(No Model.) 6 Sheets—Sheet 1.

J. E. PAGE.

NON TELESCOPIC RAILWAY CAR.

No. 510,816. Patented Dec. 12, 1893.

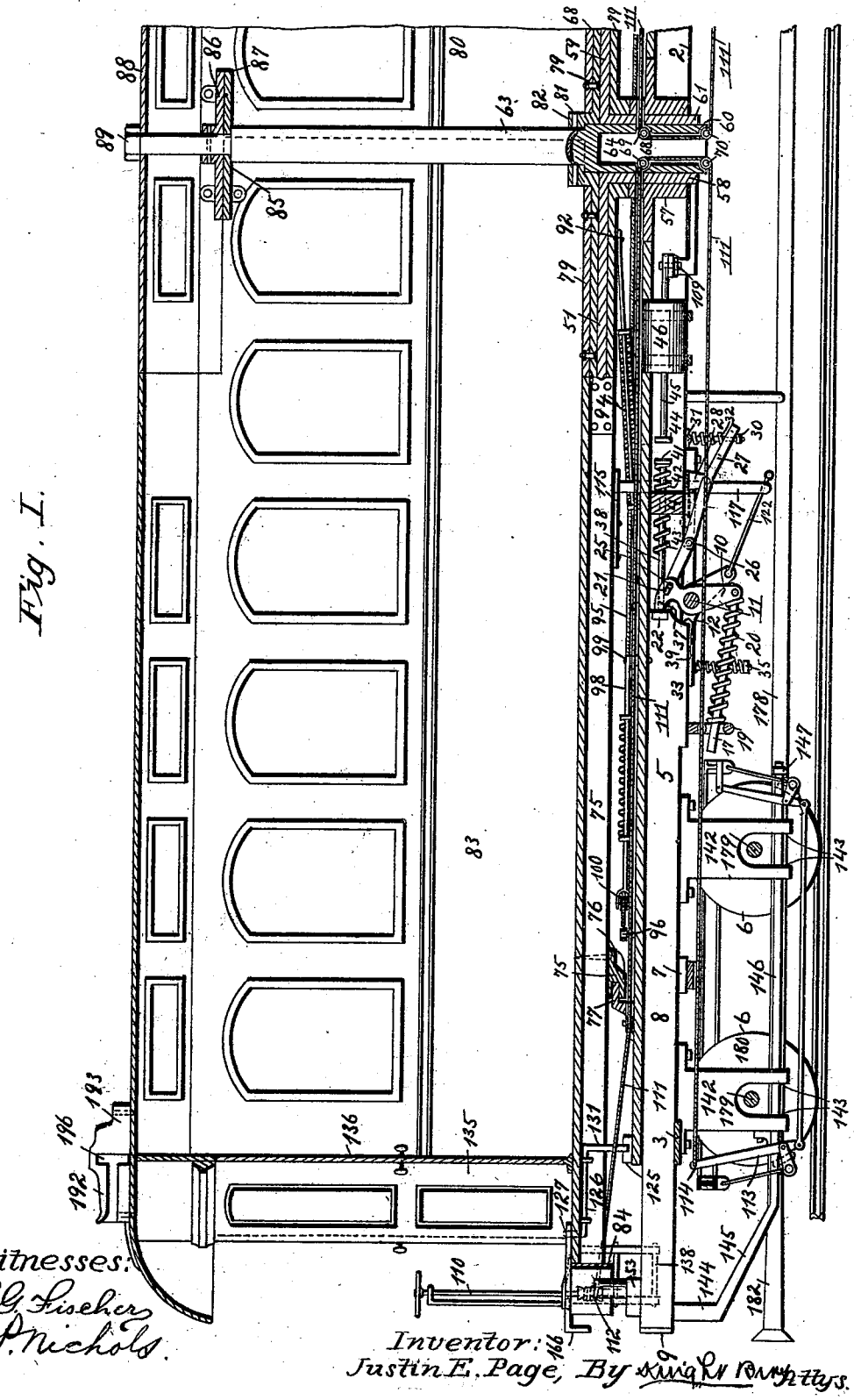

Fig. 1.

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N. P. Nichols.

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Justin E. Page, By Wm. R. Baldwin Attys.

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(No Model.) 6 Sheets—Sheet 2.

J. E. PAGE.

NON TELESCOPIC RAILWAY CAR.

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Fig. III.

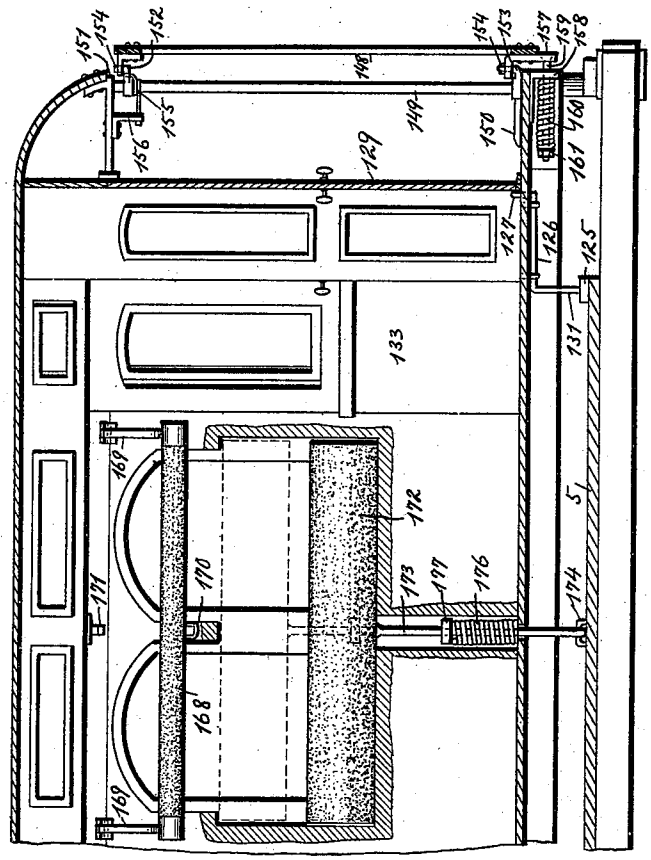
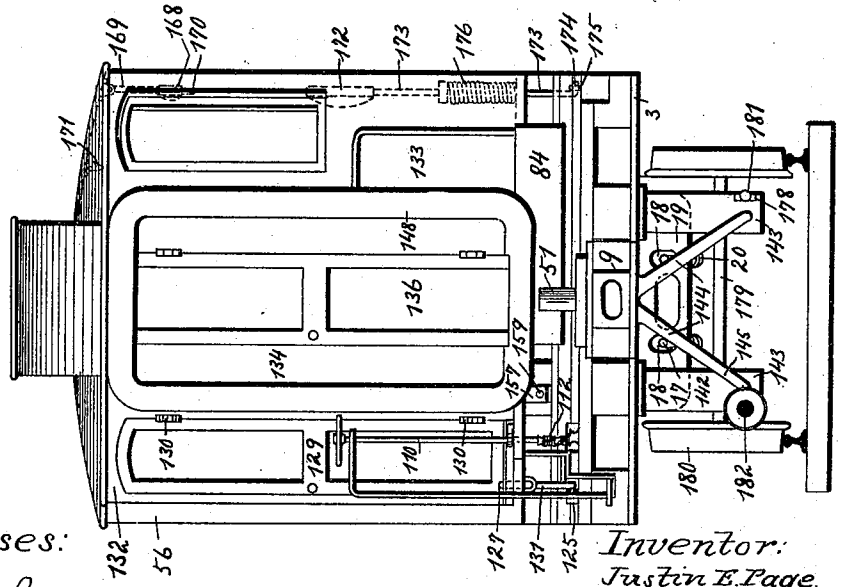


Fig. II.



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(No Model.) 6 Sheets—Sheet 3.

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NON TELESCOPIC RAILWAY CAR.

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Fig. IV.

