

Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] This invention generally relates to an upper garment. More specifically, the present invention relates to a cycling upper garment for a rider to wear when riding a bicycle.

Background Information

[0002] Bicycling is becoming an increasingly more popular form of recreation as well as a means of transportation. Moreover, bicycling has become a very popular competitive sport for both amateurs and professionals. Whether the bicycle is used for recreation, transportation or competition, the bicycle industry is constantly improving the products that the rider uses during the bicycling. For example, there are many types of garments that are especially designed for use during the bicycling.

[0003] One known example of a cycling upper garment for a rider (cyclist) to wear when riding a bicycle is a rain jacket that has been subjected to a waterproofing treatment for riding in rainy weather. The surface of this type of upper garment for riding in rainy weather is subjected to a waterproofing treatment. Consequently, it is difficult for air to penetrate the inside of the garment. Thus, when this type of upper garment is worn during comparatively warm and humid weather, the wearer's body temperature increases, perspiration occurs, and the upper garment is not comfortable to wear. A conceivable way to prevent this from happening is to provide a ventilation opening in the cycling upper garment to improve the air permeability. In short, it is feasible to apply a conventional upper garment provided with a ventilation opening to a conventional cycling upper garment. An example of such an upper garment is disclosed in U.S. Patent Application Publication No. 2004/0133962. The upper garment described in patent application publication has two side ventilation arrangements arranged diagonally along each of a pair of front body sections. Each of the side ventilation arrangements can be opened and closed as desired with a slide fastener and has an air permeable part made of mesh is provided therein.

[0004] In the combination of two conventional upper garments described above, the side ventilation arrangements are configured to be diagonal with respect to the front body sections. Consequently, the lengths of the side ventilation arrangements are limited (short) and it is difficult to draw a sufficient amount of air in through the side ventilation arrangements. Since a sufficient amount of air cannot be drawn in, sufficient ventilation performance cannot be obtained even with the side ventilation arrangements.

[0005] In view of the above, it will be apparent to those skilled in the art from this disclosure that there exists a

need for an improved cycling upper garment. This invention addresses this need in the art as well as other needs, which will become apparent to those skilled in the art from this disclosure.

SUMMARY OF THE INVENTION

[0006] One object of the present invention is to provide a cycling upper garment having at least a pair of side ventilation arrangements with the side ventilation arrangements being constructed such that sufficient ventilation performance can be obtained.

[0007] The foregoing objects can basically be attained by providing a cycling upper garment for a rider to wear when riding a bicycle in which the cycling upper garment basically comprises an upper garment main body, a pair of sleeves, and at least a pair of side ventilation arrangements. The sleeves are attached to both sides of the upper garment main body, each of the sleeves having a cuff. The ventilation arrangements extend from a corresponding one of the sleeves to a bottom hem of the upper garment main body such that the each of the ventilation arrangements extend through an underarm portion formed between the upper garment main body and the sleeves. The ventilation arrangements have an air passage part made of an air permeable material and an open-close part configured and arranged to selectively exposed and covered the air passage part from outside of the cycling upper garment.

[0008] With this upper garment, the side ventilation arrangements are not limited to the upper garment main body but, instead, run from the sleeves to a bottom hem of the upper garment main body in such a fashion as to pass through an underarm portion. Since the side ventilation arrangements run from the sleeve through the underarm portion to the bottom hem of the upper garment main body, large side ventilation arrangements can be obtained. Consequently, a large quantity of air can be efficiently taken into the upper garment and discharged through the side ventilation arrangements, thereby enabling sufficient ventilation performance to be obtained. Since the underarm portions are comparatively difficult to see from the front, the side ventilation arrangements do not easily degrade the cosmetic appearance of the upper garment.

[0009] In the cycling upper garment in accordance with a second aspect of the present invention, each of the sleeves has a seam for making the sleeve into a tubular shape, and the upper garment main body includes a front body section and a back body section. The sleeves are sewn onto an upper, outside portion of the front body section. The back body section is arranged facing opposite the front body section and having the sleeves sewn thereto. With this cycling upper garment, since the sleeves, front body section, and back body section are each formed as separate parts, the design of a garment provided with side ventilation arrangements in accordance with the present invention can be changed while

keeping the resulting increase in production costs to a minimum. For example, the designs of the front body section and back body section can be changed while keeping the design of the sleeves the same.

[0010] In the cycling upper garment in accordance with a third aspect of the present invention, the ventilation arrangements extend along the seams of the sleeves to the underarm portions. With this cycling upper garment, since the side ventilation arrangements are provided in such a fashion as to utilize the existing seams, the number of places where stitching is required is reduced and the manufacturing cost can be reduced. Also, since the seams are made in places that are comparatively inconspicuous, the side ventilation arrangements do not easily degrade the cosmetic appearance of the upper garment.

[0011] In the cycling upper garment in accordance with a fourth aspect of the present invention, the ventilation arrangements extend between the front body section and the back body section from the underarm portions. With this cycling upper garment, since the side ventilation arrangements are arranged so as to run along the seams between the front body section and the back body section, the number of stitching locations is reduced even further and the manufacturing cost can be reduced even further. Furthermore, since the boundaries between the front body section and the back body section are located on the sides of the body, the side ventilation arrangements are less conspicuous and less likely to degrade the cosmetic appearance of the cycling upper garment.

[0012] In the cycling upper garment in accordance with a fifth aspect of the present invention, the ventilation arrangements extend generally vertically along the front body section from the underarm portions. With this cycling upper garment, since the side ventilation arrangements are arranged so as to cross the front body section generally vertically, the side ventilation arrangements are positioned on the front of the rider's body and large quantities of air can be taken in more readily, particularly when riding a bicycle.

[0013] In the cycling upper garment in accordance with a sixth aspect of the present invention, the ventilation arrangements extend generally vertically along the back body section from the underarm portions. With this cycling upper garment, since the side ventilation arrangements are arranged so as to cross the back body section generally vertically, the side ventilation arrangements are positioned on the back of the rider's body and air that has been taken inside the upper garment can be discharged more readily, particularly when riding a bicycle.

[0014] In the cycling upper garment in accordance with a seventh aspect of the present invention, the ventilation arrangements extend to positions near the cuffs. With this cycling upper garment, since the side ventilation arrangements do not separate at the sleeves, the sleeves are readily stopped at the wrists even when side ventilation arrangements are opened with the open-close parts.

[0015] In the cycling upper garment in accordance with an eighth aspect of the present invention, the ventilation arrangements extend through the cuffs to free ends of the sleeves. With this cycling upper garment, the side ventilation arrangements cut through the cuffs and open the sleeves completely such that openings having a large surface area are obtained, thereby enabling even more air to be taken in and discharged through the side ventilation arrangements.

[0016] In the cycling upper garment in accordance with a ninth aspect of the present invention, the ventilation arrangements extend to positions near the bottom hem of the upper garment main body. With this cycling upper garment, since the side ventilation arrangements do not separate at the bottom hem of the upper garment main body, the bottom hem does not widen when the side ventilation arrangements are opened with the open-close parts and the bottom hem is less likely to become turned up.

[0017] In the cycling upper garment in accordance with a tenth aspect of the present invention, the ventilation arrangements extend through the bottom hem of the upper garment body to a bottom edge of the upper garment body. With this cycling upper garment, the side ventilation arrangements cut through the bottom hem of the upper garment main body and open the upper garment main body completely such that openings having a large surface area are obtained, thereby enabling even more air to be taken in and discharged through the side ventilation arrangements.

[0018] In the cycling upper garment in accordance with an eleventh aspect of the present invention, the air passage part includes a perforated mesh part having numerous through holes. With this cycling upper garment, air can be both taken in and discharged efficiently through the mesh part.

[0019] In the cycling upper garment in accordance with a twelfth aspect of the present invention, the open-close part includes a sliding fastener that is configured and arranged to open and close the passage part. With this cycling upper garment, the side ventilation arrangements can be opened and closed with ease by grasping a slider of the slide fastener.

[0020] In the cycling upper garment in accordance with a thirteenth aspect of the present invention, the open-close part includes a hook-and-loop fastener that is configured and arranged to open and close the passage part. With this cycling upper garment, the side ventilation arrangements can be partially opened at any desired portion or at multiple portions using the hook-and-loop fasteners.

[0021] In the cycling upper garment in accordance with a fourteenth aspect of the present invention, the front body section includes a pair of first sleeve attaching parts arranged on both outward sides of an upper portion of the front body section and curved diagonally such that shoulders of the rider protrude there-beyond, and a pair of first front-to-back attaching parts arranged below the

first sleeve attaching parts on both outward sides of the front body section. The back body section includes a pair of second sleeve attaching parts arranged on both outward sides of an upper portion of the back body section and curved diagonally such that the shoulders of the rider protrude there-beyond, and a pair of second front-to-back attaching parts arranged below the second sleeve attaching parts on both outward sides of the back body section and are connected to the first front-to-back attaching parts. Each of the sleeves includes first and second sleeve forming parts that extend in a curved fashion from both sides of the cuff and are connected together, a first seam part that is sewn to the first sleeve attaching part and has a V-shaped cut part that is cut in a V-shape from the first sleeve forming part, a second seam part that extends from the second sleeve forming part and is sewn to the second sleeve attaching part, and a neck opening that joins the first and second seam parts. A first angle is formed by the intersection of a first straight line that is a substantially perpendicular bisector with respect to the cuff and a second straight line that runs along the apex of the rider's shoulder from the neck opening toward a shoulder opening is equal to or larger than 30° and smaller than or equal to 90°.

[0022] With this cycling upper garment, when the front body section, back body section, and the pair of sleeves are sewn together and the cycling upper garment is worn, the angle between the first straight line and second straight line of each sleeve is equal to or larger than 30° and smaller than or equal to 90° and a V-shaped cut part is provided in the first seam part of each sleeve, i.e., the portion where the sleeve is sewn to the front body section. By setting the first angle, which is the intersection angle between the first and second straight lines, i.e., the intersection angle between the shoulder and the sleeve, to a value equal to or larger than 30° and smaller than or equal to 90°, the first angle is made to be larger than the first angle of a conventional cycling upper garment and the entire sleeves are rotated (swung) inward about an approximate vertical axis of the garment in accordance with the first angle so as to be oriented in the forward direction. Also, by providing V-shaped cut parts and sewing the front body section thereto, the forwardly oriented sleeves are made to rotate further forward about an approximate horizontal axis of the garment. As a result, since the sleeves of the garment are oriented toward the front, the upper garment does not become uncomfortably tight at the backs of the rider's shoulders or wrinkled in the front portions of the rider's shoulders when the rider mounts a bicycle and extends his or her arms forward to grip the handlebar. Thus, the comfort of the upper garment when the handlebar gripped is improved and the air resistance of the garment is reduced.

[0023] In the cycling upper garment in accordance with a fifteenth aspect of the present invention, the surfaces of the upper garment main body and the pair of sleeves have been subjected to a waterproofing treatment. This cycling upper garment is well suited for use as a rain

jacket.

