(No Model.)

H. BORMANN.

GRIPPING MECHANISM FOR CARS OR VEHICLES, &c.

No. 450,661. Patented Apr. 21, 1891.

Fig. 1.

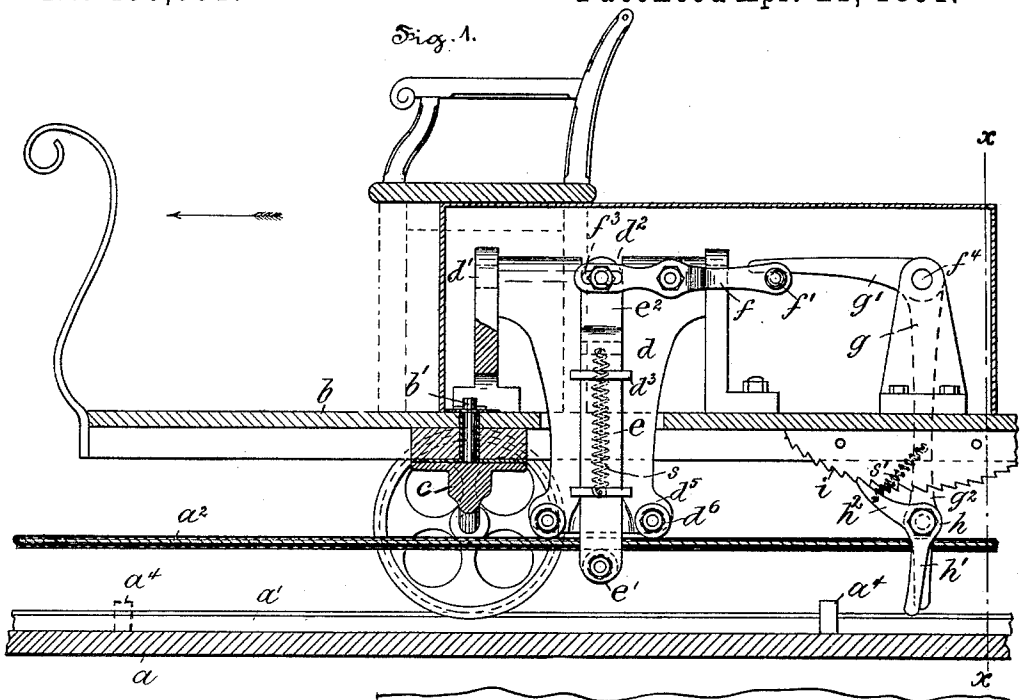


Fig. 2.

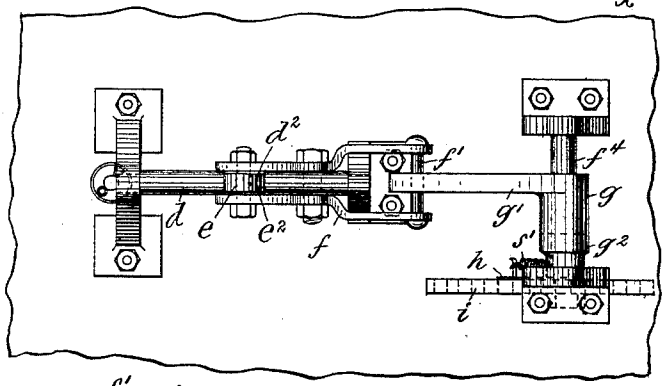
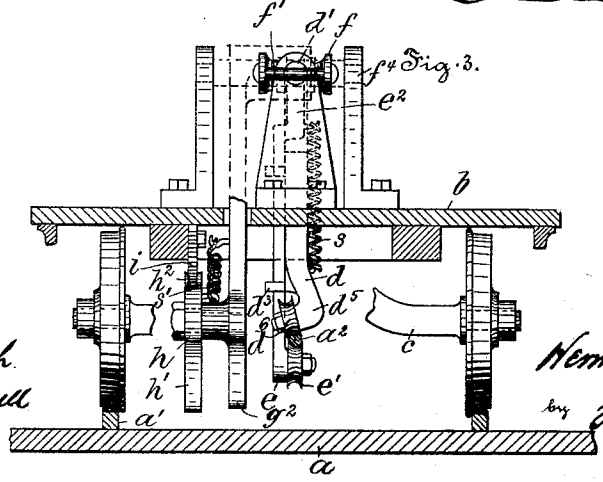


Fig. 3.



