A protective cover for a press fabric seam of a press fabric on the roll side of the fabric. The protective cover has a first portion and a second portion. The first portion is attached to a press fabric first seam portion such that the first portion is attached to the roll side of the press fabric.
SEAM FOR PAPERMACHINE CLOTHING
CROSS-REFERENCE TO RELATED APPLICATIONS


STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not applicable.

REFERENCE TO A COMPACT DISK APPENDIX

[0003] Not applicable.

BACKGROUND OF THE INVENTION

[0004] 1. Field of the Invention
[0005] The invention relates to a fabric used in papermaking. More specifically, the present invention relates to a press felt having an improved seam and method for sewing that protects the loops from wear and abrasion on the roll side of the fabric.

[0006] 2. Description of Background
[0007] EP1127976 A2 and U.S. Pat. No. 6,712,940, are incorporated herein by reference. These patents disclose a papermachine belt having a thermoplastic composite surface, the belt is on-machine seam, and the belt is seam sealed using thermoplastic means and materials.

[0008] Various methods are known for seaming paper machine fabrics along with the use of resin materials. For example, in U.S. Pat. No. 2,151,329, a process belt has a resin coated surface. The belt is cut over the seam, and a mixture of resin and blowing agent is applied to the cut after the belt is pinned on the paper machine. Heat is then applied to activate the blowing agent to foam and fill the voids and cure the resin.

[0009] In U.S. Pat. No. 5,601,877, the belt is processed similarly to U.S. Pat. No. 2,151,329 discussed above, except the seam is impregnated with viscous paste.

[0010] In U.S. Pat. No. 4,948,646 for a seam felt, the surface of the seam flap is provided with a resilient support material to impart a compression recovered thickness equal to or greater than the rest of the felt. This is then held in place utilizing a low melt adhesive.

[0011] In U.S. Pat. No. 5,789,052 for a processing belt, the coating that is used is of a polymeric resin material. The seam is covered on the uncoated side of the belt with an encapsulating material. The encapsulating material is a paste of resin and foaming agent.

[0012] It is also known to add silicone “silastic” to the roll side of seam felts after pinning on the paper machine.

[0013] It is also known to add a polyamide resin to the seam from the sheetside after pinning on the paper machine.

[0014] In older methods, no flap is formed, rather a gap is created that must be filled with resin, foaming agent, etc., on the paper machine. It is well known that this method in practice leads to sheet marking from the seam, from, for example, uneven application of the resin paste, uneven high temperature curing on the paper machine, and/or the resin paste losing adhesion in use, and/or wearing off to create a nonuniform gap. Furthermore, the cured resin paste will not have the same smoothness and surface properties compared to the rest of the felt, both when the felt is new and when it wears, which also leads to sheet marking and sheet transfer difficulties.

[0015] There is, however, an inherent problem in that for all of the above seams, none protect the seam loop from wear and abrasion on the roll side of the fabric. Accordingly, there is a need for an apparatus and method of applying a protective measure on the roll side of the fabric.

BRIEF SUMMARY OF THE INVENTION

[0016] In current PMC press felt seams, the seam loops are not protected from wear and abrasion on the roll side of the fabric. This is a result of the needled batt being removed in order to seam the felt on the paper machine.

[0017] One objective of this invention is a protective cover that extends over the exposed seam loop while on the paper machine, protecting the seam, and more importantly, the loops, from being exposed to wear and abrasion while running on the paper machine.

[0018] To protect the seam and the loops on the papermachine roll side, a flap or protective cover is used. The flap, or protective cover, is fabricated from a solid film or a scrim type plastic material. The protective cover can be permeable or impermeable. One side of the protective cover is attached to the leading edge of the fabric on the roll side. Attachment of the protective cover to the fabric can be via an adhesive or casting.

[0019] In this manner, after a seam loop area has been created, a protective cover can be applied. When the protective cover is a strip, a first portion of the strip, for example one side edge of the strip can be needled to the batt fiber to hold the side edge of the strip to the fabric. This creates a hinge in a middle portion of the strip, and a free moving third portion, or flap of the strip. The hinge is preferably on the leading side portion of the fabric. In this manner, the third portion or flap of the strip will naturally fall into the proper position thereby protecting the loops in the seam area. The third portion or flap of the strip extends over all or part of the entire seam loop area. Preferably the flap extends at least to the portion of the seam area where the pindle is located.

[0020] In another embodiment, the first portion of the strip is attached to or incorporated into the base of the fabric, arranged so that the third portion, or flap, is exposed after the fabric is needled.

[0021] The protective cover or strip can also be formed from needled batt fibers, optionally reinforced with an adhesive resin.

[0022] In another embodiment, the first portion of the protective cover or strip can be embedded within the layers of the needled batt.

[0023] These and other features and advantages of this invention are described in or are apparent from the following detailed description of the preferred embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] The preferred embodiments of the present inventions is further described in the detailed description which follows, in reference to the noted plurality of drawings by way of non-limiting examples of exemplary embodiments of the present invention, in which like reference numerals represent similar parts throughout the several views of the drawings, and wherein:
FIG. 1 is a cross-section of a prior art paper machine fabric on-machine seam;

FIG. 2 is a cross section of a paper machine fabric with a flap attached to the roll side batt of a fabric of the present invention after the seam is complete.

**DETAILED DESCRIPTION OF THE INVENTION**

[0027] The particulars shown herein are by way of example and for purposes of illustrative discussion of the embodiments of the present invention only and are presented in the cause of providing what is believed to be the most useful and readily understood description of the principles and conceptual aspects of the present invention. In this regard, no attempt is made to show structural details of the present invention in more detail than is necessary for the fundamental understanding of the present invention, the description taken with the drawings making apparent to those skilled in the art how the several forms of the present invention may be embodied in practice.

