D. M. PFAUTZ & J. L. LUCKENBACH.

GUARD IRON FOR ELEVATED RAILROADS.

APPLICATION FILED JUNE 29, 1908.

915,374.

Patented Mar. 16, 1909.

2 SHEETS—SHEET 1.

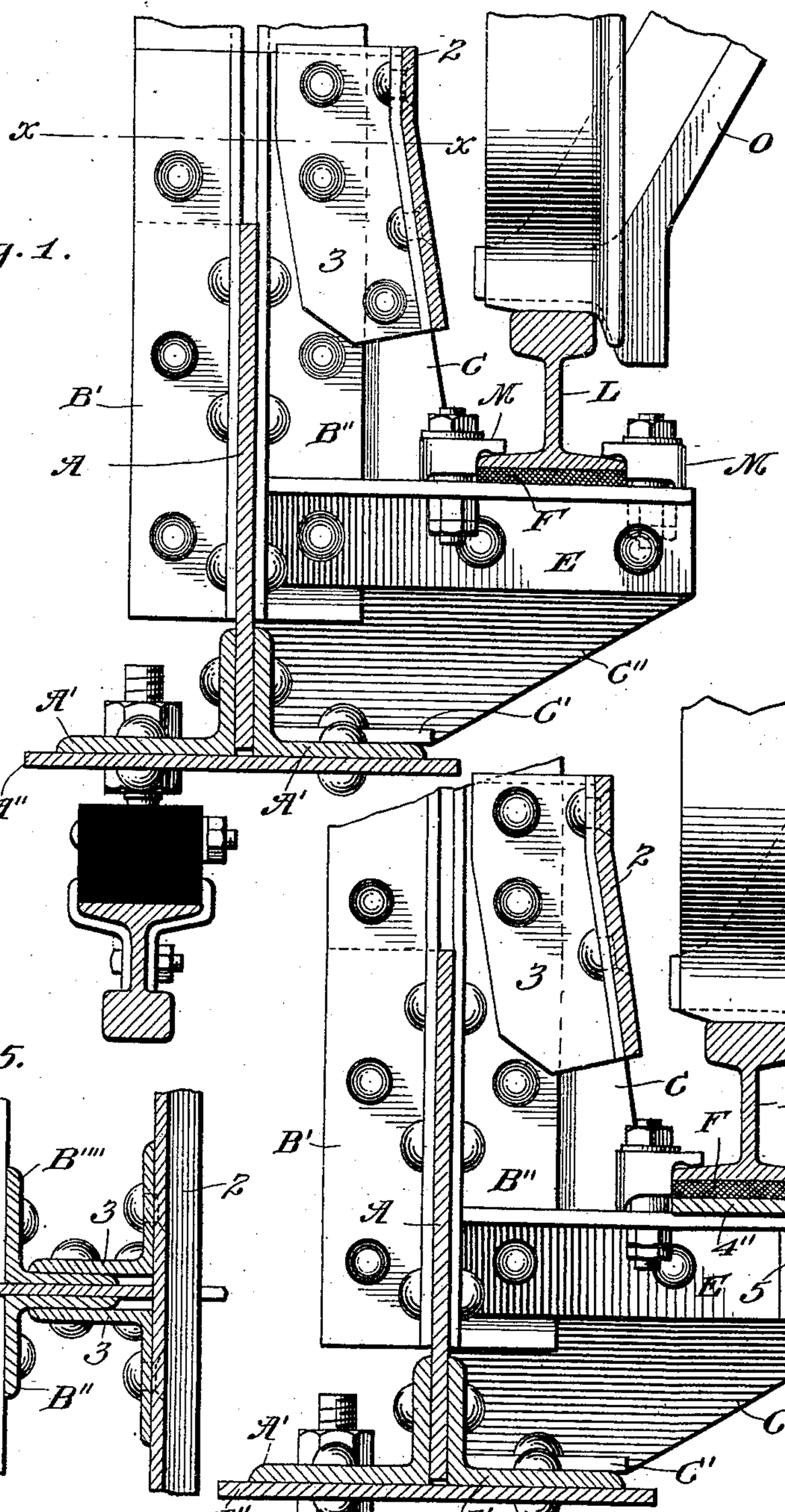

Fig. 1.

Fig. 2.