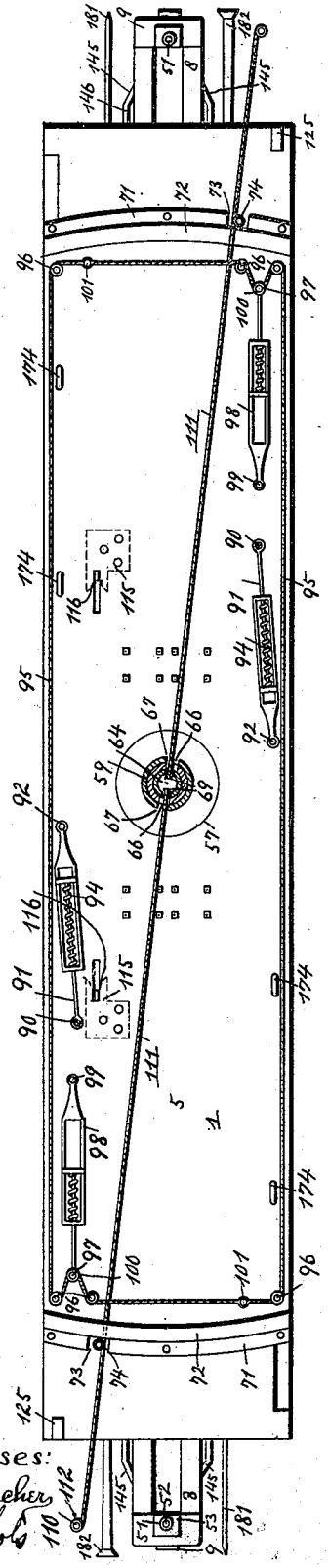

Fig. V.

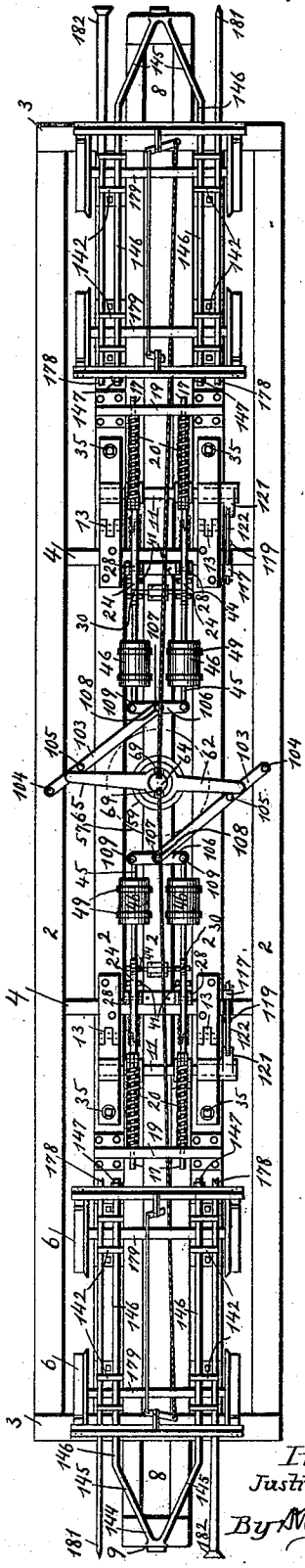

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Fig. V.

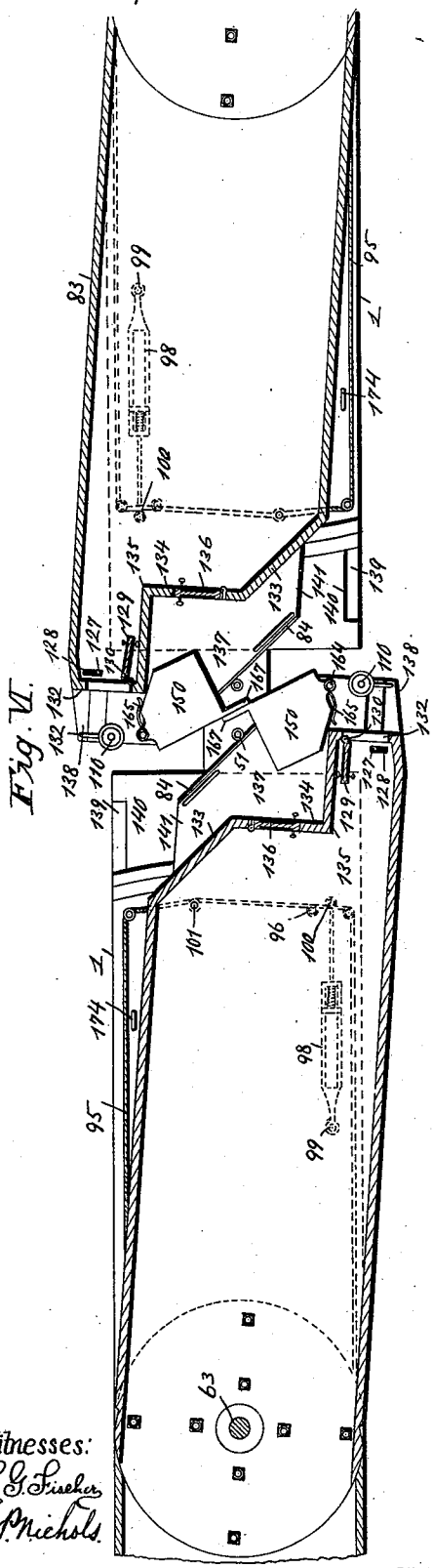

Fig. VIII.

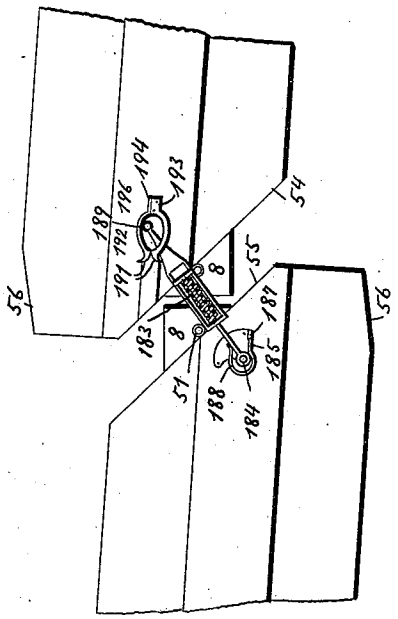

Fig. VII.

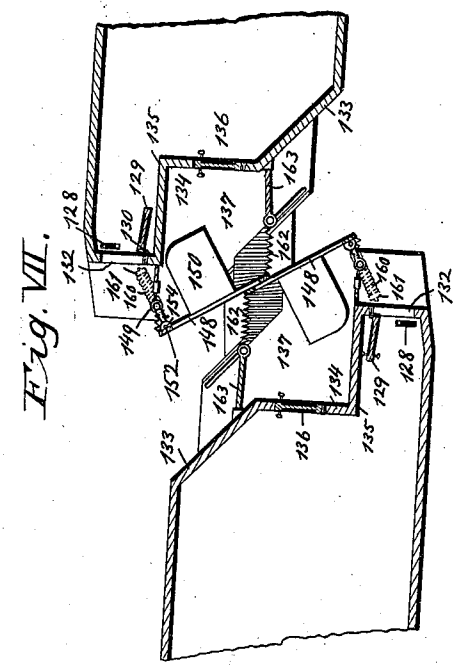

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Fig. IX.

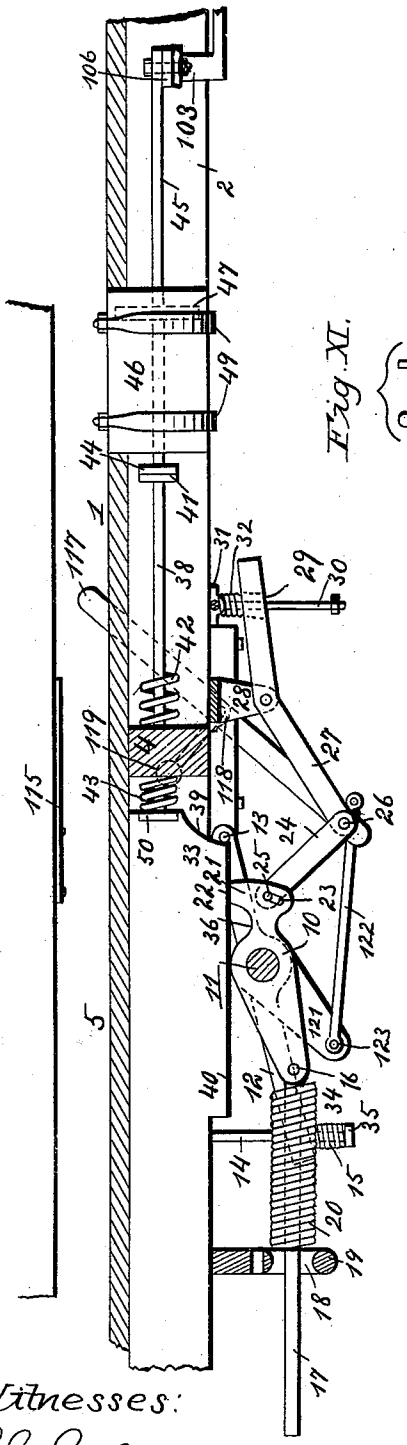


Fig. XII.