[0024] With this invention, large side ventilation arrangements can be obtained because the side ventilation arrangements run from the sleeves to the bottom hem of the upper garment main body in such a fashion as to pass through the underarm portions. Consequently, a large quantity of air can be both taken into the upper garment and discharged from the upper garment through the side ventilation arrangements in an efficient manner, thereby enabling sufficient ventilation performance to be obtained. Additionally, since the underarm portions are comparatively difficult to see from the front, the side ventilation arrangements do not easily degrade the cosmetic appearance of the upper garment.

[0025] These and other objects, features, aspects and advantages of the present invention will become apparent to those skilled in the art from the following detailed description, which, taken in conjunction with the annexed drawings, discloses preferred embodiments of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0026] Referring now to the attached drawings which form a part of this original disclosure:

[0027] Figure 1 is a front side elevational view of a cycling upper garment in the form of a cycling rain jacket in accordance with a first embodiment of the present invention;

[0028] Figure 2 is a rear side elevational view of the cycling rain jacket illustrated in Figure 1 in accordance with the first embodiment of the present invention;

[0029] Figure 3 is a front side elevational view of the cycling rain jacket illustrated in Figures 1 and 2, similar to Figure 1, but with the side ventilation arrangements in their opened states.

[0030] Figure 4 is a top plan view of the various sections of the cycling rain jacket illustrated in Figures 1 to 3 after they have been cut from fabric using pattern paper and prior to being sewn together;

[0031] Figure 5 is a front side elevational view of a cycling upper garment in the form of a cycling rain jacket in accordance with a second embodiment of the present invention;

[0032] Figure 6 is a rear side elevational view of the cycling rain jacket illustrated in Figure 5 in accordance with the second embodiment of the present invention;

[0033] Figure 7 is a top plan view of the various sections of the cycling rain jacket illustrated in Figures 5 and 6 after they have been cut from fabric using pattern paper and prior to being sewn together;

[0034] Figure 8 is an enlarged top plan view of the cut fabric for making the right-hand sleeve of the cycling rain jacket illustrated in Figures 5 and 6;

[0035] Figure 9 is a front side elevational view of a cycling upper garment in the form of a cycling rain jacket in accordance with a third embodiment of the present invention; and

[0036] Figure 10 is a front side elevational view of a cycling upper garment in the form of a cycling rain jacket in accordance with a fourth embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0037] Selected embodiments of the present invention will now be explained with reference to the drawings. It will be apparent to those skilled in the art from this disclosure that the following descriptions of the embodiments of the present invention are provided for illustration only and not for the purpose of limiting the invention as defined by the appended claims and their equivalents.

FIRST EMBODIMENT

[0038] Referring initially to Figures 1 to 3, a cycling rain jacket 10 is illustrated in accordance with a first embodiment of the present invention. The cycling rain jacket 10 is intended for a rider (cyclist) to wear when riding a bicycle and exemplifies a cycling upper garment in accordance with a first embodiment of the present invention. Thus, the rain jacket 10 is a cycling upper garment intended to be worn over a jersey chiefly when riding a road bike, mountain bike, or other bike for sports purposes. The cycling rain jacket 10 is preferably a long-sleeve front-opening upper garment having raglan sleeves that extend from an area adjacent the neck opening.

[0039] The cycling rain jacket 10 basically comprises an upper garment main body 12, a pair of sleeves 14 and 15 attached to both sides of the upper garment main body 12 and at least a pair of side ventilation arrangements 16. The surfaces of the upper garment main body 12 and the sleeves 14 and 15 have been subjected to a waterproofing treatment. As a result, the air permeability of these parts of the upper garment 10 is poorer than that of a typical cycling jersey. The side ventilation arrangements 16 serve to improve the air permeability, i.e., the ventilation.

[0040] The sleeve 14 is a tubular member that has a cuff 14a at its free end. Likewise, the sleeve 15 is a tubular member that has a cuff 15a at its free end. The side ventilation arrangements 16 extend from a position near the cuffs 14a and 15a to a bottom hem part 12a of the upper garment main body 12 in such a fashion as to pass through underarm portions 14b and 15b, respectively. The side ventilation arrangements 16 serve to take air inside the rain jacket 10.

[0041] The upper garment main body 12 has a left front body section 21 and a right front body section 22, a back body section 23, a left side member 26, a right side member 27 and a collar 30, all of which are sewn together. The front body sections 21 and 22 are separated so that the rain jacket 10 opens in the front. The front body sections 21 and 22 have upper outside portions to which the sleeves 14 and 15 are sewn. The back body section 23

is arranged to face opposite the front body sections 21 and 22. The back body section 23 has the sleeves 14 and 15 sewn thereto. The side members 26 and 27 are arranged between the front body sections 21 and 22 and the back body section 23. The back body section 23 is arranged facing opposite the front body sections 21 and 22.

[0042] As shown on the upper left of Figure 4, the front body sections 21 and 22 are shaped to be linearly symmetrical with a vertical line of symmetry. The front body section 21 has a first (left) sleeve attaching part 21a, a first (left) front-to-back attaching part 21b, a first neckline part 21c, a slide fastener attaching part 21d and a front hem part 21e. Similarly, the front body section 22 has a first (right) sleeve attaching part 22a, a first (right) front-to-back attaching part 22b, a first neckline part 22c, a slide fastener attaching part 22d and a front hem part 22e.

[0043] The bottom hem part 12a of the upper garment main body 12 includes a pair of front hem parts 21e and 22e of the front body sections 21 and 22, a back hem part 23e of the back body section 23 and a pair of side hem parts (not numbered) of the side members 26 and 27. The back hem part 23e of the back body section 23 is arranged to be lower than the front hem parts 21e and 22e of the front body sections 21 and 22.

[0044] A slide fastener 32 is installed between the front body sections 21 and 22 such that the front body sections 21 and 22 can be selectively separated from each other. The slide fastener 32 is, for example, an open ended slide fastener configured such that the left and right strips of tape can separate at the bottom end of the slide fastener.

[0045] The sleeves 14 and 15 have seams 14c and 15c, respectively, for connecting the longitudinal ends of the sleeve material to form a tubular shape for each of the sleeves 14 and 15. In this embodiment, the side ventilation arrangements 16 are arranged to run along the seams 14c and 15c from positions near the opening portions of the cuffs 14a and 15a toward the underarm portions 14b and 15b.

[0046] The side ventilation arrangements 16 also extend between the front body sections 21 and 22 and the back body section 23 from the underarm portions 14b and 15b toward the bottom hem part 12a. More specifically, each of the side ventilation arrangements 16 runs along the seam between the respective one of the front body sections 21 and 22 and the respective one of the side members 26 and 27 to the respective one of the front hem parts 21e and 22e. As shown in Figure 3, each of the side ventilation arrangements 16 has an air passage part 34 made of an air permeable material and an open-close part 36 configured to cover the air passage part 34 in such a fashion that the air passage part 34 can be opened and closed from the outside. The air passage part 34 includes a perforated mesh part 38, while the open-close part 36 has a slide fastener 40 configured such that it can selectively open and close the passage part 34. The perforated mesh part 38 is made of a stretchy

material having numerous through holes. Each of the slide fasteners 40 is a closed end slide fastener that is closed at the end thereof that is near the cuff 14a and 15a such that the left and right strips of tape of the slide fastener 40 cannot completely separate from each other at the end near the cuff 14a and 15a.

[0047] Excluding the slide fastener 32, the side ventilation arrangements 16, and the collar 30, the shapes of the various parts mentioned above will now be described in more detail with reference to Figure 4. Figure 4 shows the state of the various parts after they have been cut from, for example, a waterproof polyester fabric using a pattern paper. In Figure 4, the parts are depicted such that the outer fabric side that is exposed to the outside is visible. The fine lines shown just inside the perimeters of the various parts are stitch lines or fold lines, and the portions between the stitch lines or fold lines and the outside perimeter are stitch margins or fold margins.

[0048] As shown on the upper left of Figure 4, the first sleeve attaching part 21a is arranged on the outward side of an upper portion of the front body section 21 and curves diagonally such that the respective shoulder of the rider protrudes there-beyond. The first front-to-back attaching part 21b is arranged below the first sleeve attaching part 21a on the outward side of the front body section 21. The first neckline part 21c turns inward from the first sleeve attaching part 21a and curves in generally the shape of a circular arc. The slide fastener attaching part 21d runs downward from the inward side of the first neckline part 21c. The front hem part 21e joins the slide fastener attaching part 21d and the first front-to-back attaching part 21b.

[0049] Similarly, as shown on the upper left of Figure 4, the first sleeve attaching part 22a is arranged on the outward side of an upper portion of the front body section 22 and curves diagonally such that the respective shoulder of the rider protrudes there-beyond. The first front-to-back attaching part 22b is arranged below the first sleeve attaching part 22a on the outward side of the front body section 22. The first neckline part 22c turns inward from the first sleeve attaching part 22a and curves in generally the shape of a circular arc. The slide fastener attaching part 22d runs downward from the inward side of the first neckline part 22c. The front hem part 21e and 22e joins the slide fastener attaching part 22d and the first front-to-back attaching part 22b.

[0050] The first sleeve attaching parts 21a and 22a are configured to slant generally diagonally downward and outward such that they are shaped generally like a letter S so as to be curved convexly outward at an upper portion and concavely inward at a lower portion. The first front-to-back attaching parts 21b and 22b turn downward from the first sleeve attaching parts 21a and 22a and are shaped generally like a combination of a slightly concave curve and a straight line. One of the tape strips of each slide fastener 40 (which form the side ventilation arrangements 16) is sewn to each of the first front-to-back attaching parts 21b and 22b. The first neckline parts 21c

and 22c are configured to curve downward and inward in a circular arc-like shape. The slide fastener 32 (Figure 1), which connects the front body sections 21 and 22 together, is attached to the slide fastener attaching parts 21d and 22d.

[0051] As shown in the upper middle section of Figure 4, the back body section 23 is provided with a pair (left and right) of second sleeve attaching parts 23a and 23b, and a pair (left and right) of second front-to-back attaching parts 23c and 23d.

[0052] The second sleeve attaching parts 23a and 23b are arranged on both outward sides of an upper portion of the back body section 23 and curve diagonally such that the shoulders of the rider protrude there-beyond. The second front-to-back attaching parts 23c and 23d are arranged below the second sleeve attaching parts 23a and 23b on both outward sides of the back body section 23, and are connected to the first front-to-back attaching parts 21b and 22b through the side members 26 and 27. The back body section 23 also has the back hem part 23e that joins the bottom ends of the second front-to-back attaching parts 23c and 23d and a second neckline part 23f that is curved convexly downward between the second sleeve attaching parts 23a and 23b.

[0053] The second sleeve attaching parts 23a and 23b are curved convexly outward over the entire lengths thereof and configured to slant diagonally downward and outward from the second neckline part 23f. The second front-to-back attaching parts 23c and 23d are configured to have a slightly concave shape that curves inward. The back hem part 23e is configured to protrude downward so as to be longer than the front body sections 21 and 22. Thus, the back body section 23 is quite a bit longer than front body sections 21 and 22. As a result, the rain jacket can cover the rider's pants even when the rider's torso is bent forward and the rider's pants are less likely to become wet.

