W. SCHNEIDER.

METHOD OF PRODUCING DESIGNS UPON PILE FABRICS.

APPLICATION FILED OCT. 29, 1914.

1,248,727.

Patented Dec. 4, 1917.

2 SHEETS—SHEET 1.

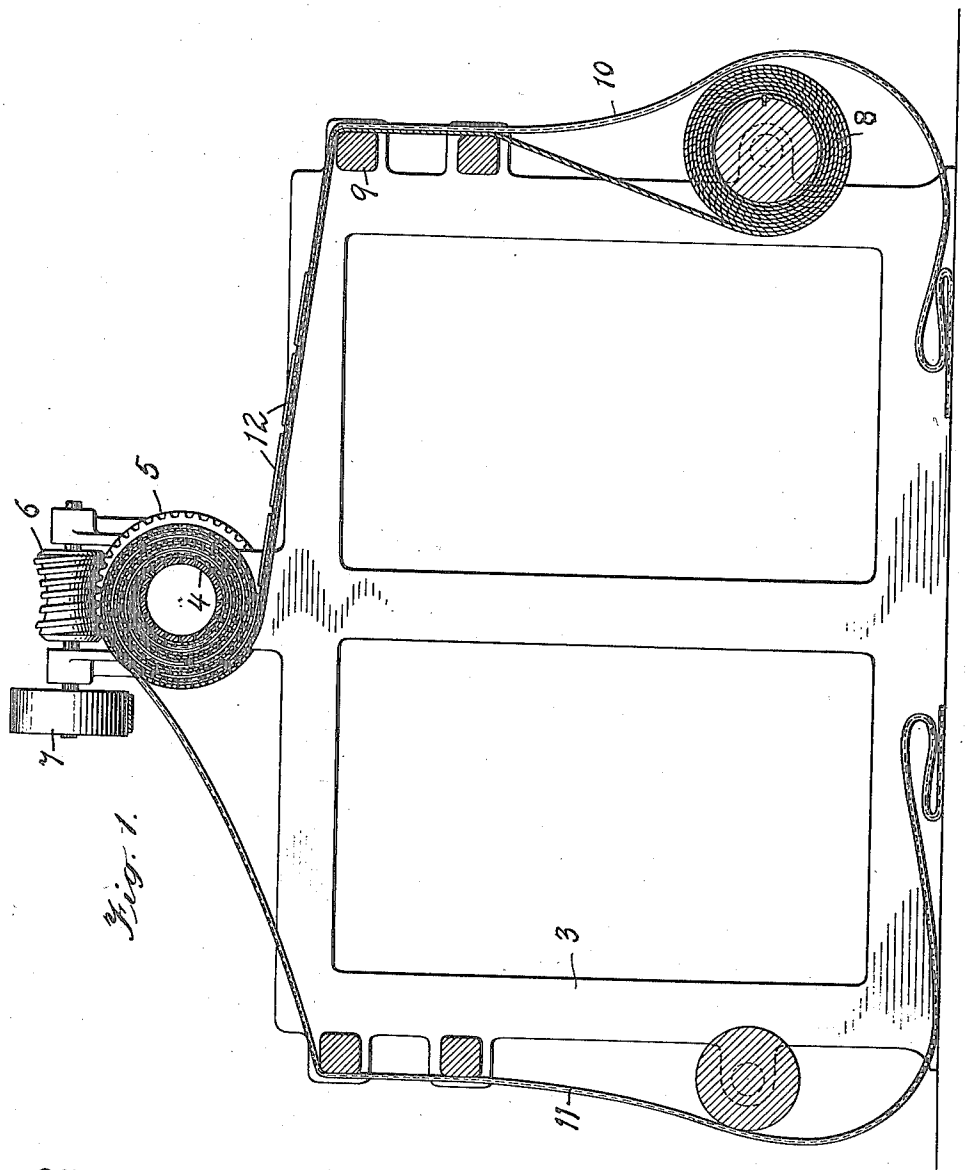


Fig. 1.

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Fig. 2.

