

(No Model.)

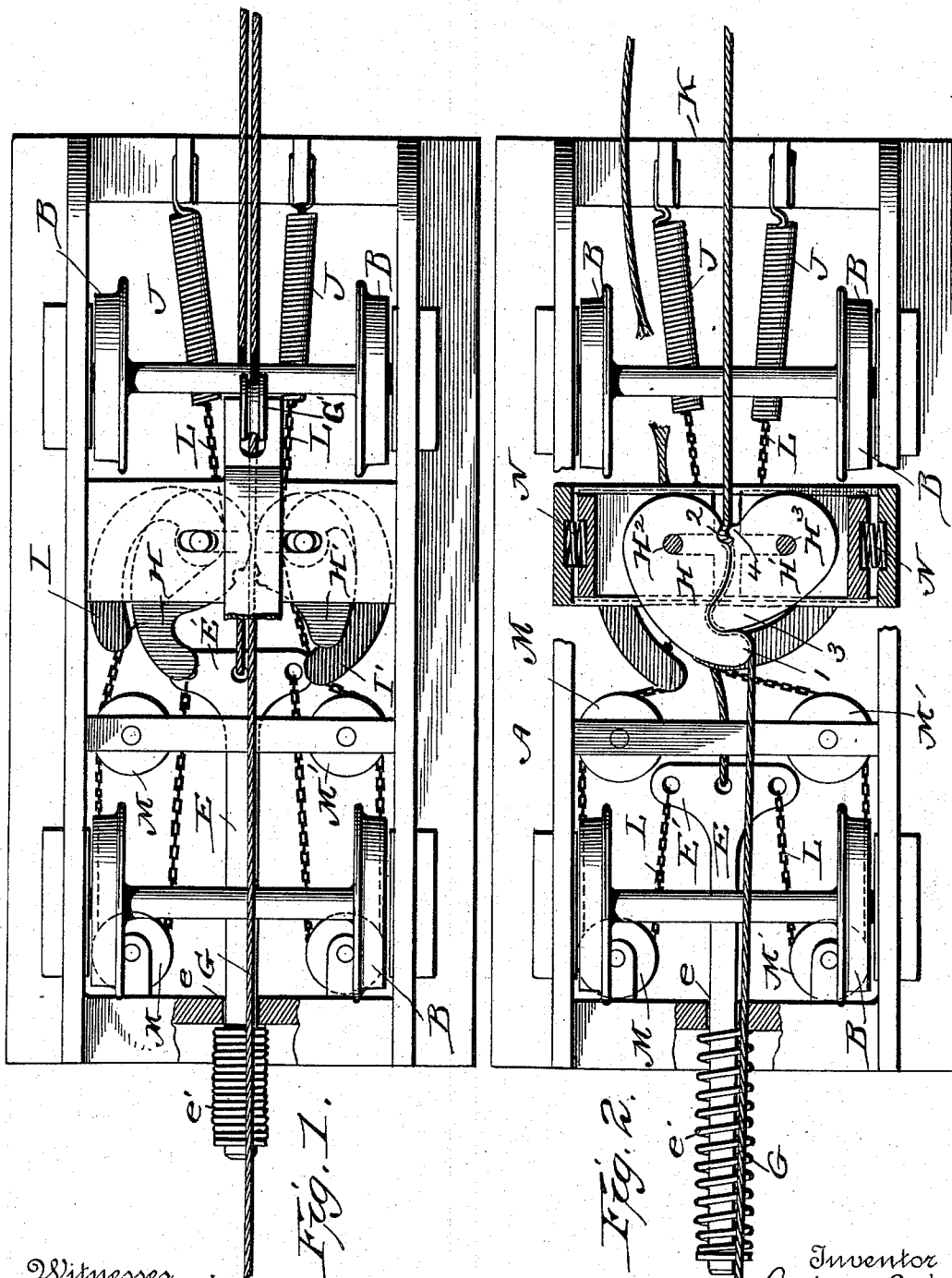
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O. M. SMITH.