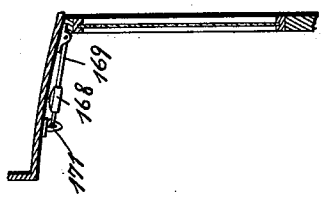


Fig. XI.

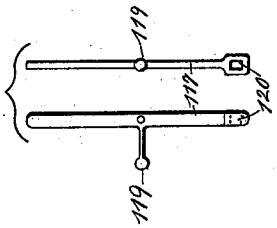
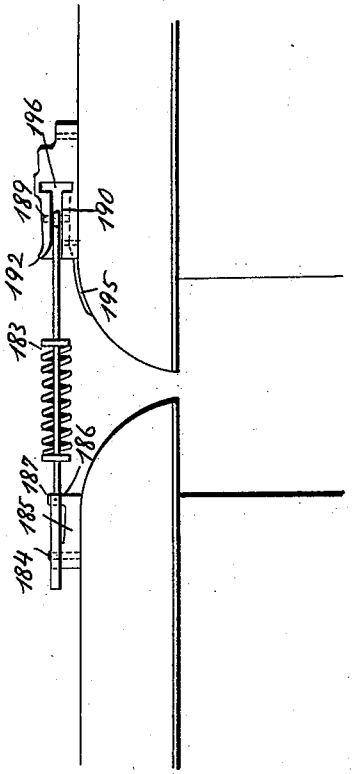


Fig. X.



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NON TELESCOPIC RAILWAY CAR.

No. 510,816. Patented Dec. 12, 1893.

Fig. XV.

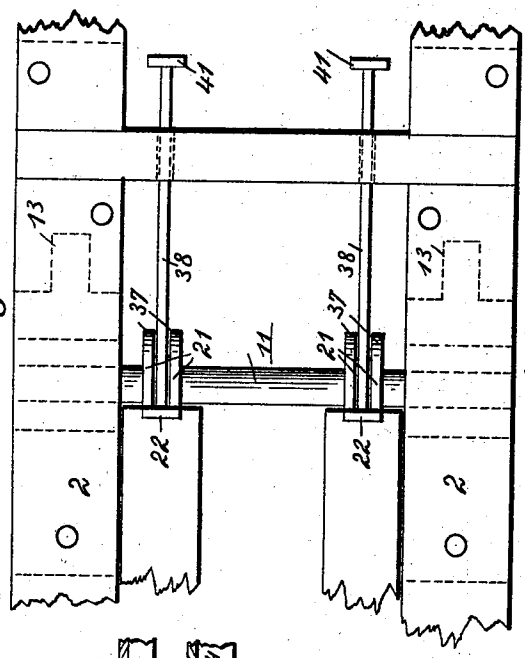


Fig. XIII.

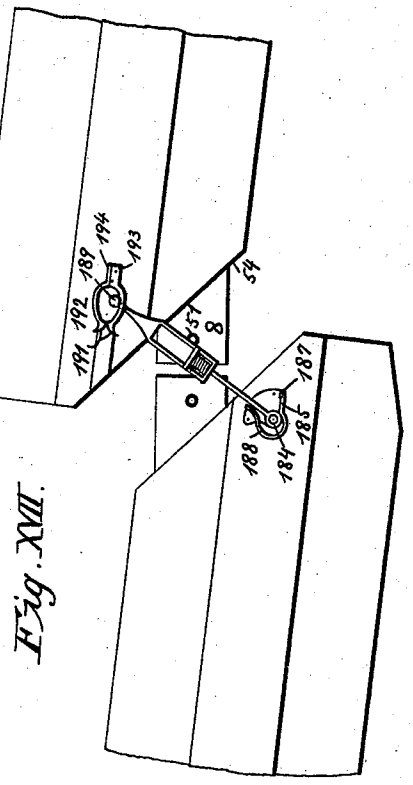


Fig. XII.

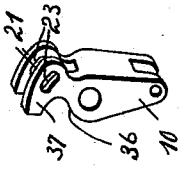


Fig. XIII.

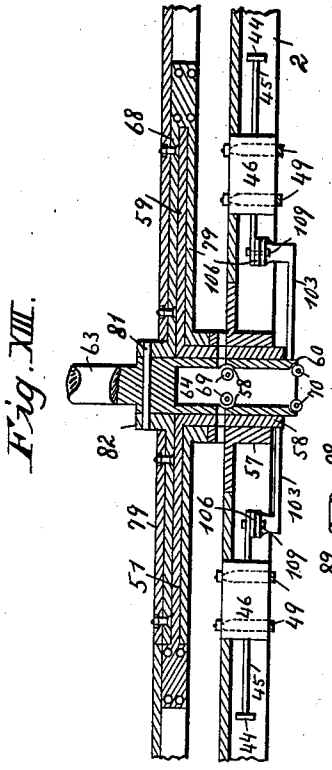
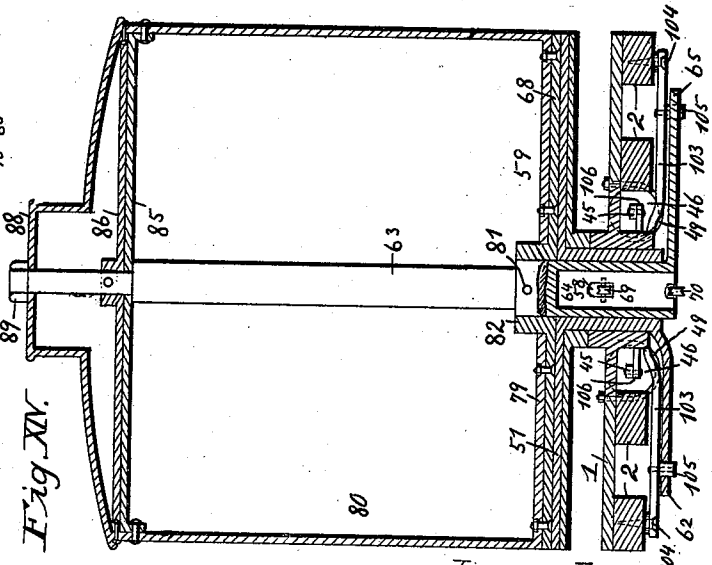


Fig. XIV.



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UNITED STATES PATENT OFFICE.

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NON-TELESCOPIC RAILWAY-CAR.

SPECIFICATION forming part of Letters Patent No. 510,816, dated December 12, 1893.

Application filed June 26, 1893. Serial No. 478,784. (No model.)

To all whom it may concern:

Be it known that I, JUSTIN E. PAGE, of Independence, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Non-Telescopic Railway-Cars, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention pertains to improvements in railway cars, and more especially to certain improvements in non-telescopic railway cars.

One of the objects of my invention is to so guard the trucks of a railway car as to assist them in preserving a normal alignment with the track and with the car when either or all of the wheels of such trucks become derailed either by broken rail, broken axle, or a broken flange, or from any other cause which would in an ordinary car allow the truck to turn upon its pivot farther than necessary and thus throw the wheels cross-wise of the track, and so capsize the car or wreck the train.

A further object of my invention is to so lock a train of cars together as to preserve the horizontal and longitudinal alignment of the train in case of severe collision or sudden and dangerous stoppage of the train from any cause.

A still further object of my invention is to so improve the attachments to the truck brake of a non-telescopic railway car as that it shall be automatically set in case of severe and dangerous collision. I also so mount the chafing plates of a vestibule upon the ends of such a car as to be automatically adjustable from a transverse alignment with the car to a diagonal or an oblique alignment with the same when necessary.

A still further object of my invention is to so joint the body of a car having beveled ends and mounted upon a truck platform as to allow either end of the car body to be moved laterally upon its pivotal support independent of its opposite end, thus forming a flexible car body, and also to so attach buffeted guards or defense rails to the inner walls of the car body as to protect the occupants from injury in case of a severe collision which should cause a lateral movement of the car body to take place.

Another object is to so protect the rear end of the car when being approached by a locomotive as to prevent a longitudinal alignment of the car with the locomotive, and thus prevent the car from being thrown to one side upon the pilot of the engine.

Still another object of my invention is to improve the different locking and unlocking mechanisms, and also to furnish air cushions against which certain telescopic or sliding frames projecting from either end of a truck platform will be driven in case of severe collision, and also that a portion of the force which shall cause the ends of the car bodies to be moved laterally shall be exerted upon its central pivot.

A further object of my invention is to arrest the lateral movement of either end of the car body at the proper time by means of certain connections hereinafter described.

Again, my invention tends to simplify the mechanism and cheapen the construction of a non-telescopic railway car.

To the above purposes my invention consists of certain peculiar and novel features of construction and arrangement as hereinafter described and claimed.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings.

