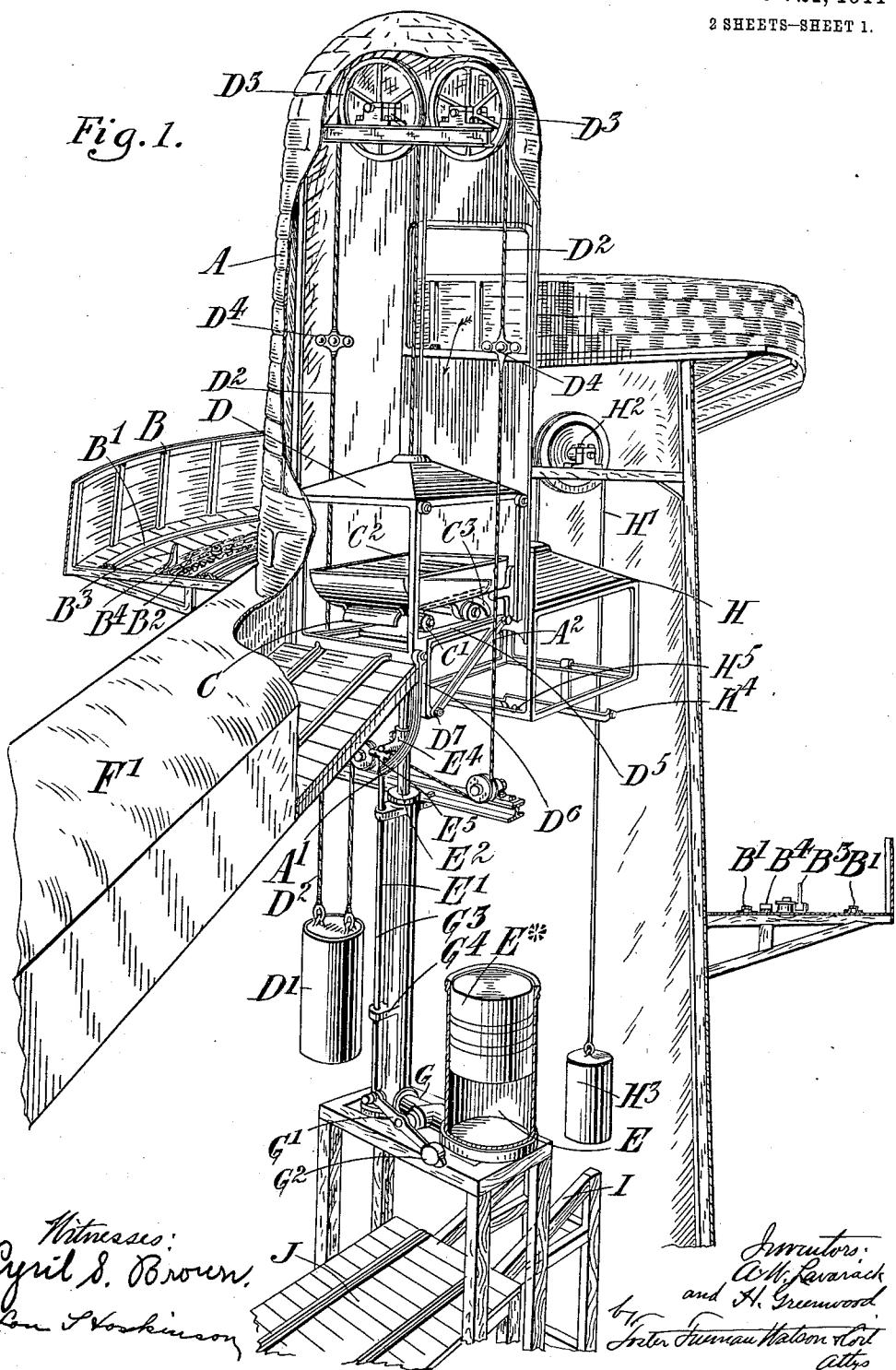


A. W. LAVARACK & H. GREENWOOD.
 RECREATIVE APPARATUS OF THE SWITCHBACK OR LIKE TYPE.
 APPLICATION FILED APR. 2, 1910.
1,009,076. Patented Nov. 21, 1911

2 SHEETS-SHEET 1.

Fig. 1.



