

Description

The present invention relates to the machine finishing of garments, in particular to a process and apparatus for mocklinking a knitted trim to an unfinished edge of a knitted garment, to a knitted edging trim for use therewith, and to garments finished by this process.

In the knitwear industry, it has been the practice to manufacture a knitted trim for application to an unfinished edge of a knitted garment such as the arm holes of a sleeveless top garment or the neck hole of a V-necked or round-necked pullover. The trim may be knitted in a strip on a warp knitting machine or by making up lengths of trim on a conventional double bed weft knitting machine in a sequence of parallel strips joined loosely together by means of a strong draw thread. Individual lengths of trim are separated by removal of the draw threads and joined end to end to form a continuous ribbon which is then folded into a double or triple thickness before being attached to the unfinished edge of a knitted garment. The attachment process may be carried out manually wherein individual loops on an edge of the trim are linked point-to-point with loops on an unfinished edge of a knitted garment which is a highly skilled and time-consuming operation that is only cost-effective in the case of very high quality knitwear, for example of cashmere. Machines may be used to perform this operation by sewing the trim onto the garment with matching yarn using overlock or overseam stitching, but this results in a rather noticeable join between the trim and the garment and a thick seam on the inside which of course must be suitably finished to prevent fraying of the joined edges. In order to simulate a link finish, machines have been developed to attach a knitted trim to a knitted garment by sandwiching an unfinished edge of the garment between folded over portions of the trim in accurate alignment and machine stitching with matching yarn along a folded edge of the trim in a process known as "mock-linking".

Point-to-point linking machines are generally of the rotary dial type, for example, as described in British Patent Specification No. 1,318,004. Such a machine comprises a dial having a bed of radially-projecting impaling pins for reception of consecutive loops of the unfinished garment edge and of the edging strip, which may be doubled over to enclose the garment edge. The strip may be provided with an edge tab or selvedge of thinner elasticated yarn. Because of the fact that the garment edge and strip are held in perfect alignment along a single course of stitching on the impaling pins, linking may be performed by rotating the dial past a stitching station along a regular seam line. If necessary, the seam line in edging strips used with machines of this type may be defined by a single course of matching nylon yarn, thinner than the yarn in which the garment and strip are knitted.

The so-called "mock-linking" machines known from the prior art generally utilise a standard

sewing machine to unite the unfinished garment edge to a knitted edging with an ordinary chain stitched seam as this greatly speeds the linking process, but great care has still to be taken to exercise control over the stitching of the seam to keep the two pieces in accurate alignment, so as to ensure that the seam line does not wander off the edging strip, at higher sewing speed. This problem may be overcome by using a magazine comprising projecting impaling pins to receive the garment edge wherein the edging strip is fed via a folder to sandwich the impaled garment edge in accurate alignment prior to linking, as described in U.S. Patent Specification No. 4,128,066.

British Patent Specification No. 2,004,926 B also describes a "mock-linking" apparatus which is primarily concerned with a feed arrangement for bringing the knitted trim and unfinished garment edge together at different tensions to overcome any tendency for an incorrectly tensioned edging to distort the finished garment edge.

U.S. Patent Specification No. 3,476,065 describes apparatus comprising a sewing machine for sewing a binding along the edge of a fabric in chain-stitching wherein the stitch is blind on one side of the binding, and is mainly concerned with a needle arrangement to bring this about. A folder which progressively folds the binding around the fabric edge is also disclosed with its outlet located as close as possible to the needle path. To use such an arrangement in a mock-linking process there is the practical disadvantage that trims over a certain width will foul the apparatus. Furthermore it would be difficult in practice to guide and control the passage of the trim and garment border past the needle path with the required precision in the absence of further guidance and alignment means.

U.S. Patent Specification No. 3,370,559 describes a presser foot arrangement for a sewing machine designed to guide the edge of a garment past the needle path so as to facilitate stitching of a seam parallel to, or two seams parallel to that edge. However, while such an arrangement including guide pins projecting inwardly from the foot provides guidance to the garment edge, the arrangement is not adapted to additionally receive a fabric edge and provide extra tensioning thereto, which has been found to be of importance in the context of a mock-linking process where the fabric edge in question is a knitted edging trim.

