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CAR RETARDING DEVICE

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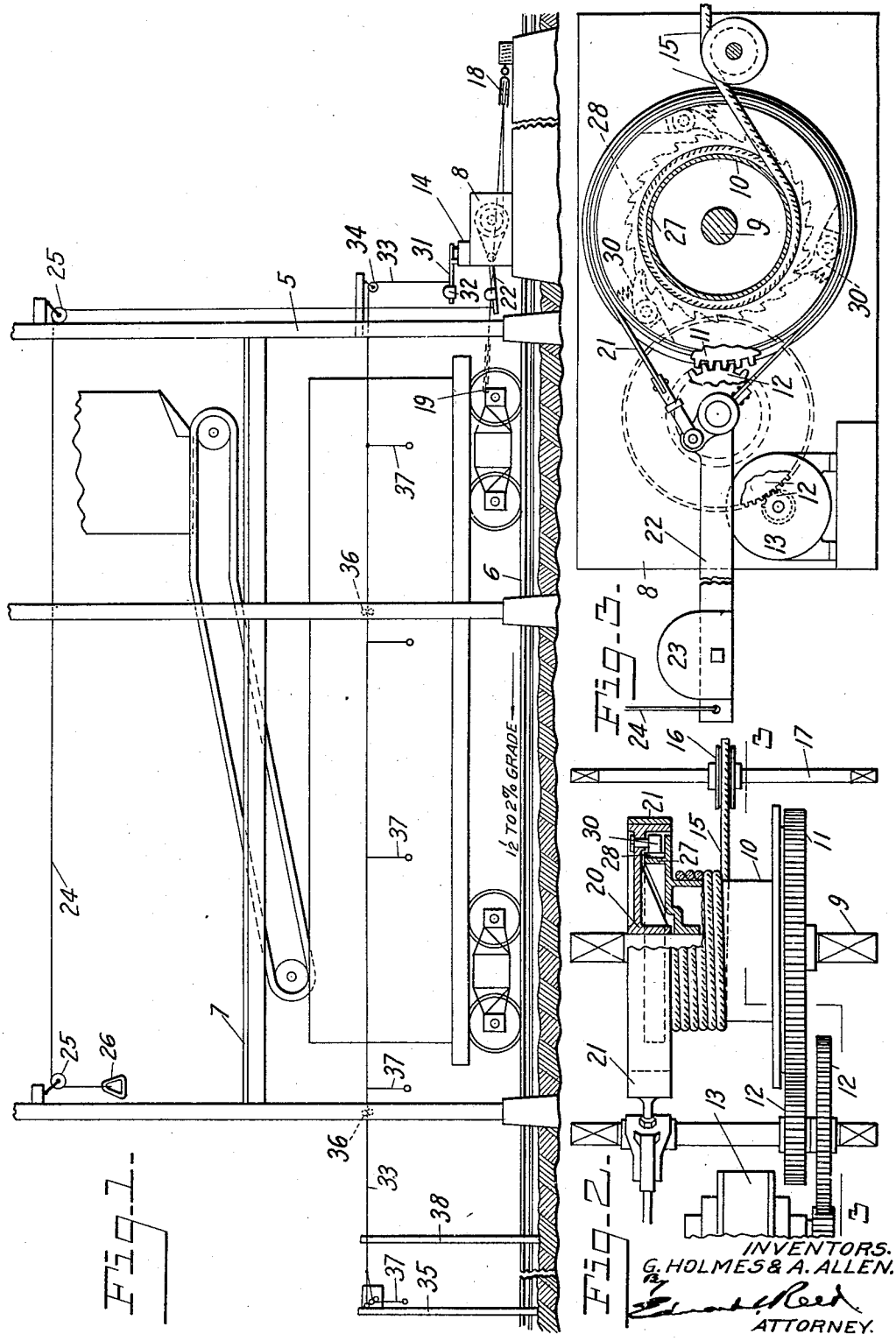


Fig. 1.

Fig. 2.

Fig. 3.

INVENTORS.
G. HOLMES & A. ALLEN.
BY
ATTORNEY.

