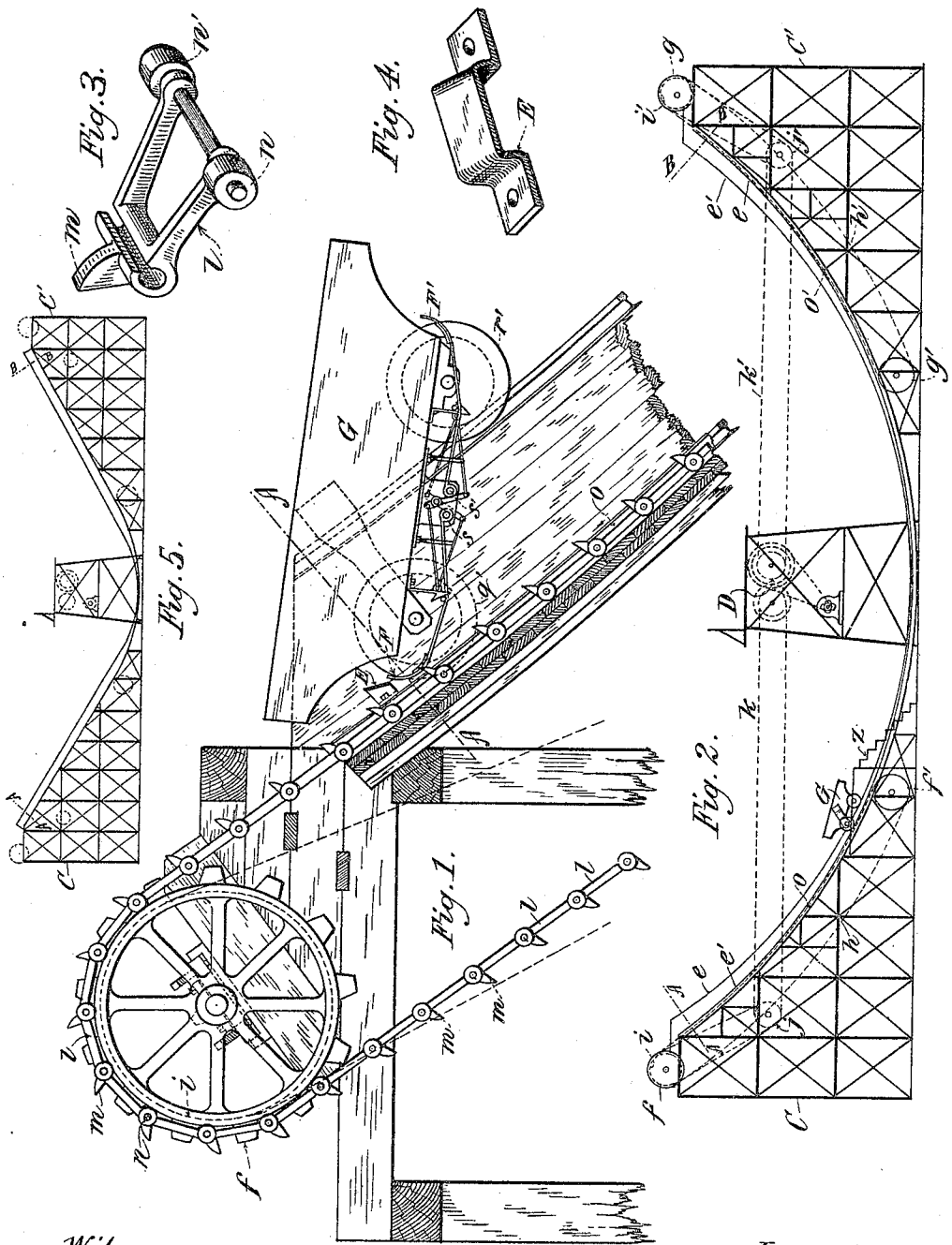
No. 812,996. PATENTED FEB. 20, 1906.

T. G. HILL.

GIANT SWING.

APPLICATION FILED NOV. 10, 1904.

