B. KLEIN.
AMUSEMENT DEVICE.
APPLICATION FILED DEC. 14, 1918.

1,336,082. Patented Apr. 6, 1920.

6 SHEETS—SHEET 1.

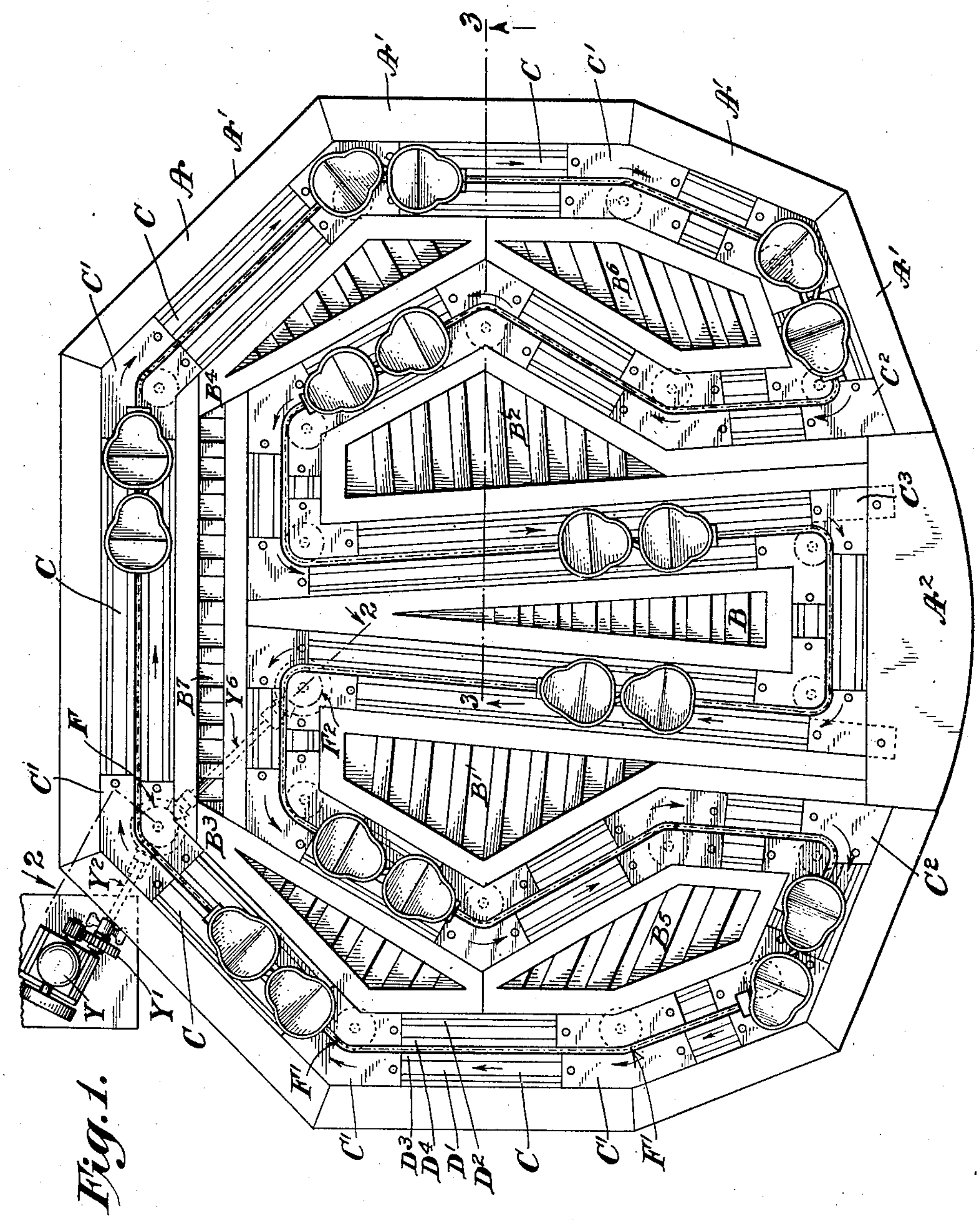

Fig.1.

Inventor
Benjamin Klein
By his Attorney *[signature]*

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6 SHEETS—SHEET 2.

Fig. 2.

