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L. H. TALMADGE

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Fig. 1.

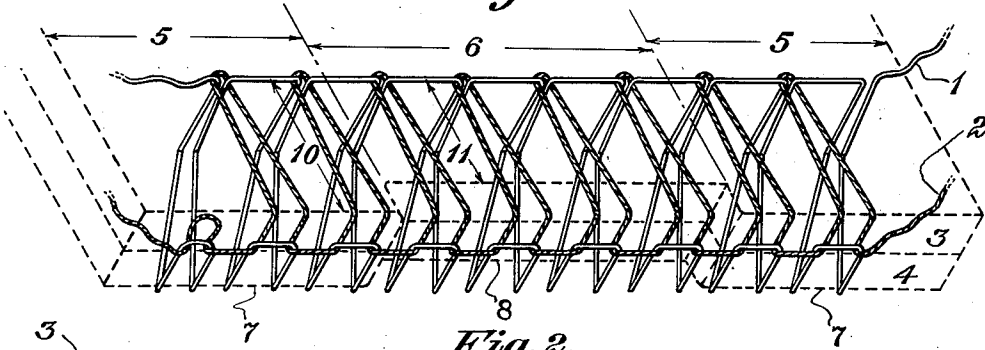


Fig. 2.

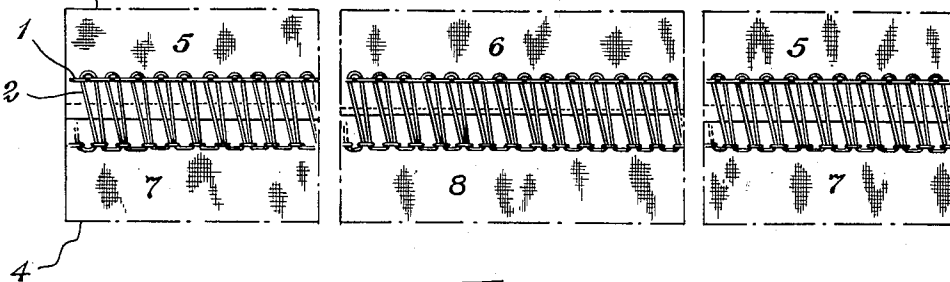


Fig. 3.

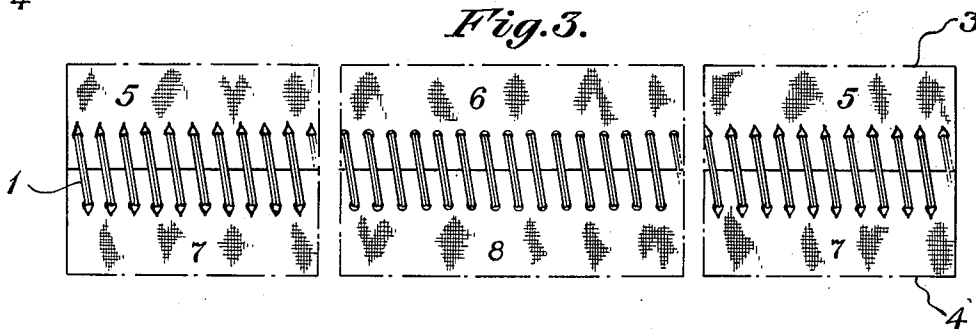


Fig. 4.

