(No Model.)

3 Sheets—Sheet 1.

T. C. ANDERSON.

CAR SHIFTING DEVICE.

No. 583,353. Patented May 25, 1897.

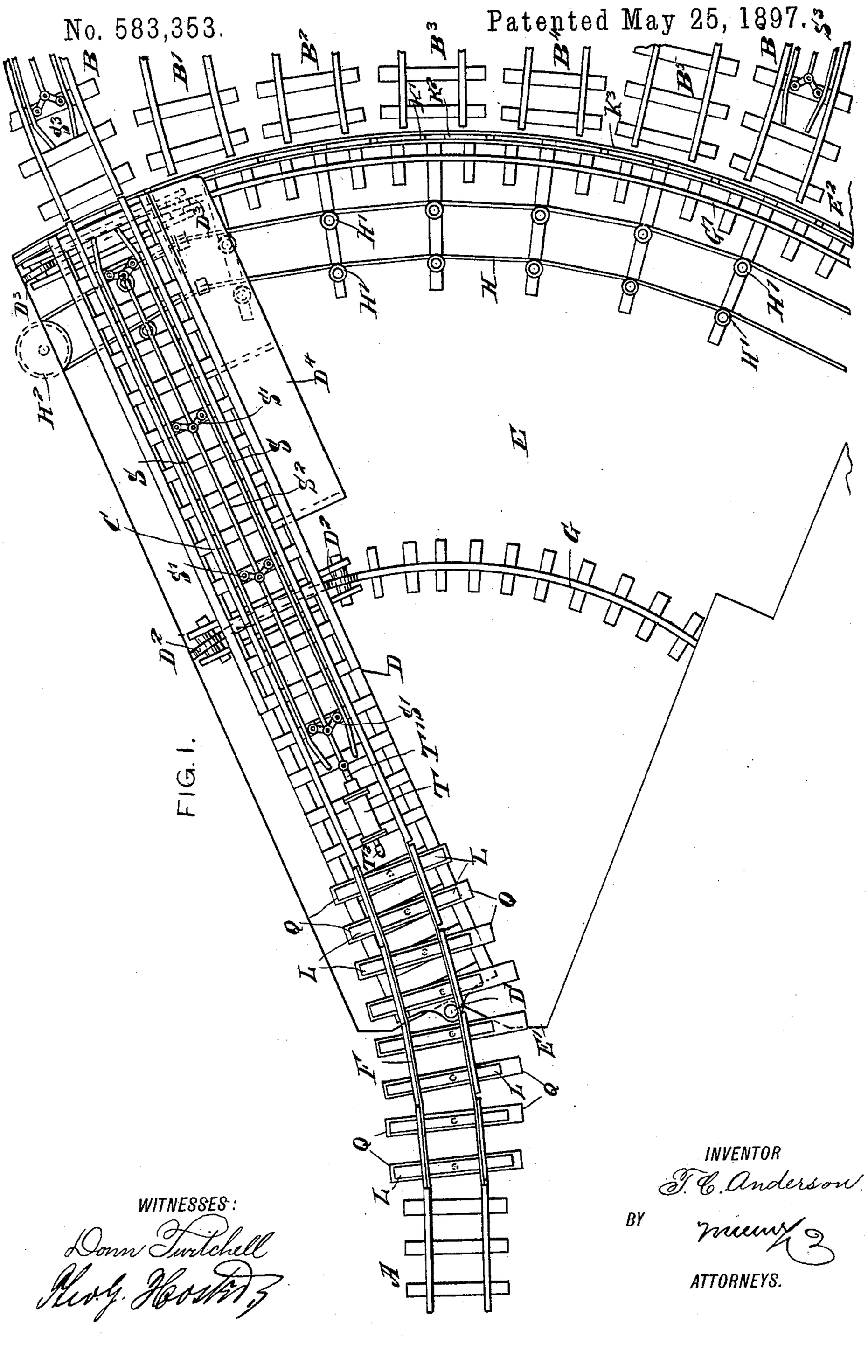

FIG. 1.

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FIG. 2.

