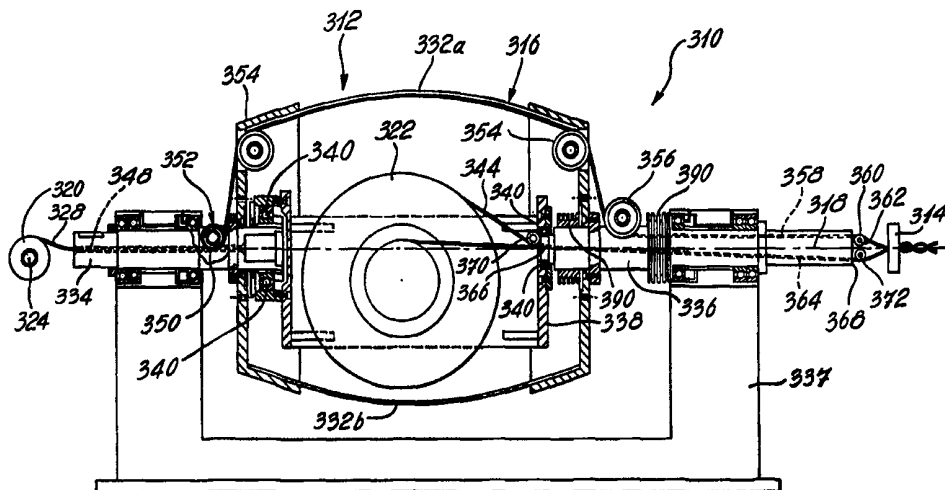




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : D07B 3/04, 7/02, 7/06, B65H 59/38	A3	(11) International Publication Number: WO 99/54542 (43) International Publication Date: 28 October 1999 (28.10.99)
(21) International Application Number: PCT/CA99/00339 (22) International Filing Date: 19 April 1999 (19.04.99) (30) Priority Data: 2,235,170 17 April 1998 (17.04.98) CA (71) Applicant (for all designated States except US): LEFEBVRE FRERES LIMITEE [CA/CA]; 3900, boulevard Tricentenaire, Montréal, Québec H1B 5L6 (CA). (72) Inventor; and (75) Inventor/Applicant (for US only): BRAZEAU, Michel [CA/CA]; 18, 394 ^e me rue, Saint-Hippolyte, Québec JOR 1P0 (CA). (74) Agents: SOFIA, Michel et al.; Swabey Ogilvy Renault, Suite 1600, 1981 McGill College Avenue, Montréal, Québec H3A 2Y3 (CA).	(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 9 March 2000 (09.03.00)	

(54) Title: APPARATUS FOR HELICALLY ASSEMBLING AT LEAST TWO FILAMENTS



(57) Abstract

An apparatus (310) for manufacturing stranded cables comprises a supply spool assembly (320, 322) having filaments wound thereon, and a flyer (316) mounted for rotation about a central axis for imparting a rotational movement to the filaments, while guiding them axially through the apparatus (310). The filaments are wound together as they pass a gathering point centrally disposed to the central axis and downstream of the flyer (316). A filament advancing assembly (16) is provided downstream of the gathering point to impart an advancing speed to the filaments. A control system allows for the control of the number of revolutions of the flyer (316) per unit length of filaments advancing through the gathering point to ensure that a constant helical pitch is obtained. The tension in the filaments is controlled by creating an adjustable opposition to the pulling action of the filament advancing assembly (16) on the filaments thereby ensuring the production of a high quality stranded cable.

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/CA 99/00339

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 D07B3/04 D07B7/02 D07B7/06 B65H59/38

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 D07B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	27303: "Machine for twisting a 2x1-cord" RESEARCH DISCLOSURE, no. 273, January 1987, NEW YORK, NY, USA, XP002108701 see figure 2	1
A	see figure 2	9,13,14, 21
Y	FR 2 453 933 A (TOKYO ROPE MFG. CO. LTD.) 7 November 1980 see page 2, line 30 - page 3, line 4; figure 2	1
A	see page 2, line 30 - page 3, line 4; figure 2	2,9, 12-15, 21,24
A	GB 625 749 A (R.A. SMITH)	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

° Special categories of cited documents :

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- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

9 July 1999

Date of mailing of the international search report

18. 01 2000

Name and mailing address of the ISA

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Authorized officer

GOODALL, C

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA 99/00339

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-25

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: 1-25

Supply spool and flyer arrangement for an apparatus for helically assembling a pair of filaments

2. Claims: 26,27

Apparatus for helically assembling filaments with a tension equaliser

3. Claims: 28,29

Helical pitch setting system for a stranding apparatus using interchangeable capstan wheels of different diameters

4. Claims: 30-36

Tension control system for a filament being drawn off from a supply spool

5. Claims: 37-86

Apparatus for helically assembling filaments or for assembling at least one filament on a core with independent supply spools for each filament

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/CA 99/00339

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 2453933 A	07-11-1980	JP 55136534 A	24-10-1980
		BE 882762 A	31-07-1980
		DE 3014190 A	23-10-1980

GB 625749 A		NONE	