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UNITED STATES PATENT OFFICE.

HERMANN BORMANN, OF PHILADELPHIA, PENNSYLVANIA.

GRIPPING MECHANISM FOR CARS OR VEHICLES, &c.

SPECIFICATION forming part of Letters Patent No. 450,661, dated April 21, 1891.

Application filed November 6, 1890. Serial No. 370,464. (No model.)

To all whom it may concern:

Be it known that I, HERMANN BORMANN, a subject of the Emperor of Germany, but now residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Gripping Mechanism for Cars or Vehicles for Pleasure-Railways, Toboggan-Slides, &c., of which the following is a specification.

My invention relates in general to a car or vehicle provided with mechanism and appliances for automatically engaging and disengaging a positively-driven cable, and the mechanism and appliances thereof are especially adapted for use in connection with a car or other vehicle susceptible of being propelled over ascending portions of a course and traveling by gravity over the descending portions of the course in a pleasure-railway, toboggan-slide, &c., to the starting-point for another trip.

The principal object of my present invention is therefore to provide a pleasure-rail way car, vehicle, or toboggan with simple, durable, and efficient gripping devices, and mechanism adapted to be automatically or otherwise actuated to permit of the engagement and disengagement of a positively-driven cable without shock or jar.

My invention consists of a car or other vehicle provided with gripping devices and mechanism constructed and arranged substantially in the manner hereinafter described, and pointed out in the claims.

The nature and characteristic features of the invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is an elevation of the front portion of a car or similar vehicle embodying features of my invention and having the side portions thereof removed to expose to view the improved gripping devices and mechanism thereof shown in application thereto. Fig. 2 is a top or plan view of a portion of the platform of a car, showing the improved gripping devices and mechanism attached thereto; and Fig. 3 is a transverse section on the line $x\,x$ of Fig. 1, showing a portion of the axle broken away and illustrating the gripping devices and mechanism in end elevation.

Referring now to the drawings, a is a portion of a course provided with track-rails a'.

a^2 is a positively-driven cable. The track-rails a' may consist of flanged rails of any preferred cross-section, or they may consist of flat ways.

b is a car-body, provided with seats and mounted on swivel-trucks c by means of king-bolts b'.

d is a plate attached to the car b by means of trunnions d' for permitting the plate d to oscillate or swing transversely of the car. This plate d is provided at the top thereof with a recess d^2 at one side thereof with brackets or lugs d^3, forming ways, and at or near the bottom thereof with an offset portion d^5.

d^6 are rolls journaled to the offset portion d^5 of the plate d and inclined somewhat to the plane of the plate d to facilitate the introduction of the cable a^2 into the grip.

e is a bar adapted to be slid along the face of the plate d and guided in its vertical movements by means of the lugs d^3.

e' is a roller journaled to the side and located at or near the lower extremity of the bar e. The upper portion e^2 of this bar e is offset and fitted into the recess d^2, so as to cause the line of stress to coincide with the median line of the plate d.

s is a helical or spiral spring attached at one extremity thereof to the bar e and at the other extremity thereof to the plate d, and tending to draw the bar e downward, so as to separate the rollers e' and d^6 and permit the cable a^2 to run free over suitable guide-wheels or pulleys. (Not shown.)

f are levers journaled at or near the center thereof to the respective sides of the plate d, and attached at one of their extremities to the yoke f' and connected at their other extremities to the offset portion e^2 of the bar e by means of a slotted connection f^3.

g is a bell-crank lever pivotally supported in trunnions f^4, attached to the platform of the car and having one arm g' in sliding contact with the yoke f'. The other arm g^2 of the lever g is provided with a detent h, pivotally attached thereto. One arm h' of this detent occupies, normally, a position parallel

with the arm g^2 of the lever g. The other arm h^2 is adapted to engage with a toothed segmental rack i, secured to the under side of the car b, in order to retain the lever h in proper position.

s' is a spiral or helical spring interposed between the lever g and detent h, in order to force the arm h^2 normally into engagement with the rack i.

a^4 are projections or blocks attached to the course a and adapted to trip the arms g^2 and h' of the levers g and h, as hereinafter more fully explained.

