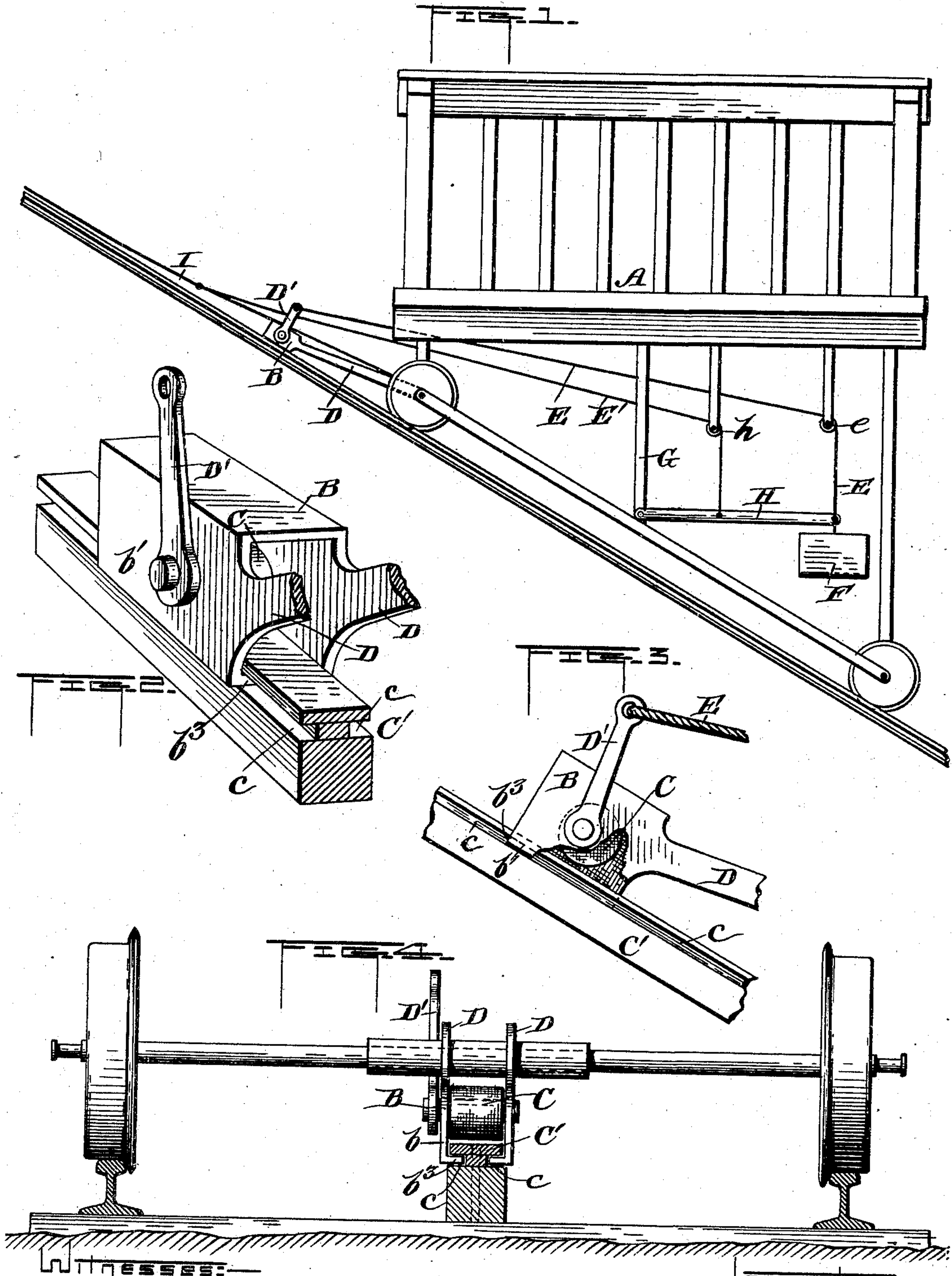


(No Model.)

M. C. LITTLEWORTH.  
SAFETY CLUTCH FOR INCLINED RAILWAYS.

No. 502,420.

Patented Aug. 1, 1893.



