



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
26.02.2020 Bulletin 2020/09

(51) Int Cl.:
D02G 3/06 ^(2006.01)
B29C 70/16 ^(2006.01) **D02G 3/40** ^(2006.01)

(43) Date of publication A2:
16.10.2019 Bulletin 2019/42

(21) Application number: **19166625.4**

(22) Date of filing: **01.04.2019**

(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

(71) Applicant: **DON & LOW LIMITED**
Forfar, Angus DD8 1FR, Scotland (GB)

(72) Inventor: **HYND, John Patrick**
Angus, DD8 1FR (GB)

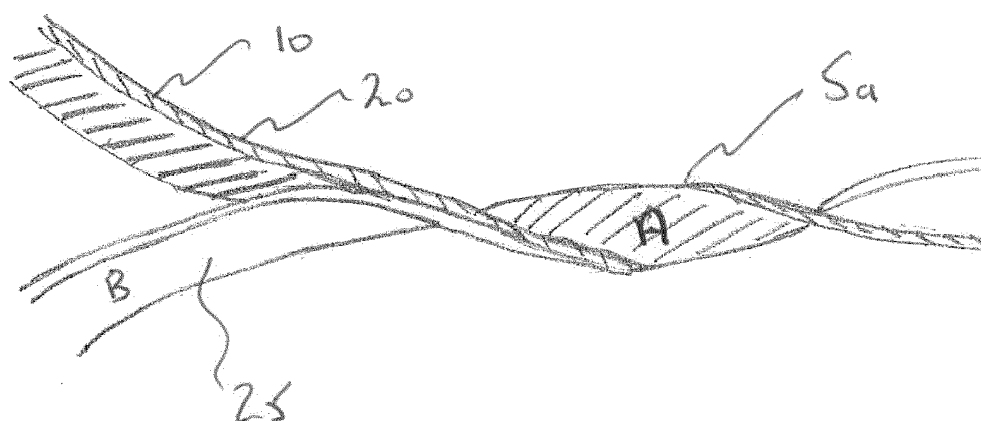
(74) Representative: **Moreland, David**
Marks & Clerk LLP
Aurora
120 Bothwell Street
Glasgow G2 7JS (GB)

(30) Priority: **12.04.2018 GB 201806046**

(54) **IMPROVEMENTS IN OR RELATING TO POLYMER MATERIALS**

(57) There is provided an elongate element (5; 5a to 5d), such as a composite and/or twisted elongate element or braid, comprising a plurality of elongate elements (10) twisted/braided together and which comprise at least one first elongate elements (20) and at least one second elongate element (25), the or each first elongate element (20) comprises a first polymer material A and the or each

second elongate element comprises a second polymeric material B, a melting point (MP_A) of material A is lower than the melting point (MP_B) of material B. In a consolidated material (100) comprising at least one elongate (5; 5a to 5d), material A acts as a matrix binder/adhesive agent, and material B acts as a strengthening/integrity providing agent.



Drawing 1. Two yarns twisted together

Figure 1



EUROPEAN SEARCH REPORT

 Application Number
EP 19 16 6625

5

10

15

20

25

30

35

40

45

50

55

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	US 5 580 642 A (OKAMOTO TADASHI [JP] ET AL) 3 December 1996 (1996-12-03) * column 1, line 63 - column 2, line 3 * * column 3, line 14 - line 48 * * column 4, line 22 - line 53; figure 6 * -----	1-4,8, 10,11, 14-16	INV. D02G3/06 D02G3/40 B29C70/16
X	WO 95/00319 A1 (PRINCE SPORTS GROUP INC [US]) 5 January 1995 (1995-01-05) * page 1, line 5 - line 11 * * page 5, line 2 - page 7, line 12; figures 1-3 * -----	1-4,10, 11,13-16	
X	EP 0 717 133 A2 (HOECHST AG [DE]) 19 June 1996 (1996-06-19) * page 2, line 3 - line 8 * * page 3, line 43 - page 6, line 36 * -----	1-4,8-16	
X	EP 0 182 335 A2 (PHILLIPS PETROLEUM CO [US]) 28 May 1986 (1986-05-28) * page 2, line 4 - line 26 * * page 3, line 11 - line 25 * * page 4, line 16 - line 36; example 1 * -----	1-4, 8-11, 13-16	TECHNICAL FIELDS SEARCHED (IPC) D02G B29C B32B D03D D04C A45C B29B
X	EP 0 133 893 A2 (BAYER AG [DE]) 13 March 1985 (1985-03-13) * page 3, line 1 - page 14, line 32 * -----	1-16	
X	EP 0 729 289 A2 (TEIJIN LTD [JP]; MATSUSHITA ELECTRIC IND CO LTD [JP]) 28 August 1996 (1996-08-28) * page 3, line 44 - page 4, line 32 * -----	1-5, 8-11, 13-16	
	-/--		
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 17 January 2020	Examiner Pollet, Didier
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)