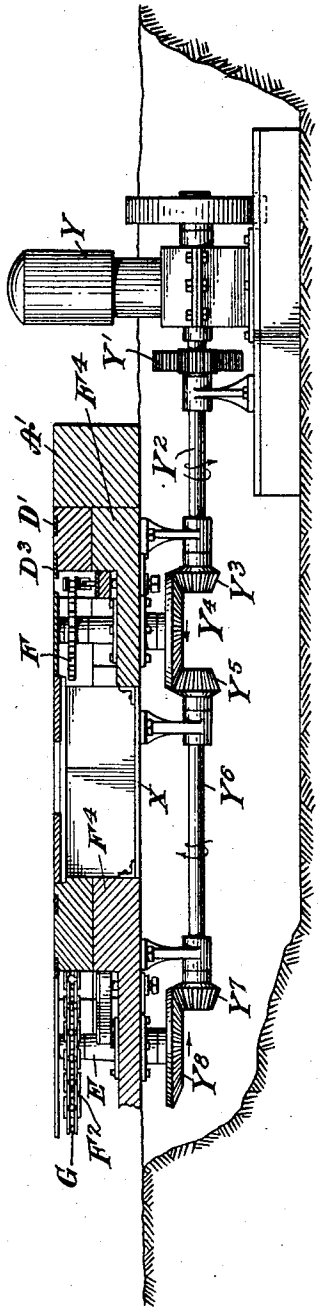
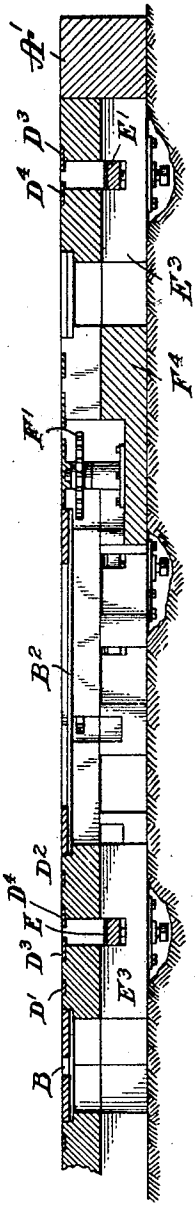


Fig. 3.



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By his Attorney Ivan Oldenwel

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6 SHEETS—SHEET 3.

Fig. 4.

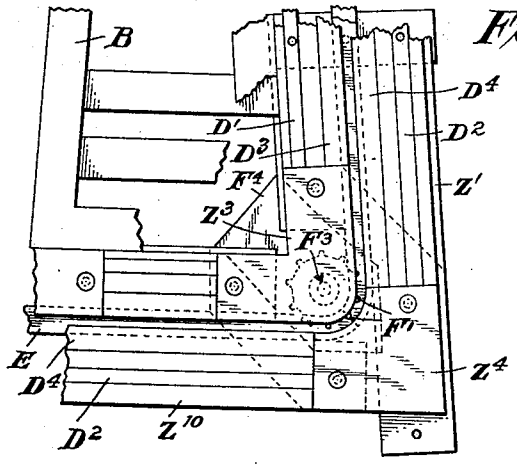
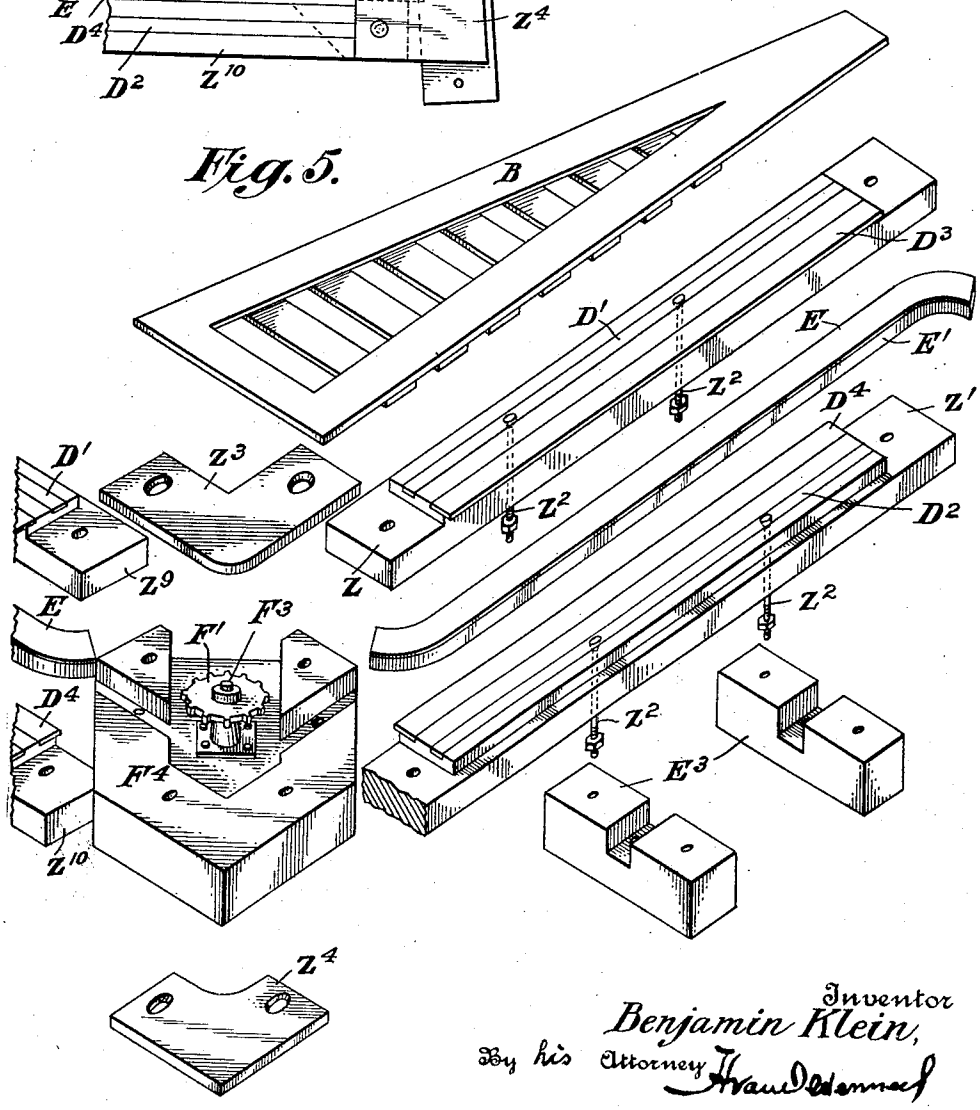