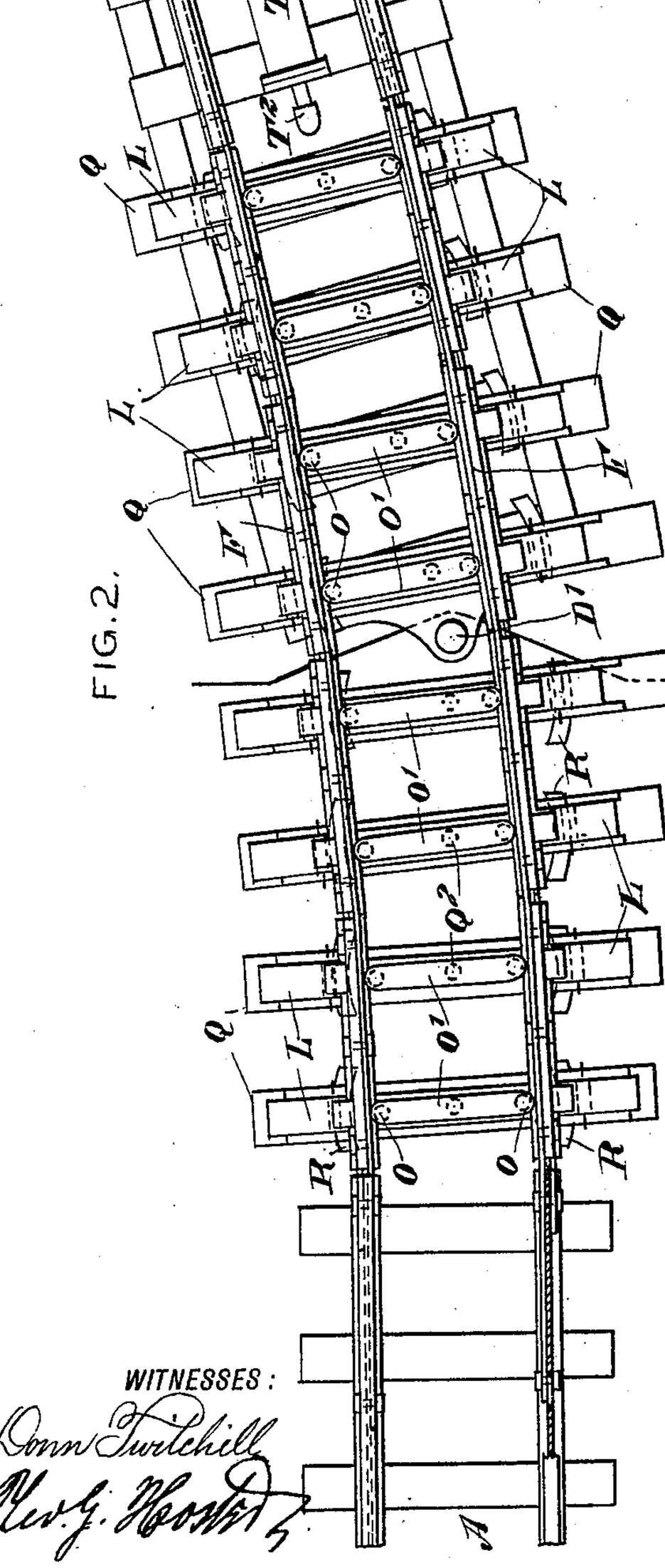

FIG. 3.