Figure I, represents a detail side elevation showing turn-table in section and means of forming the flexible connection between the two sections of car body. Fig. II, represents an end elevation showing pilot guard arms. Fig. III, represents a detail, longitudinal section, showing vestibule construction and automatic window guard. Fig. IV, represents a top view of the truck platform, showing emergency cable and tension bars. Fig. V, represents an inverted view of the truck platform, showing various details of construction. Fig. VI, represents a longitudinal section of the car bodies with roof removed, the bodies being moved laterally upon the truck platform. Fig. VII, represents a longitudinal sectional broken view of the car bodies with roof removed showing position of vestibule

and gangway platforms when bodies of cars are moved laterally. Fig. VIII, represents a detail top view of car bodies moved laterally with automatic safety tension bar and clutch. Fig. IX, represents a longitudinal section of car platform, showing telescopic frame and locking mechanism in folded position. Fig. X, is a detail side elevation of car bodies showing tension bar and automatic clutch. Fig. XI, is a detail view showing latch bar for locking the car bodies in their normal position. Fig. XII, represents a vertical section of the car body showing hinged safety guard. Fig. XIII, represents a transverse section of the turn-table and pivotal post to which the car bodies are connected. Fig. XIV., represents a vertical section of the car bodies, pivoted turn-table and truck platform. Fig. XV., is an enlarged detail view showing means for holding the telescopic frame in its extended position. Fig. XVI, is an enlarged detail view of the bifurcated arms for engaging the telescopic frame. Fig. XVII, is a detail view of car bodies showing safety tension bar for connecting the same in its extended position and the bodies moved into their extreme lateral position.

Referring to the drawings: 1, represents the truck platform upon which the body of the car is sectionally and jointedly mounted, as composed of a number of longitudinal and parallel beams 2, of any suitable length and dimension, which are shown as braced together by two transverse end plates or beams 3, and also a suitable number of intermediate transverse beams 4, and overlaid with a floor 5. I desire it to be understood that this truck platform may be either of this precise structural character, or any other suitable for supporting the car body in the manner hereinafter described, and also for supporting the operating mechanism to be described. In any event, the truck platform is of an approximately oblong, rectangular form, and is supported at its ends upon two trucks 6, these trucks being also in their general construction of any suitable or preferred type. Each of these trucks is attached to the truck platform by means of the usual pivot 7.

At each end the truck platform is provided with a longitudinal sliding frame 8, which is composed of two or any other suitable or preferred number of longitudinal and parallel beams, the outer ends of which are connected together by a cross-bar or beam 9. The two sliding end frames 8, just described are each retained normally in outwardly extended or protracted position by means of two or any other suitable or preferred number of pivoted arms 10, which are carried by horizontal pivotal rock-shafts 11, which extend transversely of the truck platform 1, the said rock-shafts being held adjustably in position by suitable pendent journal bearing bars 12, which are secured to the under side of the longitudinal beams 2, of the truck platform by a hinge joint 13 and bolt 14, said bolt being surrounded by a spiral spring 15. The downward projecting arms 10, are knuckle jointed as at 16, to the rear end of a corresponding number of rods 17, which extend outwardly and loosely through apertures 18, in a thrust bar 19, which bar is rigidly secured to the lower side of the beams 2.

20 represents springs surrounding the rods 17, said springs impinging at their outer ends against the thrust bar 19, and at their inner ends abut against the lower end of the arms 10, at the knuckle joint 16. The arm 10, is provided with an extension 21, which projects upward from the rock-shaft 11, and their outer surfaces 22, are held in frictional contact with the inner ends of the sliding frames and are provided on their opposite or outer surfaces with slots 23, to which one end of a connecting bar 24, is secured by means of a bolt 25. The connecting bar 24, which angles slightly downward and inward, connects at its opposite end, and by a knuckle joint 26, with an angular bar 27. The bar 27, is fulcrumed to a bracket 28, said bracket being secured to the under side of the beams of the truck platform. The opposite ends of the bar 27, contain slots 29, through which guide bolts 30, loosely pass. The upper end of the guide bolt is jointedly secured to a bracket 31, and is surrounded by a spiral spring 32, which impinges at its upper end against the bracket 31, and abuts at its lower end against the angular bar 27. The rock-shaft 11, is held to a position behind the beams 33, of the sliding frame 8, and slightly above the lower surface of the beams by the hinged bearing bar 12, and the bolt 14, which passes loosely through a slot 34, in the bearing bar 12, said bearing bar 12, being hinged to the bracket 28. The lower portion of the bolt 14, is surrounded by the spiral spring 15, which is held in position against the bearing bar by the nut 35. The portions 21, of the arms 10, are curved at 36, and their upper extremity also forms a fork 37, which partially surrounds a thrust rod 38, which is secured to and projects inward from the inner ends of the beams 33.

The object of the mechanism just described is to hold the sliding or telescopic frames 8, to an extended position against any ordinary force which might be exerted against them; but should the concussion be so severe as to endanger the breaking of the car the sliding frames are driven violently inward forcing the inner ends of the beams 8, against the curved and upper extremity of the arms 10, of the rock-shaft 11, causing it to rotate until the curved ends 39, of the beams 33, come in contact with the rock-shaft, forcing it downward, thus lowering the slotted end of the hinged journal bar 12, causing the compression of the spring 20, until the ends of the beam 33, including an added projection 40, have been driven inward past the rock-shaft. As the arms 10, are driven rearward and downward the joint bolt 25, has been caused to traverse the slot 23, thus forcing the arm

10, into violent contact with the jointed bars 24, 27, which are held slightly from a straight line by the joint 26, as shown in Fig. I, thus causing them to double or knuckle, as shown in Fig. IX, causing the compression of the spring 32, by the angular bar 27; and so the entire locking mechanism has been forced to yield to the violent concussion against the sliding frame, allowing it to be driven inward.

To the rear or inner ends of the beams 33, of the sliding frames 8, is rigidly connected the thrust rod 38, which passes through the cross bar 4, and to its inner end is secured a face plate 31, and surrounding the rod is a spiral spring 42, which impinges against the cross bar. Upon the opposite side of the cross bar is a spiral spring 43, which also surrounds the rod 38. At the rear or inner side of the face plate 41, and a short distance therefrom is also a face plate 44, which is fixed to the outer end of the piston rod 45, which projects from an air cylinder 46, upon the inside of which it is connected with the usual style of piston head 47, and is shown in Fig. I, as in an extended position. The inner end of the piston rod 45, passes through the cylinder 46, and is connected with an arm 48, the object of which will be presently explained. The air cylinders are secured to the under side of the platform by clips or clamps 49. It will now be understood that in case of collision sufficiently violent to drive the curved inner end portion of the beams 33, of the telescopic frames 8, inwardly past the upper ends of the arms 10, the rods 38, will also be carried inward, thus forcing the face plate 41, against the face plate 44, and so drive the piston head 47, inward, thus forming a compressed air cushion against which the telescopic frames are forced. The spiral springs 43, which surround the rod 38, also tend to arrest the inward progress of the beams by coming in contact with their squared end portion, as shown at 50. The spiral spring 42, which surrounds the rod 38, between the cross bar 4, and the face plate 41, is intended to furnish a cushion for the telescopic frame similar to that of an ordinary draw head while the train is being drawn, and so prevent the frame 8, from being withdrawn outwardly farther than its normal position.

Upon the upper side of the end cross beam 9, of the sliding end frame is mounted a vertical friction roller 51, which revolves freely upon a vertical pin or bolt 52, which projects from a plate 53, upon the cross beam, the purpose of this friction roller being hereinafter described.

