

[54] **HEM FORMING CONSTRUCTION OF GARMENTS, PARTICULARLY TROUSERS AND SKIRTS**

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[22] **Filed: Nov. 1, 1971**

[21] **Appl. No.: 194,334**

[52] **U.S. Cl.**..... 2/275, 2/222, 2/232, 2/269

[51] **Int. Cl.**..... **A41d 27/24**

[58] **Field of Search**..... 2/269, 275, 232, 2/222, 272, 274, 243

[56] **References Cited**

**UNITED STATES PATENTS**

1,204,820	11/1916	Rosenthal .....	2/232 X
2,744,844	5/1956	Wood et al. ....	2/274 X
3,168,749	2/1965	Cala .....	2/243 R
3,328,809	7/1967	Payne et al. ....	2/269

3,435,463 4/1969 Jay..... 2/269

**FOREIGN PATENTS OR APPLICATIONS**

544,119	7/1957	Canada .....	2/232
4,843	1897	Great Britain .....	2/222

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[57] **ABSTRACT**

An elongated tape-like fabric patch having a fusible substance applied thereto is placed to cover the entire turnup-forming margin of a tubular fabric body for garment such as trousers and skirt, one lateral edge of said tape-like patch being thermally bonded to the inner surface of said fabric body by the fusion of said fusible substance, the other side of said tape-like patch being fixed to the turnup-forming margin by any suitable means. Other advantages and details of the arrangement will be made clear.