A trim or edging strip suitable for use in a mock-linking process may be knitted in various different ways, to facilitate folding and attachment to the unfinished garment edge. The present invention is only concerned with such a trim which has been weft-knitted on a double bed machine, for example in plain rib stitching, double knit. This is distinguished from trims knitted on a single bed, producing a single knit flat fabric, or a single knit "tubular fabric", as described in British Patent Specification No. 1,420,231. In all cases, the trim is defined by two parallel longitudinal edges, the

first course knit being a closed loop edge or selvage, the last course knit being an open loop edge or ravel edge. When the trim is folded over an unfinished garment edge (which may also be a ravel edge), the ravel edge of the trim is tucked in inwardly of the seam line where the trim is to be linked to the garment edge to protect it against fraying or unravelling.

British Patent Specification No. 1,386,868 describes a weft-knitted trim which may be knitted on a double bed machine having a 2:1 needle formation to produce a 2 x 2 rib stitch pattern over most of its width, with the remainder being knitted on a single needle bed after all loops are transferred to that bed. Thus, a trim is described which essentially consists of a double knit portion and a single knit portion divided by a course of transfer stitches, the latter portion preferably of a thinner yarn. The course of transfer stitches forms all loops, of that course to the face side of the trim, while the next adjacent course to be knitted forms all loops of that course to the back side of the trim. This produces a fold or hinge line which facilitate the tucking in of the ravel edge portion against the back side of the trim, but there is the natural tendency of this portion to fold or curl back on account of the fact that it is of a thinner single knit fabric and/or on account of the lower denier yarn employed.

The present invention seeks to improve known knitted edging trims of this type by providing a trim which incorporates a fold or hinge line formed by at least one course of transfer stitching but which also has a definable seam line located closely adjacent to the folded edge adapted to receive a sewn seam of matching thread whereby a point-to-point link finish may be simulated when the trim is machine stitched along the seam line.

SUMMARY OF THE INVENTION

According to the present invention, there is provided a process for linking a weft-knitted edging trim in the form of a ribbon of knitted yarn with an unfinished edge of a knitted garment, using a sewing machine, the trim having been knitted to incorporate a course of transfer stitches followed by a slack tension course spaced from one side edge thereof adapted to define a fold line such that when the trim is folded along the fold line, courses adjacent the folded edge then present a seam line defined by protruding loops alternating with spaces therebetween. The process is characterised in that it comprises the steps of advancing a length of the trim through folding means so as to fold the trim along the said fold line and advancing the folded trim towards the needle path of a sewing machine adapted to perform chain-stitching, wherein the said seam line is aligned precisely with and guided towards the needle path such that the unfinished garment edge and the folded trim may be linked together by chain-stitching passing through said spaces and over said protruding loops along the seam line to substantially simulate a point-to-point link finish.

The present invention also provides a knitted

edging trim, for use in this process, weft-knitted on a double bed knitting machine in plain rib stitching to incorporate a fold line defined by one course of transfer stitching resulting in a longitudinal kink in the trim which facilitates folding about said kink, characterised in that the course following the transfer course is a slack course defined by a lessening in yarn tension while stitches which have been transferred from a first bed of needles to a second bed of needles of said double bed knitting machine are being taken up again by the said first bed to recommence knitting at the same tension as before in plain rib stitching to terminate with the ravel edge of the trim.

According to the present invention there is also provided apparatus for linking a weft-knitted edging trim in the form of a ribbon of knitted yarn with an unfinished edge of a knitted garment, comprising a sewing machine with a reciprocable needle adapted to perform chain-stitching, folding means to fold over a margin portion of the trim along a fold-line in the trim so as to enclose both sides of the unfinished garment edge prior to advancement to the needle path, and a foot plate defining an eye through which the needle may reciprocate. The foot plate defines a guide means forward of the eye to guide a seam line adjacent the hinge of a pre-formed fold line in the trim towards the needle path and the guide means is adapted to impart tension to the trim so as to slightly stretch the trim in order to open out spaces in the seam line thereby to facilitate stitching along the seam line.

Advantageously, the sewing machine includes a modified foot attachment having guide means located on the underside thereof forwardly of the eye of the foot plate adapted to receive and guide the said pre-folded portion of the trim and to align the seam line with the path of, the sewing needle, comprising an inwardly projecting lug extending from the underside of the foot plate defining a gap between the foot plate and a portion of the lug sufficient to receive a double thickness of knitted trim.