2 SHEETS—SHEET 1.



Witnesses
Will Jackson
M. C. Wright

Inventor.
Thomas G. Hill
By; R. C. Wright
Attorney.

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2 SHEETS—SHEET 2.

Fig. 6.

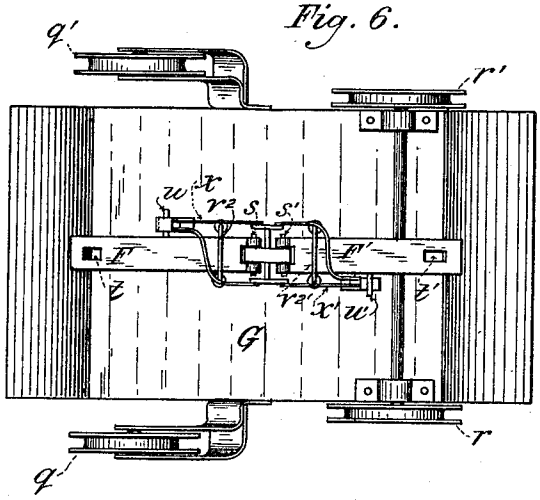


Fig. 7.

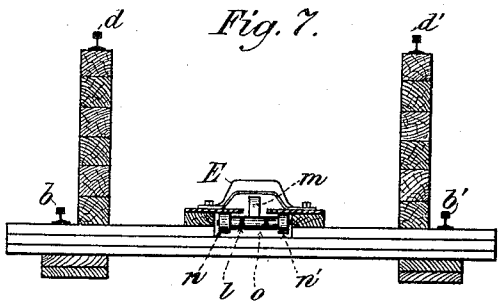


Fig. 8.

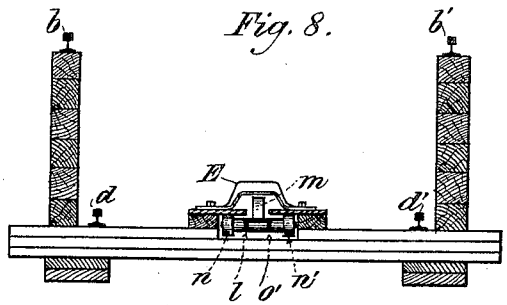
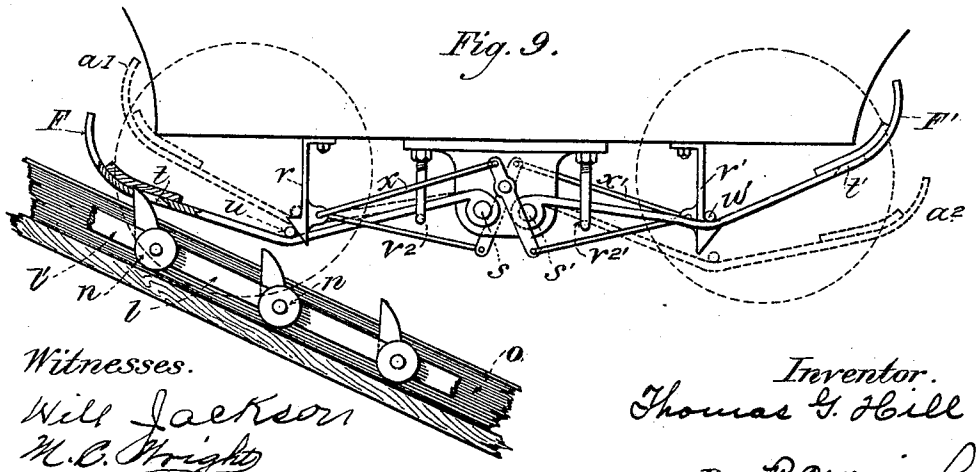


Fig. 9.



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Attorney.

UNITED STATES PATENT OFFICE.

THOMAS GUNSTONE HILL, OF PORTLAND, OREGON.

GIANT SWING.

No. 812,996. Specification of Letters Patent. Patented Feb. 20, 1906.

Application filed November 10, 1904. Serial No. 232,081.

