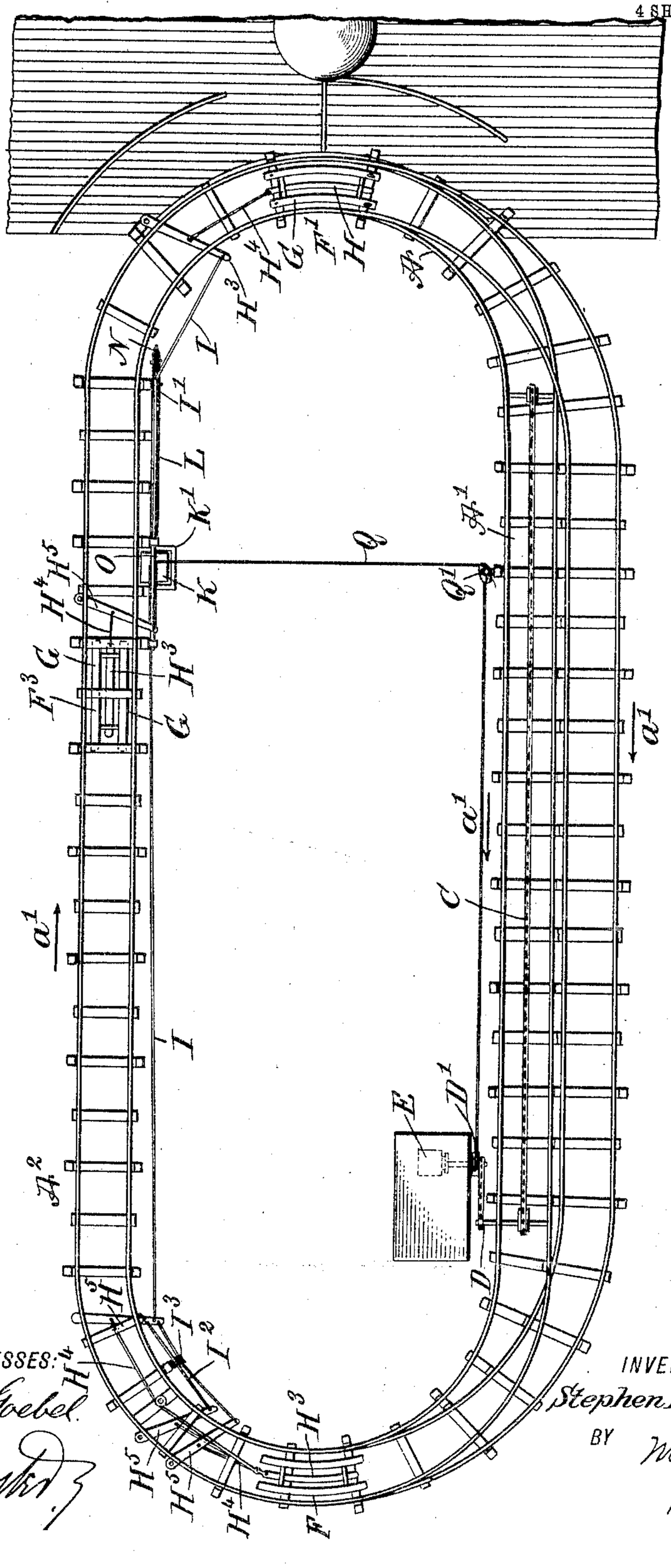
No. 780,347. PATENTED JAN. 17, 1905.

S. E. JACKMAN.

CAR STOPPING DEVICE FOR INCLINED RAILWAYS.

APPLICATION FILED SEPT. 19, 1904.