AUTOMATIC SAFETY GRIP FOR INCLINED RAILWAYS.

No. 527,894.

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AUTOMATIC SAFETY-GRIP FOR INCLINED RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 527,894, dated October 23, 1894.

Application filed May 19, 1894. Serial No. 511,794. (No model.)

To all whom it may concern:

Be it known that I, ORISON M. SMITH, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Automatic Safety-Grips for Inclined Railways; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to certain new and useful improvements in safety appliances for use in connection with cars upon inclined railways, and it has for its object the provision of a stationary or fixed cable in connection with the railway, so arranged with reference to the car upon the track as to permit the gripping of the cable by the gripping mechanism upon the car which will hereinafter be described.

A further object of the invention consists in the gripping devices and connections between the same and the propelling cable, whereby the automatic positive operation of the gripping mechanism is insured upon the breaking of the propelling cable.

To these ends and to such others as the invention may pertain, the same consists in the peculiar construction and in the novel combination, arrangement and adaptation of parts, all as more fully hereinafter described, shown in the accompanying drawings and then specifically defined in the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters and figures of reference marked thereon, form a part of this specification, like letters and figures of reference indicating the same parts throughout the several views, and in which drawings—

Figure 1 is a bottom plan view of a car provided with my gripping mechanism, the gripping-jaws being shown as open, or in their normal position. Fig. 2, is a like view, show-

ing the gripping-jaws as they appear when closed automatically upon the breaking of the propelling cable. Fig. 3, is a vertical longitudinal section through the lower portion of the car with the gripping mechanism attached thereto, showing the road-bed and cables. Fig. 4, is a section upon the line 4, 4 of Fig. 3.

Reference now being had to the details of the drawings by letter A designates the lower portion of a railway car of any approved construction which is adapted for use upon inclined railways, the car having the usual trucks and wheels B, B which travel upon the tracks C.

The motor or propelling cable has one of its ends attached to a cross-head E' of the draw-bar E, said cable extending to any suitable source of power at the top of the incline, and serving as the means for propelling the car, as will be readily understood. The said draw-bar E extends at its rear end through an opening e which is provided in the timber F depending from the bottom of the car, and upon the rear face of the said timber, the draw-bar is provided with a spiral spring e', which spring is seated within a recess e² provided in the rear face of the said timber F, the office of the said spring being to move the draw-bar rearward upon the relief of tension caused by the breaking of the motor cable attached to the cross-head, as is shown in Fig. 2 of the drawings.

G is a fixed cable having its ends secured at fixed points at each end of the inclined roadway, said cable riding in grooves in idler pulleys G', G', suitably journaled upon supporting brackets depending from the bottom of the car.

H, H' are the cable gripping jaws, which consist of plates of metal of sufficient thickness to permit the formation in their meeting edges of a groove to engage the cable when the jaws are closed. These jaws H and H', it will be observed, are securely keyed or otherwise secured to the shafts H² and H³, which shafts are arranged vertically and at their lower ends are journaled in the slots

or elongated openings H^3 and H^4 in the bottom and top plates H^5 and H^6 respectively, of the adjustable box H^7 which will be presently more fully described.

5 The cam or jaw H , is substantially pear shaped, in plan view, the smaller end or neck portion 1, being bent to one side, while at its inner edge, near the opposite end of the jaw, a notch 2, is provided. The jaw H' is, in form
10 and size similar to the jaw H just described, excepting that the smaller end or neck portion 3 is extended upon a line drawn longitudinally through the center of the jaw, and the inner edge of the jaw is provided with a lug
15 or extension 4 adapted to engage the notch 2 of the opposite jaw, as will presently appear.

The shafts H^2 and H^3 extend through the upper plate of the adjustable box and keyed to the upper ends of said shafts are the curved
20 arms I , and I' , the said arms being keyed to the shafts at one end of the arm.