Fig. 5.

Witnesses

M. C. Lyddane

Frederic B. Wright

Inventors

Daniel M. Pfautz and

John Lewis Luckenbach

By

Joshua R. H. Potts

Attorney

D. M. PFAUTZ & J. L. LUCKENBACH.

GUARD IRON FOR ELEVATED RAILROADS.

APPLICATION FILED JUNE 29, 1908.

915,374.

Patented Mar. 16, 1909.

2 SHEETS—SHEET 2.

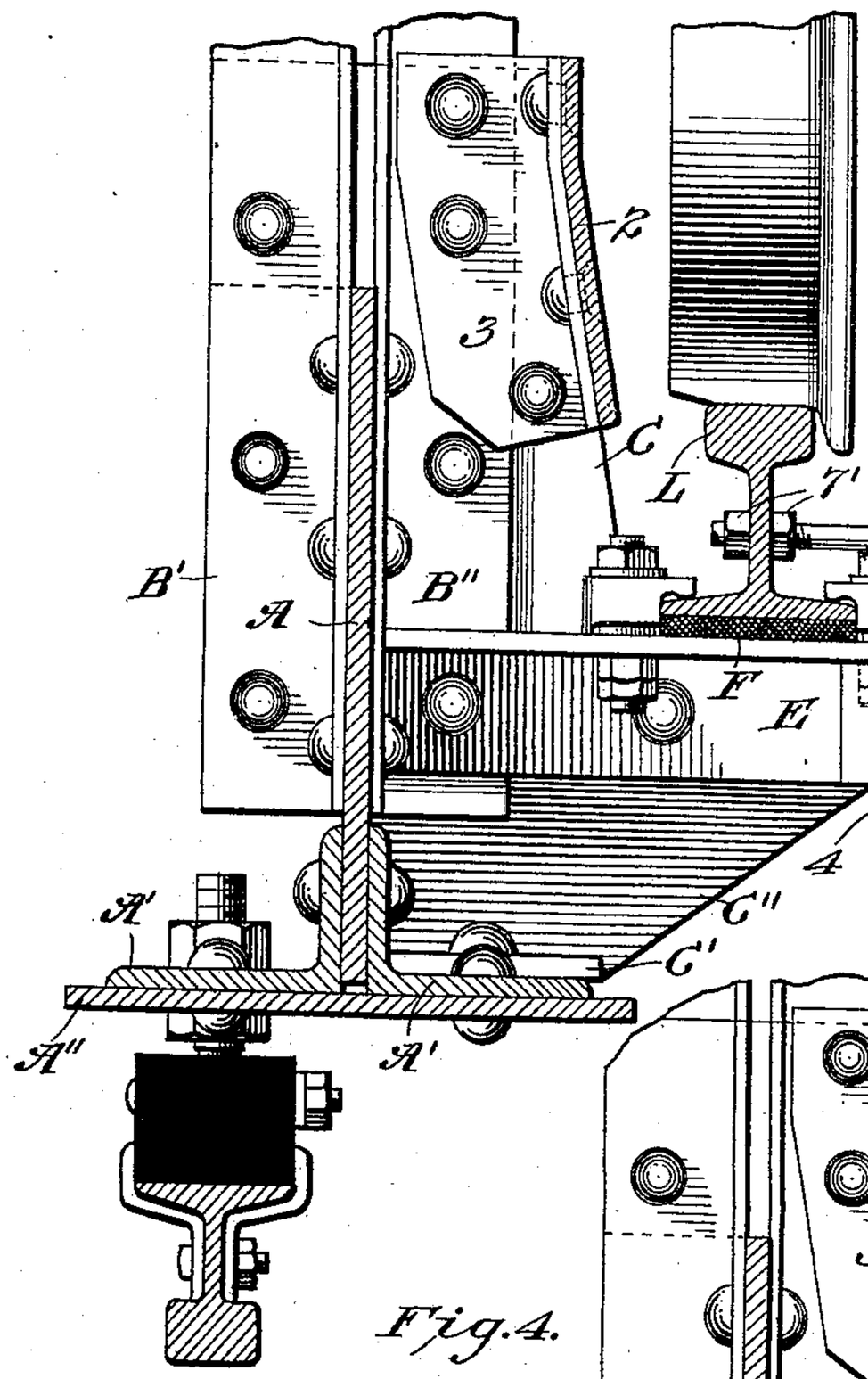

Fig. 3.

