



Europäisches
Patentamt
European
Patent Office
Office européen
des brevets



(11)

EP 3 332 916 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
15.08.2018 Bulletin 2018/33

(51) Int Cl.:
B25C 1/04 (2006.01)

(43) Date of publication A2:
13.06.2018 Bulletin 2018/24

(21) Application number: 17205914.9

(22) Date of filing: 07.12.2017

(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 MD TN

(30) Priority: 08.12.2016 CN 201621342224 U

(71) Applicant: **TTI (Macao Commercial Offshore)
Limited
Macao (MO)**

(72) Inventors:

- **TAN, Ying Xiang**
Dongguan City, Guangdong (CN)
- **LIN, Hai Ling**
Dongguan City, Guangdong (CN)

(74) Representative: **Stevenson-Hill, Jack Patrick et al
Marks & Clerk LLP
1 New York Street
Manchester M1 4HD (GB)**

(54) PNEUMATIC TOOL

(57) A pneumatic tool including a cylinder, a piston inside the cylinder and adapted to reciprocate, and a piston rod connected to the piston. The piston has a first seal ring and a second seal ring fixed thereto. The first seal ring and the second seal ring are spaced apart along the cylinder axial direction and a storage space for storing lubricating oil is defined between the first seal ring and the second seal ring. The pneumatic tool in the disclosure may effectively avoid the problems that the frictional force increases because of the lubricating oil depleting due to the use of the tool for a long time, and even worse the pneumatic tool does not work effectively.

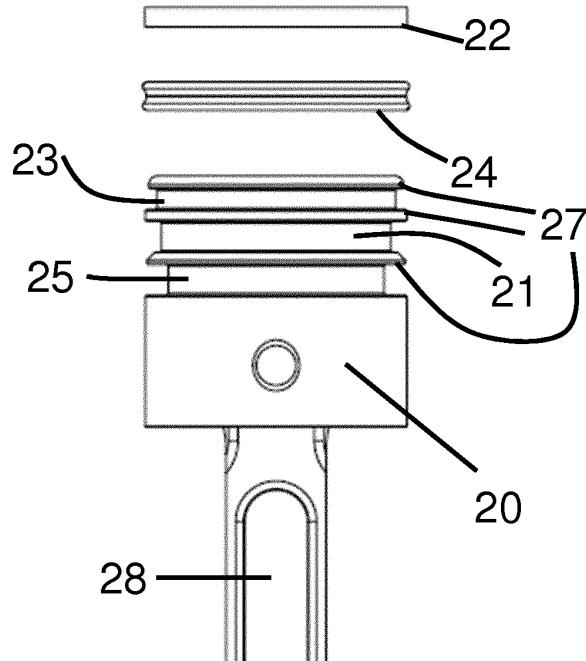


Fig. 1a



EUROPEAN SEARCH REPORT

Application Number
EP 17 20 5914

5

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
10 X	US 2009/090759 A1 (LEIMBACH RICHARD L [US] ET AL) 9 April 2009 (2009-04-09) * paragraphs [0009] - [0024], [0070] - [0082], [0112] - [0114], [0197] - [0201]; claims; figures *	1,2	INV. B25C1/04
15 X	----- US 3 160 075 A (POWERS RICHARD E) 8 December 1964 (1964-12-08) * columns 1,5,7; figures *	1,2	
20 X	----- US 3 572 211 A (DOYLE RICHARD H) 23 March 1971 (1971-03-23) * columns 2-5; figures *	1,2	
25 A	----- US 2015/136826 A1 (MASSLER ORLAW [LI] ET AL) 21 May 2015 (2015-05-21) * the whole document *	1,2	
30 A	----- US 6 016 946 A (PHILLIPS ALAN [US] ET AL) 25 January 2000 (2000-01-25) * columns 10-12; claims; figures *	1,2	TECHNICAL FIELDS SEARCHED (IPC)
35 A	----- US 4 523 646 A (DOYLE RICHARD H [US] ET AL) 18 June 1985 (1985-06-18) * columns 1,2; figures *	1	B25C
40			
45			
50 1	The present search report has been drawn up for all claims		
55	Place of search The Hague	Date of completion of the search 5 April 2018	Examiner David, Radu
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			



Europäisches
Patentamt
European
Patent Office
Office européen
des brevets

Application Number

EP 17 20 5914

5

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1, 2

The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).



5

LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 17 20 5914

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

10

1. claims: 1, 2

pneumatic tool with seal rings on piston, for improved lubrication

15

2. claims: 3-7

pneumatic tool with a door member on ejection passage, for improved access when jams occur

20

3. claims: 8-11

pneumatic tool with an air hole device linked to the pressure chamber, for improved power control

25

30

35

40

45

50

55

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

EP 17 20 5914

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.

05-04-2018

10	Patent document cited in search report	Publication date	Patent family member(s)		Publication date
15	US 2009090759 A1	09-04-2009	AU 2008308801 A1		09-04-2009
			EP 2209593 A1		28-07-2010
			EP 2243600 A2		27-10-2010
20			NZ 584294 A		31-08-2012
			NZ 601490 A		25-10-2013
			TW 200932442 A		01-08-2009
25			US 2009090759 A1		09-04-2009
			US 2009090762 A1		09-04-2009
			US 2011036885 A1		17-02-2011
			US 2011036886 A1		17-02-2011
30			US 2011278340 A1		17-11-2011
			US 2011290846 A1		01-12-2011
			US 2011315736 A1		29-12-2011
35			US 2013153251 A1		20-06-2013
			US 2014069671 A1		13-03-2014
			US 2017266796 A1		21-09-2017
			WO 2009046076 A1		09-04-2009
40	US 3160075 A	08-12-1964	NONE		
	US 3572211 A	23-03-1971	NONE		
45	US 2015136826 A1	21-05-2015	EP 2855090 A1		08-04-2015
			US 2015136826 A1		21-05-2015
			WO 2013178246 A1		05-12-2013
50	US 6016946 A	25-01-2000	EP 0927609 A2		07-07-1999
			US 6016946 A		25-01-2000
55	US 4523646 A	18-06-1985	NONE		