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PROCESS FOR THE PRODUCTION OF FLEECES

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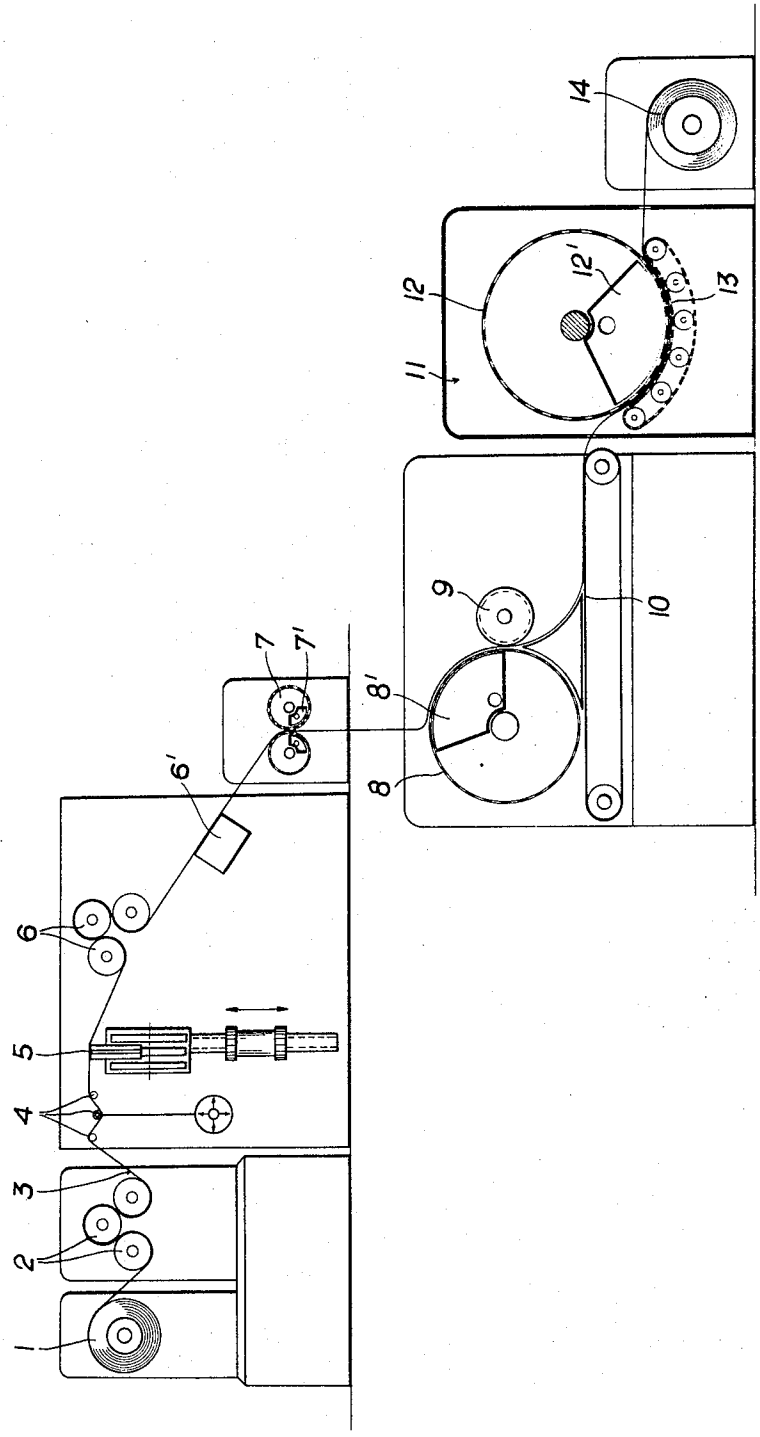

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PROCESS FOR THE PRODUCTION OF FLEECES

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ABSTRACT OF THE DISCLOSURE

The invention relates to a process for the production of fleeces, in which threads are deposited on a perforated, moving support which is subjected to suction, and the fleece so produced is compacted mechanically, thermally or by glueing. The improvement resides in that the threads are guided to the support as a series of threads arranged in one plane and parallel to each other, said series being obtained by cutting a polymer foil and simultaneously stretching the threads while they are being made. Thus each individual thread may form a loop so that a highly dense, uniformly tangled arrangement is obtained.

The invention relates to a process for the production of fleeces in which threads are deposited on a perforated, moving support which is subjected to suction, such as a screening drum or a screening ribbon, and the fleece so produced is mechanically, thermaly or by glueing compacted.

The known processes for producing fleeces usually start from spinning threads. A known method e.g. resides in that the threads are drawn from the spinning nozzles by means of pneumatic devices and transported to the perforated, moving support, whereupon they are further treated by subjecting them to heat and pressure, by the addition of adhesives or by needling. It is also known to spread bundles of threads by subjecting them to piercing air rays and by means of devices for electrostatically charging the threads before they are brought to the perforated support. A great amount of air is needed for the pneumatic transportation equipment and its useful effect is unsatisfactory. Threads drawn off by means of pneumatic devices usually have a relatively low tensile strength and a high elongation at rupture.

