication No. Sho 60-48184, and No. Hei 2-61258, Japanese Unexamined Patent Publications No. Sho 55-80432, No. Sho 55-158052, No. Sho 58-175561, No. Sho 61-37165, No. Sho 62-223213, No. 62-270161, No. Hei 1-175854, and No. Hei 2-71746, etc.

As the material of the adjustable belts, there can be used a tape formed by plain-weaving cotton yarns, polyamid yarns, polyethlene terephthalate yarns, vinyl chloride yarns, or the like or a tape formed by mix-weaving an elastomer yarns together with the abovementioned material yarns or plain-weaving elastomer yarns alone. The width of the adjustable belts is 3 to 10 cm and, preferably 5 to 7.5 cm, and the thickness thereof is 1 to 3 mm. Said adjustable belts should desirably be such belts which are not one-side-stretched or curled and have such a characteristic that the range of elasticity thereof is limited.

The bellybands should desirably be composed of a material which has a strength to such a degree that it can compress the abdomen of the patient, which is not worn out or collapsed even if it is used continuously for a long time, and which has high sweat-absorbing and dissipating properties. For instance, as the core material of each of the bellybands, there is used a non-woven fabric, felt, plastic mesh, and a formed material such as urethane, vinyl chloride, neoprene, butadiene, or the like; as the skin-side layer of each of the bellybands, there is used a material such as cotton, rayon or the like which has a high water absorption or a material whose texture is made so dense that the water absorption by capillarity is enhanced; and as the material of the outer layer of each of said bellybands, there can be used a polyamid pile which can couple the right and left bellybands to each other through fasteners. As for the size of the bellybands, each of them is formed in a rectangle having a width of 9 to 20 cm and a length of 18 to 30 cm, which can compress the abdomen of the patient in which case, desirably, the lower portion of each bellyband is provided with knotches in order to avoid the compressive contact with the ilium, and the upper portion thereof has knotches for preventing the stomach and intestins of the patient from being compressed.

(Effects of the invention)

The lumbago band according to the present invention is constructed in such a manner that, by use of a molding material comprising a soft base fabric impregnated with a water hardenable resin, the waist of a patient is directly modeled, whereby a fixing plate is formed, and therefore,

PATENTANWALTSBÜRO
KIYOSHI TOMIMURA

the fixing plate accurately fits the waist portion of the patient, it is light in weight, and in addition, it is porous, so that, even if the patient has it on continuously for a long time, his waist portion never becomes hot and stuffy, and an excellent therapeutical and preventive effect can be obtained, and at the same time, the patient can wear it comfortably.

I claim:

1. A lumbago band comprising:

a support plate adapted for application onto a waist region of a patient, said support plate being formed from a mouldable material comprising a soft base fabric impregnated with a water hardenable resin, said resin being hardened so as to mould to a shape corresponding to the shape of a patient's waist region, said support plate having a first and a second end and one or more slots;

a first bellyband being coupled to said first end of the support plate;

a second bellyband being coupled to said second end of the support plate, said first and second bellybands being releasably couplable to one another; and

a plurality of adjustable belts, each adjustable belt having a first end and a second end, said first end being fixed to said first or second bellyband and said second end being adapted for releasably fastening to said first or second bellyband to which said first end is fixed, wherein said each adjustable belt passes through one of said slots in said support plate.

2. A lumbago band comprising:

a support plate adapted for application onto a waist region of a patient, said support plate being formed from a mouldable material comprising a soft base fabric impregnated with a water hardenable resin, said resin being hardened so as to mould to a shape corresponding to the shape of a patient's waist region, said support plate having a first and a second end and one or more slots;

a first bellyband being coupled to said first end of the support plate;

a second bellyband being coupled to said second end of the support plate, said first and second bellybands being releasably couplable to one another; and

