Dec. 11, 1962 G. B. ARMSTEAD, JR 3,067,706

STITCH FORMATION

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Fig. 1.

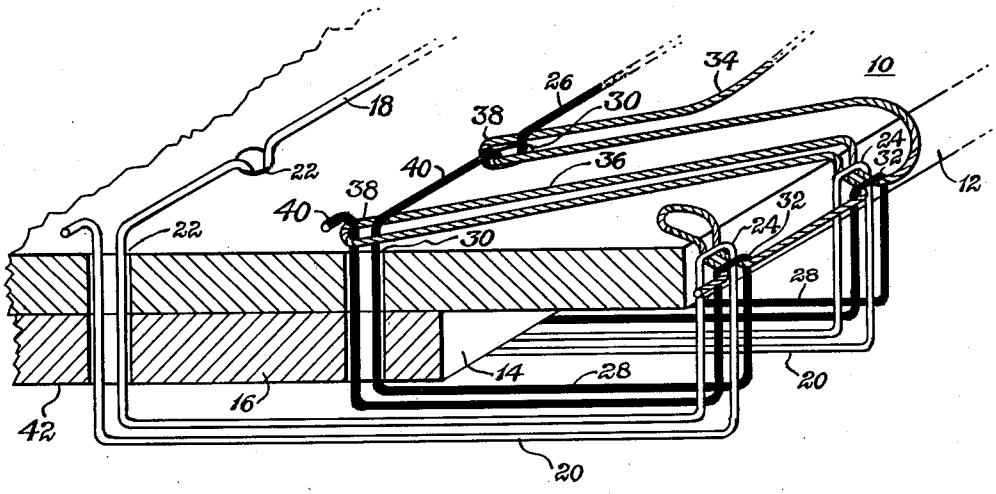
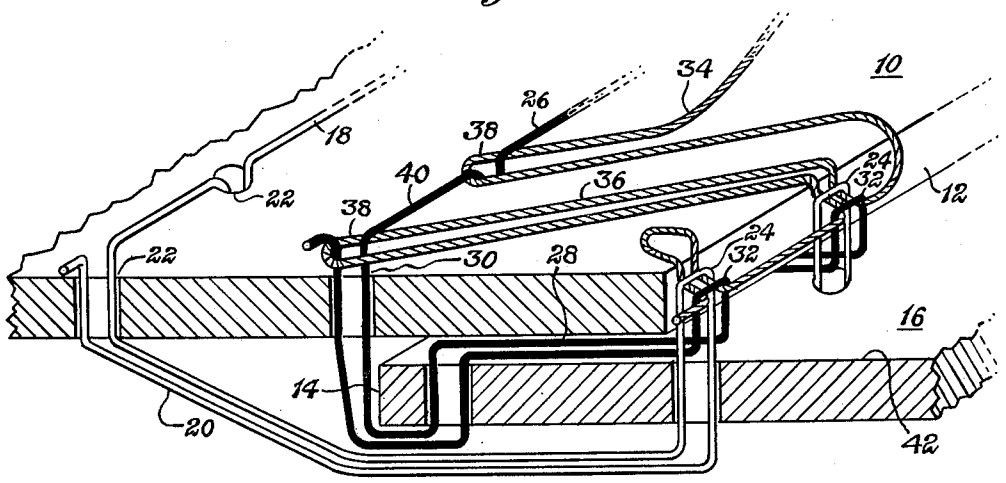


Fig. 2.



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Fig. 3.

