Aug. 26, 1969 F. T. BRUNNER 3,463,692

THERMOPLASTIC SCHIFFLI EMBROIDERY AND METHOD OF LAMINATING SAME TO BASE

Filed March 22, 1965

FIG. 1

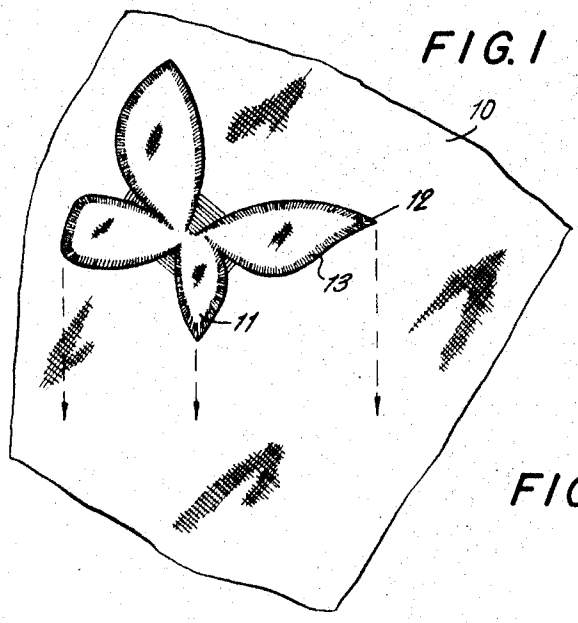


FIG. 2

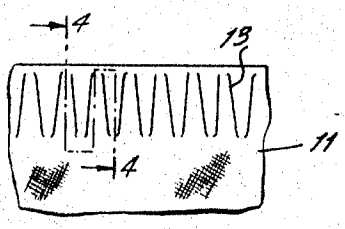
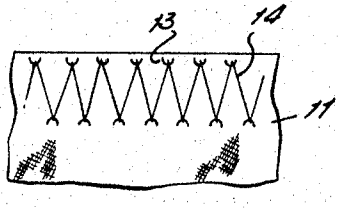


FIG. 3



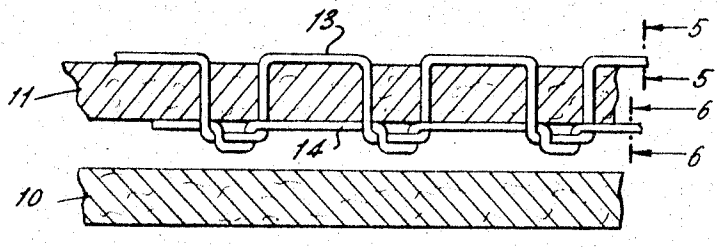


FIG. 4

FIG. 5



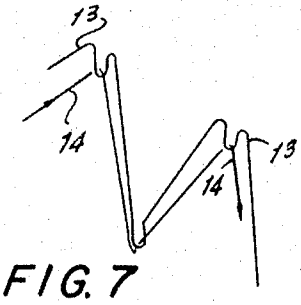


FIG. 7

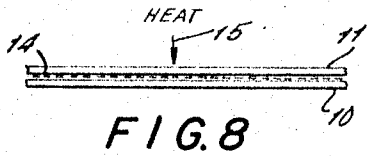
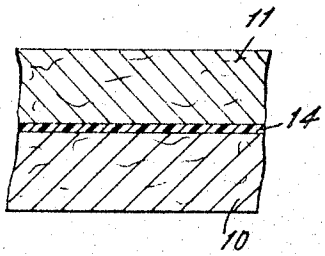


FIG. 8



FIG. 6

FIG. 9



INVENTOR.
FREDERICK T. BRUNNER
BY Albert T. Bowman
ATTORNEY

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THERMOPLASTIC SCHIFFLI EMBROIDERY AND METHOD OF LAMINATING SAME TO BASE

Frederick T. Brunner, Maywood, N.J., assignor to Brunner Bros. Co., North Bergen, N.J., a corporation of New Jersey

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6 Claims

ABSTRACT OF THE DISCLOSURE

A Schiffli embroidery is provided in which the front thread is of conventional natural or synthetic yarn and the rear or bobbin thread is of thermoplastic material. Upon the application of heat the thermoplastic thread which is principally on the rear surface serves to bind the embroidery to a supporting cloth without sticking to the source of the applied heat.