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GRANT HOLMES, OF DANVILLE, AND ANDREWS ALLEN, OF GLENCOE, ILLINOIS, ASSIGNORS TO ROBT. HOLMES & BROS., INC., OF DANVILLE, ILLINOIS, A CORPORATION OF ILLINOIS

CAR-RETARDING DEVICE

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This invention relates to a car retarding device and is designed more particularly for the purpose of controlling the movement of a car down an inclined track through a coal tipple as the car is being loaded. It has been proposed heretofore to provide a retarding device, for controlling the movement of a car, which comprises a brake controlled drum, a cable wound on the drum and connected with the car, a motor for actuating the drum to rewind the cable, and a switch to control the rewinding operation, the braking operation and rewinding operation both being under the control of an operator in the tipple, through the medium of a single actuating device, the initial movement of which actuates the brake to release the drum and the further operation of which closes the switch to cause the cable to be rewound. When the car has completed its movement through the tipple it is held against further movement by some means other than the retarding cable, the retarding cable is then disconnected from the car, by a ground man, and the cable rewound and connected with another car. The carrying out of the successive steps of this operation requires a cooperation and communication between the operator and the ground man which in practice has been found inconvenient and impractical.

One object of the present invention is to provide a car retarding device in which the braking operation which controls the movement of the car will be under the control of the operator and the rewinding operation will be under the control of the ground man.

A further object of the invention is to provide such a device in which the rewinding operation may be effected either when the brake is set or when it is released.

A further object of the invention is to provide such a device which will be simple in its construction, positive in its operation and easy to control.

Other objects of the invention will appear as the mechanism is described in detail.

In the accompanying drawing Fig. 1 is an elevation of a portion of a car tipple showing our invention applied thereto, and partly broken away; Fig. 2 is a plan view, partly in section, of the retarding mechanism; and Fig. 3 is a section taken on the line 3—3 of Fig. 2.

In these drawings we have illustrated one embodiment of our invention and have shown the same as used in connection with a coal tipple, but it will be understood that this particular embodiment has been chosen for the purpose of illustration only, and that the device may take various forms and may be used for various purposes without departing from the spirit of the invention.

In Fig. 1 of the drawings we have shown the lower portion of a coal tipple 5 through which extends the track 6 having a slight grade, sufficient to cause the car to move over the track by gravity, when unrestrained. The tipple is provided with a platform 7, above the level of the car, on which is stationed the operator or car trimmer who controls the movement of the car through the tipple. The controlling device is mounted at one side of the track, at the upgrade end of the tipple, and comprises a supporting structure or frame 8 which, if desired, may be in the form of a housing to enclose the mechanism. Mounted in suitable bearings within the housing 8 is a shaft 9 on which is mounted a drum 10 which has means for connecting it with suitable operating mechanism, such as a motor. In the present instance, the drum is rotatably mounted on the shaft 9 and has rigidly connected therewith a gear 11 which is connected by a gear train 12 with a motor 13. The motor may be of any suitable character, and is here shown as an electric motor, and is provided with a controlling device 14 which, in the case of an electric motor, would be a switch of any suitable character. Secured to and wound about the drum 10 is a cable 15 having means for connecting it with the car which is to be controlled. As here shown, the cable first extends rearwardly from the drum, over an axially movable guide sheave 16 mounted on a shaft 17, then about a snub sheave 18 mounted in the rear of the drum and then forwardly past the drum to the car. It may be connected with the car by means of a hook 19 or any other suitable

means which will permit the easy connection and disconnection of the cable.

The drum is held against movement, in a direction to unwind the cable, by a brake and is preferably capable of movement with relation to the brake, means being provided for operatively connecting the brake with the drum when the latter is rotated in a direction to unwind the cable, and the connection being of such a character that the drum is always free to rotate in a direction to wind the cable on the drum. As here shown, the brake comprises a brake wheel 20 rotatably mounted on the drum shaft 9 and having associated therewith a friction member, such as a brake band 21, which is operatively connected with a device by means of which it may be actuated to set or release the brake. In the present instance, the actuating device comprises a lever 22, which is weighted, as shown at 23, to move the same in a direction to draw the band tightly about the brake wheel and thus normally set the brake. Connected with the lever, and forming a part of the actuating device, is a flexible member or cord 24 which extends about guides 25 and terminates at a point adjacent to the operator's station or platform 7 where it may be provided with a suitable handle 26 for actuating the same, the handle being preferably weighted to maintain the cord taut. The brake wheel is preferably connected with the drum by a one-way clutch which will permit the drum to rotate with relation to the brake wheel in a direction to rewind the cable and will positively connect the drum with the brake wheel when the drum is rotated in a direction to unwind the cable. As here shown, this one-way clutch is in the form of a pawl and ratchet mechanism comprising an annular flange 27 rigidly secured to, and preferably formed integral with, one end of the drum 10 and having a circumferential series of ratchet teeth 28. This toothed flange or ratchet wheel extends within the flange of the brake wheel and rigidly secured to the web of the brake wheel are a plurality of pawls 30 which engage the ratchet wheel and will connect the drum with the brake wheel when the drum rotates in one direction and will ride over the teeth of the ratchet wheel when the drum rotates in the other direction.

