

Feb. 10, 1925.

1,526,201

A. BOSSHARD

COTTON FABRIC

Filed Aug. 22, 1922

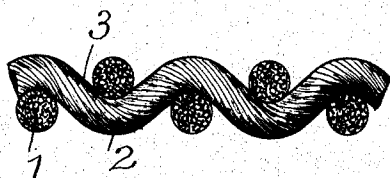


Fig. 1

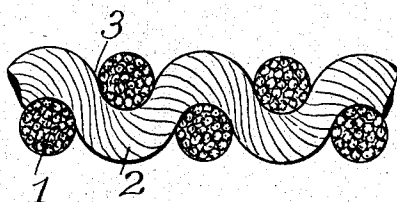


Fig. 2

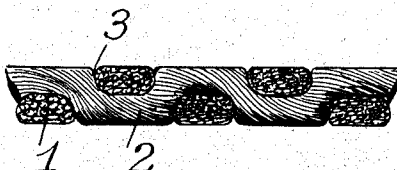


Fig. 3

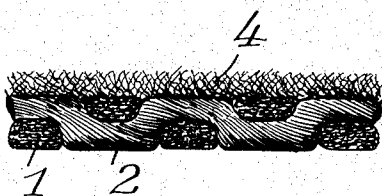


Fig. 4

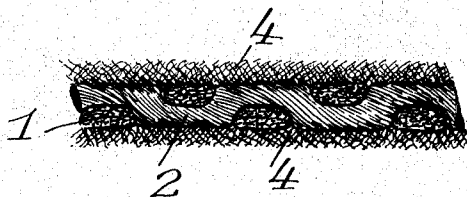


Fig. 5

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Patented Feb. 10, 1925.

1,526,201

UNITED STATES PATENT OFFICE.

ARNOLD BOSSHARD, OF ARBON, SWITZERLAND.

COTTON FABRIC.

Application filed August 22, 1922. Serial No. 533,589.

To all whom it may concern:

Be it known that I, ARNOLD BOSSHARD, a citizen of the Republic of Switzerland, residing at Arbon, Switzerland, have invented certain new and useful Improvements in Cotton Fabrics, of which the following is a specification, reference being had therein to the accompanying drawing.

In the case of knitted goods, such, for example, as those used for making gloves, it is known to produce a so-called suède finish, which effect is based on cutting open, or shearing off, the loops that stand out at right angles to the fabric, so that a velvety surface is obtained. In the case of woollen fabrics it is also known to tease or nap them in order to produce molletons and fustian. Raising and the production of similar effects on cotton fabrics have not hitherto been practicable, since grinding rendered the goods brittle because a portion of the threads would be almost completely worn through, that is to say excessively weakened.

The subject of the present invention is a method of manufacturing a new type of cotton fabric in which the threads, on one or both sides, are altered in such a way as to conceal the structure of the fabric, partially if not completely, and produce a compact, suède-finish effect. The fabric handles as soft as velvet, in consequence of a delicate superficial raising produced by grinding the cotton fabric after the same has been put through a preparatory treatment consisting in calendering or pressing the raw fabric and bringing the whole of the warp and weft threads on the surface intended to be raised, napped or ground into one plane in such a way that they are all affected by the raising, napping or grinding process and a uniform effect over the whole of the fabric is thereby produced.

The effect produced by raising is obtained by the fact that individual filaments are drawn up out of warp and weft threads alike, which fibres drawn out of the opened threads, partially conceal the woven structure of the cotton fabric, so that a kind of velour de laine effect is produced uniformly over the whole fabric. The depth of the nap depends upon the length of the filaments drawn up out of the opened portions of the warp and weft threads. In grinding with emery discs, the depth of this nap, that is to say the length of the drawn out fibres

is determined by the fineness or coarseness of the emery discs chosen. The finer the emery, the shorter the individual protruding fibres; and the coarser the emery, the longer they are.

