(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 312 033 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
06.05.2015 Bulletin 2015/19

(43) Date of publication A2:
20.04.2011 Bulletin 2011/16

(21) Application number: **10187338.8**

(22) Date of filing: **12.10.2010**

(51) Int Cl.:
D05B 19/12 *(2006.01)* ***D05B 65/00*** *(2006.01)*
D05B 69/10 *(2006.01)*

(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

(30) Priority: **13.10.2009 JP 2009236493**
13.10.2009 JP 2009236454

(71) Applicant: **JUKI Corporation**
Tama-shi
Tokyo
206-8551 (JP)

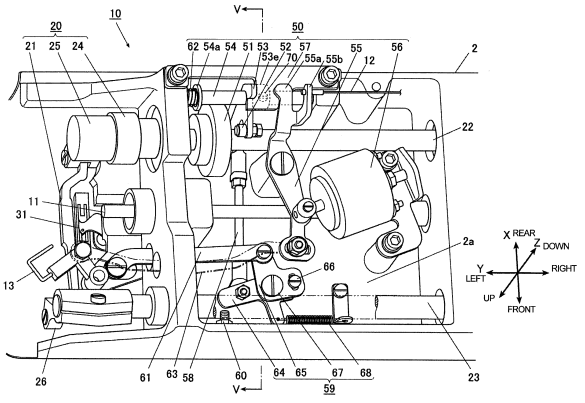
(72) Inventors:
- **Tsuchikawa, Yoshitaka**
  Tokyo 206-8551 (JP)
- **Nittou, Takashi**
  Tokyo 206-8551 (JP)

(74) Representative: **Hoeger, Stellrecht & Partner Patentanwälte**
Uhlandstrasse 14c
70182 Stuttgart (DE)

(54) **Sewing machine**

(57) The invention relates to a sewing machine (10). The sewing machine (10) includes a main shaft which is rotated by a motor (1) to move a sewing needle, a position detecting means (14, 15) for detecting a rotation angle of the main shaft as a main shaft angle, a thread cutting mechanism (30) having a movable knife (31), a thread cutting cam (51) having a cam groove (51a) formed along a circumferential direction and rotating in synchronization with the rotation of the main shaft, a cam follower (52) configured to engage with the cam groove (51a) to move the movable knife (31) in accordance with the cam groove (51a), a thread cutting actuator (56) which switches the cam follower (52) between an engaging position and a disengaging position with respect to the thread cutting cam (51), and a control means for controlling the thread cutting actuator (56) and the motor (1). The control means includes an operation timing determining means for determining an operation start timing of the thread cutting actuator (56) or the motor (1), based on at least one of a rotation speed (v1, v2) of the motor (1) for a thread cutting operation and a main shaft stopped angle (θ1) at which the main shaft has stopped immediately before the thread cutting operation.

FIG. 2



EP 2 312 033 A3

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 10 18 7338

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 A	EP 2 000 570 A1 (JUKI KK [JP]) 10 December 2008 (2008-12-10) * paragraph [0021] - paragraph [0057]; figures 1-6 *	1 2-8	INV. D05B19/12 D05B65/00 D05B69/10
A	JP 2003 326058 A (JUKI KK) 18 November 2003 (2003-11-18) * abstract; figures 1-9 *	1-8	
A	US 5 967 069 A (RODRIGUEZ FELIPE [US] ET AL) 19 October 1999 (1999-10-19) * column 3, line 42 - column 8, line 50; figures 1-12 *	1-8	
A	US 5 372 079 A (KITAI KOJI [JP] ET AL) 13 December 1994 (1994-12-13) * column 2, line 3 - column 7, line 24; figures 1-9 *	1-8	
A	US 4 421 046 A (MORITA MINORU [JP]) 20 December 1983 (1983-12-20) * column 3, line 42 - column 6, line 37; figures 1-7 *	1-8	TECHNICAL FIELDS SEARCHED (IPC) D05B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	11 February 2015	Herry-Martin, D

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 10 18 7338

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.

11-02-2015

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2000570 A1	10-12-2008	CN 101319439 A	10-12-2008
		EP 2000570 A1	10-12-2008
		JP 2008295946 A	11-12-2008
		KR 20080106850 A	09-12-2008
JP 2003326058 A	18-11-2003	CN 1458322 A	26-11-2003
		CN 101230523 A	30-07-2008
		JP 3973484 B2	12-09-2007
		JP 2003326058 A	18-11-2003
		KR 20030088368 A	19-11-2003
US 5967069 A	19-10-1999	NONE	
US 5372079 A	13-12-1994	NONE	
US 4421046 A	20-12-1983	DE 3106386 A1	10-12-1981
		US 4421046 A	20-12-1983

EPO FORM P0459

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