[0028] FIG. 1 shows a cross-section of a prior art paper machine fabric 10 on-machine seam. The fabric 10 has a paper side 12 and a paper machine roll side 14. Loops 16 are interconnected such that a pintle 18 can be inserted.

[0029] Batt 20 is cut near the loops 16 on the paper side 12. On the paper machine roll side 14, the roll side batt 22 may be cut or removed from the area 24 about the loops 16, allowing the fabric 10 to be flexible in such a manner that the seam can be completed on the paper machine. This results in a void area 26 on the roll side 14 about the loops 16.

[0030] FIG. 2 is a cross section of a paper machine fabric 100 having a paper side 112 and a paper machine roll side 114. Loops 116 are interconnected such that a pintle 118 can be inserted.

[0031] Batt 120 is cut near the loops 116 on the paper side 112. On the paper machine roll side 114, the roll side batt 122 may be cut or removed from the area 124 about the loops 116, allowing the fabric 100 to be flexible in such a manner that the seam can be completed on the paper machine. This results in a void area 126 on the roll side 114 about the loops 116. A flap 128 is attached to the roll side batt 122 of a fabric of the present invention prior to seamsing. The flap 128 has an attached portion 130 and an unattached portion 132. The attached portion 130 is attached to the roll side batt 122 off centered to the side of the loops 116 of a first seam portion 140.

[0033] In the preferred embodiment, the flap 128 is approximately 0.38 mm thick polyurethane member, approximately 10 mm wide and extending across the entire width of the press fabric 100. The flap 128 is positioned with a first edge, or the attached portion 130, is approximately 4 mm in front of the seam loops on the leading edge of the roll side 114 of the fabric 100. This first edge 130 is “thermo-bonded” and thereby securely bonded into the felt structure with minimal calliper addition. The second edge of the member, or the unattached portion 132, extends over and past the loops, thereby protecting the loop yams from wear and abrasion.

[0034] It should be noted that the unattached portion 132 is not required to extend put the loops, rather depending on the application, can be adjusted to cover a predetermined portion of the seam loop area 124, ranging from partially covering the loops to extending fully across the seam loop area 124 and beyond.

[0035] The flap or protective cover 128 is fabricated from a solid film or a scrim type plastic material. The flap 128 can be permeable or impermeable. One side of the flap is attached to the leading edge of the fabric on the rollside. Attachment of the flap to the fabric can be via an adhesive or casting.

[0036] In this manner, after a seam loop area 124 has been created, a protective cover or flap 128 can be applied.

[0037] In a second embodiment, the protective cover or flap 128 is a strip, and one side edge of the strip 130 is needle to the batt fiber to hold the side edge of the strip to the fabric 100. This creates a hinge 134. The hinge 134 is preferably on the leading side edge of the fabric. In this manner, the protective strip will naturally fall into the proper position thereby protecting the seam area.

[0038] While the present invention has been particularly shown and described with reference to the foregoing preferred embodiments, those skilled in the art will understand that many variations may be made therein without departing from the spirit and scope of the invention as defined in the following claims. This description of the invention should be understood to include all novel and non-obvious combinations of elements described herein, and claims may be presented in this or a later application to any novel and non-obvious combination of these elements. The foregoing embodiments are illustrative, and no single feature or element is essential to all possible combinations that may be claimed in this or a later application. Where the claims recite “a” or “a first” element or the equivalent thereof, such claims should be understood to include incorporation of one or more such elements, neither requiring nor excluding two or more such elements.

What is claimed as new and desired to be protected by Letters Patent of the United States is:

1. A protective cover for a press fabric seam, comprising:
   a press fabric having a paper side and a roll side;
   a protective cover, the protective cover having a first portion and a second portion;
   wherein the first portion is attached to a press fabric first seam portion; and
   wherein the first seam portion is attached to the roll side of the press fabric.

2. The protective cover of claim 1, the press fabric having seam loops, wherein the first portion is attached to the first seam portion off center of the seam loops.

3. The protective cover of claim 2, wherein the first portion is attached approximately 4 mm in front of the seam loops.

4. The protective cover of claim 2, wherein the second portion extends over a first portion of a seam loop area.

5. The protective cover of claim 1, wherein the protective cover is at least one of a scrim, a solid film, a plastic material, a woven material, and a non-woven material.

6. The plastic cover of claim 1, wherein the protective cover is permeable or impermeable.

7. The protective cover of claim 1, wherein the first portion is attached to the first seam portion.

8. The protective cover of claim 7, wherein the first portion is attached to the first seam portion by at least one of needling and adhesive.

9. The protective cover of claim 1, wherein the second portion is hinged to the first portion.
10. The protective cover of claim 9, wherein the hinge is on the leading side of the fabric.

11. A method of applying a protective cover to a seam in a press fabric, comprising the steps of:
   attaching a protective cover first portion to a press fabric first seam portion;
   wherein the first seam portion is on a leading edge of the press fabric, and
   wherein the protective cover first portion is attached to a roll side of the press fabric.

12. The method of claim 11, wherein the first portion is attached to the first seam portion using at least one of needling and an adhesive.

13. The method of claim 11, the press fabric having seam loops, wherein the first portion is attached to the first seam portion off center of the seam loops.

14. The method of claim 13, wherein the first portion is attached approximately 4 mm in front of the seam loops.

15. The method of claim 13, the protective cover further comprising a second portion, wherein the second portion extends over the seam loops.

16. The method of claim 11, wherein the protective cover is at least one of a scrim, a solid film, a plastic material, a woven material, and a non-woven material.

17. The method of claim 11, wherein the protective cover is permeable or impermeable.

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