Fig. 5.



Inventor

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By his Attorney *Frank Adamson*

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6 SHEETS—SHEET 4.

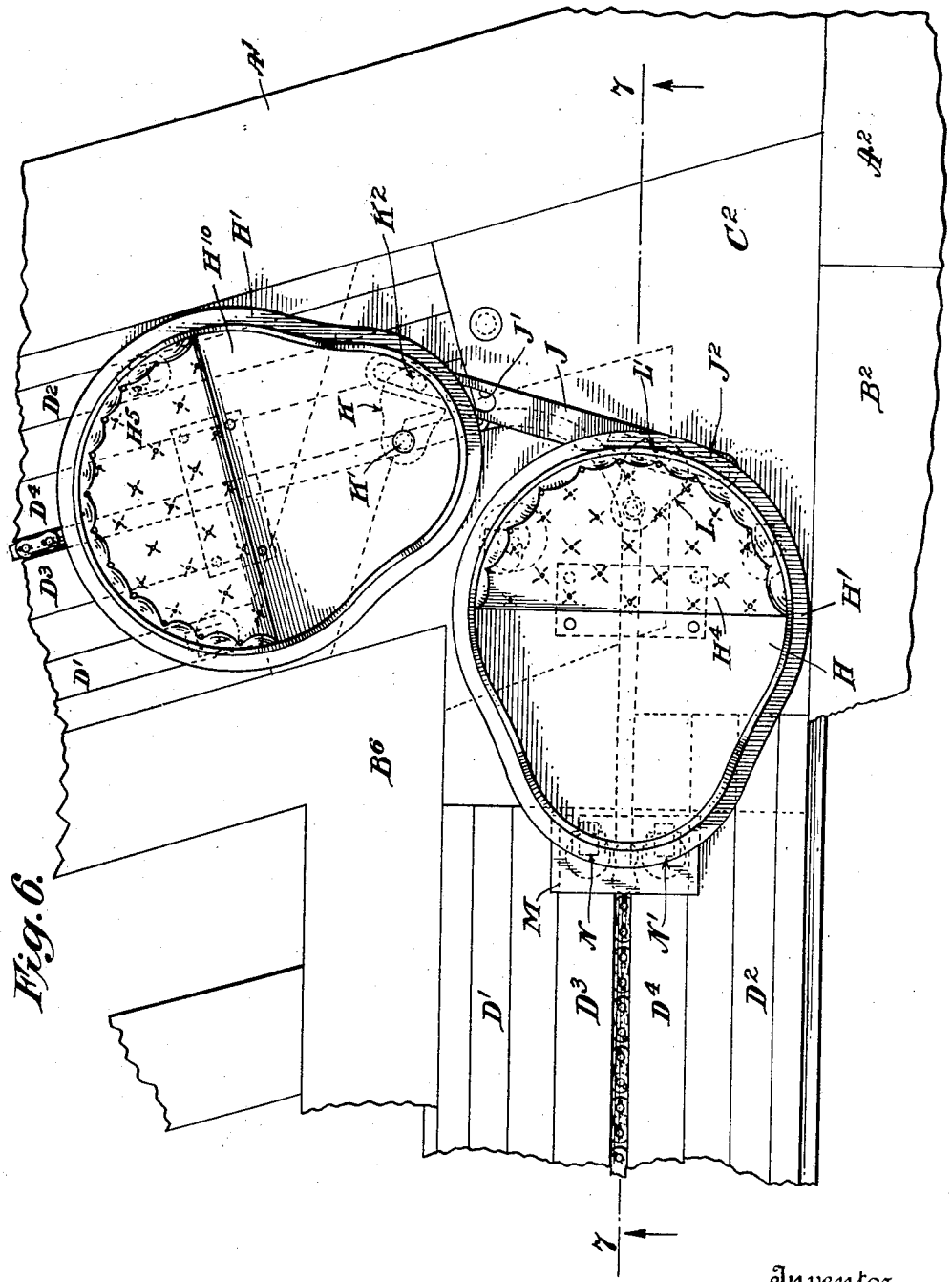

Fig. 6.

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6 SHEETS—SHEET 5.

Fig. 9.

