



(11)

EP 4 119 707 A3

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
05.04.2023 Bulletin 2023/14

(51) International Patent Classification (IPC):
D02G 1/02 ^(2006.01) **D02J 13/00** ^(2006.01)

(43) Date of publication A2:
18.01.2023 Bulletin 2023/03

(52) Cooperative Patent Classification (CPC):
D02G 1/0266; D02J 13/001

(21) Application number: **22181535.0**

(22) Date of filing: **28.06.2022**

(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:

- **IMANAKA, Akihito**
Kyoto-shi, Kyoto, 612-8686 (JP)
- **KITAGAWA, Shigeki**
Kyoto-shi, Kyoto, 612-8686 (JP)
- **HORIMOTO, Takayuki**
Kyoto-shi, Kyoto, 612-8686 (JP)

(30) Priority: 13.07.2021 JP 2021115543

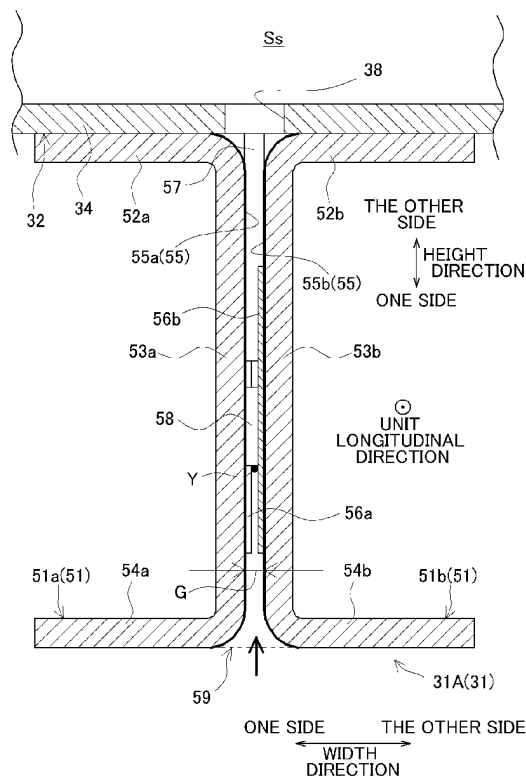
(74) Representative: **Hoffmann Eitle
Patent- und Rechtsanwälte PartmbB
Arabellastraße 30
81925 München (DE)**

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

(54) COOLER AND YARN PROCESSOR

(57) Efficiency in cooling of a yarn is improved in a cooler that is configured to cool the yarn by cooling wind. A cooler 14 includes a cooling unit 31 in which a yarn running space S in which a yarn Y runs is formed and an intake duct 32 in which an intake space Ss connected to the yarn running space S is formed. The intake duct 32 includes a duct wall portion 34 in which one or more intake slit 38 is provided to extend in a unit longitudinal direction between the yarn running space S and the intake space Ss in a flow direction in which cooling wind flows. The cooling unit 31 includes paired unit wall plates 51 that are provided on one side of the duct wall portion 34 in the height direction. The paired unit wall plates 51 includes paired unit wall surfaces 55 which oppose each other in the width direction over the yarn running space S. The height in the height direction of each of the paired unit wall surfaces 55 is 30 mm or less.

FIG.5





EUROPEAN SEARCH REPORT

Application Number

EP 22 18 1535

5

10

15

20

25

30

35

40

45

50

55

1

EPO FORM 1503 03.82 (P04C01)

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 H11 107084 A (TORAY ENG CO LTD) 20 April 1999 (1999-04-20) * paragraphs [7.11], [0012], [0014], [0015]; figures 2,3 *	1-10	INV. D02G1/02 D02J13/00
A	JP 2016 145429 A (TMT MACHINERY INC) 12 August 2016 (2016-08-12) * paragraphs [0037], [0038], [0039]; figure 4 *	1-10	
A	JP 2016 056493 A (TMT MACHINERY INC) 21 April 2016 (2016-04-21) * paragraphs [0002], [0055], [0088], [0090] *	1-10	
			TECHNICAL FIELDS SEARCHED (IPC)
			D02G D02J
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 20 February 2023	Examiner 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 18 1535

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.

20-02-2023

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP H11107084 A	20-04-1999	NONE	

JP 2016145429 A	12-08-2016	CN 105862201 A	17-08-2016
		JP 6407749 B2	17-10-2018
		JP 2016145429 A	12-08-2016

JP 2016056493 A	21-04-2016	CN 105401280 A	16-03-2016
		DE 102015216773 A1	10-03-2016
		JP 6533436 B2	19-06-2019
		JP 2016056493 A	21-04-2016
		TW 201610250 A	16-03-2016
