

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
12 June 2008 (12.06.2008)

PCT

(10) International Publication Number
WO 2008/070343 A2

(51) International Patent Classification:
F42C 11/06 (2006.01) *F42D 1/055* (2006.01)

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(21) International Application Number:
PCT/US2007/082641

(22) International Filing Date: 26 October 2007 (26.10.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
11/553,361 26 October 2006 (26.10.2006) US
11/876,841 23 October 2007 (23.10.2007) US

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH,
CN, CO, CR, CU, CZ, DE, DK, DM, DO, 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, LY, MA, MD, ME, 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.

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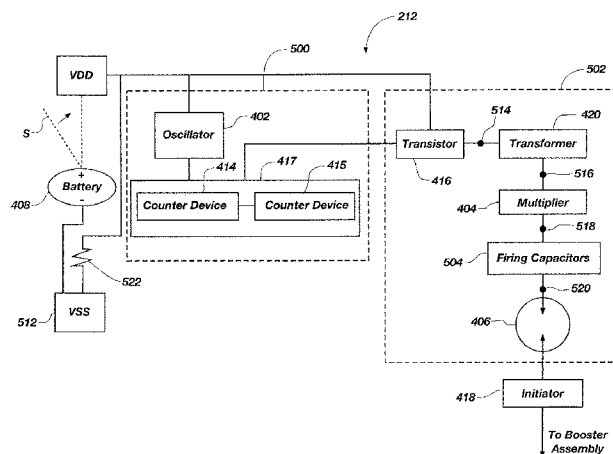
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(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, 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:

— without international search report and to be republished
upon receipt of that report

(54) Title: METHODS AND APPARATUSES FOR ELECTRONIC TIME DELAY AND SYSTEMS INCLUDING SAME



(57) Abstract: Electronic time delay apparatuses and methods of use are disclosed. An explosive or propellant system, which may be configured as a well perforating system includes an electronic time delay assembly comprising an input subassembly, an electronic time delay circuit, and an output subassembly. The input subassembly is activated by an external stimulus, wherein an element is displaced to activate an electronic time delay circuit. The electronic time delay circuit comprises a time delay device coupled with a voltage firing circuit. The electronic time delay circuit counts a time delay, and, upon completion, raises a voltage until a threshold firing voltage is exceeded. Upon exceeding the threshold firing voltage, a voltage trigger switch will break down to transfer energy to an electric initiator to initiate an explosive booster within the output subassembly. The explosive booster provides the detonation output to initiate the next element explosive or propellant element, such as an array of shaped charges in the well perforating system.

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