[0054] As shown in the lower right portion of Figure 4, the sleeves 14 and 15 are long sleeves that are linearly symmetrical with a vertical line of symmetry. The sleeves 14 and 15 are arranged so as to cover the portions of the shoulders that protrude beyond the front body sections 21 and 22 and the back body section 23. The sleeve 14 includes the cuff 14a, a first sleeve forming part 14d, a second sleeve forming part 14e and a V-shaped part 14f. The first and second sleeve forming parts 14d and 14e turn and extend in a curved fashion from both sides of the cuff 14a and are connected together so as to form a seam 14c. The V-shaped part 14f is cut in a V-shape from the first sleeve forming part 14d and sewn to the side member 26. The sleeve 14 also has a first seam part 14g and a second seam part 14h. The first seam part 14g is sewn to the first sleeve attaching part 21a. The second seam part 14h extends from the second sleeve forming part 14e and is sewn to the second sleeve attaching part 23a.

[0055] Like wise, the sleeve 15 includes the cuff 15a, a first sleeve forming part 15d, a second sleeve forming

part 15e and a V-shaped part 15f. The first and second sleeve forming parts 15d and 15e turn and extend in a curved fashion from both sides of the cuff 15a and are connected together so as to form a seam 15c. The V-shaped part 15f is cut in a V-shape from the first sleeve forming part 15d and sewn to the side member 27. The sleeve 15 also has a first seam part 15g and a second seam part 15h. The first seam part 15g is sewn to the first sleeve attaching part 22a. The second seam part 15h extends from the second sleeve forming part 15e and is sewn to the second sleeve attaching part 23b. The border portions between the V-shaped parts 14f and 15f and the first sleeve forming parts 14d and 15d form the underarm portions 14b and 15b.

[0056] The left and right side members 26 and 27 are shaped to be linearly symmetrical with a vertical line of symmetry. The side member 26 has a first connecting part 26a, a second connecting part 26b and a protruding part 26c. The first connecting part 26a is sewn to the first front-to-back attaching part 21b of the front body section 21. The second connecting part 26b is arranged opposite the first connecting part 26a and sewn to the second front-to-back attaching part 23c of the back body section 23. The protruding part 26c is configured to protrude upward in a circular arc-like shape and sewn to the V-shaped part 14f of the sleeve 14. Likewise, the side member 27 has a first connecting part 27a, a second connecting part 27b and a protruding part 27c. The first connecting part 27a is sewn to the first front-to-back attaching part 22b of the front body section 22. The second connecting part 27b is arranged opposite the first connecting part 27a and sewn to the second front-to-back attaching part 23d of the back body section 23. The protruding part 27c is configured to protrude upward in a circular arc-like shape and sewn to the V-shaped part 15f of the sleeve 15.

[0057] The mesh parts 38 and the slide fasteners 40 of the side ventilation arrangements 16 are indicated in Figure 4 with hatching lines that slant downward to the left. More specifically, the mesh parts 38 and the slide fasteners 40 are sewn between the first sleeve forming parts 14d and 15d and the second sleeve forming parts 14e and 15e starting at a position that is, for example, approximately 1 to 15 centimeters from the respective cuffs 14a and 15a. The mesh parts 38 and the slide fasteners 40 also pass through underarm portions 14b and 15b and are the sewn between the first front-to-back attaching parts 21b and 22b of the front body sections 21 and 22 and the first connecting parts 26a and 27a of the side members 26 and 27. Each mesh part 38 has a width such that each of the side ventilation arrangements 16 can open, for example, approximately 1 to 10 centimeters.

[0058] With the cycling rain jacket 10 in accordance with the first embodiment of the present invention, the side ventilation arrangements 16 are closed when the sliders 40a of the slide fasteners 40 are positioned at the bottom hem part 12a as shown in Figure 1 and fully open when the sliders 40a are grasped and pulled upward and

moved along the sleeves 14 and 15 to the cuffs 14a and 15a as shown in Figure 3. The cross sectional ventilation area of the side ventilation arrangements 16 can be adjusted as appropriate by varying the amount by which the slide fasteners 40 are moved. When the side ventilation arrangements 16 are open, the mesh parts 38 (which serve as the air passage parts 34) are exposed and air can be taken into and discharged from the inside of the jacket 10. As a result, the ventilation performance is improved.

[0059] In this embodiment, the side ventilation arrangements 16 are not limited to the upper garment main body 12 but, instead, span from positions on the sleeves 14 and 15 near the cuffs 14a and 15a to the bottom hem part 12a of the upper garment main body 12 in such a fashion as to pass through the underarm portions 14b and 15b. As a result, the cross sectional areas of the side ventilation arrangements 16 are larger than in a conventional upper garment in which side ventilation arrangements are provided only in the front body sections 21 and 22. Consequently, a large quantity of air can be taken into and discharged from the jacket 10 through the side ventilation arrangements 16, thereby enabling sufficient ventilation performance to be obtained. Additionally, since the underarm portions 14b and 15b are comparatively difficult to see from the front, the side ventilation arrangements 16 do not easily degrade the cosmetic appearance of the jacket 10.

SECOND EMBODIMENT

[0060] Referring now to Figures 5 to 8, a cycling rain jacket 60 is illustrated in accordance with a second embodiment. In view of the similarity between the first and second embodiments, the descriptions of the parts of the second embodiment that are identical or substantially identical to the parts of the first embodiment may be omitted for the sake of brevity. Rather, it will be apparent that the descriptions of the parts of the first embodiment that are identical or substantially identical to the parts of the second embodiment apply to the second embodiment, unless otherwise indicated.

[0061] As shown in Figures 5 and 6, the cycling rain jacket 60 is preferably a long-sleeve front-opening upper garment having raglan sleeves that extend from the neck opening. The cycling rain jacket 60 comprises an upper garment main body 62, a pair of sleeves 64 and 65 attached to both sides of the upper garment main body 62 and two pairs of first and second side ventilation arrangements 66 and 67. The surfaces of the upper garment main body 62 and the sleeves 64 and 65 have been subjected to a waterproofing treatment. As a result, the air permeability of these parts of the upper garment 60 is poorer than that of a typical cycling jersey. The side ventilation arrangements 66 and 67 serve to improve the air permeability, i.e., the ventilation.

[0062] The sleeve 64 is a tubular member that has a cuff 64a at its free end. Likewise, the sleeve 65 is a tubular

member that has a cuff 165a at its free end. The first and second side ventilation arrangements 66 and 67 extend from a position near the cuffs 64a and 65a of the sleeves 64 and 65 to a bottom hem part 62a of the upper garment main body 62 in such a fashion as to pass through a underarm portions 64b, 65b, the side ventilation arrangements 66 and 67, respectively. The first and second side ventilation arrangements 66 and 67 serve to ventilate the inside the rain jacket 60.

[0063] The upper garment main body 62 has a left front body section 71 and a right front body section 72, a back body section 73, a left side member 76, a right side member 77 and a collar 80, all of which are sewn together. The front body sections 71 and 72 are separated so that the rain jacket 10 opens in the front. The front body sections 71 and 72 have upper outside portions to which the sleeves 64 and 65 are sewn. The back body section 73 is arranged to face opposite the front body sections 71 and 72. The back body section 73 has the sleeves 74 and 75 sewn thereto. The side members 76 and 77 are arranged between the front body sections 71 and 72 and the back body section 73. The back body section 73 is arranged facing opposite the front body sections 71 and 72. The back hem part 73e of the back body section 73 is arranged to be lower than the front hem parts 71e and 72e of the front body sections 71 and 72. A slide fastener 82 is installed between the separate left and right front body sections 71 and 72 such that the front body sections 71 and 72 can be separated from each other. The slide fastener 82 is, for example, an open ended slide fastener configured such that the left and right strips of tape of the slide fastener 82 can separate completely at the bottom end of the slide fastener 82.

[0064] While the first embodiment has two side ventilation arrangements 16 that are provided between the front body sections 21 and 22 and the back body section 23, the second embodiment has two side ventilation arrangements 66 arranged between the front body sections 71 and 72 and the back body section 73 as well as two additional side ventilation arrangements 67 that cut vertically along the back body section 73, as shown in Figures 5 and 6. Also, in the second embodiment, the sleeves 64 and 65 are configured to be oriented in a generally forward direction.

[0065] The sleeve 64 has a sleeve main body section 74 and a lower sleeve section 78 configured to be arranged on a bottom portion of the sleeve main body section 74. Likewise, the sleeve 65 has a sleeve main body section 75 and a lower sleeve section 79 configured to be arranged on a bottom portion of the respective sleeve main body section 75. The sleeves 64 and 65 have seams 64c, 64d, 65c, 65d for forming a tubular shape (only 64c and 64d are shown in Figures 5 and 6), and the side ventilation arrangements 66 are arranged to run along the seams 64c and 65c from positions near the opening portions of the cuffs 64a and 65a toward the underarm portions 64b, 65b. Similarly, the side ventilation arrangements 67 are arranged to run along the seams 64d, 65d

from positions near the opening portions of the cuffs 64a and 65a toward the underarm portions 64b and 65b.

[0066] The first side ventilation arrangements 66 also run between the front body sections 71 and 72 and the back body section 73 from the underarm portions 64b and 65b toward the front hem part 62a. More specifically, each first ventilation opening 66 runs along the seam between the respective one of the front body sections 71 and 72 and the respective one of the side members 76 and 77 to the respective the respective one of the front hem parts 71e and 72e. Meanwhile, each of the second ventilation openings 67 extends generally vertically along the back body section 73 along a curved path from the respective one of the underarm portions 64b and 65b to a position just above the back hem part 73e. Each of the first and second side ventilation arrangements 66 and 67 has an air passage part made of an air permeable material and an open-close part configured to cover the air passage part in such a fashion that the air passage part can be opened and closed from the outside in the same manner as shown in Figure 3 for the side ventilation arrangements 16. Each of the air passage parts has a perforated mesh part and each of the open-close parts has a slide fastener 90 or 92 configured such that it can open and close the passage part. Each of the slide fasteners 90 and 92 is a closed end slide fastener that is closed at the end thereof that is near the respective one of the cuffs 64a and 65a such that the left and right strips of tapes of the slide fasteners 90 and 92 cannot separate from each other. The perforated mesh part is made of a stretchy material having numerous through holes.

[0067] Excluding the slide fastener 82 and the side ventilation arrangements 66 and 67, the shapes of the various parts mentioned above will now be described in more detail with reference to Figure 7. Figure 7 shows the state of the various parts after they have been cut from, for example, a waterproof polyester fabric using a pattern paper. In Figure 7, the parts are depicted such that the outer fabric that is exposed to the outside is visible. The fine lines shown just inside the perimeters of the various parts are stitch lines or fold lines, and the portions between the stitch lines or fold lines and the outside perimeter are stitch margins or fold margins.

