United States Patent

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[15] **3,706,102**

[45] **Dec. 19, 1972**

[54] **VENTILATED GARMENTS**

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[52] **U.S. Cl.** **2/84, 2/97, 2/272**

[51] **Int. Cl.** **A41d**

[58] **Field of Search**.....2/84, 69, 85, 93, 94, 97, 272

[56] **References Cited**

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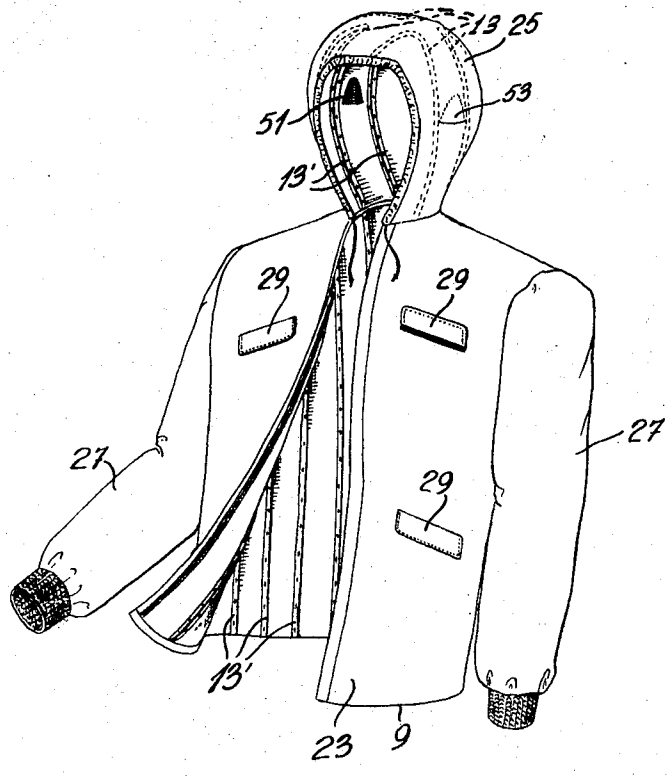
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[57] **ABSTRACT**

A ventilated insulating material formed of three spaced flexible linings; an outer and an intermediate lining defining between themselves an outer chamber allowing free air circulation and an inner chamber defined by the intermediate lining and an inner lining, the inner chamber being filled with a flexible air pervious insulating material. The outer and intermediate linings stand apart by spaced parallel tubes held against collapse by a cord of air pervious material. These tubes as well as the intermediate and outer linings have apertures for allowing ingress and egress of air.

10 Claims, 9 Drawing Figures



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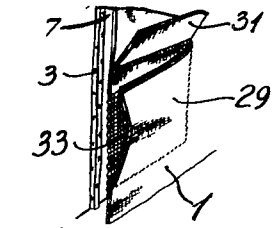


