Feb. 26, 1963 W. W. ARTZT 3,078,467

GARMENTS AND METHOD OF MAKING THE SAME

Filed April 29, 1960 2 Sheets-Sheet 1

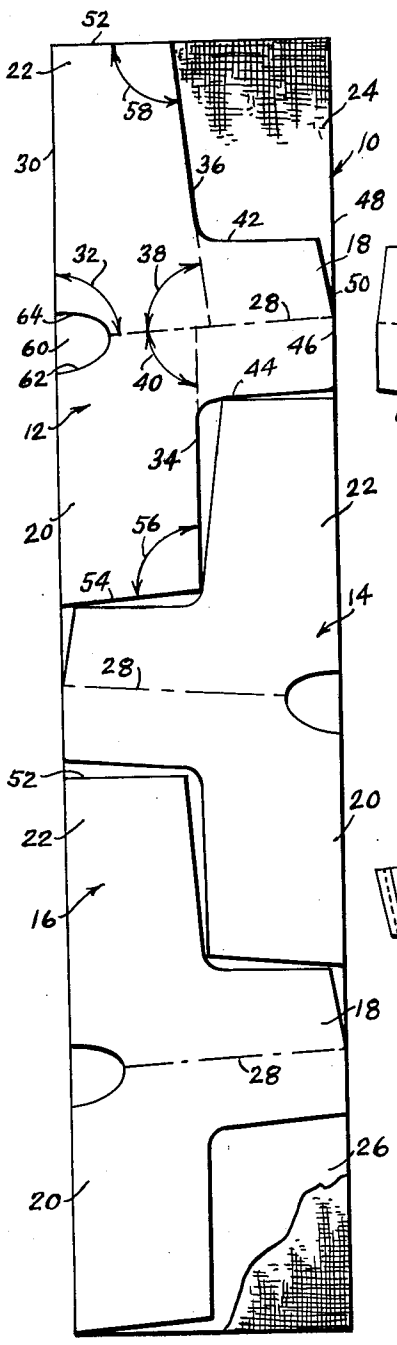

Fig. 1.

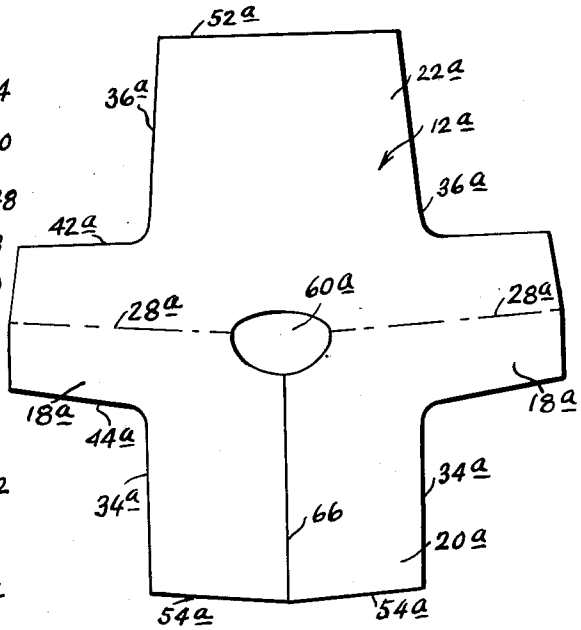

Fig. 2.

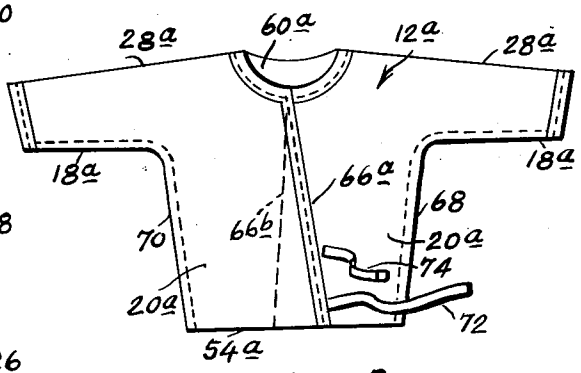

Fig. 3.