Witnesses:
 Cyril S. Brown.
 Lou Storkinson

Inventors:
 A. W. Lavarack
 and H. Greenwood
 by
 Inter-Continental Patent Office
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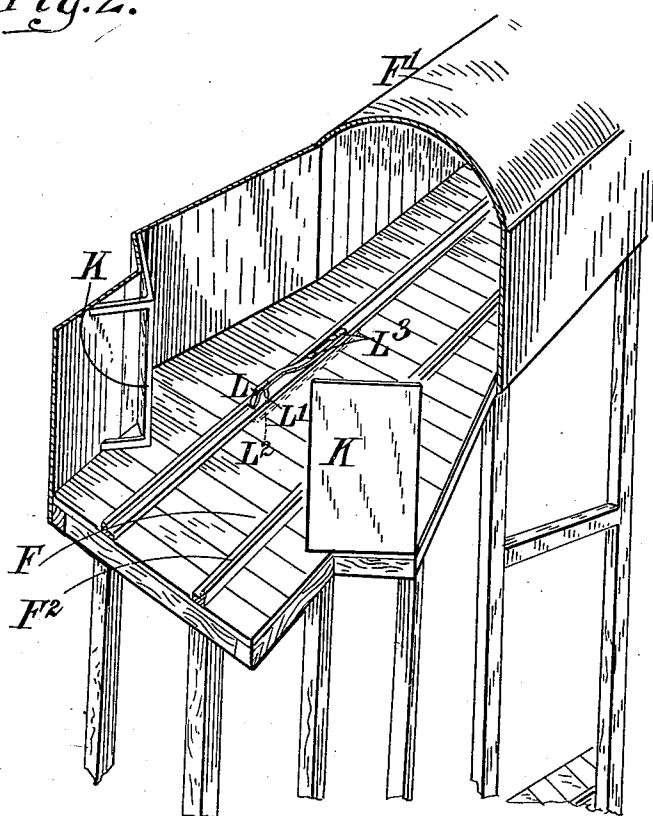
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2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

ARTHUR WHITLEY LAVARACK, OF HAMPSTEAD, AND HERBERT GREENWOOD, OF ACTON VALE, LONDON, ENGLAND.

RECREATIVE APPARATUS OF THE SWITCHBACK OR LIKE TYPE.

1,009,076.

Specification of Letters Patent. Patented Nov. 21, 1911.

Application filed April 2, 1910. Serial No. 553,123.

To all whom it may concern:

Be it known that we, ARTHUR WHITLEY LAVARACK, a subject of the King of England, residing at Hampstead, London, and HERBERT GREENWOOD, a subject of the King of England, residing at Acton Vale, London, England, have invented certain new and useful Improvements in Recreative Apparatus of the Switchback or Like Type, of which the following is a specification.

This invention is for improvements in or relating to recreative apparatus of the switchback or like type.

Figure 1 illustrates in elevation and partial section a portion of a recreative apparatus constructed in accordance with the present invention; Fig. 2 is a perspective view partially broken away of a portion of the apparatus forming a continuation of that part illustrated in Fig. 1.

According to this invention there is provided in the path of a vehicle a vertical descent down which the vehicle is allowed to drop.

25 A feature of this invention is that there is combined with the vehicle a separate body, such as for example a boat, which leaves the vehicle in the course of its journey.

30 Another feature of this invention is that a portion of the chute is made dark and a mirror is placed on each side of the track at an angle to the track so as to give a reflection of the boat or other body as it passes 35 the point where the darkened portion of the chute terminates. This reflection will convey to the occupants of the vehicle an impression of increased speed, also that a collision is imminent.

