July 6, 1943. A. R. WOOD 2,323,507

REINFORCED SEAM

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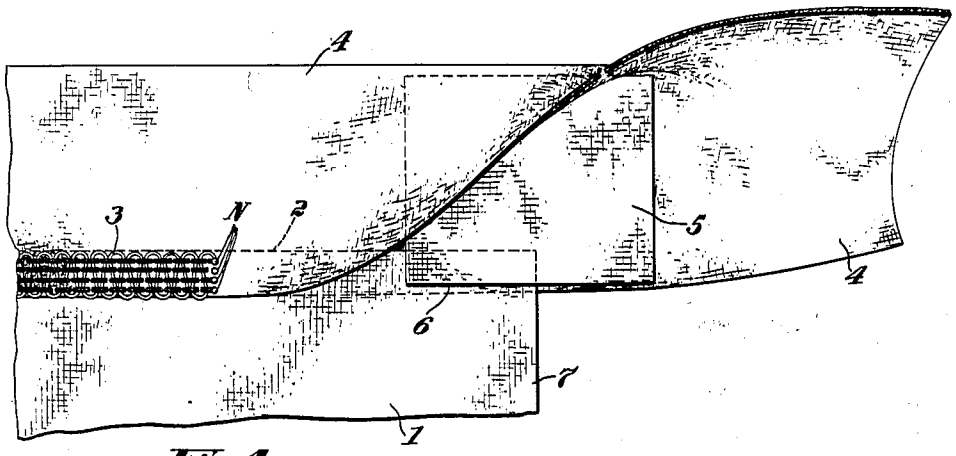


Fig. 1.

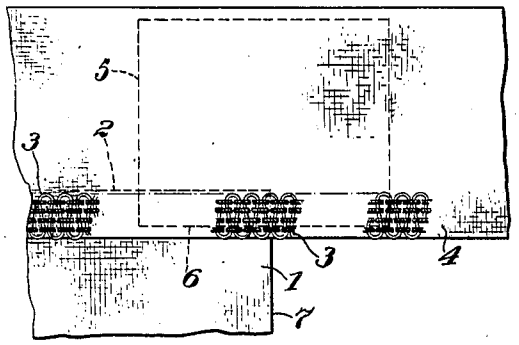


Fig. 2.

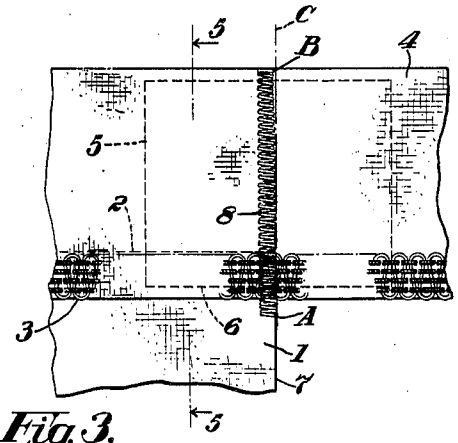


Fig. 3.

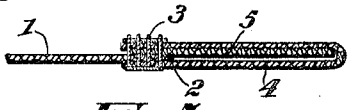


Fig. 5.

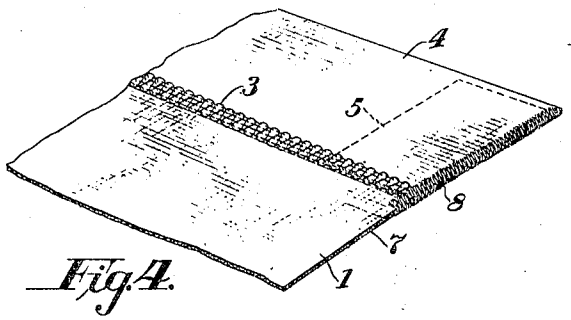


Fig. 4.



Fig. 6.

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REINFORCED SEAM

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Application March 4, 1941, Serial No. 381,619

2 Claims. (Cl. 112—262)

This invention relates to seams for stitched articles and is directed especially to seams for closing the opposite ends of a binding or hem of a body-material.

Heretofore it has been common practice in the manufacture of articles composed of knitted fabric, such for example as hospital sheets and the like, to apply a split tube binding of the same type of knitted fabric about each of the opposite raw edges of the article by means of a covering-stitch sewing machine fitted with an appropriate binding attachment. In stitching the binding strip to the body-material the binding strip is extended for a short distance beyond each of the side edges of the body-material to provide projecting binding ends. Subsequently one end of the article is placed in a suitable tacking machine which applies a line of zigzag stitches transversely of the binding strip and along a line substantially in register with the side edge of the body-material. At the completion of the tacking operation and while the article is still in the tacking machine a cutter mechanism embodied in the machine is operated to sever the binding strip closely adjacent the line of tacking stitches.

The article produced by the above described method is acceptable when it is first completed. However, after repeated laundering the closing seam of the binding strip frequently becomes permanently deformed, inasmuch as the knitted binding strip offers little resistance to the transverse stretching thereof. This permanent deformation results in an unsightly closing seam and consequently lowers the quality of the finished article.

It is therefore the principal object of the present invention to provide a reinforced seam adapted for closing the open ends of a knitted binding or hem of an extensible body-material, which seam possesses considerable resistance to any permanent deformation resulting from excessive strains applied lengthwise of the seam.

A further object of the present invention is the provision of a simple but highly efficient method of producing a reinforced seam adapted particularly for closing the open ends of a binding or a hem.

With the above and other objects in view, as will hereinafter appear, the invention comprises the devices, combinations and arrangements of parts hereinafter set forth and illustrated in the accompanying drawing of a preferred embodiment of the invention, from which the several features of the invention and the advantages attained thereby will be readily understood by those skilled in the art.

