

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
29 December 2004 (29.12.2004)

PCT

(10) International Publication Number
WO 2004/113206 A3

(51) International Patent Classification⁷: B65H 23/26

WICKMAN, Vernon, C. [US/US]; R.R. #1, Box 65, Port Wing, WI 54865 (US). CARLSON, Ryan, J. [US/US]; 13636 East Culhane Road, Brule, WI 54820 (US).

(21) International Application Number:
PCT/US2004/019401

(74) Agents: CEPURITIS, Talivaldis et al.; OLSON & HIERL, LTD., 20 North Wacker Drive, 36th Floor, Chicago, IL 60606 (US).

(22) International Filing Date: 17 June 2004 (17.06.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/465,219 19 June 2003 (19.06.2003) US
10/717,019 19 November 2003 (19.11.2003) US

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, 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, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(71) Applicant (for all designated States except US): SPECIALTY SYSTEMS ADVANCED MACHINERY, INC. [US/US]; P.O. Box 536, 68150 Front Street, Iron River, WI 54847-0536 (US).

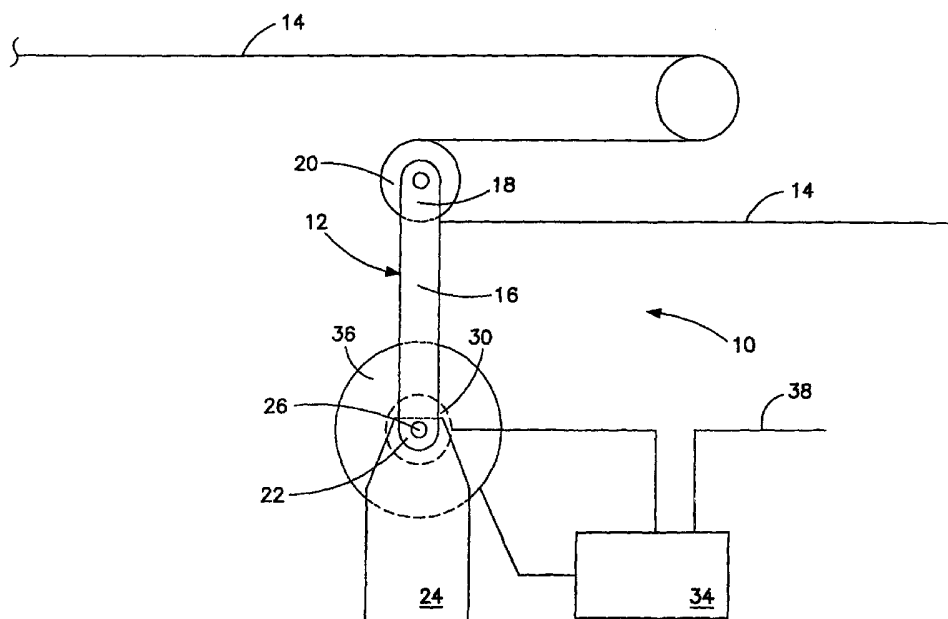
(72) Inventors; and

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,

(75) Inventors/Applicants (for US only): ST. GERMAIN, Patrick, C. [US/US]; R.R. #2, Box 100B, Iron River, WI 54847 (US). LANGRECK, Gerald, K. [US/US]; W7473 West Evans Bay Road, Phillips, WI 54555 (US).

[Continued on next page]

(54) Title: WEB TENSIONING DEVICE WITH PLURAL CONTROL INPUTS



(57) Abstract: A web tensioning device (12) utilizes a dancer arm (16) which can be positioned by a controlled servo motor (36). In a preferred embodiment, the controller (34) for the servo motor receives an input signal based on the acceleration (positive or negative) of the dancer arm and implements a torque component necessary to maintain predetermined web tension, for example, an applied torque component that changes the position of the dancer arm (16). The controller may also receive additional input signals indicative of the acceleration of the web itself.

WO 2004/113206 A3



SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG).

(88) Date of publication of the international search report:
12 May 2005

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/19401

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : B65H 23/26
 US CL : 242/417.3

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)

U.S. : 242/417.2, 417.3, 418.1

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 practicable, 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.
X	US 6,067,778 A (Yamamoto et al) 30 May 2000 (30.05.2000), see Fig. 2 and col. 8, lines 42-63.	1-3, 5
X	US 6,547,707 B2 (Cote) 15 April 2003 (15.04.2003), see whole document.	1-2, 4, 6, 10, 13-14
---		-----
Y		7-9, 11-12
Y	US 2,985,396 A (Johnson) 23 May 1961 (23.05.1961), see Fig. 1.	11
Y	US 6,024,319 A (Kawabata et al) 15 February 2000 (15.02.2000), see col. 12, lines 18-20.	12
Y	US 3,507,459 A (Campbell) 21 April 1970 (21.04.1970), see col. 2, lines 66-72.	7-8
Y	US 1,605,842 A (Jones) 02 November 1926 (02.11.1926), see Fig. 1.	9

Further documents are listed in the continuation of Box C.

See patent family annex.

Special categories of cited documents:		
"A" document defining the general state of the art which is not considered to be of particular relevance	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent published on or after the international filing date	"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
"I" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"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
"O" document referring to an oral disclosure, use, exhibition or other means		
"P" document published prior to the international filing date but later than the priority date claimed	"&"	document member of the same patent family

Date of the actual completion of the international search

14 October 2004 (14.10.2004)

Date of mailing of the international search report

23 DEC 2004

Name and mailing address of the ISA/US

Mail Stop PCT, Attn ISA US
 Commissioner for Patents
 P O Box 1450
 Alexandria, Virginia 22313-1450

Facsimile No. (703) 305-3230

Authorized officer

John M. Jillions *J. Volpe* *JVC*

Telephone No. (703) 308-2685