The present invention also provides a finished knitted garment having a weft-knitted edging trim folded around a border thereof and linked thereto by simulated point-to-point linking characterised in that the edging trim includes a course of transfer stitching resulting in a longitudinal kink which defines the hinge of a fold line in the trim such that a margin portion of the trim is tucked in about the fold line to face the outside garment border, a main portion of the trim being folded around the garment border edge to face the inside garment border, the thus folded trim being chain-stitched to the border along a seam line adjacent the fold line defined by a course of transfer stitches followed by a slack course in the trim.

The mock-linking process provided by the present invention has the advantage over prior art processes of producing a neat finished seam which is practically unnoticeable to the eye and thus is suitable for quality double knit work, at low cost on account of the fact that conventional

machinery is employed with the minimum of modification.

The weft-knitted trim utilised by this process has the additional advantage of presenting a seam line closely adjacent to the edge of the trim when folded along the fold line which can be easily aligned with the needle path of a standard chain stitch sewing machine without the need for elaborate garment and trim alignment/tensioning means. Furthermore, the trim can be knitted in such a way as to present a seam line defined by alternating loops and spaces therebetween, to facilitate chain stitching of a seam along said line, which with correct tension, simulates a true point-to-point link finish.

The apparatus used in the process of the invention is of a generally conventional type, as stated above, and is thus simple to operate and does not require a skilled machinist.

A preferred embodiment of a process and apparatus for mock-linking a knitted trim to an unfinished edge of a knitted garment, in accordance with the invention, will now be described in further detail with reference to the accompanying drawings, wherein:-

Figure 1 shows an enlarged portion of a knitted trim in detail,

Figure 2 shows a ribbon of the knitted trim of Figure 1 in conjunction with mock-linking apparatus according to the present invention,

Figure 3 shows a front elevation of a pre-folder for use in the present invention,

Figure 4 shows an end elevation of the pre-folder of Figure 3 viewed in the direction of arrow X,

Figure 5 shows a front elevation of a folder for use in the present invention,

Figure 6 shows an end elevation of the folder of Figure 5 when viewed in the direction of arrow A,

Figure 7 shows a cross-section of the folder of Figure 5 when viewed along section line B-B,

Figure 8 shows an enlarged perspective view from above of a modified foot attachment for a sewing machine for use in the present invention,

Figure 9 shows a front elevation of an alternative combined pre-folder and folder for use in the present invention,

Figure 10 shows an end elevation of the combination folder of Figure 9, viewed in the direction of arrow Y, and

Figure 11 shows a cross-section of the combination folder of Figure 9 when viewed along section line C-C.

Referring to Figure 1 of the drawings, there is illustrated a greatly enlarged portion of a knitted trim 1 suitable for mock-linking to an unfinished edge of a knitted garment. A trim is machine knitted on a double bed or V-bed weft knitting machine such as an H. STOLL GmbH & Co., Reutlingen, W. Germany "AJUM" (Trade Mark) machine using 10 gauge needles to produce a plain rib fabric. The knitted fabric has the same appearance on both sides wherein the wales are displayed as a series of parallel ribs, in contrast to weft-knitted fabric produced by a single-bed

machine which is characterised by crosswise ridges on the reverse side with vertical ribs on the face of the fabric. A series of trims of, for example 60 mm width, is knitted in a pre-programmed sequence of edge-to-edge strips joined along their side edges by a strong draw thread knitted into the sequence by a changeover to a different yarn such as terylene polyester. The draw threads are then removed to separate the strips of trim which are subsequently joined end to end by machine stitching to produce a ribbon of trim from which suitable lengths are cut to apply a finish to neck holes or arm holes of unfinished garments.

In Figure 1, the wales, or vertical lines of loops, are indicated by (x) and (y) wherein wales (x) form raised-ribs on the face of the fabric but are displayed as channels on the reverse side, while wales (y) form channels on the face of the fabric but are displayed as ribs on the reverse side. The courses, or crosswise-extending, loop-forming threads, are indicated by (a) to (g). The trim is knitted in the direction of arrow Z, wherein about 50 mm width of fabric is knitted in plain rib stitch as exemplified by courses (a) and (b) forming a main portion 2 of the trim 1. At this point the stitches are transferred from one bed of needles to the other bed during course (c), which is thus a course of "transfer stitches". It will be seen that this has the effect of gathering together pairs of adjacent loops, e.g. loops 3 and 4, of a normal course of rib stitches. The gathered loops 3, 4 are taken up by a "slack course" (d) wherein extra yarn is used to slacken the tension, previously employed when knitting courses (a) to (c), during the return of the cam carriage of the machine following one empty traverse after course (c). The slack course (d) is a row of discrete loops 5 which is in effect a single bed knitted course. Thereafter, courses (e) to (g) are knitted by double bed rib stitching at the same tension as before for about a further 10 mm width to form a margin portion 6 before the trim is finished off at the ravel edge. A single course of draw thread yarn is knitted in at very loose tension before starting the knitting of the next trim in the series.