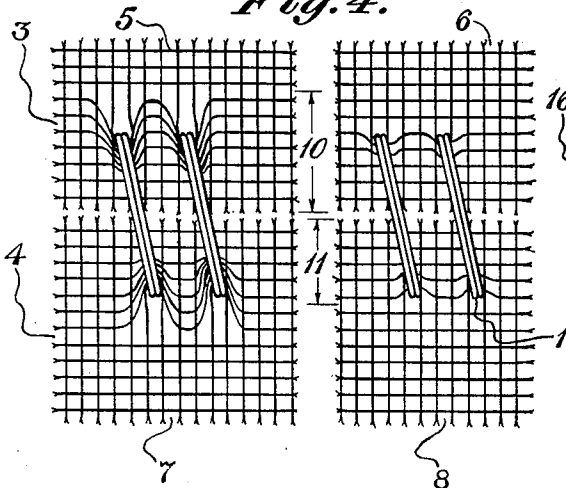
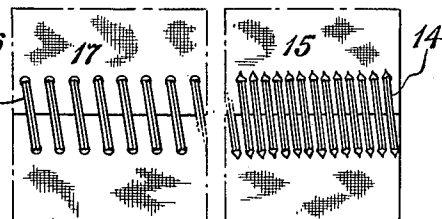


Fig. 5.



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9 Claims. (Cl. 112—262)

This invention relates to overedge stitching as applied to fabric to produce what is commonly termed an abutted seam. One method of producing such a seam comprises the formation of loose overedge stitches along a margin of superposed plies of fabric, which plies are subsequently opened out to abut the stitch enclosed edges thereby flattening the seam. Such a seam is employed to join the warp ends of lengths of fabrics preparatory to various fabric finishing processes or operations which may impose lengthwise tension or strain upon the goods. Adjacent the selvage edges of certain fabrics, the weave thereof, due to influences intentionally introduced or inherent in its manufacture, is of different character than the weave of the section or zone intermediate the selvage zones. For instance the weave of the selvage zones may be differentiated from the weave of the intermediate zone by a condition to which the term "tight selvage" is applied by those versed in the art of weaving. Thus the weave of the selvage zones, is, so to speak, tighter than the weave of the intermediate zone. This particular condition when the material is under tension in effect makes the edge zones of a length of fabric shorter than the intermediate zone and the short or tight zones during processing are placed under greater tension than the long or looser zone. Thus when said tension is imposed upon an abutted seam a greater tension is placed upon the stitch threads in the tight zones than in the looser zone with the result that the warp ends of the fabric become imperfectly abutted and pulled away from each other and prone to subsequently develop a looseness of seam or entire separation thereof especially at respective outer edges of the tight zones, when, as in the usual method employed, the stitching to form the seam was applied to include a margin of uniform depth and spacing throughout the width of the fabric. Such looseness or separation of the seam at the points mentioned tends to cause the fabric adjacent thereto to fold or curl over upon itself causing waste of much yardage of cloth in the initial or subsequent processing. The object of the present invention is the provision of a seam for uniting the warp ends of fabric whereby under tension said ends united by the stitching will assume a practically uniformly abutted relation and resist the detrimental tendencies heretofore encountered. To attain this object the depth of margin enclosed by the stitching and/or spacing of the stitches as said stitching will be applied is varied for each zone

of the fabric in accordance with the character of the weave therein. Subsequently, tension, applied in different degree to respective zones, effects a corresponding compression or displacement of the weft within the stitch enclosed margin and thereby assures a practically uniformly abutted relation of the warp ends throughout all zones traversed by the seam. As intimated the zones of different character of weave may be more specifically defined as having respectively tight and loose warp yarns. These latter terms however, seem to indicate a greater difference in the weave in respective portions of the material than is manifest from casual inspection of the material itself. Adopting the words "tight" and "loose" for distinguishing the difference involved, the invention may be stated to reside in part in the uniting of fabrics having tight and loose warp yarns in respective zones, by an overedge seam running transversely to the warp, the stitches of which are anchored at greater depth from the edge in zones of tight warp yarn and at less depth from the edge in zones of loose warp yarn. Furthermore, the stitches in the zones of tight warp yarn may be more closely spaced than the stitches in the zones of loose warp yarn. A seam appropriate to the invention and embodied therein may comprise a single line of overedge stitching including but one needle thread, and reference hereinafter to separate groups of stitches, means that said groups are in the same line of stitching but at different zones along its longitudinal extent.

