

UNITED STATES PATENT OFFICE.

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SAFETY DEVICE FOR INCLINE-CARS.

No. 829,534.

Specification of Letters Patent.

Patented Aug. 28, 1906.

Application filed January 15, 1906. Serial No. 296,056.

To all whom it may concern:

Be it known that I, MANFORD LUDLOW, a citizen of the United States, residing at Hanford, county of Kings, State of California, have invented a new and useful Safety Device for Incline-Cars, of which the following is a specification.

The main object of this invention is to provide a safety device for cars, such as mining-cars, that are hauled up inclined shafts. In a shaft of this character there is continual danger of the cable breaking, with result that the car will race or plunge to the bottom of the shaft, with resultant loss and damage of property and perhaps loss of life.

This invention relates to means for safeguarding against such contingency, and it provides means whereby the car in its ascent in the shaft is continually safeguarded against descent, so that immediately it starts to descend it will be automatically held in fixed position in the shaft and will remain in such position until proper steps can be taken to repair the cable or otherwise remedy the trouble.

The invention further relates to means for setting this automatic locking clamp or brake into and out of operation, so as to enable free downward movement of the car when it is being lowered into the shaft, but to prevent accidental downward movement when the car is being raised. For this purpose means are provided on the car operated automatically or manually to shift or change the position of the locking or braking parts, so that when the car is at the bottom of the shaft it can be set for the upward travel with the safeguard device in operation, and when it is at the top of the shaft said safeguard device can be set to enable free descent of the car.

The accompanying drawings illustrate the invention.

Figure 1 is a vertical sectional view of a mining-shaft, showing the car therein. Fig. 2 is a side elevation of the car in position on the track, this track being shown as horizontal, being, for example, part of a horizontal extension at the top of the mine-track. Fig. 3 is a vertical section on the line x^3 in Fig. 2. Fig. 4 is an inverted plan of Fig. 2. Fig. 5 is a detail section showing the catch for holding the brake devices locked in inoperative position. Fig. 6 is a diagrammatic representation of the two different operative positions of the braking or gripping devices.

1 designates a car, and 2 the track therefor, said track being inclined for at least a part of its length, being, for example, located in an inclined mine shaft or tunnel. The car is provided with wheels 3, running on the track 2, and a cable 4 is attached to the car and is operated in usual manner to haul the car up the incline or allow it to descend thereon. At its upper end the track 2 is shown with an extension 2', bringing the car to horizontal position or to proper dumping position, as may be desired.

Brake or grip levers or arms 5 are pivoted at 6 on the bottom of the car, each arm extending transversely to the track and car, each lever 5 being provided with relatively fixed jaws 7 8 to engage the track-rails 2. The jaw 7 extends down from the end of lever 5 and has a serrated inner face 7', engaging the outside of the rail-head 2^a. The jaw 8 extends down from lever 5 and is serrated, as at 8', to engage the inner side of the rail-head and has an inward extension 9, projecting under the rail-head. The jaw-faces 7' 8' are separated such a distance that when the arms extend straight out from the central plane of the car, as shown in Fig. 4, said faces will be free of engagement with the track-rails; but on turning the levers forwardly to position shown in full lines in Fig. 6 they will touch the rail-head on each side thereof. Each arm 5 is drawn toward this position by a spring 10. Another spring 11 tends to hold the arms 5 down toward the track to prevent binding of the lug or extensions 9 under the rail-head.

Means are provided for locking the arms in straight extended position, consisting of a head 12, carried by a bar 13, sliding in guides 14 on the bottom of the car, said head engaging the arms 5 and a spring catch or hook 15, fastened on the bottom of the car and engaging over the edge of the block 12. Bar 13 has an arm 13' at its forward end to engage a tripping device or abutment 16, located on the track in position to engage said arm. A rod 17, pivoted to turn in bearings 18 on the bottom of the car, has a loop or bend 17', adapted to engage over an incline 15' at the end of hook 15 to depress the hook from engagement with the head 12, said rod having an operating-handle 19, extending up at the side of the car, and a spring 20, acting on said handle, to hold the depressing means out of engagement with the hook.

