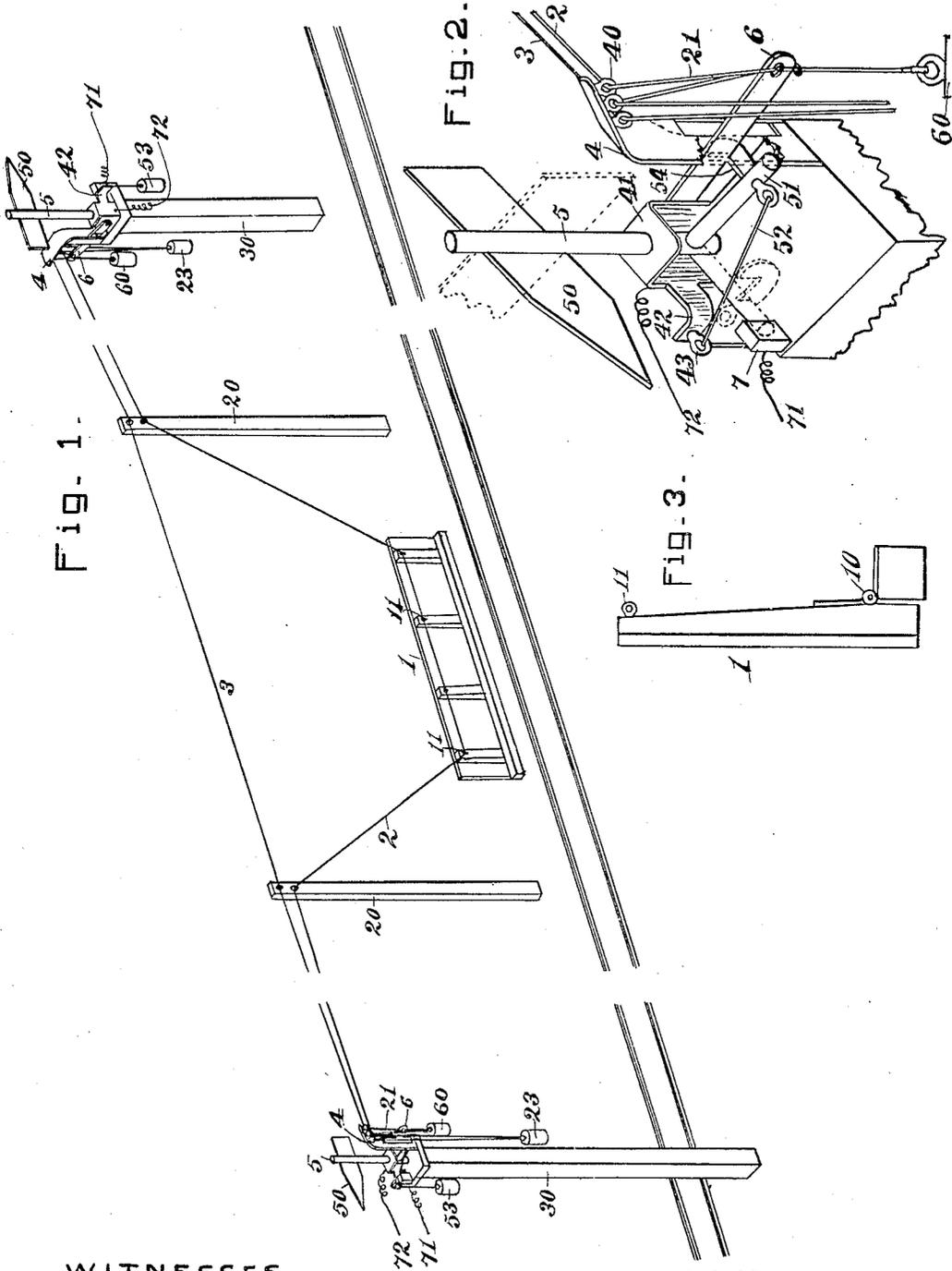


B. S. MILLER.  
RAILROAD SIGNALING DEVICE.  
APPLICATION FILED MAY 4, 1907.

2 SHEETS—SHEET 1.



WITNESSES.