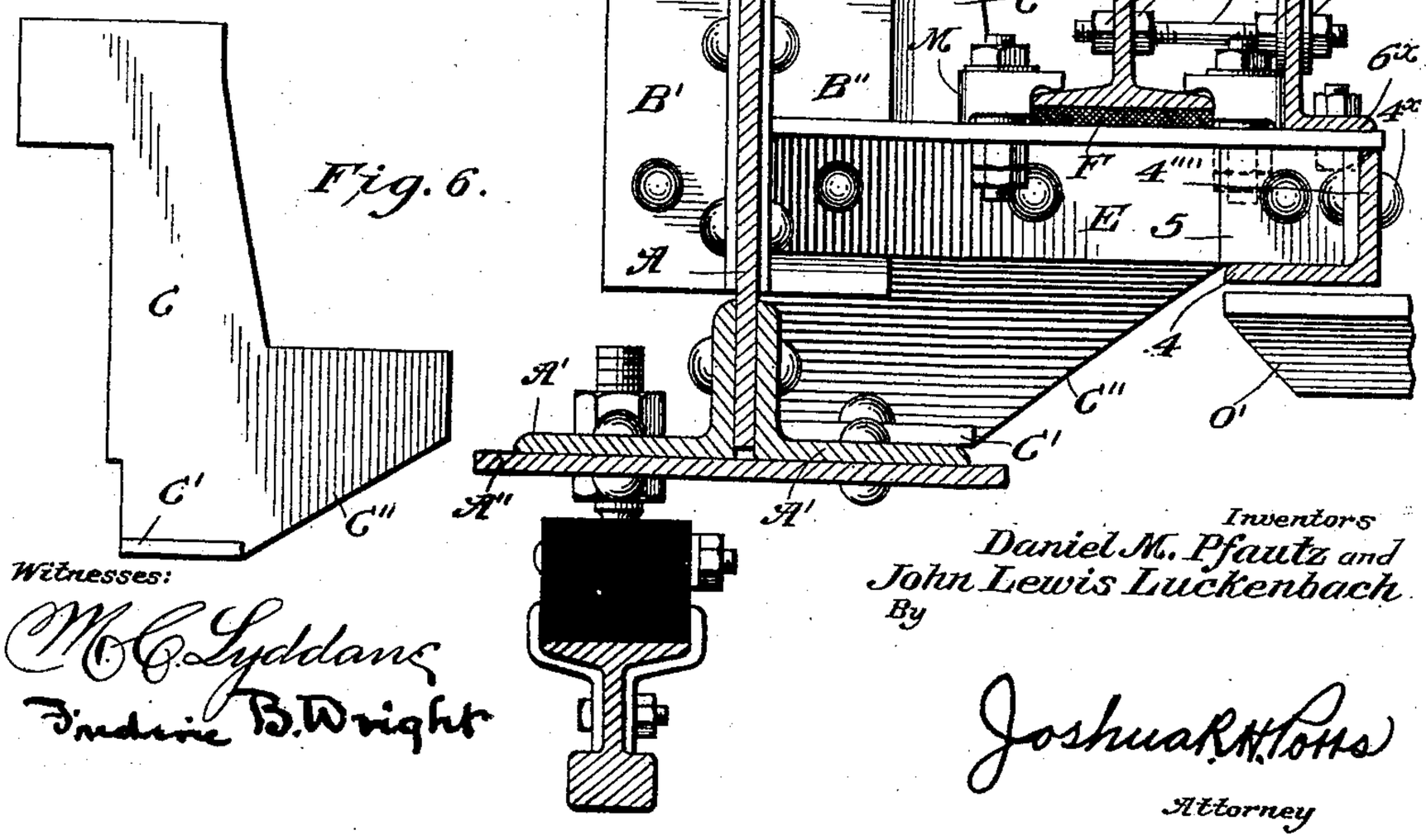

Fig. 4.

Fig. 6.

Witnesses:

M. C. Lyddane

Frederic B. Wright

Inventors

Daniel M. Pfautz and

John Lewis Luckenbach

By

Joshua R. H. Potts

Attorney

UNITED STATES PATENT OFFICE.