The car having been brought onto the track in such manner that the jaws 7 8 engage with the rail, as stated, it is apparent that said jaws will hold the car to the track.

5 Assuming that the car is at the bottom of the incline and that the parts are in the positions shown in Fig. 4, the operator or attendant will move handle 19 to cause loop 17' to depress hook 15 from head 12, allowing the latter to move forward along with arms 5, under influence of springs 10, to position shown in full lines in Fig. 6. The gripping-faces of said arms will then engage the sides of the rail-heads to resist backward movement; but

15 when the cable is pulled to haul the car up the incline the friction of these jaw-faces on the rail will continually ease off the gripping action, so that the jaws will travel practically free along the rails, but will be continually held in touch therewith by the springs 9, so that the least back movement of the car would result in the arms 5 moving to the dotted-line position in Fig. 6 and biting or gripping strongly into the sides of the rails. If

25 the cable or hauling machinery should break, the initial backward movement of the car would thus result in gripping it to the rails with a grip proportional to the weight to be sustained. On reaching the top or end of the track the arm 13' on bar 13 strikes the obstruction or abutment 16, and the resultant backward movement of the bar 13 and head 12 pushes the arms 5 back to position shown in Fig. 4, the spring-hook 15 then snapping over the head 12 to hold the parts in such position. It is assumed that at the time this action takes place the car will be otherwise safeguarded from backward movement, for example, by the fact that it is then

30 resting on a horizontal portion of the track.

What I claim is—

1. The combination with track-rails, of a car mounted to travel thereon and provided with arms pivoted thereon and extending transversely to the track and having relatively fixed jaws extending inside and outside of the track-rail, to grip the rail on forward deflection of the arm, and means for normally holding the arms rearwardly to release said jaws from the rail.

2. The combination with track-rails, of a car traveling thereon and provided with arms pivoted thereon and extending transversely to the track, each of said arms having relatively fixed jaws extending down inside and outside of a track-rail, to grip the rail on forward deflection of the arms, spring means acting on said arms to deflect them forwardly,

and retaining means for holding said arms rearwardly to release the gripping-jaws.

3. The combination with track-rails, of a car traveling thereon and provided with arms pivoted thereon and extending transversely to the track, each of said arms having relatively fixed jaws extending down inside and outside of a track-rail, to grip the rail on forward deflection of the arms, spring means acting on said arms to deflect them forwardly, retaining means for holding said arms rearwardly to release the gripping-jaws, and means for releasing said retaining means.

4. The combination with track-rails, of a car traveling thereon and provided with arms pivoted thereon and extending transversely to the track, each of said arms having relatively fixed jaws extending down inside and outside of a track-rail, to grip the rail on forward deflection of the arms, spring means acting on said arms to deflect them forwardly, retaining means for holding said arms rearwardly to release the gripping-jaws, means for releasing said retaining means, one of said projections extending under the rail-head, and spring means for holding the arms downwardly on the rail.

5. In combination with incline track-rails and a car traveling thereon, gripping-arms pivoted on the car to swing into and out of engaging relation with the rails and having jaw means extending inside and outside of the rail, springs drawing said arms forwardly to rail-engaging position, retaining means for holding said arms rearwardly out of rail-engaging position, and means for releasing said retaining means.

6. In combination with incline track-rails and a car traveling thereon, gripping-arms pivoted on the car to swing into and out of engaging relation with the rails and having jaw means extending under the rail-heads, springs drawing said arms forwardly to rail-engaging position, a device movable on the car and operating rearwardly on said arms to hold them in rail-releasing position, means located on the track to operate said device rearwardly, a spring-catch engaging said device to hold the same in rearward position, and manual releasing means for said spring-catch.

Signed at Los Angeles, California, this 29th day of December, 1905.

MANFORD LUDLOW.

In presence of—

ARTHUR P. KNIGHT,
VERNA A. TALBERT.