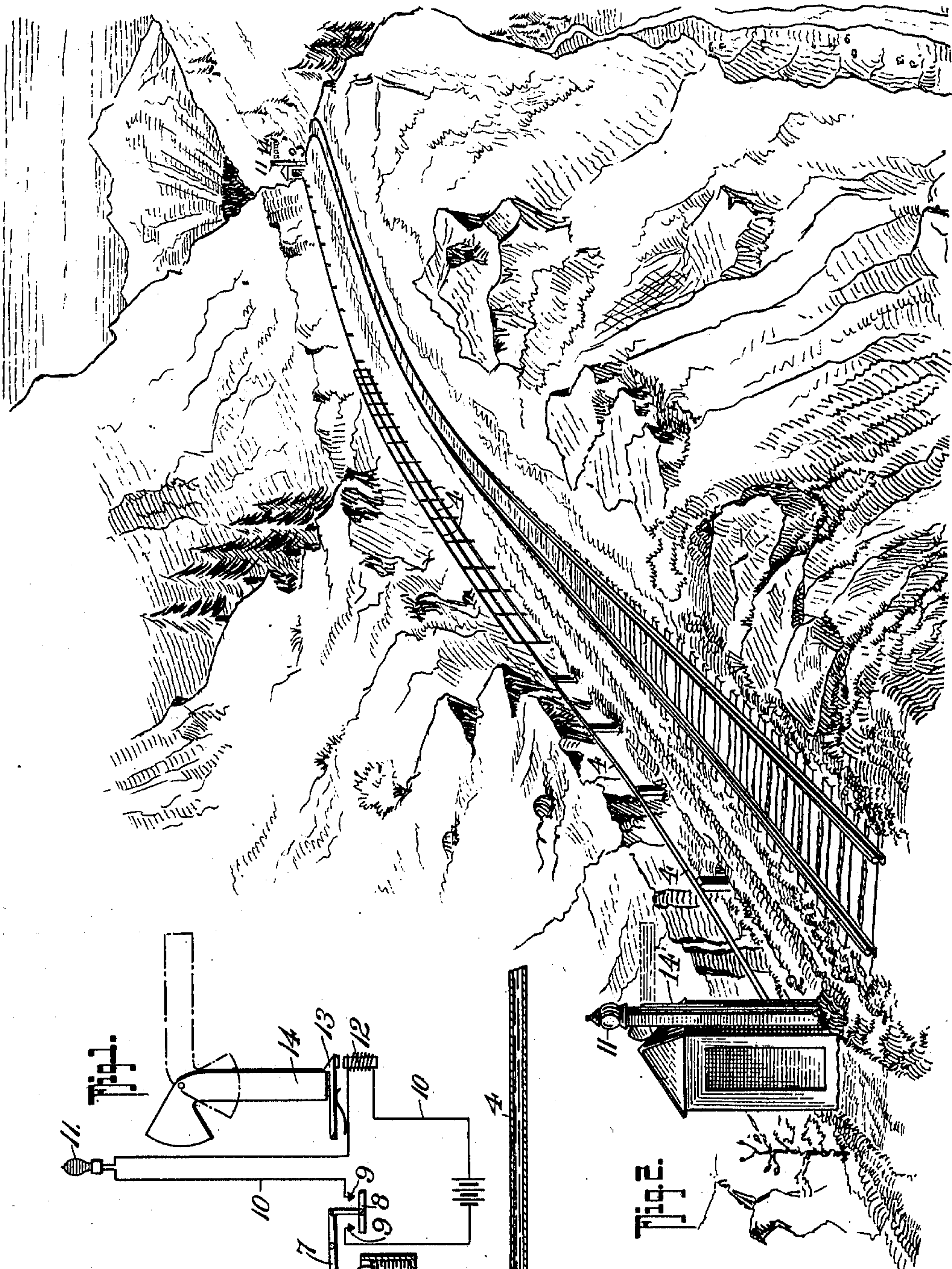


J. MORTON.
SAFETY APPLIANCE FOR RAILWAY TRACKS.
APPLICATION FILED MAR. 22, 1910.

989,276.

Patented Apr. 11, 1911.



