A. J. JOHNSON & P. BLESSANT.

MINE DOOR.

APPLICATION FILED SEPT. 3, 1915.

1,179,321.

Patented Apr. 11, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

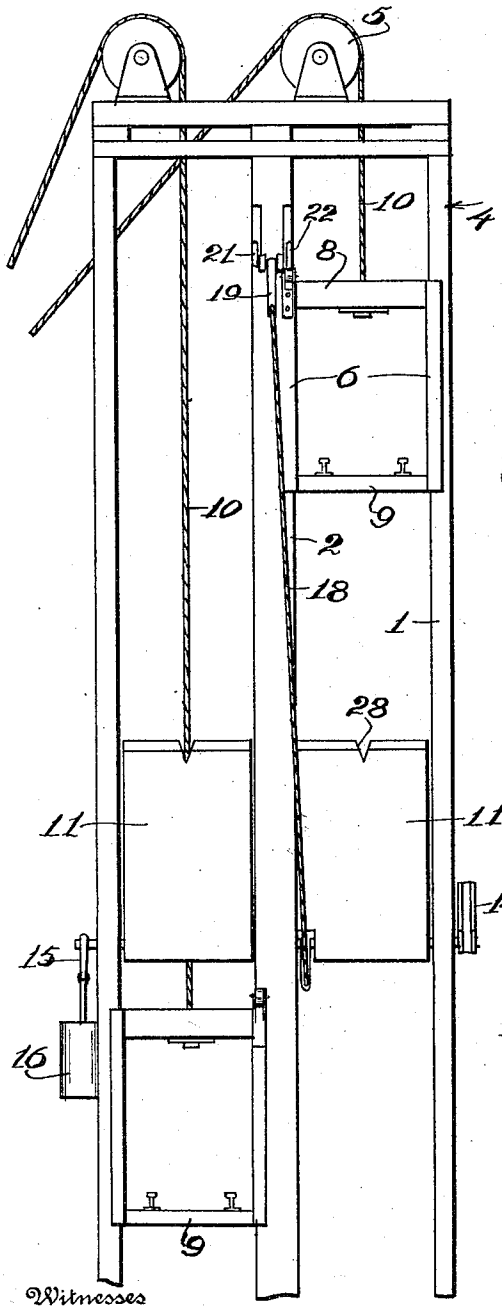
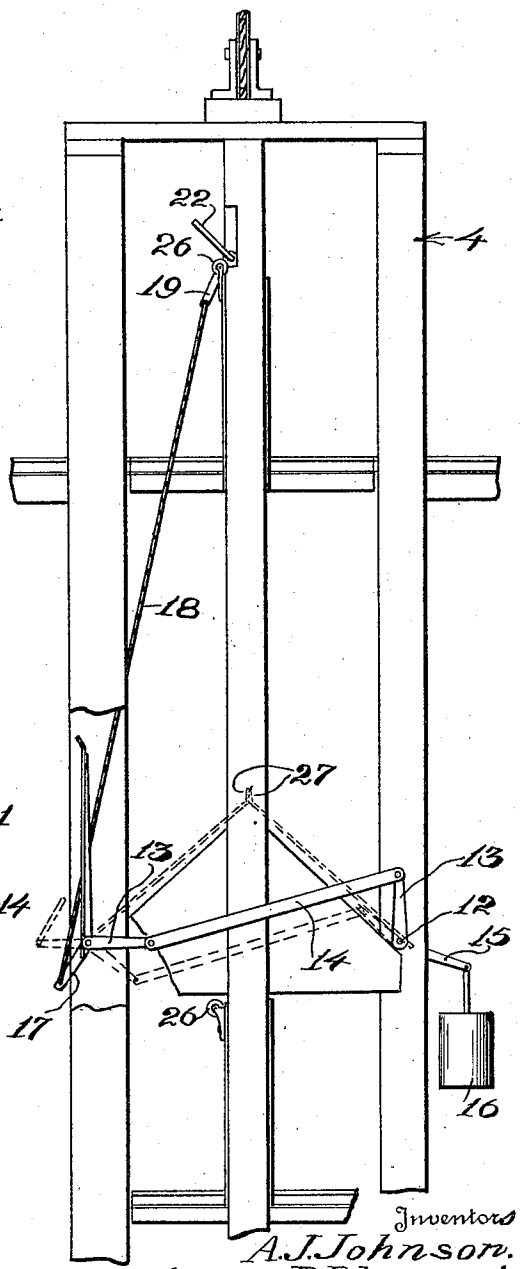


Fig. 2.