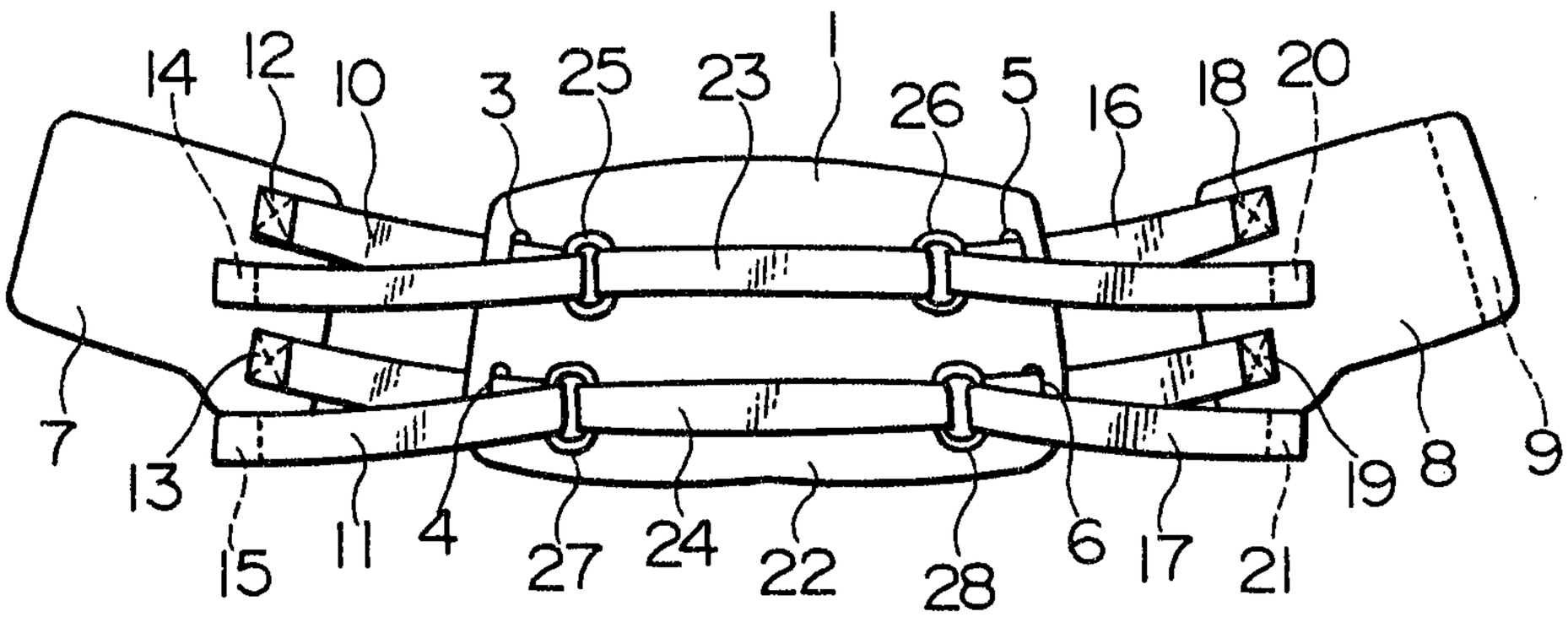
a plurality of adjustable belts, each adjustable belt having a first end and a second end, said first end being fixed to said first or second bellyband and said second end being adapted for releasably fastening to said first or second bellyband to which said first end is fixed, wherein said each adjustable

belt passes through one of said slots in said support plate and wherein the adjustable belts fixed to said first bellyband are coupled to the adjustable belts fixed to said second bellyband.

