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2,925,832

SATIN WEAVE WITH TWILL EFFECT

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FIG. 1.

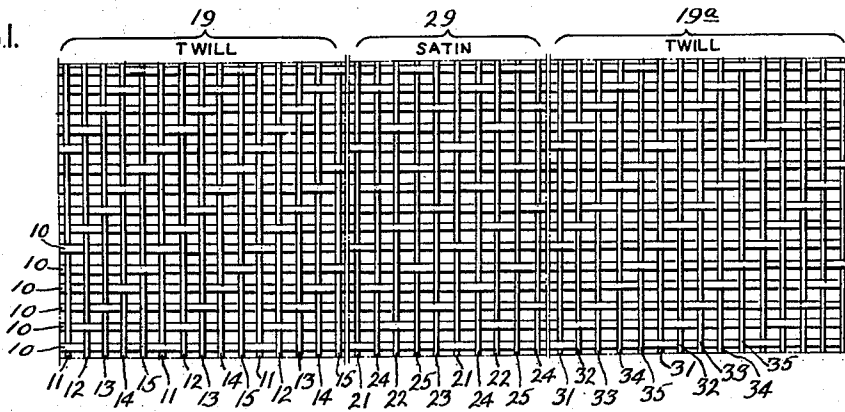


FIG. 2.

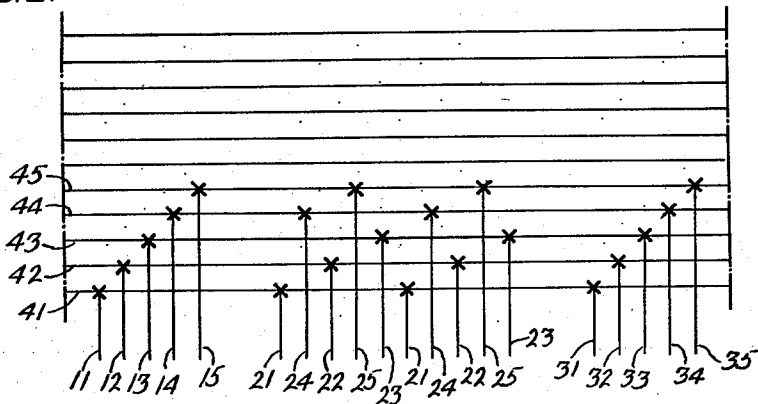


FIG. 3.

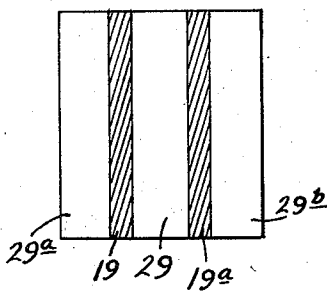


FIG. 4.

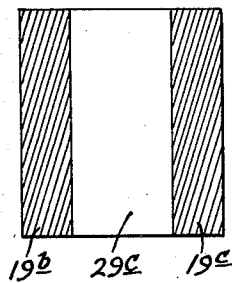
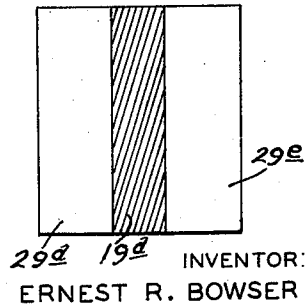


FIG. 5.



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SATIN WEAVE WITH TWILL EFFECT

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5 Claims. (Cl. 139—55)

The present invention relates to a novel method of obtaining desirable weave characteristics in a woven fabric, and has particular application to ribbons and other narrow fabrics.

Ribbons and other narrow fabrics are normally woven with a uniform weave across their width, usually a satin weave, and are bordered with a suitable selvage weave. The body of the ribbon is conventionally woven on five harnesses and the selvage weave is woven on six additional harnesses. Due to the limitations of the narrow fabric loom, additional harnesses are not available to produce variations in the weave in the body of the fabric.

With the foregoing in mind, a primary object of the present invention is to provide a variation in the weave in the body of the fabric while employing the same number of harnesses.

More specifically, the invention contemplates a narrow fabric in which the body of the fabric is woven on five harnesses controlled to produce a 5-end satin weave. A selected portion of the warp is threaded in the harnesses to produce a 5-end satin with a base of three, whereas another portion of the warp is threaded in the harnesses to produce a right-hand 4/1 twill.

All of the objects of the invention and the various details of the construction of the fabric and the performance of the method of the invention are more fully set forth hereinafter with reference to the accompanying drawing wherein:

Fig. 1 is an enlarged and opened-out plan view of a fabric made in accordance with the present invention, opened-out about five times as much weftwise as warpwise;

Fig. 2 is a draw diagram for the fabric shown in Fig. 1; and

Figs. 3, 4 and 5 are schematic representations of various effects possible within the scope of the invention.

Before proceeding with the description, it is noted that in the illustration in Fig. 1, there are substantial openings between the warps and wefts of the fabric shown. In practice, the warps are woven contiguous in continuing parallel side-by-side relation, and the wefts are likewise contiguous in continuing parallel side-by-side relation. Furthermore, the illustration is fragmentary in that the various warpwise strips extend weftwise for more than the number of repeats shown, and in the actual fabric, the side edges of the fabric have a selvage.

Referring now to Fig. 1, the portion of the fabric illustrated therein comprises a warpwise strip 19 of a twill weave construction, a central warpwise strip 29 of satin weave construction, and at the other side, a second warpwise strip 19a of twill weave construction.

