

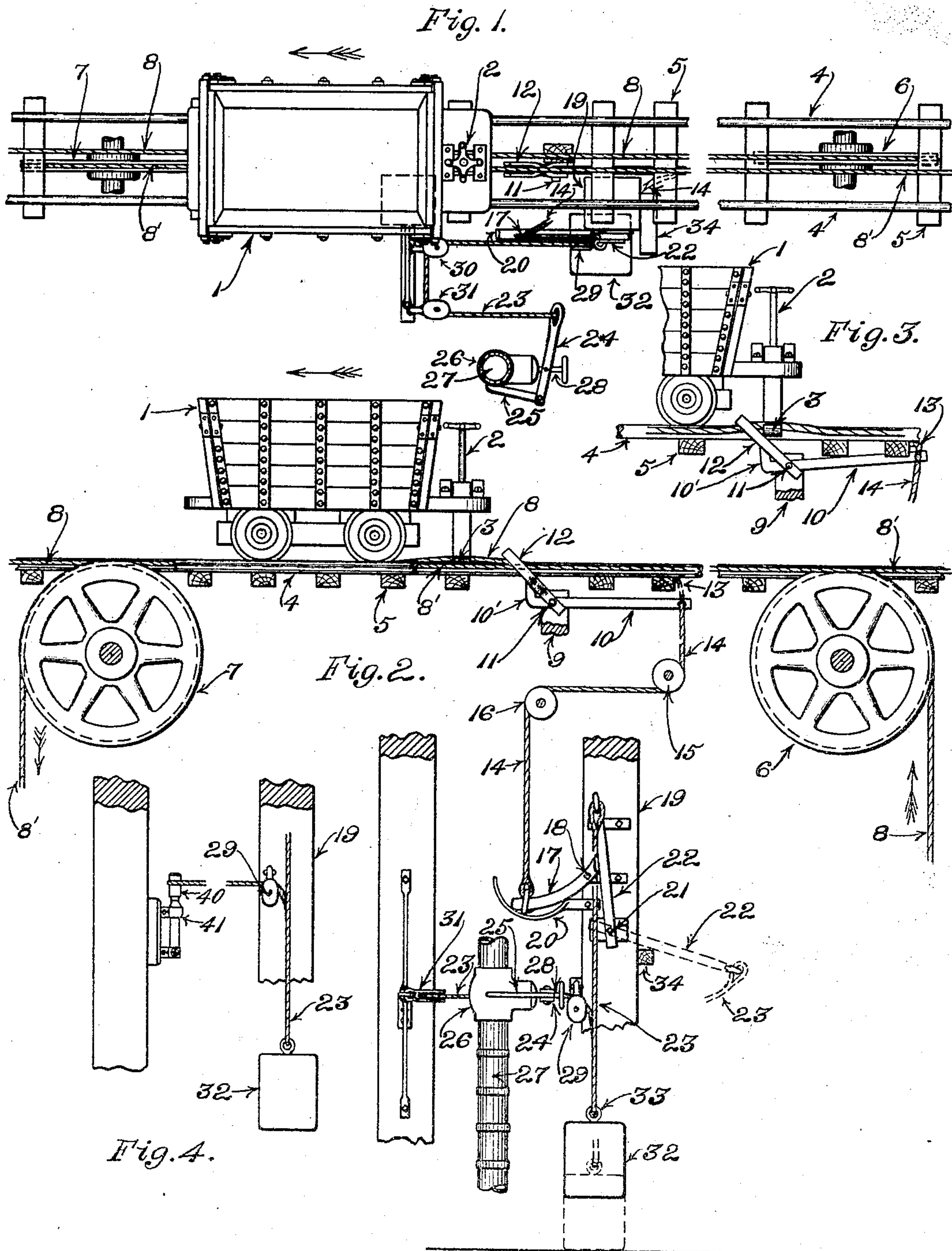
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A. M. GREEN.
AUTOMATIC STOP FOR CABLE CARS.

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NO MODEL.



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AUTOMATIC STOP FOR CABLE-CARS.

SPECIFICATION forming part of Letters Patent No. 774,244, dated November 8, 1904.

Application filed July 29, 1904. Serial No. 218,676. (No model.)

To all whom it may concern:

Be it known that I, ARCHIBALD M. GREEN, of Chelsea, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Automatic Stops for Cable-Cars, of which the following is a specification.

