Title (en)

MINE SHAFT CONSTRUCTION METHOD AND SHAFT SINKING MACHINE

Title (de)

MINENSCHACHTKONSTRUKTIONSVERFAHREN UND SCHACHTABSENKMASCHINE

Title (fr)

PROCÉDÉ D'ÉQUIPEMENT D'UN PUITS DE MINE ET MACHINE DE FONÇAGE DE PUITS

Publication

EP 3845738 A4 20220413 (EN)

Application

EP 19854844 A 20190826

Priority

- RU 2018131076 A 20180828
- RU 2019000595 W 20190826

Abstract (en)

[origin: EP3845738A1] Group of inventions relates to mining. The method includes face mining, erection of temporary lining and permanent lining with a backlog from the working face by an amount not lower than the level of conditional stabilization of the residual deformation of the rock walls, at which the load on the lining does not exceed the current bearing capacity of the lining. The level of conditional stabilization is determined by the nature of changes in deformations of the rock walls. For this purpose, directly at the working face, at one point, the conditionally initial position of the rock wall of the shaft is fixed and, as the shaft sinks to a specified level, the deformation of the rock wall relative to its conditionally initial position is measured, after which the nature of the change in the deformations of the walls along its full vertical extent from the level of fixation of the conditional initial position is established. The load on the lining is determined by the current value of deformation at the level of conditional stabilization of the residual deformation of the rock walls of the shaft based on the established nature of the deformation of its walls. Combine comprises mounting frame for erection of lining, and face frame, a panelized spacing ductile shell, in the form of a series of stoplogs installed around the face frames, connected with it by means of hydraulic jacks, an operating member for processing the cross section of the shaft, and a control system. Displacement measuring sensors are installed between a stoplog and one of the frames or both frames and / or between two adjacent frames. The control system includes a processing unit for the measurement result, which forms the ordinate of the level of conditional stabilization of the residual deformation of the rock walls from the working face, and a control unit for processing the cross section of the shaft by the operation member. As a result, the reliability and safety of workings on the construction of shafts in a wide range of mining and geological conditions and specific technological features of mining operations has increased. The operational reliability of the mine shaft and the speed of sinking have increased while the resource intensity of the workings has been reduced.

IPC 8 full level

E21D 1/03 (2006.01); **E21D 5/00** (2006.01)

CPC (source: EP RU)

E21D 1/03 (2013.01 - EP RU); **E21D 5/00** (2013.01 - EP RU)

Citation (search report)

- [A] RU 2592580 C1 20160727 - OBSHSHESTVO S OGRANICHENNOJ OTVETSTVENNOSTYU SKURATOVSKIJ O EX ZD [RU]
- [A] WO 2017058058 A1 20170406 - OBSHCHESTVO S OGRANICHENNOY OTVETSTVENNOST'YU SKURATOVSKIY OPYTNO-EXPERIMENTAL'NYY ZAVOD [RU]
- [A] RU 2631061 C1 20170918 - OBSHCHESTVO S OGRANICHENNOJ OTVETSTVENNOSTYU SKURATOVSKIJ OPYTNO-EKSPERIMENTALNYJ ZAVOD [RU]
- [A] WO 2011000037 A1 20110106 - TECH RESOURCES PTY LTD [AU], et al
- See references of WO 2020046175A1

Designated contracting state (EPC)

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