**6 Claims, 11 Drawing Figures**

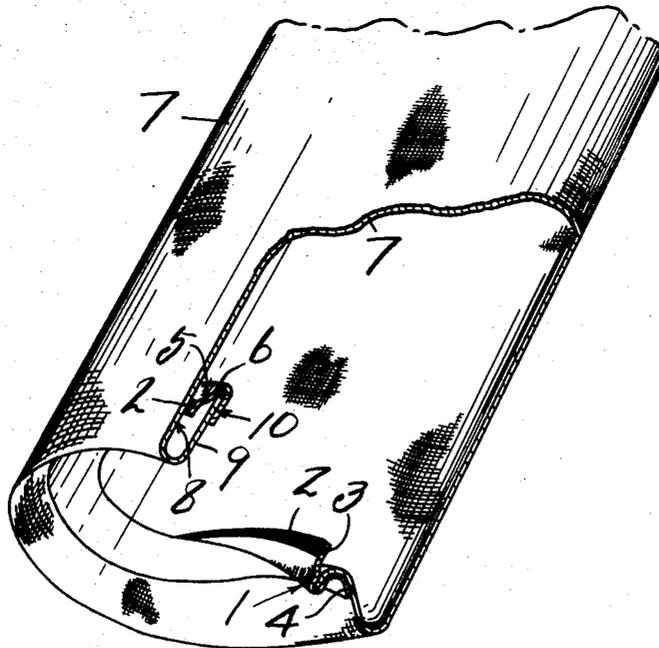


Fig. 1

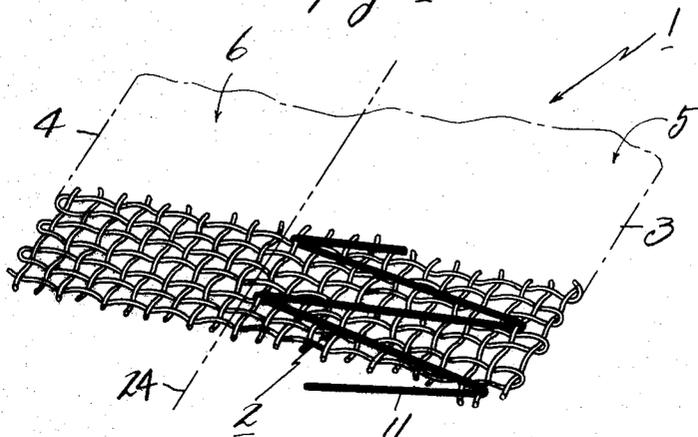


Fig. 2

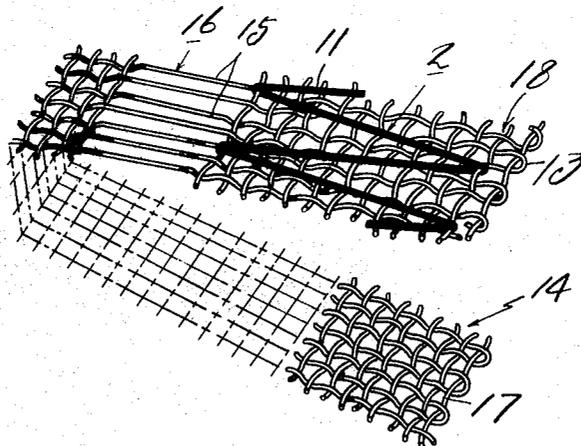
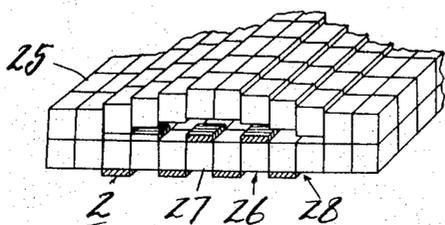


Fig. 4



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Fig 3

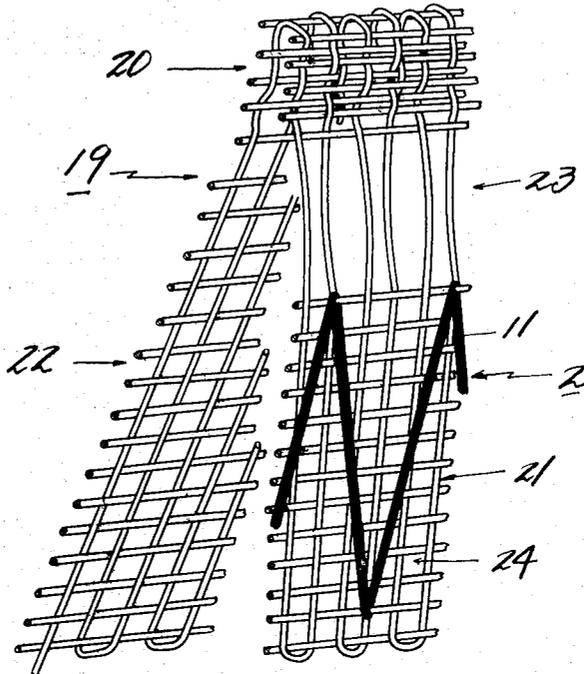
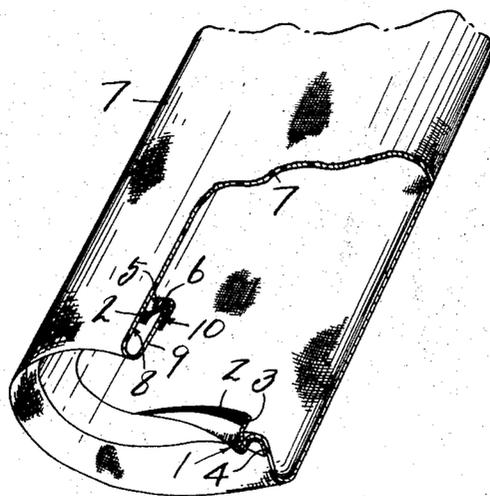