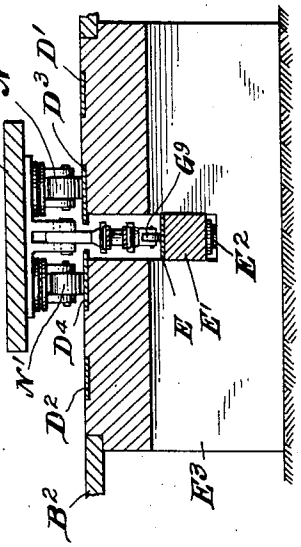


Fig. 7.

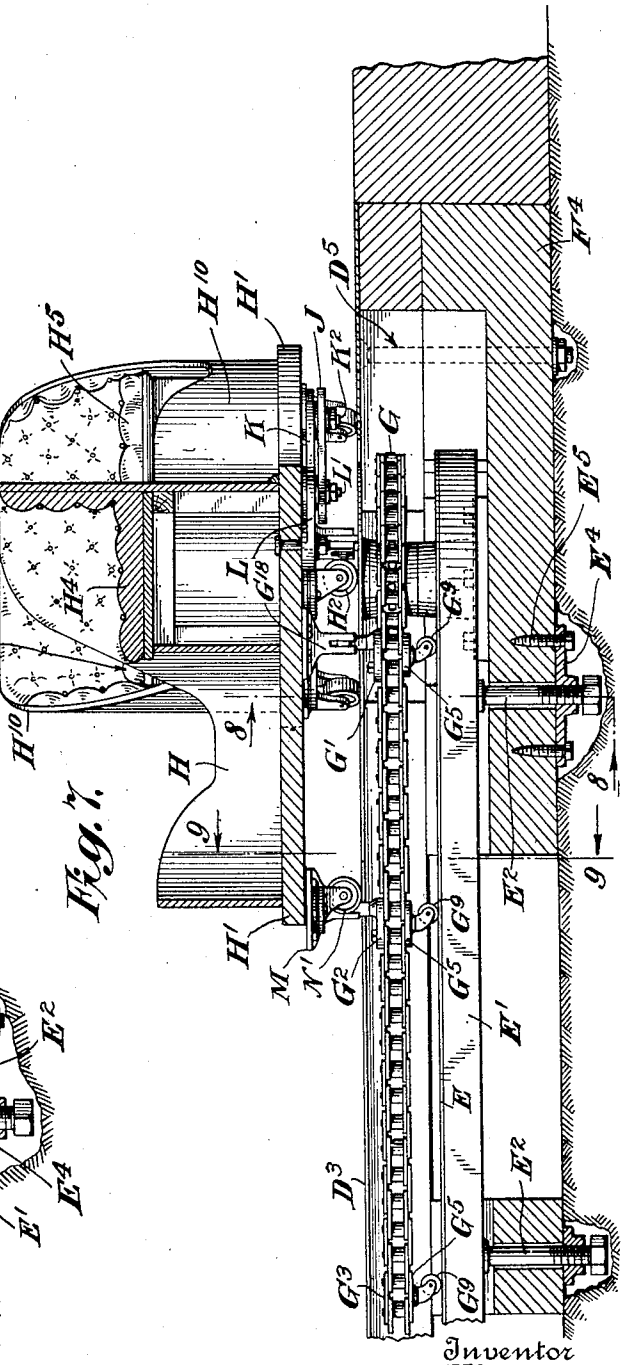
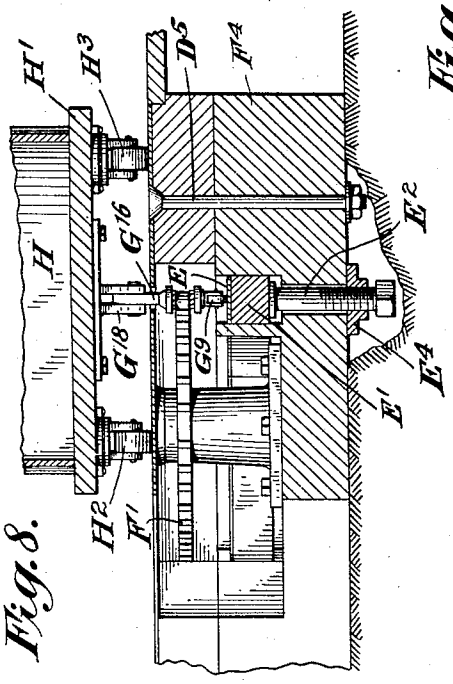


Fig. 8.



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6 SHEETS—SHEET 6.

Fig. 10.