Fig. 7

Fig. 1

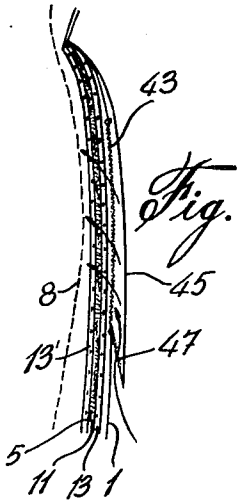


Fig. 8

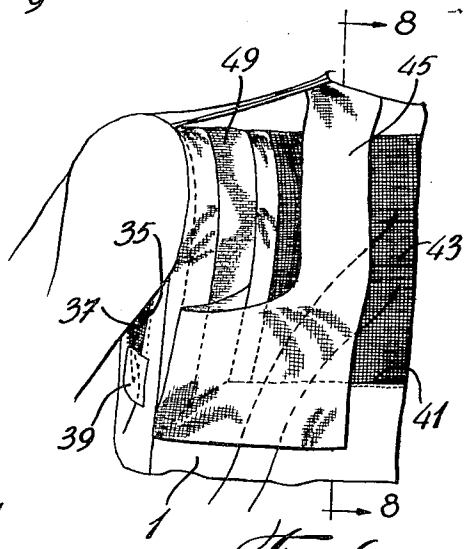


Fig. 6

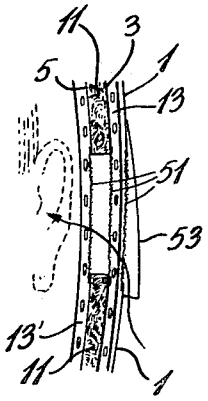


Fig. 9

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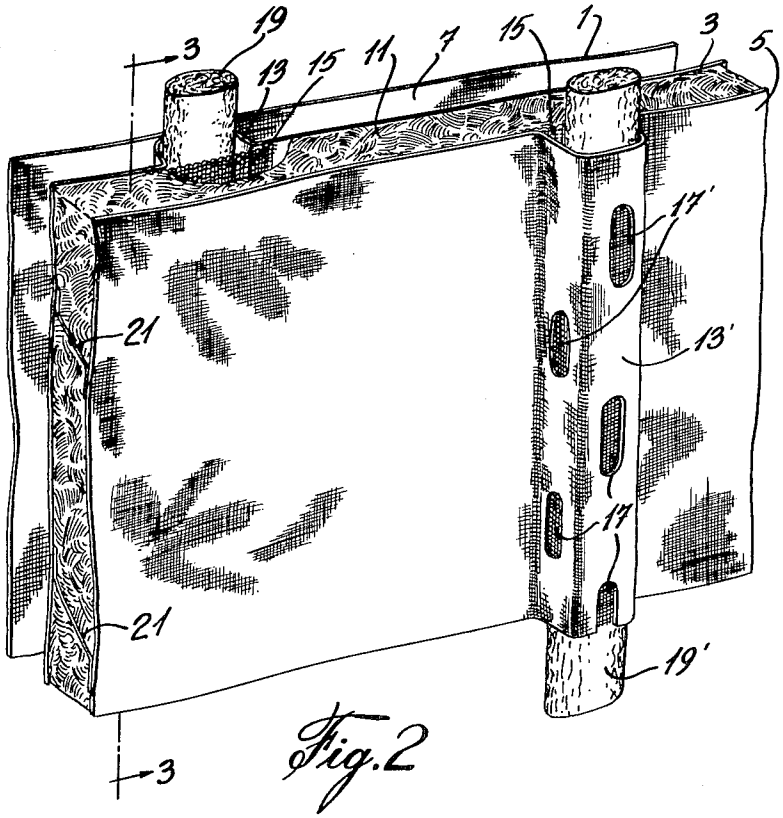


Fig. 2

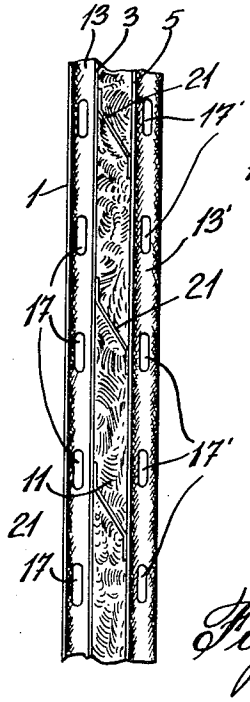


Fig. 3

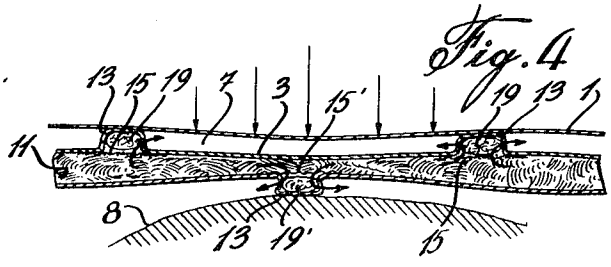


Fig. 4

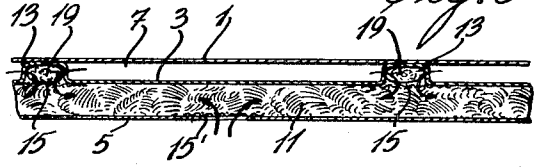


Fig. 5

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VENTILATED GARMENTS

The present invention relates to a ventilated insulating material particularly useful in the manufacture of wearing apparels such as jackets and trousers to be worn under different degrees of cold weather, from cool to bitter cold accompanied by strong winds such as are encountered when travelling on snowmobiles in cold winter climates.

It is relatively easy nowadays to obtain a well insulated garment. In fact the problem is not so much that of retaining the heat generated took by the body but that of preventing sweating by a proper air circulation that will absorb the moisture resulting from sweating while holding the body at a safe and comfortable temperature. This is more so, as inferred above, when the garment is to be worn during a period of fast changing temperature or when the wearer passes from periods of great body activity to periods of rest.

The intent of the present invention is therefore to solve this problem and this is achieved by providing a material suitable for the manufacture of a wearing apparel with which a person can work or exercise fully without freezing or perspiring under a wide range of temperatures from cool to very cold. Nor will that person feel any discomfort under sudden and rapid temperature changes.