J , J are heavy spiral springs attached, each, at one end to the timber K beneath the forward end of the car and at their opposite ends
25 being provided with chains or cables L , L , which extend to the free ends of the arms I and I' and after being attached thereto the said chains are passed around the idler pulleys M , M , and M' , and have their ends attached to the ends of the cross-head E' , as
30 shown.

Owing to the eccentric form of the cams carried by the shafts H^3 and H^2 , provision is required for lateral movement of the said shafts,
35 and to accomplish this I provide an adjustable box having the top and bottom plates provided with elongated openings for the passage of the shafts, as described, and I also provide at the ends of the box, spiral springs N which
40 springs, while permitting the shafts to be forced apart, against the tension of the springs, serve to expedite the return of the same when during their rotation the pivotal centers of the cam shaped jaws upon the
45 shafts are brought nearer together, as will be readily understood.

The operation of the gripping mechanism above described, is simple, and from the foregoing description of the construction and arrangement of the parts, will be readily understood.
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It will be seen that the gripping jaws are normally held apart, in readiness for closing upon the fixed cable, as shown in Fig. 1 of the drawings, by the force that is used in propelling the car, the tension of the springs J and e' having at all times a tendency to cause the rearward movement of the draw-head and consequent closing of the jaws, upon the slack-
55 ing of the propelling cable, either from breaking, or other cause.

In order to provide a sufficient degree of elasticity to the fixed cable to prevent breaking or cutting in the event of a sudden application of the gripping-jaws I find it expedi-
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ent to attach to the ends of the said stationary cable a spiral spring, which will admit of a slight yielding of the same in case of sudden strain being imparted thereto.

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

1. In combination with an inclined-railway car provided with a spring actuated draw-head, the motor cable attached to the draw-head and acting against the tension of the springs connected therewith, substantially pear shaped cable-gripping jaws and connections interposed between the said jaws and the draw-head whereby the jaws are normally held apart by the force used in propelling the car and adapted upon the breaking of the propelling cable to grasp a fixed cable, substantially as described.

2. The combination with an inclined railway car of two pivoted cam shaped gripping jaws with eccentrically disposed journals and having their adjacent edges grooved as described, the cable used in propelling the car and connections interposed between said last named cable and the gripping jaws, whereby the jaws are normally held apart when the car is in motion and automatically closed upon the cable upon the breaking of the motor cable, substantially as described.

3. The combination with the car, a fixed cable, and a motor cable, of gripping-jaws normally held from gripping the fixed cable by the motor cable when under tension, said jaws being approximately pear shaped the neck portion of one being disposed to embrace the neck of the other when the jaws are gripping the fixed cable, substantially as specified.

4. The combination with a car, a fixed cable, and a motor cable, of gripping jaws normally held from gripping the fixed cable by the motor cable when under tension, one of said jaws having a recess, the other a corresponding projection to cause the two jaws to work together and grip the fixed cable firmly, substantially as described.

5. The combination with a car, a fixed, and a motor cable, gripping jaws, having eccentrically disposed journals and arms operatively connected with the gripping jaws, of two springs each having connection with a gripping jaw to normally close the same, a draw-bar operatively connected with each of the said jaws, a spring for actuating the draw-bar and exerting a force to move the draw-bar against the action of the motor cable, substantially as described.

6. The combination with a car, a fixed and a motor cable, of gripping jaws having eccentrically disposed journals, yielding bearings, and a box having transverse slots for the said journals to work in, substantially as specified.

7. The combination with a car, a fixed, and a motor cable, of substantially pear shaped

gripping jaws having eccentrically disposed journals, yielding bearings, and a box having slots in which said journals work, substantially as shown and described.

arms connected with the shafts of said jaws, so substantially as described.

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

ORISON M. SMITH.

Witnesses:

A. L. HOUGH,

FRANKLIN H. HOUGH.

5 8. The combination with a car, a fixed, and a motor cable, of substantially pear shaped gripping jaws having eccentrically disposed journals, yielding bearings, a box having slots in which said journals work and the curved