[0068] As shown on the lower right of Figure 7, the front body sections 71 and 72 are shaped to be linearly symmetrical with a vertical line of symmetry. The front body section 71 has a first (left) sleeve attaching part 71a, a first (left) front-to-back attaching part 71b, a first neckline part 71c, a slide fastener attaching part 71d and a front hem part 71e. Similarly, the front body section 72 has a first (right) sleeve attaching part 72a, a first (right) front-to-back attaching part 72b, a first neckline part 72c, a slide fastener attaching part 72d and a front hem part 72e.

[0069] The first sleeve attaching parts 71a and 72a are configured to slant generally diagonally downward and outward and shaped generally like a letter S so as to be curved convexly outward at an upper portion and con-

cavely inward at a lower portion. The first front-to-back attaching parts 71b and 72b turn downward from the first sleeve attaching parts 71a and 72a and are shaped generally like a combination of a slightly concave curve and a straight line. The first neckline parts 21c and 22c are configured to curve downward and inward in a circular arc-like shape. The slide fastener 82 (Figure 5), which connects the front body sections 71 and 72 together, is attached to the slide fastener attaching parts 71d and 72d. The front hem parts 71e, 72e are configured to curve concavely upward along a middle portion thereof. As a result, the jacket 60 does not readily become wrinkled even when the rider bends forward.

[0070] As shown in the upper middle portion of Figure 7, the back body section 73 has a back body section main piece 731 and a pair (left and right) of back body section side pieces 732 and 733. The back body section 73 is divided into three pieces in order to provide the second side ventilation arrangements 67, which cut generally vertically along the back body section 73. The back body section main piece 731 has a pair (left and right) of second sleeve attaching parts 73a and 73b and a pair of second ventilation opening forming parts 73c and 73d. The second sleeve attaching parts 73a and 73b are arranged on the outward sides of an upper portion of back body section main piece 731 and curved diagonally such that the respective shoulder of the rider protrudes there-beyond. The second ventilation opening forming parts 73c and 73d are arranged below the second sleeve attaching parts 73a and 73b on the outward sides of the back body section main piece 731. The back body section main piece 731 also has a back hem part 73e and a second neckline part 73f. The back hem part 73e joins the bottom ends of the second front-to-back attaching parts 73a and 73b. The second neckline part 73f protrudes from a middle portion of the top of the back body section main piece 731. The second ventilation opening forming parts 73c and 73d are formed to curve concavely inward. The back body section side pieces 732 and 733 each have a second front-to-back attaching part 73g and 73h and a second ventilation opening forming part 73i and 73j. The second front-to-back attaching part 73g and 73h connects to the respective first front-to-back attaching part 71b and 72b through the respective side member 76 and 77. The second ventilation opening forming parts 73i and 73j are arranged opposite the respective one of the second ventilation opening forming parts 73c and 73d.

[0071] The second sleeve attaching parts 73a, 73b are curved convexly outward over the entire lengths thereof and configured to slant diagonally downward and outward from the second neckline part 73f. The second front-to-back attaching parts 73g and 73h are configured to have a slightly concave shape that curves inward. The back hem part 73e is curved so as to bulge in generally the shape of a circular arc along a middle portion thereof. Thus, the back body section 73 is longer than front body sections 71 and 72. As a result, the rain jacket 60 can cover the rider's pants even when the rider's torso is bent

forward. The second neckline part 73f is configured such that it protrudes upward and is concave in the general shape of a circular arc.

[0072] The left and right sleeve main body sections 74 and 75 are arranged so as to cover the portions of the shoulders that protrude beyond the front body sections 71 and 72 and the back body section 73. The sleeve main body section 74 includes an upper cuff 74a, a first sleeve forming part 74b, a second sleeve forming part 74c, a first seam part 74d, a second seam part 74e and a neck opening 74f. The first and second sleeve forming parts 74b and 74c turn and extend in a curved fashion from both sides of the upper cuff 74a, and are connected together through a lower sleeve section 78. The first seam part 74d is sewn to the first sleeve attaching part 71a, and has a V-shaped cut part 83 that is cut in a V-shape from the first sleeve forming part 74b. The second seam part 74e extends from the second sleeve forming part 74c, and is sewn to the second sleeve attaching part 73a. The neck opening 74f joins the first seam part 74d and the second seam part 74e together.

[0073] The sleeve main body section 75 includes an upper cuff 75a, a first sleeve forming part 75b, a second sleeve forming part 75c, a first seam part 75d, a second seam part 75e and a neck opening 75f. The first and second sleeve forming parts 75b and 75c turn and extend in a curved fashion from both sides of the upper cuff 75a, and are connected together through a lower sleeve section 79. The first seam part 75d is sewn to the first sleeve attaching part 77a, and has a V-shaped cut part 84 that is cut in a V-shape from the first sleeve forming part 75b. The second seam part 75e extends from the second sleeve forming part 75c, and is sewn to the second sleeve attaching part 73b. The neck opening 75f joins the first seam part 75d and the second seam part 75e together.

[0074] Each of the upper cuffs 74a and 75a is substantially linear. The first sleeve forming part 74b and the second sleeve forming part 74c extend from the upper cuff 74a in an inwardly concave manner. Likewise, the first sleeve forming part 75b and the second sleeve forming part 75c extend from the upper cuff 75a in an inwardly concave manner. The first sleeve forming parts 74b and 75b are arranged more forward than the second sleeve forming parts 74c and 75c, respectively. The first sleeve forming part 74b and 75b are shorter in length than the second sleeve forming part 74c and 75c. Thus, the sleeves 74 and 75 are configured this way so that the upper cuffs 74a and 75a will face forward.

[0075] The first seam part 75d will now be explained with reference to Figure 8. Figure 8 shows the right sleeve 75. Since the left-hand sleeve main body section 74 is linearly symmetrical with the right-hand sleeve main body section 75 and has the same shape, an explanation of the first seam part 74d is omitted here for the sake of brevity.

[0076] The V-shaped cut part 84 of the first seam part 75d has a small curve section 84a and a pair of large curve sections 84b and 84c that extend from both ends

of the small curve section 84a in such a fashion as to gradually spread apart. The radius of curvature R1 of the small curve section 84a about a center O1 is equal to or larger than 3 mm and smaller than or equal to 20 mm, preferably equal to or larger than 5 mm and smaller than or equal to 10 mm. In this embodiment the radius of curvature R1 is 7 mm. The large curve section 84b extends in a curved fashion toward the first sleeve forming part 75b from one end of the small curve section 84a. The radius of curvature R2 of the large curve section 84b about a center O2 is equal to or larger than 200 mm and smaller than or equal to 600 mm, preferably equal to or larger than 300 mm and smaller than or equal to 400 mm. In this embodiment the radius of curvature R2 is 333 mm. Meanwhile, the large curve section 84c extends in a curved fashion toward the neck opening 75f from the other end of the small curve section 84a. The radius of curvature R3 of the large curve section 84c about a center O3 is equal to or larger than 200 mm and smaller than or equal to 600 mm, preferably equal to or larger than 300 mm and smaller than or equal to 400 mm. In this embodiment the radius of curvature R3 is 333 mm. The second angle of intersection α_2 between the large curve sections 84b, 84c is preferably equal to or larger than 20° and smaller than or equal to 80° and is set to 45° in this embodiment. The second angle of intersection α_2 is the smaller of the angles formed by the intersection of a tangent line C2 that is tangent to the large curve section 84b at the lengthwise midpoint of the large curve section 84b and a tangent line C3 that is tangent to the large curve section 84c at the lengthwise midpoint of the large curve section 84c.

[0077] When the angle of the V-shaped cut part 84 is set as described above, the sleeve 65 is lifted up about a substantially horizontal axis centered on the small curve section 84a of the jacket 60 (i.e., rotated clockwise about said horizontal axis when the jacket 60 is viewed from the left side) and the cuff 65a is oriented more upward than downward. The degree to which the cuff 65a is oriented upward increases as the second angle α_2 decreases.

[0078] Also, a first angle α_1 formed by the intersection of a first straight line L1 that is a substantially perpendicular bisector with respect to the cuff 65a and a second straight line that runs along the apex of the rider's shoulder from the neck opening 65f toward a shoulder opening is equal to or larger than 30° and smaller than or equal to 90° , preferably equal to or larger than 30° and smaller than or equal to 90° . In this embodiment, the first angle α_1 is 57° . If the first angle α_1 exceeds 90° , the jacket 60 will feel restrictive when worn. Conversely, if the first angle α_1 is less than 30° , the sleeve 65 will be oriented toward the side, causing wrinkles and tension to develop easily when the jacket 60 is worn. By configuring the jacket 60 such that the first and second straight lines L1 and L2 intersect with a first angle α_1 , the entire sleeve 65 is rotated (swung) inward about an approximately vertical axis of the garment in accordance with the intersection

angle so as to be oriented in a forward direction, thereby causing the cuff 65a, too, to be oriented in a forward direction.

[0079] As shown in Figure 7, each of the second seam parts 74e and 75e are configured in the shape of a smooth generally circular arc and are sewn to the second sleeve attaching parts 73a and 73b of the back body section 73, respectively. A sharp angle is formed between the second seam parts 74e and 75e and the second sleeve forming parts 74c and 75c of each of the sleeve main body sections 74 and 75, respectively.

[0080] The neck openings 74f and 75f are configured to turn at intermediate positions so as to link to the first neckline parts 71c and 72c of the front body sections 71 and 72 and the second neckline part 73f of the back body section 73 in a continuous fashion. The collar 80 is placed on top of and sewn to the neckline parts 71c, 72c and 73f and the neck openings 74f and 75f.

[0081] The left and right side members 76 and 77 are shaped to be linearly symmetrical with a vertical line of symmetry. The side member 76 has a first connecting part 76a, a second connecting part 76b, a first arm hole part 76c, a bottom hem part 76d, and a third sleeve attaching part 76e. The first connecting part 76a is sewn to the first front-to-back attaching part 71b of the front body section 71. The second connecting part 76b is arranged opposite the first connecting part 76a and sewn to the second front-to-back attaching part 73g of the back body section 73. The first arm hole part 76c is arranged on top and configured to be concave in a circular arc-like shape. The bottom hem part 76d is arranged on the bottom and configured to slant upward toward the front, and a third sleeve attaching part 76e that curves from the second connecting part 76b and connects to the first arm hole part 76c in such a fashion as to form a sharp angle.

[0082] The side member 77 has a first connecting part 77a, a second connecting part 77b, a first arm hole part 77c, a bottom hem part 77d, and a third sleeve attaching part 77e. The first connecting part 77a is sewn to the first front-to-back attaching part 72b of the front body section 72. The second connecting part 77b is arranged opposite the first connecting part 77a and sewn to the second front-to-back attaching part 73h of the back body section 73. The first arm hole part 77c is arranged on top and configured to be concave in a circular arc-like shape. The bottom hem part 77d is arranged on the bottom and configured to slant upward toward the front. The third sleeve attaching part 77e curves from the second connecting part 77b and connects to the first arm hole part 77c in such a fashion as to form a sharp angle.

