

Dec. 29, 1936.

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2,066,293

FOLD LINE IN WEARING APPAREL

Filed July 5, 1935

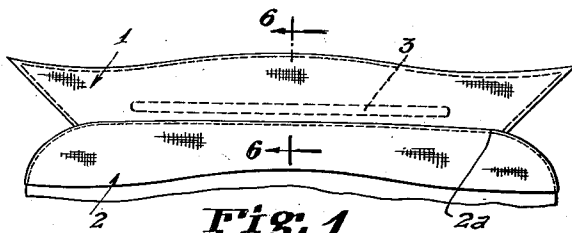


Fig. 1

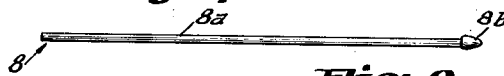


Fig. 8

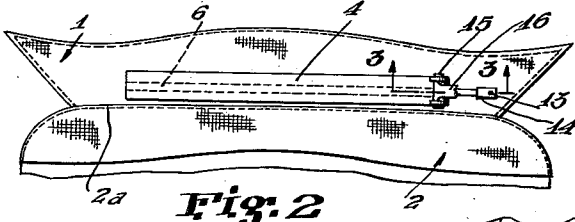


Fig. 2

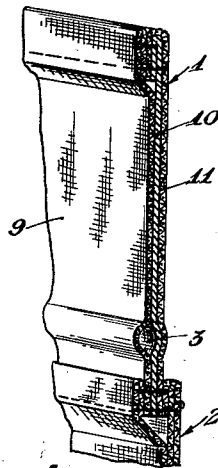


Fig. 6

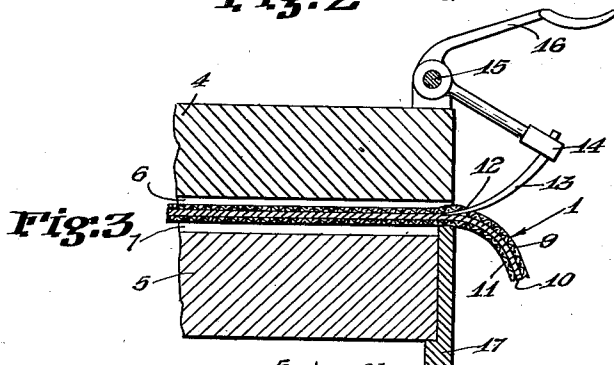


Fig. 3

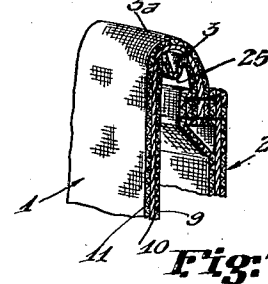


Fig. 7

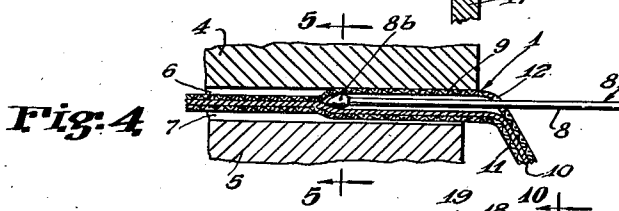


Fig. 4

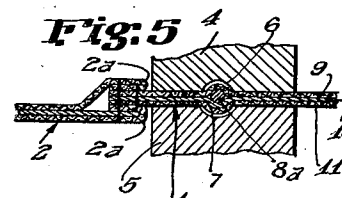


Fig. 5

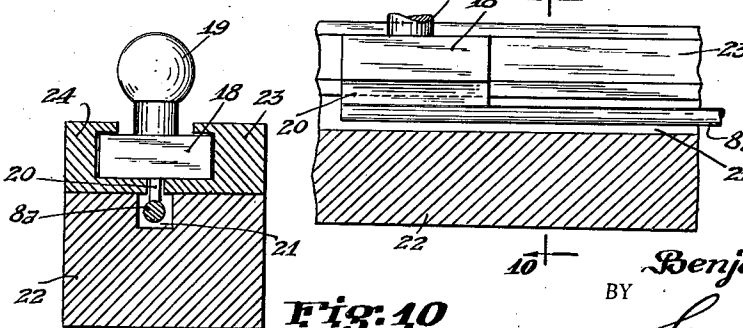


Fig. 10

Fig. 9

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2,066,293

FOLD LINE IN WEARING APPAREL

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Application July 5, 1935, Serial No. 29,817