A trim knitted by the above method is about 60 mm in width and has a kink 7 running along its length formed by the combination of a line of thicker protruding loops, i.e. gathered loops 3, 4 of course (c), and a line of less dense discrete loops 5 of course (d). The kink 7 is spaced by a margin portion 6 of about 10 mm from one side edge of the trim and acts as a fold line by virtue of the fact that loops 5 are less densely packed together than the remainder of the knitted fabric. Furthermore, there is a natural bias for the margin portion 6 to tuck in or fold under the main portion 2 of the trim by virtue of the fact that loops 5 of course (d) underlap adjacent pairs of loops 8, 9 of course (e) (when viewing the face of the knitted fabric as in Figure 1). When the margin portion 6 is folded under the main portion 2, it will be appreciated that a well defined folded edge is formed by protruding loops 3, 4 of course (c),

which has a certain degree of elasticity because of the extra yarn and slacker tension of course (d). Also, the gathering together of pairs of loops 3, 4 in course (c) leaves a larger space 10 between adjacent pairs of loops than between adjacent loops in any of courses (a), (b), (f) or (g), which is matched by the space 10' between adjacent pairs of loops 8, 9 in course (e) when margin portion 6 is folded under main portion 2. Thus when the trim 1 is folded over against the back side of the trim along the kink 7, a seam line is presented by a line running through the spaces 10, 10' between pairs of loops 3, 4 and 8, 9, and the intervening overlying gathered pairs of loops 3, 4 and 8, 9. When machine stitching along this seam line the chain stitch spacing is preferably adjusted to correspond with the distance between the spaces 10, 10' between the pairs of loops 3, 4, and 8, 9 with the thread preferably passing through the fabric at the spaces 10, 10' to give a neat finished seam. It will also be appreciated that when folded over along kink 7, the trim presents a seam line which is almost at the very edge of the folded trim, such that when linked to an unfinished edge of a knitted garment by machine stitching as described above, using thread in a matching colour, a mock-link finish may be obtained which simulates a point-to-point link finish. That is to say, a substantial number of individual groups of gathered pairs of loops 3, 4 and 8, 9 are linked directly to the garment fabric by individual loops of the chain stitch seam.

Referring now to Figures 2 to 11 of the drawings there will be described apparatus suitable for mock-linking a knitted trim as described above to an unfinished edge of a knitted garment. In practice, the garment itself may be of any fabric or material but normally it will be desired to use the apparatus to obtain a true mock-link finish with a garment knitted in the same stitch and yarn as the trim.

Figure 2 shows a conventional industrial sewing machine 11, such as a UNION SPECIAL (Trade Mark) machine. Details of threads, bobbins, etc. are omitted for clarity. Firstly a ribbon 12 of trim 1 is made by machine sewing a batch of trims end-to-end. The ribbon 12 is fed through two sets of tensioning bars 13, 14 which impart a slight tension to the ribbon before it is fed into pre-folder 15 which folds the ribbon along kink 7 (indicated by a dashed line) wherein the back side of margin portion 6 faces outwardly. The prefolder is mounted in position by means of a plate 16 having slots 17 to receive screws which allow the prefolder to be height-adjusted relative to the machine base 18. The ribbon is then fed to a folder 19 which is also illustrated in Figures 5 to 7. The folder 19 has a slit 20 on one side thereof for threading the ribbon through the folder initially, and funnels towards folder outlet 21. The main portion 2 of ribbon 12 is folded face side towards face side as it passes through folder 19, but the folder outlet 21 is at an oblique angle to the rear side of the folder and is provided with a right angle extension piece 22, which reverses the fold

imparted by the body of the folder as the ribbon passes around the right angle corner. Thus, when the trim emerges from the folder 19, the main portion 2 is folded in half, back side to back side.

The ribbon 12 of trim is therefore effectively folded twice by folding or tucking in margin portion 6 (along link 7) and folding the main portion 2 in half (along a line indicated by dotted line 23) over the tucked-in margin portion 6 to give a triple thickness of fabric. The extension piece 22 of folder 19 has a lower inwardly-curved lip 24 to receive a single thickness of the folded-over main portion 2 of the trim and an upper inwardly-curved lip 25 to receive a double thickness of folded-over overlapping main portion 2 and margin portion 6 of the trim. Alternatively the upper lip 25 is not inwardly-curved but extends straight out from the extension piece 22 (see dashed detail 25a in Figure 5).

