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(54) **AN INTEGRATED SYSTEM AND A METHOD FOR ENHANCING EFFICIENCY AND QUALITY IN TEXTILE YARN MANUFACTURING PROCESS**

(57) An integrated sensing, control and resurrecting system for yarn breakage and other defects occurrences in a ring spinning machine is provided. Accordingly, a Control system (2) integrating an individual spindle monitoring system (1) and a transportation system (3) is provided. The transportation system can navigate and facilitate movement of work force attending to the yarn breakage and other defects upon detection by the spindle monitoring system, and the information related to yarn breakage occurrence and other defects in the spindles being sensed by the yarn monitoring system and communicat-

ed to the transporting system. The transportation system is capable of carrying both personnel and required textile material traversing along the entire longitudinal axis of the ring spinning machine for attending to the yarn breakage and other defects and ensuring quicker restoration of the yarn spinning process of the spindle of the ring spinning machine and also eliminating the production of inferior yarns due to other defects. The transportation system can be effectively used for multiple ring spinning machines for attending to yarn breakage occurrences and other defects.

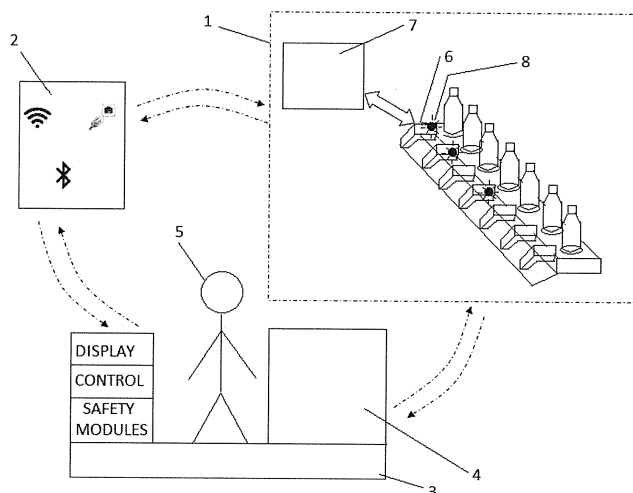


Figure 1



EUROPEAN SEARCH REPORT

Application Number
EP 15 18 6546

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	EP 2 107 142 A2 (RIETER AG MASCHF [CH]) 7 October 2009 (2009-10-07) * paragraph [0001] - paragraph [0004] * * paragraph [0009] - paragraph [0012] * * paragraph [0015] - paragraph [0019] * * paragraph [0032] - paragraph [0055] *	1-5, 11-13	INV. B65H54/26 D01H13/00 D01H13/14 D01H13/16
Y	DE 20 46 199 A1 (TSUDAKOMA INDUSTRIAL CO LTD) 22 April 1971 (1971-04-22) * page 3, paragraph 3 - page 5, paragraph 3 * * page 6, paragraph 2 - page 9, paragraph 1 *	1-5, 11-13	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65H D01H
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 15 February 2016	Examiner Hausding, Jan
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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Application Number

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due 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 those claims for which no payment was due.

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:

1-5, 11-13

☐ The present supplementary 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 (Rule 164 (1) EPC).

**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: 1-5, 11-13

Monitoring system with transport system and sensors

2. claims: 6-8, 14-16

Monitoring system with transport system, sensor, indicator
and image capturing of indicator

3. claims: 9, 10, 17, 18

Monitoring system with transport system and image capturing
system for fault detection

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

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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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15-02-2016

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82