In all these known processes the threads are present in more or less tangled bundles of threads before they are deposited on the perforated support. This has the disadvantage that the threads do not form uniform loops and nooses while they are being deposited and these inhomogeneous areas remain in the finished fleece. Thus the homogeneity and the tensile strength of the fleece will suffer.

The invention is aimed at avoiding these disadvantages and, in a process of the kind defined in the introductory part, resides in that the threads are guided to the support as a series of threads arranged in one plane and parallel to each other, said series being obtained from cutting a polymer foil and simultaneously stretching the threads while they are being made. The polymer foil used may advantageously be one made of polyethylene, polypropylene, polyester, polyamide, polyacrylonitrile, polytetrafluoroethylene or polyvinylchloride.

The series of threads thus formed may be guided to the moving support by means of a pair of rolls.

The process according to the invention differs from the known processes mainly in that the threads are guided to the moving support, not in the form of more or less tangled thread bundles, but as a closed thread curtain in which the threads are lying parallel to each other in one plane and closely side by side. Each individual thread which touches the support which is subjected to suction forms loops and deposits in this form so that a much more effective and, above all, a much denser, more uniformly tangled or disoriented arrangement is obtained than is the case with known processes in which thread bundles which are not as movable as single threads hit upon the support. After the threads have deposited the fleece is further processed in known manner, compacted and coiled up. Compaction may be achieved by a consolidating measure such as thermal treatment under pressure in which case the threads of the series of threads may be composed of two or more different polymers, of which one has a lower softening point than the other(s). Such a series of threads may be cut from a polymer foil which was produced by coextrusion of two or more different polymers over a special nozzle forming a two-layer or multi-layer foil. The threads of the series of threads may also be composed of mixed polymers. Such threads are produced by mixing two or more polymers in granular form in the extruder and cutting the thus produced foil into threads. In this case the polymers are present in each thread in statistical distribution. Thus the softening interval, in which welding is possible, is extended. Further, it is possible to produce a series of threads from two or several foils of different composition, one of the foils having a lower melting point than the other(s). The fleece may furthermore be mechanically compacted by needling on a needle machine and, finally, also by the addition of adhesives.

Within the scope of the process according to the invention it is possible to crimp the threads of the series of threads which are guided to the support prior to the formation of the fleeces; according to a further possibility the threads may be crimped in the fleece before its thermal or mechanical compaction. Such fleeces with crimped threads have advantageous properties, e.g. increased puffiness.

In order that the invention may be more fully understood it shall now be explained with reference to the drawing.

In the drawing numeral 1 denotes a foil roll from which by means of transportation rolls 2 the foil 3 is drawn off and guided over tension pins 4 which are movable in vertical and horizontal direction and are, if desired, heated. The foil 3 is guided from the pins 4 over the slitting machine 5 whence the series of threads thus being made is drawn off by the three-high stand 6 under stretching tension. If desired, the series of threads may be guided over a heating device 6' for further stretching or crimping whereupon it is drawn off by the pair of rolls 7. This pair of rolls is designed as a so-called blowing two-high stand, i.e. the hollow rolls are provided with perforations or longitudinal slits through which, from the sectors 7' which are stationarily arranged within the rolls, air is blown onto the series of threads. Thus it is avoided that individual threads are coiled up on the rolls of the pair of rolls. From the pair of rolls 7 the thread curtain is transported to the screening drum 8 in the interior of which a suction sector 8' is provided. Also on the path between the pair of rolls 7 and the screening drum 8 a crimping device, e.g. a hot air shaft, may be interposed. The series of threads is deposited on the screening drum under formation of loops or nooses of each individual thread and thus the fleece is formed which is compacted by means of the heated roll 9. This roll may be perforated and hot air or steam which gets into contact with the fleece may be guided through it. For the final compaction the fleece is transported into a heated chamber 11 by means of a transport ribbon 10. In this chamber the fleece runs between a screening drum 12 and a tightened screening ribbon

13 pressed onto said drum and is penetrated by a hot gaseous or steam medium leaving the sector 12' through the openings of the screening drum 12 so that the final compaction is obtained. Outside the chamber 11 the fleece is coiled up on a coiling device 14.

What we claim is:

1. A process for the production of fleeces, comprising depositing threads on a perforated, moving support which is subjected to suction and compacting the fleece so produced, the threads being guided to the support in a series arranged in one plane and parallel to each other, said series being obtained by cutting a polymer foil and simultaneously stretching the threads while they are being made.

2. The process set forth in claim 1, wherein the fleece is compacted by consolidating measures selected from mechanical and thermal treatment and the addition of adhesives.

3. The process set forth in claim 1, wherein the series of threads is guided to the moving support by means of a pair of rolls designed as a blowing two-high stand.

4. The process set forth in claim 1, wherein the threads of the series of threads are composed of at least two different polymers having different softening points.

5. The process set forth in claim 1, wherein the threads of the series of threads are composed of mixed polymers.

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