# United States Patent [19]

**De Brabander**

[11] **3,871,933**

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[54] **PROCESS FOR THE INDUSTRIAL MANUFACTURE OF FABRICS, STRIPS OR RIBBONS AND THE SO MANUFACTURED PRODUCTS**


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[52] **U.S. Cl.** ..... **156/88,** 156/72, 156/435

[51] **Int. Cl.** ..... **D03d 47/50**

[58] **Field of Search** ..... 156/72, 88, 435



[56] **References Cited**

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[57] **ABSTRACT**

The invention relates to a process and a device for making piled strips or ribbons starting from thermoplastic fabrics, strips or ribbons of great width, said process comprising a pile levelling, heating, pressing and cutting operations by which the pile is locally heated to the softening temperature and is driven back into the free spaces of the underlying substructure.


**1 Claim, No Drawings**

# PROCESS FOR THE INDUSTRIAL MANUFACTURE OF FABRICS, STRIPS OR RIBBONS AND THE SO MANUFACTURED PRODUCTS

This invention relates to the manufacture of any type of ribbons of textile material and more particularly of textile pile products such as some velvets, said textile products being made completely or partially of a thermoplastic material.

Another embodiment of the invention refers to the production of so-called hooking-up closing ribbons.

Generally, said ribbons are made on looms at the width of the finished products. This is however a relatively slow and expensive process due to the relatively reduced sizes of numerous ribbons and the limited speed of the looms. From the economic point of view, this drawback is further increased in that, to meet the needs of the customers, the manufacturer must store relatively large amounts of ribbons having different widths concerning which he does not know whether they will be ordered and he also does not know how long they will be stored.

of course, it has been suggested (and, in fact, this process has been applied) to start from fabrics of substantial width and to cut them subsequently into strips or straps. This procedure, which is seemingly simple and apparent, is however unacceptable owing to the absence of selvedges and consequently the vulnerability of the marginal edges of such ribbons and their unacceptable appearance.

Another process, which is apparently as simple and rational, comprises weaving on a large width, but with the omission, at suitable intermediate distances, of a number of warp threads, center selvedges being made at said locations by means, while the fabric is then severed upstreams of the winder to be thereby split into a corresponding number of ribbons.

Although this process solves a problem relating to the production increase in a given time, it has however the same shortcoming in that it may be applied only in the cases where the width of the ribbon being made may be previously determined. In that case too, this will often invalve storage considerations. In addition, the appearance of the longitudinal edges of the ribbons will be also often objectionable.

It has further been suggested to make selvedges or center selvedges by dressing or sizing. Finally, it is well-known that the textile industry increasingly uses synthetic materials and more particularly threads of a thermoplastic resin.

Consequently, it has already been attempted to make selvedges or center selvedges by thermal melting of warp and weft threads at the location of the selvedges, thereby forming, on both sides, marginal strips having an improper amorphous texture, which would not be suitable in most cases where ribbons are used, a normal sewing being substantially impossible with such selvedges or center selvedges.

This invention relates only to more or less long pile ribbons or fabrics using at least a portion of threads of thermoplastic material.

The object to the invention is essentially to provide fabrics, strips or ribbons having a predetermined width which is at least equal to the greatest width of the ribbons intended for use or a multiple of said maximum width.



In this way, it is possible to provide a continuous and, if desired, a large manufacture of fabrics, strips or ribbons having a very small number of standard widths. As compared with the conventional technics, these storage moduli are advantageous in that they are substantially suitable to the whole manufacture program without any loss and with the advantages of a substantially accelerated production owing to the production of fabrics, strips or ribbons having a maximum width.

The object of the invention is a process providing said storage moduli whereby it will be also possible, in a second operation and generally on a different machine, to distribute fabrics, strips or ribbons having the required widths in accordance with the received orders. Since the widths being produced will be generally submultiples of a fabric, a strip or a ribbon being stored, the production will be accelerated accordingly.

The process according to the invention for distributing such fabrics, strips or ribbons forming storage moduli comprises substantially subjecting the marginal edges of the discharged ribbons to the simultaneous action of levelling, heating, pressing and cutting, but under such conditions that said piles are only heated to the softening temperature and that, into this plastic state, they are driven back in the free spaces of the meshes of the underlying substructure without modifying the physical state of substantially all constituting warp and weft threads.