This invention relates to the ornamentation of fabrics by the application of embroidery thereto and particularly the attachment of the Schiffli embroideries to fabrics without sewing.

Schiffli embroideries are commonly sewn directly into the fabric to which they are applied. Individual Schiffli embroideries may also be fabricated and then secured to a fabric by sewing. However, sewing is a time consuming, expensive operation and an effort has been made to secure Schiffli embroidery to fabrics by use of adhesives. Previously known articles employing adhesives, however, have been unsatisfactory either because the adhesive stiffened the garment or failed to secure the embroidery in place after repeated washing and ironing.

Accordingly, it is an object of the present invention to provide a fusible Schiffli embroidery which can be adhered to a fabric support in a permanent manner.

Another object of the present invention is to provide a Schiffli embroidery which can be adhered to a fabric without need for sewing.

Still another object of the present invention is to adhesively secure Schiffli embroidery to a fabric while maintaining the appearance and feel of sewn articles.

A further object of the present invention is to provide an inexpensive, rapid method of securing Schiffli embroidery to a supporting fabric.

A feature of the present invention is the incorporation within the Schiffli embroidery of a thermoplastic yarn or thread.

Another feature of the present invention is the use of electronic heat sealing to secure the Schiffli embroidery to the supporting fabric.

The invention consists of the construction, combination and arrangement of parts, and the steps of the method, as herein illustrated, described and claimed.

In the accompanying drawing, forming a part hereof is illustrated one form of embodiment of the invention, and in which:

FIGURE 1 is a top plan view of a piece of fabric with a Schiffli embroidery applied thereto.

FIGURE 2 is a fragmentary view, greatly enlarged of the front or top edge portion of a Schiffli embroidery showing the pattern of the stitching.

FIGURE 3 is a view similar to FIGURE 2 of the back or bottom edge portion of a Schiffli embroidery showing the pattern of the stitching.

FIGURE 4 is a cross sectional view taken on line 4—4 in FIGURE 2 looking in the direction of the arrows showing the supporting fabric below the embroidery.

FIGURE 5 is a cross-sectional view, greatly enlarged, taken on line 5—5 in FIGURE 4.

FIGURE 6 is a cross-sectional view greatly enlarged taken on line 6—6 in FIGURE 4.

FIGURE 7 is a somewhat diagrammatic view showing the path of the front and back yarns in the Schiffli embroidery.

FIGURE 8 is a somewhat diagrammatic showing of the manner in which the Schiffli embroidery is applied to the supporting fabric in the practice of the present invention.

FIGURE 9 is a fragmentary cross-sectional view greatly enlarged showing the condition of the embroidery after the application of heat and pressure.

All Schiffli embroideries are manufactured through the use of a front or top thread and a bobbin or back thread. The two threads or yarn are ordinarily made of natural or synthetic fibers and are either identical in nature or used in any desired combination. In the well-known sewing machine stitch used in manufacturing Schiffli embroidery commercially, the front yarn is carried through the fabric by the needle, looped around the bobbin or back thread and pulled out of the fabric. The operation is then repeated as the fabric is moved through the machine.

Referring to the drawings, and particularly to FIGURE 1, **10** indicates a portion of a support fabric to which a Schiffli embroidered design in the form of a butterfly **11** has been applied. The design **11** is outlined by stitching **12**, best shown in FIGURES 2, 3, 4, and 7.

The stitching **12** of the Schiffli embroidery consists of a front thread **13** and a bobbin thread **14**. As shown in FIGURE 4, the front thread **13** passes through the support fabric and is looped around the bobbin thread as shown in FIGURE 7. The bobbin thread is thus entirely disposed on the back of the Schiffli embroidery.

In the practice of the present invention the top yarn **13** may be made of any suitable fiber, natural or synthetic. The bobbin yarn **14**, however, is selected from one of the large number of commercially available synthetic fibers which has the property of becoming thermoplastic in the presence of heat. Such fibers may be made either in whole or in part of polyethylene, a cellulose derivative plastic such as cellulose acetate or the like. However, it is essential that the melting point of the thermo-plastic yarn selected shall be higher than those associated with normal washing and ironing operations, of the order of 389° F.

