April 22 , 1924.

1,491,307

C. LANE ET AL

AMUSEMENT APPARATUS

Filed July 19, 1923

4 Sheets-Sheet 1

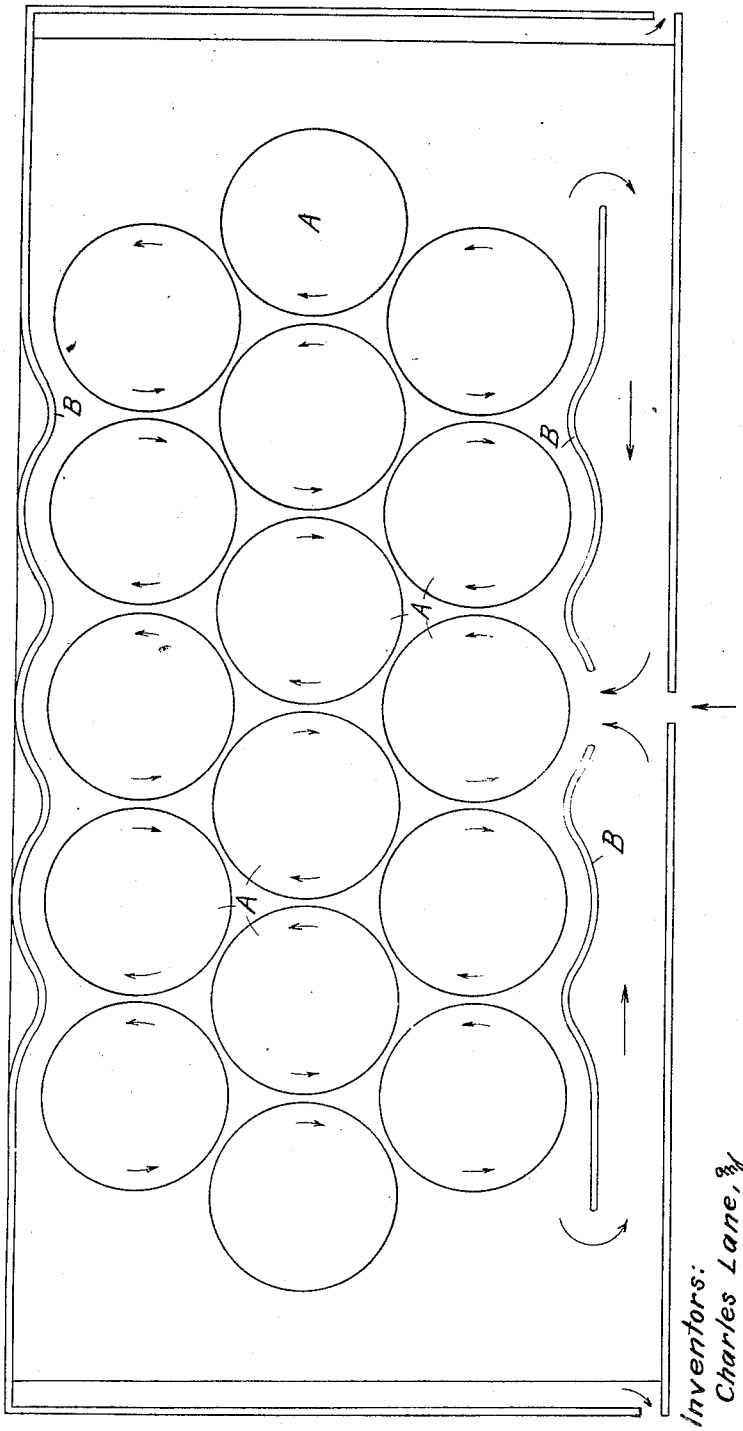

FIG. 1.

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FIG. 2.

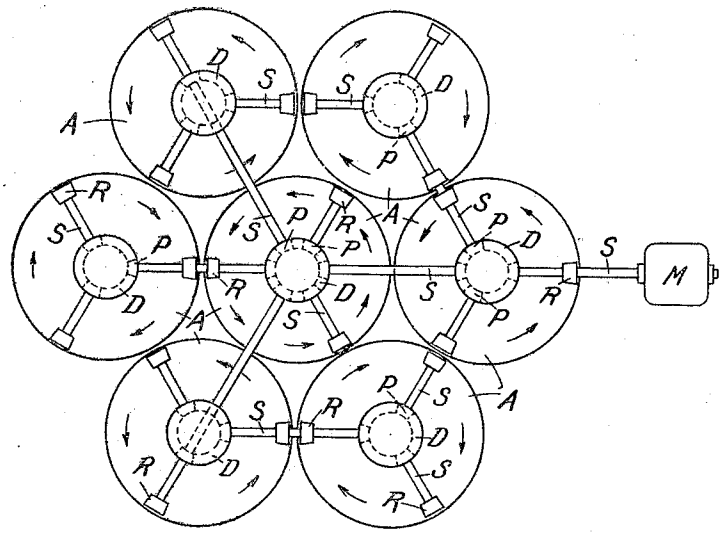

FIG. 3.