To all whom it may concern:

Be it known that I, THOMAS GUNSTONE HILL, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented a new and useful Improvement in Pleasure-Railways, of which the following is a specification, reference being had to the accompanying drawings, which form a part thereof.

The object of my invention is to provide a pleasure-railway in which a car is run, partly by power and partly by gravity, back and forth upon two ascending inclines facing each other, connected at the bottom and continuous throughout the rail-course. I attain these objects and other practical advantages by the mechanism, construction, combination, and arrangement of parts illustrated in the accompanying drawings, which form a part of this specification.

Figure 1 is a sectional elevation of the upper end of the left incline. Fig. 2 is a side elevation of my pleasure-railway, showing radial inclines. Fig. 3 is a detail perspective view of a link of the sprocket-chain. Fig. 4 is a detail perspective of the tripping-block. Fig. 5 is a side elevation of my pleasure-railway, showing tangential inclines. Fig. 6 is a plan view of the bottom of a car. Fig. 7 is a sectional view of the left incline near the upper end on the line A A. Fig. 8 is a sectional view of the right incline near the upper end on the line B B, Figs. 1, 2. Fig. 9 is a side elevation of part of a car, showing grip mechanism.

Like letters refer to like parts throughout the views.

C is the frame of the left incline, and C′ is the frame of the right incline, both of which are constructed of suitable height and form. The inclines may be tangential or radial; but while each is shown in Figs. 5 and 2 I prefer a tangential incline as offering the least friction in operation. The inclines are provided with an outer track having the rails *b b′* and an inner track of narrower gage having the rails *d d′* placed between the rails of the former, Figs. 7 and 8.

The grade of the inner track *e*, Fig. 2, increases over the grade of the outer track *e′*, Fig. 2, extending upwardly on the left incline from the center level at such a percentage as will retain the car in a horizontal position at all points on the tracks and also permit it to descend in like position onto the center-level track. The grades of the respective tracks on the right incline are the reverse of those on the left for the same reason. Both tracks are continuous from the top of one incline to the top of the other. Below the tracks, suitably mounted and secured to the incline frames on each side, is a motive mechanism consisting of the sprocket-wheels *f f′* and *g g′*, Fig. 2, seated in suitable boxes or bearings to take up wear or slack; endless sprocket-chains *h h′*; pulleys *i i′*, mounted on the outside of the shafts of the respective upper sprocket-wheels *f* and *g*; pulleys *j j′*, mounted on counter-shafts; a suitable power source D, Fig. 2, at one side of the track, and belting *k k′*, extending therefrom over said pulleys and adapted to transmit power to the sprocket wheels and chains. The links *l l* of the sprocket-chain, Figs. 1, 3, 7, 8, 9, are formed with teeth *m m* and also with rollers *n n′*, Figs. 3, 7, 8. The sprocket-chains *h h′* pass through slotted grooves *o o′*, Figs. 1, 7, 8, 9, extending along each incline the distance between the sprocket-wheels. The teeth are adapted to extend upwardly through the slot and the rollers to reduce the chain friction. At a suitable height on each incline is fixedly secured a tripping-block E, Figs. 1, 4, having an upper surface suitably sloping downward and adapted to raise the grip-lever F of the car G when the lever meets the block in sliding engagement. A suitable passenger-car G, Figs. 1, 2, 6, is provided, and this car has one pair of wheels *q q′* constructed on a gage to run on the outer track *e′* and the other pair *r r′* constructed to run on the inner track *e* in order to keep the car always horizontal.