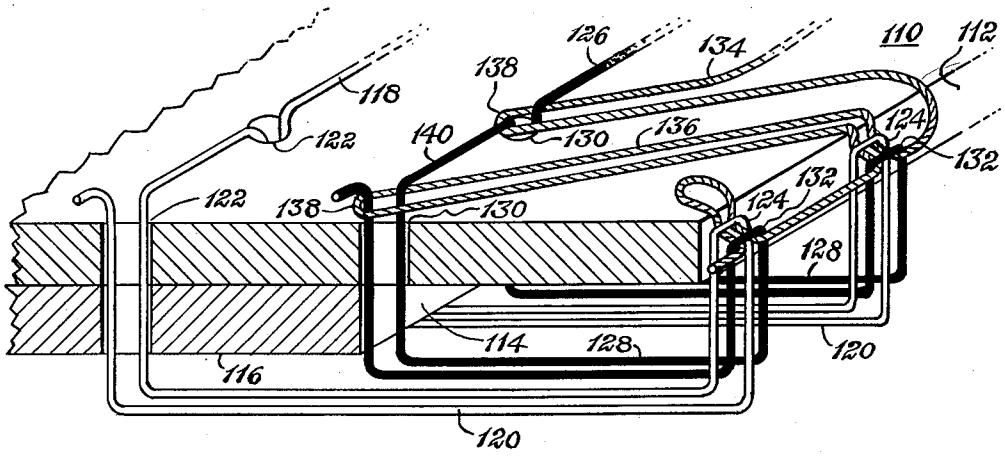
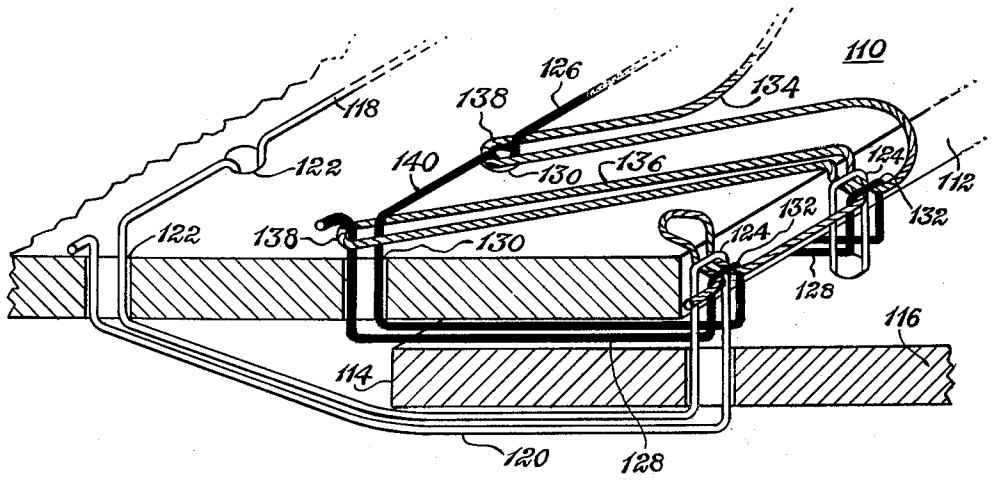


Fig. 4.



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STITCH FORMATION

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9 Claims. (Cl. 112—262)

This invention relates to stitch formation and more particularly to an improved form of compound chain stitch particularly adapted to join plies of work material along parallel laterally offset edges.

One object of the invention is to provide a compound chain stitch for joining work material where parallel offset edges of the work material portions in overlapped or overlying relationship do not show through the stitching.

Another object of the invention is to provide a compound chain stitch seam for joining work material in the above relationship in which the seam possesses substantial strength while being highly elastic in a direction parallel to the seam.

Still another object is to provide a compound chain stitch seam for joining work material in the above relationship which minimizes chaffing when the seam is abraded as by washing.

Other objects and features of the invention will become apparent by reference to the following specification taken in conjunction with the accompanying drawings.

In the drawings:

FIG. 1 is a perspective view, partially in cross-section, showing a stitch formation embodying the present invention applied to two plies of work material;

FIG. 2 is a view similar to FIG. 1 showing the two plies of work material in FIG. 1 hinged into a subsequent formation with the stitch of FIG. 1 applied thereto;

FIG. 3 is a view similar to FIG. 1 showing a modified form of the stitch formation; and,

FIG. 4 is a view similar to FIG. 2 with the stitch formation of FIG. 3 applied to the work material.

The stitch formation of the present invention is adapted to be produced on a Merrow overedge sewing machine of well-known construction. During the formation of the stitch, the two plies of fabric to be joined are fed through the machine in the relationship shown in FIG. 1 wherein the uppermost ply of work material **10** is located with its edge **12** projecting outwardly beyond the corresponding edge **14** of the lower ply **16**. Edges **12** and **14** of the respective plies are thus located in a parallel laterally offset relationship. Since the major portions of both plies of fabric **10** and **16** are located upon the same side of the edges to be joined, the stitch formation may be applied to plies of fabric having a width—i.e. right-to-left dimension in FIG. 1—which is not limited by dimensions of the sewing machine.

The stitch includes a first continuous needle thread **18** which is formed by the machine into a first series of fabric penetrating loops such as **20** which penetrate both plies of fabric at spaced points of penetration **22** which lie along a line parallel to and laterally offset from the edges of the plies of fabric to be joined. Each loop **20** passes downwardly through both plies of fabric and is extended outwardly and upwardly to locate bight portion **24** of each loop **20** adjacent the edge **12** of the uppermost ply of fabric.

A second needle thread **26** is formed into a second series of fabric penetrating loops **28** which, in the FIG. 1 embodiment, penetrate both plies of fabric at penetration points **30** laying along a line located between the line of peneration points **22** and edge **12**. Each of the second series of loops **28** passes downwardly from its

penetration points **30** through both plies of fabric and is extended outwardly and upwardly to locate the bight portion **32** of each loop **28** adjacent the edge **12** of the uppermost ply of fabric. As indicated by the cross-section of FIG. 1, each penetration point **22** of the first series of loops **20** is approximately in lateral alignment with a corresponding penetration point **30** of a loop of the second series. Bight portions **24** and **32** of laterally aligned loops of each series are located adjacent each other as indicated in FIG. 1.