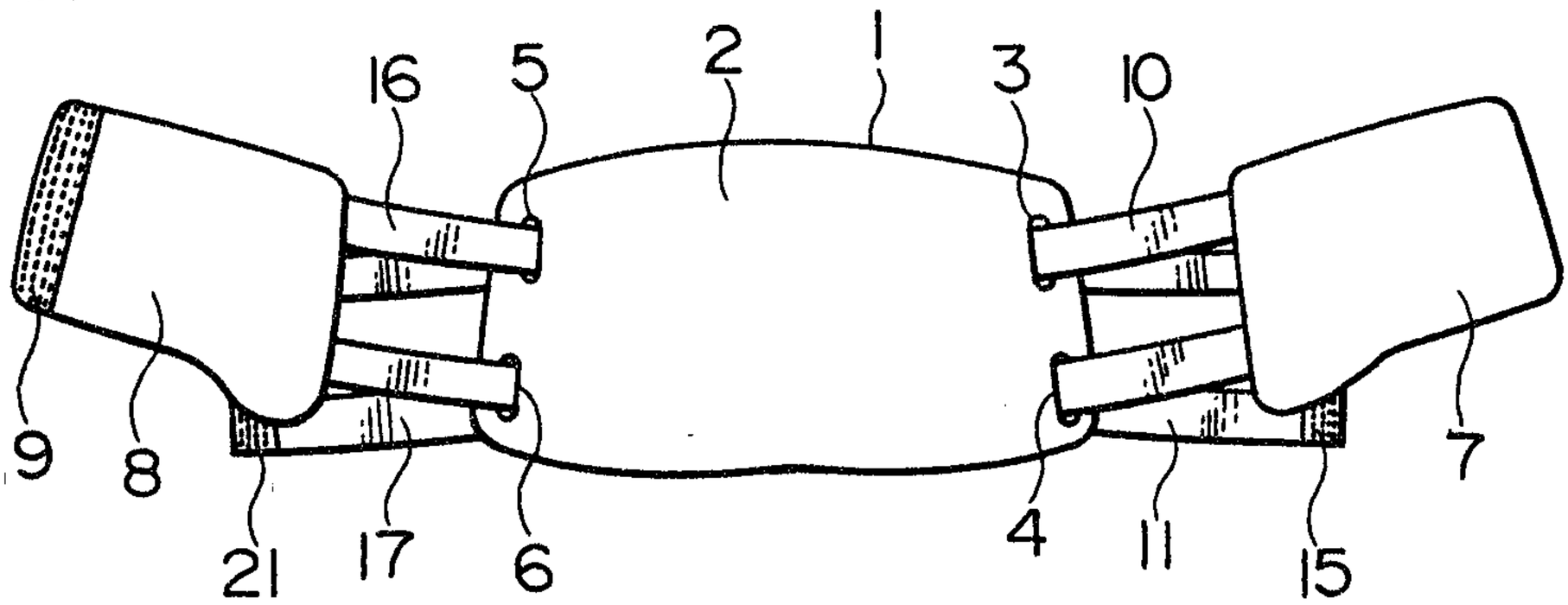
3. The lumbago band according to claim 1 or 2 wherein the base fabric of said support plate has a three-layer structure formed by an interlock stitching of a polyester fiber.

FIG. 1

a)