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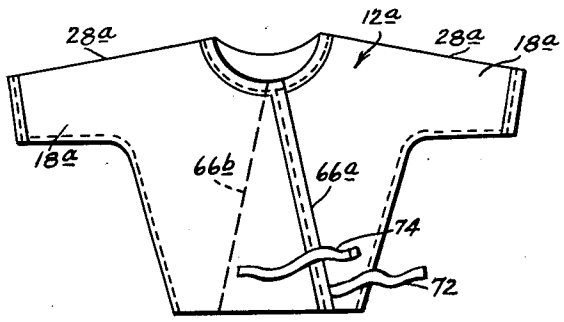

Fig. 4.

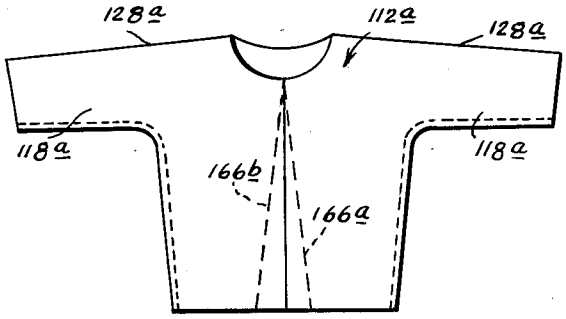

Fig. 5.

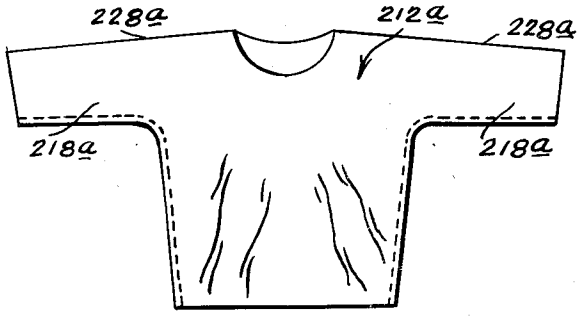

Fig. 6.

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GARMENTS AND METHOD OF MAKING THE SAME

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6 Claims. (Cl. 2—243)

This invention relates generally to wearing apparel and is particularly directed to improvements in garments, such as, T-shirts, polo-shirts, pajama tops and the like, and to improved methods of making such garments.

It has heretofore been proposed, for example, in U.S. Letters Patent No. 2,588,606, issued to me on March 11, 1952, to provide garments of the character indicated above which are of one piece construction and are so formed that the sleeves thereof are integral with the body portions for eliminating seams in the shoulder areas, thereby to increase the comfort to the wearers and the useful life of the garments as compared with similar garments having set-in sleeves. In order to effect savings in the labor required and to reduce the waste of material to a minimum, it was proposed to form such garments by cutting a series of alternately arranged, T-shaped, garment forming blanks from a continuous flattened tube of material, the T-shaped blanks being disposed with the caps or heads thereof extending longitudinally at alternately opposite sides of the medial line of the flattened tube and being dimensioned so that the opposite end portions of the caps provide the backs and fronts of the bodies of completed garments, while the double thicknesses of the stems of the T-shaped blanks provide the pairs of sleeves of the respective garments. The blanks are proportioned so that the width of each cap is the same as the length of the related stem and, therefore, the caps of the alternately arranged T-shaped blanks may conveniently be overlapped to thus effectively utilize substantially all of the material of the tube. The neck opening of each garment is formed by cutting a suitably arcuate opening in the folded edge portion of the tube at which the related body forming cap of the T-shaped blank is located. In accordance with the existing method, a completed garment is formed from each of the blanks after the latter are cut from the tube and also cut along the fold edge joining the double thicknesses of the stem, by opening the blank, then refolding the same along the transversely extending medial line of the sleeve forming portions, and finally by continuous seams extending along each side of the overlying back and front forming portions and along the lower edges of the contiguous sleeve forming portions.