40 A further feature of this invention is the employment of one or more lights or clusters of lights that travel in an opposite direction to the cage and by their relative velocity give the occupants of the cage an impression of increased speed.

Still a further feature of this invention is that the passage of the vehicle down the chute is utilized to operate means whereby the illumination of the water into which 50 the vehicle passes is controlled.

Other features of this invention will be evident from the following description taken in conjunction with the accompany-

ing drawing which illustrates a perspective view of one method of carrying this invention into effect.

A tower or similar structure A has running around it a spiral track B having rails B¹ laid thereon to enable a wheeled vehicle to travel thereon. A chain B² is arranged to travel up the track and has dogs B³ attached thereto to engage with a part of the vehicle and haul it up by the track. The chain B² may be driven in a variety of ways, such for example as by an electric motor, but as this does not form part of the present invention further description is unnecessary. A rack B⁴ is provided on the track and a sprag C³ is attached to the vehicle and is so placed that should the vehicle begin to travel backward the sprag will engage with the rack and bring the vehicle to a standstill. The vehicle consists of an underframe C provided with wheels C¹. Upon this underframe a boat C² rests which is adapted to receive a number of passengers. The boat C² projects beyond the underframe for a purpose that will be hereinafter described. A cage D travels up and down within the tower A and normally rests in a position ready to receive the underframe C with its boat C² from the top of the spiral railway. This cage is overbalanced by means of a weight D¹. This weight is attached to the cage D by ropes 85 or chains D² passing over pulleys D³. Attached to the chains or ropes D² are one or more bunches of lights D⁴ which travel in the opposite direction to that of the cage and give to the passengers the impression 90 that they are traveling at a higher rate of speed than is actually the case. The cage D is provided with a tilting bottom D⁵ to which is fixed an arm D⁶ having a roller D⁷ that travels up and down a curved guide-rail A¹ fixed to the inside of the tower. Arms A² project from the tower in such a manner as to allow the underframe to pass them freely but to engage the rear portion of the boat and tip it forward onto a chute 100 F. This chute is provided with rails F² to guide the boat on its downward course. The cage is provided with a catch or catches (not shown) that are hand released as soon as the vehicle is safely within the cage.

105 Means are provided to arrest the descent

of the cage and such may consist of a convenient form of dashpot. This dashpot consists of a cylinder E filled with oil or other suitable liquid resting upon which is the 5 balance weight E*. A second cylinder E¹ has operating within it a ram E² and these two cylinders E and E¹ are connected together by a pipe in which a valve G is situated. This valve is operated by means of a 10 lever G¹ having a weight G² attached at one end thereof and pivoted at the other end is a rod G³ which is passed through guide blocks G⁴ attached to the cylinder E¹. A cross piece E⁵ attached to the rod is engaged 15 by a projecting arm E⁶ fixed to the ram E² and as the latter descends the oil or other liquid is forced from one cylinder to the other. The valve G is gradually closed as the arm E⁶ presses upon the cross piece E⁵, 20 thus increasing the resistance to the downward passage of the ram E² whereby the descent of the cage is gradually arrested. After the load has left the cage D, the latter begins to ascend under the influence of its 25 overbalance weight D¹. At the same time the weight E* forces the liquid through the partly closed valve G and returns the ram E² to its initial position.

A second cage H supported by a rope or 30 chain H¹ passing over a pulley H² and having an overbalance weight H³ at the end thereof, is provided with inclined rails H⁴ hinged at H⁵ and adapted to receive the underframe C. Below this cage rails or beams 35 I are inclined in an opposite direction to the normal position of the rails H⁴, and these rails I tilt the rails H⁴ when the latter come in contact with the former. The result of this is to give a forward movement to the underframe C which travels down to the bottom 40 of the chute J, rails being provided on the chute for this purpose.

The upper portion F¹ of the chute F is made dark by means of coverings, at the end 45 of which mirrors K are placed for the purpose of simulating a collision and giving the impression of increased speed.