I will now proceed to describe the operating mechanism of the car body, premising this description with a statement of the fact that excepting that as to the central joint and hinges, its buffeted railings inside, which will be hereinafter described, its end doors and platforms and vestibule and connections at the bottom of the car body, this car body may be of the usual or any preferred type of construction—that is to say, that whether the car be a passenger car, a mail car, a baggage car, or a freight car, the interior fittings and general construction of the car body may be of the usual or any preferred type. Referring to Fig. VIII, it will be seen that the forward and rearward ends of the car body at the left and right hand sides respectively are beveled as shown at 54, 55, from a point some distance to the left and right of the central line of the car at an angle of about forty-five degrees and toward the right and left sides of the car, thus leaving a portion of the projecting telescopic or sliding frames 8, uncovered by the body of the car. I also bevel a small portion of the opposite corner of the car body as shown at 56, in Fig. VIII, the object of which is to lessen the probabilities of its striking any obstruction along the side of the track when it has for any cause moved laterally upon its pivot. To the under side of the truck platform 1, may be secured the usual car fixtures. Upon the center of the truck platform 1, and rigidly secured thereto, I mount the lower member 57, of a turn-table having a central opening 58, into which I match the turn-table member 59, having a central opening 60, and a stem 61, which projects some distance through the lower member 57, and has rigidly secured thereto the arm 62, (see Fig. V) which projects outwardly transversely from the center of the truck platform, the object of which will be presently explained. In the opening of the member 59, I then insert a center post 63, in the lower portion of which is an opening 64. Said post extends downward through the member 59, and has rigidly secured thereto an arm 65, (see Fig. V) which extends in an opposite direction to the arm 62, of the member 59, the object of which will be presently explained. The members 57, 59, contain slots 66, 67, and the post 63, contains openings 68. 69, represents rollers journaled to the post near said openings; and 70, represents rollers journaled to the post at its lower extremity, which will be presently referred to. To the upper surface of the truck platform and at each end I rigidly attach a track 71, having an annular rib 72, and arranged concentrically with the center pivot post 63. This track also contains a cavity 73, in which is a grooved roller 74, which will be presently referred to. To the bottom of the ribs 75 of the car body I rigidly secure an annular shaped track 76, having a groove 77, which engages the rib 72. The rib 72 is provided with a shoulder 78, against which the track 76, abuts when the car body is in its normal position. Secured to the member 79, of the turn-table is the car body section 80, which extends to the outer end of the truck platform, including the extension frame 8. The upper portion of the turn-table member 79, is also secured to the center post 63, by means of a pin 81, passing through a shoulder 82. The opposite car body section 83, is secured to the turn-table mem-

ber 59, and extends likewise to the opposite end of the truck platform, including the extended frame 8. The sections 80, and 83, form a flexible car body, the ends of which are beveled to an angle of about forty-five degrees, the beveled portions 54, 55 of which are shod with an angular deflecting plate 84, against which the vertical roller 51, is forced when the frames 8, are driven inward, thus causing the lateral movement of the end of the car body adjacent thereto. (See Fig. VIII.) Upon the upper portion of the car body and just inside the roof are secured cross plates 85, 86, which receive the upper end of the pivot post 63, and which rest against a shoulder 87, the stem portion of the post 63, passing upward and through the roof 88, of the section 80, receiving a nut 89, above the roof, the plate 85, being secured to the section 83, of the car, and the plate 86, being secured to the section 80. In order that the tendency of the car body may be to remain in normal position with the track 76, held against the shoulder 78, I locate upon the upper surface of the truck platform 1, and secure thereto by a bolt 90, the outer end of a tension bar 91, the opposite end of which is attached to the lower side of one of the beams of the car body, as at 92. The arrangement is such that as the sections of the car body are moved or rotated laterally upon their pivots, the spring 94, will be tightened and thus tend to hold the car body to its normal position; and it will be understood that the operation is the same at either end of the car.

For the purpose of protection of the car body from injury in case of a severe and dangerous collision, which would cause either end section to be moved violently to one side farther than the capacity of the central joint would permit without injury, I provide an emergency cable 95, which is strung upon rollers 96, which are mounted upon the upper surface of the truck platform 1, the cable 95, being passed around these rollers and also around rollers 97, which are secured to the ends of tension bars 98, which bars are secured at their opposite ends to the surface of the truck platform 1, as shown at 99. These bars are only for the purpose of taking up the slack of the cable 96, as shown at 100, the cable being rigidly attached to the bottom of the sills of the car body, as at 101. It will now be understood that should either end section of the car body be moved violently to one side, the slack of the cable, as held by the tension bar 98, would be instantly tightened, as at 102, (see Fig. VI) and thus the center joint of the car body would be protected from undue strain by the violent lateral movement thereof.

As has been above stated, portions of the car body will be moved laterally with considerable quickness in case of violent collision. Therefore to divide the strain which will come on the car body sidewise by the force of the friction roller against the beveled portion, I pivotally attach the outer end of a lever 103 to the bottom sills 2, of the truck platform by means of a bolt 104, from which point the lever extends horizontally and in longitudinal and oblique line past the ends of the arms 62, 65, bringing a projection 105, on the lever 103, into frictional contact with the arms 62, 65, and then to a point adjacent to the inner ends of the air cylinders 46. To this end of the lever 103, is pivotally attached an equalizer 106, by means of bolts 107, which pass through the slots 108, in said lever. From thence the equalizer extends in either direction to the inner ends of the piston rods 45, of the air cylinder, and is attached thereto by means of bolts 109. Thus the entire connection is completed; and it will now be understood that as the sliding frame is driven inwardly the pistons of the air cylinders are also driven inwardly, thus causing the bolts 107, on the equalizer to traverse the slots 108, forcing the lever 103, toward the center of the car and carrying the end of the arms 62, 65, with it. By this means the force which would otherwise come directly against the beveled end of the car body is now partly diverted to a direct contact with the inner member of the turn-table; thus the car body section is given its lateral motion by power exerted on its central as well as its end portion, and it will be understood that the process is alike on either end of the car.

Located at each end of the car body platform is a hand brake staff 110, of the ordinary construction, the lower end of which is connected with a cable 111, as shown at 112, which extends along the bottom of the car body, angling slightly downward and through and between the flanges of the friction rollers 74, which are located in the cavity 73, of the track 71. Thence the cable passes back to and through the slots 66, 67, in the turn-table members and through the opening 68, in the post 63, thence over the guide roller 69, thence down and around the guide rollers 70, from which it passes back to the trucks and there connects with an ordinary brake, 113, as at 114. It will now be understood that as the cable passes the roller 73, it is located in such relation therewith that as the end of the car body is moved laterally upon its pivot, the cable is brought violently against said rollers, thus taking up the entire slack of the cable, and so automatically sets the brakes of the adjacent truck below. It will now be understood that when the car body is in its normal position the connection of the brake staff with the adjacent trucks below is such that the process of setting the brakes by hand may be freely accomplished, or the same will be set automatically by the pivotal or lateral movement of the end of the car body. It will now be understood that the driving inward of the extending sliding or telescopic frames 8, allowing an approach toward a folded position of the different car bodies of a train with relation to each other will take place in proportion to the severity of the col-

lision, and that the driving inward of the sliding or telescopic frames to their extreme cushioning point causing the lateral movement of the ends of the car bodies will first take place at the point nearest the object with which the train collides, and so on in succession toward the rear end of the train, and thus the distinct shock which occurs with an ordinary train would be divided into several lighter and therefore less dangerous shocks, while the telescoping of the car bodies would be practically impossible.

I will now proceed to describe the locking and unlocking mechanisms for holding and releasing the car body to and from its normal position parallel with and over the truck platform. Secured to the under side of the car body beams is a catch or latch receiver 115, the inwardly extending end of which is provided with a slot 116, which is wider at its entrance than at its terminus. The object of the latch will be presently described. 117, represents a latch bar pivoted to the under side of the truck platform as shown at 118, said latch bar extending vertically and being so weighted at the rear of its pivotal support, as shown at 119, as to hold it in vertical position with its upper end engaged with the slotted latch receiver 115. The lower end of the vertical latch bar 117, is provided with a vertically extending slot 120, the object of which will be presently explained. At the lower end of an arm 121, which extends downward from the rock-shaft 11, is jointly connected a rod 122, by means of a bolt 123. The rod 122, extends rearwardly and horizontally and passes loosely through the slot 120, in the lower end of the latch bar 117, and only engages therewith by means of a pin 124, passing through the rod horizontally. It will now be understood that when the extending telescope frame adjacent to the latch bar is driven inwardly, causing the shaft 11, which carries the arms 121, to rotate, the rod 122, will be carried forward or outward, thus causing the upper ends of the latch bar 117, to move inwardly and so disengage the slotted latch receiver 115, thus unlocking that end of the car body to its pivotal motion just as the friction roller 51, on the frame 8, comes in contact with the angle plate of the beveled portion of the end of the car body. It will also be understood that the locking and unlocking mechanism at the opposite end of the car locks and unlocks the section of the car body adjacent thereto to its lateral movement in precisely the same manner. The friction rollers 51, which are mounted upon the telescope frames when in their normal position are located a sufficient distance from the beveled ends of the car body to admit of the said frames being driven inward a sufficient distance to cause the unlocking of the ends of the car body to its pivotal motion, as above explained, before said rollers so come in contact with the regular deflecting plate as to cause the ends of the car body to be moved laterally upon its pivots. Secured to the upper surface of the truck platform and just outside of the track 71, is a safety door unlocking plate 125. Pivoted to the bottom of the car body is a bell crank lever 126, the upwardly extending arm 127, of which projects through a transversely extending slot 128, in the platform of the car and bearing against the inner side of a safety door 129, in the opposite squared ends of the car. The safety doors 129, are provided with spring hinges 130, which, when the unlocking levers 126, are operated by the lateral movement of the ends of the car body, cause the side doors to automatically open, said doors being unlatched by means of a downwardly extending arm 131, of the bell crank lever 126, coming in contact with the unlocking plate 125. Thus it will be understood that as the sliding frames 8, recede toward their innermost extremity, the arm 131, of the bell crank lever rests or bears upon the inner edge of the said plate 125. The lateral motion of the ends of the car body thus causes the lower extremity of the arm 131, to be elevated as it travels laterally up the face of the plate 125, the upper arm 127, at the same time moving toward the outer edge of the car body beyond the inner edge of the door, thus allowing the springs 130, to automatically open the door at each or either end of the car. 132, represents a squared end portion of the body of the car in which the safety doors 129, are located. 133, represents an oblique side extending from the opposite outer sides of the car to an intervening squared portion 134, which connects with a longitudinal portion 135, which in turn connects at its forward end with the squared portion 132. The ordinary passenger door 136, of the car is located in the squared portion 133. 137, represents the platform which is composed of that portion extending beyond the walls just described. Said platforms are provided on one side with steps 138, of the usual construction and arrangement; while on the opposite side of the car and at the rear terminations of its beveled portion the steps 139, are secured to the truck platform. It will be understood that this is necessary from the fact that to secure them to the car body would not permit its end to move laterally; therefore, to form the upper step a portion of the car body platform is cut away, as shown at 140, thus making the step of the upper surfaces of that portion of the truck platform which is left exposed by the cutting away of the car body, as at 141. To the bottom of the sills of the truck platform I depend brackets 142, which extend downward, being bifurcated at their lower ends so as to pass very loosely over and below the car axle, as at 143. The lower extremity of each of these bifurcated ends contains an opening, the object of which will be presently explained.