[0083] Forming the side members 76 and 77 in this way enables the jacket 60 to fit the human body better and reduces the air resistance by suppressing the formation of wrinkles. It also suppresses the development of tension between the front body sections 71 and 72 and the back body section 73 on both sides of the wearer's body and improves the comfort of the jacket 10.

[0084] The left and right lower sleeve sections 78 and

79 are shaped to be linearly symmetrical with a vertical line of symmetry. The lower sleeve section 78 includes a lower cuff 78a, a third connecting part 78b, a fourth connecting part 78c, a second arm hole part 78d and a third arm hole part 78e. The lower cuff 78a is arranged below the upper cuff 74a of the respective sleeve main body section 74 and forms the cuff 64a together with the upper cuff 74a. The third connecting part 78b extends from the front side of the lower cuff 79a and runs along first sleeve forming part 74b of the sleeve main body section 74. The fourth connecting part 78c extends from the back side of the lower cuff 78a runs along the second sleeve forming part 74c of the respective sleeve main body section 74. The second and third arm hole parts 78d and 78e join the third and fourth connecting parts 78b and 78c together along a convexly shaped path. The third connecting part 78b is sewn to the first sleeve forming part 74b. The fourth connecting part 78c is sewn to the entire second sleeve forming part 74c, except for a portion of the armhole side of the second sleeve forming part 74c. The second armhole part 78d is sewn to the first armhole part 76c of the side member 76. The third armhole part 79e is sewn to the second armhole part 74c of the sleeve main body section 74. The tip end portion of the armhole side of the second sleeve forming part 74c is sewn to the third attaching part 76e of the side member 76.

[0085] The lower sleeve section 79 includes a lower cuff 79a, a third connecting part 79b, a fourth connecting part 79c and a second arm hole part 79d and a third arm hole part 79e. The lower cuff 79a is arranged below the upper cuff 75a of the respective sleeve main body section 74 and forms the cuff 65a together with the respective upper cuff 75a. The third connecting part 79b extends from the front side of the lower cuff 79a and runs along first sleeve forming part 75b of the sleeve main body section 75. The fourth connecting part 79c extends from the back side of the lower cuff 79a runs along the second sleeve forming part 75c of the sleeve main body section 75. The second and third arm hole parts 79d and 79e join the third and fourth connecting parts 79b and 79c together along a convexly shaped path. The third connecting part 79b is sewn to the first sleeve forming part 75b. The fourth connecting part 79c is sewn to the entire second sleeve forming part 75c, except for a portion of the armhole side of the second sleeve forming part 75c. The second armhole part 79d is sewn to the first armhole part 77c of the side member 77. The third armhole part 79e is sewn to the second armhole part 75c of the sleeve main body section 75. The tip end portion of the armhole side of the second sleeve forming part 75c is sewn to the third attaching part 77e of the side member 77.

[0086] Providing lower sleeve sections 78 and 79 configured as just described enables the jacket 60 to fit the upper arms of the wearer better and reduces the air resistance by suppressing the formation of wrinkles. It also suppresses the development of tension in the sleeves 64 and 65 and improves the comfort of the jacket 10.

[0087] The mesh parts (which serve as air passage parts) and the slide fasteners 90 of the side ventilation arrangements 66 are sewn to the portions indicated in Figure 7 with hatching lines that slant downward to the left, and the mesh parts and the slide fasteners 92 of the side ventilation arrangements 67 are sewn to the portions indicated in Figure 7 with hatching lines that slant downward to the right. More specifically, the mesh part and slide fastener 90 of each of the first ventilation openings 66 are sewn between the first sleeve forming parts 74b and 75b of the respective one of sleeve main body sections 74 and 75 and the third connecting parts 78b and 79b of the respective one of the lower sleeve sections 78 and 79 and between the first front-to-back attaching parts 71b and 72b of the respective one of the front body section 71 and 72 and the first connecting parts 76a and 77a of the respective one of the side members 76 and 77. Meanwhile, the mesh part and the slide fastener 92 of each of the second ventilation openings 67 are sewn between the second sleeve forming parts 74c and 75c of the respective one of the sleeve main body sections 74 and 75 and the fourth connecting parts 78c and 79c of the respective of the lower sleeve sections 78 and 79 and between the first front-to-back attaching part 71 b and 72b of the respective side of the back body section 73 and the first connecting parts 76a and 77a of the respective one of the side members 76 and 77. The mesh part and the slide fastener 92 are sewn between the second ventilation opening forming parts 73c and 73d of the respective one of the sides of the back body section main piece 731 and the second ventilation opening forming parts 73i and 73j of the respective one of the back body section side pieces 732 and 733.

[0088] In a cycling rain jacket 60 in accordance with the second embodiment of the present invention, the sleeves 64 and 65 are configured such that the first straight line L1 and the second straight line L2 intersect with a first angle α_1 . As a result, when the sleeves 64 and 65 are sewn to the front body sections 71 and 72 and the back body section 73, the entire arms 64 and 65 are rotated (swung) inward about an approximately vertical axis of the garment in accordance with the first angle α_1 so as to be oriented in a forward direction, thereby causing the cuffs 64a and 65a, too, to be oriented in a forward direction. Additionally, since the V-shaped cut part 84 having a second angle α_2 is provided, when the sleeves 64 and 65 are sewn to the front body sections 71 and 72, the forwardly oriented sleeves 64 and 65 are rotated about a substantially horizontal axis of the jacket 60 so as to be even further oriented toward the front. As a result, since the sleeves 64 and 65 are oriented toward the front of the jacket 60, the jacket 60 does not readily become uncomfortably tight at the backs of the rider's shoulders or develop wrinkles in the front portions of the rider's shoulders when the rider mounts a bicycle, bends forward, and extends his or her arms forward to grip the handlebar, e.g., the drop handlebar of a road bike. Thus, the comfort of the jacket 60 when a drop handlebar is

gripped is improved and the air resistance of the garment is reduced.

[0089] Furthermore, in this embodiment, the first and second side ventilation arrangements 66 and 67 are not limited to the upper garment main body 62 but, instead, span from positions on the sleeves 64 and 65 near the cuffs 64a and 65a to the front hem part 62a and the back hem part 73e of the upper garment main body 62 in such a fashion as to pass through the underarm portions 64b and 65b. As a result, the cross sectional areas of the side ventilation arrangements 66 and 67 are larger than in a conventional upper garment in which side ventilation arrangements are provided only in the front body sections 71 and 72. Consequently, a large quantity of air can be taken into and discharged from the jacket 60 through the side ventilation arrangements 66 and 67, thereby enabling sufficient ventilation performance to be obtained. Additionally, since the underarm portions 64b and 65b are comparatively difficult to see from the front, the side ventilation arrangements 66 and 67 do not easily degrade the cosmetic appearance of the jacket 60. Additionally, since second side ventilation arrangements 67 are provided in addition to the first side ventilation arrangements 66, air can be taken in through the first side ventilation arrangements 66 and efficiently discharged through the second side ventilation arrangements when the jacket 60 is worn while riding a bicycle. As a result, the body can be cooled efficiently even when riding a bicycle under conditions of high humidity.

THIRD EMBODIMENT

[0090] Referring now to Figure 9, a cycling rain jacket 110 is illustrated in accordance with a third embodiment. In view of the similarity between the third and first embodiments, the descriptions of the parts of the third embodiment that are identical or substantially identical to the parts of the first embodiment may be omitted for the sake of brevity. Rather, it will be apparent that the descriptions of the parts of the first embodiment that are identical or substantially identical to the parts of the third embodiment apply to the third embodiment, unless otherwise indicated.

[0091] In this third embodiment, it is also acceptable to configure the cycling rain jacket 110 with a pair of side ventilation arrangements 116 that run generally vertically along the front body sections 121 and 122 as shown in Figure 9. The cycling rain jacket 110 is identical to the cycling rain jacket 10, discussed above except for the location of the side ventilation arrangements 116 relative to the side ventilation arrangements 16. It is also acceptable to provide the cycling rain jacket 110 with the side ventilation arrangements 67 in accordance with the second embodiment that cut generally vertically along the back body section or with side ventilation arrangements 16 in accordance with the first embodiment that are arranged between the front body section and the back body section.

[0092] It is acceptable for the perforated mesh part 38 to be made of a net-like material instead of a material have a large number of through holes.

5 FOURTH EMBODIMENT

[0093] Referring now to Figure 10, a cycling rain jacket 160 is illustrated in accordance with a fourth embodiment. In view of the similarity between the embodiment and first embodiments, the descriptions of the parts of the fourth embodiment that are identical or substantially identical to the parts of the first embodiment may be omitted for the sake of brevity. Rather, it will be apparent that the descriptions of the parts of the first embodiment that are identical or substantially identical to the parts of the fourth embodiment apply to the fourth embodiment, unless otherwise indicated.

[0094] In this fourth embodiment, it is acceptable for the open-close parts 36 of the first embodiment to be replaced with hook-and-loop fasteners 190 instead of slide fasteners 40. For example, Figure 10 shows the cycling rain jacket 160 having a pair of side ventilation arrangements 166 that are substantially the same as those of the first embodiment, except that the slide fasteners are replaced with hook-and-loop fasteners 190. In such a case, the respective seam portions can be formed to have overlapping portions and the tape having the hooks and the tape having the loops can be sewn separately to opposing overlapping portions to form the hook-and-loop fasteners. By using hook-and-loop fasteners 190, the side ventilation arrangements 166 can be partially opened at any desired portion or opened at multiple portions.

[0095] In the prior embodiments, the side ventilation arrangements 16, 66 and 67 are configured to run to positions near the cuffs 14a and 15a, 64a, 65a of the sleeves 14 and 15, 64 and 65. However, it is also acceptable to provide side ventilation arrangements that cut through the cuffs.

[0096] Although in the first and second embodiments the side ventilation arrangements 16, 66 and 67 are configured to run to positions near the cuffs 14a and 15a, 64a, 65a of the sleeves 14 and 15, 64 and 65, the present invention is not limited to such an arrangement. The effects of the invention can be realized so long as side ventilation arrangements are provide which run from the sleeves to the bottom hem of the main body of the garment in such a fashion as to pass through the underarm portions. For example, it is acceptable for the side ventilation arrangements to start from positions in the vicinity of the wearer's elbows when the upper garment is worn. In such a case, the cross sectional areas of the side ventilation arrangements will be slightly smaller than in the previous embodiments, but the ventilation performance will still be improved significantly in comparison with the prior art. Furthermore, since the side ventilation arrangements are not provided in the forearm area, the sleeves fit the wearer's arms more closely and do not disturb the

wearer's ability to change grips on the handlebar, shift gears, operate the brakes, etc., while riding.

[0097] Although in the previously described embodiments the front body section is divided in to a pair of left and right members, the present invention can also be applied to a cycling upper garment in which the front body section is constructed as a single member.

[0098] Although in the previously described embodiments the front body section and back body section are connected together through a pair of left and right side members, the present invention can also be applied to a cycling upper garment that is configured such that the front body section and back body section are connected to each other directly without side members disposed therebetween.