4 SHEETS—SHEET 1.



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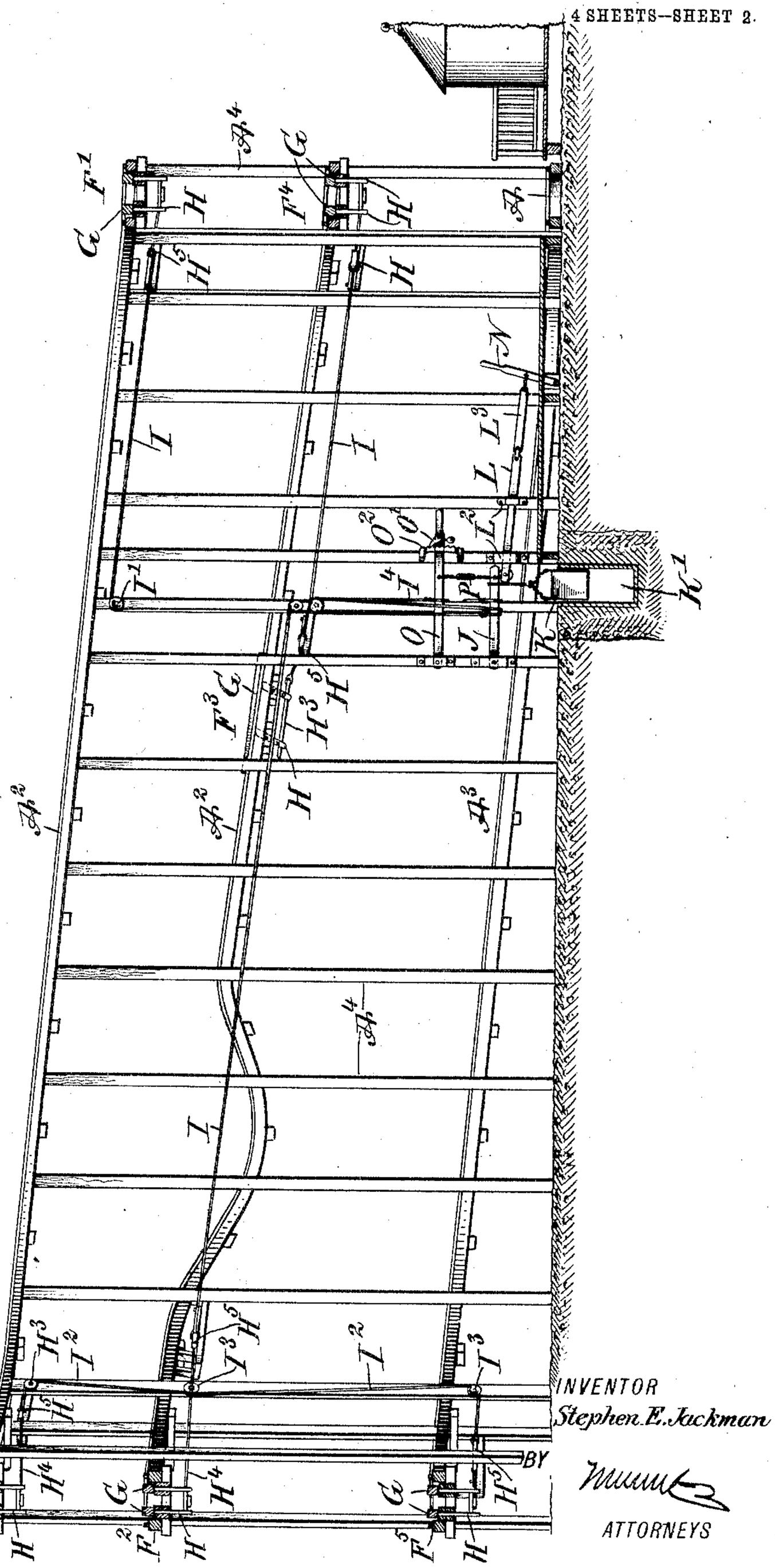
4 SHEETS—SHEET 2.

Fig. 2.