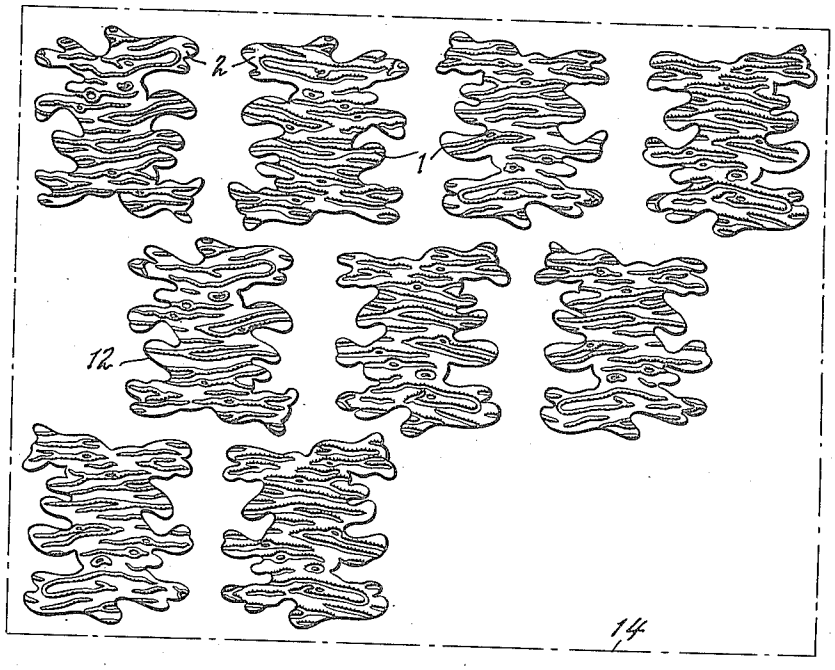


Fig. 3.

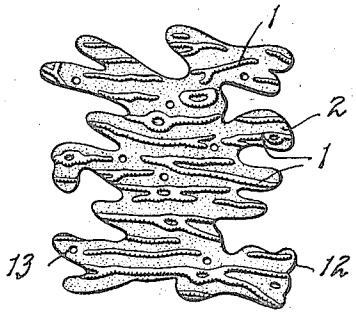
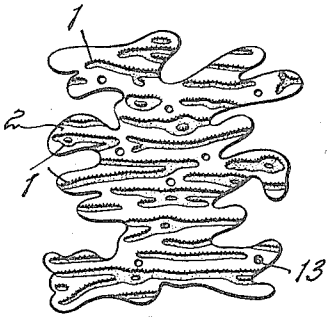


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLY SCHNEIDER, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE SALT'S TEXTILE MANUFACTURING COMPANY, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF CONNECTICUT.

METHOD OF PRODUCING DESIGNS UPON PILE FABRICS.

1,248,727. Specification of Letters Patent. Patented Dec. 4, 1917.

Original application filed May 8, 1914, Serial No. 837,255. Divided and this application filed October 29, 1914. Serial No. 869,217.

To all whom it may concern:

Be it known that I, WILLY SCHNEIDER, a subject of the Emperor of Germany, residing in the city of Bridgeport, county of Fairfield, and State of Connecticut, have invented certain new and useful Improvements in Methods of Producing Designs upon Pile Fabrics, of which the following is a specification.

The present application is a division of my application Serial No. 837,255, filed May 8, 1914, and relates to a method of producing ground effects or designs upon pile fabrics by which I am enabled to produce a fabric in close imitation of a natural skin with its various shades of light and dark ground.

The invention will be understood by reference to the following description taken in connection with the accompanying drawings in which Figure 1 is a vertical section through a machine for winding the fabrics upon which the design or pattern is to be produced; Fig. 2 a group of design pieces to show the manner of placing them to produce the desired design; and Figs. 3 and 4 obverse and reverse sides, respectively, of the same design piece.