An unfinished edge of a knitted garment is introduced at the folder outlet 21 before the final fold-over (back side to back side) is effected by extension piece 22, i.e. the unfinished garment edge (not shown in Figure 2) is sandwiched between a single thickness and a double thickness of the trim by being fed into gap 26 between inwardly-curved lips 24 and 25 of extension piece 22.

Once the ribbon of trim 1 has been threaded through pre-folder 15, folder 19 and under the foot 27 of the sewing machine, excess trim and in particular the end-to-end join between adjacent lengths of trim in the ribbon, are removed. An unfinished edge of a knitted garment is then introduced at the folder outlet 21 and mock-linking of the trim to the garment can commence. For example any of the following finishes may be achieved:

- (a) Round collar, crew neck or turtle neck, with or without open shoulder seam,
- (b) V-neck,
- (c) Rib at bottom of garment,
- (d) Arm hole trim in sleeveless garment or long sleeve cuffs,
- (e) Waist rib for skirts,
- (f) Rib trims for jackets, twinsets and cardigans.

Figure 8 shows foot 27 of the sewing machine 11 which is specially modified for use in the present invention. It may, for example, be a UNION SPECIAL 56330 AK foot in which foot plate 28 is modified as follows. The width of the plate is shortened somewhat by cutting out a recess 29 to one side of the eye 30 of the foot. A small plate 31 is fixed to one side of eye 30 to act as a guard and which extends forwardly to support an inwardly-projecting guide lug 32 which defines a gap 33 between the underside of the foot plate 28 and the guide lug 32 sufficient to receive and guide a double thickness of the knitted trim comprising the edge of folded over margin portion 6 including the seam line as described above. It is important to align the seam line precisely with the needle path during machining, and to stretch the trim slightly in order to open the spaces 10, 10' along the seam line.

In an alternative embodiment the forwardly-extending portion of the foot plate 28 is shortened somewhat to bring the leading edge of the foot and the guide lug 32 as close as possible to the needle path. A shortened foot plate of this type is illustrated in Figure 2.

Figures 9 to 11 show an alternative combination folder 34 which comprises a pre-folder 35, corresponding to pre-folder 15 illustrated in Figure 3, and a folder 36, corresponding to folder 19 illustrated in Figure 5. A tensioning bar 37 is also mounted on a rear plate 38 of the combination folder 34. It will be seen from Figure 11 that the pre-folder 35 differs only from the pre-folder 15 in having a slightly convex profile. The folder 36 has an open-ended slot 39 corresponding to slot 20 of folder 19, and an extension piece 40 extends from the folder outlet at a more oblique angle than is the case with extension piece 22 of folder 19. A wing 41 projects from the extension piece 40 to keep the folded trim in close alignment with the sewing machine foot.

During machining, a seam is stitched using chain stitching through the seam line of the trim referred to above at a distance of 1-2 mm from the folded edge, through the garment edge, and finally through the folded-over main portion 2 of the trim at a distance of about 5 mm from free edge 34 of the trim on the inside. The edge 34 of the trim is finished off during machine knitting in such a way as to provide a non-fraying edge or selvedge, but if necessary the inside edge of the trim when linked to the garment may be suitably finished to prevent fraying. When a length of trim from the ribbon 12 has been applied the whole way around an arm hole or neck hole of a garment, the ribbon is cut and the trim join finished in a manner known per se. It will be appreciated that the small degree of elasticity imparted to the kink 7 which includes the seam line facilitates the application of the trim to a curved garment edge and means that the trim is not unduly stretched.

Claims

1. A process for linking a weft-knitted edging trim (1) in the form of a ribbon of knitted yarn (2) with an unfinished edge of a knitted garment, using a sewing machine (11), the trim having been knitted to incorporate a course (c) of transfer stitches followed by a slack tension course (d) spaced from one side edge thereof adapted to define a fold line (F-F) such that when the trim is folded along the fold line, courses (c, e) adjacent the folded edge then present a seam line (S-S) defined by protruding loops (3, 4, 8, 9) alternating with spaces (10, 10') therebetween, characterised in that the process comprises the steps of advancing a length of the trim through folding means (15, 19) so as to fold the trim along the said fold line (F-F), and advancing the folded trim towards the needle path of a sewing machine adapted to perform chain-stitching, wherein the said seam line (S-S) is aligned precisely with and guided

towards the needle path such that the unfinished garment edge and the folded trim may be linked together by chain-stitching passing through said spaces (10, 10') and over said protruding loops (3, 4, 8, 9) along the seam line to substantially simulate a point-to-point link finish.