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Specification of Letters Patent. Patented Apr. 11, 1911.

Application filed March 22, 1910. Serial No. 550,826.

To all whom it may concern:

Be it known that I, JOSEPH MORTON, citizen of the Dominion of Canada, residing at Vancouver, in the Province of British Columbia, Canada, have invented a new and useful Safety Appliance for Railway-Tracks, of which the following is a specification.

This invention relates to a device particularly designed to give warning to an approaching train in the event of a rock or snow slide obstructing the track.

The device will also be effective in the event of the continuity of the track being interrupted by a washout or injury to a trestle or bridge.

Vigilant patrol is generally considered to be the most effective manner of safeguarding a railway track, but in mountain sections a slide or a washout may occur just after a section of track has been patrolled, and as in such country a railway track is seldom straight an obstruction may not be viewed by the engineer even during daylight in time to avoid mishap it is desirable that some warning means be provided supplementing the patrol, and called into action by the danger itself. It is to meet this requirement that the invention which is the subject of this application has been devised.

In general terms the device comprises a pipe or pipes extending throughout the length of track which is exposed to danger by a slide or the like, which pipe is connected at each end, and at such intermediate points as may be considered desirable, with a vessel. Within this pipe and its connected vessel a liquid is maintained at a practically constant level, and at each vessel a means is provided whereby a danger signal is exposed when the level of the liquid falls below a certain predetermined level such as would occur in the event of the pipe being broken or injured.

The invention is particularly described in the following specification, reference being made to the drawings by which it is accompanied, in which:

Figure 1 is a diagrammatic representation of the warning appliance at each station, and Fig. 2, a perspective view showing its application to a section of track.

In these drawings 2 and 3 represent the signal station of a section of track which is known to be dangerous and which may be situated a mile or more apart. From end to end of this track section a pipe 4 is carried,

which pipe is of such dimensions and material and so supported that it will be readily broken by a rock, land or snow slide or by a washout or other interruption in the continuity of the track that would be likely to endanger a passing train.

The pipe 4 may be carried on either side or on both sides of the track as the nature of the ground may render advisable or in particularly dangerous positions where a single pipe would not be sufficient two or more may be used forming a fence.

At each end, and at such intermediate points as the character of the track may render advisable, the pipes 4 are connected together and to a small vessel 5 and in the pipes and connected vessels, a liquid preferably having a low freezing temperature, is maintained at an approximately constant level.

Within each vessel 5 is a float 6 preferably on the end of a pivotally mounted lever 7, and the outer end of each lever 7, that opposite to the float, is provided with a means 8 for closing the terminals 9 of an electric circuit 10 in which circuit is an incandescent lamp 11 and an electro-magnet 12. The lamp is intended to show a red light at night to approach in either direction and the electro-magnet when sensitized will withdraw a latch 13 which holds down a counterweighted semaphore arm 14 which, when released, will move up to the danger position.

In use the pipe 4 and vessels 5 being filled with the non-freezing liquid such as glycerin and water the floats 6 sustained thereon within the vessels 5 will maintain the electric circuit 10 open, in which condition no danger light will be shown and the semaphore arms 14 are latched in the downward position. When the pipe sustains any injury that will allow the liquid to escape, as would be the case in the event of a slide or washout, the level of the liquid within the vessels will at once be lowered and with it the floats 6. The fall of the floats will close the electric circuit 10 and the lamp 11 will show a red danger signal and at the same time the current in 10 will sensitize the electro-magnet 12 and withdraw the latch to allow the semaphore arm 14 to move to danger. This exposure of a danger signal for night or day will be made at each end of the section or any intermediate position if thought necessary toward each direction of approach and will be an effective warning

to a train which may be on or may approach the section.

The current for the lamp and the electromagnet circuit may be derived from a battery or from other source of supply or separate circuits may be provided for the lamp and semaphore magnet if thought desirable without departing from the spirit of the invention as the same fall of the floats may close the circuit.

