



Southern Illinois University System

Applications

- Longwall mining dust removal
- Longwall mining safety

Inventors

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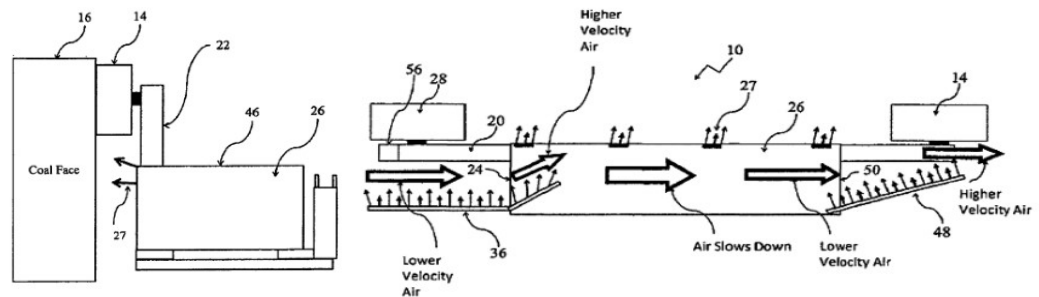
John Pulliam
Mr. Pulliam is a former researcher in mining and mineral resources engineering at SIU Carbondale.

Spray System for Dust Control on a Mining Machine

Longwall mining of coal currently accounts for over 50% of the underground mined coal. In longwall mining, the coal is cut from the coalface wall by a machine called the shearer. This process generates dust control problems in mining areas leading to worker illness. Current technologies to control the dust created in longwall mining generally includes using water sprays behind each of the cutting bits on the two shearer drums and around the shearer drum. However, there is a need to improve the design of the sprays on and around the longwall shearer to further control respirable dust and provide more efficient use of water.

Invention

SIU researchers have developed a spray system for longwall mining dust control that operates on the mining floor surface and consists of a shearer machine chassis, a first arm located at the front of the shearer machine, a second arm located at the back of the shearer machine, a set of arm sprays located behind the second arm and mounted on an operator side of the shearer machine, and a set of shearer clearer arm sprays that operates in conjunction with a set of shearer-clearer venturi arm sprays located towards the front of the shearer machine.



Key Advantages

- Improved wetting of dust generated at the source
- Minimizes the escape of mining dust
- Provides mine workers a relatively uncontaminated air stream

Status

U.S. patent #9,810,067 was issued on November 7, 2017. The technology is available for license.

Other opportunities related to this technology, included but not limited to sponsored and/or collaborative research, may be available. Please reach out to the designated contact identified at left for more information.

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