T. RAMSAY.
MINE DOOR CLOSER.
APPLICATION FILED JULY 17, 1913.

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Inventor
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Witnesses
Philip E. Barnes
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By
A.W. Wilson & Co.
Attorneys
To all whom it may concern:

Be it known that I, THOMAS RAMSAY, a citizen of the United States, residing at Roslyn, in the county of Kittitas and State of Washington, have invented certain new and useful Improvements in Mine-Door Closers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to mine ventilation, and more especially to the trap doors which are employed in mines to prevent the flow of air currents through the passages rather than through the flues or pipes where they are intended to flow; and the object of the invention is to provide improved means for closing said doors. This object is accomplished in the manner hereinafter more fully set forth and claimed, and as shown in the drawings wherein is given a general perspective of the interior of a passageway in a mine equipped with my invention.

In the drawings I have conventionally illustrated a mine passageway P, herein shown as having a track T, and at suitable points within the passageway are built bulkheads H wherein are hinged doors D. If the passageway is narrow as it usually is, the bulkheads will be hardly more than upright beams lying close against the side walls and on one of which the door is hinged in any suitable way, because there is very little space for the car and its load to pass through the passageway and of course the bulkhead could not be extensive. Its use is to close the passageway around the door opening, whereas the door closes that. The purpose of closing the passageway is to prevent the flow therethrough of air currents and therefore to retain the fresh air in that part of the mine where it is used or to divert it from the passageway into the flues, flues, or other channels by which it can be conducted to the point of use without being wasted in the mine or its passages. In order to effectively close the passage, two doors are ordinarily used as seen in the drawing and these are spaced not very far apart so that after a team or a group of miners passes through one door and it is closed, it or they can pass through the other door and close that and pass on. But I have observed that through carelessness one door and sometimes both doors are left open, with the result that the fresh air escapes or foul air flows along the mine undesirably.

The purpose of the present invention is to positively and automatically close one door as the other is opened, and if desired, to cause both doors to close automatically when released by the workmen passing therethrough.

Coming now to the details of the present invention, the numeral 1 designates a wire or cord connected with one door at point 2 near its hinge, passing over suitable pulleys or guides 7 and 8 between the doors, thence through an opening 9 in the bulkhead B, around a pulley 6, and having a short stretch attached at a point 3 on the other door as far from its hinge as was the point of attachment of the longer stretch from the hinge of the first-named door. The point of connection of each stretch of this cord or rope with the door is on what might be called the leeward side in the direction of the air current as indicated by the arrow 4.

By preference I dispose a weight 5 on the cord between the guides, and this weight is of sufficient size to cause the automatic closing of both doors.

The action of this device is as follows: Assuming that an operator approaches and opens one door, he draws on the cord which pulls around the pulley and closes the other door, meanwhile raising the weight if there be one. Passing through this door he releases it and the weight slams it closed. When he reaches the other door the action is repeated, for as he opens this door he draws on the cord which pulls around the pulley and raises the weight while it holds the first named door closed; and after the operator or workman has passed through the second door and released it, the weight descends and this door slams closed. Assume now that he is approaching in the opposite direction; he passes through the left-hand door first, and as he pushes it open he raises the weight while the tension of the cord holds the right-hand door closed. Passing the left hand door he releases it and the descent of the weight slams it closed. Passing on through the right hand door as he swings it open the tension of the cord again raises the weight, and as he releases this door the weight slams it closed. If there were no weight whatever, the length of the cord or rope may be such that one door may stand closed and the other open when the rope is
The result will be precisely the same, except that it would be possible for him then to leave both doors slightly open but for the fact that the current of air flowing along the direction indicated at A would slant first one closed and then the other. I prefer, however, to employ the weight; and if the current of air be in the opposite direction I would make the weight of ample size so as to hold both doors closed against the force of the air.

Obviously the materials and proportion of parts with this exception are not essential to the successful operation of the invention.

What is claimed as new is:

In a mine passageway subjected to drafts of air, two spaced bulkheads and two doors hinged therein and adapted to close with the wind; combined with a pair of guides between the doors, a pulley within the passageway beyond the leeward door, the bulkhead of the latter having an opening, a cord attached at its ends to the leeward sides of both doors and having a short stretch leading around said pulley and a long stretch leading through said opening and over said guides, and a weight on the cord between the guides, for the purpose set forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

THOMAS RAMSAY.

Witnesses:

CHRISTOPHER C. HALVERSON,

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