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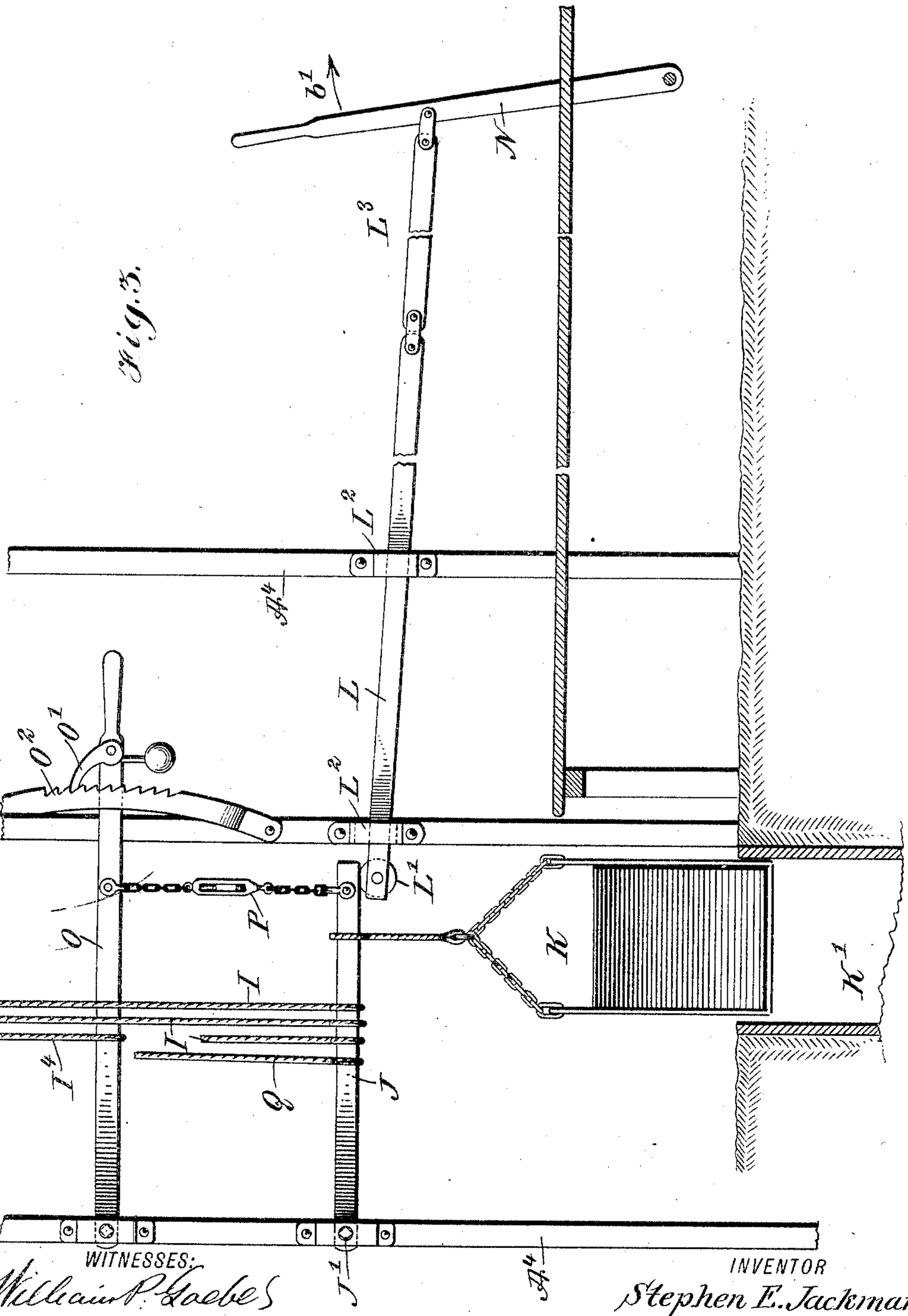
4 SHEETS—SHEET 3.

Fig. 3.