2. A process according to claim 1, characterised in that tension is imparted to the trim as it is guided towards the needle path of the sewing machine so as to stretch the trim slightly in order to open out the spaces (10, 10') along the seam line (S-S).

3. Apparatus for linking a weft-knitted edging trim (1) in the form of a ribbon of knitted yarn (12) with an unfinished edge of a knitted garment, comprising a sewing machine with a reciprocable needle adapted to perform chain-stitching, folding means (15, 19) to fold over a margin portion (6) of the trim along a fold-line (F-F) in the trim so as to enclose both sides of the unfinished garment edge prior to advancement to the needle path, and a foot plate (28) defining an eye (30) through which the needle may reciprocate and guide means (32) forward of the eye to guide a seam-line (S-S) adjacent the hinge of a pre-formed fold line (F-F) in the trim towards the needle path the guide means being adapted to impart tension to the trim so as to slightly stretch the trim in order to open out spaces (10, 10') in the seam line (S-S) thereby to facilitate stitching along the seam line.

4. Apparatus according to claim 3, characterised in that the guide means comprises an inwardly-projecting lug (32) extending from the underside of the foot plate (28) defining a gap (33) between the foot plate and a portion of the lug sufficient to receive a double thickness of the trim.

5. A finished knitted garment having a weft-knitted edging trim folded around a border thereof and linked thereto by simulated point-to-point linking characterised in that the edging trim (1) includes a course (c) of transfer stitching resulting in a longitudinal kink (7) which defines the hinge of a fold line (F-F) in the trim such that a margin portion (6) of the trim is tucked in about the fold line (F-F) to face the outside garment border, a main portion (2) of the trim is folded around the garment border edge to face the inside garment border, the thus folded trim being chain-stitched to the border along a seam line (S-S) adjacent to the fold line (F-F) defined by a course of transfer stitches (c) followed by a slack course (d) in the trim.

Patentansprüche

1. Ein Verfahren zum Verbinden einer schußgestrickten Randausrüstung (1) in Gestalt eines Bandes aus verstricktem Garn (2) mit der unbearbeiteten Kante eines gestrickten Kleidungsstückes unter Verwendung einer Nähmaschine (11), wobei die Ausrüstung so gestrickt ist, daß sie eine Reihe (c) von Übertragungsmaschen einschließt, auf die eine Maschenreihe (d) mit schlaffer Spannung folgt, die einen Abstand von einer Seiten-



In an alternative embodiment the forwardly-extending portion of the foot plate 28 is shortened somewhat to bring the leading edge of the foot and the guide lug 32 as close as possible to the needle path. A shortened foot plate of this type is illustrated in Figure 2.

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towards the needle path such that the unfinished garment edge and the folded trim may be linked together by chain-stitching passing through said spaces (10, 10') and over said protruding loops (3, 4, 8, 9) along the seam line to substantially simulate a point-to-point link finish.

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3. Apparatus for linking a weft-knitted edging trim (1) in the form of a ribbon of knitted yarn (12) with an unfinished edge of a knitted garment, comprising a sewing machine with a reciprocable needle adapted to perform chain-stitching, folding means (15, 19) to fold over a margin portion (6) of the trim along a fold-line (F-F) in the trim so as to enclose both sides of the unfinished garment edge prior to advancement to the needle path, and a foot plate (28) defining an eye (30) through which the needle may reciprocate and guide means (32) forward of the eye to guide a seam-line (S-S) adjacent the hinge of a pre-formed fold line (F-F) in the trim towards the needle path the guide means being adapted to impart tension to the trim so as to slightly stretch the trim in order to open out spaces (10, 10') in the seam line (S-S) thereby to facilitate stitching along the seam line.