A covering thread **34** is formed into a third series of loops **36** passing through contiguous bight portions **24** and **32** of a loop **20** of the first series and the laterally aligned loop **28** of the second series. Bight portion **38** of each loop **36** of the covering thread extends around the next adjacent loop **28** of the second series at its point of fabric penetration **30**. In so doing, the bight portion **38** of each loop **36** of the covering thread is disposed between the uppermost surface of upper ply **10** and adjacent runs **40** of the second needle thread **26**.

In the usual case, the desired final relationship between the two plies of work material is that shown in FIG. 2 and the FIG. 1 relationship is used only as a manufacturing convenience to place the stitches in the two plies of material. After the stitches have been placed as in FIG. 1, lower ply **16** is hinged about its edge **14** to shift into the relationship shown in FIG. 2. At the completion of this hinging movement, that surface **42** of the lowermost ply **16** which was the lowermost surface in the FIG. 1 relationship becomes the uppermost surface of ply **16** in the FIG. 2 relationship. This action serves to locate a portion of each loop **28** of the second thread between the overlapped portions of the respective plies **10** and **16**.

As best seen in FIG. 2, each of the edges **12** and **14** of the respective plies is substantially fully protected or shielded by the arrangement of the threads in the completed stitch. The edge **12** is protected by the runs of covering thread **34** which run substantially along edge **12** between adjacent bight portions **24** and **32** of the loops of the first and second series. The edge **14** is substantially protected by a portion of loops **20** of the first thread and a portion of loops **28** of the second thread. As well as protecting the edge of the fabric, these edge covering loop portions likewise tend to minimize chaffing at the seam where the stitch is employed in the formation of garments such as corsets.

This complete seam is readily adaptable to the manufacture of elastic garments such as corsets since it is highly elastic in directions parallel to the seam. The binding action exerted by the loops **28** and the cooperating loops **36** of the covering thread about the overlapped section of the work pieces achieves an extremely strong seam.

In FIGS. 3 and 4 a modified stitch formation is disclosed which is generally similar to the stitch formation of FIGS. 1 and 2 but differs in that the second needle thread does not penetrate the lower ply of material. As in the previous case, the stitch formation shown in FIGS. 3 and 4 is formed from three continuous threads.

The modified form of seam includes a first continuous needle thread **118** formed into a first series of loops **120** which pass downwardly through both plies of material **110** and **116** at penetration points **122** as in the previously described embodiment. The stitches are placed in the respective plies by feeding the plies through an overedge sewing machine with the edge **112** of the upper ply **110** projected outwardly beyond and in parallel lateral offset relationship to the corresponding edge **114** of the lower ply. Bight portions **124** of loops **120** are located adjacent edge **112**.

A second continuous needle thread **126** is formed into a second series of fabric penetrating loops **128** which

penetrate only the upper portion of work material at penetration points 130 lying on a line located between the line of penetration points 122 and edge 112. Penetration points 130 are also located so that loops 128 project downwardly through points 130 just clear of edge 114 of the lower ply 116. Bights 132 of loops 128 are, as in the previous case, brought out to edge 112 and located adjacent the bights 124 of the laterally aligned loops 120 of the first series. Covering thread 134 is formed into a third series of loops 136 in exactly the same fashion as described above in connection with the FIGS. 1 and 2 embodiment so bight portions 138 lie between upper ply 110 and runs 140 of the second thread at penetration points 130.

As in the previous case, the completed seam usually finds the lower ply 116 being hinged into the FIG. 4 position. The completed seam as shown in FIG. 4 differs from the first embodiment in that loops 128 pass along the lower surface of upper ply 110 and do not penetrate lower ply 116 as in the previous embodiment. The completed seam of FIGS. 3 and 4 possesses substantially the same shielded and elastic characteristics of the seam of FIGS. 1 and 2 and, in fact, is somewhat less susceptible to chaffing since loops 28 do not project from the inner (lower in FIG. 4) surface of the material. Some strength is sacrificed by not passing loops 128 through the lower ply, however, the seam of FIGS. 3 and 4 possesses adequate strength for most applications.

While two exemplary embodiments of the invention have been described, it will be apparent to those skilled in the art that the disclosed embodiments may be modified. Therefore, the foregoing description is to be considered exemplary rather than limiting, and the scope of the invention is that defined in the following claims.