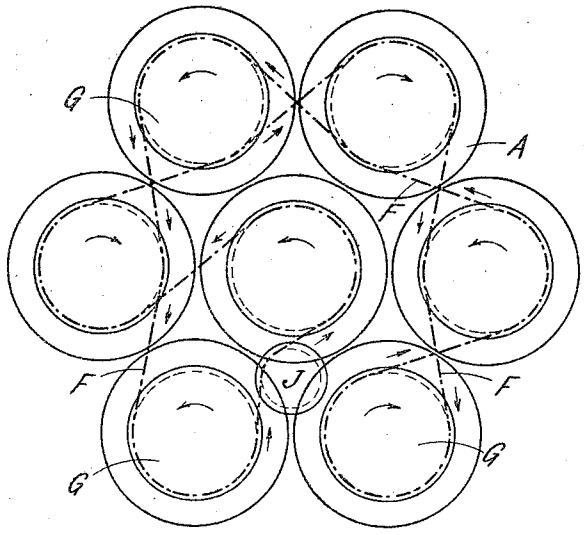

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FIG. 4.

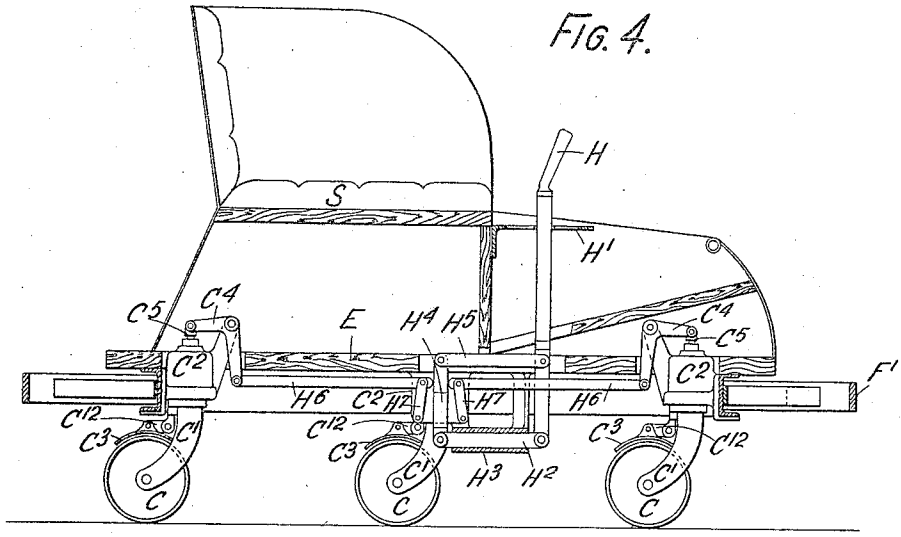

FIG. 5.