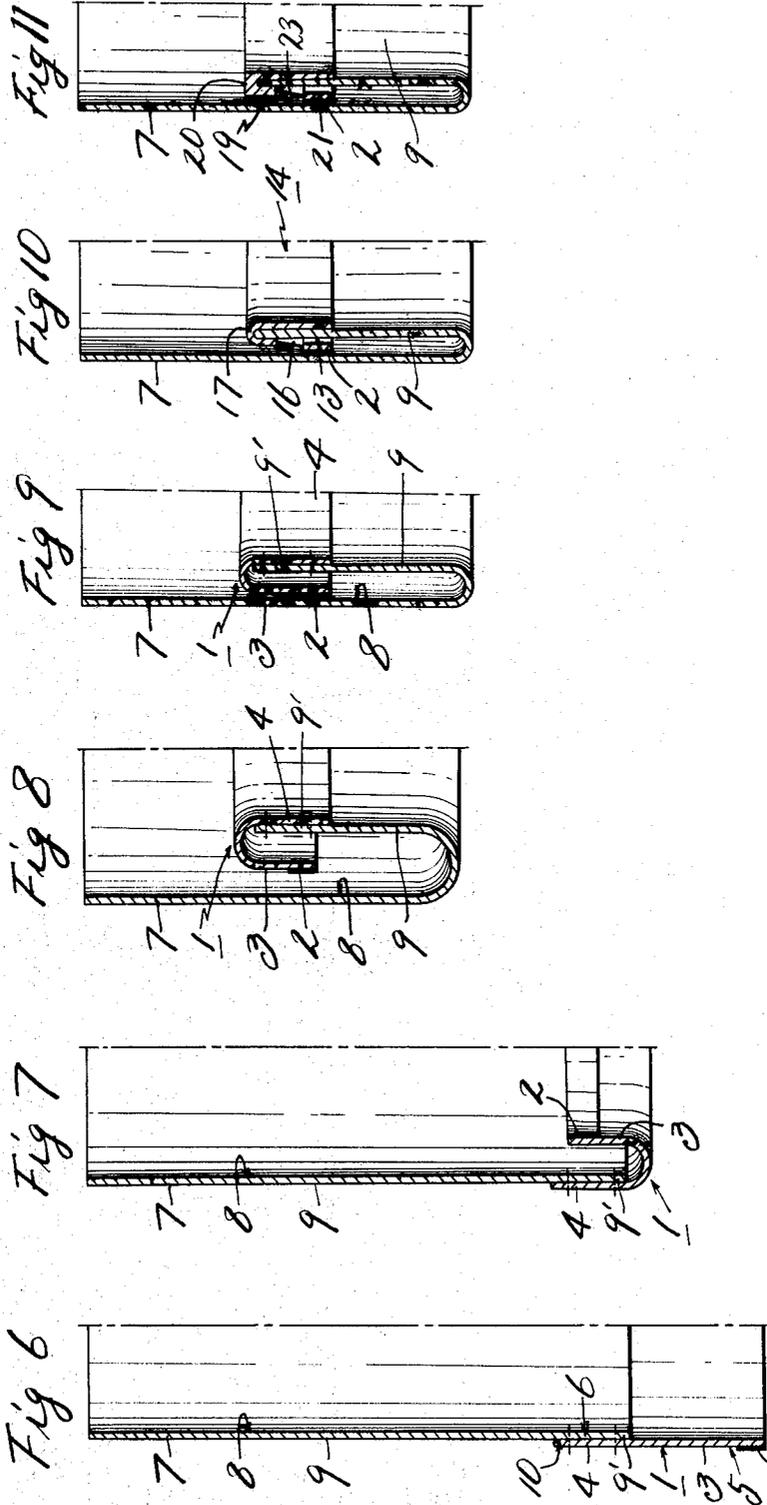
Fig 5



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# HEM FORMING CONSTRUCTION OF GARMENTS, PARTICULARLY TROUSERS AND SKIRTS

## BACKGROUND OF THE INVENTION

### 1. Field of the Invention

The present invention relates to improvements in and relating to the hem forming construction of garments such as trousers and skirts.

### 2. Description of the Prior Art

According to the conventional hem forming construction of trousers, skirts and other garments, the entire marginal periphery of a turnup-forming portion of a tubular fabric body constituting trousers, skirt or the like is sewn directly to the inner surface of the fabric body. As a result, the sewing lines are exposed on the surface of the article or sewing wrinkle, i.e. the so-called puckering takes place, thereby detracting from the external appearance and hence marketability of the product. At present ample time is assigned to such sewing for more careful operation with the intention of avoiding said disadvantage. Moreover, the sewing operation demands considerable skill in the operator and hence is inefficient. Once the puckering takes place, much time and labor have to be wasted in mending operation.

## SUMMARY OF THE INVENTION

The present invention relates to improvements in and relating to the hem-forming construction of garments such as trousers and skirts wherein the turn-up forming portion of tubular fabric body is fixed to the inner surface of the tubular fabric body without using sewing thread.

## BRIEF DESCRIPTION OF THE DRAWINGS.

In the accompanying drawings showing preferred embodiments of the invention:

FIGS. 1 through 3 are fragmentary enlarged perspective views of tape-like patches embodying the present invention. Thus, FIG. 1 shows a fundamental tape-like patch according to the invention and FIGS. 2, 3 show modifications. FIG. 4 is a schematic view of a modification of the portion to which a fusible substance is applied. FIG. 5 is a schematic view showing how to use a tape-like patch according to the invention. FIGS. 6 through 9 schematically show the order of operation for forming a hem using the tape-like patch shown in FIG. 1. FIG. 10 shows an example of the use of the tape-like patch shown in FIG. 2. FIG. 11 shows an example of the use of the tape-like patch shown in FIG. 3.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS.

A tape-like fabric patch according to the present invention, as shown in FIG. 1, comprises an elongated fabric base 1 and a fusible substance 2 applied to said fabric base. This tape-like patch shown in FIG. 1 is of the fundamental construction.