At a convenient spot on the chute a device is arranged that effects the illumination by 50 electric lamps of the water or other surrounding objects, when the vehicle passes down the chute. Such a device may consist of a spring plate L fixed to one of the rails F² by screws L³, having a contact pin L¹ 55 adapted to pass without touching through a hole drilled in the rail and make connection with a second plate L² fixed underneath the rail, but insulated therefrom.

The cycle of operations is as follows:— 60 The boat C² receives a load of passengers, it is then passed on to the underframe C at the bottom of the spiral railway up which it is conveyed by means of a moving chain B² carrying a dog B³ which engages with some 65 part of the underframe. Should the dog

give way backward movement will be prevented by means of the sprag attached to the underframe engaging with the rack B². At the top of the spiral railway the underframe C with its boat C² passes into the cage D which is waiting ready to receive it. When it is safely inside, the cage is released by means of the catch or catches hand operated and owing to the extra weight within the cage the latter drops vertically until the 70 bottom of the cage comes into contact with the head of the ram E² when its movement is gradually arrested. Just before the cage reaches the bottom of its travel the rear of the boat C² is engaged by the arms A² which thus lift the boat from the underframe C and hold it still while the front of the boat still descends until it is on a level with the chute F when it leaves the underframe and travels down the chute. At the same time 75 the bottom of the cage is tilted backward owing to the roller D⁷ pivoted to the arm D⁶ traversing the bent portion of the rail A¹. This results in the underframe running backward into the cage H waiting ready to receive it. This cage now descends owing to the weight of the underframe C over-balancing the weight H*. As the inclined rails H⁴ engage the oppositely inclined rails I the 80 underframe is gradually lifted to a horizontal position then to a position sloping in a reverse direction to that at which it originally rested with the result that the underframe runs down the chute J, into a position 85 ready to receive the next boat for a fresh 90 ascent.

Suitable connections are run from the two plates L and L² to electric lamps beneath and around the water and the passage of the vehicle over these plates will close the circuit 95 and the electric lamps will light up. Obviously more than one such device can be used to permit of the illumination lasting a longer time than would be the case with only one device.

Any well known form of catch may be used to release the cage D at the top of the spiral railway at the moment when the vehicle has entered it. Such devices are well known and need not be described here. Instead of the ram and its cylinder a spring and recoil device such as is used in heavy artillery may be employed to arrest the cage, or a cylinder could be provided having a number of openings at suitable distances so arranged that as the ram travels up and down these holes would be uncovered or covered up successively, allowing the fluid to pass in larger or smaller quantities, thus more or less wire drawing the fluid leaving the cylinder thereby checking the ram in its descent. 115

It is within the scope of this invention to use other means than that shown for closing the valve G, for instance, a rod might be attached to the cage itself and operate the 120 130

valve through toothed gearing, thus obviating the necessity of using a weight such as G².

Obviously it is within the scope of this invention to employ a vehicle that is not provided with a separate body such vehicle leaving the cage and descending the chute in the well-known manner. This arrangement would obviate the necessity of providing a second cage and chute.

What we claim as our invention and desire to secure by Letters Patent is:—

1. In a recreative apparatus of the character described, the combination of an inclined chute, a car comprising a truck and a body separable from the truck, means for raising the car to a greater elevation than the upper end of the chute, a vertically movable support adapted to receive the car at such elevation and descend with it to the upper end of the chute, and means for automatically detaching the body from the car truck when the said body is in position to move down the chute.

25 2. In recreative apparatus of the character described, the combination of an elevator shaft, a chute communicating at its upper end with said shaft, an inclined track communicating with the shaft at a point above the upper end of the chute, a car comprising a truck adapted to travel on said track and a separable body, a cage mounted to move up and down the shaft and adapted to receive the car from said track, and means for automatically moving the car body from its truck when the cage has descended sufficiently to bring said body in alinement with the upper end of the chute.

