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(71) Applicant: **IMPERIAL CHEMICAL INDUSTRIES PLC**
Imperial Chemical House Millbank
London SW1P 3JF(GB)

(72) Inventor: **Davidson, Alistair J.**
39 Almsford Avenue
Harrogate North Yorkshire(GB)

(74) Representative: **Corbett, William Michael et al,**
Imperial Chemical Industries PLC Legal Department:
Patents Po Box 6
Welwyn Garden City Herts, AL7 1HD(GB)

(54) **Process for the manufacture of filling fibres.**

(57) A process for the blow filling of an article with staple filling fibres comprising the steps in sequence of deregistering the filaments of at least one tow of crimped continuous fibres by passage through a threaded roll module, cutting the deregistered tow into staple fibres, and blowing the cut fibres into the article to be filled.

PROCESS FOR THE MANUFACTURE OF FILLING FIBRES

This invention relates to a process for the manufacture of a filling material for articles such as quilts, pillows, and clothing.

- In recent years, considerable development has been made in
5. the use of man-made fibres as a replacement for natural material, such as feathers and down, as filling material for quilts, pillows, and clothing, and other similar articles. One way in which man-made fibres are used for this purpose is to take the crimped, staple fibres which are sold by the fibre manufacturers in the form of a compressed bale,
 10. and to blow the fibres by means of a stream of compressed air into the article to be filled. For this method to work satisfactorily, it is necessary for the staple fibres on removal from the bale to be opened by a mechanical means, such as by passing the fibres through a carding machine. Carding machines are rather complex and expensive,
 15. and for satisfactory operation require to be run continuously rather than intermittently.

We have now found that it is possible to produce staple fibres for blow filling articles by a cheaper and more convenient route using a "threaded roll module".

20. According to the present invention there is provided a process for the blow filling of an article with staple filling fibres, the process comprising the steps in sequence of de-registering the filaments of at least one tow of crimped continuous fibres by passage through a threaded roll module, as hereinafter defined, cutting the
25. deregistered tow into staple fibres, and blowing the cut fibres into the article to be filled.

- By the term "threaded roll module" is meant a machine comprising at least one pair of rolls, the surface of at least one of which is made up of grooves and ridges, the grooves encircling the
30. roll in the form of one or more helices or a large number of parallel and endless grooves, so that when a tow of filaments is passed between a pair of rolls the filaments are only gripped between the rolls at the ridges and little or no grip is applied to the remaining filaments.

- As the rolls rotate, different filaments are gripped and released,
35. and are caused to undergo lateral movement relative to other filaments.

Preferably, a threaded roll module comprises successive pairs of rolls, the periferal speed of a pair of rolls being greater than that of the preceding pair of rolls, but insufficiently fast to put the tow under substantial tension, so that the crimp in the filaments is noticeable even between roll pairs, while the tow is deflected out of its normal running path with ease. The threaded roll module is described in considerable detail in British Patent Specification No 1 001 813.

Tow of crimped fibres suitable for use in the process of the present invention is that supplied by fibre manufacturers specifically for processing through a threaded roll module for the manufacture of filling material comprising continuous filaments.

The deregistered tow of continuous filaments may be cut into staple fibre by passage through any convenient cutter, such as that made by Lummus Industries Inc. The cut fibre may be blown into an article to be filled by any conventional equipment.

Advantageously, the three steps of the process of the present invention are operated without a break in which case the threaded roll module, cutter, and blower for the cut fibre are operated sequentially in-line, and consequently by a single operative. In this way, the equipment may be operated intermittently, providing cut staple filling fibres as and when required for blow filling an article. Alternatively one or two steps of the process may be operated at a different time or even a different location from the others if necessary. For instance the tow of continuous fibres may be deregistered by passage through a threaded roll module and cut into staple fibres at one location, and transferred to another location where the cut fibre is blown into an article to be filled.

Further advantages of the process of the present invention over the conventional process are superior opening of the fibre, higher throughput, and the capability of satisfactorily processing blends of fibres of different decitex, different cross-section, different crimp levels or formed from different polymers.

The present invention is further illustrated by the following example.

3.

EXAMPLE 1

- A tow of 33 K tex hollow poly(ethylene terephthalate) filaments each of 4.4 decitex was opened by passage through a threaded roll module comprising two pairs of rolls, generally as described in
5. British Patent No 1 001 813. The fibres were then cut into lengths of 26 mm by a conventional staple cutter made by Lummus Industries Inc, and then blown into a quilt using conventional equipment designed for the blow filling of feathers and down.

CLAIMS

1. A process for the blow filling of an article with staple filling fibres comprising the steps in sequence of deregistering the filaments of at least one tow of crimped continuous fibres by passage through a threaded roll module, as herein before defined, cutting the deregistered tow into staple fibres, and blowing the cut fibres into the article to be filled.
2. A process according to claim 1 wherein there is a break between one or more of the steps.



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
A	DE-A-2 702 166 (BRINKHAUS, H.) * Page 6, paragraph 4; page 7; figures 1-3 *	1,2	D 01 G 1/10 B 68 G 3/00 B 68 G 7/06
A	FR-A-1 125 824 (KAWASHIMA, K.)		
A	FR-A-1 120 023 (ICI)		
A	GB-A- 712 250 (THE BRITISH RAYON RESEARCH ASSOCIATION)		
			TECHNICAL FIELDS SEARCHED (Int. Cl. 3)
			D 01 G B 68 G
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 24-04-1984	Examiner MUNZER E.
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