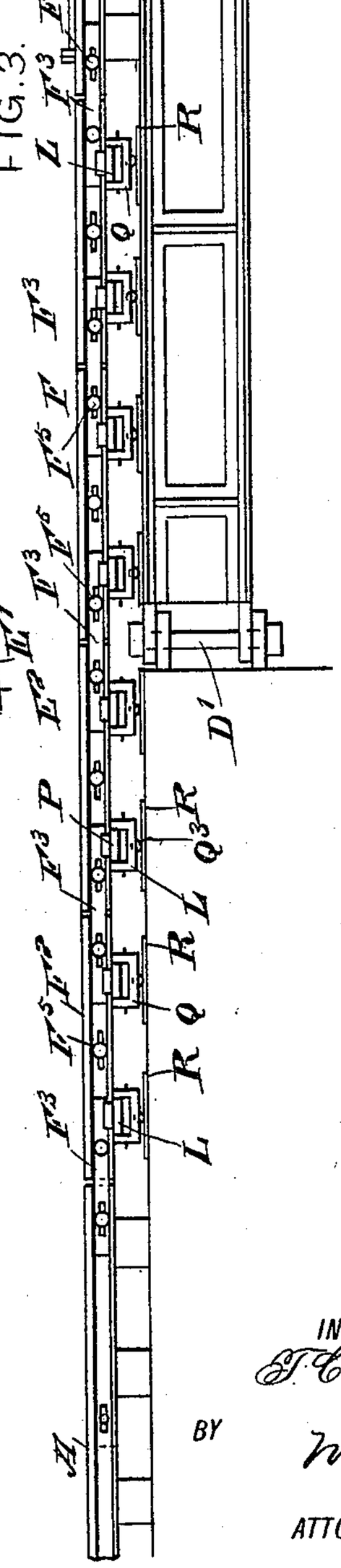

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FIG. 4.

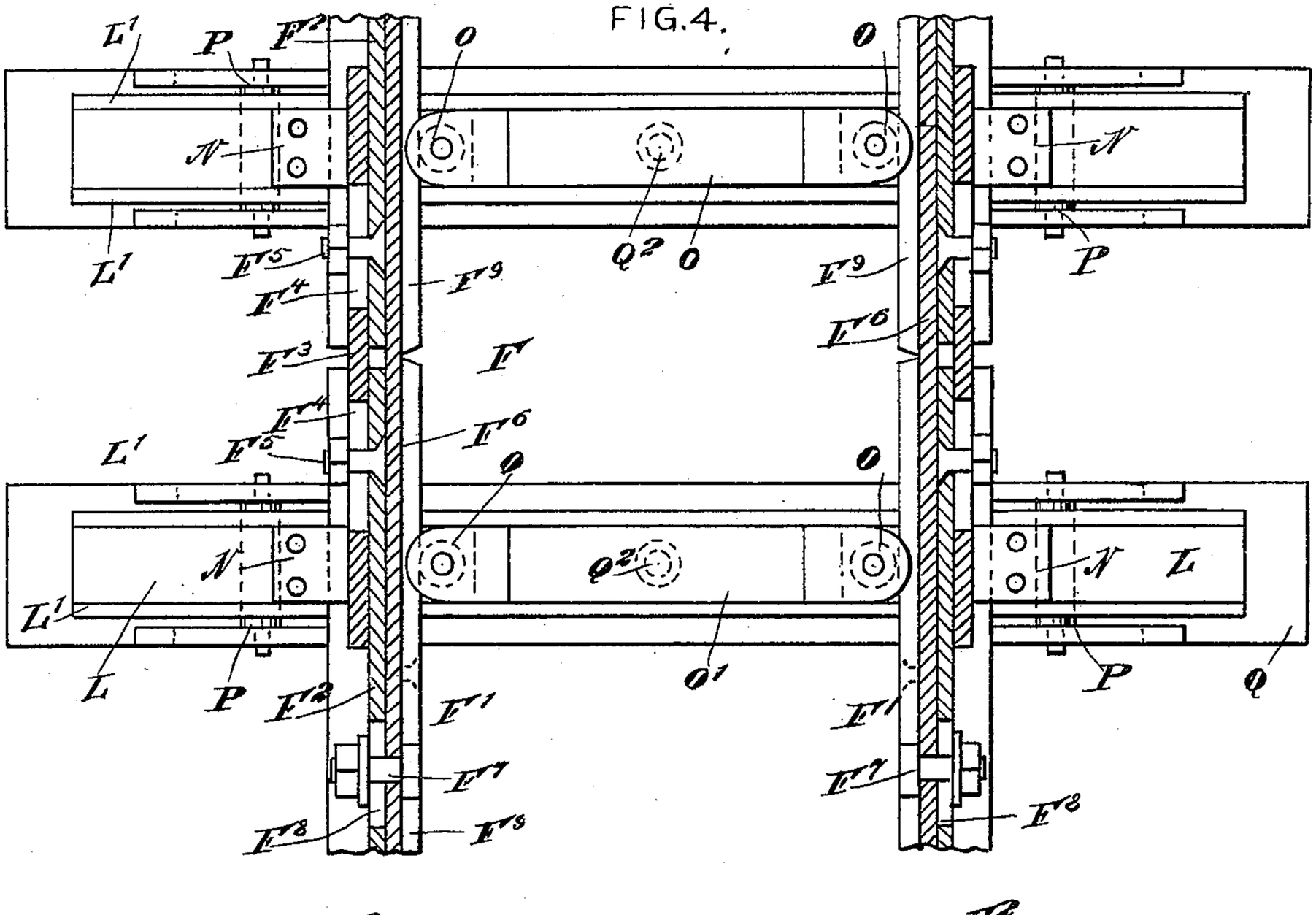


FIG. 5.

