G. C. LUTHER.

CABLE PROPELLED AEROPLANE.

APPLICATION FILED JUNE 14, 1910.

969,643.

Patented Sept. 6, 1910.

2 SHEETS—SHEET 1.

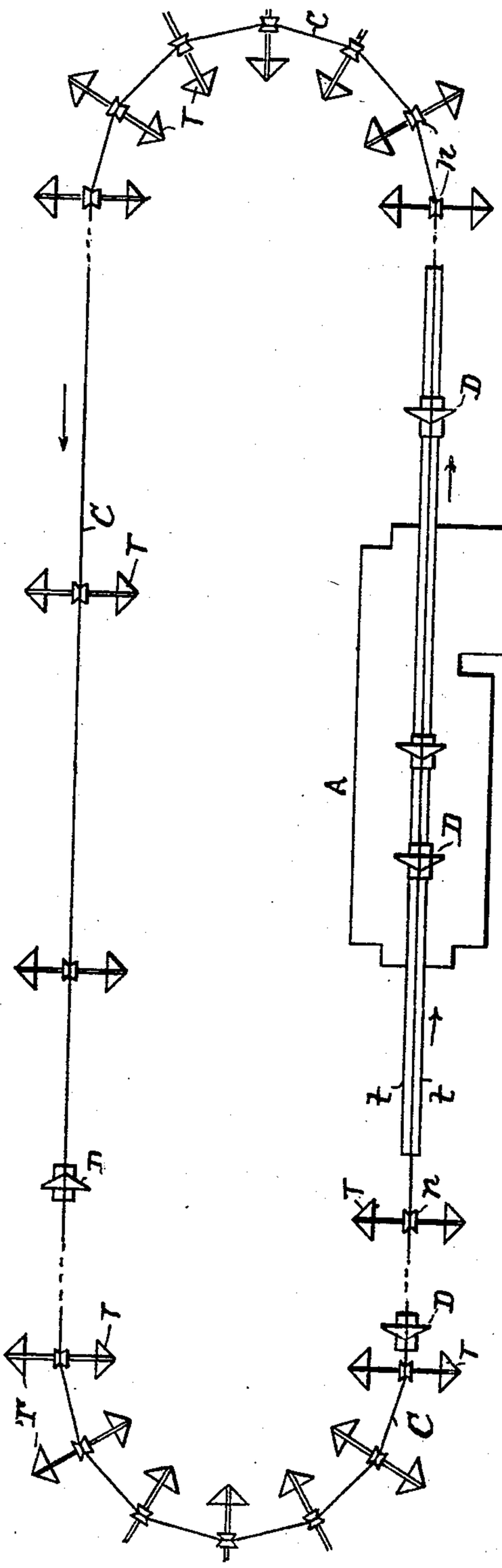

Fig. 2.

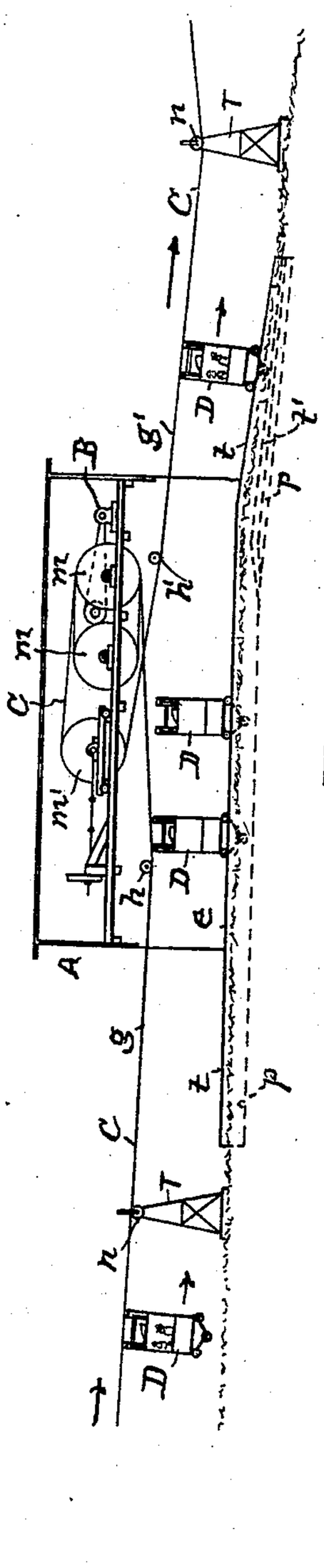

Fig. 1.