The process according to the invention is applicable to any yarn count in the original cotton fabric. Instead of producing the desired effect by a single calendering and grinding, a preliminary calendering and grinding can be given, the goods being then re-calendered and subjected to a final grinding.

The pressing and calendering of the cotton fabric are preferably carried on in such a manner that the warp and weft threads of the original fabric are not merely caused to lie in the same plane, but are also flattened out, in consequence of which a closer union is effected between the warp and weft threads, that is to say the fabric is given a more compact appearance and the projecting and depressed portions of the woven structure are levelled up, so that the whole of the warp and weft threads are uniformly affected by the raising or grinding process. It has also been found beneficial to distend or swell the threads of the fabric, as indicated in Fig. 2, prior to pressing or calendering, by treatment with a known mercerizing fluid, for example, sulphuric acid of 49-51° Bé. strength, or caustic soda or potash solution of 30-40° Bé. This treatment can be carried out at the ordinary temperature, and also at a temperature varying therefrom. During this treatment the fabric may be allowed to shrink, according to the yarn count and the desired effect, thus giving the fabric a more compact appearance—or the fabric may be kept stretched.

The accompanying drawing shows a diagrammatical illustration of the development of the final product according to a typical method of carrying out the process.

Fig. 1 shows the rough cotton fabric, in section, on a considerably enlarged scale, the warp threads 1 forming an ordinary cotton fabric with the weft threads 2. After being distended, for example after treatment with an acid, this fabric assumes the appearance represented in Fig. 2. In order to simplify the illustration it is assumed that the fabric has been kept stretched during the distension treatment: though, as already mentioned, the material may also be allowed to shrink. After distension, the fabric is

put through a calendering or pressing process, and acquires the appearance shown in Fig. 3, both warp and weft threads being not merely flattened out but also caused to lie more closely together, so that the interstitial spaces 3, which are still fairly large in Fig. 1, have already been considerably reduced in Fig. 3, and have shrunk to a size practically approximating to a minimum.

Fig. 4 shows how, as the result of grinding, napping or raising individual fibres of the warp and weft threads have been drawn up out of the threads and represent a pile or a velvety form. The warp and weft threads, 1 and 2, have been only slightly weakened by the grinding, which, however, has affected all of them in an equal degree, so that the desired effect, on the one side of the cotton fabric, is completely uniform and conceals the original interstitial spaces 3. Fig. 5 shows that the effect can be produced on both sides, a pile 4 being formed on both the front and back of the cotton fabric.

The process may also be carried out by first calendering the rough cotton fabric, then napping it and subjecting it to treatment with an alkali or acid—with or without shrinking—then re-calendering, and thereupon producing the desired final effect by napping. If the fabric be allowed to shrink, the fine hairs raised by the first napping draw closer together, the threads of the fabric also becoming more closely interlocked. The structure is more compact than

when shrinking is prevented by keeping the fabric stretched, since, in that case, only the fine hairs draw closer together, whereas the threads retain their position.

In grinding the prepared cotton fabric, a slight pressure is employed, by means of which the cotton fabric is drawn away under the emery discs.

The fabric illustrated in Fig. 1 is merely an example of an ordinary cotton fabric, but the original material may also consist of calico, serge or drill.

I claim:

1. A process for the manufacture of a new type of cotton fabric, which comprises subjecting the fabric to a preliminary pressing and a superficial napping, then swelling the fabric with a mercerizing solution, then pressing the swelled fabric to bring the whole of the warp and weft threads on a level, and finally napping the fabric a second time.

2. A process for the manufacture of a new type of cotton fabric, which comprises subjecting the fabric to a preliminary pressing and a superficial napping, then swelling the fabric with a mercerizing solution and stretching it, then pressing the swelled fabric to bring the whole of the warp and weft threads on a level, and finally napping the fabric a second time.

In testimony whereof I affix my signature.

ARNOLD BOSSHARD.