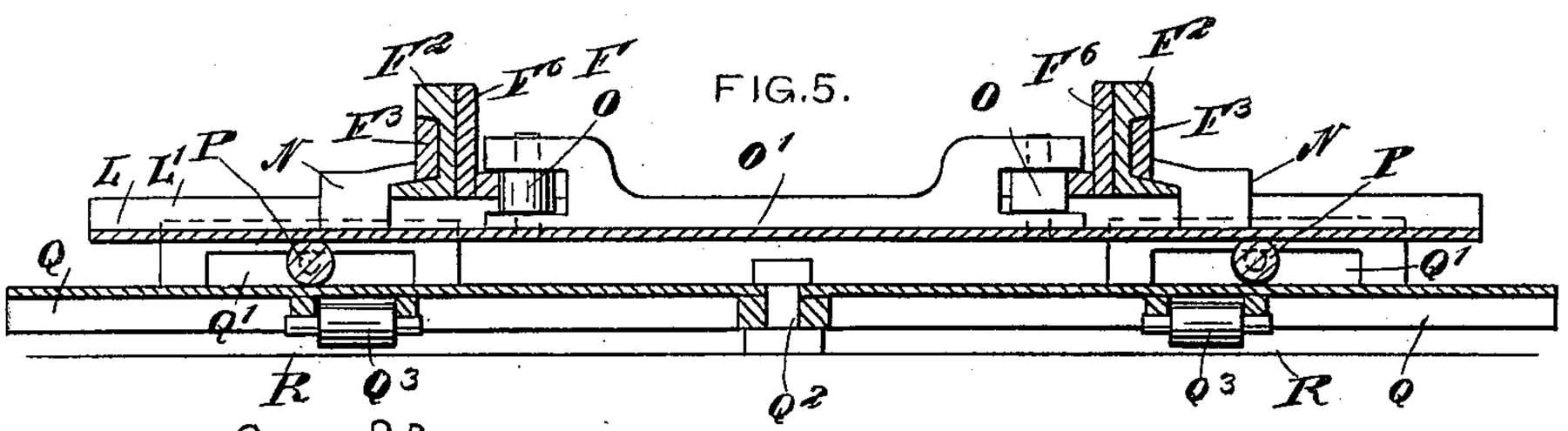


FIG. 6.