Witnesses.

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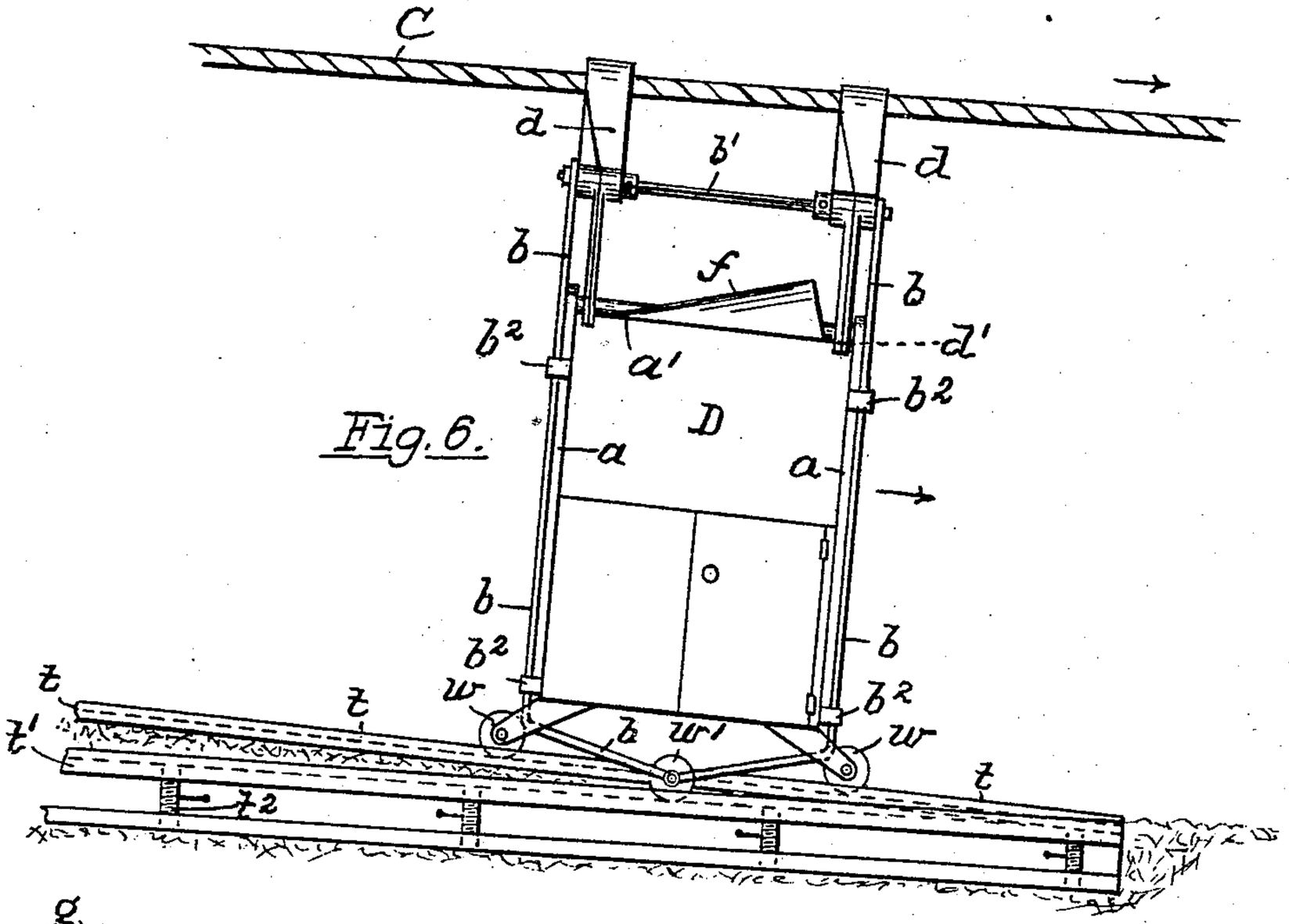

Fig. 6.