I claim:

1. A chain stitch seam joining two portions of work material with adjacent edges of said portions secured in overlapped parallel offset relationship comprising a pair of continuous needle threads formed into two series of loops, one of said series of loops penetrating one of said portions of material at spaced points lying along a line spaced a first distance from the edge of said one of said portions and penetrating the other of said portions along a line adjacent said edge of said one portion, the other series of loops passing through penetration points lying at spaced points along a line located between the first mentioned line and the edge of said one portion, each loop of said other series lying between the overlap between said two portions, each loop of both series having a bight portion disposed adjacent said edge of said one portion, and a covering thread formed into a corresponding series of loops passing through the bight portion of a loop of said first series and the bight portion of a loop of said second series adjacent the edge of said one portion, each of said covering thread loops having a bight portion looped around a succeeding loop of said second series at the penetration point of said succeeding loop of said second series.

2. A chain stitch seam joining two portions of work material in overlapped face-to-face engagement with each other with adjacent edges of the respective portions secured in parallel laterally offset relationship comprising a first continuous needle thread formed into a first series of material penetrating loops, each loop of said first series penetrating both portions of work material by passing downwardly from points of penetration on the upper surface of the uppermost of said portions lying at spaced positions along a line laterally offset a first distance from the edge of the uppermost of said portions and passing upwardly through the other of said portions to project upwardly adjacent the edge of said one portion, a second continuous needle thread formed into a second series of material penetrating loops passing downwardly from spaced points of penetration lying along a second line intermediate said first line and said edge of said uppermost portion and passing between the overlapped faces of the two portions, the points of penetration of said second series of loops being in substantial lateral alignment with the points of penetration of said first series of loops, the bight portion of each loop of said first series and the bight portion of the laterally aligned loop of said second series being located adjacent each other near the edge of said uppermost portion, and a covering thread formed into a third series of loops, each loop of said third series passing through the bight portion of a loop of said second series and the bight portion of the loop of said first series laterally aligned therewith and extending across the upper surface of said upper portion to a bight portion looped around a succeeding loop of said second series at its point of penetration.

3. A chain stitch seam as defined in claim 2 wherein each loop of said second series passes downwardly across the edge of the lowermost portion and penetrates said lowermost portion of work material to pass upwardly therethrough.

4. A chain stitch seam as defined in claim 3 wherein said uppermost portion of material projects outwardly beyond the lowermost portion of material, the loops of said first and said second series passing along the lower surface of said lowermost portion of material between their respective points of penetration and bight portions.

5. A chain stitch seam as defined in claim 1 wherein said portions of work material are overlapped with each other with said edge of said uppermost portion overlying the upper surface of the lowermost portion of material, each loop of said first series extending below the lower surface of said uppermost portion and the lower surface of said lowermost portion and penetrating upwardly through the lowermost portion of material to locate its bight adjacent the edge of said uppermost portion, each loop of said second series passing downwardly through said uppermost portion, passing along the lower surface of said lower portion, penetrating said lower portion by passing upwardly therethrough and extending along the upper surface of said lower portion between said overlapped portions of work material to said edge of said uppermost portion.

6. A chain stitch seam joining two portions of work material with respective edges of said portions secured in parallel overlapped relationship comprising a first continuous needle thread formed into a first series of loops passing downwardly through the uppermost portion of material at spaced penetration points lying along a line spaced from the edge of said uppermost portion by a distance greater than the overlap between said portions, each loop of said first series passing laterally beneath both of said portions and upwardly through the lowermost of said portions in substantial alignment with the edge of said uppermost portion to locate the bight of the loop of the first series adjacent said edge of said uppermost portion, a second continuous needle thread formed into a second series of loops passing downwardly through said uppermost portion at spaced penetration points lying along a line spaced from the edge of said uppermost portion by a distance substantially equal to the overlap between said portions, each loop of said second series having a bight located adjacent said edge of said uppermost portion in lateral alignment with a bight of a loop of said first series, and a continuous covering thread formed into a third series of loops, each loop of said third series passing through the bight of a loop of said second series and the laterally aligned bight of a loop of said first series, each loop of said third series extending across the upper surface of said uppermost portion to a bight looped around a succeeding loop of said second series at its point of penetration.

7. A chain switch seam as defined in claim 6 wherein the major portion of each loop of said second series passes

laterally between said uppermost portion and said lowermost portion in the region of overlap.

8. A chain stitch seam as defined in claim 7 wherein each loop of said second series passes downwardly across the edge of the lowermost portion of material, laterally beneath said lowermost portion to a second penetration point, upwardly through said second portion and laterally between said portions in the region of overlap.

9. A chain stitch seam as defined in claim 7 wherein each loop of said second series is disposed entirely above the lowermost portion of material.

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