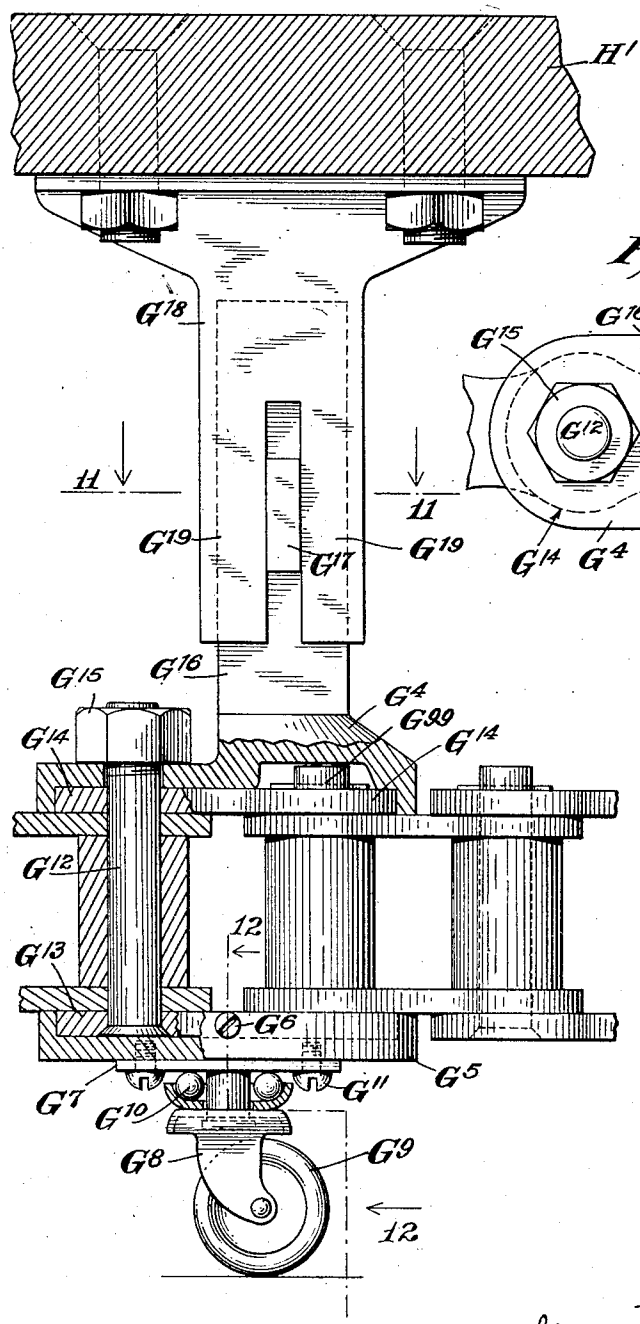


Fig. 11.

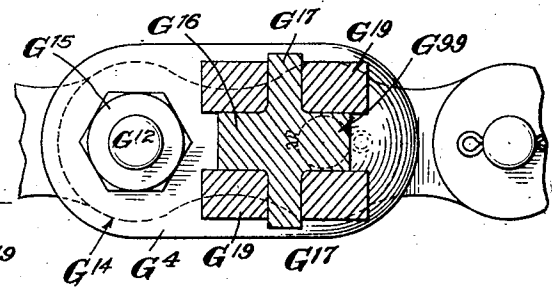
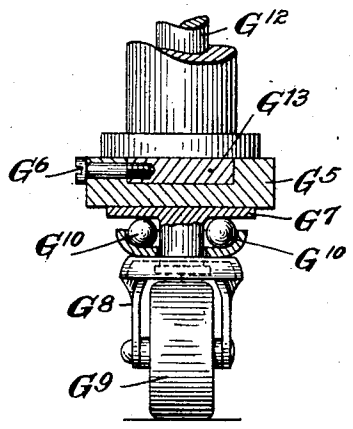


Fig. 12.



Inventor

Benjamin Klein

By his Attorney

UNITED STATES PATENT OFFICE.

BENJAMIN KLEIN, OF NEW YORK, N. Y.

AMUSEMENT DEVICE.

1,336,082. Specification of Letters Patent. Patented Apr. 6, 1920.

Application filed December 14, 1918. Serial No. 266,706.

To all whom it may concern:

Be it known that I, BENJAMIN KLEIN, a citizen of the United States of America, residing in the borough of Manhattan, city and State of New York, have invented a new and useful Amusement Device; and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to amusement devices having traveling carriages, and in which amusement is afforded not only by the travel of the carriages but also by contributing snapping portions to the carriages to jolt the occupants and throw the riders together.

The objects of the invention are: To provide a sectional structure which may be quickly "taken down" and shipped in compact form, and the sections whereof may readily and quickly be assembled; to provide a structure in which the carriages are caused to travel in a continuous back-and-forth, and serpentine, path; to provide means for relieving a chain or the like from the weight of the carriages; and to provide means whereby sprockets or the like for driving the chain are relieved from the weight of the chain, all to the end that the operating parts and the carriages will run freely, smoothly and economically; to provide means whereby driving power is applied to a chain or the like at somewhat widely-separated points throughout the length of the latter, to lessen the strain on the chain; and, generally, to simplify and improve the construction of this class of amusement devices.

Other specific objects are mentioned hereinafter.

Some of the improvements are novel in driving means useful for many purposes, and will be hereinafter claimed in the broader aspects.