Coiled and twisted rubber in the shape of mat-like pieces have been used heretofore, but these are expensive to make and soon lose their original consistency and shape because of the heat to which they are subjected. Also being devoid of sharp edges the design or pattern is not well defined, and, because of the material used in their manufacture, and of the manner of making them, the designs on the two sides of the mat are not substantially similar. Other mats have been made of string coiled and formed in like manner to the rubber, and paper has been tried, but the objections to both of these are many and obvious. They are easily deformed by the action of the moisture and heat to which the fabric is subjected, and, like the rubber mats, have the same design or pattern on both sides. Moreover the effect produced upon the fabric is unsubstantial and in many instances barely perceptible.

In my former application, Serial No. 837,255, I have described a die or design piece made of material which is practically indestructible and which will retain its original configuration under the conditions of heat and moisture to which it is subjected after being rolled with the pile fabric. Also one which is non-compressible and flexible so that it may readily adapt itself to the curvature of the roll, and which will produce the same design, without distortion, upon all the convolutions of the roll. One form of design piece, shown in Figs. 2, 3 and 4, is made of sheet metal, preferably sheet brass, the blanks of which may be cut by hand or by machine, and they may be of the same or of different outline. The dies or design pieces are made from the blank by passing them between engraved male and female rolls, or by stamping with male and female dies. The design pieces so made are practically indestructible, inexpensive, and capable of extreme variability of design, and they produce in the fabric a sharp and well defined design. I have shown, in Figs. 3 and 4, the obverse and reverse sides respectively of such a design piece. In both figures the countersunk or intaglio portions are stippled. Thus in Fig. 3 the projecting or relief sections 1 of the design piece are the countersunk or intaglio portions on the reverse side shown in Fig. 4. So also the countersunk portions 2 of Fig. 3 appear as the relief portions of Fig. 4. The edges of the design are relatively sharp and well defined and in practice have proved their utility and superiority over rubber and other forms of so-called embossing mats heretofore used. With such design pieces the design on the fabric is produced, not only by the relief and countersunk portions but by the outline or configuration of the piece.

The manner of using the design pieces to produce novel pattern or design effects upon a pile fabric will be understood by reference to Fig. 1 in which the numeral 3 designates the frame of a machine in which is mounted a perforated metal mandrel 4 rotated by suitable means such as a worm wheel 5 driven by a worm 6 on the shaft of pulley 7. At one end, and near the base of the frame, is mounted a roll 8 of canvas or like material, one end of which roll is car-

ried up over the bar 9 and thence forward to the mandrel to which it is secured. This canvas strip is stretched tight and is unrolled only when subjected to a considerable pulling force. It serves as a base or support upon which is laid the strip of pile fabric to be treated, said piece or strip 10 being fed in between the canvas strip and the mandrel with its finished or pile face up. As the rolling progresses the design pieces are placed upon the surface of the pile fabric, the pressure due to the winding of the strip into a tight compact roll causing the design pieces to be pressed into the pile, the impression or design being subsequently fixed by steaming the roll.

If a design piece of the kind described is used it is possible to treat two pieces or strips of pile fabric at the same time. In such practice the second piece 11 is brought up from the opposite end of the frame, as shown, and carried over the mandrel and thence fed, with its finished face down, between the piece 10 and the mandrel, so that the two finished faces are together at the point of winding. The canvas strip and the two pile fabrics being thus started, the operator places the design pieces upon strip 10 in the same manner as when using only a single strip of pile fabric. The design pieces may be placed somewhat as shown in Fig. 2, whether one pile fabric or two are being treated, so as to substantially cover the face of the fabric or so much thereof as is desired to be treated. The rolling up on the mandrel is continued until the mandrel is built up, the operator placing the design pieces as the winding progresses. When treating only one pile fabric the layers or convolutions on the mandrel are made up of the canvas strip and the pile fabric. When two strips of pile fabric are being treated there will be the additional piece, and between the pile fabrics, the design pieces 12, as indicated in Fig. 1, all being wound into a tight compact roll.

