

论文

特厚急倾斜煤层水平分层开采岩层及地表移动机理

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摘要:

以窑街矿区三矿地质条件为原型, 采用相似材料模型试验方法, 研究了特厚急倾斜煤层水平分层开采岩层移动机理和地表移动规律。结果表明, 特厚急倾斜煤层水平分层开采时, 浅部开采阶段岩层以应力拱结构控制岩层移动, 深部开采阶段岩层以铰接岩梁结构控制岩层移动; 根据覆岩破坏形式, 将采动岩层移动分为松散岩块区和层状岩层区。揭示了特厚急倾斜煤层水平分层开采具有显著的重复开采和变方向传播的特征; 随着工作面自上向下逐层布置回采, 地表移动盆地具有向顶板侧扩展和下沉值不断累计的特点, 最终形成一个整体的移动盆地。研究结果可为地表及岩层移动预测模型的建立提供依据, 从而指导类似条件下煤炭资源的合理开发。

关键词: 特厚急倾斜煤层; 岩层及地表移动机理; 水平分层开采; 相似模型试验

The mechanism of strata and surface movements induced by extra thick steeply inclined coal seam applied horizontal slice mining

Abstract:

Taking the geological condition of No.3 coal mine in Yaojie mining area as the prototype, study on the strata movement mechanism and the regularity of surface movements of extra thick steeply inclined coal seam applied horizontal slice mining. The results show that, strata stress arch structure is formed to control the strata movement in shallow mining stage, and the stage of deep mining with hinge structure to control the strata movement in the extra thick steeply inclined coal seam applied horizontal slicing mining. According to the mining damage forms, it can be divided into loose rock block zone and layered rock zone. It reveals the remarkable repeated mining and alterable spread direction characters. As the horizontal slice working face extracted from up to down, the surface subsidence basin's sink value is increasing and the basin spread at the roof side, and finally forms a whole movement basin. It provides the basis to establish the prediction model for strata and surface movements of the similar geological and mining conditions, to guide the exploitation of coal resources of the similar conditions.

Keywords: extra thick steeply inclined coal seam; mechanism of strata and surface movements; horizontal slice mining; similar model test

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