*H. D. Campbell*  
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INVENTOR.

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his attorney.

No. 872,002.

PATENTED NOV. 26, 1907.

B. S. MILLER.  
RAILROAD SIGNALING DEVICE.

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2 SHEETS—SHEET 2.

Fig. 4.

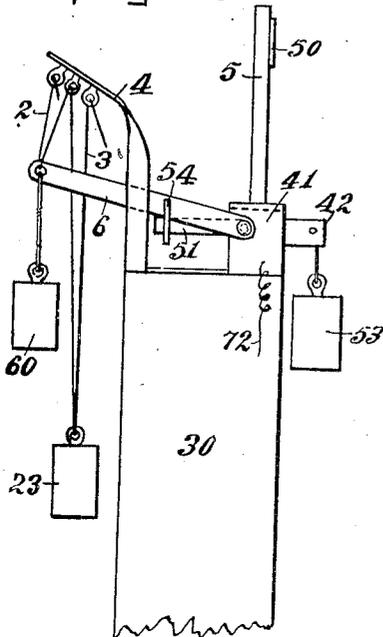


Fig. 5.

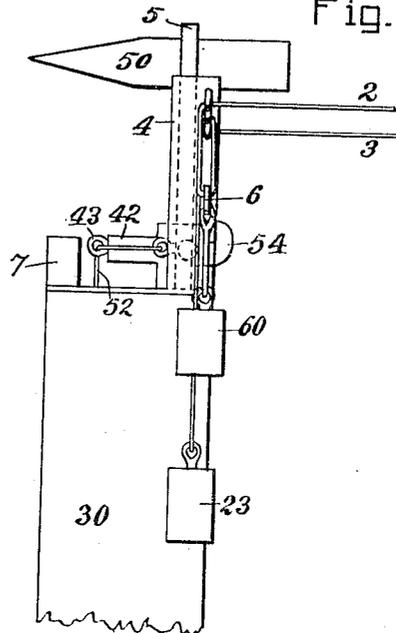


Fig. 6.

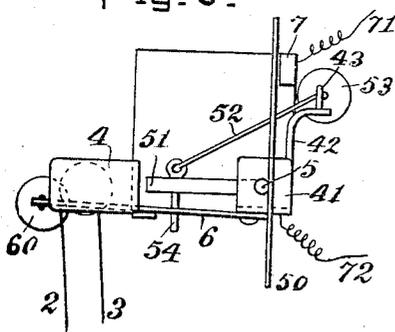
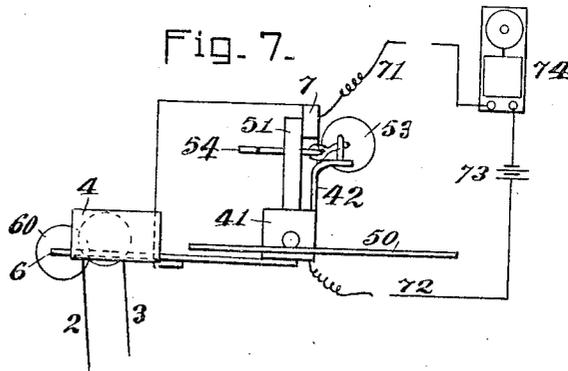


Fig. 7.



WITNESSES.

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# UNITED STATES PATENT OFFICE.

BURNS S. MILLER, OF EVERETT, WASHINGTON.

## RAILROAD SIGNALING DEVICE.

No. 872,002.

Specification of Letters Patent.

Patented Nov. 26, 1907.

Application filed May 4, 1907. Serial No. 371,860.

*To all whom it may concern:*

Be it known that I, BURNS S. MILLER, a citizen of the United States, residing at Everett, in the county of Snohomish and State of Washington, have invented new and useful Improvements in Railroad Signaling Devices, of which the following is a specification.

My invention relates to an improvement in railroad signaling devices, and comprises the novel parts and combinations of parts which will hereinafter be defined in the claims.

The object of my invention is to provide an improved device which will give warning of the intrusion of foreign bodies upon a railway track, such for instance, as a mass of earth or rocks due to a landslide.

In the accompanying drawings I have shown my invention embodied in the form which is now preferred by me.