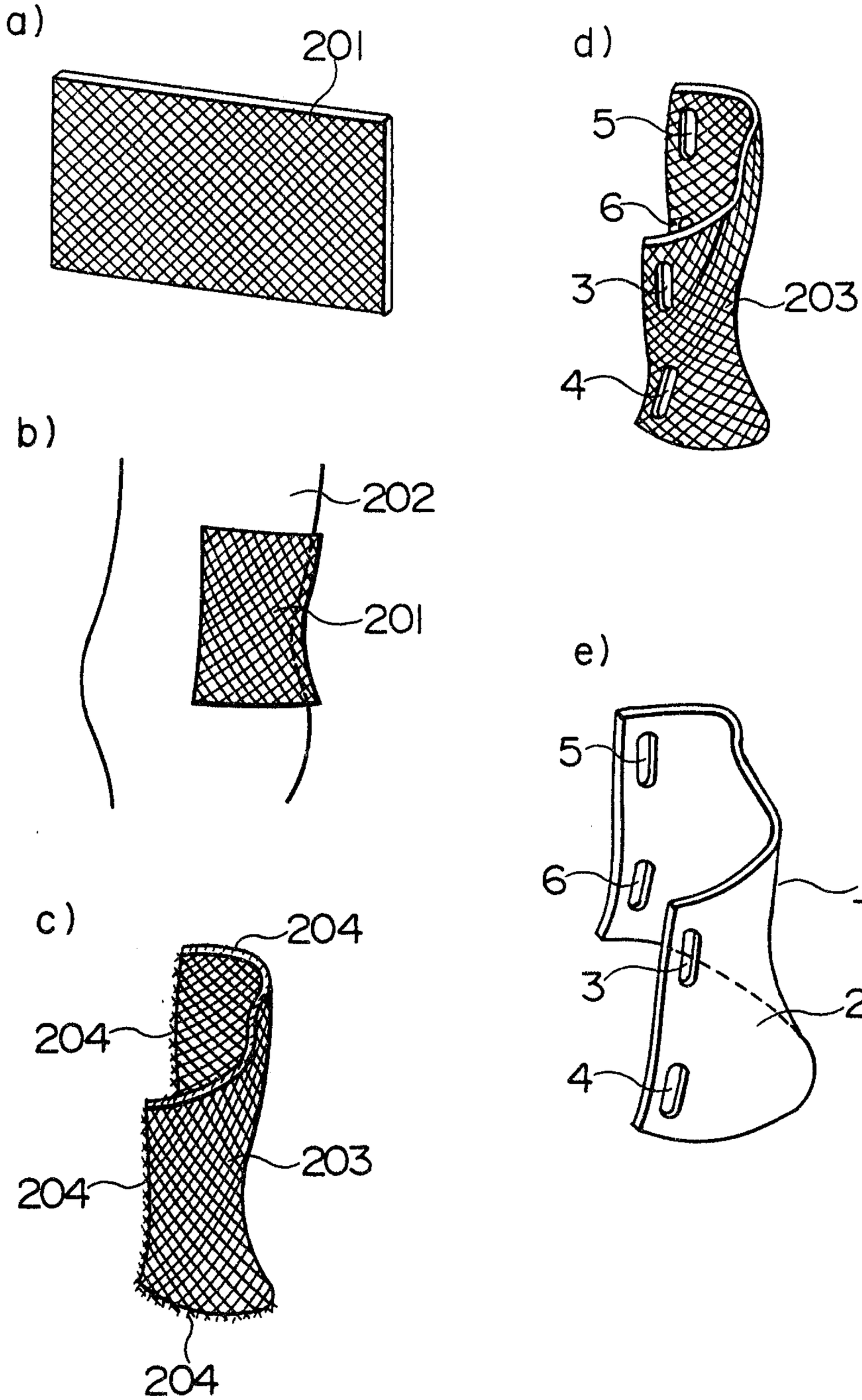


b)



