

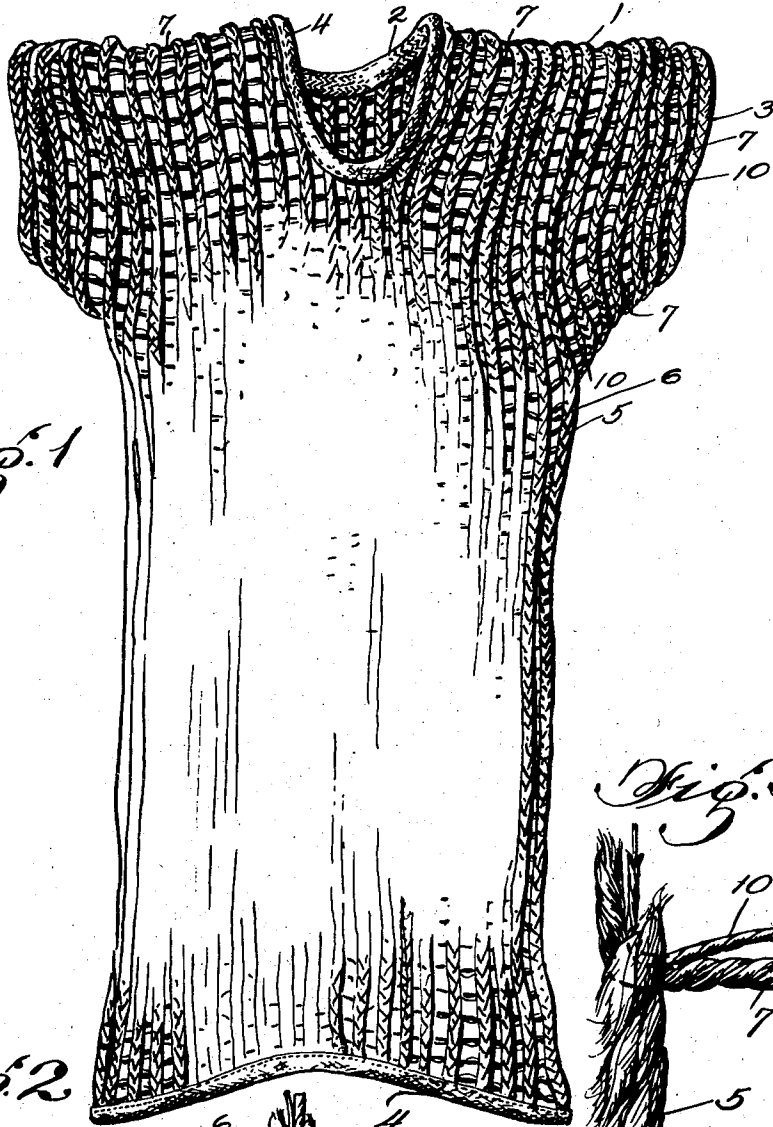
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E. A. KOSTOPOULOS

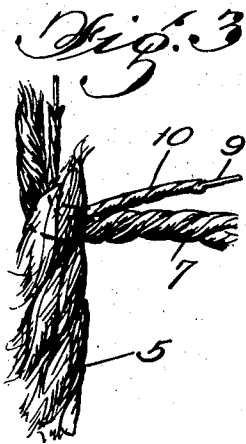
2,610,496

VENTILATING AND INSULATING UNDERSHIRT

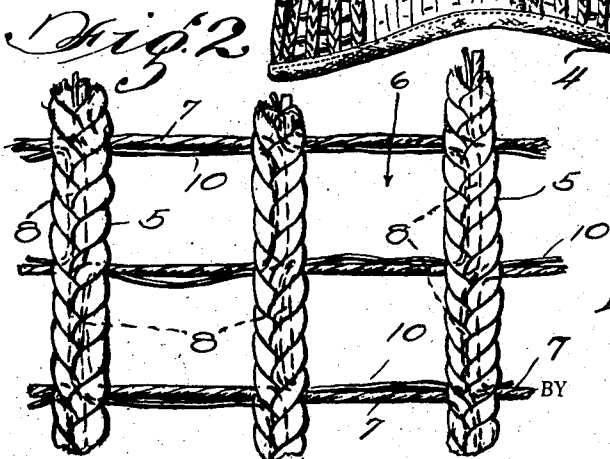
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*Fig. 1*



*Fig. 3*



*Fig. 2*

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# UNITED STATES PATENT OFFICE

2,610,496

## VENTILATING AND INSULATING UNDERSHIRT

Emanuel A. Kostopoulos, Drexel Hill, Pa.

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4 Claims. (Cl. 66—176)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

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The invention described herein, if patented, may be manufactured and used by or for the Government for governmental purposes without the payment to me of any royalty thereon.

