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Combined hydraulic support of suspension roof timber

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Abstract

The coal output of small-medium-sized mines accounts for about a proportion of 40%, which covers a very high percentage in China. However, technique in small-medium-sized mines is laggard. At present, the nodose mode, the sliding ceiling timber support and suspension roof timber support are used in small-medium-sized mines , which have the same problems such as inserting bottom plate, no guide mechanism between the adjacent supports, poor work stability and advancing support. Therefore, a new type of the combined hydraulic support of suspension roof timber is designed based on the analysis of others supports.

Key words: *Hydraulic support, Simple support, Combined hydraulic support of suspension roof timber, Design*

1. Introduction

Small-medium-sized mines are important component of coal industry in China. But, the friction prop or the single hydraulic prop with articulated beam can be the main supporting equipment at the coal face, leading to low production efficiencies due to the complicated geology condition and lagging mining technique in small-medium-sized mines. As a result, safe production is not guaranteed. Owing to the short coal faces and narrow tunnels in small-medium-sized mines, lagging supporting equipments are almost impossible to be moved to the coal face, to fully play their functions. Moreover, large-size supports are so heavy and so expensive that small coal mines are unable to afford them. Thus the technique is confined. Since the supporting level or the supporting height can not reach caving condition, superabundance of coal has to be discarded, resulting in serious waste of resources when encountering thick coal seam. How to improve the supporting technology and ensure safety and high yield in the small-medium-sized mines is the concern of both state and local governments. This paper analyzes the disadvantages of the nodose mode support and the sliding ceiling timber support as well as suspension roof timber support used in small-medium-sized mines. At present, the nodose mode, the sliding ceiling timber support and the suspension roof timber support have the same problems such as inserting bottom plate, no guide mechanism between the adjacent supports, poor work stability and advancing support. The demerits also include poor stability in working, hard to move and to adjust.

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