Although the above described existing method of making garments of the described character reduces to a minimum any waste of the material from which the garments are formed and also effects substantial savings in the labor required, the resulting garments have certain undesirable characteristics. First of all, the shoulders of the garments extend straight out from the neck opening, rather than sloping downwardly, as is preferred for obtaining the best fit and greatest comfort to the wearer, and the sleeves are of uniform width throughout their length, rather than tapering toward their open ends. Further, garments produced in accordance with the described existing method have body portions which are also of uniform width from the top to the bottom thereof, whereas it is desirable that the body portion of the garment taper downwardly in order to avoid an excess of material around the wearer's waist.

Accordingly, it is an object of the present invention to provide garments of the described character by a method which is generally similar to that referred to above as being disclosed in my prior patent, but wherein the method is modified so that the resulting garments have

downwardly sloping shoulders and tapering sleeves and body portions, thereby to greatly improve the fit of the garment and comfort to the wearer, without any substantial sacrifice of the advantages of the known method with respect to the saving of labor and the reduction in the waste of material.

In accordance with an aspect of this invention, the sleeve defining stem of each T-shaped blank is made symmetrical about a medial line extending generally transversely across the flattened tube from the neck opening, but being inclined with respect to a perpendicular to the longitudinal axis of the flattened tube so that an acute angle is included between the medial line of the sleeve forming portion of the blank and the folded edge of the tube extending along the end portion of the cap of the T-shaped blank intended to form the back of the garment. After such a blank is cut from the tube and cut along the fold edge of the flattened tube joining the double thicknesses of the stem of the T-shaped blank, the blank is opened and then refolded along the medial lines of the sleeve forming portion which thus form shoulders sloping downwardly from the neck opening, and finally continuous stitched seams are provided along each side of the back and front forming portions and along the lower edges of the contiguous sleeve forming portions.

Preferably, each blank employed in producing a garment embodying the invention has its sleeve forming portions tapering in the direction away from the related neck opening, while the inner edge of the end portion of the cap of the T-shaped blank which is intended to form the back of the garment is at an angle with respect to the inclined medial line of the sleeve-forming portions which is equal to the acute angle between that medial line and the folded edge of the flattened tube so that, when the blank is opened, and then refolded along the medial lines of the sleeve forming portions, as previously described, the side edges of the front forming portion of the blank will overlie the side edges of the back forming portion of the blank. In forming a garment from a blank having the above described configuration, the front forming portion of the blank is preferably cut along its medial line extending from the neck opening to the bottom edge of the front forming portion to define a front opening for the garment.

In one embodiment of the invention, the edge portions defining the front opening of the garment are permitted to overlap, thereby to provide a garment of the wrap-around type. In another embodiment of the invention, the edge portions defining the front opening of the garment are turned back so as to define fold edges which abut at the front opening, thereby to provide a cardigan type garment. In still another embodiment of the invention, the edges of the front portion defining the front opening of the garment are made to abut, thereby to provide fullness at the front of the garment by reason of the tendency of such front edge portions to overlap.

The above, and other objects, features and advantages of the invention, will be apparent in the following detailed description of illustrative embodiments thereof which is to be read in connection with the accompanying drawings forming a part hereof, and wherein:

FIG. 1 is a plan view of a flattened tube of material having a series of alternately arranged patterns thereon to define the lines along which the tube is cut to provide garment forming blanks in accordance with this invention;

FIG. 2 is a plan view of a blank cut from the tube of FIG. 1 and then spread flat;

FIG. 3 is a front elevational view of a garment formed from the blank of FIG. 2;

FIG. 4 is a view similar to that of FIG. 3, but showing a garment having an accentuated wrap-around;

FIG. 5 is a front elevational view similar to that of FIG. 3, but showing another garment formed from the blank of FIG. 2; and

FIG. 6 is a front elevational view of still another garment formed from the blank of FIG. 2.