For the purpose of protection in the case of a rear end collision, I fix to the under side of

the outer transverse beam 9, of the telescopic frame 8, an angular shaped metal guard 144, having two arms 145, rigidly fixed thereto. As these arms extend downwardly at an angle, they diverge from each other, as shown in Fig. II, and also extend rearwardly from the outer end of the car toward its center, as shown in Fig. I, until they reach a point some distance below the car axles; from thence they extend rearwardly and parallel with each other as shown at 146, loosely through the openings in the brackets 142, and are secured at their inner ends by nuts 147. It will now be understood that should this car be approached by the front of a locomotive, the pilot would so come in contact with the guard iron as to preserve a longitudinal alignment of the car with the engine, instead of allowing it to slip to one side of the pilot, as in the absence of the guard iron it would be liable to do; thus the longitudinal alignment would be sustained until the bumper of the engine would drive the frames 8, and guard arms inwardly, first unlocking the end sections of the car body to its pivotal motion, then causing it to rotate laterally and out of the way of the engine thus approaching it. It will also be understood that the guard iron arms as they pass through the holes in the brackets will tend to strengthen and assist the telescopic frames in sustaining a horizontal alignment as they have been driven inward. The brackets and guard iron arms will also assist the safety truss bars which will be hereinafter explained, to sustain the trucks to something near their normal position should the trucks in any way become crippled, but would in no way touch or interfere with the trucks while in their normal position.

I will now describe the mechanism and operation of the vestibule for my design of cars. For the purpose of sustaining the chafing plates 148, in the proper position, I erect a post 149, on the outer edge of the platform and sufficiently to the right of the central longitudinal alignment of the car to admit of a central gangway 150, such as in the ordinary cars. The post 149, is pivotally secured to the frame of the platform, and also to the roof of the car by brackets 151. Secured to the top and bottom of the post are obliquely, outwardly extending arms 152, 153, said arms having hinged thereto the chafing plates 148, as shown at 154. The top of the post 149, is surrounded by a spiral spring 155, which is secured at one of its ends to the roof bracket 156, and at the opposite end to the arms 154. Said spring tends to hold the arms of the post in an outwardly extended position. To assist in holding the chafing plates at an alignment transversely of the car, I attach to the chafing plate near the extreme right side, a bracket 157, and to the platform a bracket 158. 159, represents a bolt which passes through the brackets 157, 158, and has a coil spring 160, surrounding the same, said spring being held thereon by a nut 161, which together with the main post hold the chafing plate in an alignment transversely of the car, as shown in Fig. III. The walls of the vestibule are made corrugated, as shown at 162, and of flexible material, and are secured to the chafing plates and to the posts of the longitudinal doors 163, in the usual way. It will now be understood that when the chafing plate of this vestibule comes in frictional contact with the one mounted upon another car of its like the tendency will be to frictionally hold each other in a direct transverse alignment with the car; but should these cars meet with a severe and dangerous collision, sufficient to drive the telescopic frames inward, unlocking either or both of the car body sections to their pivotal motion and causing their ends to swerve laterally and glide past each other, the chafing plates would quickly adjust themselves to an alignment with the beveled portion of the car body, as shown in Fig. VII, thus allowing them to also glide past each other a suitable distance without injury. To the lower central portion of the chafing plate is secured the gangway platform 150, the under surface of which plays loosely upon the upper surface of the floor 137, of the car platform. In the absence of the vestibule the gangway platform 150, is pivotally secured to the upper surface of the step platform 137, by means of a stud bolt 164, as shown in Fig. VI. This bolt is surrounded by a spring 165, which has one end secured thereto. The other resting against the gangway platform tends to hold the platform to an extended position beyond the floor of the step platform, as shown in Fig. I. The outer edge of this platform is turned downward so as to form a face plate 166, having a projection 167, against which a similar face plate would chafe when mounted upon the adjacent end of another car of its like and met by it. It will now be understood that should the ends of the car body be driven past each other as hereinbefore described, the gangway platforms would so work on their pivot bolts as to rotate rearwardly sufficiently to permit them to pass each other without injury.

I will now describe the cushioned defense rails 168, which are especially necessary in my peculiarly constructed car, as shown in Fig. III. Said rails are suspended to the left hand inside walls of the car looking each way from the center; or in other words, on the side next to the beveled portion of the car body, and toward which an occupant of the car would make haste in case of collision which would cause the car body to move laterally upon its pivot. These rails extend across the upper portion of the window and intervening walls, as shown in Fig. III, and are suspended to the upper portion of the side walls by means of hinges 169, the rails being held in their normal position across the upper portion of the window by means of latches 170. In order that these rails may be conveniently removed from across the upper portion of the window when necessary, they swing upward

on their hinges and are held to the ceiling of the car by means of a latch 171. It will now be understood that should the car body be suddenly moved laterally upon its pivot the occupants who were standing would stumble toward the walls thereof and their defense is thus prepared.

For the purpose of automatically guarding the lower portion of the window and intervening walls when necessary, I provide a cushioned plate 172, which is held in position by a vertical rod 173, which is secured thereto. The lower end of the rod 173, passes downward through the floor of the car body and is provided with a hook 174, which extends outwardly and engages with a staple 175, on the upper surface of the truck platform. The opening in the floor through which the rod 173, passes is of sufficient size to admit of the passage of the rod, but will not permit the passage of the hook 174, thus arresting the upward movement of the cushion plate 172. Surrounding the vertical rod is a spiral spring 176, which impinges at its lower end against the floor and at its upper end against a shoulder 177, on the rod. It will now be understood that should the end of the car body be moved laterally the hook 174, would be released from the staple 175, thus allowing the spring to hoist the cushion plate upward and across the lower portion of the window and intervening walls, thus automatically preparing a defense against which the occupants of the car would strike should they be thrown in that direction.

I will now describe the truck guards or safety truss bars, which consist of two horizontal bars 178, rigidly secured to the bottom of the truck platform and in parallel alignment therewith, the said bars being rigidly secured thereto by means of brackets 142. Said bars traverse nearly the entire length of the truck platform, passing under the axles of the truck at either end of the platform and are located a sufficient distance beneath the axles 179, and inside of the flanges of the wheels 180, to entirely clear them in case of the rocking movement of the car and the lateral movement of the truck wheels when turning curves in the track. It will now be understood that if for any cause either of the wheels become derailed the truss bars and bracket forks would at once form a pedestal upon which the crippled portion of the trucks would rest, and thus tend to preserve an alignment of the trucks with the track and so prevent them from turning crosswise of the track and capsizing the car and wrecking the train until it could be stopped and thus a wreck averted. It will also be understood that the safety bars as above described are adapted to be used on any ordinary car.