It is anticipated that in different zones of a fabric a respective difference in weave may involve other characteristics than the specific one mentioned above. Also location of the different zones may be changed. Furthermore fabric which throughout its width comprises a weave of uniform character may be subjected to tension which differs in degree in different zones, especially at or near the ends of the seam. In either event or in conceivable cases wherein a combination of the suggested conditions exist the depth of margin enclosed in the overedge stitching of the fabric or the spacing of the stitches, or both may be regulated to secure the desired abutting of the warp ends when tension is imposed as in fabric processing.

In the accompanying drawing,—

Figure 1 is a detail diagrammatic view of one form of stitch commonly employed in producing an abutted seam, dotted lines indicating superposed plies of fabric to which overedge stitching

has been applied in accordance with the present invention.

Figure 2 is a view of stitching uniting the warp ends of two pieces of fabric which have been opened out to flatten the seam. The selvage zone warp ends are here shown in the overlapping relation which exists previous to the application of tension which subsequently effects abutment of said ends.

Figure 3 is a view of the reverse side of the seam shown in Fig. 2 but with the warp ends abutted throughout in the arrangement brought about by lengthwise tension on the fabric.

Figure 4 is a detail view indicating diagrammatically the effect which tension such as mentioned produces upon filler threads and stitches when the latter have been applied respectively to margins of different depth.

Figure 5 is a view of a modified form of the invention.

The stitching illustrated in detail in Fig. 1 is formed of two threads 1 and 2. A loop of thread 1 is passed through the material and extended to the edge thereof where it is engaged by a loop of thread 2. The loop of thread 2 is then carried forward over the surface of the material initially entered by the loop of thread 1 to a point where it is entered by the next succeeding loop of thread 1 before that loop is passed through the material. These operations repeated form a sequence of stitches of the type designated by the Bureau of Standards as stitch type 503. Other suitable forms of stitching may be used.

Preparatory to applying loose stitching of the described or suitable character for the purpose of uniting in accordance with my invention the warp ends of material as 3 and 4, said ends are superposed as shown in Fig. 1 with the selvage zones 5 and intermediate zone 6 of one ply in register with corresponding zones 7 and 8 of the other ply, respective zones in each ply being of different character as hereinbefore explained. The margin of material enclosed by the stitching is varied in accordance with requirements predetermined as by experiment, that is the depth of margin 10 in the selvage zones is made enough greater than the depth of margin 11 in the intermediate zone to thereby compensate for the difference of relative displacement of the warp ends that takes place when subsequent tension is imposed upon the seam, the relative displacement at the selvage zones being greater than the relative displacement at the intermediate zone. The stitching may also be more closely spaced at the ends of the seam, and in cases of extremely sleazy fabric, both change in depth and change in spacing of the stitching may be applied at and near the ends of the seam.

Referring to Fig. 3 it is to be understood that the warp ends of the material enclosed by the stitching are abutted throughout the length of the seam because of arrangement brought about by lengthwise tension on the fabric, that is, the material edges (previously overlapping as shown in Fig. 2) at the selvage zones, have been, under tension imposed, moved farther in opposite directions than the edges at the intermediate zone, thereby causing a crowding together of the greater number of filler threads encompassed by stitches in the selvage zones into space substantially equal to that occupied by the lesser number of filler threads encompassed by the stitches in the intermediate portion of the seam. See Fig. 4. The cross threads of the stitches or stitch loops being of practically equal length through-

out the length of the seam, they appear in alignment throughout, while the needle punctures indicated, appear more elongated in the selvage zones than therebetween. The formation of practically uniform depth overseam stitches enclosing different widths of margin of material is effected in common practice by the use of a stitch finger around which the stitches are formed of practically equal depth irrespective of the width of margin of material included within the seam.

In the modified form of the seam indicated in Fig. 5 the stitches 14 at the selvage or tight zone 15 are closer together as well as deeper into the margin of the fabric than are the stitches 16 in the looser zone 17.