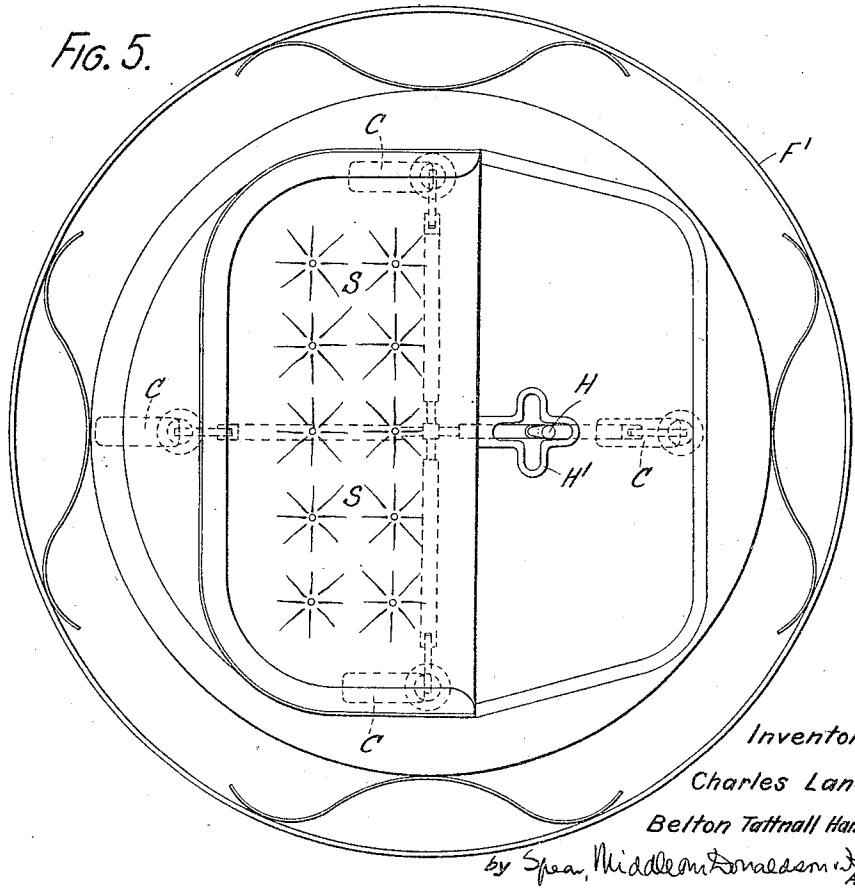

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FIG. 6.

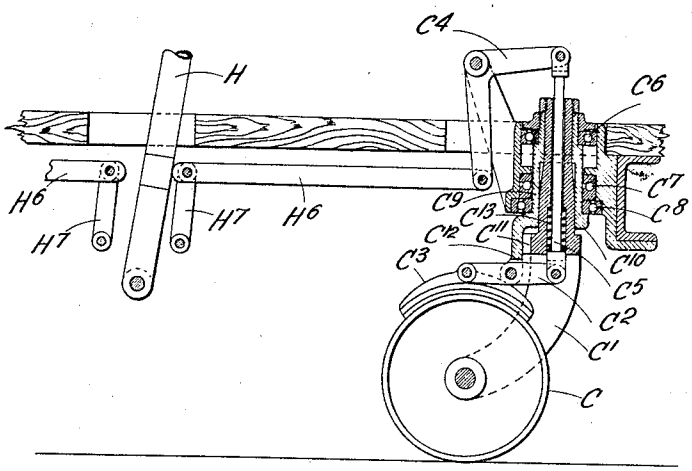
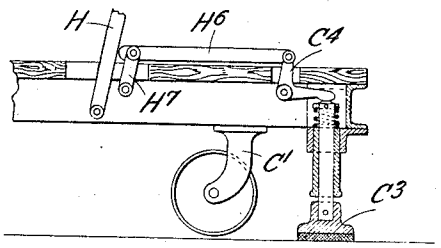


FIG. 7.



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Patented Apr. 22, 1924. 1,491,307

UNITED STATES PATENT OFFICE.

CHARLES LANE AND BELTON TATTNALL HAMILTON, OF LONDON, ENGLAND.

AMUSEMENT APPARATUS.

Application filed July 19, 1923. Serial No. 652,639.

To all whom it may concern:

Be it known that we, CHARLES LANE and BELTON TATTNALL HAMILTON, residing in London, England, have invented certain new and useful Improvements in Amusement Apparatus, of which the following is a specification.

This invention relates to amusement apparatus in which the movements of a moving floor or platform are communicated to one or more cars carried or mounted upon the platform, and consists in providing the cars, mounted on rollers or castors so as to be capable of traveling horizontally in any direction, with means for producing a gripping or braking action between the car and the floor for the purpose of driving and varying the direction of travel of the car. To this end one or more brakes for the castors or gripping pads or feet, to act directly on the floor, are provided, which may individually be operated at the will of the occupant or driver of the car to produce the required frictional contact with the moving floor beneath the car and so cause the car to be driven by and partake of the movement of that portion of the floor. Provision is also made of means enabling the driver at any moment to sever this frictional connection of the car with the floor, so that the car then, impelled by its own momentum, will travel freely in the particular direction in which it was moving at the time of release.

The cars are preferably circular in shape and are provided with spring, pneumatic or other suitable pads or buffers to prevent shock and damage when the cars collide with each other or with the boundaries of the track or floor.

The gripping pads are revolubly mounted on the car and when two or more are used are mounted eccentrically to the centre of gravity of the car in such manner that when connection is made between the gripping pad and the floor centrifugal force will cause the car to swing around the pad as a centre until its centre of gravity is away from the axis of revolution of that portion of the floor with which connection is established.