DANIEL M. PFAUTZ AND JOHN LEWIS LUCKENBACH, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNORS TO THE AMERICAN SUSPENSION RAILWAY COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

GUARD-IRON FOR ELEVATED RAILROADS.

No. 915,374. Specification of Letters Patent. Patented March 16, 1909.

Application filed June 29, 1908. Serial No. 440,807.

To all whom it may concern:

Be it known that we, DANIEL M. PFAUTZ and JOHN LEWIS LUCKENBACH, citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Guard-Irons for Elevated Railroads, of which the following is a specification.

Our invention relates to elevated structures carrying suspended cars and particularly to guard plates, irons or rails designed to prevent the derailing of a train of suspended cars.

The object of our invention is to prevent the suspending wheels or a car of a suspended train from lifting from the rails, and provide means for directing the wheels of such a car again upon the track rails if by chance they should be lifted from the tracks by a movement independent of the car. In other words, our main object is to prevent a car from being dislodged in any way from the rails and falling from the elevated structure.

Our invention consists in the arrangement of parts and the constructional details shown in the accompanying drawings and particularly set forth in the claims appended.

In the drawings, Figure 1, is a transverse section of the lower chord of an elevated structure, the vertical upper chord support and laterally projecting, rail supporting brackets being in elevation. Fig. 2, is a like view to Fig. 1, showing also an inside anti-lifting plate. Fig. 3, is a like view showing the combination of a lateral guard, an anti-lifting plate, and an inside wheel guard. Fig. 4, is a like view to Fig. 3, showing another form of lateral wheel guard. Fig. 5, is a horizontal section taken on line x—x of Fig. 1. Fig. 6, is a side elevation of a rail supporting bracket plate carrying the lateral wheel guards.

Like reference characters throughout the several views designate like parts.

Our invention pertains particularly to elevated structures of a general character described in Patent No. 841436, of January 15, 1907, granted to Daniel M. Pfautz, wherein the car is suspended from wheels which travel on upper tracks carried upon the overhead structure, the support from the car depending between the track rails from wheels which run upon the two overhead separated rails. The special form of structure to which we have particularly applied our guard rails is shown in another application for patent by us now pending, Serial No. 440,810, filed June 29, 1908. In such structure as this, it is particularly necessary to guard against the truck dropping from the wheels, the wheels leaving the track, the car rising upward against the elevated structure or the wheels rising independently of the car from the track and not being properly returned thereon. The combination of the various guard rails or irons herewith shown, are designed to prevent such accidents in a railway structure of the character described, but, of course are applicable to some extent to other elevated structures of a different character.

In the drawings we have shown the lower chord of an elevated structure supporting one of the rails of the track—it being of course understood that the opposite side of the structure is the same and provided with like rail supporting brackets, beams, etc.

The elevated structure as far as we have shown it in the drawings, consists of a longitudinal beam A, forming the lower chord of the structure riveted to vertical members composed of angle irons. There are four of these vertical angle irons B′, B″, B‴, B⁗, as shown in Fig. 5. Between the laterally projecting flanges of these angle irons is riveted the bracket plate C, shown in detail in Fig. 6, of an approximate L-shape. The bracket plate extends down below the vertical angle irons B′, B″, B‴, B⁗, and its lower end is bent at right angles to form a flange C′, which is riveted to an angle iron A′, riveted in turn to the lower margin of the beam A. There are two of the angle irons A′, opposed to each other and connected by a stiffening plate A″. From the lower chord thus formed is supported the third or contact rail and its insulating blocks. The third-rail support is fully described in another application filed coincident with this, Serial No. 440,808, filed June 29, 1908.

The bracket plate C, forms the support for the track rail, and in order to stiffen it we provide angle irons E, located on a level

with the upper margin of the outwardly projecting portion C″, of the bracket, and on these angle irons E, is carried the sound-deadening plate F, on which rests the rail L. The base of the rail is clamped to the structure by clamping and adjusting bolts M, which also form the subject of another application Serial No. 440,809, filed June 29, 1908. This general structure above described is illustrated in all the views as the rail supporting structure.

Our present invention relates to the guard rails, plates or irons, and in Fig. 1, we show a lateral wheel guard for the outside of the wheel designed to guide the wheel back upon the rail if at any chance the wheel should rise therefrom.