Figure 1, is a perspective showing a section of track protected by my device. Fig. 2, shows in perspective the mechanism carried by one of the distant signal posts. Fig. 3, shows in elevation a modification of my device which may be used independently of or in combination with an ordinary fixed bulkhead. Fig. 4, is an elevation of the mechanism on one of the distant signal posts. Fig. 5, is an elevation of the same mechanism taken from a point varying 90° from that of Fig. 4. Fig. 6, is a plan view of the same mechanism, the parts being in locked position. Fig. 7, is a plan view of the same mechanism, the parts being in unlocked or released position.

There are many places along railroads where slides are liable to occur, or where rocks are likely to roll upon the track. It is the object of my present invention to protect these points by the use of means which will give a distant warning in case of the breaking down of the protecting bulkheads or the intruding of any foreign or dangerous body upon the tracks.

My present invention is supplemental to that shown in the United States Patent No. 833935 issued to me October 23, 1906.

At such points of possible danger I erect alongside the track sections of fence or protective bulk-heads, 1. These are made of sufficient strength to hold back ordinary slides and high enough so that they will prevent any slide from going over the top. It is intended that they break or be inclined

over before letting any material pass over them. When this occurs the cord or wire 2 is tightened up and the distant signal actuated. If preferred a hinged fence-section, such as shown in Fig. 3 may be employed either alone or in combination with a protective bulkhead. Adjacent the ends of these sections are placed two posts, 20, and a line of similar posts leading along the track to the point where it is desired that the distant signal be shown. These may extend in one or both directions as desired.

A signal operating or releasing cord or wire 2, is connected with or secured to the bulkhead and leads through guides carried by the posts 20 to the distant signal. A compensating cord or wire 3, also extends to the distant signal. This latter wire is, however, not secured to or in any way connected with the bulkhead or fence 1. Where two distant signals are used these wires run to both. The distant signal mechanisms are both alike so that a description of one will suffice.

Upon a post 30 is mounted any suitable form of visual signal. That shown is a semaphore 50, carried by a vertical shaft 5, which is turnable in its supports 41. Mechanism is provided by which this shaft may be turned from "safe", to "danger" positions. The mechanism shown for this purpose consists of an arm 51 carried by the shaft 5, a cord 52 which is connected with the outer end of this arm and passes through a guide 43 carried by the arm 42, and a weight 53, suspended from said arm. Any other suitable means may be substituted. As a visual signal the semaphore would be supplemented by a light, as is common in railway practice.

The arm 51 carries a hook or catch 54, which engages a pivoted locking lever or trigger arm 6, which is pivoted to the standard 41 forming the support for the shaft 5. This trigger arm or lever passes through a slot in another standard 4, whereby it is held against side deflection. From the outer end of this lever is suspended a weight 60 which acts as a yielding resistance to the strain of the signal operating or releasing cord or wire 2, and prevents the lever being lifted by the strain necessary to put upon the releasing wire in order to take up its slack. It will, however, lift by a steady pull.

The post or standard 4 is provided with suitable guides 40 for the signal operating or releasing wires and for the compensating

wires. I have herein used the terms wire and cord interchangeably when referring to these members, as either may under suitable conditions be used. Usually these would be  
5 wires.

The compensating cord or wire 3 is intended to normally support the weight which is attached to the end of the signal operating wire 2, that is weight 23, and to regulate the  
10 position of this weight as may be necessary to compensate for expansion and contraction due to atmospheric variations, whether these be caused by variations of heat or moisture. Being of substantially the same length and  
15 subject to the same atmospheric conditions as the signal operating wire, the two will give and take at the same time and in the same amount.

The signal operating cord or wire 2 passes  
20 through one of the guides 40, upon the standard 4, thence through a guide or hole in the lever 6, thence upwards and through a guide 40, and thence downwards to the weight 23, to which the end of the compensating wire 3  
25 is also attached. The compensating wire 3 also passes through one of the guides 40, on arm 4, so that the course of both wires is substantially the same, except that the compensating wire does not connect with the bulk-  
30 head 1 or have the loop extending to the lever 6. This loop 21 is a somewhat important detail of my device in its present form, as it enables me in combination with the weight 23 to compensate for atmospheric variations.