Referring to the accompanying drawings,

Figure 1 is a top view of the amusement apparatus, showing arrangement and power plant;

Fig. 2 is a detail sectional view as indicated on the line 2—2, in Fig. 1, looking in the direction of the arrow, and on a somewhat larger scale;

Fig. 3 is a detail sectional view, as indicated on line 3—3 of Fig. 1, looking in the direction of the arrows;

Fig. 4 is a fragmentary plan view of a corner section;

Fig. 5 is a perspective view, in unassembled positions, of the various parts constituting the corner section of Fig. 4;

Fig. 6 is an enlarged fragmentary view of a corner section, showing the carriages in the position of making a turn;

Fig. 7 is a vertical longitudinal section, as indicated on the line 7—7 in Fig. 6, and illustrates the manner of supporting the drive-chain or casters, and the relation of the various parts;

Fig. 8 is a transverse sectional view, indicated on the line 8—8 in Fig. 7 and looking in the direction of the arrows;

Fig. 9 is a transverse sectional view indicated on the line 9—9 of Fig. 7, and looking in the direction of the arrows;

Fig. 10 is an enlarged side elevation, partly in section, of the adjustable carriage bracket, a portion of the roller chain, and the caster supporting the same;

Fig. 11 is a horizontal section on the line 11—11 of Fig. 10; and

Fig. 12 is a vertical transverse section on the line 12—12 of said Fig. 10.

The apparatus has a body, A, a platform being shown, and which, in use, lies substantially level in a horizontal plane. Such a body is made up of parts or separable sections, so as to be quickly disassembled in order to be housed compactly and conveniently carried from place to place. In the form shown, the body is made up of outside sections, as A′, and a mid-section, A^2, the latter being the platform wherein passengers assemble and are discharged.

The body further consists of track-sections, C, and of blocking and filling sections, B, the whole being assembled as shown to provide an endless track above or on the upper surface, of the body, so that carriages, traveling on the track, may pursue a horizontal path over substantially all of the body and, in the instance shown, will follow a winding, back-and-forth, or serpentine path.

The filling sections are shown as including a central triangular section, B, side sections B′ and B^2, and outer sections B^3, B^4, B^5, B^6 and B^7. While any of these sections may be of any suitable construction, I prefer to use frames, (as shown in Fig. 5) strengthened and finished by cross-pieces, so that

while each unit shall be exceedingly strong, it shall be light in weight and easily handled.

The track sections are each formed so as to be each readily secured in place, by means of corner-plates or junction-plates, indicated at C′, C² and C³, to provide continuous and endless tracks along the opposite edges of a slot. In the construction shown, there are two sets of substantially-parallel tracks, one for wheels or rollers of carriages, and the other set of tracks for wheels or rollers of supports or rests arranged at the front ends of some of the carriages.

The first-mentioned tracks are indicated as D′ and D² in the drawings, while the second-mentioned tracks are indicated as D³ and D⁴. All of the tracks are formed, in part, of the corner-plates or junction-plates, C′, C², C³.

As before stated, there is a slot which runs between the sets of tracks, entirely from end of the system.

At the bottom of the slot and running the entire length of and parallel with the slot and the carriage-tracks, there is a track or way, formed, in the instance shown, by metallic or other plates E, and resting on beams or supports E′, as shown in Figs. 2, 3, 5, 7, 8 and 9. The lower track or way is for supporting a driving chain, as hereinafter mentioned, in order that the driving means may be relieved of the weight of the chain.

Referring, especially, to Figs. 4 and 5, it will be seen that the track-sections are made of a plurality of parts, such as side-sections Z and Z⁹ (carrying parts of tracks D′ and D³), side-sections Z′ and Z¹⁰ (carrying parts of tracks D² and D⁴), corner-blocks, F⁴, corner-plates Z³ and Z⁴, sections (E, E′) of chain-supporting trackways, bolts Z² and recessed cross-beams, E³. The corner-blocks carry a sprocket, F′, rotatable about a vertical axle F³.

An examination of Fig. 5 will show the manner of assembling the mentioned parts.

As before stated, the beams E′ support the lower track E. The beams may rest upon and be adjusted, up or down, by means of bolts, E², to compensate for any unevenness or for any mistakes or errors in adjustment of the parts of the platform or body A. The lower end of a bolt, E², may be threaded, and engage with threads of a plate E⁴, and the latter may, as shown in Fig. 7, be secured to the frame work, by bolts E⁵, or otherwise.

The upper tracks, as shown, have a succession of straight portions disposed at angles to each other and connected by curved portions, and at or near each such junction there is a sprocket wheel, F, F′ (and one designated F²). Each of said wheels is rotatable in a horizontal plane, and these wheels engage with the links of a roller chain, G, as hereinafter especially described, to haul passenger-carriages.

Some of the sprockets are used to drive and also to guide the chain, and the remaining sprockets are employed only to guide that chain. The first-mentioned sprockets are designated F and F², and are positively driven by machinery to, in turn, drive the chain; the other sprockets, F′, of the series are employed to guide the chain, so as to compel it to follow a path coinciding substantially with the upper tracks.