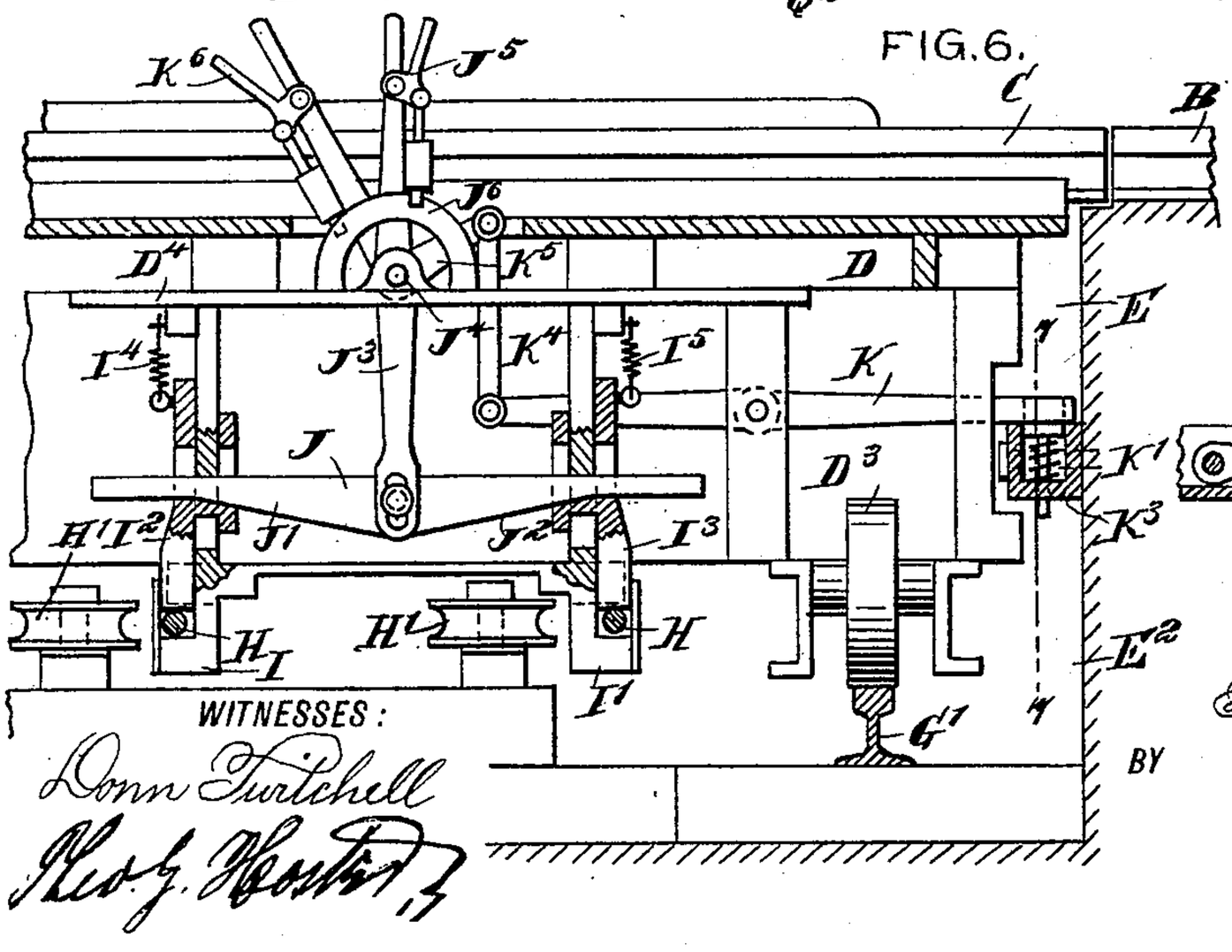
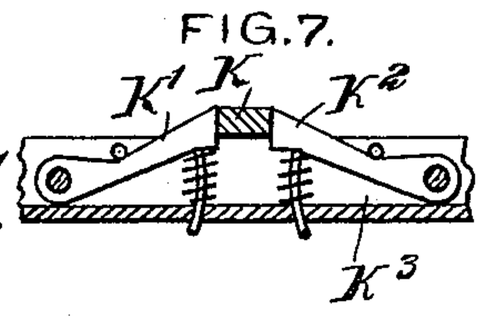


FIG. 7.



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UNITED STATES PATENT OFFICE.

THOMAS CAIRNS ANDERSON, OF TARENTUM, PENNSYLVANIA.

CAR-SHIFTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 583,353, dated May 25, 1897.

Application filed September 10, 1896. Serial No. 605,348. (No model.)

To all whom it may concern:

Be it known that I, THOMAS CAIRNS ANDERSON, of Tarentum, in the county of Allegheny and State of Pennsylvania, have invented a new and Improved Car-Shifting Device, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved car-shifting device more especially designed for use in railroad-yards for making up trains in a very simple and quick manner and without the use of turn-tables and the numerous side-tracks and switches now employed.

The invention consists principally of a bridge pivoted at one end and mounted to swlng horizontally, the bridge having a track connected at the fulcrum end of the bridge with a main track and adapted to connect at its free end with a series of side-tracks.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improvement. Fig. 2 is an enlarged plan view of part of the bridge, showing the flexible connection with the main track, parts being in section. Fig. 3 is a side elevation of the same. Fig. 4 is an enlarged sectional plan view of part of the flexible connection. Fig. 5 is a cross-section of the same. Fig. 6 is a sectional side elevation of part of the bridge, showing the cable-gripping device, the bridge-locking device, and adjacent parts; and Fig. 7 is a cross-section of part of the bridge-locking device on the line 7 7 of Fig. 6.

The improved device illustrated in Fig. 1 is provided with a single main track A, a series of side-tracks B B′ B^2 B^3 B^4 B^5 B^6, a track C, held on a bridge D, fulcrumed at D′ on the wall E′ of a pit E, in which the said bridge D is mounted to swing horizontally. The bridge-track C is connected with the main track A by a flexible connection F, so that the main track and the bridge-track are continuous, and the free end of the bridge-track C is adapted to connect with any one of the side-tracks B B′ B^2 B^3 B^4 B^5 B^6 whenever the bridge is swung horizontally at its fulcrum D′ in the pit E.