Witnesses

Inventors

A. J. Johnson.

P. Blessant.

By

Attorney

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2 SHEETS—SHEET 2.

Fig. 3.

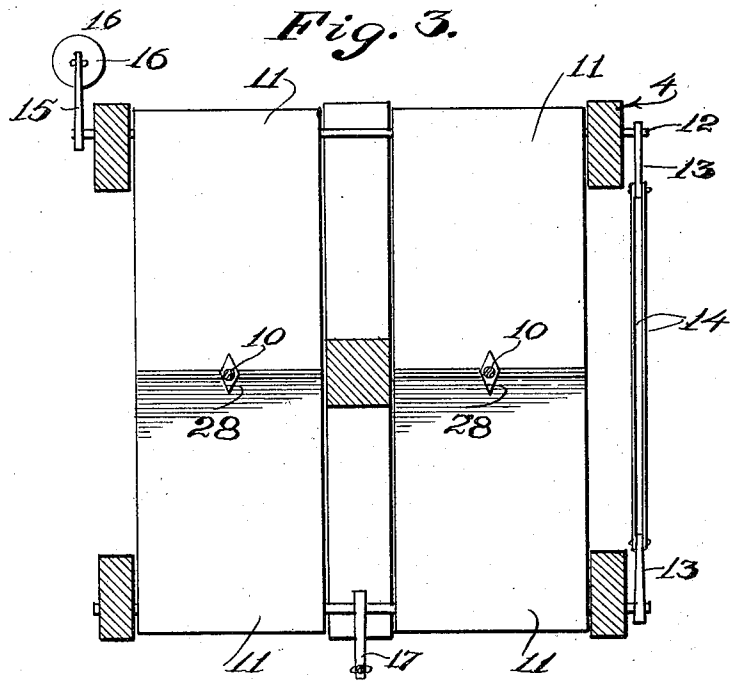


Fig. 4.

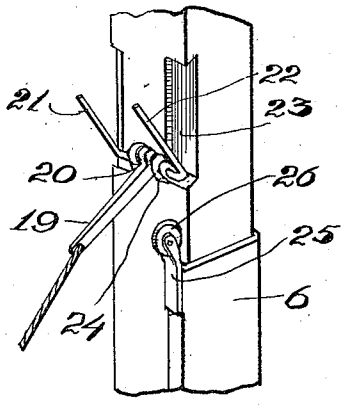
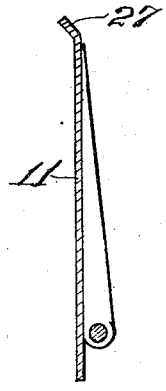


Fig. 5.



Witnesses

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P. Blessant

By

Attorney

UNITED STATES PATENT OFFICE.

ANDREW J. JOHNSON AND PETER BLESSANT, OF STONINGTON, ILLINOIS.

MINE-DOOR.

1,179,321. Specification of Letters Patent. Patented Apr. 11, 1916.

Application filed September 3, 1915. Serial No. 48,855.

To all whom it may concern:

Be it known that we, ANDREW J. JOHNSON and PETER BLESSANT, citizens of the United States, residing at Stonington, in the county of Christian and State of Illinois, have invented certain new and useful Improvements in Mine-Doors; and we do hereby 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 new and useful improvements in mine doors and the principal object of the invention is to provide a cover for a mine shaft to prevent coal and the material which is being mined from falling back into the shaft when the same is being dumped.

Another object of the invention is to provide a pair of automatic doors which will open when the elevated cars are traveling either up or down and which will automatically close when the cars have reached their upward limit of travel.

A still further object of the invention is to provide an automatic means for operating the door.