More specifically, the invention provides a ventilated insulating wearing material formed of flexible outer, intermediate and inner spaced linings defining an outer empty chamber between the outer and the intermediate linings allowing free circulation of air and defining an inner chamber between the intermediate and the inner linings, this inner chamber being filled with a flexible air permeable or pervious insulating material while air communication means is provided to allow ingress and egress of air between the outer and inner chambers, on the one hand, and the inner chamber and the surrounding atmosphere, on the other hand.

In the preferred form of the invention, the outer and intermediate linings are held in spaced relationship by means of parallel tubes and the communication means are apertures through the tubes and through the inner linings. The tubes are filled with cords made of a material to prevent their collapse such as cords of synthetic wool. Preferably also, the spacing tubes are formed by U-shaped folds made in the intermediate lining and projecting in the outer chamber, screen-like material closing up the apertures and the openings of the U-shaped folds.

I find such a material, aforedescribed, particularly suitable for the making of a jacket having a head cap integral therewith, the jacket further having a pair of sleeves and at least one pocket formed at the front thereof, wherein such pocket is closed by a loose flap and has an inner wall formed with an opening looking into the outer chamber and wherein the inner wall opening is closed by a piece of screen material.

I believe that the invention will be better understood from the following description of a preferred embodiment having reference to the appended drawings wherein:

FIG. 1 is a perspective view of a garment made with the wearing material of my invention;

FIG. 2 is a perspective view of a piece of material according to my invention;

FIG. 3 is a cross sectional view taken along line 3—3 of FIG. 2;

FIG. 4 is a longitudinal cross sectional view of the material of FIG. 2;

FIG. 5 is a longitudinal cross sectional view of a material according to a second embodiment;

FIG. 6 is an elevation view, partly cut away to show details, of a portion of the back of the garment of FIG. 1;

FIG. 7 is a perspective view, with vertical cross section, of a pocket of the garment of FIG. 1;

FIG. 8 is a cross sectional view taken along line 8—8 of FIG. 6, and

FIG. 9 is a cross sectional view of a detail of the garment of FIG. 1.

As shown in FIGS. 1 through 5, the ventilated insulating wearing material of my invention comprises flexible outer, intermediate and inner spaced linings 1, 3 and 5. Nylon is particularly indicated for the linings, especially for the outer lining 1 because of its interesting qualities of lightness, resistance to wind and waterproofness. It will of course be appreciated that other materials offering similar qualities can be used.

Linings 1 and 3 define therebetween an outer empty chamber 7 that allows free circulation of air. These two linings are to be separated throughout the length of a garment, being opened for the ingress of air along one edge such as 9 in FIG. 1.

Linings 3 and 5 define between themselves an inner chamber 11 filled with flexible air pervious insulating material that keeps linings 3 and 5 apart. This material may for instance be eiderdown or similar material pervious to air and offering good insulating property.

Spacing means is also provided in chamber 7 to keep linings 1 and 3 apart as clearly illustrated in FIG. 4 where the outer lining 1 is shown being subjected to wind action, depicted by the arrows and applying the material against the body 8. The spacing means for chamber 7 is a set of spaced parallel tubes 13 that can be formed by U-shaped folds made in the intermediate lining 3 and projecting in the outer chamber 7. The openings across the bights of the U are closed by a screen-like material 15 secured, as by stitching, to the unfolded lining 3 adjacent to the folds. Air communication between chambers 7 and 11 is obtained through such screens 15 and apertures 17 (FIG. 3) through the branches and bights of the U-shaped folds 13. Sufficient stiffness of tubes 13 to resist wind action and normal movements by the wearer is obtained by filing each tubes with a cord 19 of air pervious material such as synthetic wool or the like.

In the preferred form of the invention, the inner lining 5 is likewise formed with U-shaped folds 13′ closed by screen 15′ and filed with cord 19′ of air pervious material. Folds or tubes 13′ have a series of apertures 17′ for air circulation but extend away from the inner chamber 11 contrary to tubes 13 that project into the outer chamber 7. Such tubes 13′ are shown in use in the jacket illustrated in FIG. 1.

Alternatively, tube 13′ may be replaced by the simple screened openings 15′ through the inner lining 5, as illustrated in FIG. 5.

It may be pointed out that the outer lining 1 may be kept loose, that is unattached to the bights of tubes 13.

The insolating air pervious material in chamber 11 is separated into blankets by a series of narrow bands 21

of flexible material that can be nylon for instance and that prevent undue separation of linings 1 and 31, being fixed to the said linings by being stitched thereto along their longitudinal edges as clearly shown in FIG. 3.

