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(54) **Pyrotechnic millisecond delay charge for industrial detonators with delay time of explosion of 25 to 1,000 ms from initiation, the way of manufacture of the delay charge, and electric and non-electric detonator**

(57) Pyrotechnic delay charge that contains FeSiZr as combustible and Bi₂O₃ as oxidizer in proportion 50 ± 15 wt. % FeSiZr and 50 ± 15 wt. % Bi₂O₃. FeSiZr is an alloy of dominant elements Si, Zr, Fe and Ti with content of trace impurities originating from aluminosilicates. The limit representation of dominant elements in FeSiZr is as follows: Si at least 30 wt. %, Zr at least 10 wt. %, Fe at the most 25 wt. %, Ti at least 1 wt. %. The controller of combustion speed is the additive TiO₂ in the amount of up to 5 wt. % of the total weight.

The way of manufacture of the pyrotechnic millisecond delay charge in which FeSiZr with limit representation of dominant elements Si at least 30 wt. %, Zr at least 10 wt. %, Fe at the most 25 wt. % and Ti at least 1 wt. %, are prepared in the physical process of grinding to the particle size in the range of 1-10 μm, Bi₂O₃ to the particle size in the range of 1- 10 μm, whereupon these two components in proportion 50 ± 10 wt. % FeSiZr and 50 ± 10 wt. % Bi₂O₃ are mechanically homogenized nad pelletized with pressure of 255 MPa, and after that are crushed to grading of 0.2 - 0.8 mm grain size. Finally, the

charge is pressed into the delay tube with pressure of 280 MPa with column height of 5 up to 40 mm.

Industrial non-electric detonator has an enclosure in shape of a shell (1) with inserted detonation tube. In the enclosure there is created a space at least for the primary explosive and for the delay charge. The shell (1) closed at the bottom side has in its bottom part created a space (11) for the secondary explosive, which is from above closed with delay tube (12), in the cylindrical box of which there is placed primary explosive (13) and delay charge (14) above it. Over the delay charge (12) in shell (1) is inserted a sleeve (15) with amplifying charge (16) closed with cover (17), and inserted from the upper part into shell (1) there is the detonation tube (19), fitted with insulation (18) against the enclosure of the shell (1).

Industrial electric detonator has in shell (2) the fuse-head (25) inserted, with in-lead wires (26) fitted with insulation (27) against enclosure of the shell (2).

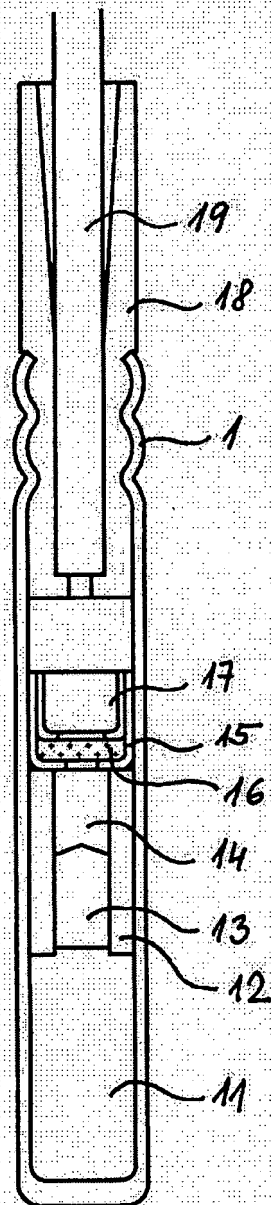


Fig. 1



EUROPEAN SEARCH REPORT

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			TECHNICAL FIELDS SEARCHED (IPC)
			C06C C06B F42B
The present search report has been drawn up for all claims			
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CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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