In order to insure an easy motion of the bridge, I provide the same with wheels D^2 D^3, mounted to travel on segmental tracks G G′, held in the bottom of the pit E. In order to impart a swinging motion to the bridge D, I prefer a traveling cable or rope H, passing over a series of vertically-disposed pulleys H′, journaled in the bottom of the pit E, the cable also passing over a drum H^2 at one side of the pit E next to the first track B, as is plainly shown in Fig. 1. The cable H is connected with suitable machinery for imparting a continuous traveling motion to the said cable, so that one run of the latter travels in one direction and the other parallel run travels in the reverse direction.

In order to connect the bridge D with either of the two runs of the cable, I provide a double-gripping device, (shown in detail in Fig. 6,) the said gripping device serving to connect the bridge with either of the two runs, so as to swing the same forward or backward to connect the bridge-track C with either of the side-tracks B to B^6. The runs of the cable H pass through the fixed jaws I I′, secured to the under side of the bridge D, and in the said fixed jaws operate the movable jaws I^2 I^3, respectively, for clamping the runs in place in the corresponding fixed jaw I or I′. The movable jaws I^2 I^3 are fitted to slide vertically in suitable bearings on the bridge, and said jaws are normally held out of engagement with the runs by springs I^4 I^5, connected with the said movable jaws. The latter are adapted to be engaged by inclines or wedges J′ J^2, formed on a bar J, fitted to slide longitudinally in suitable bearings arranged on the bridge D, said bar being pivotally connected with the lower end of a lever J^3, fulcrumed at J^4 to a running-board or platform D^4, attached to the bridge at one side of the bridge-track C.

The upper end of the lever J^3 is provided with a hand-lever J^5, adapted to engage a notched segment J^6 for locking the said hand-lever, and consequently the lever J^3, in place after the lever has been shifted to the right or to the left, according to the run of the cable H to be clamped and locked to the bridge,

to swing the latter forward or backward in the pit E.

In order to lock the bridge D in position when its track C is continuous with one of the side-tracks B to B^6, I provide a locking-lever K, fulcrumed on the bridge and extending longitudinally thereof, the outer or free end of said lever being adapted to engage a pair of spring-pressed levers $K' K^2$, fulcrumed on a segmental string-beam K^3, secured to the wall E^2 of the pit E. A pair of such levers $K' K^2$ is in alinement with each side-track B to B^6, as plainly indicated in Fig. 1, so that the lever K in snapping in between the free ends of a pair of said levers locks the bridge D in place with the bridge-track C continuous with the corresponding side-track B to B^6.

The inner end of the lever K is pivotally connected by a link K^4 with a bell-crank lever K^5, fulcrumed on the platform D^4 next to the lever J^3, and on the upper arm of said bell-crank lever K^5 is arranged a hand-lever K^6, adapted to engage a notched segment to lock the said bell-crank lever K^5 in place after the lever K is in engagement with a pair of levers $K' K^2$.

When the bridge D is being swung, as above described, then the lever K is locked by the hand-lever K^6 in an inactive position—that is, with the free end of the lever K above the free ends of the levers $K' K^2$—to permit of shifting the bridge, as described; but when the desired position is reached the lever K is is actuated to engage the corresponding pair of locking-levers $K' K^2$ and lock the bridge in position.

The flexible connection F extends equal distances from the pivot D'—that is, about one half of the connection extends upon the bridge D to connect with the track C, and the other half extends on the ground to connect with the end of the main track A. The connection F is provided with two track-rails $F' F'$, each made in short sections F^2, connected with each other at the outside of their webs by flexible plates F^3, formed with longitudinal slots F^4 for the passage of bolts F^5, held in the webs of the sections F^2.