Referring to the drawings in detail, and initially to FIG. 1 thereof, it will be seen that an elongated flattened tube 10 of material is there shown, with such tube being preferably formed of a circularly knitted fabric, but tubes of other materials, such as, for example, broadcloth, flexible sheet material, woven nylon or other synthetic yarns, and the like, may be utilized.

After the tube 10 of material has been flattened to provide two layers of material joined together along the folded side edges, a series of alternately arranged garment forming blanks having the forms hereinafter described in detail are cut therefrom. In FIG. 1, a series of patterns 12, 14 and 16 are shown disposed on the flattened tube 10 preparatory to cutting the latter along the edges of such patterns to provide the desired blanks. It will be noted that each of the patterns 12, 14 and 16 is substantially of T-shaped configuration with the head or cap of each pattern extending longitudinally and the stem thereof extending laterally relative to the tube 10.

In describing the specific form of the patterns, reference will be made particularly to pattern 12, but it is to be understood that all of the patterns are identical.

It will be seen that pattern 12 is formed with a stem 18 corresponding to the sleeve forming portions of the blank and having a length equal substantially to one-half the width of the flattened tube, and a cap including end portions 20 and 22 corresponding to the front and back forming portions of the blank and having widths equal approximately to one-half the width of the flattened tube 10. Since the length of the stem is substantially the same as the width of the cap in each T-shaped pattern, the patterns may be conveniently arranged on the flattened tube 10 with the caps of successive patterns disposed alternately at opposite sides of the longitudinal medial line of the tube, and with the end portions of each cap occupying the substantially rectangular spaces enclosed between the caps and stems of the next adjacent patterns. Thus, as seen in FIG. 1, substantially all of the flattened tube 10 is covered by the several patterns except for the spaces 24 and 26 enclosed by the stems and caps of the blanks 12 and 16 at the opposite ends of the tube, thereby reducing to a minimum the material wasted in cutting several garment forming blanks from the tube 10. Although only three patterns have been illustrated as superposed on the flattened tube 10, it is apparent that the length of the tube is the only actual limitation on the number of patterns that may be arranged in the manner shown, and that, if desired, a tube of any length may be employed while a single pattern is utilized and moved to each of the successive positions of the illustrated patterns 12, 14 and 16 as the cutting operation proceeds.

In accordance with the present invention, the stem 18 of each of the patterns 12, 14 and 16 is symmetrical about a medial line 28 which extends generally transversely across the tube 10, but is inclined with respect to the perpendicular to the longitudinal axis of the tube so that the medial line 28 is at an acute angle 32 with respect to the folded edge 30 of the tube 10 running along the outer edge of the back forming portion 22 of the pattern. Further, although the front forming portion 20 of the pattern is preferably of uniform width and has its inner edge 34 running along the longitudinal medial line of the flattened tube 10, the back forming portion 22 of the pattern preferably tapers toward its free end by having its inner edge 36 extend at an angle 38 with respect to the medial line 28 which is equal to the previously mentioned acute angle 32, and hence equal to the angle 40 between the edge 34 and the medial line 28.

The stem 18 of each pattern also preferably tapers towards its free end, and the desired taper may be obtained by arranging the edge 42 of the stem, which is contiguous to the edge 36 of the back forming portion 22, perpendicular to the longitudinal medial line of the flattened tube 10, while the opposite edge 44 of the stem 18 extends at the same angle with respect to the medial line 28 as does the edge 42. The end edge of the stem 18 preferably includes a portion 46 extending between the edge 44 and the medial line 28 along the folded edge 48 of the flattened tube 10, and a portion 50 extending between the edge 42 and the medial line 28 at an angle to the latter which is equal to the angle between the medial line 28 and the edge portion 46, that is, equal also to the angle 32.

The end edge 52 of the back forming portion 22 of each pattern preferably extends perpendicular to the longitudinal medial line of the flattened tube 10, while the end edge 54 of the front forming portion 20 forms an obtuse angle 56 with respect to the edge 34, which obtuse angle is equal to the angle 58 included between the end and side edges 52 and 36, respectively, of the back forming portion 22.

