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[Continued on next page]

(54) Title: QUICK-RELEASE JAWS WITH SINGLE-PIECE BEARING CHUCK

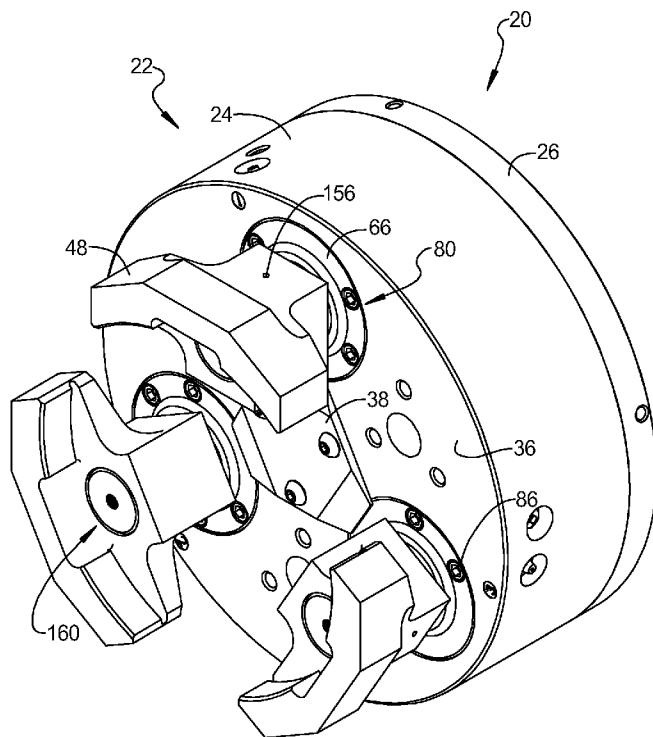


FIG 1

(57) Abstract: A workholding chuck can use actuating members that pivot within a non-split unitary front bearing. The non-split unitary front bearing can include pockets in its central bore that can allow a spherical section of an actuator arm to be inserted into the bearing. The spherical section can include radially recessed areas to facilitate the insertion into the bearing. The jaws can be retained to the actuator arms through the use of a quick-release assembly. The quick-release assembly allows the jaws to easily and quickly be changed to allow the chuck to grasp different workpieces.

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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, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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31 December 2008

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 08/52250

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - B23B 31/00 (2008.04)

USPC - 279/123, 124

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)

USPC: 279/123, 124

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
USPC: 279/123, 124, 106-109 -- term limited -- see search terms below --

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WEST: Databases: PGPB, USPT, USOG, EPAB, JPAB; Google.com

Search terms: quick release, jaw, chuck, actuator, homing, rocker arm, pivot, swivel mount, removable wall, slot, screw, bearing, etc.

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                                                                     | Relevant to claim No. |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Y         | US 3,472,526 A (Hohwart) 14 October 1969 (14.10.1969), entire document, esp., title; abstract; col 3, ln 5-20; col 3, ln 49 - col 4, ln 21; col 4, ln 29-75; fig 2, 5. | 1-9 and 24-28         |
| Y         | US 3,380,747 A (Hohwart et al.) 30 April 1968 (30.04.1968), entire document, esp., col 3, ln 46-60; fig 3.                                                             | 1-9 and 24-28         |
| Y         | US 4,465,289 A (Banks) 14 August 1984 (14.08.1984), entire document, esp., col 3, ln 14-28; fig 2.                                                                     | 8                     |
| A         | US 5,322,305 A (Cross et al.) 21 June 1994 (21.06.1994), entire document.                                                                                              | 1-9 and 24-28         |

☐ Further documents are listed in the continuation of Box C.

\* 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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

22 September 2008 (22.09.2008)

Date of mailing of the international search report

**26 SEP 2008**

Name and mailing address of the ISA/US

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 08/52250

**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:

Group I: claims 1-9 and 24-28 are directed to a chuck comprising: an actuator arm to hold a workpiece retaining jaw at one end and to hold a chuck actuating member at the other end, and an intermediate semi-spherical section having at least two semi-spherical surfaces with radially recessed surfaces therebetween; and a non-split unitary bearing having a bore therethrough with an engaging surface and at least two radially recessed pockets, said bearing being disposable around the semi-spherical section.

Group II: claims 10-23 and 29-37 are directed to a chuck comprising: an actuator arm having a to receive a workpiece retaining jaw on one end, and coupled to a chuck actuating member at the other end; a workpiece retaining jaw; and a quick-release assembly with a retaining member to secure the jaw to and allow removal from the end the actuator arm through non-removing movement of a component of said quick-release assembly coupled to said retaining member.

Group II does not include the inventive concept an actuator arm with an intermediate semi-spherical section having at least two semi-spherical surfaces with radially recessed surfaces therebetween; of Group I.

Group I does not include the inventive concept of a chuck with a quick-release assembly with a retaining member to secure a jaw to and allow removal from an actuator arm through non-removing movement of a component of said quick-release assembly coupled to a retaining member of Group II.

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 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.:  
1-9 and 24-28

**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.