



US 20040020596A1

(19) **United States**  
(12) **Patent Application Publication** (10) **Pub. No.: US 2004/0020596 A1**  
**Blumenthal** (43) **Pub. Date: Feb. 5, 2004**

(54) **METHOD OF MAKING AN EMBLEM**

**Related U.S. Application Data**

(75) Inventor: **Robert Blumenthal**, Philadelphia, PA  
(US)

(62) Division of application No. 09/579,171, filed on May  
25, 2000, now Pat. No. 6,653,249.

Correspondence Address:

**AKIN GUMP STRAUSS HAUER & FELD  
L.L.P.  
ONE COMMERCE SQUARE  
2005 MARKET STREET, SUITE 2200  
PHILADELPHIA, PA 19103-7013 (US)**

**Publication Classification**

(51) **Int. Cl.<sup>7</sup>** ..... **B29C 65/00**

(52) **U.S. Cl.** ..... **156/285**

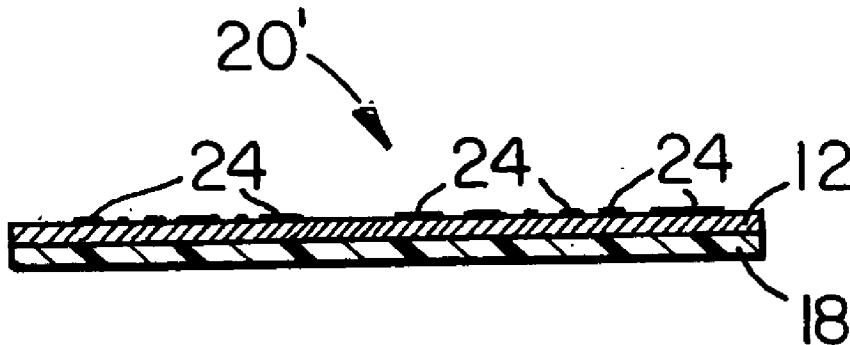
(57) **ABSTRACT**

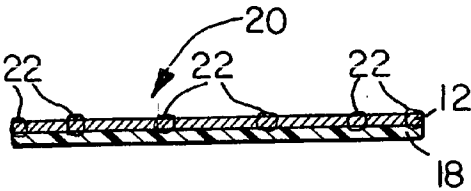
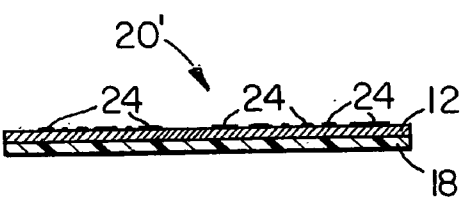
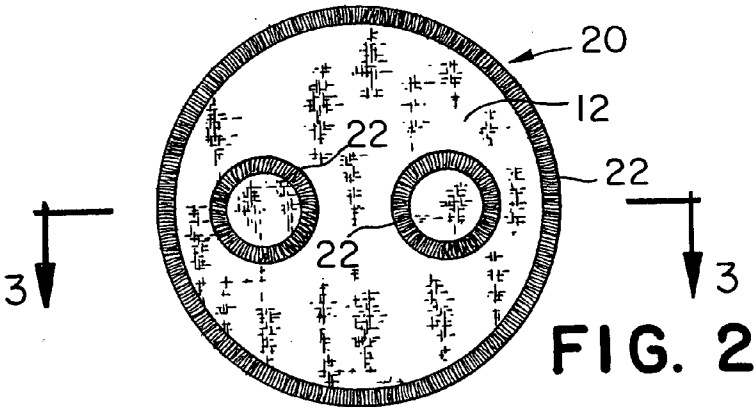
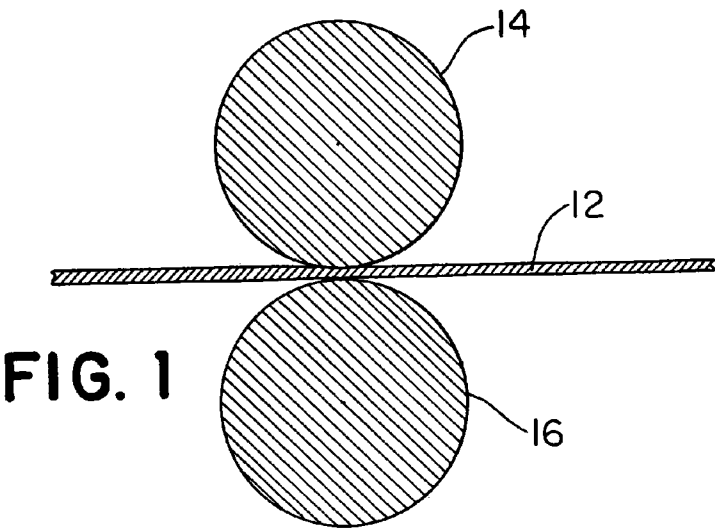
A method of making an emblem comprises the steps of  
providing a fabric layer; subjecting the fabric layer to a  
calendering process comprising the application of heat and  
pressure; applying a pattern on the first surface of the fabric  
layer; and bonding a second layer of thermoplastic adhesive  
material to a second surface of the fabric layer.