Finally, the outer edge of the cap of each T-shaped pattern is formed with a central cutout 60 of suitable curvature to define the neck opening in the garment body forming blank. Preferably, one side portion 62 of the cutout 60 is formed with a smaller radius of curvature than that of the other side 64 of such cutout so that the neck opening of the completed garment will dip lower in the front than in the back, as will be explained more fully hereinafter.

In producing garments of the character indicated, the two overlying layers of the flattened tube 10 are simultaneously cut along the lines defined by the edges 52, 36, 42, 50, 46, 44, 34 and 54 and the portions 62 and 64 of the cutout 60. While patterns, such as the patterns 12, 14 and 16 are useful in defining the lines to be followed by a manually directed cutter, it should be understood that, in mass production or commercial practice, the entire cutting operation is preferably performed by stamping the blanks from the tube by means of suitably shaped blanking dies having the configuration of the described patterns, and in that event, the dies would be formed to also cut simultaneously along the folded edge 30 at the side of the flattened tube 10 corresponding to the outer edge of the front forming portion 20, that is, along the edge of the latter extending between the cutout 60 and the end edge 54.

The blanks cut from the tube 10, whether they are formed by using patterns of the described character and a manually directed cutter or by suitably shaped blanking dies, will each have the form shown in FIG. 2 when the blank is spread flat.

It will be seen that the blank 12*a* of FIG. 2 includes a back forming portion 22*a* provided by the double thicknesses of material on which the end portion 22 of the pattern was superposed, a front forming portion 20*a* provided by the double thicknesses of material on which the end portion 20 of the pattern was superposed, a neck opening 60*a* corresponding to the cutout 60 of the pattern, and laterally extending sleeve forming portions 18*a* at the opposite sides of the back and front forming portions and provided by the severed double thicknesses of material underlying the stem 18 of the pattern. Further, the front forming portion 20*a* of the blank 12*a* is divided into two equal portions by the cut 66 extending from the neck opening 60*a* to the bottom edge 54*a* of the front forming portion, and the cut 66 is formed either simultaneously with the cutting of the blank from the flattened tube, when blanking dies are used, as previously described, or the cut 66 may be formed after the blank has been spread flat, as in FIG. 2.

The blank 12*a* is formed into a garment body by refolding such blank along the medial lines 28*a* of the sleeve forming portions 18*a* extending from the neck opening 60*a* and corresponding to the medial line 28 of the related pattern. The blank 12*a*, when thus refolded, has the appearance from the front as shown in FIG. 3, wherein the fold lines are seen to define downwardly sloping shoulders 28*a*. Further, the neck opening 60*a* of the garment is deeper at the front than at the back as a result of the displacement of the cutout 60 to one side of the medial line 28 of the related pattern shown in FIG. 1. Although the neck opening or cutout has been illustrated as being cut along arcuate lines 62 and 64 of different radii to provide the necessary displacement of the neck opening 60*a* so that the front of the neck opening will be deeper or lower than the back thereof, it is to be understood that the cutout 60 may be substantially semicircular, if desired, in which case the center of the semicircular cutout will be displaced with respect to the medial line 28 toward the side of the cap of the T-shaped pattern corresponding to the front portion of the garment forming blank.

The garment body is finished by securing together the overlying edges at the sides of the back and front and along the bottom edges of the sleeves with the continuous stitched seams 68 and 70. It will be seen from FIG. 3 that the sleeves 18*a* of the garment taper toward their outer ends and follow the downward slope of the shoulders 28*a*, while the sides of the body of the garment also converge downwardly, thereby to provide an improved fit for the wearer and consequent increased comfort to the latter.