The operation of my device is as follows:  
35 The two wires are strung in the manner described, the operating wire 2 secured to the fence 1 and leading in one or both directions, as may be desired. The two wires are ad-  
40 justed in tension before attaching them to the weight 23, so that the wire 3 will sustain substantially all the weight and so that the wire 2 simply has its slack taken up. The strain upon the wire 2 should not be sufficient  
45 to lift the lever 6 until the strain has been increased to the extent of breaking or forcing forward the bulkhead or fence 1. Should a slide take place where the fence is located, or any obstruction roll against the fence so as to  
50 break it or dislocate it, this would increase the tension upon the signal operating wire 2, thereby lifting the locking lever 6 and permitting the shaft 5 to swing under the influence of the weight 53. This swings the  
55 semaphore to the danger position and also carries the arm 51 into contact with a stop 7. This stop may form one terminal of a wire 71 forming one part or side of an electric circuit. The shaft 5 and arm 51 are in electrical  
60 connection with the support 41 which is connected with the other wire 72 forming the other side of the same circuit. This circuit leads to any point where it may be desired to give additional or audible warning.  
65 It is supplied with a battery 73 and an alarm

bell 74, or other suitable electrically operated mechanism. When the arm 51 contacts with the stop 7 the circuit is closed and the mechanism included in the circuit is operated.

What I desire to secure by Letters Patent 70 is:

1. A railroad signaling device comprising a track-protecting bulkhead or fence, a distant warning signal, a catch normally hold-  
75 ing said signal at safety, a releasing wire or cord connecting said bulkhead with the distant signal and engaging the catch by a loop, and means compensating for atmospheric changes in their effect upon said wire or cord.

2. A railroad signaling device comprising 80 a track-protecting bulkhead or fence, a distant warning signal, a signal-operating wire or cord connecting said bulkhead and signal, a releasing catch or trigger engaged by a loop in said wire or cord, and means compen-  
85 sating for variations in length of said wire caused by atmospheric changes.

3. A railroad signaling device comprising a track-protecting bulkhead or fence, a distant signal, a releasing member for said signal, a wire or cord connecting said releasing  
90 member and said bulkhead, a compensating wire or cord of substantially equal length, and an actuating weight for said signal connected with both wires but normally sup-  
95 ported by the compensating wire.

4. A railroad signaling device comprising a track-protecting bulkhead or fence, a distant visual signal, a releasing member for  
100 said signal, a wire or cord connecting said bulkhead and said releasing member, an electric signaling circuit thrown into action by the operation of said visual signal, a compensating wire or cord of substantially equal  
105 length to the other wire, an actuating weight for said signal device connected with both said wires but normally supported by the compensating wire.

5. A distant signal operating device comprising an actuating wire or cord having a  
110 loop formed therein and engaging a catch or trigger member, a compensating wire or cord of like extent, and a weight connected with both said wires and normally supported by  
115 the compensating wire.

6. A distant signal operating means comprising a primary member adapted to be moved to produce the signal, a distant signal, a releasing member for said signal, a wire or  
120 cord connecting said releasing member and the primary moving member, said wire engaging the releasing member by a loop, a compensating wire or cord of substantially equal extent, and an actuating weight for  
125 said signal connected with both wires and normally supported by the compensating wire.

7. A railroad signaling device comprising a primary moving device adapted to be  
130 moved before an obstructing body may be

intruded upon the track, a distant signal  
comprising a semaphore mounted to turn,  
means acting upon said semaphore to exert a  
continuous turning strain thereon, a catch  
5 or trigger lever normally holding the sema-  
phore in restrained position, cord or wire  
guides above said lever, a releasing wire or  
cord extending from said primary mover to  
the distant signal, said wire extending from  
10 the said guides to the catch or trigger lever

and back to form a loop, a compensating  
wire extending from adjacent the primary  
mover to the distant signal, and a weight  
connected with both said wires and normally  
supported by the compensating wire.

BURNS S. MILLER.

Witnesses:

SCHUYLER DURYEE,  
JOS. COLEMAN.