Underneath the car and suitably secured to it there is an automatic grip mechanism consisting of the grip-levers F F′, Figs. 1, 6, 9, mounted on pivots *s s′* near the center of the car, the levers being formed with curved ends adapting them to automatically engage and slide upon the tripping-block E, also near their ends having the openings *t t′*, adapted to allow the passage of the sprocket-chain teeth M M through them and the lever to engage the same, also the latch-pins *u u′* near the center of the levers at their sides extending horizontally and laterally therefrom and adapted to automatically engage the lever-latches *v v′*, the said latches being fixedly secured to the bottom of the car in a vertical position and made of such form and material as will permit them to be sprung at the lower ends backwardly far enough to allow the

latch-pins to automatically engage the angular heads and on rising upwardly to engage the latch, so as to secure the grip-lever F at the height shown in the dotted-line position a', Fig. 9. Between the lower ends of the latches v v' are bell-crank rods x x' in reverse position with respect to each other and adapted upon the grip-lever being raised on one end of the car, as at said position a', to automatically release the latch u' at the other end and permit the lever there to drop to the dotted-line position a^2, where it is held by the vertical loop $v^{2\prime}$, fixedly secured to the floor of the car. A similar loop v^2 is also provided for the opposite lever.

It will thus be seen that the car G is placed upon the track first at the place shown in Fig. 2, and passengers ascend to it by the steps 2. The grip-lever on the left side of the car has then engaged the teeth of the sprocket-chain h. Upon signal the motive power is applied, and the sprocket-chain raises the car to the height of the tripping-block, when it is automatically released, as shown, the lever at that end being held above the teeth of the chain by the latch v, while the other lever F′ is released at the same time from the latch v' by means of the bell-crank rod X and is held at a suitable height above the track by the loop $v^{2\prime}$, so as not to obstruct the track. Upon the return trip the mechanism operates in reverse manner. It will also be further seen that the car upon being released at the upper end of one incline will descend by gravity and ascend by the accumulated momentum to a sufficient height on each incline to reach the lowest point where the levers may engage the sprocket-chain, and thus by applying the power continuously the car is given a trip back and forth over a track of suitable length as often as may be desired. The car may be stopped after engaging the sprocket-chain at any point by stopping the motive power, and suitable brakes may be attached to it for the purpose of stopping the car when not in engagement with the sprocket-chains. By a proper arrangement of the tracks and application of the motive power the speed and length of the trips of the car can be regulated without difficulty and an apparatus be thus provided which by its automatic action is economical in construction and operation as well as easily controlled and of perfect safety to passengers using it. The construction and mechanical principles employed will be easily understood by those skilled in the art as distinguishing my invention from all those previously put forth designed for the same object and purpose.

I claim—

1. A pleasure-railway comprising two tangential incline frames facing each other and having two continuous rail-tracks on their upper surfaces connected at the lower ends, one track of narrower gage being placed between the rails of the other, the ascending grade of one track increasing over that of the other such a percentage on each incline as will retain the car G in horizontal position to all places; below the track on each incline the motive mechanism consisting of the sprocket-wheels f f' and g g' suitably mounted, endless sprocket-chains h h' of suitable length, adapted to pass through the slotted grooves o o' the links l l being formed with the gripping-teeth m m passing through the slots and having friction-rollers n n'; a tripping-block E with sloping surface near the upper end of each incline, adapted to raise the grip-lever F of the car in sliding engagement; a car G having wheels gaged to run on the respective tracks and beneath it secured thereto, pivotally-mounted automatic grip-levers F F′ adapted to engage the teeth of the sprocket-chains and be raised by the tripping-block E, also having suitable means to catch and release the levers, also to retain them from dropping; and suitable motive mechanism with means to transmit the power, all substantially as described.

2. In a pleasure-railway the combination of two oppositely-placed tangential incline frames having continuous and connected tracks upon them, suitably arranged to retain the car G in horizontal position at all places; on each incline endless sprocket-chains suitably mounted and arranged, having gripping-teeth m m, adapted to engage the grip-levers F F′ of a car; motive mechanism and means of transmitting the power to the sprocket-chains; a lever-tripping block E on each incline; and a car G having wheels gaged to run on the respective tracks and also having beneath it secured thereto, pivotally-mounted, automatic grip-levers F F′ adapted to engage the teeth of the sprocket-chains and be raised by the tripping-block E and suitable latching, holding and releasing means for the levers, all substantially as described.

THOMAS GUNSTONE HILL.

Witnesses:
C. O. DAVIS,
T. M. ELLINGER.