The rewinding operation may be effected in any suitable manner and in the arrangement here shown the motor which actuates the drum is under the control of an operator, preferably the ground man, so that the winding operation is initiated by, and the extent thereof determined by, the operator. For this purpose, the device for controlling the motor which operates the drum, in the present instance the switch 14, is provided with an actuating device of such a character and so arranged that it may be operated by the ground man in any one of a plurality of positions along the track on which the car moves. In the present construction, this actuating device comprises a lever 31, which, if desired, may be weighted, as shown at 32, to restore the same to its normal position, and connected with this lever is a flexible member or cord 33 which extends upwardly about a guide 34 and then forwardly along the track to a point remote from the drum and, as here shown, some distance beyond the downgrade end of the tipple. Preferably the remote end of the flexible actuating member 33 is anchored to a suitable support, such as a post 35. It may, if desired, be supported at intermediate points by guides 36 mounted on the tipple or other suitable supports. It will be obvious that the switch may be actuated by a pull on the cable at any point between its ends. Inasmuch as it is desirable that the actuating cord be arranged at such an elevation that the operator can pass beneath the same, we have attached to the actuating cord, at separated points along its length, a series of handles or pull cords 37 which depend therefrom to positions in which they may be readily grasped and operated by the ground man.

When the retarding cable has been connected with the car, as shown in Fig. 1, the operator will manipulate the brake, from time to time as the loading of the car progresses, to permit the car to advance by gravity, step by step, until it has been completely loaded. It will be understood, of course, that the cable may be connected with a single car, as shown in the drawings, or that a series of cars may be connected in a train. The mechanism being located at the side of the track the cable may be connected with one car of the train and all the cars controlled thereby. When the car or cars have been loaded and have passed beyond the tipple they are held against further movement by some means other than the cable, such as the brakes on the cars or by blocking the wheels. The ground man then disconnects the retarding cable from the car and drops the same on the ground. He then actuates the switch operating cord 33 to close the circuit through the motor and cause the drum to be rotated in a direction to rewind the drum. If the switch is of that type which is opened and closed by successive movements of the actuating device in the same direction he may then release the actuating cord and walk to the rear or upper end of the tipple while the cable is being rewound. When the cable has been fully rewound he will again actuate the switch, from any position which he may occupy along the track, to interrupt the operation of the motor. He then again connects the cable to another car and, if necessary, further actuates the rewinding drum to take up any slack that may be in the cable. The mechanism is then in condition for control

by the operator to cause the car to be advanced and loaded. Because of the fact that the rewinding operation may take place regardless of whether the brake is set or released it will be obvious that this operation is under the sole control of the ground man and requires no cooperation nor communication between him and the operator.

While we have shown and described one embodiment of our invention we wish it to be understood that we do not desire to be limited to the details thereof as various modifications may occur to a person skilled in the art.

Having now fully described our invention, what we claim as new and desire to secure by Letters Patent, is:

1. In a retarding device to control the movement of a car down an inclined track, a rotatable drum, a cable wound on said drum and having means to connect the same with a car which is to be controlled, a brake for said drum to control the unwinding of said cable, power operated means for actuating said drum to rewind said cable thereon, a controlling device for said power operated means, and separate actuating devices for said brake and said controlling device located at separated points, both of which are remote from said drum.

2. In a retarding device to control the movement of a car down an inclined track, a rotatable drum, a cable wound on said drum and having means to connect the same with a car which is to be controlled, a brake for said drum to control the unwinding of said cable, power operated means for actuating said drum to rewind said cable thereon, a controlling device for said power operated means, an actuating device for said controlling device extending to a point remote from said drum and operable from any one of a plurality of positions along the same, and a separate actuating device for said brake extending to a point remote from said drum and from the first mentioned actuating device.