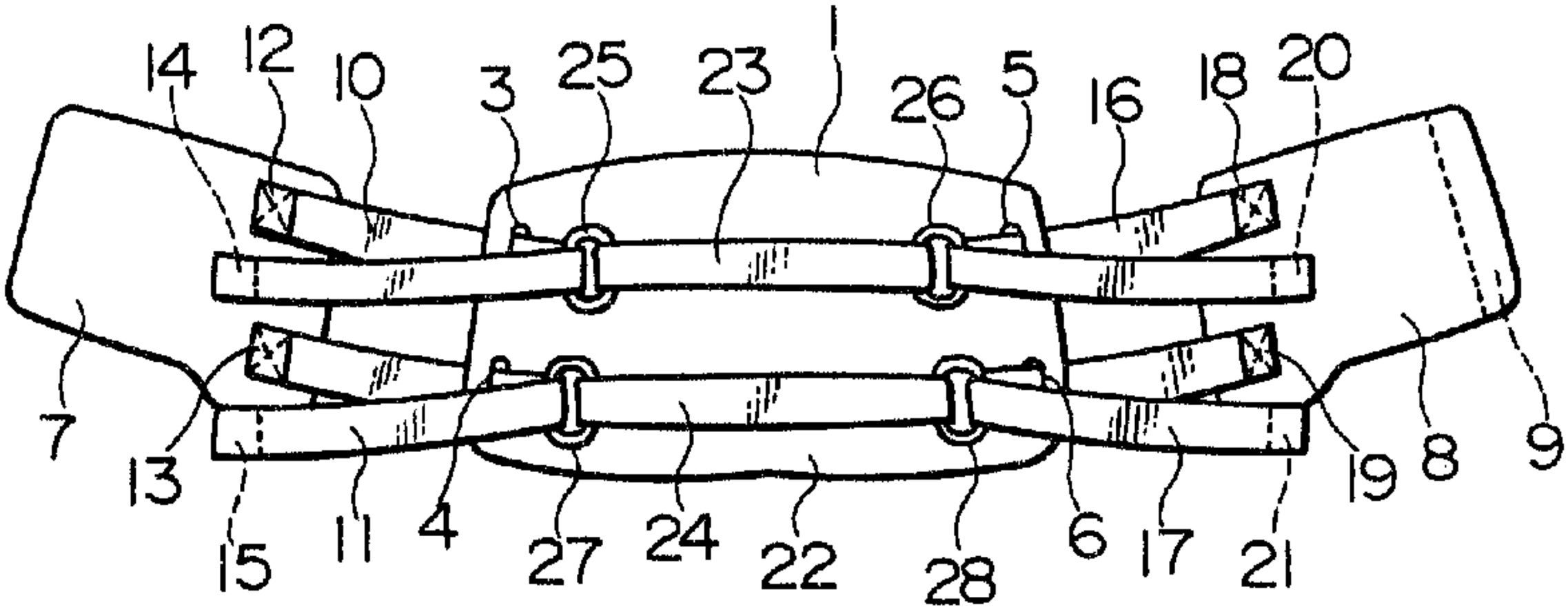
Gowling, Strathy & Henderson

FIG. 2

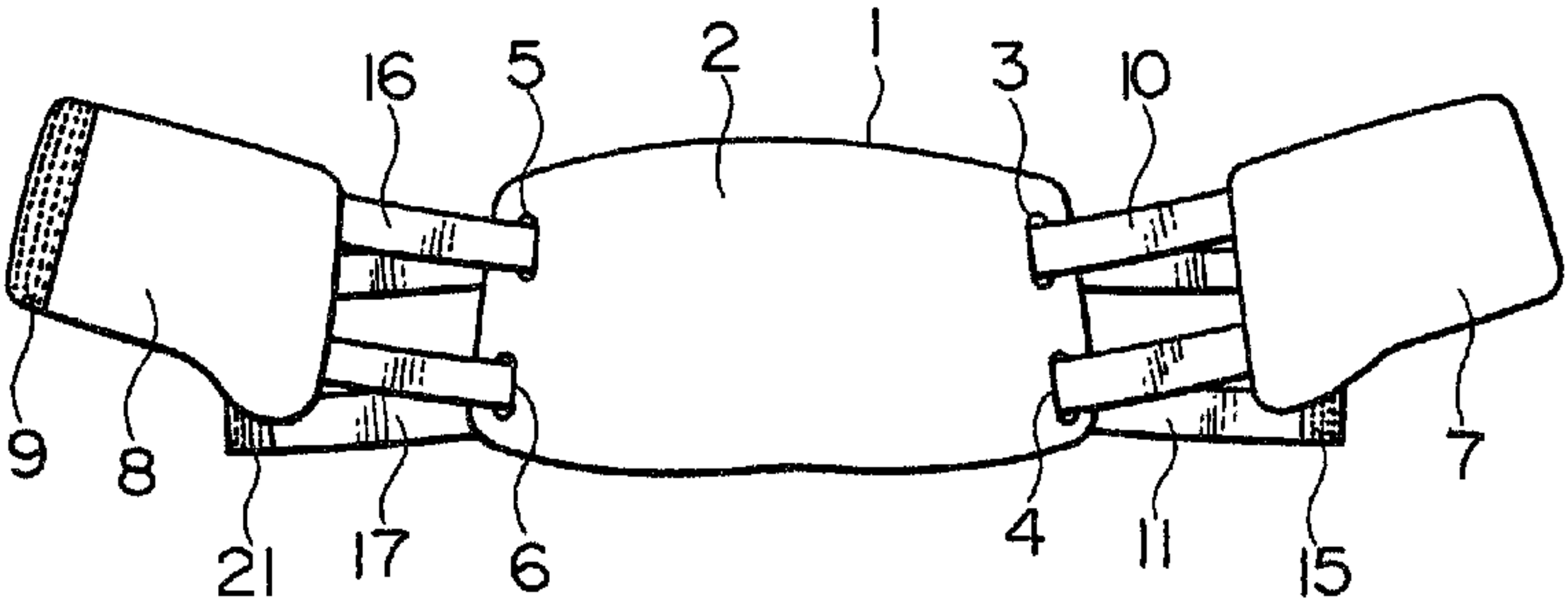


Gowling, Strathy & Henderson

a)


14
12
10
3
25
23
1
26
5
16
18
20
7
13
15
11
4
27
24
22
28
6
17
21
19
8
9

b)


16
5
2
1
3
10
9
8
21
17
6
4
11
15
7