[0099] Although the previously described embodiments illustrate cases in which the invention is applied to a rain jacket whose surface has been treated to make it waterproof, the present invention can also be applied to a regular cycling jersey.

[0100] In understanding the scope of the present invention, the term "comprising" and its derivatives, as used herein, are intended to be open ended terms that specify the presence of the stated features, elements, components, groups, integers, and/or steps, but do not exclude the presence of other unstated features, elements, components, groups, integers and/or steps. The foregoing also applies to words having similar meanings such as the terms, "including", "having" and their derivatives. Also, the terms "part," "section," "portion," "member" or "element" when used in the singular can have the dual meaning of a single part or a plurality of parts. Finally, terms of degree such as "substantially", "about" and "approximately" as used herein mean a reasonable amount of deviation of the modified term such that the end result is not significantly changed. For example, these terms can be construed as including a deviation of at least $\pm 5\%$ of the modified term if this deviation would not negate the meaning of the word it modifies.

[0101] While only selected embodiments have been chosen to illustrate the present invention, it will be apparent to those skilled in the art from this disclosure that various changes and modifications can be made herein without departing from the scope of the invention as defined in the appended claims. Furthermore, the foregoing descriptions of the embodiments according to the present invention are provided for illustration only, and not for the purpose of limiting the invention as defined by the appended claims and their equivalents.

Claims

1. A cycling upper garment for a rider to wear when riding a bicycle, comprising:

an upper garment main body;
a pair of sleeves attached to both sides of the

upper garment main body, each of the sleeves having a cuff; and

at least a pair of ventilation arrangements, with each of the ventilation arrangements extending from a corresponding one of the sleeves to a bottom hem of the upper garment main body such that the each of the ventilation arrangements extend through an underarm portion formed between the upper garment main body and the sleeves, and each of the ventilation arrangements having an air passage part made of an air permeable material and an open-close part configured and arranged to selectively exposed and covered the air passage part from outside of the cycling upper garment.

2. The cycling upper garment recited in claim 1, wherein each of the sleeves has a seam for making the sleeve into a tubular shape; and the upper garment main body includes a front body section with the sleeves sewn onto an upper, outside portion of the front body section, and a back body section arranged facing opposite the front body section and having the sleeves sewn thereto.
3. The cycling upper garment recited in claim 2 or 3, wherein the ventilation arrangements extend along the seams of the sleeves to the underarm portions.
4. The cycling upper garment recited in claim 2, wherein the ventilation arrangements extend between the front body section and the back body section from the underarm portions.
5. The cycling upper garment recited in any one of claims 2 to 4, wherein the ventilation arrangements extend generally vertically along the front body section from the underarm portions, and/or generally vertically along the back body section from the underarm portions.
6. The cycling upper garment recited in any one of claims 1 to 5, wherein the ventilation arrangements extend to positions near the cuffs, in particular through the cuffs to free ends of the sleeves.
7. The cycling upper garment recited in any one of claims 1 to 6, wherein the ventilation arrangements extend to positions near the bottom hem of the upper garment main body, in particular through the bottom hem of the upper garment body

to a bottom edge of the upper garment body.

8. The cycling upper garment recited in any of claims 1 to 7, wherein the air passage part includes a perforated mesh part having numerous through holes. 5

9. The cycling upper garment recited in claim 1, wherein the open-close part includes a sliding fastener and/or a hook-and-loop fastener, configured and arranged to open and close the passage part. 10

10. The cycling upper garment recited in any one of claims 2 to 9, wherein the front body section includes a pair of first sleeve attaching parts arranged on both outward sides of an upper portion of the front body section and curved diagonally such that shoulders of the rider protrude there-beyond, and a pair of first front-to-back attaching parts arranged below the first sleeve attaching parts on both outward sides of the front body section; the back body section includes a pair of second sleeve attaching parts arranged on both outward sides of an upper portion of the back body section and curved diagonally such that the shoulders of the rider protrude there-beyond, and a pair of second front-to-back attaching parts arranged below the second sleeve attaching parts on both outward sides of the back body section and are connected to the first front-to-back attaching parts; each of the sleeves includes first and second sleeve forming parts that extend in a curved fashion from both sides of the cuff and are connected together, a first seam part that is sewn to the first sleeve attaching part and has a V-shaped cut part that is cut in a V-shape from the first sleeve forming part, a second seam part that extends from the second sleeve forming part and is sewn to the second sleeve attaching part, and a neck opening that joins the first and second seam parts; and a first angle formed by an intersection of a first straight line that is a substantially perpendicular bisector with respect to the cuff and a second straight line that runs along an apex of the rider's shoulder from the neck opening toward a shoulder opening is equal to or larger than 30° and smaller than or equal to 90°. 15 20 25 30 35 40 45

11. The cycling upper garment recited in any one of claims 1 to 10, wherein the upper garment main body and the sleeves have been subjected to a waterproofing treatment. 50

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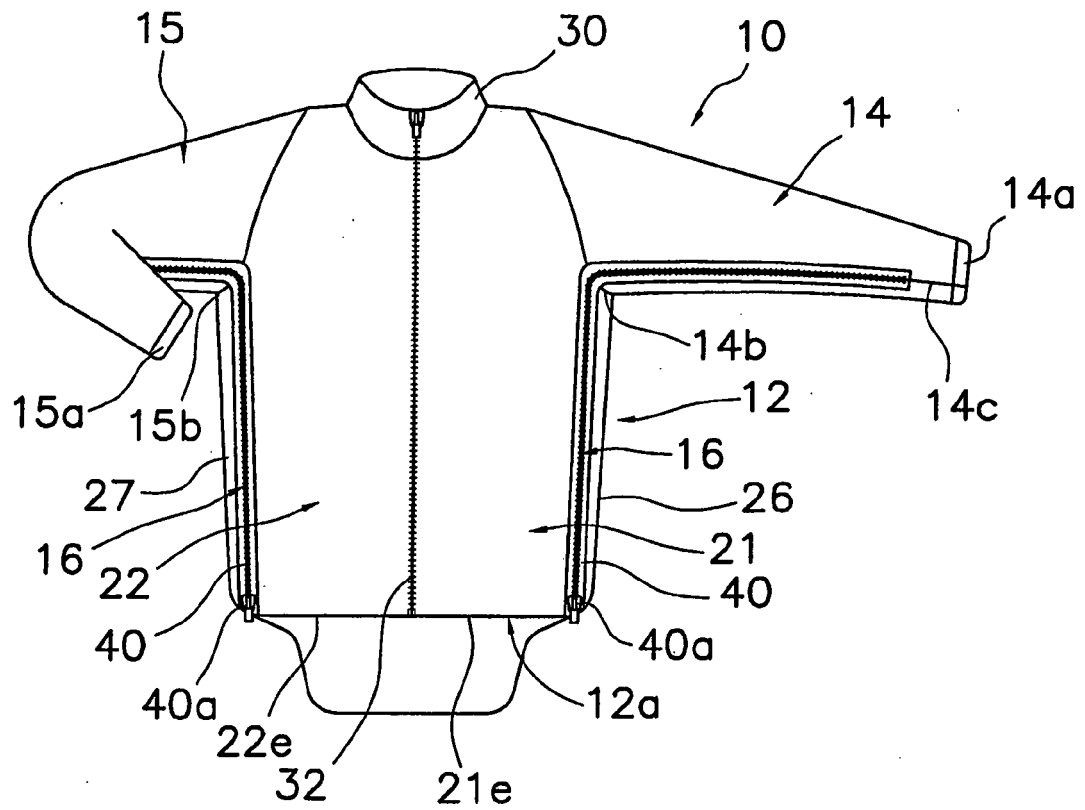