With these and other objects in view, the invention consists in the novel combination and arrangement of parts which will be fully set forth in the following specification and accompanying drawings, in which:—

Figure 1 is a view showing a portion of the shaft with one of the cars raised and the other one partially lowered. Fig. 2 is a side view similar to Fig. 1 taken at right angles thereto. Fig. 3 is an enlarged horizontal sectional view of the device. Fig. 4 is a detail perspective view of the door controlling trip lever, and Fig. 5 is a vertical sectional view through the cover.

Referring now to the drawings by characters of reference, the numeral 1 designates one of the vertical guides, while the numeral 2 designates the coöperating guide. These guides are supported in a suitable framework 4, the upper end of which carries the pulleys 5. Slidable on the guides are the U-shaped standards 6, which are preferably formed of channel iron and these standards are connected by means of the upper bar 8 and a platform 9 which forms the car or elevator. This elevator is suspended on a suitable cable 10 which passes over the pulley 5 and around a suitable placing drum (not shown).

The covers for the shafts are best illustrated in Figs. 2 and 3 and comprise the plates 11 which are mounted on the shaft 12, which shaft extends transversely of the frame 4 and are provided at their ends with suitable crank arms 13. These crank arms are connected by means of a suitable link 14 and a weight carrying crank arm 15 is secured on one end of one of the shafts for supporting the weight 16 by means of which the doors are held in their open position. A suitable crank arm 17 is carried centrally of one of the shafts and has connected thereto a flexible member 18, the upper end of which is connected to the controlling lever which will be more fully hereinafter described. The controlling lever hereinbefore referred to is designated by the numeral 19 and is supported on the bight portion of the U-shaped operating member, the arms 21 and 22 of which extend parallel to the central guide 2, when the doors are in their closed positions. These arms 21 and 22 are arranged to enter the recesses 23 formed in the central guide 2 and the bight portion is journaled in suitable bearings 24 mounted near the upper end of the central standard 2. The upper end of the vertical guides or standards 6 are provided with suitable brackets 25, in which the rollers 26 are journaled.

It will be apparent from the foregoing that in use the upward movement of the elevators will upon reaching their upward limit of travel cause the rollers 26 to engage one of the arms 21 or 22, theeby moving the operating lever 19 upwardly which will pull upwardly on the lever 17 and thereby cause the doors 11 to move inwardly so their flanges designated by the numeral 27 will abut. In this way it will be seen that the open mouth of the mine shaft will be closed and any falling articles will be directed outwardly and away from the shaft. The flanges and doors 11 are provided with notches 28 for the accommodation of the hoisting ropes 10, so that when the elevator is lowered, the doors may close. The movement of one of the doors will cause the link 14 to move the opposite door and thus lift the weight 16 and as soon as the elevator starts to descend and reaches a point so that the roller 26 disengages the arm 21 or 22, it will be evident that the weight 16 will move the doors to their open position and by the time the elevator is in a position to pass

through the mouth of the mine, it will be apparent that the doors will be wide open, thereby avoiding any possibility of interference.

While in the foregoing there has been shown and described the preferred embodiment of this invention, it is to be understood that such changes may be made in the combination and arrangement of parts as will fall within the spirit and scope of the appended claim.

What is claimed is:

In combination with a mine shaft, vertical guides extending into the shaft and projecting above the upper end of the shaft, a lever provided with a pair of angularly extending arms pivoted to the uppermost end of one of the guides, one arm of the lever being engaged by the elevator cars when either of said cars has reached its upward limit of travel, pivoted covers for the mine shaft, shafts supporting said pivoted covers, an arm on one of the shafts, a weight on the arm arranged to hold the covers normally open, an arm at the opposite end of the shaft, an arm on the opposite shaft, a link connecting the last mentioned arms, a crank arm intermediate the ends of the last named shaft and a flexible member connected to the lever and to the last named crank arm whereby when the lever is actuated the covers will be moved to closed position against the influence of the weight.

In testimony whereof we affix our signatures in presence of two witnesses.

ANDREW J. JOHNSON.
PETER BLESSANT.

Witnesses:
J. M. KELLY,
ROBT. PATTERSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."