It will be noted that while the depth of margin enclosed by the stitching in respective zones is varied, the length of thread or threads entering into the formation of each stitch remains substantially constant making the stitches themselves throughout the length of the seam of substantially equal width or depth. Also it will be noted that the greater tension imposed upon the selvage zones causes the stitches therein to crowd together more of the filler threads than are affected by the stitches in the intermediate zone upon which relatively less tension is imposed (see Fig. 4). In other words, when after subsection to tension, edges of the material are uniformly abutted throughout the length of the seam, the edges enclosed by stitches in the selvage zones are of greater density than are the edges enclosed by stitches in the intermediate zone.

What is claimed as new is,—

1. The method of forming an abutted seam for joining the warp ends of woven fabric wherein the weave in certain zones of width is of different character than the weave in other zones of width, which consists in applying overedge stitching to plies of the fabric which are superposed with zones of like weave in register, varying, for respective zones of different character of weave, both the depth of margin enclosed by the stitches and the spacing of the stitches, and subsequently subjecting the seam to tension imposed lengthwise of the fabric to cause the warp ends enclosed by the stitches to assume practically abutted relation in each zone.

2. A seam for uniting edges of woven fabric having respective zones of tight and loose warp yarns, said seam running transversely to the warp and comprising overedge stitches anchored at a greater depth from the edge in the zone of tight warp yarn than in the zone of loose warp yarn.

3. For forming an abutted seam joining the warp ends of woven fabric preparatory to processing, the method which consists in applying overedge stitching to superposed plies of the fabric with stitches forming part of the longitudinal extent of the seam anchored at a greater depth from the edge of the material than stitches forming the remaining length of the seam, and subsequently opening out the plies and tensioning the material transversely of the seam and in different degree for the respective differently identified lengths of the seam.

4. For forming an abutted seam for joining end edges of material preparatory to processing, the method which consists in applying overedge stitching to superposed plies of the material with stitches forming part of the longitudinal extent of the seam anchored at a greater depth from the edge of the material than stitches forming the

remaining length of the seam, and subsequently opening out the plies and tensioning the material transversely of the seam and in different degree for the respective differently identified lengths of the seam.

5 5. A seam for uniting edges of woven fabric having respective zones of tight and loose warp yarns, said seam running transversely to the warp and comprising overedge stitches encompassing the margins of both fabrics to be united and which are anchored at different depths from the edge in respective zones and differently spaced in respective zones.

10 6. A seam for uniting edges of woven fabric having respective zones of tight and loose warp yarns, said seam running transversely to the warp and comprising overedge stitches encompassing the margins of both fabrics to be united and which in the zone of tight warp yarn are more closely spaced than in the zone of loose warp yarn.

15 7. A method of forming an abutted seam for joining the warp ends of woven fabric, which consists in applying transversely to the warp and encompassing the margins of both fabrics to be united a single line of overedge stitching to plies

of fabric wherein the weave has tight and loose warp yarns in respective zones of width, which plies are superposed with zones of like weave in register, varying, for respective zones of weave, the depth of margin enclosed by the stitches, and subsequently subjecting the seam to tension imposed lengthwise of the fabric to cause the warp ends enclosed by the stitches to assume practically abutted relation in each zone.

8. A seam for uniting edges of woven fabric having respective zones of tight and loose warp yarns, said seam running transversely to the warp and comprising overedge stitches encompassing the margins of both fabrics to be united and which in the zone of tight warp yarn are more closely spaced and more deeply anchored into the edge than in the zone of loose warp yarn.

9. An abutted seam uniting edges of woven fabric having selvage edges in which the warp yarns are tighter than in the body of the fabric, said seam running transversely to the warp and comprising overedge stitches encompassing the margins of both fabrics united, the stitches near the selvage edges being more closely spaced than elsewhere in the seam.

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