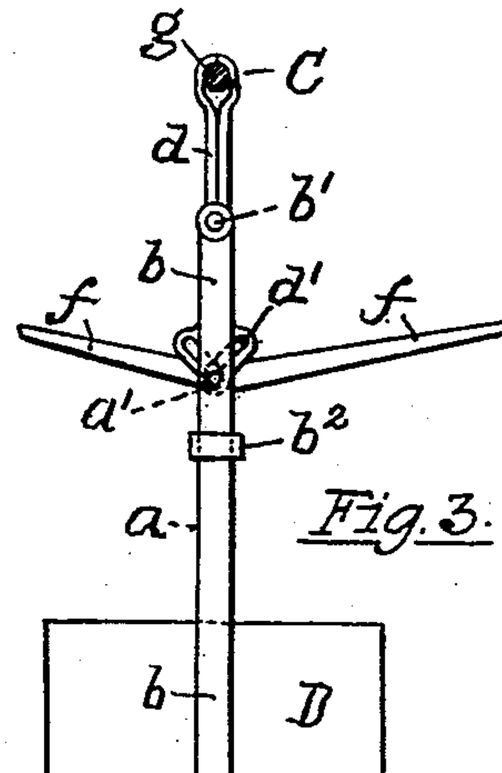

Fig. 3.

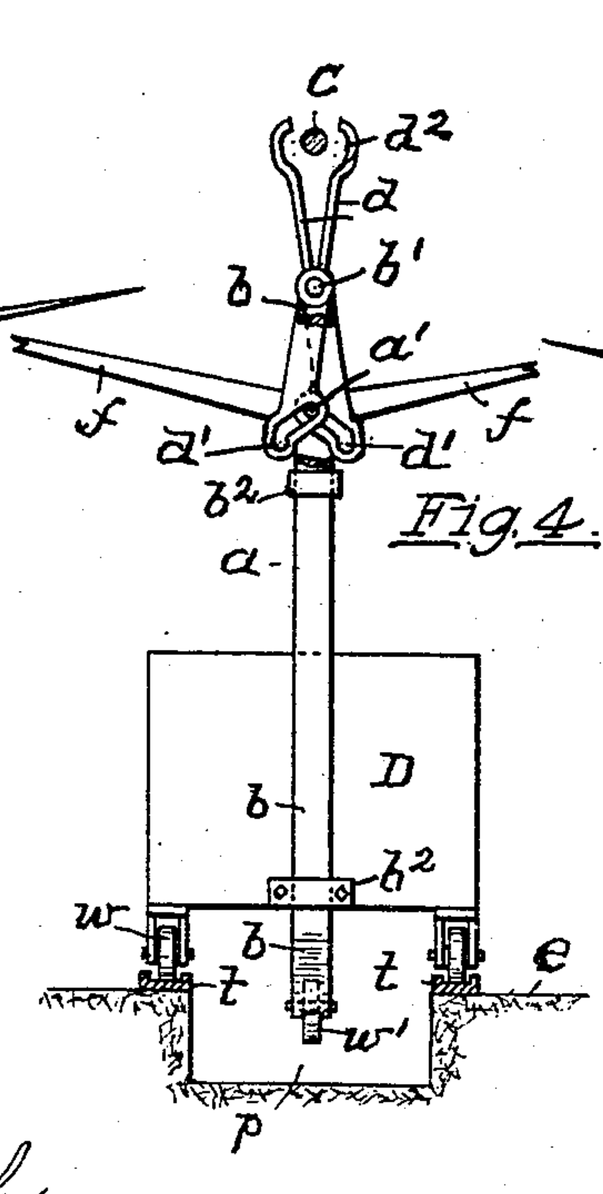

Fig. 4.