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Patentansprüche

1. Ein Verfahren zum Verbinden einer schußgestrickten Randausrüstung (1) in Gestalt eines Bandes aus verstricktem Garn (2) mit der unbearbeiteten Kante eines gestrickten Kleidungsstückes unter Verwendung einer Nähmaschine (11), wobei die Ausrüstung so gestrickt ist, daß sie eine Reihe (c) von Übertragungsmaschen einschließt, auf die eine Maschenreihe (d) mit schlaffer Spannung folgt, die einen Abstand von einer Seiten-



kante hiervon hat und befähigt ist, eine Faltlinie (F—F) derart zu bilden, daß bei Faltung der Ausrüstung entlang der Faltlinie der gefalteten Kante benachbarte Maschenreihen (c, e) dann eine Nahtlinie (S—S) darstellen, die durch vorstehende, mit dazwischenliegenden Zwischenräumen (10, 10') abwechselnde Schlingen (3, 4, 8, 9) bestimmt ist, dadurch gekennzeichnet, daß das Verfahren die Schritte umfaßt: Verschieben einer Länge der Ausrüstung durch Faltmittel (15, 19), um die Ausrüstung entlang der Faltlinie (F—F) zu falten, und Verschieben der gefalteten Ausrüstung in Richtung auf die Nadelbahn einer zur Ausführung von Kettenstichen befähigten Nähmaschine, wobei die Nahtlinie (S—S) genau mit der Nadelbahn ausgerichtet und zu ihr hingeführt wird, derart, daß die unbearbeitete Kleidungsstückkante und die gefaltete Ausrüstung durch Kettenstiche, welche durch die Zwischenräume (10, 10') und über die vorstehenden Schlingen (3, 4, 8, 9) entlang der Nahtlinie verlaufen, miteinander verbunden werden, um im wesentlichen ein Punkt-für-Punkt-Verbindungsfinish vorzutauschen.

2. Ein Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß der Ausrüstung, während sie zur Nadelbahn der Nähmaschine hingelenkt wird, Spannung auferlegt wird, so daß die Ausrüstung geringfügig gedehnt wird, um die Zwischenräume (10, 10') entlang der Nahtlinie (S—S) aufzuweiten.

3. Vorrichtung zur Verbindung einer schußgestrickten Randausrüstung (1) in Gestalt eines Bandes aus verstricktem Garn (12) mit der unbearbeiteten Kante eines gestrickten Kleidungsstückes, umfassend: eine Nähmaschine mit einer zur Ausführung von Kettenstichen befähigten, hin- und herbeweglichen Nadel, Faltmittel (15, 19), um einen Randteil (6) der Ausrüstung entlang einer Faltlinie (F—F) in der Ausrüstung derart umzufalten, daß beide Seiten der unbearbeiteten Kleidungsstückkante vor dem Verschieben zur Nadelbahn eingeschlossen werden, und eine Fußplatte (28) mit einem Auge (30), durch welches sich der Nadel hin- und herbewegen kann, und Führungsmittel (32) vor dem Auge, um eine Nahtlinie (S—S) in der Nähe des Scharniers einer vorgeformten Faltlinie (F—F) in der Ausrüstung zur Nadelbahn hinzuführen, wobei die Führungsmittel befähigt sind, der Ausrüstung Spannung mitzuteilen, durch welche die Ausrüstung geringfügig gedehnt wird, um die Zwischenräume (10, 10') in der Nahtlinie (S—S) zu öffnen und hierdurch die Vernähung entlang der Nahtlinie zu erleichtern.

4. Vorrichtung nach Anspruch 3, dadurch gekennzeichnet, daß die Führungsmittel einen nach einwärts vorstehenden Ansatz (32) umfassen, der sich von der Unterseite der Fußplatte (28) aus erstreckt und zwischen der Fußplatte und einem Teil des Ansatzes einen Spalt (33) bestimmt, der ausreicht, um die doppelte Dicke der Ausrüstung aufzunehmen.

5. Ein endbearbeitetes gestricktes Kleidungsstück mit einer schußgestrickten Randausrüstung,

die um einen Rand des Kleidungsstückes herumgefaltet und damit durch vorgetäuschte Punkt-für-Punkt-Verbindung verbunden ist, dadurch gekennzeichnet, daß die Randausrüstung (1) eine Reihe (c) von Übertragungsmaschen einschließt, die eine längsweise gerichtete Knickstelle (7) ergeben, welche das Scharnier einer Faltlinie (F—F) in der Ausrüstung derart bestimmt, daß ein Randteil (6) der Ausrüstung um die Faltlinie (F—F) eingeschlagen wird, um dem äußeren Rand des Kleidungsstückes gegenüberzuliegen, wobei ein Hauptteil (2) der Ausrüstung um die Randkante des Kleidungsstückes gefaltet wird, um dem inneren Rand des Kleidungsstückes gegenüberzuliegen, wobei die so gefaltete Ausrüstung durch Kettenstiche mit dem Rand entlang einer Nahtlinie (S—S) in der Nähe der Faltlinie (F—F) vernäht wird, und wobei die Faltlinie durch eine Reihe von Übertragungsmaschen (c) gebildet ist, auf die in der Ausrüstung eine schlaaffe Maschenreihe (d) folgt.