In unloading coal from vessels it is common to raise the coal from the vessel by means of hoisting-buckets, or "coal-diggers" as they are frequently termed, and carried by the buckets up to an elevated platform, where the coal is emptied from the buckets into cars which carry the coal to the place where it is to be dumped into the proper coal-pocket in the yard. Tracks for the cars are laid on the platform and are usually arranged in circuit, forming an endless track. The cars are usually operated by endless cable, which may be driven by any suitable engine—steam, electric, or other power. The cable comes up from the engine, extends around the circuit, doubles upon itself for some distance, and then returns to the engine. The grip is applied to the cable after it comes up from the engine. After the car has gone around the circuit it is necessary to release the grip from the cable before it reaches the sheave where the cable passes down to the engine; otherwise something will have to break when the grip strikes the sheave. It is usual to have an operator release the grip at some point along the double line of the cable and shift it over to the portion of the cable which has just come up from the engine. Sometimes the operator is neglectful and fails to make the shift, and damage results in the manner already described.

The object of the present invention is to provide an automatic stop whereby if the grip is not released before it reaches a certain point the cable will be stopped by throwing off the power. This is accomplished by means of a trip device actuated by the grip or some projection carried by the car, which operates to move a valve and shut off the steam if a steam-engine furnishes the power, or to turn a switch if electricity be the medium, or in some other way to control the motive power, whatever it may be.

The invention will now be fully described, reference being had to the accompanying drawings, and the novel features thereof will be particularly pointed out in the claims at the close of the specification.

In the drawings, Figure 1 is a plan of a section of track and a car and connections, illustrating the invention when steam-power is employed. The car is shown as having passed the automatic stop and the grip engaged with the proper run of the cable. Fig. 2 is a side elevation of Fig. 1, partly in section. Fig. 3 is a side elevation, partly broken away, showing the grip-hook in engagement with the stop-lever as it will be in passing if the grip has not been shifted. Fig. 4 is a detail view showing how the invention is employed to open a switch when electricity is the motive power.

1 represents a car, 2 the grip-operating lever, and 3 the grip-hook which engages the cable, all in well-known manner, and are therefore not shown in detail. The track-rails 4 4 are laid on the cross-ties 5.

6 represents the pulley over which the cable 8 passes when it comes up from the engine, and 7 is the pulley over which the cable passes on its return to the engine. For convenience of reference the return run of the cable is designated by 8'. These pulleys are journaled in suitable bearings in the frame below the track, so that the run of the cable between the pulleys will be at the proper level.

Fulcrumed at 11 to a post 9 beneath the track is a lever 10, having an upturned forward arm 10', which engages the under side of lever 12, the rear arm of lever 10 being heavier than the forward arm, but held from dropping below a certain point by a rope 13, which is fastened to one of the cross-ties 5. Lever 12 is also pivoted either to the lever 10 or to the post 9 and bearing upon the upper end of arm 10' extends at an inclination up into the path of the grip-hook 3, being inclined to the direction that the car travels. Preferably the upper end of arm 10' is beveled to fit the inclination of lever 12. Preferably the lever 12 is forked at its upper end, so that the cable may lie between the branches of the fork which form a guide for the cable 8', so that

if the grip-hook has not been shifted from 8' to 8 before the car reaches the lever 12 the grip-hook will be surely engaged by the lever 12 and not allow the cable to swerve to one side of the lever, and thereby cause the lever 12 to fail of engaging the grip-hook.

To the rear arm of lever 10 there is fastened a rope 14, which is guided by suitable pulleys, as 15 16, and is attached to one arm of lever 17, fulcrumed at 18 to the standard 19. A stop 20 supports the lever 17 when in the position of Fig. 2.

Pivoted at 21 to the standard 19 is a lever 22, which normally stands extending upward a little off of the plumb and rests against the end of lever 17, which prevents lever 22 from turning down further. A rope 23 is fastened at one end to the upper end of said lever 22 and at its other end it is connected with one end of a lever 24, which is fulcrumed at the opposite end from the rope connection to a connecting-rod 25, which is pivoted to a collar 26 on the steam-pipe 27. Intermediate its two ends the lever 24 is pivoted to the stem 28 of a valve which controls the passage of steam through the pipe 27 to the engine. When the valve is pulled inward, it shuts off the steam and stops the engine. Rope 23 is guided over suitable pulleys 29 30 31, and on the said rope there is hung a weight 32, the rope running through an eye 33, fast to the weight. The downward pull of the weight normally retains the lever 22 against the end of lever 17, as in Fig. 2.

If the grip-hook is not shifted before the car reaches the lever 12, the hook will engage the said lever and depress the upper end, thus turning down the upturned arm 10' of lever 10, on which it bears, and lifting the rear arm of lever 10. This pulls upon the rope 14, and thus turns up the long arm of lever 17. This causes the short arm of said lever 17 to push lever 22 over to the other side of the vertical, and the pull of the weight 23, which previously held the lever 22 against the end of lever 17, now pulls the lever 22 down into the dotted-line position of Fig. 2 as far as allowed by the stop 34. The drop of the weight keeps the rope 23 taut and causes it to pull the valve and shut off the steam, so that the engine stops, and therefore the cable stops moving and brings the car to a rest. As soon as the grip-hook rides off from the lever 12 after turning it down the weight of the rear arm of lever 10, which overbalances the fore arm 10', will cause the rear arm to drop as far as allowed by the rope 13 and restore the lever 12 again to the position of Fig. 2. The cable, however, will not start again until the valve is reopened at the will of the operator or engineer, and in the meantime the operator will shift the grip before he opens the valve.