Since the side edges 36*a* of the back forming portion 22*a* of the blank 12*a* converge toward the end edge 52*a* which forms the bottom of the garment at the back thereof, and since the two divided parts of the front forming portion 20*a* of the blank are of uniform width from the top to the bottom thereof, but have their outside edges 34*a* stitched to the converging edges 36*a* in the completed garment, it will be apparent that the edges 66*a* and 66*b* of the front forming portion extending along the cut 66 tend to overlap in the completed gar ment, as shown in FIG. 3. Thus, the garment produced in accordance with the present invention may be of the wrap-around type with the opening of the garment at the front thereof being normally held closed, that is, with the edges 66*a* and 66*b* in the illustrated overlapped relationship, by means of a tape 72 suitably secured to the lower portion of the outer edge 66*a* and adapted to be tied to a tape 74 secured to the front 20*a* of the garment adjacent the side seam 68.

Although the garment illustrated in FIG. 3 has only a relatively slight overlap of the front edges 66*a* and 66*b*, it will be understood that the extent of this overlap may be increased, if desired, as shown in FIG. 4, merely by decreasing the angle 32 included between the medial line 28 and the side edge 30 of the pattern used in forming the blank for producing the garment. Such adjustment of the angle 32 of the pattern will also increase the angle of slope of the shoulders 28*a* of the garment as well as the taper of the sleeves 18*a* and of the body portion, as is apparent in FIG. 4.

Although the blank 12*a* of FIG. 2 cut from the tube 10 in the manner described above in connection with FIG. 1 is ideally suited for the production of a garment of the wrap-around type, as illustrated in FIGS. 3 and 4, it is to be noted that the same blank 12*a* may be fashioned into a garment of the cardigan type, as generally identified by the reference numeral 112*a* in FIG. 5. In finishing the garment 112*a*, the edges at the opposite sides of the cut 66 extending along the front portion 20*a* of the blank are folded under, as at 166*a* and 166*b* (FIG. 5) so that the fold edges will then be parallel and meet or abut along the front opening of the garment, as at 168. In the garment 112*a*, the front and back of the body portion have equal fullness, and the garment further has the sloping shoulders 128*a*, and the tapering sleeves 118*a* and downwardly tapering body portion which are characteristic of garments embodying the present invention.

Although the garments made from the blank 12*a* as illustrated in FIGS. 3 and 4, and in FIG. 5 have equal fullness at the front and back of the garment either as a result of overlapping the edge portions at the front opening of the garment or by folding under such edge portions, respectively, it will be seen in FIG. 6 that a garment 212*a* may be formed from the blank 12*a* of FIG. 2 so as to have increased fullness at the front thereof merely by omitting the cut 66. While such garment does not have the overlapped edge portions at the front opening thereof, it has the other characteristic features of garments embodying the invention, namely, the downwardly sloping shoulders 228*a*, the tapered sleeves 218*a*, and the downwardly tapering sides of the body portion.

Although the cutting of the flattened tube 10 of FIG. 1 along the lines represented by the edges of the patterns 12, 14 and 16 results in slightly more waste of the tube material, as compared with the cutting arrangement illustrated in my prior U.S. Letters Patent No. 2,588,606, by reason of the irregularly shaped gaps appearing between the portions 20 and 22 of patterns 12 and 14, respectively, and between the portions 20 and 22 of patterns 14 and 16, respectively, the improved fit and increased comfort to the wearer resulting from the sloping shoulders and tapering sleeves and body portions of the garments produced in accordance with the present invention fully justify the almost negligible increased waste of material.

While illustrative embodiments of the invention have been described in detail herein with reference to the accompanying drawings, it is to be understood that the invention is not limited to those precise embodiments, and that various changes and modifications may be effected therein without departing from the scope or spirit of the invention, except as defined in the appended claims.