There is shown in FIG. 1, a garment made with the novel material of my invention. The garment is in the foam of the jacket 23 having a head cap 25 integral therewith, a pair of sleeves 27 and pockets 29.

As clearly illustrated in FIG. 7, each pocket 29 is closed by a loose flap 31 and has an inner wall formed with an opening looking into the outer chamber 7 and closed by a piece screen material 33.

A similar arrangement for air circulation may be provided in the arm pit area as shown in FIG. 6 wherein an opening 35 has a screen 37 fixed thereacross and closed over by flap 39 fixed along a portion only of the opening 35, the remaining portion allowing air passage. For the sake of clarity, only the lower part of the flap 39 is shown.

To insure that air will not become stagnant, causing temperature rise and perspiration, I propose that an additional wide air opening be provided at the back of the jacket, along the shoulder and immediately below the neck. This opening 41 is, as before, spanned by a screen 43 and covered by a wide flap 45, as shown in FIGS. 6 and 8. The flap 45 extends below the lower edge of the opening 41 but the screen 43 which is fixed along the said lower edge of the opening 41 closes the gap and is fixed to the lower edge of the flap 45 shown in FIG. 8. The opening 41 should be made narrower than the full back to allow insertion, on either side thereof, of a strip 49 of elastic material to allow the back to stretch.

In order not to hinder the wearer's capacity to hear when he puts on the cap 25, I provide aligned hearing openings through the three linings 1, 3 and 5 and through insolating material 11 as shown in FIG. 9. The opening through the outer lining 1 may be bridged by a screen 51 and covered by a flap 53, unattached along the lower portion thereof.

I have found that a garment made with the ventilating insulating material of my invention provides comfort, no freezing norperspiring, when worn at any temperature from cool to bitter cold such as under heavy winds and below freezing temperatures. I have also found that no discomfort is felt when the wearer is exposed to sudden temperature changes.

I claim:

1. A ventilated insulating wearing material comprising:

a. flexible outer, intermediate and inner spaced linings defining an outer empty chamber between said outer and intermediate linings to allow free air circulation, and defining an inner chamber between said intermediate lining and said inner lining;

b. flexible air permeable insulating material filling said inner chamber and keeping said intermediate and inner linings apart;

c. spacing means in said outer chamber to keep said outer and said intermediate linings apart, and

d. communication means to allow ingress and egress of air between said outer and said inner chambers and between said inner chamber and the surrounding atmosphere.

2. A ventilated material as claimed in claim 1, wherein said spacing means are formed by spaced parallel tubes and said communication means are apertures through said tubes and through said inner lining and wherein said tubes are filled with material to prevent collapse thereof.

3. A ventilated material as claimed in claim 2, wherein said tubes are formed by U-shaped folds made in said intermediate lining and projecting in said outer chamber, and screen-like material closing up said apertures and the openings of said U-shaped folds looking into said inner chamber.

4. A ventilated material as claimed in claim 2, wherein said collapse preventing material in said tubes is a cord of air pervious material.

5. A ventilated material as claimed in claim 3, wherein said collapse preventing material in said tubes is a cord of air pervious material.

6. A ventilated material as claimed in claim 3, wherein said inner lining is formed with U-shaped folds projecting outwardly away from said inner chamber, said folds being formed over said apertures through said inner lining and filled with air pervious stiffening material; said tubes being further formed with apertures for movement of air therethrough.

7. A ventilated material as claimed in claim 4 wherein said intermediate and said inner linings are held together by a series of spaced bands of flexible material respectively connected thereto along their edges.

8. A ventilated material as claimed in claim 6, in the form of a jacket having a head cap integral therewith, said jacket having a pair of sleeves and at least one pocket formed at the front thereof, wherein said pocket is closed by a loose flap and has an inner wall formed with an opening looking into said outer chamber and wherein said inner wall opening is closed by a piece of screen material.

9. A ventilated material as claimed in claim 8, wherein a screened opening is provided through said outer lining in each arm pit area of said jacket and a closure lies over said opening fixed long a portion of the edge of said opening, the remaining edge portion being unattached for the circulation of air through said screen opening.

10. A ventilated material as claimed in claim 9, wherein said head cap is formed, in the ear regions, with aligned hearing openings through said three linings and through said insulating material, the openings through the outer linings being screened and covered by flaps secured to the outer lining along most of the flap contour, a part of said contour remaining unattached for allowing sounds through to the ears.

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