10 Claims. (Cl. 2-143)

My invention relates to apparel, and particularly to such garments or garment parts which are stiffened by the adhesive union of a plurality of plies, and which have a fold or fold line where the garment is folded over. A particular application of this invention is to collars of the fold-over of turn-down type, such as is described in my Patents Numbers 1,968,409 and 1,968,410, where the separate plies of the collar are permanently united by adhesive means.

In these patents, I have described collar or other articles of apparel in which the adhesive material is incorporated in the lining in a dry state, and said lining is then interposed between an outside ply and an inside ply, or, as referred to hereinafter, between a top ply and a bottom ply. Adhesion is developed by subjecting the assembly to the action of a softening agent or solvent, and then pressure with heat to evaporate the solvent. After the adhesion is obtained, the resulting three plies have a considerable degree of stiffness, even after many launderings. Because of this stiffness, special provision is desirable in the fold zone where the garment part is folded over.

Heretofore, it has been proposed to obtain predetermined fold lines in the case of permanently stiffened articles of apparel by weakening the zone of the fold line by elimination of the adhesive material. This creates a soft zone along which the article will readily fold. For example, the patent to Van Heusen, Number 1,479,565, dated January 1, 1924, and the patent to Tully, Number 1,668,744, dated May 8, 1928, disclose adhesive material completely omitted in a narrow zone along the fold line, and said narrow zone in the case of a collar extends the complete length of the collar top. In my own Patents Numbers 1,968,409 and 1,968,410 I disclose how a fold line may be obtained by stopping the lining of the collar top before it enters into the band so as to leave a residuum of two uncemented plies of the collar top where it enters the band, and also along the narrow zone adjacent to the band.

These methods of providing a very soft fold line by omission of adhesive material or of lining containing the adhesive material along said fold line or adjacent to said fold line, have important disadvantages. In the first place, manufacturing tolerances required for maintenance of a uniform width of said soft zone, are so close that I have heretofore found it impracticable to put such methods into commercial operation; the results which I have been able to obtain so

far by this method, using competent operatives, and competent cutting and stitching technique, have been unsatisfactory because of the variable width of said softened zone. Furthermore, a completely softened zone adjacent to a stiff zone is open to the objection that it creates a zone of mechanical weakness due to the abrupt change in stiffness at the boundary between the stiffened material and the very soft material forming the zone for the fold line. In many instances, this results in rapid wear at the fold line.

Also, where the region of the fold line is very soft compared with the regions adjacent to the fold line, I have found that one does not get a smooth curve in the collar after it is folded down and bent around to conform with the neck, at least in some cases depending upon the variations in width of said fold line. Moreover, in these previous forms of fold line, the fold line has extended practically the full length of the collar top and has conformed exactly to the curve of the band of said collar. I have found it desirable, however, for reasons which will be clear to those skilled in the art, to have a predetermined fold line which will stop short of the ends of the collar by at least one or two inches, and which may be perfectly straight, or in any event, less curved than the edge of the band adjacent to the collar top.

I have discovered through experiments on fold lines that a more satisfactory fold is obtained when the fold line itself, while more flexible than the regions adjacent to the fold line, is not "dead soft". In other words, a certain amount of stiffness in the fold line itself is desirable, but this stiffness must be substantially less than the stiffness of the part of the collar top adjacent to the fold line.