What is claimed is:

1. A one-piece blank for forming a garment of the class described comprising a rectangular portion providing a front forming section, a back forming section in the form of a portion extending from an end of said rectangular portion and having side edges converging toward its free end, and laterally directed projections extending from the opposite sides of said front and back forming sections to define sleeve forming sections and being symmetrical about medial lines which are disposed at acute angles which respect to the longitudinal medial line of said back forming section, said blank having a neck opening which is laterally centered and located between said back and front forming sections and a central cut extending longitudinally along said front forming section from said neck opening so that, when said blank is folded about said medial lines of the sleeve forming sections and the side edges of said front forming section are in overlying relation to the side edges of said back forming section, the edge portions of said front forming section extending along said central cut tend to overlap.

2. A one-piece blank as in claim 1; wherein said converging side edges of the back forming section extend at acute angles with respect to said medial lines of the sleeve forming sections which are equal to said acute angles between said medial lines and said longitudinal medial line of the back forming section.

3. A one-piece blank for making garments of the class described and consisting of two superposed layers of fabric material joined together along at least one edge to provide a fold line extending along said one edge, said blank being substantially T-shaped and including a cap extending along said fold line and having one end portion that tapers towards its free end and is intended to form the back of the body portion of a garment and another end portion of uniform width along its length

and intended to form the front of said body portion, and a stem of the T-shaped blank intended to form the sleeve portions of the garment, said stem being symmetrical about a generally transversely extending medial line which is at an acute angle with respect to the portion of said fold line extending along said one end portion of the cap, said blank having an arcuate cutout at a point along said fold line substantially midway between the ends of said cap to define a neck opening of the garment so that, when the blank is opened along said fold line and refolded along said medial lines of the sleeve forming portions, said medial lines define downwardly sloping shoulders and extra fullness is present in the front of the body portion upon alignment of the side edges of the latter with the side edges of the back of the body portion.

4. A one-piece blank as in claim 3; wherein the inner edge of said one end portion of the cap of said T-shaped blank extends at an acute angle relative to said medial line of the stem which is equal to said acute angle between the medial line of the stem and said fold line at the joined together edges of the layers of fabric so that, when the opened blank is refolded along said medial lines, the side edges of said front of the body portion overlie the side edges of said back of the body portion and converge toward the bottom of the latter.

5. A one-piece blank as in claim 3; wherein said blank further has a cut extending along said fold line from said arcuate cutout to the end of said portion of the cap which is intended to form the front of the body portion so that, upon refolding the blank along said medial lines, said cut defines a front opening of the garment at which the edges of the front of the body portion tend to overlap.

6. The method of making garments of the class described comprising flattening an elongated tube of flexible material to provide two superposed layers of material joined at the folded side edges thereof; cutting both layers of the flattened tube into substantially T-shaped adjacent blanks having caps extending alternately along the opposite folded side edges of the flattened tube and stems which nest between the caps of the next adjacent

blanks; cutting each stem to define the sleeve forming portions of the blank, and cutting said stems symmetrically about the medial line which extends generally transversely with respect to the longitudinal axis of the flattened tube and which is at an acute angle with respect to the portion of the folded side edge along one of the end portions of the related cap, said one end portion of the cap defining the back forming portions of the blank, cutting the edge of said one end portion remote from said folded edge at said acute angle relative to said line so that it tapers towards said folded edge, cutting the edge remote from said folded edge of said other end portion at said angle relative to said line so that it is parallel to said folded edge, cutting an arcuate section out of the superposed layers at a point along each folded side edge substantially midway between the ends of the cap of each T-shaped blank so as to define a neck opening for the blank; cutting said other end portion of said cap along the related folded side edge from said neck opening to the end edge of said other end portion; opening the superposed layers of each T-shaped blank; refolding each open blank along the medial line of each sleeve forming portion, so that the fold lines of the refolded blank define downwardly sloping shoulders while the parts of the refolded blank corresponding to said one end portion and said other end portion of the cap of the T-shaped blank define the back and front, respectively of a body portion having their side edges in overlying relationship and tapered downwardly, while said front of the body portion has a front opening at which edges of said front tend to overlap; and securing together the edges of each refolded blank along the opposite sides of said front and back of the body portion and along the contiguous lower edges of the sleeve forming portions.

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