This invention relates to an undergarment to be worn under very heavy clothing in extremely cold climates for the purpose of spacing the clothing from the body to provide a quiet or dead air space between the clothing and the skin, which will serve as a heat insulating layer, and which will also minimize the absorption of perspiration by the clothing.

It is an object of the invention to provide such an undergarment in the form of a vest, which is formed of a material which does not readily absorb moisture, which will not unduly irritate the skin, and which is so constructed as to lend itself to rapid production on conventional knitting machines.

A further object of the invention resides in the provision of an undershirt adapted to be disposed between heavy clothing and the skin of the wearer, which is constructed of relatively thick cords or chains horizontally spaced to provide a plurality of vertically-extending dead air spaces extending to the neck of the garment and across the shoulder portions thereof.

Another object of the invention consists in the provision of such a garment in which the vertically-extending cords or chains are united by non-elastic inlay or filler threads and elastic threads, whereby freedom of bodily movement is permitted without permanent distortion of the garment.

Other objects and advantages of the invention will be apparent from the following description when taken in connection with the accompanying drawings, in which:

Figure 1 is a front elevation view of the ventilating undershirt or vest;

Figure 2 is an enlarged fragmentary detail view showing the manner of incorporating inlay or filler threads and the elastic threads; and

Figure 3 is an enlarged detail view showing in a general way the construction of the cords and threads, part of the cord being broken away to more clearly show the knit construction.

Referring to the drawings more specifically, the numeral 1 indicates the undershirt or vest provided with a neck portion 2 and arm portions 3, and preferably provided with bindings 4 about the neck portion and lower edge of the body portion. The body of the shirt is formed of a plurality of horizontally spaced chains or cords 5 preferably warp knitted and having a relatively

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large diameter or thickness to adequately space the clothing from the skin of the wearer.

These vertically extending cords are horizontally spaced to provide a series of quiet or dead air spaces 6 therebetween and may be maintained in their proper relationship by inlay or filler threads 7 which may be vertically spaced as clearly indicated in the drawings. The vertically aligned spaces 6 also provide longitudinally-extending channels which direct perspiration vapors, etc., toward the neck and shoulders where it may more readily escape, particularly when the throat portions of the outer garments are loosened.

Both the cords 5 and the filler threads 7 are preferably formed of nylon or other material having low moisture absorbing qualities and the filler threads 7 are formed in a zig-zag path to connect adjacent cords 5. This construction is shown more clearly in Figure 2 in which the vertical portions of the threads which are inlaid in the cords are indicated by the numeral 8 as shown in dotted lines in that figure.

In order to further maintain the cords or chains in their relationship and to provide a snug fit of the garment about the body of the wearer, elastic threads 9 of rubber covered by plaiting 10 of nylon thread are provided. These elastic threads 9—10 are incorporated in the body of the garment in zig-zag formation and substantially parallel in juxtaposition to the filler threads 7 which also connect the cords 5. As indicated above, this ventilating undershirt or vest is intended to be worn in extremely cold climates and is placed next to the skin of the wearer so as to space the heavy garments usually worn in extremely cold climates, from the wearer's body. Consequently, when this undershirt is worn, a plurality of vertically extending dead air spaces 6 are provided which serve to insulate the body and also prevent the outer garments from absorbing perspiration, etc., from the body, which would tend to nullify the heat-retaining qualities of the garment. Also this spacing of the outer garments allows any moisture such as perspiration to evaporate more readily and the vapors may pass upwardly through the channels 6 and escape around the neck of the garment. Moreover, by reason of the fact that the several elements of the shirt are formed of nylon or other material having little or no moisture absorbing qualities, the chilling of the wearer's body by being in contact with wet garments is avoided.

In accordance with the patent statutes I have

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described what I now consider to be the preferred form of construction, but it is to be understood that the spacing of the vertical cords and the filler threads may be varied between wide limits and it is intended that all such variations be included within the scope of the appended claims.

I claim:

1. A ventilating undershirt comprising a plurality of horizontally spaced vertical cords of relatively large diameter formed of warp-knitted nylon, and vertically spaced filler threads of relatively small diameter connecting said cords.

2. A ventilating undershirt comprising a plurality of horizontally spaced vertical cords of relatively large diameter formed of warp-knitted nylon, the spacing of said cords being at least as great as the diameter thereof, and vertically spaced filler threads of relatively small diameter connecting adjacent cords.

3. A ventilating undershirt comprising a plurality of horizontally spaced vertically arranged cords of relatively large diameter, vertically spaced filler threads of relatively small diameter

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connecting said cords, and elastic threads also connecting said cords.

4. A ventilating undershirt comprising a plurality of horizontally spaced vertically arranged cords of relatively large diameter, and sets of filler threads and elastic threads arranged in zig-zag pattern to connect adjacent cords.

EMANUEL A. KOSTOPOULOS.

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