(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
20 September 2007 (20.09.2007)

PCT

(10) International Publication Number
WO 2007/106661 A3

(51) International Patent Classification:
B23B 31/32 (2006.01)

(21) International Application Number:
PCT/US2007/062873

(22) International Filing Date:
27 February 2007 (27.02.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/783,589 16 March 2006 (16.03.2006) US

(71) Applicant *(for all designated States except US)*: **THREE M TOOL AND MACHINE** [US/US]; 8155 Richardson Road, Walled Lake, MI 48390 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **WROBEL, Donald, J.** [US/US]; 7973 S. Shoreside Drive, Traverse City, MI 49684 (US). **CHIZMADIA, Alex, R.** [US/US]; 30617 Palomino, Warren, MI 48093 (US).

(74) Agent: **MCPHERSON, James, M.**; Dobrusin & Thennisch PC, 29 W. Lawrence St., Suite 210, Pontiac, MI 48342 (US).

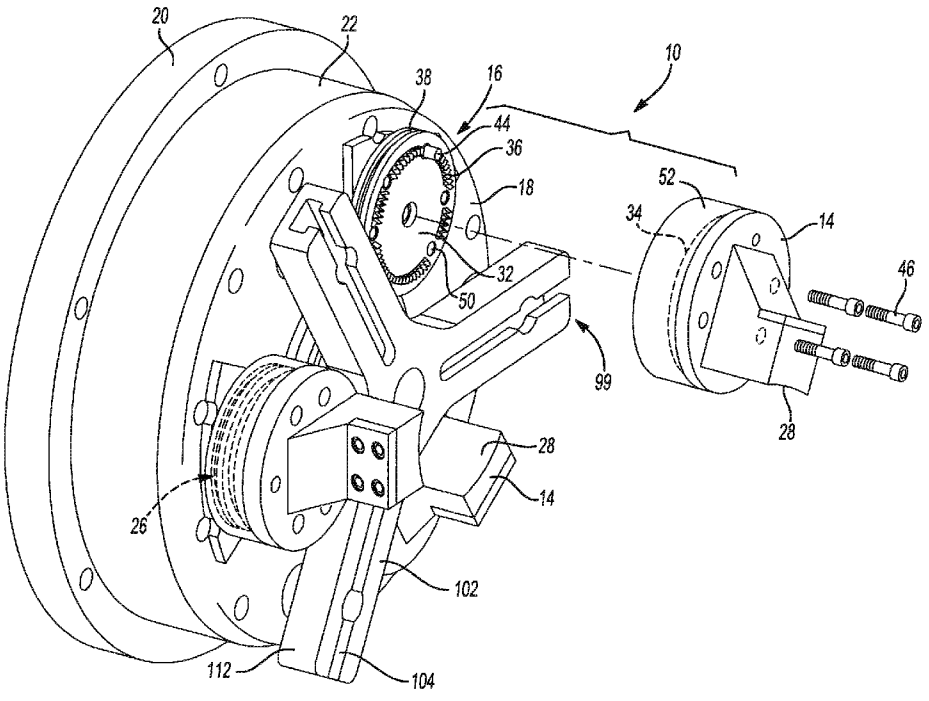
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, 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, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (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*

[Continued on next page]

(54) **Title:** IMPROVED CHUCK ASSEMBLY



(57) **Abstract:** The present invention provides an improved chuck having an engagement feature (26) for positively locating and securing work engaging jaws (14) on a chuck assembly (10), such as a diaphragm chuck assembly. In another aspect, the improved chuck also provides a quick change feature for rapid and improved mounting of the work engaging jaws to the chuck assembly.

WO 2007/106661 A3

(88) Date of publication of the international search report:
21 December 2007

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/US2007/062873

A. CLASSIFICATION OF SUBJECT MATTER
INV. B23B31/32

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)
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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	US 6 089 578 A (CHAI CHENG-CHUNG [TW]) 18 July 2000 (2000-07-18) column 2, line 64 - column 4, line 15 figures 2-5B	1,2,5 3,4,6-8, 12
X	US 3 191 952 A (MORAWSKI LONDON T) 29 June 1965 (1965-06-29) column 1, line 45 - column 3, line 25 figures 1-5	1,2,5
Y	US 2 667 358 A (HIGHBERG GEORGE A) 26 January 1954 (1954-01-26) the whole document	3,4,6,7

-/--

[X] Further documents are listed in the continuation of Box C.

[X] 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 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	Date of mailing of the international search report
27 September 2007	08/10/2007

Name and mailing address of the ISA/	Authorized officer
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	Lorence, Xavier

3

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/062873

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 3 744 808 A (HUGHES C) 10 July 1973 (1973-07-10) column 3, line 61 - column 4, line 11 column 6, lines 14-32 figures 1,6,9,10	6-8,12
A	US 6 145 850 A (REHM FRITZ [DE]) 14 November 2000 (2000-11-14) column 4, line 34 - column 7, line 13	1-7

3

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2007/062873

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 6089578	A	18-07-2000	NONE		
US 3191952	A	29-06-1965	NONE		
US 2667358	A	26-01-1954	NONE		
US 3744808	A	10-07-1973	NONE		
US 6145850	A	14-11-2000	FR	2784916 A1	28-04-2000
			JP	2000126913 A	09-05-2000