The pile fabrics upon which the designs are to be impressed are in a dry condition when wound upon the mandrel and the pressure to which they are subjected causes the projecting or relief portions of the design to sink into both pieces. Thus, if the design piece of Figs. 3 and 4 is placed on the strip 10 with its obverse side upward, the reverse side, shown in Fig. 4, will be in contact with the strip 10 and the obverse side in contact with the strip 11. By placing the piece so that obverse and reverse sides are alternately up, in rows transversely of the piece 10, a uniformity of effect will be produced in the two fabrics. This capability of reversing the design pieces and so producing similar effects in two strips at one operation has not been accomplished heretofore, so far as known to me. It also permits of a much greater variability of design, and more natural effects than can be produced by any of the methods heretofore used. This results from one side of the design piece leaving an impression which is clean cut and sharply defined, while the other side leaves somewhat of a blunt impression.

When the winding is completed, whether a single strip of pile fabric is treated, or whether two strips are treated, the roll is removed from the frame and placed in a steamer for a sufficient length of time, and pressure of steam, to fix the impressions or designs made in the pile by the design pieces. The roll is then removed from the steamer, cooled and unwound, when the canvas and design pieces are ready for further use.

During the rolling up process, the design pieces being flexible, readily conform to the curvature of the convolutions of the roll, without any distortion of the pieces. They are also unaffected by the heat and moisture to which the roll is subjected in the steamer, and retain their original size and configuration.

Fabrics treated in the manner described can be made attractive in design and in close imitation of the natural skins, and a further distinct advantage is, that the design is firmly fixed or set and is held after long continued wear and is not distorted or affected by weather conditions. When using an embossed design piece a distinct advantage, from a manufacturing standpoint, is that two pieces of goods may be operated upon at the same time, as each design piece makes an impression upon the lower as well as the upper piece of goods, an impression by the obverse side on one piece, and by the reverse side on the other piece. The lobes or lateral extensions of the design pieces may be made so as to produce any desired design or effect.

If desired, the design pieces may be perforated in several places, as indicated at 13 in Figs. 3 and 4, to permit the escape of steam therethrough. Also instead of an operator placing the design pieces in position on the lower piece of goods during the winding operation, they may be fastened as shown in Fig. 2 to a blanket 14 as done heretofore with mats made of strings. This saves the work of placing the design pieces by hand with each new roll. Such blanket is to be used only when treating a single strip of pile fabric, such single strip being fed to the mandrel with its pile face down as described with reference to the strip 11 of Fig. 1.

An additional advantage connected with my invention is that a series of design pieces may be made similar, both as to outline and as to surfaces, such design pieces producing on the face of a pile fabric a uniform figure

or design. Such design pieces are not only non-compressible but are of a permanent shape, having the advantages above described.

Being the first as I believe, to produce a pattern or design upon pile fabrics by the use of non-compressible design pieces, I desire to claim the same broadly without reference to the particular material of which the design pieces are made. I also desire to claim without reference to specific means for accomplishing the result, the use of a series of non-compressible design pieces similar as to outline and surfaces whereby a uniform figure or design may be produced.

What I claim and desire to secure by Letters Patent of the United States is:—

1. The method of producing designs upon a pile fabric consisting in impressing non-compressible design pieces upon the pile surface to be acted on, and then fixing the design or impression made by said pieces.

2. The method of producing designs upon a pile fabric consisting in rolling under longitudinal tension a strip of pile fabric, placing thereon non-compressible design pieces as the rolling progresses, and then subjecting the roll to the action of steam.

3. The method of producing designs upon a pile fabric consisting in placing non-compressible design pieces upon the pile surface to be acted on, and subjecting said elements to pressure and to the action of steam.

4. The method of producing designs upon a pile fabric consisting in placing non-compressible design pieces upon the pile surface to be acted on, winding the fabric with the design pieces thereon into a roll, and then steaming the roll.

5. The method of producing designs upon a pile fabric consisting in placing metal design pieces upon the pile surface to be acted on, winding the fabric with the design pieces thereon into a roll, and then steaming the roll.

6. The method of producing designs upon a pile fabric consisting in placing upon the pile surface to be acted on design pieces which are practically indestructible and which will retain their original configuration under conditions of heat and moisture to which the fabric is subjected, winding the fabric with such design pieces into a roll, and then fixing the impression or design made in the fabric.

7. The method of producing designs upon a pile fabric consisting in placing non-compressible and flexible design pieces upon the pile surface to be acted on, winding the fabric with such design pieces into a roll, and then steaming the roll.

