



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
12.10.2022 Bulletin 2022/41

(51) International Patent Classification (IPC):
D01D 5/088 (2006.01) **D01D 5/092** (2006.01)
D01D 5/08 (2006.01) **D01D 4/02** (2006.01)

(43) Date of publication A2:
28.09.2022 Bulletin 2022/39

(52) Cooperative Patent Classification (CPC):
D01D 5/088; D01D 5/092

(21) Application number: **22160455.6**

(22) Date of filing: **07.03.2022**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(72) Inventors:
• **TOYODA, Kai**
Kyoto-shi, Kyoto 612-8686 (JP)
• **HINO, Koichi**
Kyoto-shi, Kyoto 612-8686 (JP)

(74) Representative: **Hoffmann Eitle**
Patent- und Rechtsanwälte PartmbB
Arabellastraße 30
81925 München (DE)

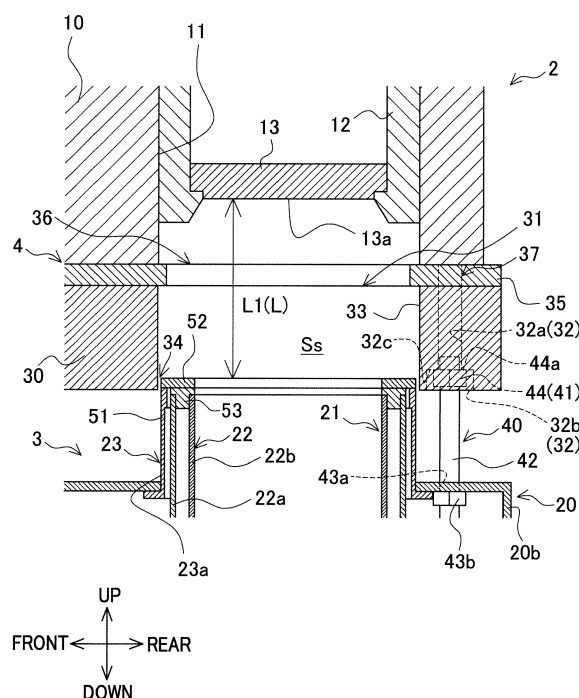
(30) Priority: **23.03.2021 JP 2021048119**

(71) Applicant: **TMT Machinery, Inc.**
Osaka-shi, Osaka 541-0041 (JP)

(54) **YARN SPINNING SYSTEM**

(57) A slow cooling space is allowed to be changed in length in the up-down direction when the number of yarns spun out is large, with a small number of members. A yarn spinning system 1 includes a spinning apparatus 2 including spinnerets 13, a cooling apparatus 3 configured to cool yarns Y spun out from the spinnerets 13, and a slow cooling unit 4 provided between the spinning apparatus 2 and the cooling apparatus 3 in the up-down direction. The cooling apparatus 3 includes cooling cylinders 21 that are arranged to guide cooling wind to the yarns Y. The slow cooling unit 4 includes a block member 30 and an adjustment unit 40. The block member 30 includes surrounding faces 33 arranged to surround at least parts in the up-down direction of the respective cooling cylinders 21, the surrounding faces 33 have parts above the cooling cylinders 21, and the parts form slow cooling spaces Ss in which slow cooling of the yarns Y is performed. The adjustment unit 40 is arranged to be able to adjust the relative positions of the block member 30 and the cooling cylinders 21 in the up-down direction.

FIG.5





EUROPEAN SEARCH REPORT

Application Number

EP 22 16 0455

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	JP S62 60264 U (NIPPON ESTER CO., LTD) 14 April 1987 (1987-04-14)	1	INV. D01D5/088
A	* the whole document *	2-15	D01D5/092
A	EP 3 147 392 A1 (TMT MACHINERY INC [JP]) 29 March 2017 (2017-03-29) * paragraphs [0020] - [0023], [0034] - [0036]; figures 1,2 *	1-15	D01D5/08 D01D4/02
A	CN 202 401 170 U (BEIJING CHONGLEE MACHINERY ENG) 29 August 2012 (2012-08-29) * the whole document *	1-15	
A	CN 103 993 374 A (TMT MACHINERY INC) 20 August 2014 (2014-08-20) * the whole document *	1-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			D01D
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		29 August 2022	Van Beurden-Hopkins
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			

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

EP 22 16 0455

5

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.

29-08-2022

10

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP S6260264	U	14-04-1987	NONE
<hr/>			
EP 3147392	A1	29-03-2017	CN 106544742 A
			29-03-2017
			EP 3147392 A1
			29-03-2017
			JP 6600205 B2
			30-10-2019
			JP 2017057521 A
			23-03-2017
<hr/>			
CN 202401170	U	29-08-2012	NONE
<hr/>			
CN 103993374	A	20-08-2014	CN 103993374 A
			20-08-2014
			CN 107604452 A
			19-01-2018
			DE 102014202934 A1
			21-08-2014
			JP 6069019 B2
			25-01-2017
			JP 2014159649 A
			04-09-2014
<hr/>			

25

30

35

40

45

50

55

EPO FORM P0459

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