EUROPEAN SEARCH REPORT

Application Number
EP 19 16 6625

5

10

15

20

25

30

35

40

45

50

55

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	US 2008/182471 A1 (DANZEY LEE B [US]) 31 July 2008 (2008-07-31) * paragraph [0020]; figure 5 * * paragraph [0024] - paragraph [0026]; figures 7-8 *	1-4, 8-16	
X	----- US 4 275 117 A (CRANDALL STEVEN J) 23 June 1981 (1981-06-23) * column 3, line 57 - column 4, line 62; figures 1-2 * * column 6, line 30 - line 39 *	1-4, 8-11, 14-16	
X	----- US 5 366 797 A (ROETGERS ANDRE [DE] ET AL) 22 November 1994 (1994-11-22) * column 2, line 11 - column 4, line 30 * -----	1-4, 8-11, 13-16	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
Place of search Munich		Date of completion of the search 17 January 2020	Examiner Pollet, Didier
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)

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

EP 19 16 6625

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.

17-01-2020

10

15

20

25

30

35

40

45

50

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5580642	A	03-12-1996	JP H05269726 A	19-10-1993
			US 5580642 A	03-12-1996

WO 9500319	A1	05-01-1995	TW 235970 B	11-12-1994
			WO 9500319 A1	05-01-1995

EP 0717133	A2	19-06-1996	AT 199946 T	15-04-2001
			AU 693292 B2	25-06-1998
			CA 2165402 A1	17-06-1996
			DE 59509109 D1	26-04-2001
			DK 0717133 T3	23-04-2001
			EP 0717133 A2	19-06-1996
			ES 2154710 T3	16-04-2001
			FI 956013 A	17-06-1996
			JP H08260276 A	08-10-1996
			KR 960023340 A	18-07-1996
			PL 311862 A1	24-06-1996
			TW 382642 B	21-02-2000
			US 5688594 A	18-11-1997

EP 0182335	A2	28-05-1986	AT 79125 T	15-08-1992
			AU 589916 B2	26-10-1989
			CA 1277188 C	04-12-1990
			DE 3586454 D1	10-09-1992
			DE 3586454 T2	14-01-1993
			EP 0182335 A2	28-05-1986
			JP H0346010 B2	12-07-1991
			JP S61130345 A	18-06-1986
			US 4800113 A	24-01-1989
			US 4925729 A	15-05-1990

EP 0133893	A2	13-03-1985	DE 3341292 A1	03-01-1985
			EP 0133893 A2	13-03-1985

EP 0729289	A2	28-08-1996	CN 1143303 A	19-02-1997
			DE 69600443 D1	27-08-1998
			EP 0729289 A2	28-08-1996
			US 5776597 A	07-07-1998

US 2008182471	A1	31-07-2008	NONE	

US 4275117	A	23-06-1981	DE 2920513 A1	29-11-1979
			FR 2426765 A1	21-12-1979
			GB 2028885 A	12-03-1980
			IT 1192773 B	04-05-1988
			JP S6086598 U	14-06-1985

EPO FORM P0459

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

55

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

EP 19 16 6625

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.

17-01-2020

10

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		JP S54159032 A	15-12-1979
		NL 7904033 A	26-11-1979
		US 4275117 A	23-06-1981

US 5366797 A	22-11-1994	AT 153087 T	15-05-1997
		EP 0551832 A1	21-07-1993
		FI 930130 A	16-07-1993
		JP H05272020 A	19-10-1993
		US 5366797 A	22-11-1994

15

20

25

30

35

40

45

50

EPO FORM P0459

55

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