The mode of operation of the above-described gripping device is as follows: In use the positively-driven cable a^2 is introduced into the grip, so as to run over the roller e' and beneath the rollers d^6, by permitting the spring s to depress the roller e', either by tripping the detent h or in any other convenient manner. The inclination of the rollers e' and d^6 with reference to each other greatly facilitates the operation of the introduction of the cable, as will be readily understood by reference to Fig. 3. After the cars have been loaded with passengers, or whenever it becomes necessary or desirable, the grip may be readily attached to the cable a^2 by pushing the car forward, as indicated by the arrow in Fig. 1, until one of the blocks a^4 trips the arm g^2 and slightly rotates or turns the lever g. The motion of the lever g is transmitted to the sliding bar e by means of the lever f, and, overcoming the force of the spring s, draws the roller e' upward between the rollers d^6, thus gripping the cable a^2 and preventing the latter from running freely through the grip. The arm h^2 of the detent-lever h is forced by the spring s' into engagement with the rack i and retains or locks the various parts of the gripping device. The car may be detached from the cable, in order to permit it to descend over portions of the course under the influence of gravity or for any other purpose, by tripping the arm h' of the detent-lever h, either by means of a block a^4 attached to the course or in any other convenient manner. This movement of the arm h' causes the arm h^2 to be withdrawn from the rack i and permits the spring s to draw the sliding bar e and with it the roll e' downward, thus releasing the cable.

It will be obvious to those skilled in the art to which my invention appertains that further modifications may be made in the details of construction and arrangement of the parts thereof without departing from the spirit of the invention, and hence I do not limit myself to the exact construction and arrangement of the parts, as hereinbefore described; but

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a railway, of a positively-driven cable, a car, a plate attached to said car by trunnions and provided at the top with a recess, at one side with ways, and at or near the bottom with an offset roller journaled in the offset portion of said plate, a bar adapted to slide in said ways and having the upper portion thereof offset into the recess formed in said plate, a roller journaled to the side of said bar, and means for elevating and depressing said bar, substantially as and for the purposes set forth.

2. The combination, in a railway provided with projections or blocks, of a positively-driven cable, a car, a plate attached to the car by trunnions and provided with ways, rollers journaled to said plate, a bar adapted to slide along the plate in said ways and having the upper portion thereof offset to a recess formed in said plate, a roller journaled to one side of said bar, links attached to a yoke and pivoted to said bar and plate, a bell-crank lever attached to the car and contacting at one extremity with said yoke and provided at the other extremity with a spring-actuated pawl, and a rack secured to said car, substantially as and for the purposes set forth.

3. The combination, in a railway, of a positively-driven cable, a car having gripping mechanism hinged thereto, a rack secured to said car, a bell-crank lever pivotally attached thereto and having one arm in engagement with said gripping mechanism and the other provided with a spring-actuated detent-lever, and blocks or projections for tripping said bell-crank and detent-levers, substantially as and for the purposes set forth.

4. The combination, in a railway, of a cable, a car provided with mechanism for gripping said cable, a rack secured to said car, a bell-crank lever pivotally attached to said car and having one arm in engagement with said gripping mechanism and the other provided with a spring-actuated detent-lever, and blocks or projections for tripping said bell-crank and detent-levers, substantially as and for the purposes set forth.

In witness whereof I have hereunto set my signature in the presence of two subscribing witnesses.

HERMANN BORMANN.

Witnesses:
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