In use, the fabric base 1 is longitudinally folded along a central line 24 to provide a first section 3 and a second section 4. The fusible substance 2 is applied to one surface 5 of the first section 3 or to one surface 5 of the first section 3 and one surface 6 of the second section 4 at the same time.

More particularly, as shown in FIG. 5, the fusible substance is applied to the surface 5 of the fabric base

1 opposed to the inner surface 8 of a tubular fabric body 7 or to the surfaces 5 and 6 opposed to the inner surface 8 of the tubular fabric body 7 and the outer surface 10 of the turnup 9.

As the fusible material 2 to be applied to the tape-like fabric base 1, use may be made of fusible yarn (trade name: Elder yarn) which will easily melt under heat from e.g. an iron, thermo-adhesive resin film or power, etc.

When yarn is used, it is interwoven in such a manner that the major portion thereof is exposed on the adhesive surface of the fabric base. Further, in the case of a thermo-adhesive resin film, it is cut into tapes and such tape is applied to the adhesive surface of the fabric base. Thermo-adhesive resin powder may be applied to the adhesive surface of the fabric base.

The tape-like fabric patches shown in FIGS. 1, 2 and 3 use fusible yarns 11 as the fusible substance 2.

Thus, the tape-like patch shown in FIG. 1 shows a form in which a fusible yarn 11 is interwoven in zigzags in the first piece 3 of the fabric base in such a manner that the major portion of the yarn is exposed on one surface 5 of the fabric base.

The tape-like patch shown in FIG. 2 shows a second form in which at the root of the first section 13 a connecting portion 16 like a rattan blind is formed which consists only of weft yarns 15, said connecting portion extending throughout the length of the fabric base 14. Thus, in this form the first and second sections 13 and 17 constituting the fabric base 14 are interconnected at the connecting portion 16 and a fusible yarn 11 is interwoven on one surface 18 of the first section 13.

The tape-like patch shown in FIG. 3 is composed of a fabric base 19 of twofold construction wherein one lateral portion is closed to provide a so-called double weave portion 20, from which the first and second sections 21 and 22 branch. Further, at the root of the first section a connecting portion 23 like a rattan blind is formed and a fusible yarn 11 is interwoven on one surface 24 of the first section 21.

FIG. 4 shows a modification of the portion to which the fusible substance 2 is applied.

In this diagrammatic figure, the upper series of cubes 25 represents one wall of the hollow weave construction 26; the lower series of cubes 27 represents the other wall joined thereto only laterally as shown, and the space between the two series represents the hollow between the two fabric layers; and the thermoplastic fusible yarn 2 is interwoven only with the wall 27 and not with the wall 25. Thus the fusible substance 2 is applied to one section 27 forming part of the hollow portion in such a manner that the major portion of the fusible substance is exposed on the adhesive surface 28. The application of a fusible substance to a hollow weave portion in this way will prevent the substance that becomes fused upon thermal bonding from seeping to the outermost surface.

Reference will now be made to the use of such tape-like patch to form the hem of trousers or the like.

In FIG. 5, the tape-like patch shown in FIG. 1 is used to form a hem. First, the second section 4 of the tape-like fabric base 1 is sewn to the outside of the entire periphery of the turnup portion 9 of the tubular fabric body 7, with the fusible substance 2 directed outwardly as shown in FIG. 6. Thereafter, the second section 3 is turned inwardly to cover the lower end 9' of the turnup portion 9 of the tubular fabric body 7, as shown in FIG.

7. Subsequently, as shown in FIG. 8, the hem, i.e. turnup portion 9 of the tubular fabric body is turned inwardly over a predetermined distance. When the turnup portion 9 is turned as shown in FIG. 8, the exposed surface of the fusible substance 2 applied to the first section 3 becomes opposed to the inner surface 8 of the tubular fabric body 7. In this condition the part in question is heated as by an iron to melt the fusible substance 2 to bond said part, thereby completing the intended hem treatment.

In FIG. 10, the tape-like patch shown in FIG. 2 is used for hem treatment. Since the first section 13 is connected by the rattan-blind-like connecting portion 16, there is a play between the first and second sections 13 and 17. Therefore, no puckering will take place.

In FIG. 11, the tape-like patch of double weave construction shown in FIG. 3 is used for hem treatment. In this case the operative step of folding the tape-like patch can be considered to become automatic, or to have been effected prior to the displacement thereof to permit the sewing operation so that the operation efficiency increases.

