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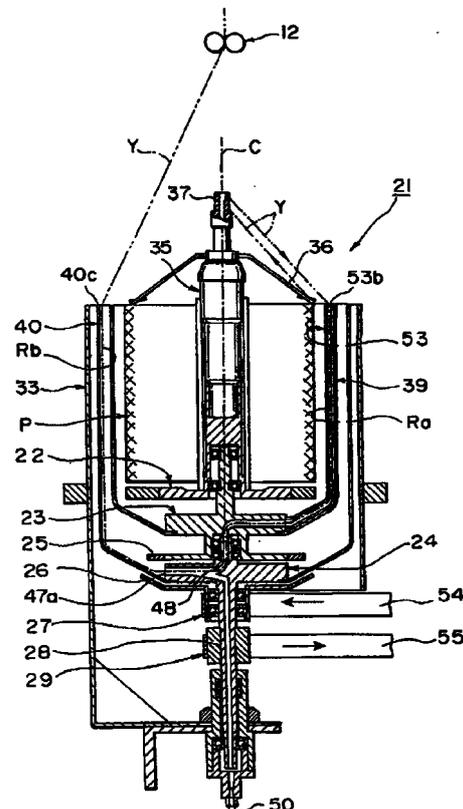
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(54) **Four-for-one twister**

(57) A four-for-one twister that enables yarn to pass through easily and quickly, increasing operating efficiency.

In four-for-one twister 21 which twists yarn by means of upper disk 23 in which yarn guide hole 47a is formed and lower disk 24 in which yarn guide hole 47b is formed rotating in the same plane in mutually opposed directions, air for passing the yarn is flowed through both yarn guide holes 47a and 47b in a forwardly moving direction. Yarn guide holes 47a and 47b are formed so as to be connected. Ejection nozzle 48 which injects air to pass the yarn opens into yarn guide hole 47 in a suitable place. Inner guiding member 39 which revolves around the outside of supply package P on upper disk 23 is provided, and yarn guide pipe 53 is provided in inner guiding member 39 connected to yarn guide hole 47a on upper disk 23.

FIG. 1



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EUROPEAN SEARCH REPORT

Application Number
EP 97 12 2447

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
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A	EP 0 611 841 A (TEIJIN SEIKI CO LTD) 24 August 1994 (1994-08-24) * the whole document * ---	1	
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A	US 4 222 221 A (LENORAK FERDINAND) 16 September 1980 (1980-09-16) * the whole document * ---	5,8	
A	PATENT ABSTRACTS OF JAPAN vol. 1996, no. 02, 29 February 1996 (1996-02-29) & JP 07 268731 A (TEIJIN SEIKI CO LTD), 17 October 1995 (1995-10-17) * abstract * ---	5,8	
A	PATENT ABSTRACTS OF JAPAN vol. 1996, no. 02, 29 February 1996 (1996-02-29) & JP 07 268732 A (TEIJIN SEIKI CO LTD), 17 October 1995 (1995-10-17) * abstract * -----	5,8	TECHNICAL FIELDS SEARCHED (Int.Cl.6) D01H
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 5 June 2000	Examiner Tamme, H-M
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	

EPO FORM 1503 03 82 (P04C01)

**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:



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: 1-4

A four-for-one twister with increased yarn traveling speed

2. Claims: 5-11

A four for one twister with reduced yarn tension.

The subject-matter of claims 5 to 11 has not been searched.

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

EP 97 12 2447

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 The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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