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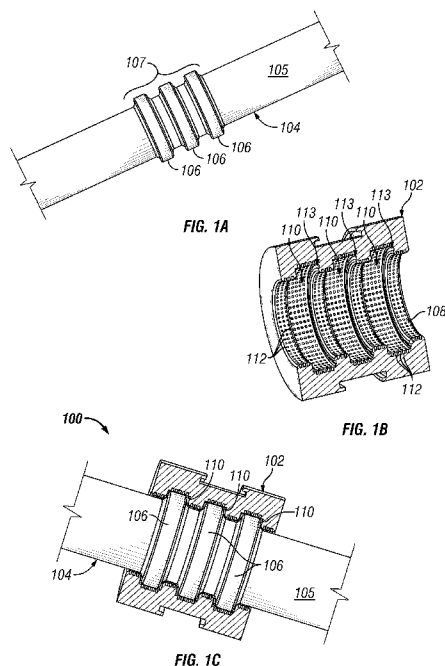
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[Continued on next page]

(54) Title: INTERLOCKING HOLE PATTERN SEAL

(57) Abstract: A seal for a turbomachine is disclosed. The seal assembly in-
cludes a rotatable shaft having a stepped outer circumferential surface that
defines one or more annular protrusions axially-spaced thereon. A seal is
radially-offset from the rotatable shaft and has one or more annular recesses
that extend radially-outward from the inner circumferential surface of the
seal. A plurality of holes are defined in both the inner circumferential surface
and the one or more annular recesses of the seal, the one or more annular re-
cesses being axially-spaced from each other and configured to receive the one
or more annular protrusions in an interlocking fit.



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International application No.
PCT/US2012/030279**A. CLASSIFICATION OF SUBJECT MATTER*****F16J 15/24(2006.01)i, F16J 15/16(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)

F16J 15/24; F03B 11/00; F01D 11/12; F16J 15/44

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: seal, shaft, protrusion, recess, hole, groove and gap.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2008-0080972 A1 (RONALD SCOTT BUNKER) 03 April 2008 See figure 11 and page 4.	1-3,5,7,9,10,13,18 ,19
Y		4,6,11,12,14-17
A		8,20
Y	JP 50-058460 A (KAWAKUCHI TACHU) 21 May 1975 See figures 1-3.	4,11,12,14-17
Y	WO 2004-061340 A1 (MTU AERO ENGINES GMBH et al.) 22 July 2004 See figure 1 and abstract.	6

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

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"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

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"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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