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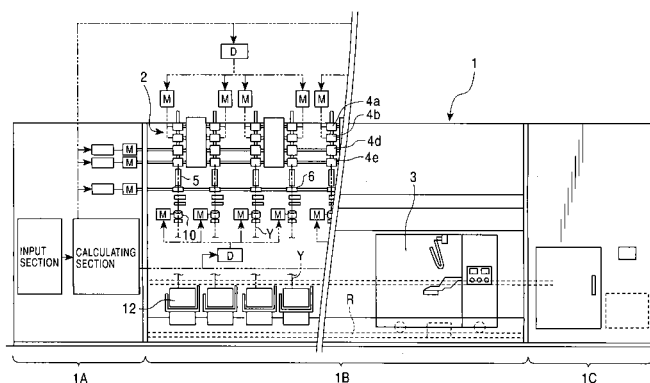
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(54) **Tension control and slack eliminating device for a yarn winder**

(57) The present invention stabilizes a yarn tension in a yarn winder in which a plurality of winding units are disposed, each of the winding units being provided with a yarn slack eliminating device. A transmitted force adjusting mechanism is provided to adjust a rotative driving force transmitted by a slack eliminating roller 21 of a yarn slack eliminating device 10 to an unwinding tension applying member 22. The transmitted force adjusting mechanism can be set so that when a load acting on the unwinding tension applying member 22 increases above a predetermined value, the unwinding tension

applying member 22 rotates or rotatively moves independently of the slack eliminating roller 21. When winding tension is weak, the unwinding tension applying member 22 rotates integrally with the slack eliminating roller 21 to tense a yarn. When the winding tension exceeds a predetermined value, the unwinding tension applying member 22 prevents the winding tension from becoming excessive to suppress a variation in tension. When the transmitted force adjusting mechanism is configured so as to vary the force transmitted to the unwinding tension applying member, it is easy to deal with spinning conditions (Fig.4).

FIG. 1





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EUROPEAN SEARCH REPORT

Application Number
EP 04 00 3083

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.7)
Y	US 4 132 056 A (HUSGES ET AL) 2 January 1979 (1979-01-02)	1	B65H51/22 B65H59/18 D01H4/48
A	* column 3, line 41 - column 4, line 4; figure 1 *	2-10	
Y	----- EP 0 108 195 A (SCHUBERT & SALZER MASCHINENFABRIK AKTIENGESELLSCHAFT) 16 May 1984 (1984-05-16)	1	
A	* page 21, line 24 - page 22, line 16; figures 1,2 *	2-10	
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	* column 3, line 54 - column 4, line 5; figure 1 *		
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	* page 5, line 22 - line 34; figure 1 *		

			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B65H D01H

The present search report has been drawn up for all claims

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Place of search The Hague	Date of completion of the search 11 March 2005	Examiner Henningsen, O
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document		



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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☒ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



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LACK OF UNITY OF INVENTION
SHEET B

Application Number
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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-10

Special yarn winder

1.1. claims: 1-4

Special slack eliminating device with adjustable unwinding
tension applying member

1.2. claims: 5-10

Special yarn winder with slack eliminating devices provided
at each winding unit and having a work carriage

Please note that all inventions mentioned under item 1, although not necessarily linked by a common inventive concept, could be searched without effort justifying an additional fee.

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 04 00 3083

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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11-03-2005

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