In the drawing, which shows by way of illustration one embodiment of the present invention, Fig. 1 shows the article in the process of manufacture with the binding strip being stitched to the body-material and the reinforcing strip properly positioned within the folded binding strip for securement to the body-material.

Fig. 2 illustrates the article after the completion of the binding-securing stitches, showing in dotted lines the reinforcing strip secured along its lower edge to the body-material by the binding-securing stitches.

Fig. 3 illustrates the article after the completion of the transverse line of superposed zigzag stitches employed for closing the open end of the binding.

Fig. 4 represents the completed article after the extended end of the binding strip and superfluous portion of the reinforcing strip have been severed from the article.

Fig. 5 represents an enlarged sectional view taken along the line 5—5, Fig. 2.

Fig. 6 represents a view similar to Fig. 5, but showing the present invention as applied to a hem of a body-material.

Referring more in detail to the drawing, the invention is shown as embodied in an article comprising a body-material 1 of knitted or extensible fabric having secured about its raw edge 2 preferably by a suitable covering seam 3 a knitted binding strip 4 having its marginal edges in contact with the opposite faces of the body-material 1. Interposed between the two plies of the binding strip 4 is a reinforcing piece or section 5 consisting of buckram or the like, the lower edge 6 of which rests upon the marginal edge 2 of the body-material 1 and is stitched thereto by the covering seam 3. Disposed transversely of the binding strip 4 and in a line substantially in register with the side edge 7 of the body-material 1 is a row of zigzag stitches 8 which penetrate the two plies of the binding strip 4 and the reinforcing piece 5 to close and finish off the end of the binding.

The reinforcing piece 5 preferably is approximately the same width as the binding strip 4. In the completed seam, see Fig. 4, the reinforcing piece functions to take up any strain which might be applied to the line of zigzag stitches 8 lengthwise thereof and thereby prevents permanent deformation of the knitted binding strip 4 adjacent the line of zigzag stitches 8. Also the reinforcing piece 5, being secured between the body-

material 1 and one of the plies of the binding strip 4 by the stitches 3 and between the two plies of the binding strip 4 by the zigzag stitches 8, provides stiffening for the end of the binding-strip 4, thereby maintaining the end of the binding substantially flat and its closed end in substantial register with the side edge 7 of the body-material 1.

The construction of the novel reinforced seam is such as to lend itself to convenient production with the aid of high speed sewing machines. Referring to Fig. 1 it will be understood that the binding strip 4 can be stitched to the body-material 1 by a commercial sewing machine of the type disclosed in the U. S. Patents to G. S. Gatchell, Nos. 1,335,374 and 1,479,907, issued Mar. 30, 1920, and Jan. 8, 1924, respectively. In using such a sewing machine, a common form of binding attachment is fitted thereon which folds the binding strip 5 into substantially U-shape and about the raw edge 2 of the body-material 1 and directs the work thus arranged to the stitching mechanism. At the proper time in the stitching cycle, the pre-cut reinforcing piece 5 is introduced between the plies of the binding strip 4 so that it extends beyond the side edge 7 of the body-material 1. The reinforcing strip thus arranged, together with the binding strip 4 and body-material 1 are presented to the needles N (Fig. 1) of the sewing machine stitching mechanism, which secures the assembly together in a manner shown in Fig. 2.

After the completion of the binding-securing operation, the article is preferably introduced into the work-clamp of a tacking machine of the type disclosed in my pending application, Serial No. 335,935, filed May 18, 1940. This machine effects the production of the transverse line of zigzag stitches 8 shown in Fig. 3. In performing its stitching operation, the sewing machine disclosed in the above noted application begins its stitching at the point A in Fig. 3 and proceeds transversely of the binding strip 4 up to point B, where it reverses and lays upon the first line of zigzag stitches a second line of zigzag stitches terminating at point A. Immediately upon the completion of the stitching operation the cutting mechanism with which the machine is fitted is automatically actuated to cut the binding strip 4 and the reinforcing piece 5 along a line C, see Fig. 3, which is closely adjacent the line of stitching 8. The finished article is shown in Fig. 4.

While the method above described involves the use of specific types of commercial sewing machines, it is to be understood that other types of sewing machines may be employed in practicing the method, or the sewing operations may be performed by hand. In effecting the production of the seam illustrated in Fig. 6, the marginal portion of the body-material is edge-folded or hemmed instead of being enclosed by a binding-strip. Whether or not the raw edge of the body-material is enclosed by a binding strip or is edge-folded or hemmed, there is provided a flattened tubular portion having opened ends which must be properly closed. The present invention is applicable to any case wherein the edge-portion thereof is of tubular form.

Having thus set forth the nature of the invention, what I claim herein is:

1. The method of finishing a stitched article of the class described including the steps of applying a binding about the end of a body-material and securing the same with a line of stitching, positioning within said binding a piece of reinforcing material of less length than said binding and stitching the same along one of its edges to said body-material with the line of stitches which secures the binding, applying a line of tacking stitches through said binding and reinforcing material transversely of said binding and in substantial register with a side edge of said body-material, and cutting said binding and reinforcing material closely adjacent the line of tacking stitches.

2. An article of the class described comprising a body-material, a binding of extensible material enveloping one end of and contacting the opposite faces of said body-material, a reinforcing piece of less length than said binding disposed within the binding and having one of its edges overlapping the enveloped end of said body-material, said binding and reinforcing piece terminating in substantial register with each other, a line of stitches securing said binding to said body-material and penetrating the two plies of said binding, the body-material and said reinforcing piece, and a line of tacking stitches penetrating the two plies of the binding and the reinforcing piece and overlapping the end of said line of stitches which secures said binding to said body-material.

ALFRED R. WOOD.