In Fig. 2, I have indicated a means for simultaneously applying driving power to the two sprockets F and F². Y indicates a suitable gas or other engine, Y′ speed-reducing gear, Y² a rotatable shaft from said gear, Y³, Y⁴ and Y⁵ intermeshing bevel-gears, Y⁶ a rotatable shaft therefrom, and Y⁷ and Y⁸ indicate two intermeshing bevel-gears. The engine, shafts, gears and the usual supports, may all be housed within a pit formed in the ground.

As shown, the bevel-gear, Y⁴, is connected with and drives the sprocket F, and the bevel-gear Y⁸ is connected with and drives the sprocket F². Power is thus applied to a plurality of points through the system or series of sprockets, thus distributing the strain on the chain and rendering its operations more certain.

As will be seen by an examination of Fig. 1, the sprockets F and F² are quite widely-separated (nearly equi-distantly) throughout the length of the system of sprockets, and they are separated by a great number of sprockets F′ located, in the series.

The sprockets F′ are employed merely for the purpose of guiding the chain.

All of the sprockets are arranged to revolve in substantially the same horizontal plane.

Such chain, G, may be any suitable roller chain, and I prefer to use a link-chain. In that case, selected or special links thereof are provided with means for taking up the weight of the chain, so as to relieve all of the sprockets from such weight, thereby effecting a minimum of friction and wear on the sprockets and chain.

The chain is shown (Fig. 7) as provided, at desired (and substantially equidistant) points—designated as G′, G² and G³—throughout the length thereof, with means for supporting the chain, for the purpose before mentioned. At each of the mentioned points, the chain carries a roller or caster which rests upon and moves along the lower track, E, before mentioned. At some of the mentioned points, the chain carries means for connection with carriages upon the upper tracks and with supports or rests at the forward end of some of the carriages.

Referring especially to Figs. 10, 11 and 12,

I have shown either the top-plate, G^{14}, or the bottom-plate, G^{13}, of a link or chain provided with a cap or cover. The upper cap, G^4, is fitted to the top plate and is held in place on the link by means of a pin, G^{12}, which takes the place of and is longer than the usual pintle; at its upper end, the pin is threaded, and is there engaged by a nut G^{15}. The bottom cap, G^5, is fitted to the bottom plate, and is held in place by means of a screw, G^6, which passes through the flanged side of the cap and into the bottom plate, as shown in Fig. 12.

A plate, G^7, is secured below the bottom-plate, G^5, by means of screws G^{11}, and below plate G^7 there is a caster-frame, G^8, carrying a roller G^9, the construction being one usual and rotatably connected with the chain in usual manner, anti-friction balls, G^{10}, being provided.

Upon looking at Fig. 7 of the drawings, it will be seen that there is a great number of the rollers G^9 disposed at intervals, preferably equidistant, throughout the length of the chain, and these are employed to sustain the weight of the chain, at many points. The rollers run along track E', and the weight of the chain is thus, throughout its whole length, thrown upon that track and upon the beams E' which support the track. In turn, the beams throw the weight upon the bolts E^2. If it is found that (owing to unevenness in construction or assembly of the parts of the body A, or for other reasons) it is necessary to raise or lower any part of the beam-system, E', and the track, E, this may be assured by turning that bolt E^2 which is near the part to be adjusted.

The principal object in supporting the chain throughout its length, is to relieve all of the sprockets from the weight of the chain, and to throw that weight, in rolling contact, upon the body. Under these circumstances, the chain-links will be engaged directly and positively by the teeth of the sprockets, and still the upper plates or other parts of the links or of the chain will not rest upon or even touch the upper faces of the sprockets. The chain and the sprockets will thus run with the minimum of friction, and smoothly and evenly.

So far as I am aware, I am the first to provide a driving chain, and especially an endless edgewise-running chain moving about a substantially-level and horizontal path, with means for supporting the weight of the chain at a plurality of points throughout its length. Again, so far as I am aware, I am the first to provide means, in a chain-drive system, whereby the driving or the guiding wheeels of the system, are freed from the weight of the chain driven or guided thereby.

Returning now to Fig. 10, it will be seen that the top cap, G^4, is provided with an upper extension, G^{16}, intended to form part of a telescopic or adjustable joint, and having wings or fingers, G^{17}, at the opposite sides (see Fig. 11).

The adjustable or telescopic joints, referred to, and especially hereinafter described, will correspond, in number, to the carriages to be driven and to rests or supports for said carriages. Preferably, the joints will be connected with the chain (in the before described manner) above the points of attachment of the rollers, G^9.

My amusement apparatus is provided with carriages which travel above the body, A, and run along the tracks D' and D^2. The carriages are arranged in pairs, each having a forward carriage and one in rear thereof, and are hauled by the chain, G, each being separately connected theerwith by the adjustable or telescopic joints referred to. In the drawings, I have designed the forward carriage as H and the rear carriage as H^{10}. The forward carriage has a seat H^4, and the other carriage has a seat H^5.

