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- (81) **Designated States** (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,

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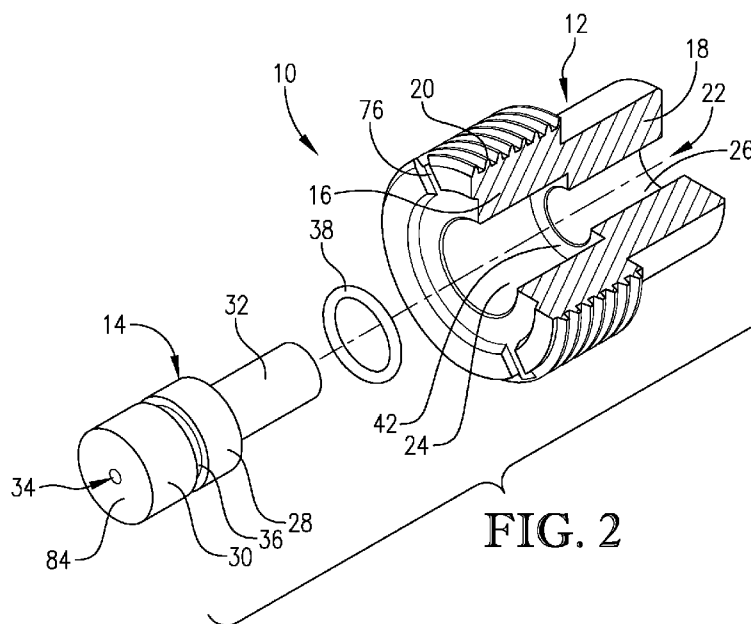
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(54) **Title:** ENERGY TRANSFER DEVICE

**FIG. 2**

(57) **Abstract:** A energy transfer device (10) is provided that is capable of transferring the energy output from one pyrotechnic device (52) to another device (78) for initiating firing thereof. Device (10) comprises a device housing (12) in which a deformable device insert (14) is received. Device insert (14) comprises a central passageway (34) for transmitting the output from a pyrotechnic device (52), including energy, gasses, and/or solids, to another pyrotechnic device (78). The passageway (34) conducts the pyrotechnic device output to a precise location on the second pyrotechnic device (78) where firing is most effectively initiated. The energy transfer device (10) may be employed as a part of a tool (44) used in well completion operations.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/032243**A. CLASSIFICATION OF SUBJECT MATTER****E21B 43/116(2006.01)i, E21B 43/1185(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)

E21B 43/116; E21B 43/1185; F42C 15/24; F42C 5/00; C06C 5/00; C06C 5/06; F42C 15/188; C06C 5/04; F42B 3/00

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: energy transfer, pyrotechnic device, time delay, and explosive charge

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4135454 A (MORRIS et al.) 23 January 1979 See column 2, line 30-column 3, line 7 and figure 1.	1-31
A	US 2010-0000789 A1 (BARTON et al.) 07 January 2010 See paragraphs [0020]-[0023] and figures 3-4.	1-31
A	WO 2011-112647 A1 (DYNO NOBEL INC.) 15 September 2011 See paragraphs [0011]-[0018] and figures 2,2A.	1-31
A	US 5780764 A (WELCH et al.) 14 July 1998 See claims 1-3 and figures 1,8.	1-31
A	US 2012-0055365 A1 (RITEHIE, ROBERT S.) 08 March 2012 See paragraphs [0045]-[0046] and figure 9.	1-31



Further documents are listed in the continuation of Box C.



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

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"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

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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
US 4135454 A	23/01/1979	None	
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