I will now describe the telescopic safety rods 181, and tubes 182, which are especially adapted to be used on my peculiarly constructed car. These rods and tubes are rigidly secured to the brackets and project outward in parallel and longitudinal alignment with the cars to a short distance beyond the extreme projecting point of the telescope frames, the rods being pointed at their outer ends, while the tubes are enlarged or bell shaped at their outer ends. The openings in these tubes are of sufficient size to permit the rods to enter them loosely or easily, the rods and tubes being each located side by side upon each end of the car respectively. It will now be understood that when these rods and tubes are met by others of their like, mounted in like manner, upon another car, the points of the rods enter the bell shaped nozzle of the tubes a short distance and have sufficient play to admit of the usual oscillation of either car without causing the points of the rods and the nozzles of the tubes to come in frictional contact. But should the train meet with a collision severe enough to drive the telescope frames inward from their normal position the safety rods and tubes would proportionately be telescoped with each other and so lock the train together as not to permit the capsizing of any single car or allow them to rise endwise toward the vertical or perpendicular position.

I desire it to be expressly understood that I do not confine myself to any number of these rods and tubes, nor to any specific locality or manner of securing them to the truck platform, as any desired number of them may be used, and they may be correspondingly located at any point below the upper surface of the truck platform and rigidly secured thereto in any manner desired. At any rate, they are so located that when in a train an advance of the truck platforms from their normal position toward each other may cause them to telescope and thus lock the truck platform to a longitudinal alignment corresponding with the track upon which they rest. The rods and tubes are also matched alternately so that should either car be turned end for end they would telescope with each other just the same.

I will now describe the safety tension bar which connects the end portions of the roofs of the cars together and is especially adapted to cars constructed according to my design. Upon the roof of one end of the car and secured thereto, I pivotally mount a tension bar 183, by means of a joint 184, upon a bracket 185. A short distance from the joint and toward the outer end of the car is an annular shaped rib 186, having at its right hand extremity a lug or vertical projection 187. The tension bar 183, is thus supported to a horizontal alignment by said rib and to a longitudinal alignment by a spring 188, which holds it against the projection 187. This spring is also secured to the bracket 135. 189, represents a vertically extending pin on the opposite end of the tension bar 183. When the car upon which is mounted the mechanism just described is to be coupled with another car of its like the adjacent end of it will be

provided with a combination friction and positive clutch 190, which is formed by forks 191, 192, in a curved bracket 193, which is secured to the roof of the car in the position shown in Fig. VIII. Matched against the forked plate near its outer end is the spring member 191, which extends rearwardly and is secured to the bracket as shown at 194. As will be seen, the outer or extreme end of the forked plate and also the extreme outer end of the spring is curved outwardly and in opposite directions, as shown in Fig. VIII. Just beneath these curved ends is a metal plate 195, which angles downward toward the outer end of the car, the object of which is to furnish a guide to the vertically set pin 189, in the end of the tension bar 183, which is mounted upon the adjacent end of another car as hereinabove described. It will now be understood that as the cars are advanced toward each other for coupling, the vertical pin 189, in the end of the loop would traverse the face plate and be driven between and pass the spring member 191, and the fork member 192, and thus it would be frictionally held in that position. It will now be understood that should the ends of the car body be swerved laterally and driven by each other as in the case of severe collision the tension bar would be at once carried toward a transverse alignment with the car, and thus the outer end of the tension bar would pass between the curved forks and cause the vertical pin to catch upon them and so automatically form a positive clutch. Thus the ends of the car bodies would be gradually arrested in their lateral movement by the gradual tightening of the tension bar, as shown in Fig. XVII. Formed in the forked member 192, of the bracket 193, is a vertical slot 196. It will now be understood that should the car bodies be driven toward each other farther than their normal position after the end frames have been folded or driven inward either by the breaking of the truck platform or from any other cause, the vertical pin in the end of the tension bar will have traversed between the forks in the bracket to the vertical slot through which it would pass, and thus the top connections of the end connection of the car bodies would be severed, allowing the bodies of the cars to pass by each other unhindered.

I claim as my invention—

1. A railway car having a flexible body pivotally mounted upon a truck platform; a curved track 71, having a rib 72, mounted upon said platform; a track 75, secured to the bottom of the car body, said track 75, having a groove 76, into which the rib 72, extends; substantially as described and for the purpose set forth.

2. A flexible railway car; body pivotally mounted upon a rectangular frame and formed in sections; a sliding frame projecting from each end of said rectangular frame and adapted to be telescoped with the rectangular frame, said car body having beveled ends, and mechanism for separately moving either end section of the car body upon its central pivot; substantially as described and for the purpose set forth.

3. In a railway car the combination of a rectangular frame mounted upon trucks; a flexible sectional car body mounted on said frame; means for locking and holding the car body in longitudinal alignment with the frame, and means for automatically unlocking the car body from its longitudinal alignment so that either section of the car body may be mounted laterally upon the frame independently of the other section; substantially as described and for the purpose set forth.

4. In a railway car the combination of a truck platform mounted upon suitable trucks; a telescopic frame projecting from each end of the platform; means for holding said frame in an extended position which will automatically yield to pressure, and permit said frame to be driven inward; a flexible, sectional car body pivotally mounted upon said platform, and means in connection with said telescopic frame for unlocking and moving laterally the sections of the car body either separately or simultaneously; substantially as and for the purpose set forth.

5. In a railway car, the combination of a platform mounted upon suitable trucks; a car body pivotally mounted upon the platform and adapted to be moved laterally on its pivot; suitable brakes supported by the platform, and means for connecting the brakes with the car body whereby the lateral movement of the car body will automatically set said brakes; substantially as described and for the purpose set forth.

6. In a railway car, the combination of a platform mounted upon trucks; a car body pivotally mounted upon the platform and adapted to be rotated laterally upon its pivot, and means for automatically applying force to its pivotal support in order to rotate the car body; substantially as described and for the purpose set forth.

7. In a railway car, the combination of a supporting frame mounted upon suitable trucks; a telescopic frame projecting from the supporting frame and adapted to be driven inward; a car body pivotally mounted on the supporting frame, and means for connecting the telescopic frame with the pivotal support of the car body whereby the same may be rotated by the driving inward of the telescopic frame; substantially as described.

8. In a railway car, the combination of a car body mounted upon suitable trucks; a window guard secured to the car body, and means in connection therewith whereby the sudden and dangerous stoppage of the car body will cause said window guard to be automatically thrown across the windows of the car; substantially as set forth.

9. In a railway car, the combination of a frame suitably mounted upon trucks; a car body pivotally mounted upon said frame and

capable of being moved laterally; a window guard which is automatically thrown across the windows of the car as the body moves laterally; substantially as described and for the purpose set forth.

10. In a railway car, the combination of a platform mounted upon trucks; a car body pivotally mounted upon said platform, and capable of being moved laterally; a movable window guard secured to the car body, and suitable means in connection with said window guard whereby the lateral movement of the car body will cause the same to be thrown across the windows of the car; substantially as described and for the purpose set forth.

11. In a railway car, the combination of a car body mounted upon trucks and having a pivotal support whereby the car body is capable of being moved laterally; a window guard secured to the car body; means for normally holding the guard in a depressed position beneath the window opening, and means for throwing said guard across the window opening as the car is moved laterally; substantially as and for the purpose set forth.

12. In a railway car, the combination of a platform mounted upon trucks; a car body pivotally mounted on said platform; a window guard 172, secured to the car body; a hooked rod 173, secured to the guard and engaging a staple 174, on the car platform for holding the guard below the window opening, and a spring 176, for throwing said guard across the window opening when the lateral movement of the car body causes the hooked rod to be disengaged from the staple, 174; substantially as described and for the purpose set forth.

13. In a railway car, the combination of a car body mounted upon suitable trucks; a window guard consisting of a cushioned rail hinged to the car body and adapted to extend across the window opening, and a latch 170 for securing and holding said guard across said opening; substantially as described and for the purpose set forth.

14. In a railway car, the combination of a car body mounted upon suitable trucks; a window guard consisting of a cushioned rail hinged to the car body and adapted to extend across the window opening; and a latch 171 for holding said guard in a raised position so as not to interfere with the window opening; substantially as and for the purpose set forth.

15. In a railway car, the combination of a supporting frame mounted upon trucks; telescopic frames projecting therefrom; pilot guards secured to said telescopic frames and extending rearwardly and downwardly therefrom, and means for connecting the pilot guards with the supporting frame; substantially as described and for the purpose set forth.

16. In a railway car, the combination of a supporting frame mounted upon trucks; telescopic frames projecting therefrom; pilot guards secured near the outer end of the telescopic frames, and extending rearwardly, downwardly and diverging therefrom, and depending brackets secured to the supporting frames in which the pilot guards have a movable bearing; substantially as described and for the purpose set forth.

17. In a railway car, the combination of a supporting frame mounted upon trucks; telescopic frames projecting therefrom; pilot guards having their outer ends secured to the telescopic frames and extending rearwardly, downwardly and diverging therefrom and having a suitable support whereby they are held at a point beneath the truck axles; substantially as and for the purpose set forth.

