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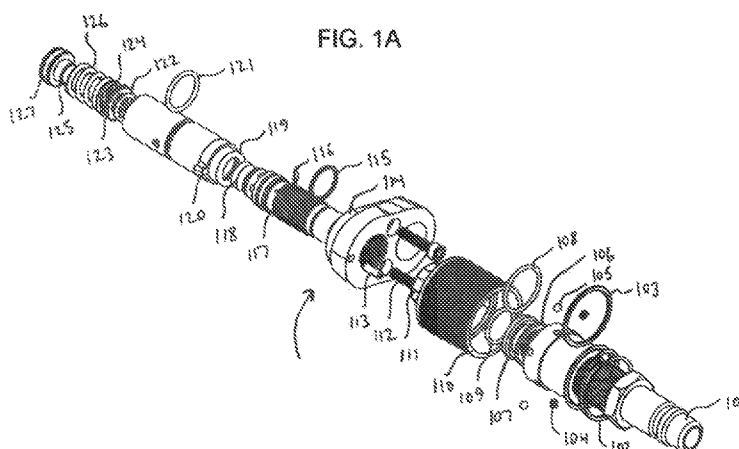
(71) Applicant: **HYTORC DIVISION UNEX CORPORATION** [US/US]; 333 Route 17 North, Mahwah, NJ 07430 (US).

(72) Inventors: **JUNKERS, Eric, P.**; 158 13th Street, Hoboken, NJ 07030 (US). **FORTOLOCZKI, Peter, E.**; 22 Bloomfield Avenue, Essex Fells, NJ 07021 (US). **MCLOUGHLIN, Thomas, F.**; 47 College Avenue, Montclair, NJ 07043 (US). **RASKA, Richard, J.**; 151 Jefferson Avenue, River Edge, NJ 07661 (US).

(74) Agent: **BENDER, Justin, B.**; 445 Park Avenue, Floor 9, New York, NY 10022 (US).

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(54) Title: APPARATUS FOR TIGHTENING THREADED FASTENERS



(57) Abstract: Disclosed inventions include: • integrated pneumatic flow pressure regulator assemblies with and/or without filters and/or swivels, per FIGS. 1A, 1B, 1C, 1D, 1E, 1F, 1G, 1H, 1I, 1J, 1K, 1L, 1M and 1N for use with all of Applicant's pneumatic torque gun models; • activation, or trigger, lock safety assemblies, per FIGS. 2A1, 2A2, 2B1 and 2B2, for use with all of Applicant's electric and pneumatic torque gun models; • automatic torque gun shifting assemblies including: - rotation speed-sensing centrifugal multi-speed automatic shifting assemblies, per FIGS. 3A, 3B and 3C, for use with all of Applicant's electric and pneumatic torque gun models; - torque-sensing centrifugal multi-speed automatic shifting assemblies, per FIGS. 4A, 4B, 4C, 4D, 4E, 4F, 4G, 4H, and 4I, for use with all of Applicant's electric and pneumatic torque gun models; • helical cam, or wobbling, turning force multiplication assemblies, per FIGS. 5A, 5B, 5C, 5D, 5E, 5F and 5G, for use with all of Applicant's electric and pneumatic torque gun models; • pneumatic pressure release, or burst, valve assemblies, per FIGS. 6A, 6B, 6C, 6D, 6E, 6F, 6G, 6H, 6I and 6J, that allow bleeding of pressure to unstick a locked up tool for use with all of Applicant's pneumatic torque gun models; • pneumatic fluid directional valve assemblies, per FIGS. 7A, 7B and 7C, for use with all of Applicant's pneumatic torque gun models; • pneumatic fluid directional and activation, or trigger, lock safety valve assemblies, per FIGS. 8A and 8B, for use with all of Applicant's pneumatic torque gun models; and • pneumatic tool

SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR,
TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *of inventorship (Rule 4.17(iv))*

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- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:

17 May 2018 (17.05.2018)

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2017/019541

A. CLASSIFICATION OF SUBJECT MATTER
INV. B25B21/00 B25B23/145 G05D16/10 B25C1/04
ADD.

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)
B25B G05D B25C

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)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2003/196701 A1 (CLAIRE BRIAN [US] ET AL) 23 October 2003 (2003-10-23)	1,2,7-9
Y	paragraphs [0005] - [0006], [0012] - [0014]; claims 1,15; figures 1,2	3-6
Y	US 5 901 794 A (SCHOEPS KNUT CHRISTIAN [SE] ET AL) 11 May 1999 (1999-05-11) column 3, line 24 - column 4, line 10; figures 3,4	3,4,6
Y	CN 2 782 929 Y (TIAN JIANJIANG [CN]) 24 May 2006 (2006-05-24) abstract; figure 1	5,6
X	US 3 327 196 A (SAHRBACKER EDWARD V) 20 June 1967 (1967-06-20) column 2, line 62 - column 3, line 34; figures 3,4,6,13	10-14
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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

"E" earlier application or patent but published on or after the international filing date

"L" 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)

"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

"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

"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

27 March 2018

Date of mailing of the international search report

10/04/2018

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Pastramas, Nikolaos

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2017/019541

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 2 163 353 A1 (MAKITA CORP [JP]) 17 March 2010 (2010-03-17) paragraphs [0013] - [0016]; figures 1,4,5,7,8 -----	15-19
X	DE 20 2015 103299 U1 (YEAR CONGRATULATE IND CO [TW]) 1 July 2015 (2015-07-01) paragraphs [0050] - [0064]; figures 1,2,5,12,14,15 -----	47-50
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A	column 2, line 38 - column 6, line 37; figures 2,3a,3b,7,8 -----	20-24
Y	US 3 187 860 A (SIMMONS ROGER C) 8 June 1965 (1965-06-08)	25-29
A	column 7, line 35 - column 8, line 47; figures 1,2 -----	30-34
Y	US 2014/209322 A1 (FRANCIS DALE [US] ET AL) 31 July 2014 (2014-07-31) paragraphs [0011] - [0020], [0038], [0232] - [0252]; figures 50-55 -----	30,31, 33,34
Y	EP 2 533 943 A2 (HYTORC DIVISION UNEX CORP [US]) 19 December 2012 (2012-12-19) paragraphs [0015] - [0017], [0023] - [0025]; claims 1-4; figures 2,3,4,5 -----	35-38
Y	US 2015/111692 A1 (SAFTOIU RADU [US]) 23 April 2015 (2015-04-23) paragraphs [0015] - [0017], [0023] - [0025]; claims 1-4; figures 2-5 -----	35-38
X	US 2013/081839 A1 (TULLY GERALD JONATHAN [US]) 4 April 2013 (2013-04-04) paragraphs [0054] - [0058]; figures 2,3,14-16,21,24 -----	39-46
X	US 5 937 370 A (LYSAGHT RICHARD G [US]) 10 August 1999 (1999-08-10) column 1, line 46 - column 2, line 15; figures 1,5a,9 -----	51-54
X	US 2003/212534 A1 (LYSAGHT RICHARD G [US]) 13 November 2003 (2003-11-13) paragraph [0006]; claim 1; figures 1,5,10 -----	51-54

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2017/019541

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 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 No. III Observations where unity of invention is lacking (Continuation of item 3 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 fees, this Authority did not invite payment of additional fees.
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.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-8

integrated pneumatic flow pressure regulator assemblies

2. claims: 10-19

activation or trigger lock safety assemblies

3. claims: 20-34

automatic torque gun shifting assemblies

4. claims: 35-38

helical cam or wobbling turning force multiplication assemblies

5. claims: 39-42

pneumatic pressure release or burst valve assemblies

6. claims: 43-46

pneumatic fluid directional valve assemblies

7. claims: 47-50

pneumatic fluid directional and activation or trigger lock safety valve assemblies

8. claims: 51-54

pneumatic tool cycle counter or odometer assembly

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2017/019541

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International application No

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