35 3. In recreative apparatus of the character described, the combination of an elevator shaft, a chute communicating at its upper end with said shaft, an inclined track communicating with the shaft at a point above the upper end of the chute, a car comprising a truck adapted to travel on said track and a separable body, a cage adapted to support the car while moving in the shaft between the track and chute, means 45 acting to maintain the cage at the upper limit of its travel, and means for automatically detaching the car body from its truck and delivering it on to the chute as the cage passes below the upper end of the chute.

55 4. In recreative apparatus of the character described, the combination of an elevator shaft, a chute communicating at its upper end with said shaft, an inclined track communicating with the shaft at a point above the upper end of the chute, a car comprising a truck adapted to travel on said track and a separable body, a cage movable in the shaft from below the upper end of the chute to a position in alinement with the upper end of

the track, means for automatically detaching the car body from its truck as the cage passes below the upper end of the chute, and means for subsequently automatically moving the truck from the cage.

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5. In recreative apparatus of the character described, the combination of an elevator shaft, a chute communicating at its upper end with said shaft, an inclined track communicating with the shaft at a point above the upper end of the chute, a car comprising a truck adapted to travel on said track and a separable body, a cage movable in the shaft from a position where it can receive a car from the track to a point below the upper end of the chute, means for automatically detaching the car body from its truck and causing it to move on to the chute, means for automatically removing the truck from the cage after the car body has been separated therefrom, a second cage adapted to receive the truck, and a return track adapted to receive said truck from the second cage.

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6. In recreative apparatus of the character described, the combination of an elevator shaft, a chute communicating at its upper end with said shaft, an inclined track communicating with the shaft at a point above the upper end of the chute, a car comprising a truck adapted to travel on said track and a separable body, a cage movable in the shaft between the ends of the track and chute, means acting to maintain the cage at the upper limit of its travel, means for checking the downward movement of the cage, means for automatically detaching the car body from its truck and delivering it into the upper end of the chute, a return track for the truck, and means for automatically transferring the truck from the cage to said return track after the body has been detached.

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7. In recreative apparatus of the character described, the combination of an elevator shaft, a chute communicating at its upper end with said shaft, an inclined track communicating with the shaft at a point above the upper end of the chute, a car comprising a truck adapted to travel on said track and a separable body, a cage movable in the shaft between the ends of the track and chute, illuminating means connected with the cage to travel in a direction opposite thereto, and means for automatically with-drawing the car from the cage.

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8. In recreative apparatus of the character described, the combination of an inclined track, an inclined chute, a shaft communicating with the upper end of the track and extending past and communicating with the upper end of the chute, a car comprising a truck adapted to travel on said track and a separable body adapted to travel on the chute, a cage movable in the shaft and

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adapted to receive the car from the track, and means for automatically detaching the car body from its truck and delivering it on to the chute.

- 5 9. In recreative apparatus of the character described, the combination with a car, of an inclined way over which the car is adapted to travel comprising two sections, the adjacent ends of which are at different elevations, a vertically movable cage supported independently of the track and adapted to transfer the car from the upper to the lower of said sections, and a dash pot adapted to control the downward movement of said cage.
- 10 10. In recreative apparatus of the character described, the combination with a movable car, a guide-way therefor comprising two sections, the adjacent ends of which are at different elevations, and a cage adapted to transfer the car from the upper to the

lower of said sections, of a dash pot comprising a ram working in a cylinder filled with suitable liquid and having an adjustable valve whereby the escape of liquid is controlled, said ram extending into the path 25 of movement of the cage, and a weight connected with the cage and adapted to return the ram to its elevated position by exerting pressure on the liquid in the cylinder.

In testimony whereof we have signed our 30 names to this specification in the presence of two subscribing witnesses.

ARTHUR WHITLEY LAVARACK.
HERBERT GREENWOOD.

Witnesses as to A. W. Lavarack:

R. LESLIE MOORE,
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Witnesses as to Herbert Greenwood:

HARRY B. BRIDGE,
PERCY HEWITT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."