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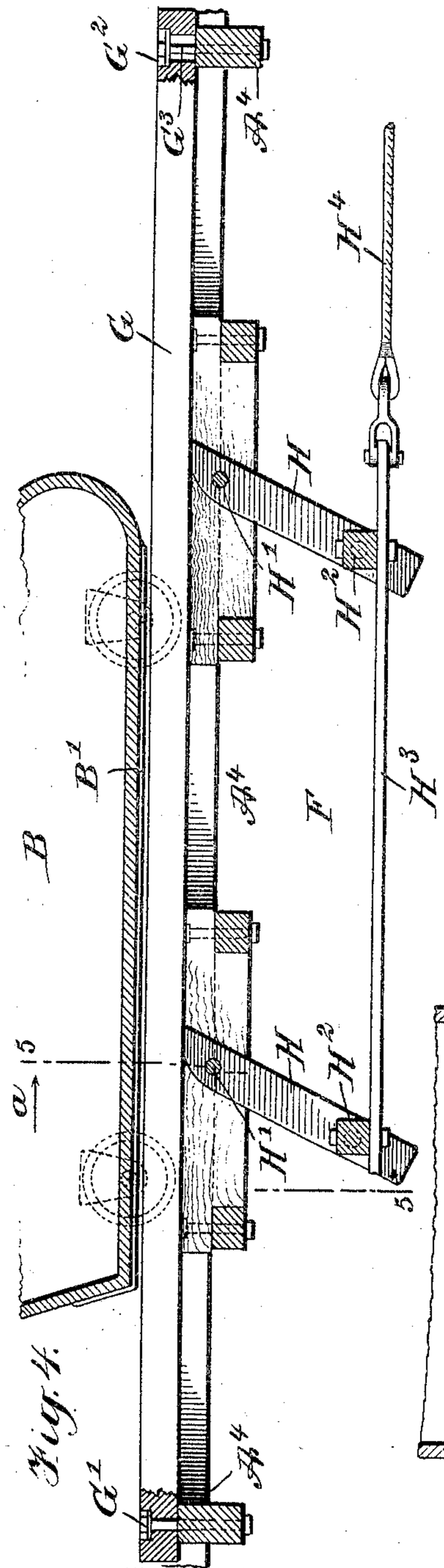

Fig. 4.

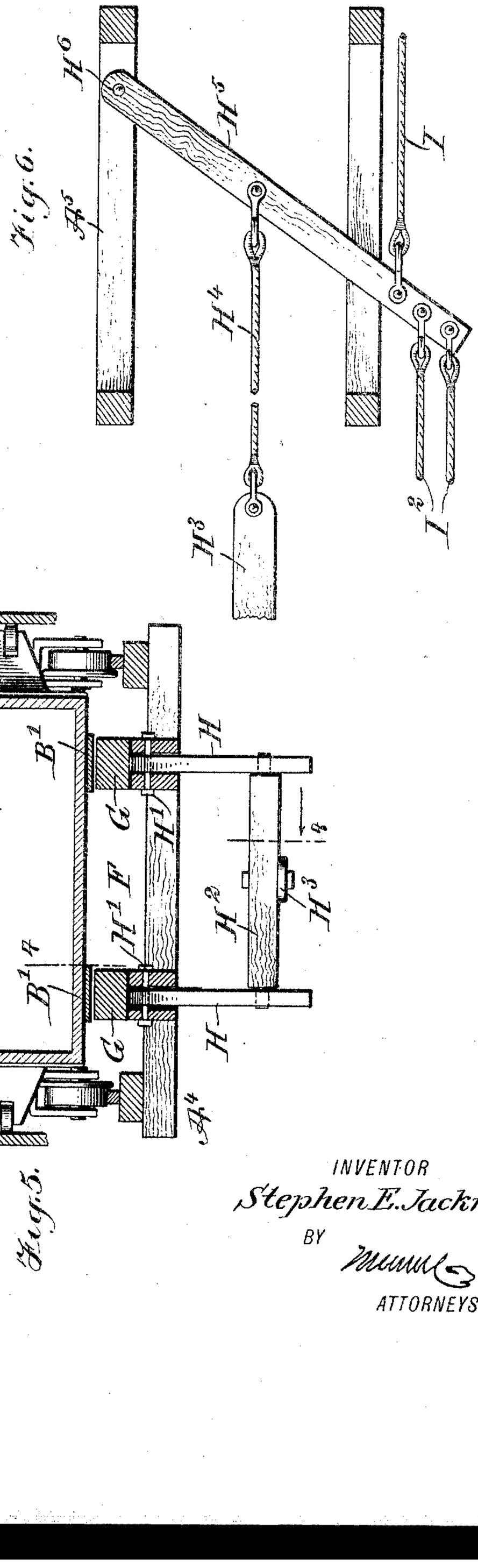

Fig. 5.