The pads are preferably so arranged and spaced on the car that one or other of them is at all times capable of establishing connection with a moving portion of the floor, or in other words can straddle across any non-moving portions thereof.

The engagement or vice-versa of the gripping pads with the floor may be controlled in some cases by a hand wheel or in other cases by a hand or foot lever and the control is preferably so arranged that when more than one gripping pad is provided one pad only at a time can be engaged with the floor and further that between the engagement of one pad or another with the floor there is a neutral point or zone in which all pads are free of such engagement.

Instead of using frictional pads with a frictional grip on the floor, one or more of the castor wheels or rollers upon which the car is mounted may be fitted with a brake adapted to be operated by the driver of the car. When desirous of imparting the movement of a revolving platform to the car the driver applies the brake to the particular castor wheel which rests on the platform, thereby preventing it from revolving on its axis and causing the friction at the point of contact of its periphery with the platform to impart the movement of the latter to the car.

A fence is preferably provided to surround the floor, and fitted with a suitable rail or fender to engage with the buffers on the cars when they collide with the fence.

An embodiment of the invention will now be described with reference to the accompanying drawings in which:—

Fig. 1 shows a plan view of a track or floor provided with a number of circular rotatable platforms,

Fig. 2 shows an underside view of some of the platforms with their driving mechanism, and

Fig. 3 shows a modified form of drive.

Fig. 4 is a sectional side elevation of a car, and

Fig. 5 shows a plan of same,

Fig. 6 is a detail view partly in vertical section of one of the castors with its braking mechanism, and

Fig. 7 is a similar view, showing a friction pad shoe.

The floor comprises a series of discs or tables (A) arranged in juxtaposition each disc revolving at a predetermined speed. Adjacent discs are preferably arranged to revolve in opposite directions as far as conveniently possible. Suitable fences or

guards (B) are arranged around the floor to limit the outward movement of the cars.

Fig. 2 shows an underside plan view of one form of gear for driving the platforms.

A series of shafts (S) mounted in suitable fixed bearings beneath the floor are driven by bevel gearing from a motor or engine (M) these shafts being arranged to lie radially beneath the platform (A) and have mounted on them pulleys or rollers (R) upon which the platforms are supported, in the example shown there being three roller supports for each platform.

Thus a 3 point drive is communicated to the latter.

A crown wheel or bevel (D) is arranged on an axis concentric with the axle of each revolving platform, but these wheels revolve independently of the platforms. The rollers (R) which drive the platforms are driven by bevel pinions (P) mounted on the radial shafts (S), which in turn drive or are driven by the crown bevels.

In the example illustrated it will be noted that each crown bevel (D) drives three rollers (R) by means of the intermediate shafts (S), but the invention is not limited to this particular form of drive. As an alternative, the platforms or tables may be driven by ropes or belts (F) as is shown in Fig. 6, the rope passing around grooved pulleys (G) fastened to the underside of the revolving platforms.

Preferably a double grooved pulley or two grooved pulleys are fastened to each disc to enable the driving rope to be crossed where necessary without rubbing or interference. A jockey pulley (J) may be employed to take up any slack which may occur in the rope driver.

One of the interconnected tables or platforms in such a section may be driven by bevel or worm or other suitable gearing by the engine or motor, the other platforms in the section being then driven by the rope, ropes or belting.

The car is preferably circular in plan and consists of a floor (E) carried on three or more (in the drawings four) castors (C) revolubly mounted in forks (C^1) which in turn are revolubly mounted in brackets (C^2) attached to the floor of the car. The axis of the castor wheels is disposed at a right angle to and eccentrically to the vertical axis about which the forks turn in such manner that in whichever way the car is travelling the castor wheels will trail and follow the direction of the car.

Each castor wheel is provided with a brake block (C^3) operated by a bell crank lever (C^4) and rod (C^5), (see particularly Fig. 6) passing through the centre of the fork axis in such manner that although perfect freedom of movement of the castor around the fork axis is permitted, yet the brake can be applied to the castor wheels in whatever position it occupies in relation to the car floor. The brake block (C^3) is connected to the lower end of the rod (C^5) by a lever (C^{12}) pivoted to a sleeve or part which rotates with the fork (C^1).

A seat or seats (S) is provided suitably mounted on the car floor and in convenient position to be easily handled by the occupant of the seat is a hand lever (H) which passes through and its movement is limited by a guide block or plate (H^1) having an opening or gate in the shape of a cross, in such manner that the lever can be pushed forward or pulled back or moved to one side or the other as desired.