Fig. 1

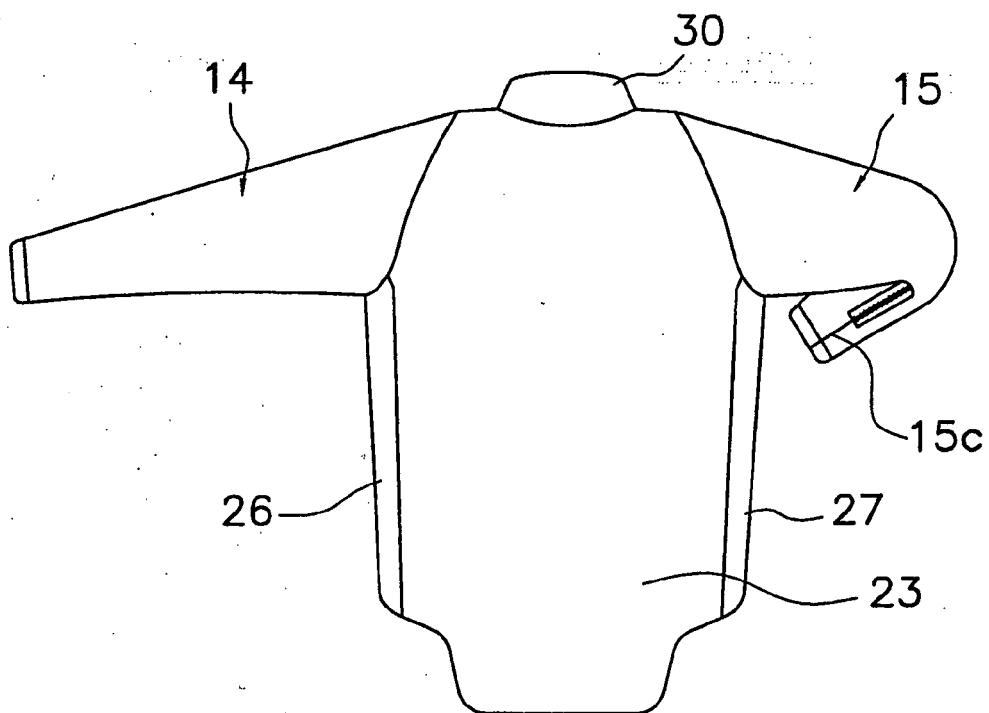


Fig. 2

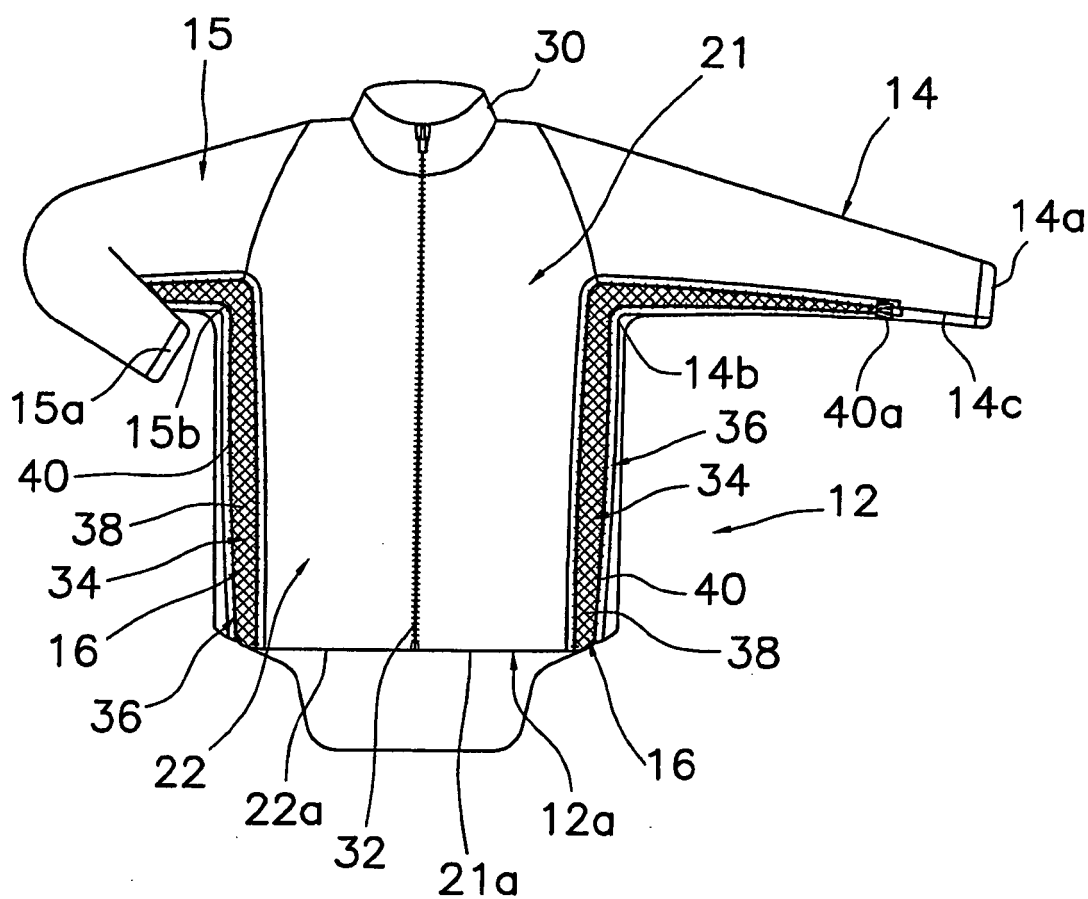


Fig. 3

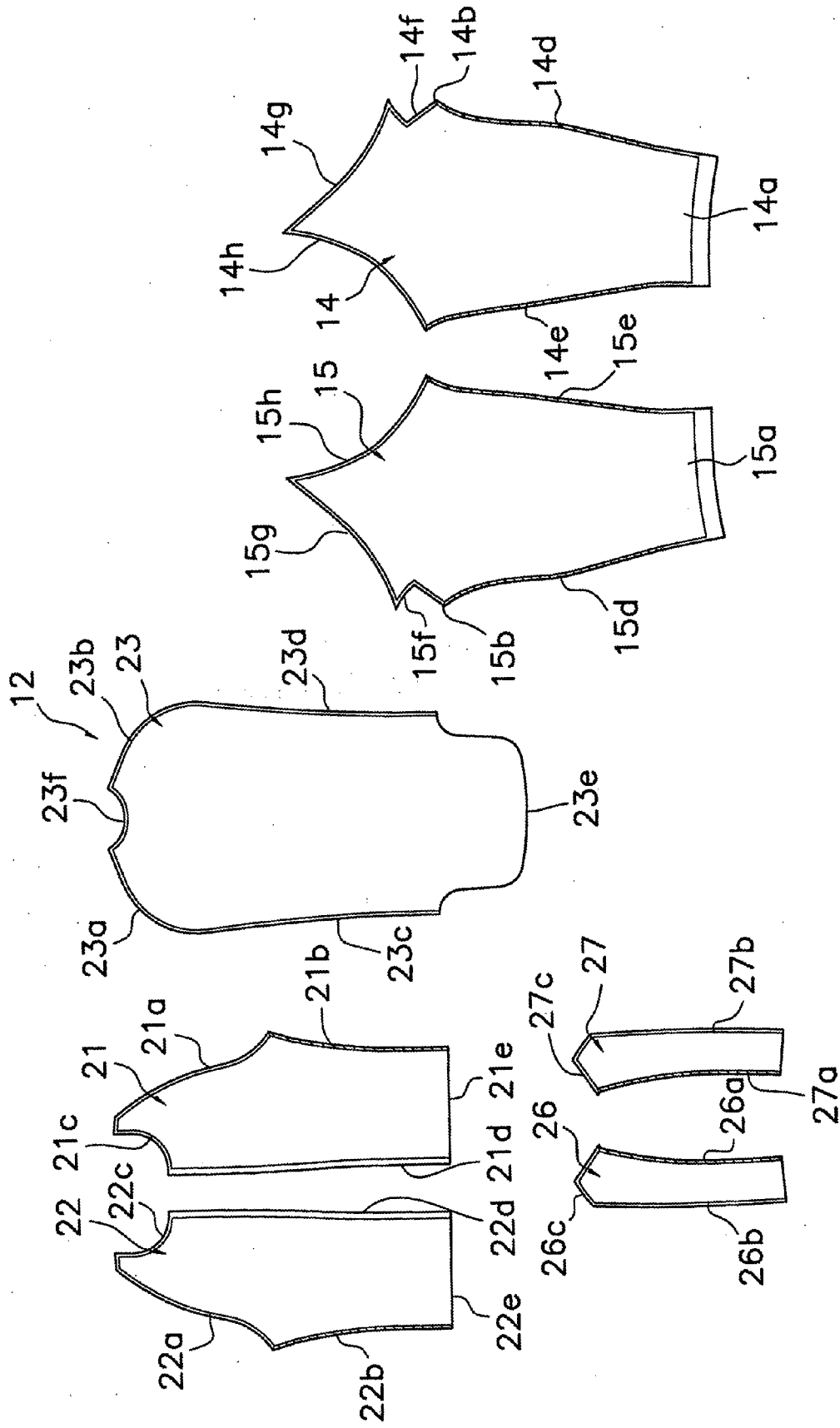


Fig. 4

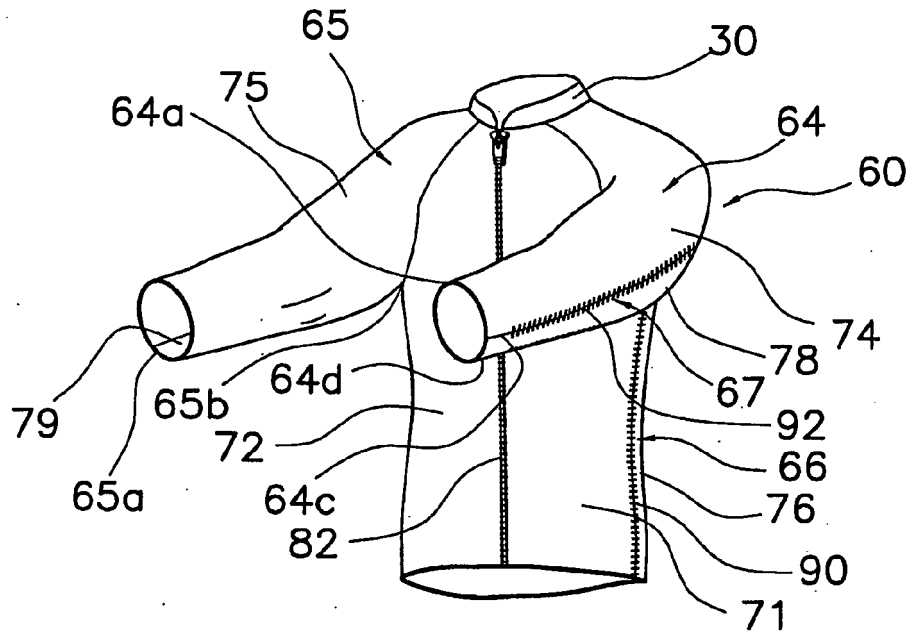


Fig. 5

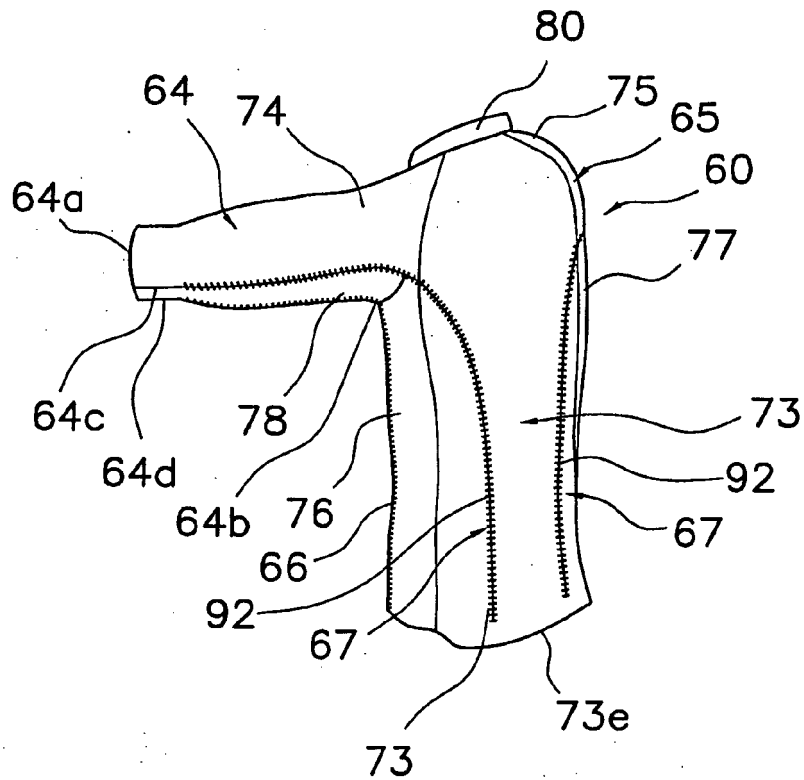


Fig. 6

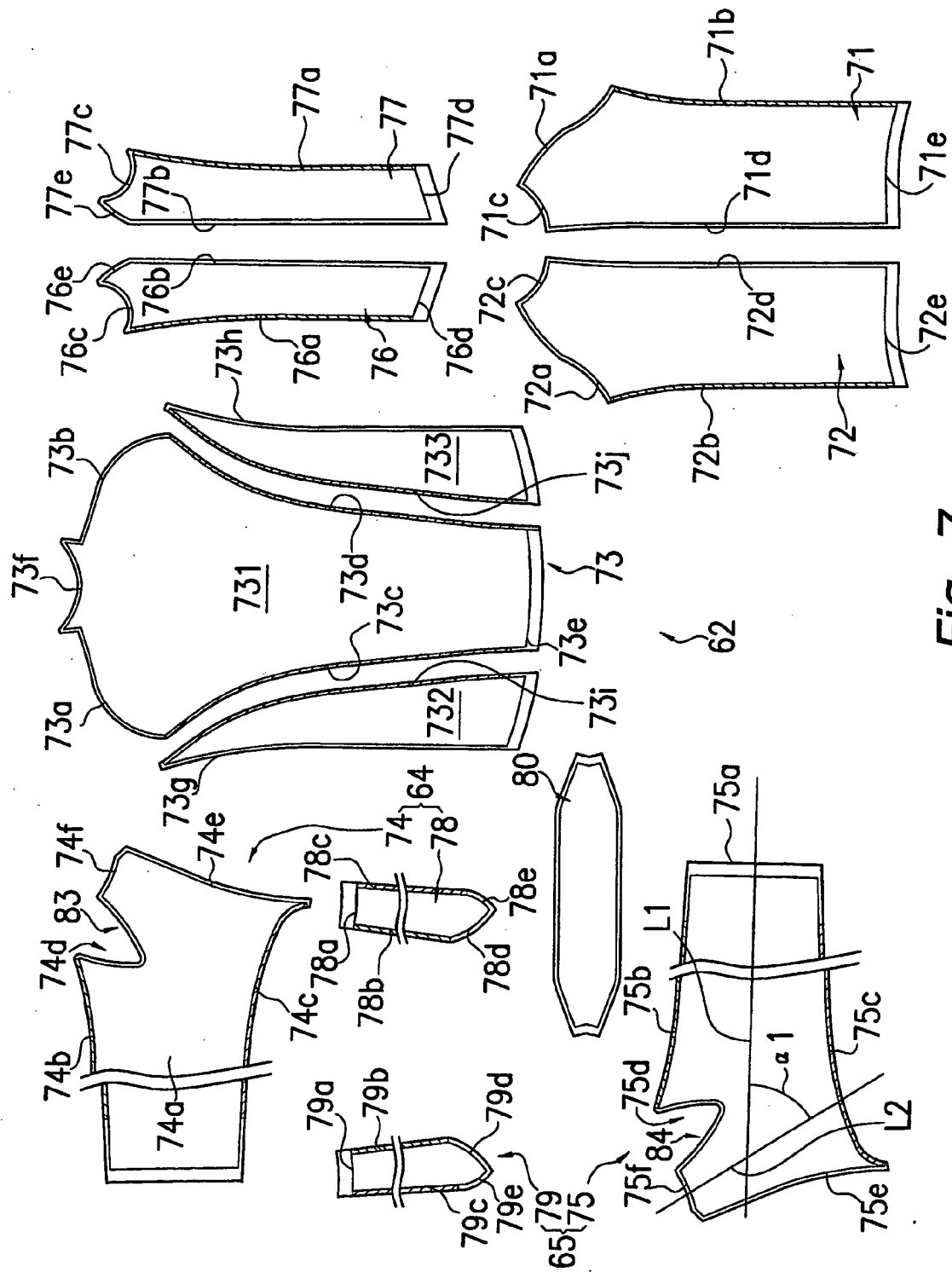


Fig. 7

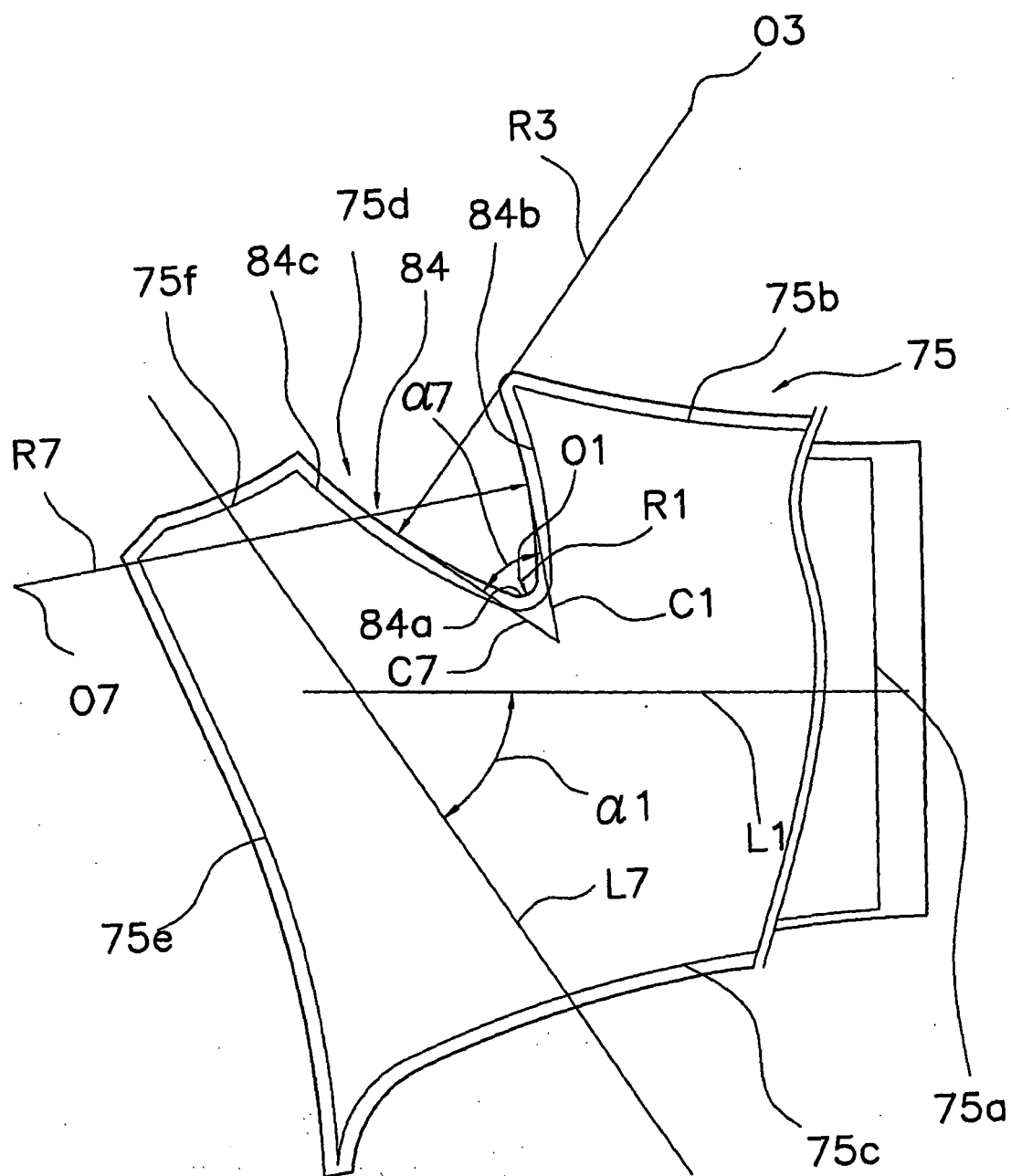


Fig. 8

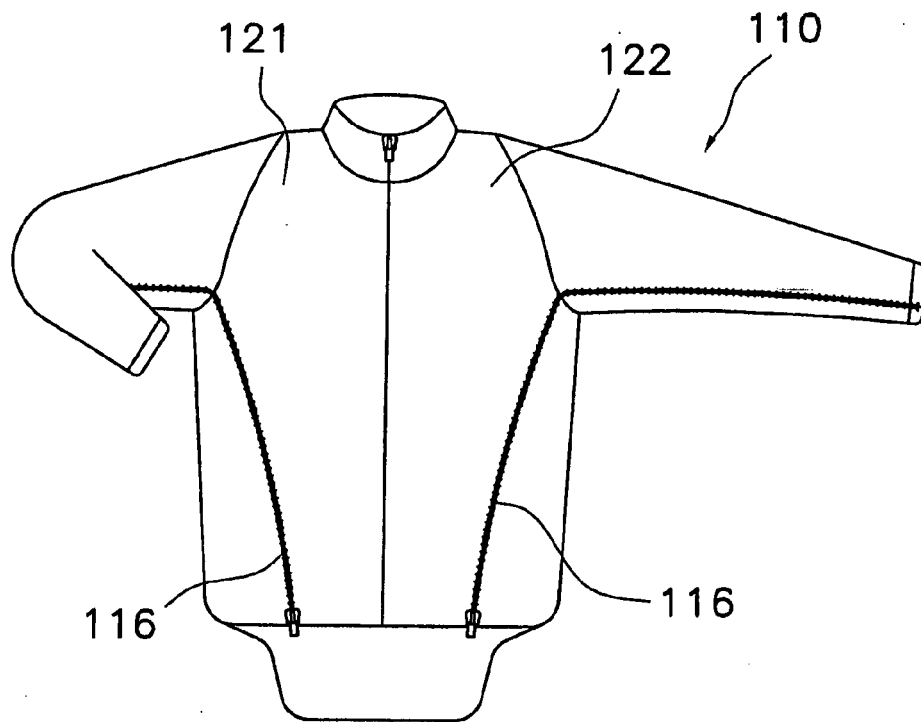