Fig. 6.

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No. 780,347. Patented January 17, 1905.

UNITED STATES PATENT OFFICE.

STEPHEN EDWARD JACKMAN, OF NEW YORK, N. Y.

CAR-STOPPING DEVICE FOR INCLINED RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 780,347, dated January 17, 1905.

Application filed September 19, 1904. Serial No. 225,048.

To all whom it may concern:

Be it known that I, STEPHEN EDWARD JACKMAN, a citizen of the United States, and a resident of the city of New York, Coney Island, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Car-Stopping Device for Inclined Railways, of which the following is a full, clear, and exact description.

The invention relates to inclined or switch-back railways, such as are used in pleasure resorts, exhibitions, and like places.

The object of the invention is to provide a new and improved car-stopping device for inclined railways, arranged in case one of the cars breaks down or gets out of order or accidentally stops to stop all the cars on the track, thus preventing the cars from running one into the other.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the improvement. Fig. 2 is a longitudinal sectional elevation of the same. Fig. 3 is an enlarged side elevation of the actuating device for a brake mechanism and the releasing device for normally supporting the actuating device and releasing it in case of accident. Fig. 4 is an enlarged longitudinal sectional elevation of one of the brake mechanisms and one of the cars, the section being on the line 4 4 of Fig. 5. Fig. 5 is a cross-section of the same on the line 5 5 of Fig. 4; and Fig. 6 is a plan view of part of the brake-actuating mechanism, part of the supporting structure being shown in section.

The inclined railway shown in the drawings is provided with a continuous track of an approximately oval shape and consisting of a station portion A, the front end of which leads to the lower end of the up-track A′, terminating at its highest point at the beginning of the down-track A^2, terminating at its lower end in the homestretch A^3, leading back to the station portion A. The cars B for traveling over the track in the direction of the arrow *a′* are hauled up the up-track A′ by a suitable device—such, for instance, as an endless chain C engaging dogs on the cars B, the said chain being driven by a suitable driving device D, actuated by an engine or other motor E.

In the down-track A^2 are arranged a plurality of brake mechanisms F, F′, F^2, F^3, F^4, and F^5, of which the brake mechanisms F, F′, F^2, F^4, and F^5 are preferably located in the half-round portions of the track, while the brake mechanism F^3 is arranged in the straight portion of the track, as plainly shown in Figs. 1 and 2. The brake mechanisms F, F′, F^2, F^3, F^4, and F^5 are alike in construction, and each is provided with a pair of longitudinally-extending brake-beams G G, adapted to be moved in engagement with rubbing-irons B′, held on the bodies of the cars B, to bring a car traveling on the track to a standstill when engaged by a pair of said beams.

Each of the beams G of a pair of brake-beams is secured at one end by a bolt G′ (see Fig. 4) to the supporting structure A^4 of the track, and the other end of the beam is provided with an elongated slot G^2, through which extends a bolt G^3, likewise secured to the structure A^4. The pair of brake-beams G G in their normal position have their upper faces a distance below the rubbing-irons B′ of the cars B, so that the latter travel over the track without interference on the part of the brake-beams; but in case of an accident the middle portions of the brake-beams are pressed on in an upward direction, so as to spring the brake-beams and force the same upwardly for the rubbing-irons B′ of an approaching car B to come gradually in contact with the said brake-beams for bringing the car to a standstill. For the purpose described the pair of brake-beams G G are engaged at the under side between the ends of the beams by the upper ends of pairs of levers H, (see Figs. 4 and 5,) fulcrumed at H′ on the structure A^4. The levers H of each pair are engaged at their lower ends by the trunnions of a cross-beam H^2, and the cross-beams for the

two pairs of levers H for each brake mechanism are connected with each other by a link H^3, connected by a flexible connection, such as a chain or rope H^4, with a transverse lever H^5, fulcrumed at H^6 on a support A^5, forming part of the structure A^4. . (See Fig. 6.) The levers H^5 for the brake mechanisms F', F^2, and F^4 are connected by a rope or chain I, passing over suitable guide-pulleys I', with a lever J, fulcrumed at J' on the supporting structure A^4, (see Figs. 2 and 3,) and the levers H^5 for the brake mechanisms F and F^5 are connected by ropes or chains I^2, passing over guide-pulleys I^3, with the lever H^5 of the brake mechanism F^2, as plainly indicated in Figs. 1, 2, and 6.