While the above description refers to the case where a fusible substance is applied only to the part which is opposed to the inner surface of a tubular fabric body it may also be applied to the part which is opposed to the outer surface of the lower end portion of a tubular fabric body so as to effect the fixing between the second and the fabric body by thermal bonding rather than by sewing.

As described above, according to the invention, since the hem portion of a tubular fabric body is bonded by the fusion of a tape-like patch covering the same without sewing it to the tubular fabric body, there is no seam or the like appearing on the surface so that the appearance of the product is improved. Further, the use of a tape-like patch whose first section is connected by a rattan-blind-like connecting portion provides a play between the turnup portion and the tubular fabric body, so that puckering can be prevented. With a tape-like patch of double weave construction folded in two, the operation efficiency increases. Further, since the substance for thermal bonding is a fusible yarn or thermo-adhesive resin film or powder which can be easily melted when heated as by ironing, the bonding of the tape-like patch can be effected in a short time, which is a marked difference from the conventional sewing operation. Further, with a tape-like patch having a hollow weave construction in the region where a fusible substance is provided, the molten resin will not soak through the fabric 3, FIG. 8, and adhere to the turned up portion 9. The turning of the tape portion 1 over the edge of the tubular body 9 to form an edge binding allows only the smooth binding to come in direct contact with the heater plate, so that the edging or hemming can be carried out smoothly.

Besides, non-woven fabric may be applied to the material for the fabric body, wherein, except providing a connecting portion like rattan blind between the first and second sections or providing a hollow weave construction to be applied with fusible substance, the rest of the constructions are same as in the case of ordinary fabric.

While there have been described herein what are at present considered preferred embodiments of the several features of the invention, it will be obvious to those skilled in the art that modifications and changes may be

made without departing from the essence of the invention.

It is therefore to be understood that the exemplary embodiments thereof are illustrative and not restrictive of the invention, the scope of which is defined in the appended claims and that all modifications that come within the meaning and range of equivalency of the claims are intended to be included therein.

I claim:

1. An improved method of hemming trousers, shirts, and the like wherein the hem forming portion of a tubular fabric body is turned up inwardly and the end edge of the turned up portion is fixed to the inner surface of the tubular body, said improvement comprising:

a. attaching to the outer side of that portion of the tubular fabric body to be turned up inwardly to form the hem, an elongated tape-like patch with a free portion thereof terminating in a free edge and projecting below the edge of said body, said patch having thermo-adhesive applied to its outer side adjacent said free edge,

b. turning about the edge of the tubular body the free portion of the tape-like patch,

c. turning up inwardly of said tubular body that portion of the body to which said tape-like patch is attached thereby positioning said thermo-adhesive to face outwardly toward the inside wall of the tubular body below the turned up edge of the tubular body, and

d. pressing the hem thus formed to cause adhesion of said thermo-plastic adhesive to said wall with said tape forming an edge binding about the free edge of the turned up portion.

2. An improved method of hemming as claimed in claim 1, wherein:

e. the patch applied in step (a) comprises two parallel portions, with an edge binding portion therebetween, one of which parallel portions carries said adhesive while the other is attached in step (a), and  
f. the portion of said patch which carries the adhesive is spaced from the edge binding portion thereof which is turned about the free edge of the tubular body in step (b) so that the edge binding portion extending about the free edge of the tubular body is free of adhesive.

3. An improved method of hemming as claimed in claim 2, wherein:

g. said adhesive carrying portion of said patch is connected to said edge binding portion by a connecting portion of rattan blind construction consisting only of weft yarns, and which is positioned below the free edge of the tubular body in attaching step (a).

4. An improved method as claimed in claim 1, wherein:

e. the patch applied in step (a) has its free portion attached by a portion of double weave construction to the portion thereof attached to the outside of the tubular body in step (a), and

f. the attachment of step (a) and the turning of step (b) are effected to juxtapose said double weave portion along the top of the edge binding formed in step (d).

5. An improved method of hemming as claimed in claim 4, wherein:

g. said adhesive carrying portion of said patch is connected to said double weave portion by a connect-

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ing portion of rattan blind construction consisting only of weft yarns, which is positioned between the turned up portion of the tubular body and the inner wall of the tubular body in the pressing of step (d).

6. An improved method of hemming as claimed in claim 1, wherein:

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e. the patch applied in step (a) has a hollow weave construction in its free portion and said thermo-adhesive is in the form of a thermo-plastic fusible yarn interwoven only with the outer wall of said hollow weave construction.

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