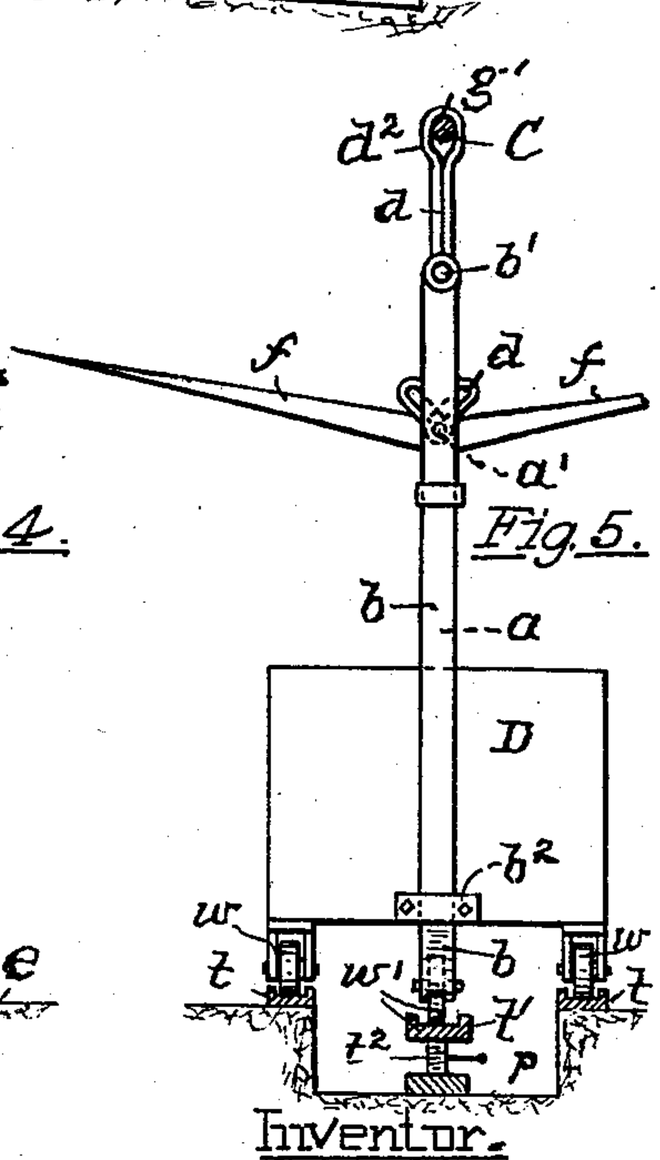

Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

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CABLE-PROPELLED AEROPLANE.

969,643. Specification of Letters Patent. **Patented Sept. 6, 1910.**

Application filed June 14, 1910. Serial No. 566,726.

To all whom it may concern:

Be it known that I, GARDNER C. LUTHER, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Cable-Propelled Aeroplanes, of which the following is a specification.

My invention relates to aerial scenic railway apparatus for amusement purposes, and it consists essentially in the combination of a suitably supported power-driven or propelled aerial endless cable, passenger cars adapted to be suspended therefrom at suitable intervals, and means positioned or located with respect to a central station for automatically connecting the outgoing cars singly to the moving cable, and automatically disconnecting the incoming cars from it, all as more fully hereinafter set forth and claimed.

The object I have in view is to provide a comparatively inexpensive amusement device possessing a greater degree of safety and simplicity, and at the same time capable of giving more pleasurable excitement to the passengers than devices of this general character heretofore devised. In fact, the device may be termed a cable-propelled aeroplane, the cars having animal or bird forms, if desired.

In the accompanying two sheets of drawings, illustrating my invention, Figure 1 represents, in small scale, a front elevation showing incoming and outgoing cars suspended from the continuously traveling cable, and also showing the main or central station, the front wall of the latter being removed so as to expose the interior mechanism, etc. Fig. 2 is a corresponding top plan view, the cable being contracted in length. Figs. 3, 4 and 5 represent, in enlarged scale and in transverse elevation, different positions of the car with respect to the cable and the track-rails, the latter, however, being in section; and Fig. 6 represents a front side elevation of one of the cars, corresponding with the position shown in Fig. 5.

The amusement apparatus or system illustrated in the drawings includes a suitably arranged housed main or head station A, containing, say an electric motor B for propelling the supported aerial endless cable C, the latter having a portion thereof wrapped around a series of driving pulleys m and a slidably mounted pulley m^1, coöperating with said other pulleys adapted to automatically take up the "slack" of the cable so as to maintain it under a substantially uniform tension or tautness. The cable extends in opposite directions from the station any practical distance and in a circuitous or other desired course to form a loop, and is supported by guide-wheels or sheaves n, revolubly mounted on and carried by suitably spaced towers T.

The body portion of the passenger-carrying cars D may have a rectangular or other suitable shape and be provided interiorly with seats for the passengers. To the underside of the base of each car are mounted four small truck-wheels w, one at each corner, adapted at the termination of each trip of the car to engage a pair of stationary grooved parallel horizontal track-rails t, located on and extending longitudinally of the floor or platform e of the station. To each end of the car and centrally thereof is fixed a vertical bar a of metal, rigidly connected at the top to a strong rod or bail a^1 (Fig. 6) extending longitudinally of the car; said rod being located above the car floor so as to provide ample head room or space. If desired, oppositely disposed triangular or other suitably shaped wings or aeroplanes f may be secured to the member a^1 and extend transversely outward beyond the car body.