Witnesses:  
G. C. Alvord  
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by his atty  
Thos. F. Smith & Lawrence



# UNITED STATES PATENT OFFICE.

MALCOLM C. LITTLEWORTH, OF DULUTH, MINNESOTA.

## SAFETY-CLUTCH FOR INCLINED RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 502,420, dated August 1, 1893.

Application filed October 19, 1892. Serial No. 449,405. (No model.)

*To all whom it may concern:*

Be it known that I, MALCOLM C. LITTLEWORTH, 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 Safety-Clutches for Inclined Railways; and I do hereby 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.

My invention consists in certain novel constructions in safety clutches for incline railways, whereby, in the event of the cable breaking, the car will be instantly automatically stopped and prevented from returning down the incline, preventing the liability of a serious accident happening to the passengers.

In the accompanying drawings, Figure 1 is a side elevation of a car and an incline track with my invention applied to the car. Fig. 2 is a detail perspective view of a portion of a rail which is secured between the two track rails and the clutching mechanism for preventing the descent of the car. Fig. 3 is a side elevation of the clutching mechanism and the central rail, a portion of the view being broken away to show more clearly the operation of the eccentric, and Fig. 4 is a view of the front axle of the car provided at its end with track wheels and at its center with the clutching mechanism; wheels being shown in connection with the tracks and the central clutching mechanism adapted to engage a central rail.

A in the drawings represents a car of any suitable construction adapted to travel on what is termed an "inclined" track.

B represents a bracket or housing in which is journaled an eccentric wheel or roller C, the bracket being secured on the front axle of the car by means of the arms D, as shown in Fig. 4. The lower ends of the sides  $b'$  of the bracket are formed with inwardly turned flanges  $b^3$  which fit loosely in side grooves  $c$  of a central T-rail  $C'$ , which latter is secured between the two tracks.

To the outer end of the journal which passes through or is formed on the eccentric roller

C, is an arm  $D'$ , to the upper end of which is attached a wire rope E. The rope E is passed backward over a pulley  $e$  on the car and provided at its lower end with a weight F.

G represents a downwardly extending support from the car frame, to which is pivoted, at one of its ends, a lever H, the other end of the lever being secured to the weight F or to the rope E. An auxiliary cable  $E'$  is attached by one of its ends to the lever H, passed over a pulley  $h$  and secured by its other end to the main cable I. By this construction, in the event of the main cable breaking, the lever H and weight F would lower, drawing the broken cable backward and at the same time cause the eccentric roller to revolve by the lever arm  $D'$  and firmly impinge upon the surface of the central rail and powerfully force the flanges  $b^3$  against the under side of the flanges of the rail, and thereby stopping the car. If desired, the surface of the eccentric may be roughened, as shown, thereby increasing the friction upon the rail.

What I claim as my invention is—

1. In a clutching mechanism for inclined railways, a housing having flanges extending inward horizontally toward each other, a T-rail under the head of which the said flanges bear at proper times, an eccentric placed within the housing and above the said rail, a lever connected with the pin or shaft of the eccentric, a main cable, and means connected with said cable and with the lever for automatically operating the mechanism, thereby arresting a car when the cable breaks, substantially as described.

2. In a clutching mechanism for inclined railways, the combination with the main cable, of an eccentric, a weight, a rope connecting the eccentric and weight, a lever pivoted by one of its ends to the weight and a rope connected to the lever, and by its other end to the main cable, a flanged housing and a T-rail, whereby, when the main cable breaks, the eccentric will be automatically caused to impinge upon the rail and thrust the housing upward, substantially as described.

3. In a clutching mechanism for inclined railways, the combination with the main cable and the tracks, of an auxiliary T-rail  $C'$

placed in between the main track, a flanged housing, an eccentric C adapted to bear upon said auxiliary track automatically in the event of the cable breaking and thrust the housing  
5 upward, a weight F, a rope connecting the eccentric and weight, a lever H pivoted by one of its ends on the car frame and attached by its other end to a weight, and an auxiliary cable E' connected by one of its ends to the

lever H and by its other end to the main cable, substantially as described.

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

MALCOLM C. LITTLEWORTH.

Witnesses:

A. H. CRASSWELLER,

O. E. W. MILLER.