(73) Assignee: **Penn Emblem Corporation**

(21) Appl. No.: **10/629,001**

(22) Filed: **Jul. 28, 2003**





## METHOD OF MAKING AN EMBLEM

### CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a division of and claims benefit of U.S. patent application Ser. No. 09/579,171, "Emblem Having Calendered Fabric Layer", filed May 25, 2000.

### BACKGROUND OF THE INVENTION

[0002] The present invention relates to an emblem and a method of making an emblem and, in particular, an emblem and a method of making an emblem from a fabric layer which has been deformed by a calendering process.

[0003] In general, emblems and methods for making emblems are well known in the art. A particular embroidered emblem and method of making the embroidered emblem is disclosed in U.S. Pat. Nos. 3,657,060 and 3,816,211 which are owned by the assignee of the present application. These two patents disclose an embroidered emblem which comprises a fabric base with an embroidered design on a first principal surface of the fabric base and a thermoplastic material laminated on the second principal surface of the fabric base. In this manner, the emblem can be conveniently fastened to a garment or other surface through the application of heat and pressure to melt the thermoplastic material and thereby bond the fabric base to the garment or other surface. A similar emblem and method is disclosed in U.S. Pat. No. 4,981,742. The subject matter of each of the three above-mentioned patents is hereby incorporated by reference into the present application.

[0004] While the emblems disclosed in the three above-mentioned patents are quite acceptable and while the methods disclosed in the patents are quite useful in manufacturing such emblems, there is a need in the art for an emblem which provides an enhanced appearance as well as enhanced performance as well as enhanced performance characteristics.

[0005] Calendering is a mechanical process which is generally well known in the fabric arts and is used to finish or impart certain special effects, such as high luster, glazing, moiré and embossing effects to existing fabrics. More particularly, calendering involves the application of pressure, either alone or in combination with heat, to an existing fabric to effectively compress the fibers of the fabric to produce the desired special effect. U.S. Pat. No. 4,262,397 discloses a method for calendering tubular knitted fabric to smooth and stabilize the fabric. U.S. Pat. No. 4,084,026 discloses a calendering process for embossing designs on fabrics used as blankets, bedspreads and the like. Although, the calendering process has been used in the fabric industry for creating certain special surface effects on fabrics, the calendering process has not been used to date in connection with the production of emblems. It has been found that by applying calendering to the base fabric used in making emblems, the resulting emblem includes a high luster which enhances the appearance of the emblem. In addition, calendering the base fabric improves the performance of some emblems. For example, with emblems in which the pattern is sublimated, the color of the sublimated ink is retained longer and in better condition with a calendered fabric base. With respect to a screen printed emblem, the printing holds

up better to repeated industrial laundering if the fabric base is subjected to a calendering process.

### BRIEF SUMMARY OF THE INVENTION

[0006] Briefly stated, the present invention comprises a method of making an emblem, including the steps of providing a fabric layer; subjecting the fabric layer to a calendering process comprising the application of heat and pressure; applying a pattern on the first surface of the fabric layer; and bonding a second layer of thermoplastic adhesive material to a second surface of the fabric layer.

### BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

[0007] The foregoing summary, as well as the following detailed description of preferred embodiments of the invention will be better understood when read in conjunction with the appended drawing. For the purpose of illustrating the invention, there are shown in the drawing, embodiments which are presently preferred. It should be understood, however, that the present invention is not limited to the precise arrangements and instrumentalities shown. In the drawing:

[0008] **FIG. 1** is a schematic representation of the application of a calendering process to a base fabric used in producing an emblem;

[0009] **FIG. 2** is a top plan view of an embroidered emblem in accordance with a first preferred embodiment of the present invention;

[0010] **FIG. 3** is a sectional view taken along line 3-3 of **FIG. 2**; and

[0011] **FIG. 4** is a sectional view of a second preferred embodiment of a nonembroidered emblem in accordance with the present invention.

### DETAILED DESCRIPTION OF THE INVENTION

[0012] As described above, the present invention comprises a method of making an emblem of the type which includes a base formed of a first layer of fabric. Emblems in accordance with the present invention are substantially the same as existing, prior art emblems with one notable exception. That exception is that the fabric layer, which is employed for producing emblems in accordance with the present invention is initially subjected to a calendering process prior to the production of the emblem. The calendering process provides a desirable surface effect to the fabric layer which results in an emblem with an enhanced appearance once the emblem making process has been completed. In addition, subjecting the fabric to a calendering process results in emblems which exhibit enhanced performance characteristics including the enhanced ability to maintain color and/or print quality despite the emblems being subjected to industrial laundering.

[0013] Referring to the drawing, wherein the same reference numerals are used to indicate the same components throughout the several figures, there is shown in **FIG. 1** a schematic representation of a calendering process being applied to a fabric **12** in accordance with the present invention. Preferably, the fabric **12** is a woven textile fabric which may be

made from any type of natural or synthetic textile material using techniques which are well known to those skilled in the art. More preferably, the fabric **12** is a woven polyester, woven cotton or a combination thereof. Presently preferred fabrics include, 100% polyester, 100% cotton or polyester-cotton blends of about 65% polyester and about 35% cotton. It will be appreciated by those of ordinary skill in the art that while certain fabrics as described above are preferred, virtually any suitable woven fabric may be employed. If desired, the fabric **12** may be coated or impregnated with one or more soil resisting or stain repellent treatments. In addition, the fabric **12** may be colored using textile dyes of a type well known to those of ordinary skill in the art.

**[0014]** As illustrated schematically in **FIG. 1**, the calendering process involves the application of pressure and heat to the fabric layer **12**. In particular, a pair of rollers **14, 16** are employed for applying the pressure and heat to the fabric layer **12**. Preferably, the rollers **14, 16** are made of a high strength material such as steel and are arranged to apply the desired amount of pressure and/or heat to the fabric layer **12**. Preferably, the pressure which is applied to the fabric layer **12** is in the range of 300 to 450 lbs. per linear inch and, more preferably, is in the range of 375 to 425 lbs. per linear inch. At least one of the rollers, preferably the upper roller **14** is heated to the desired temperature to simultaneously apply heat to the fabric layer **12**. In the present embodiment, the desired temperature is in the range of 370° to 420° F. and more preferably is in the range of 390° to 400° F. The manner in which the rollers **14, 16** are constructed, the techniques employed for causing the rollers **14, 16** to rotate and the manner in which the upper roller **14** is heated are well known to those of ordinary skill in the calendering art and need not be described herein for a complete understanding of the present invention. The application of heat and pressure by the rollers **14, 16** results in the fabric layer **12** being compressed and deformed to a flat, generally even surface with a high luster. The heat and pressure which is applied to the fabric **12** is sufficient so that the fabric **12** does not fully recover and, therefore, retains the flat, generally even surface, high luster features. If desired, the lower roller **16** may be unheated or may be heated to a lower temperature than the temperature to which the upper roller **14** is heated. The combination of the application of heat and pressure causes individual fibers within the fabric to melt and flow, such that the fibers are flattened and the surface facing the heated roller **14** is left with a high luster.