A substantially U-shaped metal strap b, capable of short vertical movement with respect to the car body, extends centrally of and below the car base, and thence upward against the respective side bars a. The upper end portions of the strap project above the corresponding end of bars a and are firmly secured together by a horizontal tie member b^1 disposed longitudinally of the car. See Fig. 6. The strap is mounted in fixed guides or bearings b^2, as clearly shown. The portion of the strap under the car carries a central wheel w^1, adapted when in use to engage a track-rail t^1 disposed centrally between and below the side rails t, extending outward from the station.

A pair of coöperating, cable-clamping levers d are mounted to swing on the tie member b^1 at each end thereof. The lower arm portion of each lever is enlarged at its bottom end and provided with an elongated slot d^1 formed at an angle to the longitudinal axis of the lever and adapted to receive therein the said bail member a^1. The slots

of each pair of levers are oppositely disposed to each other or crossed. The upper arms of these levers terminate in oppositely facing recessed jaws d^2, constructed to be clamped to the cable C.

The direction of the portion g of the cable entering the station is maintained at a suitable inclination below the horizontal plane to a point where it engages an overhead guide-wheel, as h, which latter deflects it upward to the main driving-pulleys, as shown in Fig. 1. The side track-rails t are laid horizontally, and having a relatively shallow central pit p extending longitudinally between them. A center-rail t^1 may be located in the pit, its upper face being parallel with the cable. The vertical distance between said track face and cable is the same as the vertical distance between the center of the clamping-jaws d^2 and the bottom of the center-wheel w^1 located below the car, thereby maintaining the jaws, whether open or closed, in proper juxtaposition to the cable at all times, except when the car is disconnected from the cable and temporarily supported on the side tracks and while the car is being manually moved in the station to the outgoing or trip-starting point. When the system is in normal action, the weight of the car and its load are suspended from the cable through the medium of the cable-clamp levers d, the bail member a^1 of the side bars then resting on the bottom of the slotted openings of the levers (see Fig. 3). When the wheels w of the downwardly inclined moving car engage the horizontal rails t, the weight then becomes gradually transferred from the cable to the rails, thereby at the same time allowing the lever-carrying strap b (by reason of its own weight) to slide downward in its guides b^2, the levers at the same time moving downward with it, say until the upper end of the slots contact with the relatively stationary bail member a^1, thus wide-opening the jaws. It is to be borne in mind that meanwhile the jaws continue in the same relative position to the cable as when they are clamped to it. Fig. 4 shows the car, &c., when thus disconnected from the cable at the terminus of the trip, preliminary to being pushed along the station track to become connected to the outgoing portion g^1 of the cable to make another circuit of the loop.

Since the construction and arrangement of the parts are such that the jaws of the clamping-levers are in the same vertical position with respect to the moving cable at all times, except when the car is temporarily disconnected from it and while being pushed along manually as before stated, it may appear that the track-supported car moves upward with relation to the inclined cable part g until its rod member a^1 engages the upper end of the slots d^1, thus separating the jaws and releasing them from the cable.

The cable portion g^1 in its passage outward from the station is deflected downward from a guide-wheel h^1 and at a somewhat greater angle than the said incoming portion g until it engages a tower-wheel n, which changes the angular direction upward (see Fig. 1). The center track-rail t^1 is located in this portion of the pit p below the cable part g^1, the face of the middle rail being parallel with the cable; the vertical distance between the cable and the underside of the center wheel w^1 of the car being the same as before stated with respect to the other portion g of the cable. The side rails t may continue horizontally along the floor or platform of the station say to a point directly below the said guide-wheel h^1, from which point the tracks extend downward at an angle exceeding that of the cable, and so that the vertical distance from the lower termination of tracks t to the cable is somewhat greater than the normal working distance between the bottom of the wheels w and the cable when the car is wholly suspended from it. As thus arranged the car, which upon entering the decline is supported by the tracks t and disconnected from the cable, will, as it advances, gradually acquire speed and momentum, while at the same time the increasing angle of the side tracks with respect to the cable permits the car to correspondingly move downward until its bail member a^1 is arrested in the bottom end of the lever's slot d^1, the result being to automatically close the jaws d^2 snugly upon the cable without sudden jar or shock or other unpleasant or annoying experience to the occupants of the car. See Figs. 5 and 6. The car thus normally clamped to the moving cable is now carried around the circuit until it arrives at the terminal, at which point the cable section g, in coöperation with the adjacent side rails t and the mechanism of the car automatically operate to gradually release the car from the cable, as before described, the entire weight then being borne by the said tracks.