A constant level of the liquid within the pipe 4 and its connected vessels 5 may be maintained by a small feeding reservoir 15 adjacent or forming a part of the vessel 5 but at a higher level. This feeding reservoir has a sealed upper end which may be provided with a screwed plug for charging and has a delivery outlet 16 and vent 17. The delivery outlet should be below the desired level of the liquid in the vessel and the vent should about coincide with it. The pipe 4 and its connected vessels 5 being filled to the required level the vessel 15 is filled and its filling aperture closed, the aperture 16 and vent 17 may be plugged while this is being done although these apertures should be so small as hardly to require plugging. If the level of the liquid in the pipe and vessel falls below what is required and uncovers the vent 17 air will get into the vessel 15 and a corresponding amount will flow out through 16 until the vent is again covered, when as no air can get in, no liquid will flow out.

The aperture and vent 16 and 17 should be kept small in order that the outflow from them will not appreciably delay the closing of the circuit in the event of the pipe 4 being injured. Provision will also be made for emptying the pipe 4 when occasion requires but this is not material to the invention.

An efficient safeguard is thus provided against the numerous accidents which occur in mountainous regions owing to rock or land slides or to an avalanche of snow and the cost of the protection and its maintenance is comparatively trifling nor will the device be subject to derangement consequent on climatic changes.

Having now particularly described my invention and the manner of its use, I hereby declare that what I claim as new and desire to be protected in by Letters Patent is:

1. As a safety appliance for a railway track, a pipe extending throughout a given section of track, open vessels connected to said pipe, a liquid within said vessels and said pipe, means for normally maintaining the liquid at a constant level in said vessels, a danger signal mechanism, and means whereby a fall in the level of the liquid in said vessels and pipe will operate said signal mechanism to expose the signal to an approaching train.

2. As a safety appliance for a railway

track, a pipe extending throughout a given section of track, and supported at a suitable height there-above, open vessels connected with said pipe within which and within said pipe a liquid is held, means for maintaining a constant level of liquid in said vessels, floats in said vessels, electric circuit controllers connected with said floats, a semaphore arm, a magnetically controlled latch device for holding said semaphore arm in one position, an electric circuit connecting said switch with said magnetically controlled latch device, and a source of energy for said electric circuit.

3. As a safety device for railway tracks, a pipe extending throughout a given section of track and supported at a suitable interval above the same, an open vessel connected with said pipe, a liquid within said pipe and said open vessel, means for maintaining a constant level of liquid in said open vessel, a float actuated circuit switch having a float operating in said vessel, an electric signaling circuit including said switch, a signal and a source of electric energy.

4. As a safety device for railway tracks, a pipe extending throughout a given section of track and supported at a suitable interval above the same, an open vessel connected with said pipe, a liquid within said pipe and said open vessel, means for maintaining a constant level of liquid in said open vessel, a float actuated circuit switch having a float operating in said vessel, an electric signaling circuit including said switch a signal and a source of electric energy, said circuit also including a semaphore controlling mechanism, and a semaphore controlled by said mechanism.

5. As a safety appliance for a railway track, the combination with a pipe extending throughout the length of the track and open vessels in connection therewith within which pipe and vessels a liquid is to be maintained at a constant level, means for normally maintaining the constant level of the liquid said means comprising a closed liquid container situated above the level which it is desired to maintain, and an aperture delivering therefrom at the level which it is desired to maintain.

6. In a safety signal for railways, a pipe, an open reservoir connected with said pipe, a fluid in said pipe and reservoir, a closed reservoir connected with said open reservoir to deliver into said open reservoir and normally maintain a constant level of fluid in said open reservoir, a fluid in said closed reservoir, a gravity set semaphore, a latch normally holding said semaphore in one position, electromagnetic means for releasing said latch, a switch and a float actuated device for operating said switch, said float actuated device including a float held in said open reservoir.

7. In a railway and signal, a pipe, a fluid
supplying reservoir at each end of said
pipe, means connected with said fluid sup-
plying reservoirs for normally maintaining
5 a constant level of fluid in said reservoirs,
a float operating in each reservoir, a switch
controlled by the movement of said float, a
normally open electric circuit adapted to be
closed by said switch and including a source

of supply, a visible signal, and an electro- 10
magnetically released semaphore.

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

JOSEPH MORTON.

Witnesses:

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ALEXANDER SMITH.

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