**[0015]** Once the calendering process has been completed the resulting flattened high luster fabric **12** is employed for completion of the emblem making process in a manner as described in connection with the above-referenced patents. **FIGS. 2 and 3** illustrate a first embodiment of an embroidered emblem **20** made in accordance with the present invention. An emblem pattern **22** is embroidered to the fabric layer **12** using techniques which are well known to those of ordinary skill in the art as described in the above-referenced patents. In the illustrated embodiment, the embroidered pattern **22** comprises a pair of circles surrounded by a border. It should be understood by those of ordinary skill in the art that the particular embroidered pattern **22** is provided only for purposes of illustration and should not be considered to be a limitation on the present invention, which could employ any type of embroidered pattern. Preferably, the embroidered pattern **22** is applied to the first or upper surface of the fabric layer **12**, which

preferably is the surface which has been exposed to the heated roller **14** and, therefore, has the high luster appearance.

**[0016]** Once the embroidered pattern **22** has been applied to the first surface of the fabric layer **12**, a second layer of thermoplastic adhesive material **18** is bonded to the second surface of the fabric layer **12**. Preferably, the thermoplastic adhesive material comprises a polyurethane of a type well known to those of ordinary skill in the art and as described in the above-identified patents. The thermoplastic adhesive layer **18** facilitates the convenient application of the emblem **20** to a garment or other surface through the application of heat and pressure in a manner well known to those of ordinary skill in the art.

**[0017]** **FIG. 4** illustrates an alternate embodiment of the present invention. In the embodiment **20** illustrated in **FIG. 4**, the pattern **24** is not applied to the first surface of the fabric layer **12** by embroidering. Instead, the pattern **24** is applied to the first surface of the fabric layer **12** using some other technique well known to those of ordinary skill in the art. For example, the pattern **24** may be sublimated or may be screen printed to the first surface of the fabric layer **12**. Other techniques for the application of the pattern **24** to the first surface of the fabric layer **12** will be apparent to those of ordinary skill in the art. As with the emblem **20** of **FIGS. 2 and 3**, the layer of thermoplastic adhesive material **18** bonded to the second surface of the fabric layer **12**.

**[0018]** From the foregoing, it will be appreciated that the present invention comprises an improved method of making an emblem which includes a base fabric with a high luster surface. In one preferred embodiment, the present emblem is made by first applying a calendering process to the base fabric from which the emblem is formed. It will be appreciated by those of ordinary skill in the art that changes or modifications may be made to the embodiments described above. For example, the order in which the steps of the method are performed is immaterial. For example, the thermoplastic adhesive material **18** may be applied to the second surface of the fabric layer **12** before the pattern **22** is applied. Therefore, the present invention is not limited to the particular embodiments described but may be embodied in other specific forms within a spirit and scope of the appended claims.

I claim:

1. A method of making an emblem comprising the steps of:

- providing a fabric layer;
- subjecting the fabric layer to a calendering process comprising the application of heat and pressure;
- applying a pattern on a first surface of the fabric layer; and
- bonding a second layer of thermoplastic adhesive material to a second surface of the fabric layer.

2. The method of making an emblem of claim 1, wherein the step of subjecting the fabric layer to a calendering process is performed before the step of applying the pattern.

3. The method of making an emblem of claim 1, wherein the step of subjecting the fabric layer to a calendering process is performed before the step of bonding the second layer.

4. The method of making an emblem of claim 1, wherein the step of subjecting the fabric layer to a calendering process is performed after the step of applying the pattern.

5. The method of making an emblem of claim 1, wherein the step of subjecting the fabric layer to a calendering process is performed after the step of bonding the second layer.

6. The method as recited in claim 1 wherein the applied temperature is in the range of 370-420° F.

7. The method as recited in claim 1 wherein the applied pressure is in a range of 300-450 lbs. per linear inch.

8. The method as recited in claim 1 wherein the application of heat and pressure causes fibers of the fabric to be flattened and at least one surface of the fabric layer to include a luster.

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