It may be added that in my improved aerial amusement device or system it is desirable that the downwardly inclined portions g and g^1 of the cable be kept under a substantially uniform degree of tautness and angle, or supported as to prevent it from sagging materially. In order to provide means adapted to maintain the proper or normal vertical distance between the cable portions g^1 and the center rail t^1 (being also the vertical distance between the jaws d^2 and the lower side of the middle wheel w^1) the track may be supported on suitably mounted vertical adjusting screws t^2, as indicated in Figs. 5 and 6. These figures also represent the car at substantially the in-

stant that it is fully clamped to and practically suspended from the moving cable.

The apparatus or system forming the subject of this application for patent is practically a plurality of passenger-carrying aeroplanes suspended from and propelled by a power-driven endless cable, the device being wholly automatic with respect to the manner of connecting the cars or aeroplanes to the moving cable and disconnecting them from it; the only manual labor used being that expended in pushing the disconnected cars at suitable intervals apart along tracks *t* of the station and onto the downwardly inclined portion of the tracks, the continued advancing movement of the car, due to its gravity, causing it, in coöperation with the mechanism of the car, to automatically close the jaws snugly upon the cable, thus clamping or locking the car to the latter, as before described.

What I claim as my invention is:

1. In a cable-propelled aeroplane or amusement apparatus of the general character described, the combination of a suitably supported aerial endless cable, means for propelling the cable, an aeroplane or passenger-car, a cable-clamping device carried by the car, means coöperable with the clamping device for automatically clamping or locking the car to the moving cable at any pre-arranged point in the cable's circuit, and means for automatically unlocking or releasing the car from the moving cable at a predetermined point.

2. In an amusement apparatus of the general character described, a power-driven and supported aerial cable, and track-rails or members located therebelow at certain sections of the cable, said cable and rails being disposed at an angle to each other, in combination with a car having elements adapted to engage said track rails, and cable-clamping means connected to the car and capable of limited movement independently of it, the car when in normal action being suspended from the cable through the medium of said cable-clamping device.

3. In an amusement apparatus of the general character described, a power-driven, aerially supported endless cable, having a portion thereof guided downwardly at an angle, and stationary side rails located therebelow in a horizontal plane, the combination therewith of a car proper having base wheels adapted to run on said rails when it is being disconnected from or being connected to the cable, a device connected to the car and capable of limited movement independently of it provided with jaws adapted, when in normal service, to be clamped to and suspended from the cable, the car itself at the same time being suspended from the clamping device and keeping the jaw-members closed snugly upon the cable, thereby causing the car to be propelled concurrently with it, and having the clamping device capable of automatically detaching itself from the cable while the forwardly moving car is being supported on said rails.

4. In an amusement apparatus of the general character described, having a mounted power-propelled aerial endless cable, and relatively short track members located therebelow, the combination therewith of a car having base wheels adapted to engage said track members, a vertically movable strap connected to the car frame, and car-suspending levers pivotally mounted on said strap having their upper ends constructed to clamp the cable, the opposite end of the levers being slotted and in engagement with the car frame.

5. In an amusement apparatus of the general character described, having a power-propelled aerial endless cable, the combination therewith of a car, comprising a car body provided with vertical frame members connected together at the top, straps capable of limited vertical movement disposed with relation to said frame members, a pair of suspending levers pivoted to the strap, having their upper ends adapted to clamp said cable, the opposite ends being slotted and engaging the frame members for suspending the car therefrom, and means cooperating with the car and said levers for opening the latter and releasing the car from the cable at a predetermined point.

6. In an amusement apparatus of the general character described, the combination of a power-propelled supported aerial cable, having a portion thereof extending downward at an angle, stationary track-rails located below said inclined cable portion and forming therewith a divergent angle, a car, a clamping device or element connected with and carried by the car, and means adapted to coöperate with the clamping device for automatically connecting the latter to the active cable while the car is moving downward on the track-rails and at the same time causing the car to be gradually suspended from the clamping element and freed from said rails.

In testimony whereof I have affixed my signature in presence of two witnesses.

GARDNER C. LUTHER.

Witnesses:

GEO. H. REMINGTON,

CALVIN H. BROWN.