The lever J is provided at or near its free end with a weight K, preferably in the form of a weighted box, adapted to rise and fall in a suitable casing or well K', and the free end of the said lever J rests on the top of the peripheral face of a roller L', journaled on one end of a slide L, mounted to slide lengthwise in suitable bearings L^2, secured to the structure A^4. The slide L is connected by links L^3 with an upright hand-lever N, adapted to be moved by the operator in the direction of the arrow *b'* to cause the slide L to move, and thereby withdraw the friction-roller L' from under the free end of the lever J, so that the latter can swing downward by the action of its weight K. Normally, however, the weighted lever J is supported on the friction-roller L', so that the several brake mechanisms remain in their normal inactive positions—that is, allow the cars to pass freely over the brake mechanisms without interference by the same.

In practice a number of cars—say three or four—spaced suitable distances apart are run over the track at a time, and in case one of the cars breaks down or comes to a stop for one reason or another then the operator in charge on noticing the mishap pulls the hand-lever N in the direction of the arrow *b'*, thus releasing the weighted lever J to allow the latter to swing downward, and thereby exert a pull on the several ropes I to actuate the brake mechanisms F, F', F^2, F^4, and F^5, so that the several cars traveling over the track at the time are brought simultaneously to a standstill on reaching the next brake mechanism ahead, and consequently the cars are prevented from running one into the other.

The brake mechanism F^3 is for the same purpose as the brake mechanisms F, F', F^2, F^4, and F^5 and is actuated from the lever J; but in addition this brake mechanism F^3 serves as a speed-checking device for checking the speed of the cars in case the same acquire too much momentum. For the purpose described it is necessary to raise the brake-beams G G of this brake mechanism F^3 to such a height that the cars on traveling over the down-track A^2 at the said brake mechanism F^3 have their rubbing-irons B' come sufficiently in contact with the brake-beams to check the speed of the car for the time being; but the said brake-beams G G of the brake mechanism F^3 are not raised to their full extent unless an accident takes place, and then the beams G G of this brake mechanism F^3 are raised to the full extent with the brake-beams of the other brake mechanisms F, F', F^2, F^4, and F^5. For the purpose described the lever H^5 for the brake mechanism F^3 is connected by a rope or chain I^4 with a separate lever O, (see Figs. 2 and 4,) fulcrumed on the structure A^4 and connected by an adjustable connection P with the lever J, so that when the latter swings downward the lever O is caused to swing with it to cause the chain or rope I^4 to actuate the lever H^5, and consequently the levers H and the brake-beams G G of the brake mechanism F^3, the same as the brake-beams in the other brake mechanisms F, F' F^2, F^4, and F^5.

The lever O is adapted to be set so that its chain or rope I^4 pulls on the lever H^5 of the brake mechanism F^3 to such an extent as to keep the brake-beams G G of this brake mechanism slightly raised for checking the speed of the cars passing over the track at this brake mechanism F^3. In order to hold the lever O in this set position, suitable means may be employed—for instance, a dog O', fulcrumed on the lever O and engaging a toothed segment O^2, secured to the structure A^4. Whenever the lever O is set to bring the brake-beams G G of the brake mechanism F^3 into the desired position, it is necessary to lengthen or shorten the connection P accordingly, so as to properly connect the levers O and J with each other for the lever J to actuate the lever O whenever the slide L is withdrawn, as previously explained.

In order to prevent a car which leaves the upper end of the up-track A' from running into a car brought to a standstill at the first brake mechanism F, it is necessary to stop the car going up the up-track, and for this purpose the following device is provided: The lever J is connected by a rope or chain Q, passing over pulleys Q', with a suitable stopping device D', such as a clutch mechanism in the driving device D, to bring the latter to a standstill whenever the lever J is released and swings downward and the several brake mechanisms are moved into action, as above explained. By the arrangement described the driving device D is brought to a standstill in case of accident, and consequently the chain C stops traveling and the car held on the chain is brought to a standstill.

