

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
12 February 2004 (12.02.2004)

PCT

(10) International Publication Number
WO 2004/012891 A3

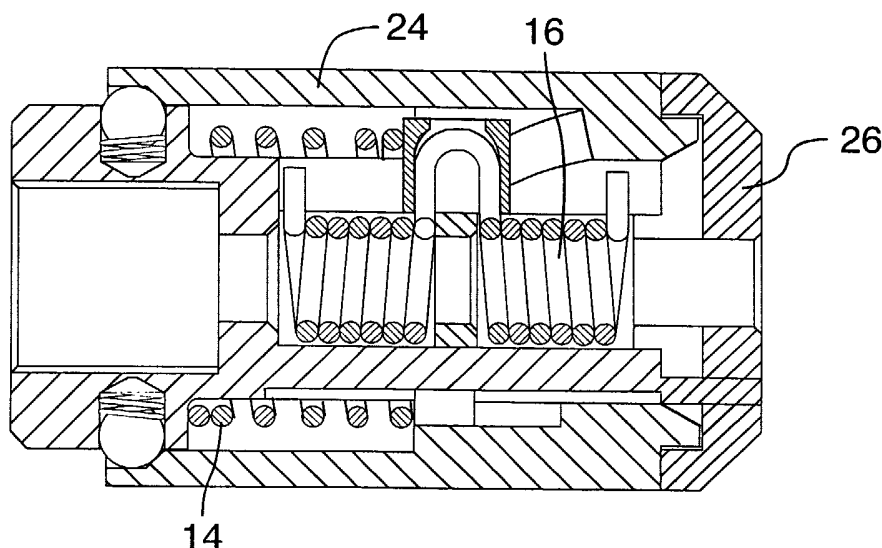
- (51) International Patent Classification⁷: **B23B 31/17** (74) Agent: BORDEN LADNER GERVAIS LLP; 100 Queen Street, Suite 1100, Ottawa, Ontario K1P 1J9 (CA).
- (21) International Application Number:
PCT/CA2003/001163 (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, 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, 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, UZ, VC, VN, YU, ZA, ZM, ZW.
- (22) International Filing Date: 1 August 2003 (01.08.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/400,037 2 August 2002 (02.08.2002) US (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- (71) Applicant: MAXTECH MANUFACTURING INC.
[CA/CA]; 620 McMurray Road, Waterloo, Ontario N2V 2E7 (CA).
- (72) Inventors: ALLAN, Scott, W.; 80 Church Street, Kitchener, Ontario N2G 2S2 (CA). HASAN, Maz, A.; 46 Thorncliffe Street, Kitchener, Ontario N2N 1Z2 (CA). VASUDEVA, Kailash, C.; 10 Grand River Drive, Waterloo, Ontario N2J 4G8 (CA). SINGH, Satnam; 419B Dayna Crescent, Waterloo, Ontario N2K 3M5 (CA).

Declaration under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES,

[Continued on next page]

(54) Title: QUICK-CONNECT CHUCK MECHANISM



(57) Abstract: A chuck (10) for retaining the shank of a tool bit or accessory, having a fixed diameter, inserted in a central channel (42) at a distal end of said chuck (10), comprising at least one torsion spring (14) mounted axially within a housing (12) and having an inner dimension and shape comparable to said shank's outer dimension and shape, and mechanical means (32a, 32b, 34) for winding and unwinding said torsion spring to respectively grip or release said shank, said winding being in a rotational direction consistent with a normal operating rotational direction of said chuck such that said shank (10) tends to further wind said torsion spring (14) for further self-tightening in normal operation.



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, 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, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

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

6 May 2004

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/CA 03/01163

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B23B31/117

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)

IPC 7 B23B

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 practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 582 332 A (FURUKAWA HIKARU ET AL) 15 April 1986 (1986-04-15) column 2, line 11 - line 14 column 2, line 31 - line 40 column 2, line 62 - column 3, line 24 figure 2	1-3,9, 12,19
X	US 2 559 895 A (GOSTA NORLANDER HELGE) 10 July 1951 (1951-07-10) column 1, line 46 - line 49 column 2, line 1 - line 12 figures	1,2,12, 13,21
X	US 2 105 330 A (PAGENKOPF WALTER H) 11 January 1938 (1938-01-11) page 2, left-hand column, line 45 - line 50 figure 2	1,16,17
	----- -/--	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in 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 document 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

22 October 2003

Date of mailing of the international search report

05.03.2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Fiorani, G

INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 03/01163

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2 356 835 A (DUCKETT CECIL H) 29 August 1944 (1944-08-29) page 2, right-hand column, line 34 - line 44 page 2, right-hand column, line 73 - page 3, left-hand column, line 12 figure 2 -----	1,20

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA 03/01163

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 II Observations where unity of invention is lacking (Continuation of item 2 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 fee, this Authority did not invite payment of any additional fee.
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.:

1-9, 12, 13, 16, 17, 19-21

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ 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: 1-9,12,13,16,17,19-21

1.1. claims: 1-8

Spring chuck with short kinematism between command sleeve and spring

1.2. claim: 1+3+19

Spring chuck with economical command sleeve

1.3. claim: 1+13

Spring chuck for non-cylindrical tool shanks

1.4. claim: 1+16

Spring chuck with tool shank secured in both rotational directions

1.5. claim: 1+20

Spring chuck with increased contact surface

1.6. claim: 1+21

Spring chuck with shank abutment

2. claims: 1+3+9+10-11

Spring chuck with non-retractable command sleeve

3. claims: 1+14-15

Spring chuck with means for axially orienting the tool shank

4. claim: 1+18

Spring chuck with means for preventing extraction of the tool shank

5. claims: 1+22, 24-31

Chuck with distributed retention forces

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

6. claim: 1+23

Spring chuck allowing a more flexible manufacturing process

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/CA 03/01163

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4582332	A	15-04-1986	JP 1645049 C	28-02-1992
			JP 3010448 B	13-02-1991
			JP 60090609 A	21-05-1985
			EP 0141370 A2	15-05-1985

US 2559895	A	10-07-1951	BE 480994 A	
			CH 261685 A	31-05-1949
			FR 961921 A	25-05-1950
			GB 633817 A	30-12-1949

US 2105330	A	11-01-1938	NONE	

US 2356835	A	29-08-1944	NONE	