Fig. 9

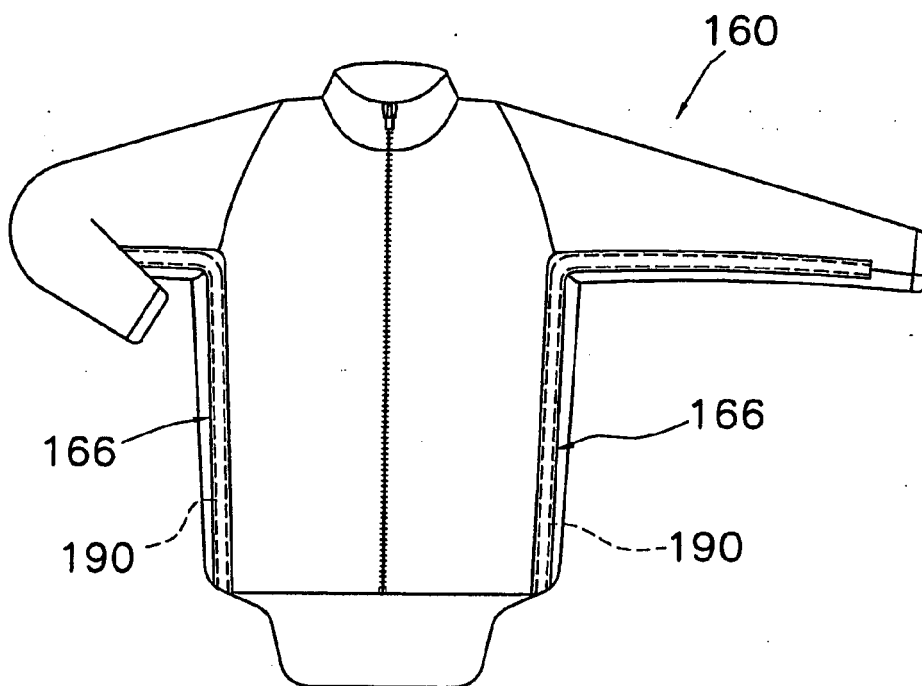


Fig. 10



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 01 0209

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Place of search The Hague		Date of completion of the search 13 September 2006	Examiner Garnier, Françoise
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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