The lever N is preferably located at or near the junction of the homestretch A^3 with the station portion A, adjacent to the hand-levers employed for actuating the brake mechanisms located in the homestretch A^3, and of the construction more fully shown and de-

scribed in the Letters Patent of the United States No. 749,691, granted to me for a brake mechanism for inclined railways January 12, 1904, so that further showing and description of this part of the inclined railway is not deemed necessary.

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

1. The combination with an inclined railway, and a plurality of cars traveling independently of each other on the railway, of mechanical braking means in the said railway for simultaneously engaging and stopping the several cars on the said railway, the said mechanical means being normally in an inactive non-braking position, to allow free travel of the cars over the railway.

2. The combination with an inclined railway having a continuous track, of a plurality of cars spaced apart and traveling independently of each other on the said track, and mechanical braking means in the said continuous track, for simultaneously engaging and stopping the cars on the said track, to prevent the cars from running one into the other.

3. An inclined railway provided with a continuous track, and a plurality of mechanical brake mechanisms, distributed in the track, for engaging and bringing the several cars on the track to a standstill, independently one of the other, the brake mechanisms being normally in an inactive non-braking position, to allow free travel of the cars over the track.

4. An inclined railway provided with a track, a plurality of mechanisms distributed in the track, for bringing the several cars on the track to a standstill, independently one of the other, and an actuating device for holding the said mechanisms normally in an inactive position and when released for simultaneously moving the same into an active position.

5. An inclined railway provided with a track, a plurality of mechanisms distributed in the track, for bringing the several cars on the track to a standstill, independently one of the other, an actuating device for holding the said mechanisms normally in an inactive position and when released for simultaneously moving the same into an active position, and a manually-controlled releasing device for the said actuating device, to normally support the latter and to release the same when required.

6. An inclined railway provided with a track, a driving means for raising a car up on a portion of said track, brake mechanisms distributed in the track, and a device connected with the said means and the said brake mechanisms, for stopping the said driving means and for moving the said brake mechanisms into active positions to stop the several cars on the track at the time.

7. An inclined railway provided with a continuous track having a station portion, an up-track and a down-track terminating in a home-stretch leading to the station portion, means for moving the cars up the said up-track, brake mechanisms for the cars, arranged in the said down-track and spaced apart, and a device connected with the said means, to stop the latter, and connected with the said brake mechanisms, to move the same into an active position to brake the cars on the down-track.

8. An inclined railway provided with brake mechanisms in the track, normally out of engagement with the cars traveling over the track, a weighted lever connected with the said brake mechanisms, and a manually-controlled device for normally supporting the lever and arranged to allow the lever to swing to actuate the said brake mechanisms simultaneously.

9. An inclined railway provided with brake mechanisms in the track, normally out of engagement with the cars traveling over the track, a weighted lever connected with the said brake mechanisms, a driving device for moving the cars up the up-track portion of the said track, a stopping device for the said driving device, connected with the said weighted lever, and a manually-controlled device for normally supporting the lever and arranged to allow the lever to swing to actuate the said brake mechanisms simultaneously and to actuate the said stopping device.

10. An inclined railway provided with a speed-checking mechanism, arranged in the inclined track between the ends thereof, and adapted to rub on a car as the latter travels down the track, over and past the speed-checking mechanism to temporarily check the speed of the car while the latter travels over the said speed-checking mechanism.

11. An inclined railway provided with a speed-checking mechanism, arranged in the inclined track between the ends thereof, and adapted to rub on a car as the latter travels down the track, over and past the speed-checking mechanism to temporarily check the speed of the car while the latter travels over the said speed-checking mechanism, and means for setting the said speed-checking mechanism, to check the car more or less.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

STEPHEN EDWARD JACKMAN.

Witnesses:
THEO. G. HOSTER,
WILLIAM P. GOEBEL.