It is noted that throughout the illustrated portion of the fabric, each warp floats over four wefts and is tied under the fifth weft. In the strip 19 of the fabric, the first warp 11 is tied under a first weft 10 and floats over the next four wefts 10 at each side of the tying-in weft. The warp 12 is tied under the second weft 10 and floats

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over the four wefts 10 on either side of the tying-in weft. The warp 13 is tied under the third weft 10 and floats over the four adjacent wefts on either side of the tying-in weft. The fourth warp 14 is tied-in under the fourth weft shot 10 and floats over the four adjacent weft shots on either side of the tying-in weft shot. The fifth warp 15 is tied under the fifth weft 10 and floats over the four weft shots on either side of the tying-in weft shots. Thus, the tying-in points for the warps 11 to 15 inclusive are disposed in a straight line, being offset by one weft shot in adjacent warps.

The weave in the strip 19 is a 4/1 right-hand twill which produces definite angled lines in the section 19 as shown in Fig. 3. In the satin strip 29, the first warp 21 acts identically to the warp 11. The second warp 24 acts identically to the warp 14; the third warp 22 operates identically to the warp 12; the fourth warp 25 operates identically to the warp 15, and the fifth warp 23 operates identically to the warp 13. This produces a 5-end satin weave with a base of three and in the fabric, exhibits a generally smooth appearance free of the angled twill lines which are present in the sections 19 and 19a. The twill strip 19a is formed by warps 31-35 which are arranged and act identically to the warps 11-15.

In accordance with the invention, the warps in the twill strips 19 and 19a are strung in five harnesses designated respectively 41, 42, 43, 44, and 45 in Fig. 2. The remaining harnesses are employed to weave the selvage of the cloth. Since the warps in the section 29 operate identically to the warps in the sections 19 and 19a, they are strung in the same harnesses. As shown in Fig. 2, the warps 21 are strung in the harness 41, the warps 24 are strung in the harness 44, the warps 22 are strung in the harness 42, the warps 25 are strung in the harness 45, and the warps 23 are strung in the harness 43. By reason of this construction, and the stringing of the warps as indicated, the weave produced by the present invention exhibits warpwise strips having twill characteristics in addition to warpwise strips having satin characteristics.

In the weaving process, each harness is raised over four successive picks and is lowered under the fifth pick. Each harness is lowered under a different pick, and in the present instance, the lowering of the harnesses is performed in regular sequence. The operation of the loom in this manner thereby produces a fabric, the body of which is composed of strips having different weave characteristics, but woven on the same harnesses.

Many interesting weave effects may be obtained by the method of the present invention. For example, Fig. 3 shows a weave having satin strips 29, 29a, and 29b respectively separated by twill strips 19 and 19a. Fig. 4 shows a weave having a single satin strip 29c and a pair of twill strips 19b and 19c on opposite sides thereof. Fig. 5 shows a reverse arrangement having a single twill strip 19d bordered by satin strips 29d and 29e.

In the illustrated embodiments, the satin weave is a five-end satin with a base of three. It is possible to use more or less hardnesses to increase or decrease the number of ends in the satin weave, and by proper selection for the threading-in of the warps in the satin strip, the base of the satin weave may be changed. In similar manner, the twills have been illustrated as 4/1 twill. Other twills in which the warp is tied-under a single weft after a warpwise float may be produced in conjunction with other satin weaves as noted above.

In the illustrated draw diagram, the twill ends are drawn in a straight draw and the harnesses are controlled to weave a twill. This procedure is preferred when the twill ends outnumber the satin ends. In the fabrics where the satin ends outnumber the twill ends, it is preferred to draw the satin ends in a straight draw

and control the harnesses to weave a satin. With reference to Fig. 2, it is noted that if the harnesses are controlled to weave satin on a straight draw, the ends 11-15 will weave satin and the ends 21-25 will weave a 4/1 left-hand twill.

As an example of a specific fabric composition, a rayon fabric might embody warps of seventy-five denier, wefts of one hundred fifty denier, and the construction would embody approximately two hundred forty ends per inch and sixty picks per inch. A fabric employing nylon yarn would embody a seventy denier warp and two hundred denier filling and the construction would be identical to the rayon construction as to picks and ends per inch.

By using a heavier denier in the filling, the twill effect may be made more pronounced.

While particular embodiments of the present invention have been herein illustrated and described and specific examples given, it is not intended to limit the invention to such disclosure, but changes and modifications may be made therein and thereto within the scope of the following claims:

I claim:

1. The method of producing a fabric having at least two warpwise strips therein, one of said strips embodying a twill weave and the other of said strips embodying a satin weave, comprising the steps of controlling a given number of harnesses of a loom to weave over a plurality of picks and under a single pick in each warpwise repeat embodying said given number of picks, each harness

weaving under a different pick in said repeat, threading the warps of said twill strip into said harnesses in a sequence so as to form a twill weave exhibiting diagonal stripes, and threading the warps of said satin strip into said harnesses in a different sequence so as to produce a satin weave having no apparent stripes therein.

2. The method according to claim 1 wherein said given number is five, said harnesses weaving over four picks, and wherein further said warps of the twill strip are threaded to produce a 4/1 twill, and said warps of the satin strip are threaded to produce a five-end satin weave.

3. The method according to claim 1 wherein said fabric has at least three strips including the step of threading the warps of said strips to provide a central strip of one weave and strips of the other weave on opposite sides of said central strip.

4. The method according to claim 1 wherein said fabric has at least five strips including the step of threading the warps of said strips to provide a central strip and two side strips of one weave, and a strip of the other weave between said central strip and each side strip.

5. The method according to claim 1 including the step of interweaving with said warps picks having twice the size of the warps to produce a fabric having substantially more ends per inch than picks per inch.

References Cited in the file of this patent

Handbook of Weaves by Oelsner, The Macmillan Company, 1915, pages 324 and 328 required.