

Title (en)
Electric igniter for detonators.

Title (de)
Elektrischer Zünder für Sprengkapseln.

Title (fr)
Allumeur électrique pour détonateurs.

Publication
EP 0469458 A1 19920205 (DE)

Application
EP 91112462 A 19910725

Priority
US 56034990 A 19900730

Abstract (en)
[origin: US5052301A] In an electric detonator or blasting cap of the type including a base charge of high explosive material, an initiator means or initiator for creating an abrupt eruption in response to application of a selected voltage across the igniter and means for detonating the base charge upon creation of the abrupt eruption of the initiator, there is provided an improvement comprising forming the initiator as a junction of energetic material, such as a PN junction of an LED chip, encapsulated in a plastic or glass confinement housing. The housing has a directional controlling partition means facing in a selected direction. This partition has an effective spacing from the junction substantially less than the remainder of the confinement housing whereby application of a voltage pulse of over about 500 volts causes the junction to form an electric arc to create a plasma by a confined, high temperature, high pressure exothermic reaction. The effective spacing of the aforementioned partition at the junction is thick enough to confine the exothermic reaction until creation of the plastic and thin enough to allow the plasma to rupture the controlled partition and penetrate through the partition a given distance in the selected direction. The base charge is located in the selected direction and spaced from the partition a distance less than the given distance of plasma penetration whereby the plasma impacts against the base charge, thus, detonating the base charge.

Abstract (de)
Elektrischer Zünder für Sprengkapseln (10) mit einer Basisladung (14) aus hochexplosivem Material, bei dem das Zündmittel (20) ein Verbindungsstück (40) aus energetischem Material, wie beispielsweise einen pn-Übergang oder einen LED-Chip aufweist, das in einem abgeschlossenen Kunststoff- oder Glasgehäuse (50) eingekapselt ist. Durch Anlegen eines Spannungsimpulses von über 500 V wird das Verbindungsstück (40) angeregt, einen elektrischen Lichtbogen zu bilden, der unter Abschluß bei hoher Temperatur und hohem Druck in einer exothermen Reaktion ein Plasma bildet, welches richtungsgesteuert aus dem Gehäuse ausbricht und unter Erhöhung von Druck und Temperatur in einem Zwischenraum (30) auf die Basisladung (14) wirkt und diese zur Detonation bringt. <IMAGE>

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F42B 3/13

IPC 8 full level
F42B 3/13 (2006.01)

CPC (source: EP US)
F42B 3/13 (2013.01 - EP US)

Citation (search report)
• [A] US 4840122 A 19890620 - NERHEIM ELDON [US]
• [A] US 4708060 A 19871124 - BICKES JR ROBERT W [US], et al
• [A] US 3019732 A 19620206 - ALFRED KASPAUL
• [A] US 3366055 A 19680130 - HOLLANDER JR LEWIS E

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DOCDB simple family (publication)
US 5052301 A 19911001; AU 635436 B2 19930318; AU 8143591 A 19920604; CA 2048072 C 19950404; EP 0469458 A1 19920205; MX 9100407 A 19920228; ZA 915931 B 19920429

DOCDB simple family (application)
US 56034990 A 19900730; AU 8143591 A 19910729; CA 2048072 A 19910729; EP 91112462 A 19910725; MX 9100407 A 19910729; ZA 915931 A 19910729