It is an object of this invention to provide in an article of apparel a fold line which shall be permanent, which shall create a zone of relatively increased flexibility, but still having some stiffness, and which shall tend to form a smooth curve after the garment part is turned down along the fold line and bent around into a curve.

Another object of this invention is to provide a fold line of this kind which is simple to apply in commercial production of the articles of apparel and which can be manufactured without requiring impracticable close tolerances.

A further object of this invention is to obtain the desired fold line without eliminating the adhesive material along the fold line, which elimination involves considerable difficulty and expense,

and which would also involve the use of extremely close tolerances in manufacture.

Still another object of my invention is to provide a method of mechanically separating the binder ply from one of the outer plies along a predetermined fold line after being adhesively secured thereto.

A further object of my invention is to provide a roll effect at the ends of a folded-over permanently stiffened article of wearing apparel.

Another object of my invention is to provide means for and methods of manufacturing collars and specifically the fold lines thereof.

Still a further object of my invention is to provide a process of manufacturing collars which comprises preparing the fold line after the collar has been assembled and after the application of the adhering process.

Still a further object of my invention is to provide a process of manufacturing apparel in which the fold line is accurately oriented with respect to formed edges of the apparel.

I accomplish these and other objects, as will hereinafter be brought out, by mechanically separating, after the adhering process, the lining from the bottom external ply of the collar in the zone which forms the fold line, without eliminating the adhesive material from said zone, leaving the other external ply, viz., the face ply, and the lining ply adhered throughout, thus forming a narrow zone of reduced stiffness, as will hereinafter be disclosed in connection with the drawing, in which:

Fig. 1 is a plan view of a completed collar with the predetermined fold line indicated.

Fig. 2 shows a plan view of a guide in forming the fold line, with the collar in position.

Fig. 3 is the sectional view 3—3 of Fig. 2.

Fig. 4 is a sectional view showing the formation of the predetermined fold line.

Fig. 5 is the sectional view 5—5 of Fig. 4.

Fig. 6 is a sectional perspective of the completed collar with the predetermined fold line.

Fig. 7 is a view of the collar of Fig. 6 bent over along the fold line.

Fig. 8 is the probe used in the apparatus for forming the predetermined fold line.

Fig. 9 is a sectional view of the apparatus used in forming the predetermined fold line.

Fig. 10 is the sectional view 10—10 of Fig. 9.

Referring to the drawing: 1 represents a collar top, the plies of which are adhesively united. The collar top 1 is attached to a band 2 and has a zone of increased flexibility indicated at 3. A preferred form of this zone is that it shall not extend to the ends of the collar and that it shall have less curvature than the edge 2a of the band 2. Referring to Figs. 2 and 3, I have shown diagrammatically the collar clamped between an upper block 4 and a lower block 5, block 4 being provided with a groove 6 and the block 5 with a corresponding groove 7. A probe 8 is entered between the back ply 9 and the lining ply 10 at the point indicated by 12, approximately at the center of the grooves. These grooves 6 and 7 guide the probe as it is pushed into the collar. The collar is gauged by the edge of the band, 2a, being set substantially along the faces of the blocks, 4 and 5, as indicated in Fig. 5. The probe 8 may have the form indicated in Fig. 8. This probe 8 consists of a long shank 8a having a blunt point and enlarged head 8b. A convenient diameter for the shank 8a is approximately .030 to .040 inch. The head 8b should be .010 to .020 larger in diameter than the shank.

Referring now to Fig. 3, which is a cross-section on the line 3—3 of Fig 2, a completed "fused" collar top with its face ply 11, bottom ply or inner ply 9, and lining ply 10, is shown in cross-section clamped between the blocks 4 and 5, with their respective grooves, 6 and 7. A curved needle 13 similar to that used on so-called blind stitch machines is carried in a holder 14 pivoted at 15 on the block 4 and operated by the extension or handle 16. By rotating the holder 14, the needle is forced into the collar, as indicated, and creates an opening between the inner or bottom ply 9 and the lining ply 10 as diagrammatically shown in Fig. 3.

