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(71) Applicant (for all designated States except US): **TRANE INTERNATIONAL INC.** [US/US]; 1 Centennial Avenue, Piscataway, NJ 08854-3921 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **BENCO, Michael, G.** [US/US]; 816 Windhill Street, Onalaska, WI 54650 (US). **LAPP, William, E.** [US/US]; 4727 Juniper Street, La Crosse, WI 54601 (US). **LEPAK, Derrick, J.** [US/US]; 3150 25th S Street, La Crosse, WI 54601 (US). **BUTTERWORTH, Arther, L.** [US/US]; N1625 Mickel Road, La Crosse, WI 54601 (US). **JANDA, David** [US/US]; 728 Pleasant Court, Onalaska, WI 54650 (US). **DORMAN, Dennis, R.** [US/US]; N2326 Fen Lockney Drive, La Crosse, WI 54601 (US).

(74) Agents: **EVANS, Edward, J.** et al.; Michael Best & Friedrich LLP, 100 East Wisconsin Avenue, Suite 3300, Milwaukee, WI 53202-4108 (US).

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(54) Title: COMPOSITE METAL-POLYMER BUSHING AND CRANKSHAFT ASSEMBLY

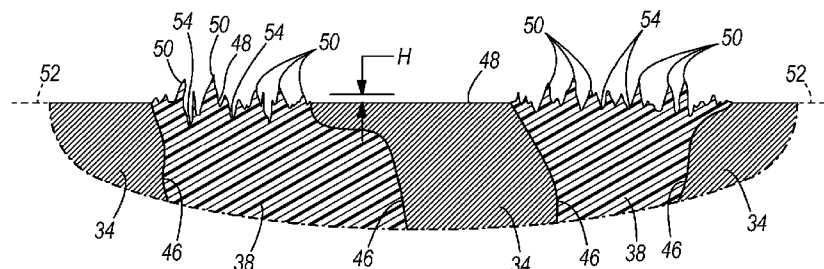


FIG. 4

(57) Abstract: An assembly includes a composite metal-polymer bushing having an outer metal layer with an inner surface, metal particles sintered to the inner surface, a polymer material between the metal particles, a finished interior surface collectively defined by the polymer material and exposed portions of the metal particles, a plurality of interstices formed between the metal particles and the polymer material, and a plurality of ridges defined by the polymer material that protrude above the metal particles. The ridges occupy at least about 8% of the area of a cylindrical reference surface nominally coinciding with the finished interior surface. The assembly also includes a crankshaft having a journal at least partially received within the bushing and supported by the finished interior surface. The journal is polished to a surface finish of about 0.1 microns or less to reduce a wear rate of the bushing.



INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/036510**A. CLASSIFICATION OF SUBJECT MATTER***F04C 29/02(2006.01)i, F04C 18/07(2006.01)i, F04C 18/02(2006.01)i*

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)

F04C 29/02; B22F 7/02; F16C 33/04; F16C 33/02

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models
Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: bushing, polymer, surface, interstices, ridges, crankshaft

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2009-017501 A1 (FEDERAL-MOGUL CORPORATION et al.) 05 February 2009 see paragraph 50 - paragraph 96 and figure 1.	1-25
A	US 04865467 A (BECKER; KARL et al.) 12 September 1989 see column 1, line 4 - column 2, line 49 and figure 3.	1-25
A	WO 2010-091083 A1 (DEXMET CORPORATION et al.) 12 August 2010 see page 3, line 25 - page 11, line 12 and figure 1A.	1-25

 Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

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"&" document member of the same patent family

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Authorized officer

KIM, DONG JIN

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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