The castor wheels are preferably disposed in reference to the car one forward, one back and one on either side, and the hand lever (H) is interconnected with suitable linkages and connections with the bell crank levers (C^4) in such manner that when the hand lever is in the centre of the cross shaped guide plate (H^1) all four castor wheels are free to revolve on their axes, but when the lever is pushed or moved into either of the slots of the cross the corresponding castor wheel has its brake applied. Thus putting the lever forward brakes the leading castor wheel, pulling it back brakes the rear castor, and putting it to left or right brakes the left hand or the right hand castor as the case may be.

In the example illustrated the hand lever (H) is pivoted at its lower end to a rod (H^2) mounted in a tubular bearing (H^3) the other end of this rod being pivoted to a vertical rod (H^4) the upper end of which is connected to the hand lever (H) by a horizontal arm (H^5). A linked parallelogram is thus formed by the parts (H), (H^2), (H^4) and (H^5) in such manner that by moving the lever (H) backwards or forwards or to one or other side the vertical rod (H^4) will be correspondingly moved.

Around the upper part of the rod (H^4) are arranged the inner ends of horizontal bars (H^6) supported on links (H^7) and having their outer ends pivoted to the ends of the bell crank levers (C^4). It will be seen that if the hand lever (H) is moved forward, the forward bar (H^6) will also move forward, raise the horizontal arm of the bell crank lever (C^4) and apply the brake (C^3) to the castor of the front wheel, thereby causing it to partake of the motion of the platform upon which it happens, at that time, to rest, with the result that that end of the car will swing round in the direction of travel of the table.

A spring steel buffer strip (F^1) is suitably arranged around the edge of the floor of the car to minimize shock when two cars collide or when a car collides with the floor boundary fence.

The axis of the fork carrying the castor wheel is preferably mounted in journal ball bearings (C^6), (C^8) (Fig. 6) with a thrust bearing (C^7) to take the weight of the car.

In the construction shown the tubular shaft (C^9) of the fork (C^1) is slidably mounted in a sleeve (C^{10}) carried by the fork and engaging with a lug (C^{14}) on the sleeve (C^{10}).

The effect of this arrangement is such that when the brake is applied the floor of the car can be bodily lifted by the brake shoe when it acts on the top of the castor wheel, thus making it a certainty that the castor wheel will make hard contact with the ground and with the brake shoe.

A spring (C^{13}) keeps the brake off the castor when the lever (H) is in neutral position, or when applying the brake to either of the other castors. Fig. 7 shows an alternative method of gripping the floor. In this case the braking shoes (C^3) instead of gripping the castors makes direct contact with the surface of the revolving platform constituting the moving floor. They are operated as shown in the drawing in similar manner to that shown in Fig. 6 the castor wheels being mounted revolubly in plain brackets suitably spaced and fixed to the car floor so as not to interfere with the braking pads.

In some cases the revolving discs or platforms comprising the floor instead of presenting flat horizontal surfaces may be formed conically or in other cases may be of such contour that the complete floor presents a series of hills and valleys or wave-like formations.

Again in other cases the revolving platforms constituting the floor may be augmented by straight running platforms constructed in the manner usually known as caterpillar tracks mounted upon suitable guides or rollers.

While we have described and shown a separate pad or brake for each castor it is to be understood that we might use a single pad or brake so mounted that it could be moved by the occupant, to brake any castor or to frictionally engage the floor at any desired point below the car.

What we claim and desire to protect by Letters Patent is:—

1. In combination a floor consisting of stationary and driven elements, and a car having rotatory supports engaging said floor, means for producing a braking action between the car and the floor, a lever under control of the occupant of the car, and a series of connections intermediate the lever and the braking means, whereby any desired brake may be applied by appropriate movement of the lever.

2. In combination a floor consisting of stationary and driven elements and a car having rotatory supports engaging said floor, a pivoted lever under the control of the occupant of the car, a vertical rod linked to said lever and a series of brake actuating rods having their inner ends in proximity to said vertical rods, and braking means adapted to be actuated by the outer ends thereof.

3. In combination a floor consisting of stationary and driven elements and a car having rotatory supports engaging said floor, a manually operated brake actuating lever, a brake for each rotatory support, and a series of levers intermediate the brake actuating lever and the respective brakes, substantially as described.

4. In combination a floor consisting of stationary and rotatory elements, gearing below the floor for driving each rotatory element, a car having rotatory supports engaging said floor, and means for producing a braking action at different points between the car and the floor.

In testimony whereof we affix our signatures in presence of two witnesses.

CHARLES LANE.
BELTON TATTNALL HAMILTON.

Witnesses:
A. RILY,
FRANK BENHELF.