The guard consists of a longitudinal plate 2, which is inclined from its upper edge downwardly and inwardly toward the tread of the rail. This plate along its length is supported on the inclined edge of the bracket C, the plate being also riveted to opposed angle irons 3, which in turn are riveted to the web of angle irons B″, B‴, as shown clearly in Fig. 5. The upper margin of the guard plate is vertical and the plate is then bent at a slight angle as shown in the sectional views, the lower edge of the plate being just below the tread of the track rail. If the wheel lifts from the track it will strike against the face of the guard plate and will be guided back on to the track. This guard will have the same effect if the wheel supporting structure lifts independently of the wheel, the projecting guard arm O, carried thereby striking against the plate and being guided back on to the track.

In Fig. 2, we show a combination of a lateral guard plate 2, with a guard plate acting to prevent the suspended car from rising independently or with the wheels. This anti-lifting guard consists of a longitudinal iron 4, preferably an angle iron having an upwardly extending flange 4′, by which it is connected to the end of bracket E. In Figs. 3 and 4, we show this angle iron inturned and independent, but, in Fig. 2, the guard plate is shown as forming one flange of a Z-shaped angle iron, the other flange 4″, of which extends beneath the rail and from the bed plate therefor. In this case, the guard rail 4, is supported not only by the rivets $4^{\times}$, which secure it to the angle irons 5, but by the downward pressure of the rail L, and the rail clamping means.

Where the anti-lifting guard rail is used in any of its forms, the wheel supporting structure or car, is also provided with an extended portion O′, which projects out beneath the guard rail 4, but is normally out of contact therewith. This extension O′, prevents the car from rising and striking the elevated structure, or lifting of the wheels from the track.

The construction shown in Figs. 3 and 4, is of the same character and purpose as those before described, with certain modifications however whereby the lateral guard plate 2, and the anti-lifting guard plate 4, are combined with an inside lateral guard iron 6, located just above the level of the rail tread and acting to prevent the rail from being forced to one side and so running off the track. This construction we have shown in two forms. In Fig. 3, the plate 4, projects inwardly and is formed in one piece with a vertical longitudinally extending web 4‴′, which extends upward to a point above the level of the rail tread, where it is bent inward as at 4‴. To this flange 4‴, is riveted one flange of an angle iron which forms the guard rail 6. 7, designates an adjusting bolt which connects the web of rail L, with the guard iron supporting plate 4″. Nuts, 7′, clamp the rail between them, and nuts and washers 7″, engage on both sides of the web 4‴′. It will be seen that by this construction, the wheel is prevented from any lateral movement by the plate 6, that it is guided back onto the rail by the plate 2, and that the supporting car or wheel is prevented from lifting by the projection O′, extending beneath the guard plate 4. In Fig. 4, we show a like combination of elements as is shown in Fig. 3, the difference being that the guard iron or plate 4, is not formed in one piece with a web 4″, which supports the guard iron 6. In Fig. 4, the guard iron is formed of an angle iron, one web 4‴′, of which is riveted to an angle iron 5, as before described for Fig. 2, the guard rail being inturned and one flange extending up to the upper flange of the angle irons E. The guard rail 6′, is independent of the angle iron 4, and is mounted upon the upper face of the angle iron E, and the bracket C. It has the form of an ordinary rail, the lower side of which is bent laterally to form a base $6^{\times}$, which is bolted to the supporting structure. The guard rail 6′, in Fig. 4, extends up above the tread of the rail L, and is held to the rail L, by the adjusting bolt 7, having the nuts 7′, 7″, as before described. This adjusting bolt, as in the construction shown in Fig. 3, permits the guard rail to be drawn up tight in position, and to be adjusted properly with relation to the rail L, and the car wheel traveling thereon.

Incidental to the construction described we have shown in Figs. 1 and 2, the downwardly projecting outwardly inclined arm O, which is supported normally slightly above the rail L. The purpose of this arm is to act as an auxiliary support in case the wheel axle should break. In this case the car would

fall, but through the auxiliary arm O, the car is supported upon the rails and without danger of falling even if the wheels should break.

Of course, we do not wish to limit ourselves to the precise construction shown, as the spirit of our invention may be embodied in many other forms without departing therefrom.