In addition to the foregoing requirements for the practice of the present invention, it is important that the Schiffli design be executed in such manner that a sufficient amount of bobbin yarn is exposed to the support fabric to insure a good bond between the embroidery design **11** and the said fabric.

Bonding or fusing of the Schiffli embroidery design to the support fabric is accomplished by bringing the two together with the thermo-plastic bobbin yarn **14** in contact with the surface of the fabric **10** and subjecting the assembly to the heat and pressure of an electronic heat sealing machine indicated by the arrow **15** in FIGURE 8. The electronic heat sealing machine may be any one of the known commercially available devices used in the plastics industry to fuse or weld plastics together.

The high temperatures created within the yarn **14** by the heat sealing machine cause it to become thermo-plastic and to invade the fibers of the fabric **10**. As a result, upon cooling, an excellent mechanical bond is effected between the Schiffli embroidery **11** and the support fabric **10**, which will withstand all of the normal forces of fabric use, including washing, ironing or even dry cleaning. Because the top yarn **13** is selected from fibers which

are not thermo-plastic it will not adhere to the pressure platens of the heat sealing machine. As shown in FIGURES 8 and 9, the finished article results in a Schiffli embroidery member **11** firmly secured to the fabric **10** by the thermo-plastic bobbin yarn **14**. The narrow, continuous bonded area does not alter the feel of the finished article which remains as soft and pliable as sewn articles of this type.

It will be apparent from the foregoing that a wide variety of Schiffli embroidery patterns may be used and the support fabric may be of any type of cloth, either woven or knitted of natural or synthetic fibers without departing from the spirit of the present invention.

One or more embroidered designs made in accordance with the present invention can be disposed upon a support fabric and bonded thereto in a fraction of the time required for sewing.

While the stitching illustrated in FIGURE 1 is disposed along the periphery of the Schiffli embroidery, it will be apparent that such stitching may also comprise all or nearly all of the body of the pattern in accordance with the present invention.

Having thus fully described the invention, what is claimed as new and desired to be secured by Letters Patent of the United States, is:

1. An embroidery element of the Schiffli type comprising an ornamental pattern, stitching defining said pattern said stitching comprising a top yarn substantially disposed upon the front of the embroidery element and a bobbin yarn of thermo-plastic material substantially disposed upon the back of the embroidery element.

2. An embroidery element of the Schiffli type comprising an ornamental pattern, stitching defining said pattern and disposed along the periphery thereof, said stitching comprising a top yarn substantially disposed upon the front of the embroidery element and a bobbin yarn of thermo-plastic material substantially disposed upon the back of the embroidery element.

3. An embroidery element according to claim **1** in which the bobbin yarn is disposed over a substantial portion of the back of the embroidery element.

4. The method of securing a Schiffli embroidery to a support fabric which comprises the steps of employing a thermo-plastic yarn as the bobbin yarn for the embroidery, placing the embroidery upon the support fabric with the thermo-plastic yarn in contact with said fabric, softening the said yarn, pressing the softened thermo-plastic yarn into intimate contact with the fibers of the support fabric allowing the yarn to cool while in such contact whereby a mechanical bond is effected between the embroidery and the support fabric.

5. The method of securing a Schiffli embroidery to a support fabric which comprises the steps of employing a thermo-plastic yarn as the bobbin yarn for the embroidery, placing the embroidery upon the support fabric with the thermo-plastic yarn in contact with said fabric, softening the said yarn by the application of electronic heat, pressing the softened thermo-plastic yarn into intimate contact with the fibers of the support fabric allowing the yarn to cool while in such contact whereby a mechanical bond is effected between the embroidery and the support fabric.

6. The method of securing a Schiffli embroidery to a support fabric which comprises the steps of employing a thermo-plastic yarn as the bobbin yarn for the embroidery covering a substantial portion of the back of the embroidery with the bobbin yarn, placing the embroidery upon the support fabric with the thermo-plastic yarn in contact with said fabric, softening the said yarn by the application of electronic heat, pressing the softened thermo-plastic yarn into intimate contact with the fibers of the support fabric allowing the yarn to cool while in such contact whereby a mechanical bond is effected between the embroidery and the support fabric.

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ROBERT F. BURNETT, Primary Examiner

W. A. POWELL, Assistant Examiner

U.S. Cl. X.R.

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