



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
30.03.2016 Bulletin 2016/13

(51) Int Cl.:
F04B 1/29 (2006.01) **B26F 3/00** (2006.01)
F04B 1/30 (2006.01) **F04B 1/32** (2006.01)
F04B 9/08 (2006.01) **F04B 9/115** (2006.01)
F04B 23/06 (2006.01)

(43) Date of publication A2:
23.03.2016 Bulletin 2016/12

(21) Application number: **15183740.8**

(22) Date of filing: **03.09.2015**

(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:
MA

(71) Applicant: **Sugino Machine Limited**
Uozu-shi,
Toyama 937-8511 (JP)

(72) Inventor: **SATO, Sho**
Uozu-shi, Toyama 937-8511 (JP)

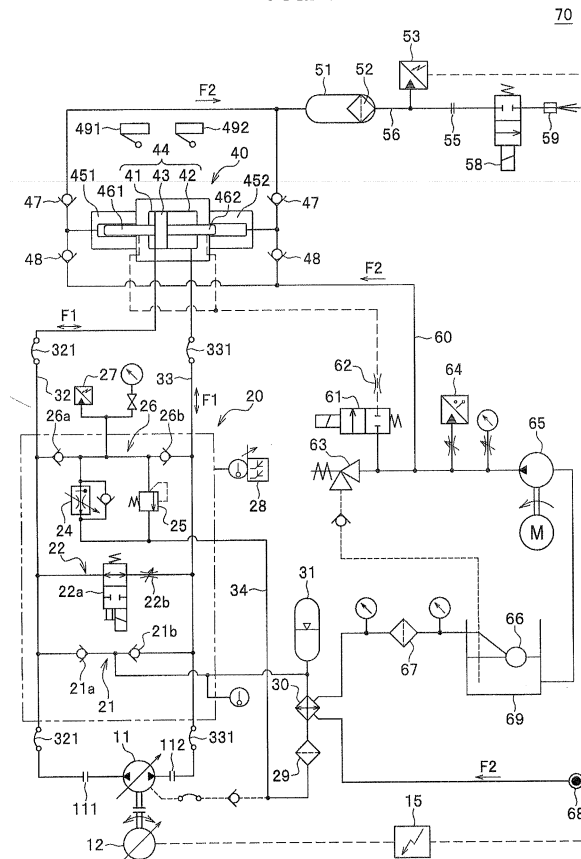
(74) Representative: **Hague, Alison Jane**
Dehns
St Bride's House
10 Salisbury Square
London
EC4Y 8JD (GB)

(30) Priority: **19.09.2014 JP 2014190725**

(54) **ULTRA-HIGH PRESSURE GENERATOR**

(57) An ultra-high pressure generator (70) includes: an intensifier (40) that discharges pressurized fluid (F2) and has a double-acting drive cylinder (44) formed to have a first chamber (41) and a second chamber (42) which are delimited by a piston (43) driven by a working medium (F1), high pressure cylinders (451,452) which discharge the pressurized fluid (F2), and plungers (461,462) which reciprocate with the piston (43) in the high pressure cylinders (461,462); a closed-circuit working medium pump (11) having a first port (111) and a second port (112) as suction/discharge ports for the working medium (F1) ; a drive source (12) that drives the closed-circuit working medium pump (11) ; a first working medium channel (32) that communicates the first chamber (41) with the first port (111) ; and a second working medium channel (33) that communicates the second chamber (42) with the second port (112), wherein the closed-circuit working medium pump (11) sucks/discharges the working medium (F1) from/to the first and second chambers (41,42) respectively via the first and second ports (111,112) to drive the intensifier (40).

FIG. 1





EUROPEAN SEARCH REPORT

Application Number
EP 15 18 3740

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 4 606 709 A (CHISOLM JAMES P [US]) 19 August 1986 (1986-08-19)	1-3,5	INV. F04B1/29
Y	* column 1, line 14 - column 7, line 68; figures 1-4 *	4	B26F3/00 F04B1/30 F04B1/32
Y	US 2013/167951 A1 (TRIEB FRANZ [AT] ET AL) 4 July 2013 (2013-07-04) * paragraph [0036]; figure 1 *	4	F04B9/08 F04B9/115 F04B23/06
			TECHNICAL FIELDS SEARCHED (IPC)
			F04B B26F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 17 February 2016	Examiner Jurado Orenes, A
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	

 1
EPO FORM 1503 03.82 (P04C01)

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

EP 15 18 3740

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.

17-02-2016

10

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4606709 A	19-08-1986	NONE	

US 2013167951 A1	04-07-2013	AT 512322 A1	15-07-2013
		CA 2798423 A1	30-06-2013
		EP 2610490 A2	03-07-2013
		JP 2013139871 A	18-07-2013
		RU 2012157990 A	10-07-2014
		US 2013167951 A1	04-07-2013

15

20

25

30

35

40

45

50

55

EPO FORM P0459

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