Revendications

1. Procédé pour lier un galon de bordure à mailles cueillies (1) sous forme de ruban de fil tricoté (2) à un bord non fini de vêtement tricoté, à l'aide d'une machine à coudre (11), le galon ayant été tricoté en sorte de comporter un rang (c) de mailles reportées suivi d'un rang lâche (d) espacé d'un de ses bords latéraux pour définir une ligne de pli (F-F) de façon que lorsqu'on plie le galon suivant la ligne de pli, les rangs (c, e) voisins du bord plié offrent alors une ligne de couture (S-S) définie par des boucles saillantes (3, 4, 8, 9) alternant avec des espacements (10, 10') les séparant, caractérisé en ce qu'il comprend les opérations consistant à faire avancer un tronçon du galon à travers un moyen de pliage (15, 19) de façon à plier le galon suivant ladite ligne de pli (F-F) et à faire avancer le galon plié vers la trajectoire d'aiguille d'une machine à coudre propre à effectuer une couture à points de chaînette, ladite ligne de couture (S-S) étant située précisément en regard et guidée en direction de la trajectoire d'aiguille de façon que le bord de vêtement non fini et le galon plié puissent se trouver liés l'un à l'autre par des points de chaînette passant à travers lesdits espacements (10, 10') et par-dessus lesdites boucles saillantes (3, 4, 8, 9) suivant la ligne de couture pour imiter sensiblement une finition à enchaînement point par point.

2. Procédé selon la revendication 1, caractérisé en ce qu'on tend le galon pendant son guidage vers la trajectoire d'aiguille de la machine à coudre de façon à l'allonger légèrement afin d'ouvrir les espacements (10, 10') suivant la ligne de couture (S-S).

3. Dispositif pour lier un galon de bordure à mailles cueillies (1) sous forme de ruban de fil tricoté (12) avec un bord non fini de vêtement tricoté, comprenant une machine à coudre à aiguille mobile à va-et-vient propre à effectuer une couture à points de chaînette, un moyen de pliage (15, 19) destiné à replier une partie margi-



nale (6) du galon autour d'une ligne de pli (F-F) du galon afin d'enfermer les deux côtés du bord du vêtement non fini avant avancement vers la trajectoire d'aiguille, une plaque à aiguille (28) définissant un oeil (30) à travers lequel l'aiguille peut se déplacer à va-et-vient et un moyen de guidage (32) situé devant l'oeil pour guider vers la trajectoire d'aiguille une ligne de couture (S-S) voisine de l'articulation d'une ligne de pli (F-F) prémarquée dans le galon, le moyen de guidage étant agencé pour tendre le galon d'une façon à l'allonger légèrement afin d'agrandir les espacements (10, 10') de la ligne de couture (S-S) pour faciliter par là la couture suivant la ligne de couture.

4. Dispositif selon la revendication 3, caractérisé en ce que le moyen de guidage comprend une oreille saillant vers l'intérieur (32) s'étendant à partir du dessous de la plaque à aiguille (28) en définissant entre la plaque à aiguille et une partie

de l'oreille une brèche (33) suffisante pour recevoir une double épaisseur du galon.

5. Vêtement tricoté fini comportant un galon de bordure à mailles cueillies plié autour d'un de ses bords et lié avec lui par une imitation d'enchaînement point par point, caractérisé en ce que le galon de bordure (1) comporte un rang (c) de mailles reportées faisant apparaître un coude longitudinal (7) qui définit l'articulation d'une ligne de pli (F-F) du galon de sorte qu'une partie marginale (6) du galon est rentrée autour de la ligne de pli (F-F) pour faire face à la bordure de vêtement extérieure, qu'une partie principale (2) du galon est repliée autour du bord de bordure du vêtement pour faire face à la bordure de vêtement intérieure, le galon ainsi plié étant cousu à points de chaînette sur la bordure suivant une ligne de couture (S-S) voisine de la ligne de pli (F-F) définie par un rang de mailles reportées (c) suivi par un rang lâche (d) du galon.

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