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ROMANIA

FAST SEALING SYSTEM FOR UNDERGROUND MINING WORKS

Patent of invention nr. 129843 / 30.12.2019

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Summary of the invention

The invention relates to the development of a system for fast sealing underground mining works to guide air into those underground mining works located in the proximity of areas in which occurred explosion or fire-type events and which have to be insulated with priority and celerity to minimize the risk for the initiation of a new explosion or new coal self-ignition processes (in the insulated area) or against the input of toxic/flammable gases released within the insulated perimeter/mining work into mining works which have to dispose of uncontaminated fresh air.

The rapid closure system for underground mining workings according to the invention consists of two identical elements placed at a distance from each other of about 1.5-5 m in the underground mine workings. Each part of the system consists of three inflatable modules – the left-side module (1.1), the lower module (1.2), and the right-side module (1.3). Each module is multicellular, or honeycombed, consisting of a series of inflatable cells (1.4) with individual valves (1.5), coupled together using fasteners of the Velcro (hook-and-loop fastener) or zipper type (1.6). An access window (1.7) made of material similar to that of the inflatable cells is integrated into the assembly of the three modules, using the same fastener type. This system can be used temporarily to ensure worker safety during the construction of permanent containment dams. It can also be used for longer periods of time after an explosion has occurred, with proper instrumentation and a device to compensate for air/nitrogen leakage in the containment area.

The invention is useful for quickly isolating parts or areas of an underground mining network where explosions or fires have occurred. It also facilitates the rapid restoration of critical mining ventilation routes, as well as providing a controllable level of safety for mine rescue teams who need to intervene to rescue victims caught in the event. This ensures that the flow of toxic and/or explosive gases from the affected area is restricted to the fresh air mining workings, while preventing fresh air from penetrating the underground mining workings that need to remain active. This helps prevent the formation of new explosive atmospheres or the continuation of the original combustion process.

ROMÂNIA

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BREVET DE INVENȚIE

Nr. 129843

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Titlul invenției: SISTEM DE ÎNCHIDERE RAPIDĂ PENTRU LUCRĂRILE MINIERE SUBTERANE

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Descrierea invenției, revendicările și desenele la care se face referință în acestea, fac parte integrantă din prezentul brevet de invenție.
Durata brevetului de invenție este de 20 ani, cu începere de la data de 05/03/2013, cu condiția plății taxelor anuale de menținere în vigoare a brevetului.

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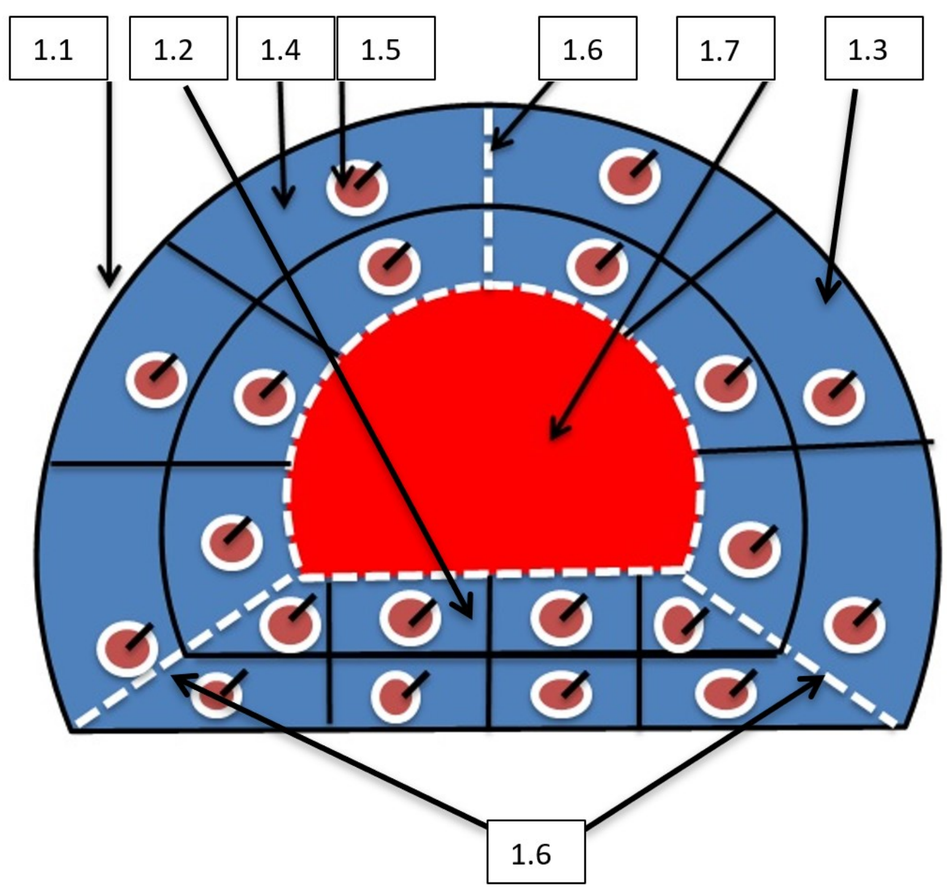
Fig. no. 1. Element of a fast sealing system for underground mining works



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