The floor H' of the carriage has a member, G^{18} (Fig. 10, especially) secured to and depending therefrom, and such member has arms G^{19}, which slidably fit the extension G^{16} at opposite sides thereof. Each arm G^{19} is forked to slidably fit the side wings or finger G^{17} before mentioned.

Each carriage is provided with rollers H^2 H^3 which run upon the tracks D' D^2. It will be seen, therefore, that the weight of the carriages and of any occupants is thrown upon the body A, and not upon the chain, and that movements, due to any unevenness of the tracks, will be adjusted and taken up by the telescopic joints.

The carriages of each pair are shown as being loosely connected by means of a link J (see especially Fig. 6), which is provided at one end with a slot J' and at its forward end with a slot J^2.

The forward carriage H is provided, below the platform H', and at the rear of the car, with a plate, L, which is pivoted to freely swing, and which carries a pin L', such pin fits the slot J^2, aforesaid, of link J.

The rear carriage. H^{10}, is provided, below its platform, and at the front of the car with a plate, K, which is pivoted at K' to freely swing, and which carries a pin, K^2, fitting the slot J' of the link.

My new system also includes a support or rest for at least one carriage of each pair, the object being to sustain the weight of users of the carriage when getting into or alighting from the carriage, which would tend to put great strains upon the telescopic joint and upon the chain. For this purpose, I provide a rest or support at and underneath the forward end of a carriage, such rest being free of the carriage, and is con-

nected with the chain, to be also hauled thereby, so as to be always in position beneath and yet free from the carriage. As shown, the rest or support is formed of a narrow platform, M, and has rollers or wheels N and N′ which run upon the tracks D^3 and D^4. The platform is connected, by a telescopic or adjustable joint, of the kind shown in Fig. 10, with the chain, and the strain (due to weight, etc.) upon the platform is transferred to the tracks and not to the chain.

What I claim is:—

1. In an amusement apparatus, a body having an endless track, sprockets carried by the body at intervals, a chain engaging the sprockets to follow a path substantially coinciding with that of the track, a carriage traveling along said track and in driven engagement with the chain, a device for preventing sagging of the chain, and means for vertically adjusting the chain without affecting the driving connection between the chain and the carriage.

2. In an amusement apparatus, an endless track, a carriage adapted to travel lengthwise of the track, a chain in driving engagement with the carriage, driving sprockets for the chain, means acting upon each of the opposed lengths of chain intermediate a pair of sprockets and adapted to relieve said sprockets of the major weight of said lengths, and means for adjusting the height of the chain relatively to the sprocket.

3. In an amusement apparatus, a body having an endless track, a carriage above the body and adapted to travel lengthwise of the track, a chain for driving said carriage, driving means for operating the chain, the last-mentioned means arranged to apply driving power to the chain at a plurality of points throughout its length, supports for the chain and a vertically adjustable track for said supports.

4. In an amusement apparatus, a body, a carriage movable thereon, a chain, a connection from the chain to the carriage, means for driving the chain, supports disposed at intervals lengthwise of the chain and throughout the length thereof for supporting the same and relieving the driving means of the major weight of the chain, and resting means for the supports, adjustable relatively to the means for driving the chain.

5. In an amusement apparatus, a body, a forward carriage and one in the rear of that mentioned, both movable thereon, a chain, connecting means from each carriage individually to the chain, said connecting means being pivotal and axially extensible, and a link connecting the forward carriage and a rearward carriage.

6. In an amusement apparatus, a body, a forward carriage and one in the rear of that mentioned, both movable on the body, a chain, connecting means from each carriage individually to the chain, and a bar between the two carriages and having a slidable and swinging engagement with both.

7. In an amusement apparatus, a body, a forward carriage, a plate pivotally mounted thereon, a rearward carriage, a plate pivotally mounted thereon, a chain, connecting means from each carriage individually to the chain, and a bar between the two carriages and having a slidable engagement with both aforesaid pivotally mounted plates.

8. In an amusement apparatus, a body, a carriage movable thereon, a movable carriage-rest for the carriage and free thereof, means for driving said carriage and rest simultaneously, a connection from said driving means to the carriage, and a connection from said driving means to the carriage rest.

9. In an amusement apparatus, a body, a carriage movable thereon, a movable carriage-rest for the carriage and free thereof, and a driving chain connected with the carriage and also separately connected with the carriage-rest.

10. In an amusement apparatus, a body, a carriage movable thereon, a movable carriage-rest for the carriage and free thereof, a driving chain connected with the carriage and with the carriage-rest, and weight-relieving means carried by said chain and located at about the points of connection with the carriage and with the carriage-rest.

11. A link-chain having a link thereof provided with a cap, an extension on said cap, wings on said extension, and a hollow slotted member depending from a carriage, said extension telescoping with said hollow member and said wings fitting in the slots of said hollow member.

12. A link chain according to claim 11, having a chain-support located beneath said cap.

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

BENJAMIN KLEIN.

Witnesses:

FRANK H. LOGAN,
CORNELIUS HERRING.