The levelling operation will be applied in all the cases where the length of the piles is such that the mass of the thermoplastic material formed by the piles corresponding to the selvedge being made, is more important than the free spaces of the meshes of the substructure provided to receive said thermoplastic material during the heating and the pressing step. This leveling operation is, in a manner, an operation controlling the predetermining, prior to the subsequent steps of the process, the proportion of thermoplastic material of the piles adjoining the marginal areas provided for the subsequent formation of the selvedge or center selvedge proper under the conditions of the process according to the invention. This levelling operation may be carried out with any mechanical, physical, chemical or similar means, it being possible to use all said means provided they are capable of separating the excess of piles or pile lengths at the location of the selvedges or the center selvedges being made.

By way of exaple, it may be considered that the said levelling step may be carried out by cutting or shearing by means of knives the shape, the sizes and the relative position of which are determined in accordance with the width of the selvedge or center selvedge being made.

it is apparent that, with a fabric, a strip or a ribbon being distributed in elements having a smaller width in which the piles are relatively short and in any case such that they form a mass of thermoplastic material in a proportion lesser than or equal to the sum of the free spaces presented by the meshes of the underlying substructure of the fabric, this levelling operation will be unnecessary.

The heating and pressing steps must be at least partially simultaneous so that the thermoplastic material is duly driven back into the free spaces provided by the meshes of the underlying substructure of the fabric when they are in a suitable plastic state.

The heating step must be conducted in such manner that the physical state of warp and/or weft threads of the substructure of the pile fabric is not substantially modified. In other words, if all or some of said warp and/or weft threads are made of a thermoplastic material, it is essential that they are not heated to the softening temperature. The result being reached is that said warp and/or weft threads are kept in such state that, within the thickness of the selvedges or center selvedges, they are connected with each other only by the mass of thermoplastic material coming from the heated and pressed piles, thereby remaining in the form of a true weave. These very particular conditions of the process according to the invention have substantial advantages In fact, the resulting selvedges or center selvedges are still very flexible and they have a maximum resistance to levelling and to the defibering and, principally, said selvedges or center selvedges allow the subsequent setting of the ribbons by sewing, which would be practically excluded if the selvedges or center selvedges would be produced by softening and pressing of all the constituting material of the selvedges or center selvedges, i.e. the constituting material of the piles as well as that of the warp and weft threads of the fabric substructure.

This at least partially simultaneous operation of heating and pressing may be carried out also by very different means. In one embodiment, it will be possible to use a blade, a shoe or a slide capable of heating and pressing the pile fabric along the marginal edges the intermediate distance of which is determined by the width of the fabric, the strip or the ribbon being distributed.

Finally, the cutting or distributing step proper of the fabric, the strip or the ribbon coming from fabric, the strip or the ribbon having a greater width may be carried out by any type of blades or knives.



In another embodiment of the means capable of using the process according to the invention, it will be also possible to combine the heating, pressing and cutting means in a single tool, since it would be possible to align said means in only one moving equipment in front of which the fabric, the strip or the ribbon being distributed may be shifted. Such equipment may be provided, e.g. under the form of a heating knife the outline of which is such that it may simultaneously soften and press the thermoplastic material at the location of the selvedge or center selvedge, while cutting or distributing also fabrics, strips or ribbons having a smaller width. In any case, the levelling step provided to bring the piles to a suitable length at predetermined locations may be carried out by any means capable of cutting, shearing, grinding, milling, abrading, wearing, trimming or any other equivalent means.

The invention relates to the disclosed process as well as to any device capable of using it. It relates also to any fabrics, strips or ribbons having selvedges consisting of a thermoplastic material filling up the interstices of the meshes of the underlying substructure of the fabric the warp and weft threads of which have not been substantially modified during formation of the said selvedge.

What I claim is:

**1.** A process of producing ribbons from a relatively large sheet of fabric susceptible to raveling when cut and consisting of a structure with interstices covered by piles made of a thermoplastic material, said process comprising the steps of heating the piles of surfaces intended to form marginal edges of said ribbons to a temperature at which said piles are in a softened state and pressing the thus softened piles in the interstices of said structure.

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# UNITED STATES PATENT OFFICE

# CERTIFICATE OF CORRECTION

Patent No. 3,871,933 Dated March 18, 1975

Inventor(s) Jean De Brabander

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

[30] Foreign Application Priority Data

| | | |
|---|---|---|
| Belgium | 729,090 | Feb. 28, 1969 |
| Belgium | 732,958 | May 13, 1969. |

Signed and Sealed this

second Day of December 1975

[SEAL]

*Attest:*

**RUTH C. MASON**
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*Commissioner of Patents and Trademarks*

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