Having thus described our invention what we claim as new and desire to secure by Letters Patent is:

1. In an elevated structure of the class described for supporting depending cars, an outside guard-iron downwardly and inwardly inclined for the purpose of guiding a wheel onto the track, a guard for preventing the depending car from lifting and a guard located on the inside of the track for holding the wheels of the car upon the track.

2. In an elevated structure of the class described, vertical supporting elements, inwardly extending brackets bolted to said vertical elements and having an inwardly extending track rail supporting portion, and a longitudinal extending guard plate located outside of the track rail, said plate being inclined downwardly and toward the rail.

3. In an elevated structure of the class described, vertical supporting elements, inwardly extending brackets riveted to said vertical elements, said brackets having downwardly and inwardly inclined inner edges, and an inwardly extending track rail supporting portion; in combination with a longitudinally extending guard-plate located outside of and above the track rail, said plate being inclined downwardly and toward the rail, and having angle irons riveted thereto and to the said brackets.

4. In an elevated structure of the class described for suspended cars, vertical supporting elements, inwardly extending rail supports, and a longitudinally extending guard having a flat horizontal undersurface adapted to contact with a projecting portion of the car structure to prevent said car from lifting.

5. An elevated structure for supporting suspended cars having inwardly extending rail supports, a rail mounted thereon, a longitudinally extending lateral guard plate located outside of the track rail, and a longitudinally extending guard plate located inside of said track rail having a flat horizontal undersurface adapted to contact with a projecting portion of the car structure to prevent said car from lifting.

6. An elevated structure for supporting suspended cars having inwardly extending rail supports, a rail mounted thereon, a longitudinally extending guard-plate located outside of the track rail, said plate being inclined downwardly and toward the rail, a longitudinally extending guard having a flat, horizontal undersurface located inside of the rail and below the same and adapted to contact with a projecting portion of the car to prevent the car from lifting, and a longitudinal lateral guard located inside the track rail and above tread of the same.

7. An elevated structure for supporting suspended cars having inwardly extending rail supports, a rail mounted thereon, a longitudinally extending guard plate located outside of the track rail, said plate being inclined downwardly and toward the rail, a longitudinally extending guard having a flat, horizontal undersurface located inside of the rail and below the same and adapted to contact with a projecting portion of the car to prevent the car from lifting, a longitudinal lateral guard located inside of the track rail and above the tread of the same, and adjustable connections between said track rail and the lateral guard.

8. An elevated structure of the class described for supporting suspended cars having vertical supporting members, brackets attached to said supporting members each having a vertically extending portion and an inwardly extending portion, a track rail supported on the upper edge of said inwardly extending portion of the bracket, a longitudinally-extending guard-plate located outside of the track rail, said plate being inclined downwardly and toward the rail, and supported upon the vertical portion of said brackets, and a longitudinally extending anti-lifting guard having a flat, horizontal undersurface adapted to contact with a projecting portion of the car to prevent the car from lifting, said anti-lifting guard being attached to the extremities of said brackets, and a longitudinally extending lateral guard iron supported upon the extremities of the brackets and having means whereby it may be adjusted to or from the track rail.

9. In an elevated structure of the class described for supporting suspended cars, vertical supporting members, a horizontal member attached thereto and having a flange on its lower edge, brackets attached each to one of said vertical supporting members, the lower end of each of said brackets being right angularly flanged and riveted to the flanges of said horizontal member, each of said brackets having a vertically extending and an inwardly extending portion for supporting the track, a longitudinally extending guard iron located outside of the track rail, and inclined downwardly and inwardly toward said rail, said guard being supported upon the vertically extending portion of said brackets, a longitudinally extending anti-lifting guard iron having a flat, horizontal undersurface adapted to contact with a projecting portion of the car to prevent the car

from lifting, said anti-lifting guard being riveted to the ends of said brackets below the track rail supported thereon, and a lateral guard iron supported upon the upper faces of the brackets inside of said track rail, and having a bolt connecting it and said track rail, the bolt being provided with means whereby the lateral guard may be adjusted nearer to or farther from said track rail.

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

DANIEL M. PFAUTZ.
JOHN LEWIS LUCKENBACH.

Witnesses:
J. A. L. MULHALL,
FREDERIC B. WRIGHT.