In Fig. 4 the rope 23 is shown as connected with the lever 40 of an electric switch 41,

showing how the invention may be applied to open the switch and stop the car when the motive power is electricity.

It is obvious that the invention may be applied to a cable-car used for any purpose; also, that the particular form of trip and connections may be varied without departing from the scope of the invention.

What I claim is—

1. An automatic stop for cable-cars comprising a lever actuated by the cable-grip at a certain point in the travel of the car, and mechanism actuated by the said lever whereby the engagement of the said grip with said lever shuts off the motive power of the cable.

2. An automatic stop for cable engines and cars comprising a pivoted lever which projects up into the path which the grip pursues if the grip is retained in engagement with one line of the cable, said lever being actuated by said moving grip, and mechanism actuated by said lever and grip to shut off the motive power of the cable.

3. In a circuit cable-car system in which the grip has to be shifted from the return-line of the cable to the outgoing line at the end of each round trip, an automatic stop which shuts off the motive power if the grip is not shifted, said stop mechanism comprising a forked lever pivoted below the cable and embracing the return-line of the cable, whereby the said lever will be engaged by the grip if the grip is not shifted before reaching the said lever, a shut-off for the motive power of the cable, and mechanism connecting said shut-off with said lever, whereby the engagement of said grip with said lever actuates the shut-off.

4. In a circuit cable-car system in which the grip has to be shifted from the return-line of the cable to the outgoing line after each trip, an automatic stop which shuts off the motive power if the grip is not shifted, said stop mechanism comprising a pivoted lever which extends up into the path of the grip if the grip remains on the return-line and which is out of the path of the grip while the grip is on the outgoing line, shut-off mechanism for the motive power of the cable, and mechanism connecting said shut-off with said lever whereby if the grip remains in connection with the return-line it will actuate said lever and shut-off.

5. An automatic stop for cable engines and cars comprising a pivoted lever which projects up into the path in which the cable-grip moves when in engagement with the return-line of the cable and which is depressed by the grip in passing, a shut-off for the motive power of the cable, mechanism for actuating said shut-off, mechanism which normally holds said shut-off-actuating mechanism inactive, and trip mechanism actuated by said first lever when depressed which throws said shut-off-actuating mechanism into action.

6. An automatic stop for cable engines and

cars comprising a pivoted lever which projects up into the path in which the cable-grip moves when in engagement with the return-line of the cable and which is depressed by engagement of the grip in passing, a second lever which normally holds said first lever in engaging position for the grip, a shut-off for the motive power of the cable, mechanism for actuating said shut-off, mechanism which normally holds said shut-off-actuating mechanism inactive, trip mechanism for said detent mechanism, and connections between said trip mechanism and said second lever whereby the depressing of the said first lever by the cable-grip actuates the tripping mechanism and throws the shut-off-actuating mechanism into action.

7. An automatic stop for cable engines and cars comprising a pivoted lever which projects up into the path in which the cable-grip moves when in engagement with the return-line of the cable and which is depressed by engagement of the grip in passing, means which normally hold said first lever in engaging position for the grip, a shut-off for the motive power of the cable, a flexible connection with said shut-off, mechanism connected with said flexible connection which tends to actuate it so as to shut off the power, a pivoted lever to which said flexible connection is connected and which normally holds said shut-off-actuating mechanism out of action, a trip-lever which engages said detent-lever, and mechanism connecting said trip-lever with said grip-engaging lever whereby the depressing of the grip-engaging lever trips

the said detent-lever and renders the shut-off-actuating mechanism operative.

8. An automatic stop for cable engines and cars comprising a pivoted lever which projects up into the path in which the cable-grip moves when in engagement with the return-line of the cable and which is depressed by the grip in passing, mechanism which throws the said lever again into engaging position when the lever is released from the grip, a shut-off for the motive power of the cable, mechanism for actuating said shut-off, mechanism for normally retaining said shut-off mechanism inactive and mechanism actuated by the depressing of said grip-engaging lever to throw the shut-off mechanism into action.

9. An automatic stop for cable engines and cars comprising a pivoted lever which projects up into the path in which the cable-grip moves when in engagement with the return-line of the cable and which is depressed by the grip in passing, mechanism which throws the said lever again into engaging position when the grip has passed out of engagement with the said lever, shut-off mechanism for the motive power of the cable, and mechanism actuated by the depressing of said grip-engaging lever to throw the shut-off mechanism into action.

In testimony whereof I affix my signature in presence of two witnesses.

ARCHIBALD M. GREEN.

Witnesses:

WILLIAM A. COPELAND,
ROBERT WALLACE.