The probe 8 may then be easily entered and pushed along the collar, being guided by the grooves 6 and 7, so that ply separation and the resultant increased flexibility comes along a definitely predetermined area. It is very desirable to wet with water the zone where the plies are to be separated, as this makes it much easier to push the probe along the collar. The adjustment of the needle 13 must be very accurate and the collar must be properly supported for this purpose. Accuracy may be facilitated by providing a support, diagrammatically shown at 17, at the time that the needle 13 is penetrating the ply 9. After withdrawal of the needle 13 the support 17 may be dropped out of position so as to expose the groove which guides the probe. Ordinarily, however, a support like 17 is not necessary if the grooves 6 and 7 are small.

Referring now to Figs. 9 and 10, the shank of the probe 8a is shown diagrammatically to enlarged dimensions welded to a holder 18 by means of a small tongue 20 to which is fastened the handle 19. The shank 8a operates in a groove 21 in a long narrow block 22, which groove is covered over by means of pieces 23 and 24 which prevent the shank 8a from leaving the groove, and which also guide the holder 18. In this way the shank 8a is guided continuously along its length as it is pushed into the collar.

While I have shown a specific mode of carrying out my invention, it must be understood that this may be departed from without departing from the scope or spirit of my invention.

I claim:

1. In an article of apparel, a plurality of fabric plies and adhesive means uniting said plies, said adhesive means between at least two of said plies being disrupted along a narrow zone to form a fold line.

2. In an article of apparel, a plurality of fabric plies including a lining ply having adhesive means uniting said plies, said adhesive means between said lining ply and at least one of the other plies being disrupted along a narrow zone to form a fold line.

3. In an article of apparel a pair of external fabric plies, and a lining ply comprising spaced thread-formed cellulose derivative adhesive means securing said external plies to the lining ply, said adhesive means between the lining ply and one of the external plies being in a disrupted state along a narrow zone forming a fold line.

4. In a folded garment part of the character described, a plurality of fabric plies having a predetermined fold line, a predetermined distribution of adhesive material alike at the fold line and adjacent thereto, at least one of the plies being separated from the adjacent ply along a narrow zone comprising the fold line, along which fold line the garment part may be repeatedly folded and unfolded.

5. In a folded garment part of the character described having a predetermined fold line, a front ply, a lining ply, a back ply, and a predetermined distribution of adhesive material alike at the fold line and adjacent thereto, said front ply being united to said lining ply by said adhesive material at said fold line and adjacent thereto, said back ply being united to said lining ply by said adhesive material adjacent to said fold line but being free from adhesion thereto at the fold line.

6. In a turn-down collar, a collar top having a predetermined fold line and comprising an outer fabric ply, an inner fabric ply, and an intermediate lining fabric ply, said plies being adhesively united, the adhesion between the inner ply and the lining ply being disrupted along the fold line.

7. The process of manufacturing an article of apparel which comprises assembling a plurality of fabric plies, adhesively securing said plies to each other and breaking the adhesion

between at least two of the plies along a narrow zone to form a fold line.

8. The process of manufacturing an article of apparel which comprises assembling a pair of external fabric plies and an intermediate fabric lining ply, adhesively securing said plies to each other, and breaking the adhesion between the lining ply and one of said external plies along a predetermined narrow zone to form a fold line.

9. The process of forming a fold line in an article of apparel having a plurality of fabric plies adhesively united, which comprises forming an opening in one of the outer plies, inserting a probe in the opening between said ply and the adjacent ply and then separating said plies along the fold line by means of the probe.

10. A process for forming a fold line in an article of apparel having a plurality of fabric plies adhesively united, which comprises inserting a probe between two of the plies and separating said plies along the fold line by means of the probe.

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