8. The method of producing designs upon a pile fabric consisting in placing non-compressible design pieces upon the pile surface to be acted on, supporting the pile fabric and said design pieces between porous fabric, under pressure, and then steaming the elements so arranged.

9. The method of producing designs upon a pile fabric consisting in rolling under longitudinal tension a strip of pile fabric with an interposed porous fabric between the convolutions of the roll, placing thereon non-compressible design pieces as the rolling progresses, and then subjecting the roll so prepared to the action of steam.

10. The method of producing designs upon pile fabrics consisting in placing design pieces between pile fabrics, under pressure, and then fixing the design or pattern, produced by said pieces, in the fabrics.

11. The method of producing designs upon pile fabrics consisting in placing design pieces between two pile fabrics, under pressure, and then subjecting the fabrics to the action of steam thereby producing designs on each fabric simultaneously.

12. The method of producing a design upon a pile fabric consisting in pressing a non-compressible design piece into the pile, and then fixing the design or impression so made.

13. The method of producing a design upon a pile fabric consisting in rolling the fabric with non-compressible design pieces in contact with the pile surface, and then fixing the designs or impressions so made.

14. The method of producing designs upon pile fabrics consisting in rolling under longitudinal tension two strips of pile fabric, placing design pieces between said strips as the rolling progresses, and then subjecting the fabrics to the action of steam.

15. The method of producing designs upon pile fabrics consisting in rolling design pieces between two strips of goods while in a dry condition and then subjecting the roll to the action of steam to fix the impressions made by the design pieces, upon each fabric simultaneously.

16. The method of producing designs upon pile fabrics consisting in rolling metal design pieces between two strips of goods and then subjecting the roll to the action of steam to fix the impressions made by the design pieces.

17. The method of producing designs upon a pile fabric consisting in impressing upon the face of the fabric a series of similar design pieces to produce on the fabric a uniform figure or design.

18. The method of producing designs upon a pile fabric consisting in impressing upon the face of the fabric a series of similar non-compressible design pieces to produce on the fabric a uniform figure or design.

19. The method of producing designs upon a pile fabric consisting in impressing upon the face of the fabric a series of

flexible non-compressible design pieces to produce on the fabric a uniform figure or design.

20. The method of producing designs upon a pile fabric consisting in impressing upon the face of the fabric a series of similar non-compressible design pieces, and then fixing the design or impression so made.

21. The method of producing designs upon a pile fabric consisting in placing similar design pieces upon the pile surface, subjecting the same to pressure to produce a uniform figure or design, and then fixing the figure or design so made.

22. The method of producing designs upon a pile fabric consisting in impressing upon the face of the fabric a series of similar non-compressible design pieces, and then steaming the fabric to fix the figure or design so made.

23. The method of producing designs upon a pile fabric consisting in placing similar design pieces upon the pile surface, subjecting the same to pressure to produce a uniform figure or design, and then steaming the fabric to fix the figure or design so made.

24. The method of producing designs upon a pile fabric consisting in impressing upon the face of the fabric a series of similar permanently shaped design pieces to produce a uniform figure or design, and then fixing the figure or design so made.

25. The method of producing designs upon a pile fabric consisting in impressing upon the face of the fabric a series of similar permanently shaped design pieces to produce a uniform figure or design, and then steaming the fabric to fix the figure or design so made.

26. The method herein set forth of producing a pattern on fabrics which consists of arranging two portions of fabric opposed and placing between them a double faced pattern bearing member and submitting the whole to pressure as and for the purpose set forth.

27. The method herein described of producing a pattern upon fabrics which consists of arranging two portions of fabric with the finished faces opposed and placing between them a double faced pattern bearing and producing means, and submitting the whole to pressure and heat as and for the purpose set forth.

28. The method herein described of producing a pattern upon fabrics which consists of arranging two portions of fabric with their outer faces opposed and placing between them a pattern bearing and producing means having similar pattern upon each of its sides, moistening, and subsequently presenting the whole to pressure and heat as and for the purpose set forth.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

WILLY SCHNEIDER.

Witnesses:
ARTHUR E. PITT,
A. OAKLEY.