The inner sides of the sections F^2 of each rail F' are engaged by a flexible plate F^6, provided with bolts F^7, engaging longitudinal slots F^8 in the webs of the ends of the rails forming the main track A and the bridge-track C. The top of each plate F^6 extends to the top of the heads of the sections F^2, so as to form with the latter continuous rails for the wheels of the cars and locomotives to run upon while passing over the flexible connection. The flexible plate F^6 is provided at its lower edge and at the inside with a base F^9, made in sections riveted or otherwise fastened to the plate, the base giving stability to the plate, and, on account of being in section, allowing the plate to flex in either direction. The sections F^2 at the extreme ends of the rails F' are fastened to the rails on the bridge D and the rails on the ground by rigid fish-plates F^3, and the ends of the flexible plate F^6 are formed with longitudinal slots to engage the bolts of the said rigid fish-plates.

By having the rails F' in sections, as described, they are rendered sufficiently flexible to assume a curved form and to conform to the lengthening and shortening of the rails incident to swinging the bridge D, it being understood that when the latter is in the position shown in Fig. 2 the curved left rail F' is considerably shorter than the other curved right rail F'.

When the bridge is swung to the right to connect the track C with the side-track B^6, then the sections of the left rail of the connection F are gradually drawn farther apart, while the sections of the right rail are pushed closer together, so that the right rail is shortened and the other rail is lengthened at the time the connection is made between the tracks C and B^6. When the track C is in alinement with the track B^3, for instance, then the sections of the rails F' are in about a normal position, as the tracks A and B^3 are in alinement with each other.

The bases of the rail-sections F^2 and those of the plates F^6 rest on the top of the side flanges L' of the metallic ties L, on which are fastened the blocks N for engaging the top of the outwardly-extending bases of the rail-sections. The edges of the bases of the plates F^6 are engaged by friction-rollers O, journaled in bars O', fitted to slide loosely between the flanges L' of the tie between the two track-rails F'. (See Figs. 4 and 5.) The ends of the bars O' extend over the top of the bases of the plates F^6 to prevent an upward motion of the plates.

The ties L rest on friction-rollers P, mounted to travel on the top of an under tie Q, formed with longitudinally-slotted side flanges Q', engaged by the reduced ends or shafts of the rollers P. Each under tie Q is pivoted at or near its middle on a pivot Q^2, held on a fixed part of the bridge or ground. The under side of each under tie Q carries friction-rollers Q^3, the axes of which extend longitudinally. The rollers Q^3 are adapted to travel on stationary tracks or offsets R on the bridge D and the ground.

By the arrangement described the top tie can readily travel transversely to the line of the track on the friction-rollers P and the under tie Q can readily swing on its pivot Q^2, so as to give more flexibility to the track-rails and allow a ready bending of the plates F^6 to insure at all times a continuous track connection between the main track A and the fixed bridge-track C. The latter is preferably of a length to accommodate a number of cars or a whole train to permit of shifting the several cars to the different side-tracks as occasion may require or to move the cars from the different side-tracks upon the bridge-track and its flexible connection to the main track A to make up a train from cars stationed on the several side-tracks B B', &c.

The bridge-track C is preferably provided with brake-rails S, arranged alongside the rails of the track C and adapted to be shifted laterally to engage and clamp the flanges of the car-wheels to temporarily and securely hold a car or several cars in place on the said track C. The brake-rails S are for this purpose connected at their ends by links S′ with a rod S^2, pivotally connected with the piston-rod T′ of an air-brake cylinder T, connected with a suitable source of air-supply by a suitable connection T^2. A similar brake mechanism S^3 is arranged in each of the side-tracks B to B^6 (two being shown in Fig. 1) to arrest the movement of the cars on the said tracks whenever necessary.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A car-shifting device, provided with a bridge pivoted at one end and mounted to swing horizontally, a track continuously connected at the fulcrum end of the bridge with a main track, said bridge-track being adapted to connect at its free end with a series of side-tracks, and a flexible connection between the bridge-track and the main track, substantially as shown and described.

2. A car-shifting device, provided with a bridge pivoted at one end and mounted to swing horizontally, a track continuously connected at the fulcrum end of the bridge with a main track, longitudinally-adjustable sections for connecting the main and bridge tracks, said bridge-track being adapted to connect at its free end with a series of side-tracks, and means for imparting a swinging motion to the said bridge, substantially as shown and described.

3. A car-shifting device, provided with a bridge pivoted at one end and mounted to swing horizontally, a track continuously connected at the fulcrum end of the bridge with a main track, said bridge-track being adapted to connect at its free end with a series of side-tracks, means for imparting a swinging motion to the said bridge, said means comprising a traveling cable, and a double cable-grip held on the bridge for engaging either run of said cable, substantially as shown and described.

