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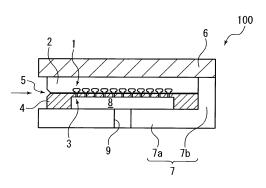
 Hashimoto, Kinzo Kyoto-shi Kyoto (JP)

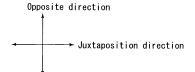
(74) Representative: HOFFMANN EITLE Patent- und Rechtsanwälte Arabellastrasse 4 81925 München (DE)

(54) Multiple yarn interlacing device

(57) The present invention provides a multiple yarn interlacing device that interlaces a plurality of yarns and which requires a reduced number of components and allows the pitch of yarn paths to be reduced, the device further having a simple configuration. The multiple yarn interlacing device 100 includes a first member 2 having a plurality of yarn traveling spaces 1 formed as spaces through which respective multifilament yarns Y travel and a second member 4 having a plurality of fluid injecting holes 3 through which a fluid to be injected into the respective yarn traveling spaces 1 flows.

FIGURE 2





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EUROPEAN SEARCH REPORT

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| DOCUMENTS CONSIDERED TO BE RELEVANT | | | | | | |
|--|--|--|---|--|---|--|
| Category | Citation of document with ir of relevant pass | ndication, where appropriate, ages | | elevant claim | CLASSIFICATION OF THE APPLICATION (IPC) | |
| Х | | 3 659 350 A (MCCULLOUGH JAMES D) 1-8 May 1972 (1972-05-02) figures 1-4 * 7-8 | | 8 | INV. D02J1/08 | |
| Υ | * figures 1-4 * | | | 8 | D02G1/16 | |
| Х | US 4 644 622 A (BAU MICHAEL [DE]) 24 February 1987 (1 * figures 4a,4b * | ER KARL [DE]; HANISCH 987-02-24) | 1 1-4 | 4 | | |
| Х | US 3 324 526 A (THO DOMINICK GIGLIOTTI) 13 June 1967 (1967- * figures 1-3 * | | 1-0 | 5 | | |
| Х | US 3 261 071 A (CLE JOSEPH; CYRIL OSBOR 19 July 1966 (1966- * figures 3-5 * | RNE JOSEPH) | 1-3 | 7,9 | | |
| Х | HUBERT MATTHEW DEWE MARIA R) 25 April 2 | RED KEVIN LYLE [US]; Y [US]; MAKSYMOWYCH 000 (2000-04-25) | 1-0 | 6 | TECHNICAL FIELDS SEARCHED (IPC) | |
| | * figures 1,3a-3f * | | | | D02G | |
| A | WO 89/02942 A1 (SCH [CH]) 6 April 1989 * figures 3,4 * | WEIZERISCHE VISCOSE (1989-04-06) | 1-9 | 9 | | |
| Α | DE 199 47 894 C1 (A 29 March 2001 (2001 * figures 6,8 * | | 1-9 | 9 | | |
| A | US 4 070 815 A (NEG KAZUO) 31 January 1 * figures 19-22 * | FISHI TAKAO; TOMIITA 978 (1978-01-31) | 1-9 | 9 | | |
| | | -/ | | | | |
| | | | | | | |
| | The present search report has l | ' | | | | |
| Place of search Date of con | | Date of completion of the searc | | | Examiner | |
| | The Hague | 7 October 2009 | ober 2009 Bar | | athe, Rainier | |
| X : parti Y : parti docu A : tech | ATEGORY OF CITED DOCUMENTS icularly relevant if taken alone icularly relevant if combined with another and the same category nological background written disclosure | L : document ci | nt documen g date ited in the a ted for othe | t, but publis pplication r reasons | shed on, or | |



EUROPEAN SEARCH REPORT

Application Number EP 08 01 3762

| ategory | Citation of document with in of relevant passa | | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) | | |
|---|--|--|--|---|--|--|
| Y | US 3 822 449 A (DIC 9 July 1974 (1974-0 * figure 1 * | <u>-</u> К В) | 7-8 | | | |
| E | DE 10 2008 018970 A GMBH & CO KG [DE]) 30 October 2008 (200 * figures 3-6 * | • | 1-6 | | | |
| Ξ | DE 10 2008 008516 A TEMCO WATTW [CH]) 21 August 2008 (2008 * figures 1-10 * | 1 (OERLIKON HEBERLEIN 8-08-21) | 1-8 | | | |
| | | | | TECHNICAL FIELDS SEARCHED (IPC) | | |
| | | | | | | |
| | | | | | | |
| | The present search report has b | een drawn un for all claims | _ | | | |
| | Place of search | Date of completion of the search | 1 | Examiner | | |
| | | 7 October 2009 | · · · · · · · · · · · · · · · · · · · | | | |
| The Hague 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 | | T : theory or princip E : earlier patent de after the filing da er D : document cited L : document cited | October 2009 Barathe, Rainier 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 8: member of the same patent family, corresponding | | | |

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

EP 08 01 3762

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.

07-10-2009

| | Patent document ed in search report | | Publication date | | Patent family member(s) | | Publication date |
|----|--|----|------------------|--|---|--------------------------|--|
| US | 3659350 | Α | 02-05-1972 | DE | 2114582 | A1 | 21-10-197 |
| US | 4644622 | A | 24-02-1987 | EP US | 0152919 4592119 | | 28-08-1989 03-06-1980 |
| US | 3324526 | Α | 13-06-1967 | NONE | | | |
| US | 3261071 | A | 19-07-1966 | DE LU | 1946072 50176 | | 15-09-1960 01-03-1960 |
| US | 6052878 | A | 25-04-2000 | BR CA EP JP MX TR WO | 0011583 2370211 1190129 2003500563 PA01012178 200103436 0073555 | A1 A1 T A T2 | 19-03-2002 07-12-2002 27-03-2002 07-01-2002 22-07-2002 21-05-2002 07-12-2002 |
| WO | 8902942 | A1 | 06-04-1989 | EP JP US | 0333789 2501395 5008991 | T | 27-09-1989 17-05-1999 23-04-199 |
| DE | 19947894 | C1 | 29-03-2001 | NONE | | | |
| US | 4070815 | Α | 31-01-1978 | GB GB IT | 1535037 1535036 1049932 | Α | 06-12-197 06-12-197 10-02-198 |
| US | 3822449 | Α | 09-07-1974 | NONE | | | |
| DE | 102008018970 | A1 | 30-10-2008 | NONE | | | |
| DF | 102008008516 | A1 | 21-08-2008 | CN | 101358396 | Α | 04-02-200 |

FORM P0459

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