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RAINFROOF VENTILATED MATERIAL

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Fig. 1

Fig. 2

Fig. 3

Fig. 4

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This invention relates to a novel type of rainproof ventilated material, particularly for waterproof clothing.

Conventional ventilating means for waterproof clothing consist, for instance, of a plurality of transversely extending strips of material, which are overlapping each other and which are either of wave-like shape or provided with folds or the like. In other known ventilating contrivances of this type, double-up strips of material or other distance regulating means of tubular or other suitable shape are arranged between two layers of fabric. However, ventilating contrivances of this kind are disliked by the public because of their unsightly appearance.

And, in addition to that, the manufacture of non-ventilating contrivances is complicated and requires much time and material, so that their production is rather expensive. It is further known to provide the waterproof garment or coat with ventilating means consisting of a plurality of transversely extending slits formed by a plurality of strips of fabric which are overlapping one another which are secured to each other by means of adhesive substance or otherwise, either with or without the arrangement of distance regulating means between the slits. But such a construction like that reduces the resistance to tearing of the material. Moreover, the slits do not guarantee a satisfactory ventilation of the coat, so that an undesired deposition of body humidity takes place on the inside of the garment.

Contrary to this the ventilating contrivance for raincoats of waterproof material disclosed in the present invention is satisfactory in every respect and of simplest construction, as it does not require any special ventilating means, such as little tubes, strips of non-converging means and the like. The novelty resides in the feature that an inner and outer layer of fabric are each provided with a plurality of arc-shaped incisions in such a way that the inner and outer arc-shaped incisions are curved in opposite directions and not positioned on top of each other, the two layers being fastened to each other only at the common intermediate portion. It is also possible to make the incisions provided in the inner layer of fabric of straight-lined formation. But best results will be obtained if the incisions in the inner layer are likewise arc-shaped and upwardly curved, whereas the arc-shaped incisions in the outer layer are downwardly curved. In a cheap and simple way like this ventilation channels or air passages can be produced which automatically open up and which afford a perfect protection against the penetration of water into the interior of the garment.

The invention will best be understood from a consideration of the following detailed description, taken in connection with the accompanying drawings, forming a part of this application and in which I have illustrated by way of reference numerals important particulars of the invention. However, it is to be understood that the invention is not confined to any strict conformity with the showing of the drawings, but may be changed or modified, so long as such changes or modifications are such as to maintain the essential feature of the invention as expressed in the appended claims.

In the drawings which like parts are referred to by the same reference numerals in all of the several figures Fig. 1 is a top-view of the outside of the ventilating contrivance with portions of the outer layer of fabric removed to show the oppositely curved incisions in the inner layer of fabric;

Fig. 2 is a vertical taken on line II—II of Fig. 1;

Fig. 3 is a vertical section on line I—II of Fig. 1 with the ventilating channels in opened-up condition through stretching of the two layers in upward and downward direction;

Fig. 4 is a detail view showing the inner layer provided with incisions of straight-line formation.

Referring now to the drawings in detail, the ventilating contrivance consists of an outer layer of sheet of fabric 1 and an inner layer of fabric 2. As illustrated in Figs. 1 and 2 the outer layer of fabric 1 is provided with arc-shaped incisions 4. These incisions have the tendency of opening up to some extent, even though the fabric may be lying on a support. When the garment is made of the fabric is being worn, this opening-up tendency of the incisions is increased considerably by the weight of the fabric, so that the incisions will then assume the opened-up form illustrated in Fig. 3, in which the arc-shaped ends 3 of the fabric are protruding in flap-like or scale-like fashion. The inner layer of fabric 2 is likewise provided with incisions, which may be here the straight-lined and horizontally extending type as shown at 7 of Fig. 4, or of any other suitable form. It is preferable, however, to provide also the inner layer with incisions of arc-like shape, as illustrated in Fig. 2, and, for instance, 5, in which case the inwardly protruding arc-shaped ends or scales 5 will result. It will be seen that through the arrangement of the incisions in the inner layer a large number of air channels or passages are produced, which extend from the outside of the garment to the interior of the latter, and which automatically open up when the garment is worn and thus guarantee a magnificent ventilation of the garment.

The opposed surfaces of the layers of fabric 1 and 2 are fastened to each other at the portions 6, positioned between the passages 7, through sewing, stitching, vulcanizing or welding. If the incisions 5 are provided in the inner layer of fabric 2 in reverse order as compared with the incisions 4 in the outer layer of fabric 1, as illustrated in Fig. 1, an entanglement of the incisions of the outer and inner layers is not possible. Because of the peculiar way of the pairs of incisions are arranged, they will open up already to a certain extent when the fabric is spread out on a flat support, whereas when the material is subjected to pull, even if the latter is exerted only by the weight of the material, the passages will open up completely, as illustrated in Fig. 5, whereby a penetration of rain-water into the garment is absolutely impossible.

As the ventilating contrivance functions without pull it is suited also for portions of the sleeve of a coat at which no pull is exerted and at which, for that reason, a satisfactory ventilation has hitherto not been possible, for instance at the sleeves, particularly at the upper portion of the arm, and at the openings of the seams, immediately below the places where the sleeves are sewed to the garment, and around the waist portion of the latter. But it is also possible to provide the entire coat with the ventilating means.

The manufacture of the ventilated material according to the invention is simple and performed in the following way:

The arc-shaped incisions are punched in by machinery quickly and at low cost, whereby the same punching tool may be used for both layers of fabric, as it is merely necessary to place the inner layer of fabric 2 under the tool in reversed order, as compared with the Fig. 1, before it is stitched or otherwise fastened to the outer layer 1. Long strips of material can be punched in continuous fashion, whereupon portions of fabric of the size and shape needed for arrangement in the garment may be cut out. But it is also possible (and this is another advantage of the invention) to punch the incisions into the ready cut coat portions, so that the complicated fastening of the ventilating portions in the garment is not necessary. In this way unsightly seams will be avoided, which may endanger the waterproof condition of the coat and which, moreover, may reduce its resistance to tear. The resistance to tearing of the ventilating contrivance is greater than that of any other known ventilating means, as it consists of two layers of fabric 1 and 2, which are firmly secured to each other, and as
the incisions in the two layers are curved in different directions, so that if at the ends of an incision of one layer of fabric tearing should occur it will normally not cause tearing of the appertaining but oppositely curved incision in the other layer of fabric. The incisions may be positioned either on top of one another or staggeredly arranged with respect to each other, as illustrated in the drawings. It is also possible to use more layers of fabric than two.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A rainproof ventilated material for a garment comprising two adjacent sheets having surfaces facing and contacting each other and being flatly interconnected, incisions in each of said sheets, said incisions extending substantially horizontally when the material is in actual use in the garment, the incisions in the outer one of said sheets in the garment being downwardly arcuated and the incisions in the inner one of said sheets in the garment being individually above the incisions in the outer sheet, the surface portions of said sheets between individual incisions in the outer sheet and individual incisions in the inner sheet which are located individually above the incisions in the outer sheet to form individual pairs of incisions being interconnected for forming individual air channels between the incisions forming pairs.

2. A material as specified in claim 1, in which the incisions in the inner one of said sheets in the garment are upwardly arcuated.

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