4. A car-shifting device, provided with a bridge pivoted at one end and mounted to swing horizontally, a bridge-track continuously connected at the fulcrum end of the bridge with a main track, the said connection comprising flexing and sliding plates, said bridge-track being adapted to connect at its free end with a series of side-tracks, and a locking device for locking the bridge to the abutment carrying the said tracks, substantially as shown and described.

5. A car-shifting device, comprising a main track, a series of side-tracks separated from the main track by a pit, a bridge mounted to swing in said pit and having its fulcrum end in alinement with the said main track and near the end thereof, a bridge-track held on said bridge and adapted to connect at its free end with said tracks, and a flexible connection between the said bridge-track and the said main track, to render the latter continuous at all times with the said bridge-track, substantially as shown and described.

6. A brake mechanism arranged between and operating in conjunction with track-rails, the said mechanism comprising brake-rails arranged alongside the track-rails at the inside thereof, links connected with the brake-rails, a rod connected with the said links and a brake-cylinder having its piston-rod connected with the said link-rod, substantially as shown and described.

7. A car-shifting device, provided with a bridge mounted to swing and having a bridge-track uninterruptedly connected to and continuous with the main track, and a series of side-tracks adapted to be connected with the free end of the said bridge-track, substantially as shown and described.

8. A car-shifting device, provided with a bridge mounted to swing and carrying a bridge-track having flexible connections with the main track, and brake-rails held on the said bridge alongside the bridge-track rails and adapted to be shifted laterally to engage the flanges of the car-wheels, and means, substantially as described, for imparting motion to the said brake-rails, as set forth.

9. A car-shifting device, provided with a flexible track, comprising rail-sections, plates for connecting the rail-sections with each other at the outside of their webs, and a flexible plate engaging the inside of the said rail-sections, and extending throughout the length of the latter, substantially as shown and described.

10. In a car-shifting device, the combination with a main track, and a bridge having a fixed track, of a flexible track comprising track-rails continuous with the rails of the said main track, each rail of the flexible track being formed in sections connected with each other by flexible plates on the outside, and a continuous flexible plate on the inside of all the sections, substantially as shown and described.

11. A car-shifting device, provided with a flexible track comprising track-rails each formed of rail-sections, plates for connecting the sections with each other on the outside thereof, a continuous flexible plate for all the sections on the inside thereof, a top tie carrying the said rail, and an under tie mounted to swing and on which the said top tie is fitted to slide transversely, substantially as shown and described.

12. A car-shifting device, provided with a flexible track having rails each made in sections connected with each other by plates on the outside and a continuous flexible plate on the inside, a tie having side flanges on which rest the bases of the said rail, a block secured on the said tie and engaging the base of the rail-section, and a bar fitted to the said

tie and having friction-rollers engaging the edges of the bases of the said inner plates, substantially as shown and described.

13. A car-shifting device, provided with a bridge mounted to swing and carrying a track, a traveling cable, fixed jaws engaging the two runs of the said cable and held on the said bridge, and movable jaws adapted to engage the runs of the cable in the said fixed jaws and clamp either of the said runs in position, to impart a swinging motion to the bridge in either direction, substantially as shown and described.

14. A car-shifting device, provided with a bridge mounted to swing and carrying a track, a traveling cable, fixed jaws engaging the two runs of said cable and held on the said bridge, movable jaws adapted to engage the runs of the cable in the said fixed jaws and clamp either of the said runs in position, to impart a swinging motion to the bridge in either direction, and a bar having two inclines for moving the said movable jaws, the movement of the bar being controlled by a lever, substantially as shown and described.

15. A car-shifting device, provided with a bridge mounted to swing and having a track connected with the main track, a series of side-tracks adapted to be connected with the bridge-track, and a locking device for the said bridge and comprising a lever under the control of the operator, and pairs of spring-levers adapted to be engaged by the said first-mentioned lever, a pair of said spring-levers being arranged on the abutment for each side-track, substantially as shown and described.

16. A car-shifting device, comprising a horizontally-swinging bridge, a main track, a track mounted on the bridge and connected to the main track, a series of side-tracks adapted to be connected with the bridge-track, a locking device for the bridge comprising a lever under the control of an operator, and pairs of spring-levers adapted to be engaged by the said first-named lever, substantially as shown and described.

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