3. In a retarding device to control the movement of a car down an inclined track, a rotatable drum, a cable wound on said drum and having means to connect the same with a car which is to be controlled, a brake for said drum to control the unwinding of said cable, power operated means for actuating said drum to rewind said cable thereon, a controlling device for said power operated means, an actuating device for said brake having a part located adjacent to an operator's station above said car, and an actuating device for said controlling device extending alongside of said track and operable from any one of a plurality of positions along said track.

4. In a retarding device to control the movement of a car down an inclined track, a rotatable drum, a cable wound on said drum and having means to connect the same with a car which is to be controlled, a brake for said drum to control the unwinding of said cable, an actuating device for said brake comprising means to normally set said brake and a flexible member extending to a point remote from said brake and operable to release said brake, a motor for actuating said drum to rewind said cable thereon, a controlling device for said motor, and a flexible actuating member connected with said controlling device, extending to a point remote therefrom and operable from any one of a plurality of positions between its ends.

5. In a retarding device for controlling the movement of a car down an inclined track through a tipple, said tipple having an operator's station above the level of said car, a drum rotatably mounted at one side of said brake and at the upgrade end of said tipple, a cable wound on said drum and having means for connecting the same with said car, a brake for said drum to control the unwinding of said cable, an actuating lever having means to normally set said brake, a flexible member connected with said lever and extending to a point adjacent to said operator's station for actuating said lever to release said brake, a motor for actuating said drum to rewind said cable thereon, a controlling device for said motor, and a flexible actuating member connected with said controlling device, extending along said track to a point remote from said drum, and operable from any one of a plurality of positions between it ends.

6. In a retarding device to control the movement of a car down an inclined track, a rotatable drum, a cable wound on said drum and having means for connecting the same with said car, a brake, means for connecting said brake with said drum when the latter is rotated in a direction to unwind said cable, said drum being rotatable independently of said brake in a direction to rewind said cable thereon, a motor for actuating said drum to rewind said cable thereon, a controlling device for said motor, and separate actuating devices for said brake and said controlling device extending to points remote from said drum.

7. In a retarding device to control the movement of a car down an inclined track, a rotatable drum, a cable wound on said drum and having means for connecting the same with said car, a brake, means for connecting said brake with said drum when the latter is rotated in a direction to unwind said cable, said drum being rotatable independently of said brake in a direction to rewind said cable thereon, actuating means for said brake having a part remote from said brake, a motor for actuating said drum to rewind said cable thereon, a controlling device for said motor, and actuating means for said controlling device operable from a position remote from

said drum and from said part of said brake actuating means.

8. In a retarding device to control the movement of a car down an inclined track, a drum and a brake wheel mounted for independent rotation, a friction member cooperating with said brake wheel, means to actuate said friction member, a cable wound on said drum and having means for connecting the same with said car, means for rotating said drum, and a one-way clutch to connect said brakes with said drum when the latter is rotated in a direction to unwind said cable.

9. In a retarding device to control the movement of a car down an inclined track, a drum and a brake wheel mounted for independent rotation about a common axis, a friction member cooperating with said brake wheel, means to actuate said friction member, a cable wound on said drum and having means for connecting the same with said car, a motor to actuate said drum in a direction to rewind said cable, means to control said motor, cooperating clutch members carried by said brake wheel and said drum, respectively, and arranged to connect said drum with said brake wheel when said drum is rotated in a direction to unwind said cable and to permit said drum to rotate with relation to said brake wheel when said drum is rotated in the other direction.

10. In a retarding device to control the movement of a car down an inclined track, a shaft, a drum mounted on said shaft, a cable wound on said drum and having means for connecting the same with said car, a motor operatively connected with said drum to rotate the same in a direction to rewind said cable thereon, means to control said motor, a brake wheel rotatably mounted on said shaft adjacent to one end of said drum, said drum having a circumferential series of ratchet teeth at that end thereof adjacent to said brake wheel, and pawls carried by said brake wheel and arranged to engage said ratchet teeth, said ratchet teeth and said pawls being arranged to connect said brake wheel with said drum when the latter is rotated in a direction to unwind said cable and to permit said drum to rotate with relation to said brake wheel when said drum is rotated in the other direction, a friction member cooperating with said brake wheel, and means for actuating said friction member.

In testimony whereof, we affix our signatures hereto.

GRANT HOLMES.
ANDREWS ALLEN.