18. In a railway car, the combination of a supporting frame mounted upon trucks; telescopic frames projecting therefrom, and inverted V shaped pilot guards secured to the telescopic frames; substantially as and for the purpose set forth.

19. In a railway car, the combination of a platform mounted upon trucks; a flexible, sectional car body pivotally mounted upon the platform; means for moving the car body laterally upon its pivotal point, and means for protecting the central joint of the car body from undue strain when being so moved on its pivotal support; substantially as described and for the purpose set forth.

20. In a railway car, the combination of a platform mounted upon trucks; a flexible sectional car body pivotally mounted upon the platform; a cable mounted upon rollers on said platform and having frictional contact therewith, said cable being secured to the car body at suitable points, and having tension bars secured to the platform with pulleys thereon with which the cable engages for the purpose of taking up slack in the same; substantially as set forth.

21. In a railway car, the combination of a platform mounted upon trucks; a flexible, sectional car body pivotally mounted upon the platform; tension bars having one of their ends secured to the car body and their opposite end secured to the platform; said tension bars serving to tensionally hold the car body in longitudinal alignment with the platform; substantially as and for the purpose set forth.

22. In a railway car, the combination of a platform mounted upon trucks; a car body pivotally mounted upon the platform, and tension bars 91, being secured at 90, to the platform and to the car body at 92, for tensionally holding the car body in horizontal alignment with the platform; substantially as set forth.

23. In a railway car, the combination of a platform mounted upon trucks; a car body pivotally supported upon the platform; safety doors hinged to the car body, and means in connection with the car body and platform whereby when the car body is moved laterally on its pivot, the safety doors will be automatically opened; substantially as and for the purpose set forth.

24. In a railway car, the combination of a platform mounted upon trucks; a car body pivotally supported upon the platform; safety doors hinged to the car body; a bell crank lever 126, pivoted to the car body and having a downwardly extending arm 131; a plate 125, secured to the platform over which the arm 131, travels and automatically releases the safety door and permits it to open as the car moves laterally on its pivot; substantially as described and for the purpose set forth.

25. In a railway car, the combination of a supporting frame mounted upon trucks; telescopic frames projecting therefrom; and means for locking the supporting frames of adjacent cars in longitudinal alignment when said telescopic frames have been driven inward; substantially as and for the purpose set forth.

26. In a railway car, the combination of a supporting frame mounted upon trucks; telescopic frames projecting therefrom and interlocking members 181, 182, locking said supporting frames in longitudinal alignment when said telescopic frames have been driven inward; substantially as described and for the purpose set forth.

27. In a railway car, the combination of a supporting frame mounted upon trucks; telescopic frames projecting therefrom; rods 181, and bell mouthed tubes 182, secured to the supporting frame, said rods and tubes being alternate and mounted on each end of the supporting frames whereby when the telescopic frames have been driven inward, the rods and tubes on adjacent supporting frames will interlock with each other; substantially as described and for the purpose set forth.

28. In a railway car, the combination of a supporting frame mounted upon trucks; truss bars extending parallel with the supporting frame and beneath the truck axles and depending brackets secured to the supporting frames and adjacent to the trucks to which the truss bars are connected; substantially as and for the purpose set forth.

29. In a railway car, the combination of a supporting frame mounted upon trucks; a car body pivotally mounted thereon, and adapted to move laterally on its pivot, and means for automatically connecting the top of the car body with an adjacent car when said car has been moved laterally; substantially as and for the purpose set forth.

30. In a railway car, the combination of a supporting frame mounted upon trucks; a car body pivotally mounted thereon and adapted to move laterally with mechanism mounted upon the ends of the car body which will automatically unite with mechanism on the adjacent end of another car body of its like, when in longitudinal alignment therewith, and thus form a friction clutch, and by the lateral movement of the car body form a positive connecting tension clutch and which will freely and automatically release either or both of said connections when necessary; substantially as and for the purpose set forth.

31. In a railway car, the combination of a supporting frame mounted upon trucks; a car body pivotally mounted thereon, and a vestibule having a chafing plate so attached to the end of the car as to have a swinging and lateral movement upon the same; substantially as and for the purpose set forth.

32. In a railway car, the combination of a supporting frame mounted upon trucks; a car body pivotally mounted thereon; a vestibule having a chafing plate so mounted upon a car body having beveled ends as to be automatically adjustable from a transverse alignment with the body of the car to an alignment with its beveled portion; substantially as and for the purpose set forth.

33. In a railway car, the combination of a supporting frame mounted upon trucks; a car body pivotally mounted thereon; and having beveled ends; a vestibule having a chafing plate fixed thereto and having a gangway platform fixed to the chafing plate; substantially as and for the purpose set forth.

34. In a railway car having a vestibule, the combination of a pivoted post 149, having extending arms 152; a chafing plate hinged to said arms; a spring for holding said arms in an obliquely extended position with the chafing plate; a tension spring 160; a bolt 159, passing through the same, and a bracket 158, forming a bearing for said spring; substantially as and for the purpose set forth.

35. A railway car body having beveled ends; a gangway platform pivotally connected therewith, and having face plates secured thereto in transverse alignment with the car body, and adapted to be moved into oblique alignment therewith; substantially as and for the purpose set forth.

36. A railway car having beveled ends; a gangway platform 150, pivoted thereto having a face plate 166, with extensions 167, and springs for normally holding the platforms in transverse alignment with the body of the car; substantially as and for the purpose set forth.

37. In a railway car, the combination of a flexible jointed car body mounted upon a turntable having a suitable support, said turntable having a central post; a pivoted member secured to one section of the car body; a pivoted member secured to the other section of the car body, one of said members overlapping and having a bearing on the other member; substantially as described and for the purpose set forth.

38. In a railway car, the combination of a flexible jointed car body; a supporting frame mounted upon trucks; a vertical post; turntable members having pivotal connection with the post on which the sectional car body is mounted, one section of the car body having a top extension adapted to overlap the other section and through which the vertical post

extends; a bearing plate loosely mounted on said post and secured to one section of the car body, and a similar bearing plate secured rigidly to the post and also secured to the other section of the car body; substantially as and for the purpose set forth.

39. In a railway car, the combination of a supporting frame; a flexible jointed car body mounted upon a turn-table supported by said frame, said turn-table consisting of separate members; a central post to which the turn-table members are pivoted; a laterally extending arm on the lower end of the post; a laterally extending arm on one of the turn-table members; a telescopic frame projecting from the supporting frame, and means for connecting the telescopic frame with said arms; substantially as set forth.

40. In a railway car, the combination of a supporting frame mounted upon trucks; a car body pivotally mounted on said frame; a telescopic frame projecting from the supporting frame; a compression cylinder and means for connecting the telescopic frame with the compression cylinder when the same has been driven inward; substantially as and for the purpose set forth.

41. In a railway car, the combination of a supporting frame mounted upon trucks; a car body pivotally mounted on said frame; a telescopic frame projecting from the supporting frame; a compression cylinder having a piston; a thrust rod between the cylinder piston and the telescopic frame and secured to the telescopic frame; a support for said thrust rod and a spring located upon said rod on each side of said support; substantially as described and for the purpose set forth.

42. In a railway car, the combination of a supporting frame mounted upon trucks; a telescopic frame projecting therefrom, and a locking device for locking the telescopic frame in its extended position, consisting of a rock-shaft 11, having a movable bearing; and arm 10, secured thereto, said arm being provided with an extension for engaging the rear end of the telescopic frame; substantially as described.

43. In a railway car, the combination of a supporting frame mounted upon trucks; a telescopic frame projecting therefrom; a rock-shaft having a movable bearing; an arm 10, secured thereto; an extension on said arm for engaging the rear end of the telescopic frame; an angular bar 27, fulcrumed to the supporting frame; a hinged connecting bar 24, for connecting the bar 27, with the arm 10, and a guide bolt 30, having a spring thereon with which the arm 27, engages; substantially as and for the purpose set forth.

44. In a railway car, the combination of a supporting frame mounted upon trucks; a telescopic frame projecting therefrom; an arm 10, mounted on a shaft 11, having a movable bearing consisting of a hinged bar 12, having a guide bolt 14, passing through the bar 12, and a spring in said bolt with which said bar engages; substantially as described and for the purpose set forth.

45. In a railway car, the combination of a supporting frame mounted upon trucks; a flexible car body mounted thereon; a telescopic frame projecting from the supporting frame; a latch receiver secured to the bottom of the car body; a pivoted latch bar; means for normally holding the latch bar in engagement with the latch receiver; a rock-shaft having a depending arm; a rod for connecting the depending arm with the latch bar, and an arm 10, on the rock-shaft for engaging the telescopic frame whereby one section of the car body may be unlocked irrespective of the other section; substantially as and for the purpose set forth.

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