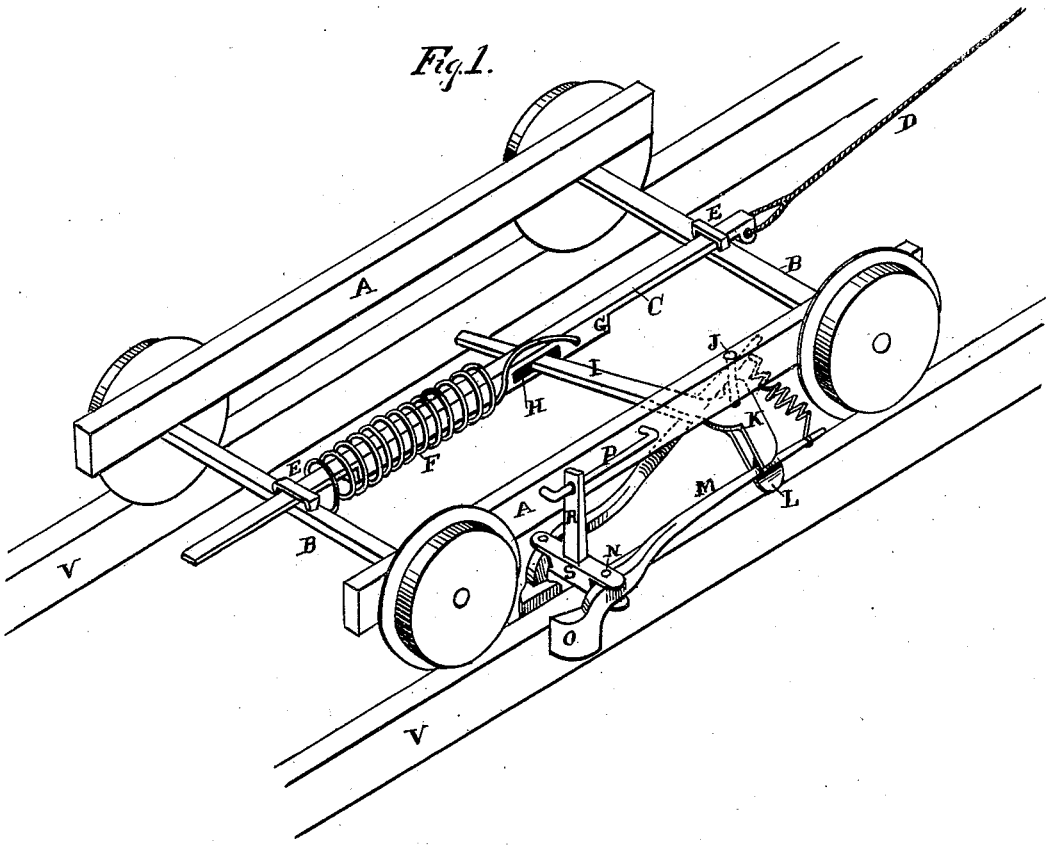
H. H. GARRISON.
Car-Brake.

No. 205,537. Patented July 2, 1878.

Fig. 1.



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UNITED STATES PATENT OFFICE.

HENRY H. GARRISON, OF PIOCHE, NEVADA.

IMPROVEMENT IN CAR-BRAKES.

Specification forming part of Letters Patent No. **205,537**, dated July 2, 1878; application filed May 6, 1878.

To all whom it may concern:

Be it known that I, HENRY H. GARRISON, of Pioche, county of Lincoln, and State of Nevada, have invented an Improved Safety-Brake for Cars; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing.

My invention relates to improvements in safety-brakes for cars, being more particularly adapted for use on that class of cars used on inclines in mines, and which are lowered and raised by means of a wire cable or rope attached to an engine on the surface.

It consists in the employment of a draw-bar, to which the cable is attached, mounted on the axles, at right angles to them, in such a manner as to be movable backward and forward for a certain distance, and being firmly attached to one of the axles by a spring, which draws it back when the strain on the cable is relaxed, and which admits of the draw-bar sliding forward until a shoulder strikes the axle, when the cable holds the weight of the car.

Engaging with the draw-bar, by means of a slot in the bar, is the long arm of a lever, the fulcrum of which is pivoted to the main frame of the car, the short arm of said main lever being cam-shaped, and having projections on each end, on which rests the long arm of a gripe-lever, the two arms of these gripe-levers being held against the ends of the cam-lever by a connecting-spring at their ends. These gripe-levers are in turn mounted on the frame at right angles to the axles, in such a manner as to admit of free backward and forward motion, and so that their short arms, provided with clamp-plates for the purpose, will gripe the rails or sleepers in case the cable breaks, which action is accomplished by the spring on the draw-bar, aided by gravity, drawing it back, when the cable is slackened too suddenly or broken, and thus moving the long arm of the main lever, which turns the short or cam-shaped arm, so as to spread apart the long arms of the two gripe-levers and bring their other ends together, so as to grasp the rail between them. Tension being brought on the cable draws out the draw-bar and spring, operating the main lever-arm and reversing the whole action of the mechanism, so that the spring connecting the long arms of the gripe-levers draws the long arms together, separating the short arms with the clamp-plates, and releasing the rail.

Referring to the drawing, a perspective view is given.

A represents the car-frame, to which are attached the axles and car-wheels B. On top of the axles, and at right angles to them, is mounted the draw-bar C, to which the main cable D is attached. This draw-bar passes freely between guides E on the axle, and is attached to the rear axle by means of the spiral spring F, as shown. This spring may be of any shape necessary to answer the purpose hereinafter described. For a certain portion of its length, between the axles, the draw-bar is made thicker than at the ends, so as to form shoulders G, as shown, to keep the draw-bar from sliding too far either way past the axles.

