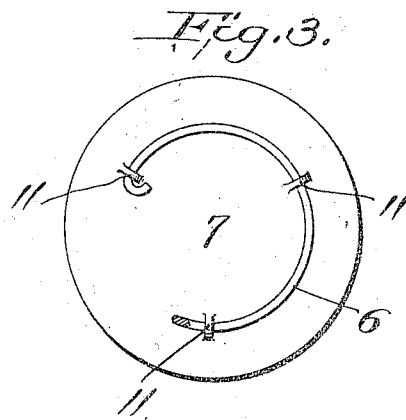
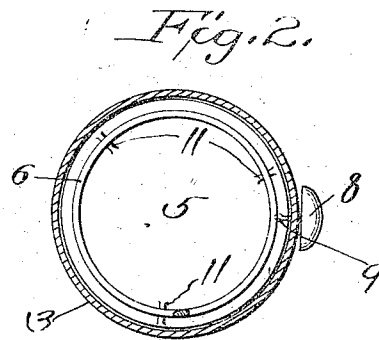
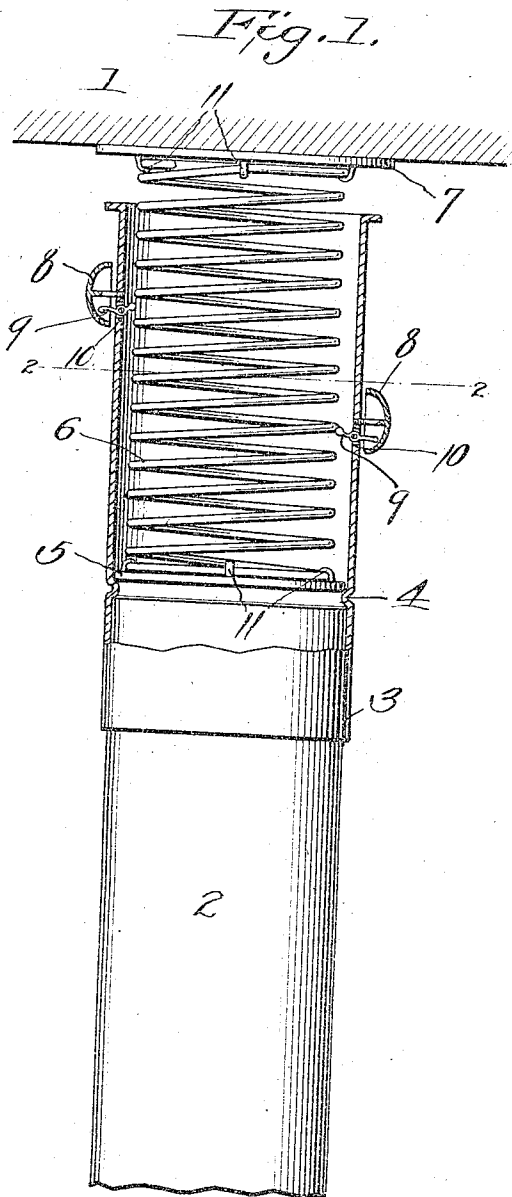


J. W. REED.
 PROTECTIVE DEVICE FOR MINES.
 APPLICATION FILED SEPT. 18, 1912.

1,064,378.

Patented June 10, 1913.



WITNESSES

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PROTECTIVE DEVICE FOR MINES.

1,064,378.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN W. REED, a citizen of the United States, residing at Cedar Grove, in the county of Kanawha and State of West Virginia, have invented a new and useful Improvement in Protective Devices for Mines, of which the following is a specification.

This invention relates to an alarm device especially adapted for use in mines, tunnels, and all excavating work in which a more or less unstable roof is left.

The object of the invention is to give an audible alarm to the miners or workmen upon any movement in said roof, even in case such movement should be merely a slow settling of the roof, unaccompanied by any cracking or other noise which would give warning to the workmen of the unsafe condition of the roof.

In order to obtain the object of the invention I employ a post adapted to be rested upon the ground or floor, and extending nearly to the roof. A sleeve is carried by this post in which is placed a coil spring, and a plate is held against the roof by said spring, and suitable alarm devices are so arranged that movement of the spring coils due to pressure of the earth or roof of the excavation or mine will cause an alarm to be given.

In Figure 1, I have shown my device in position for use, parts being shown in elevation, and parts in vertical section. Fig. 2 is a section on the line 2-2 of Fig. 1. Fig. 3 is an inverted plan view of a top plate.

In these drawings, 1 represents the roof of the mine or tunnel, and 2 a post adapted to be set vertically therein. The upper end of the post carries a sleeve 3, which is provided with an interior bead 4, which bead serves to limit movement of the sleeve over the post and also forms a support for a suitable lower plate 5. Secured to said plate is a coil spring 6, which spring extends loosely upwardly through the sleeve and normally projects outwardly above the sleeve. At its upper end the spring carries

a top plate 7, which is forced against the roof 1 by the spring 6. Suitable bells 8 are carried by the sleeve 3, said bells being arranged at different points upon the exterior of the sleeve and in different horizontal planes. The inner end of the bell clappers 9 are suitably pivotally mounted in openings 10 in the sleeve 3 and the inner ends of the clappers extend into the path of the coils of the spring as shown in the drawing.

It will be obvious that downward movement of the plate 7 due to any settling of the roof will compress the spring, causing the coils to move downwardly, and such movement will rock the clappers 9 upon their pivotal points and then release them as the downward movement is continued.

One bell could be employed but by arranging two bells at different points the device is made more sensitive to slight disturbances.

The spring 6 has its upper and lower ends suitably secured in eyes 11 punched respectively from the plates 5 and 7.

What I claim is:—

1. A device of the kind described comprising a suitable support, a vertically arranged and normally extended coil spring carried by said support, roof engaging means carried by the upper end of the said spring, and alarm sounding devices arranged adjacent said spring and adapted to be engaged and actuated by closing movement of the coils of said spring.

2. A device of the kind described comprising a post, a sleeve carried by the upper end of the post, a coil spring loosely arranged in the sleeve, and projecting above the sleeve, a plate carried by the top of the spring and normally in engagement with a roof, and alarm bells carried by the sleeve, the bell clappers extending inwardly between the coils of the spring.

3. An alarm device of the kind described comprising a vertically arranged post, a sleeve adapted to fit over the upper end of the post, an interior bead carried by the sleeve and limiting movement of the sleeve upon the post, a plate loosely arranged in

said sleeve and resting upon said bead, a coil spring mounted upon said plate and projecting above the sleeve, a second plate carried by the projecting end of the spring and adapted to engage a roof, and bells carried by the sleeve, the bell clappers extending inwardly in position to be engaged by the coils of the spring when the same are compressed.

JOHN WILSON REED.

Witnesses:

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