About midway between the axles the draw-bar has a lateral slot, H, cut in it, the corners of the slot being rounded off, as shown. In this slot is inserted, so as to move freely, the long arm I of the main or cam lever, formed of the long arm I, fulcrum-bolt J, and short arm or cam K, which operates the brakes, as hereinafter described. This main or cam lever is suspended from the car-frame A by means of the heavy bolt J, which also serves as a fulcrum-bolt for the lever. The short arm of the lever is made in a peculiar shape, as shown, the ends being curved or cam-shaped, and the lower portion being extended at each end, so as to form rests L, on which the long arms M of the gripe or clamp levers rest. These two gripe or clamp levers are formed of the long arm M, fulcrum-pin N, and gripe or clamp plates O. These levers are attached to the frame A by means of the guiding-bar P, suspension-bar R, and fulcrum-block S. The suspension-bar R has a hole in its upper end, by which it is hung on the guide P, so as to admit of free action forward or backward. The fulcrum-block S has a recess in each end, in which the gripe-lever rests, being held in place by the extending portions of the suspension-block and the fulcrum-pin, as shown.

These gripe-levers are suspended in the manner described, so that, by means of the guid-

ing-bar, suspension-bar, and fulcrum-block, the gripe-levers may have free play backward and forward, to accommodate themselves to the operation of the whole mechanism, and at the same time allow the gripe or clamp plates O to be always in a proper relative position to the rail V. The outer ends of the long arms M of the gripe-lever are connected by a spring, which keeps them in the slots L on the lower part of the short arm of the main or cam lever, and also serves to bring the ends of the gripe-levers together when the main cam-lever is in the proper position, so as to spread the short arms of the gripe-lever apart, and hold the clamp-plate O away from the track V when there is tension on the cable and draw-bar C.

The operation of my device is as follows: As soon as the car is started down the incline, strain comes on the cable which is attached to the draw-bar, sliding this bar forward through the guides E until the forward shoulder G on the draw-bar comes against the axle, the spring F thus being fully extended. As the draw-bar C is drawn forward, the long arm I of the main lever, being engaged in the slot in the draw-bar, is also drawn forward. This action turns the short arm or cam R of the main lever on its fulcrum-pin, and at the same time the spring on the ends of the long arm M of the gripe-lever draws these arms together, and spreads apart the gripe or clamp plates O on the short arms of the gripe-lever, releasing them from the rail.

Now, in case the cable holding the car is broken or is let suddenly go, the spring F on the draw-bar, assisted by gravitation, slides the draw-bar back to a point where the long arm of the main lever, operated by means of the slot in the draw-bar, turns the short arm of the said lever, and thus spreads apart the two long arms M of the gripe-levers, bringing the two gripes or clamp-plates on the short ends of these gripe-levers in close contact with the sides of the rails V, so as to stop the car in its descent. The downward pressure then brings the entire weight of the car directly against the pivot or fulcrum-bolt of the main lever, by which means the fulcrum-lever is forced still farther down, thereby causing the cam-block K to be approached nearer at right angles with the car and track, all of which tends to bring the gripe-plates F tighter against the rails. This action is assisted by the method of suspending the suspension-bar R holding the fulcrum-block S, which carries the gripe-levers. As the gripe-plates O clamp tighter on the rail, this suspension-bar and fulcrum-block slide back on the suspension-guide P nearer to the short arm or crank-cam K of the main lever, spreading still farther apart the outer ends of the long arms M of the gripe-lever, and allowing the cam or short arm K of the main lever to curve more at right angles to the track, the spring F on the draw-bar assisting in this action.

Where considered necessary, two of these attachments can be placed on the car, so that both rails will be griped. In this case the device described can be duplicated, although only one draw-bar and spring will be needed, both cam-levers being operated by the same draw-bar.

It will thus be seen that I provide a novel and effective device for preventing the escape of cars on an incline, in case the cable by which they are held should break or be suddenly let go, and which is positive in its action, holding tighter to the rails as their weight or friction is increased.

With my attachment placed on cars on inclines in mines or elsewhere, serious accidents from the breaking or surging of cables could not occur, as the brakes would immediately check the onward progress of the car at the point where it was when the cable broke.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The gripe-plates O and their levers M, mounted upon a fulcrum-bar, as shown, in combination with the operating-lever I, draw-bar C, and spring F of a car, substantially as shown, and for the purpose herein described.

2. The gripe-plates O and their levers M, mounted upon the fulcrum-bar S, said bar having a forward and backward motion upon the guide P, in combination with the lever having the peculiarly-shaped operating-arm K, with its cam-shaped ends, substantially as shown, and for the purpose herein described.

3. The lever I, mounted upon the fulcrum-pin J, and having the peculiar double cam-shaped operating-head K, working between the gripe-levers M, in combination with the spring uniting these levers, substantially as shown, and for the purpose herein described.

4. The gripe-plates O, with their levers M, mounted upon the fulcrum-bar S, so as to have a motion forward and back, in combination with the lever and the operating-head K, so mounted upon its fulcrum-pin that the griping action of the plates O shall tend to spread their levers apart and increase the gripe, substantially as shown, and for the purpose herein described.

In witness whereof I hereunto set my hand and seal.

HENRY H. GARRISON. [L. S.]

Witnesses:
J. C. HENDERSON,
W. E. GRIFFIN.