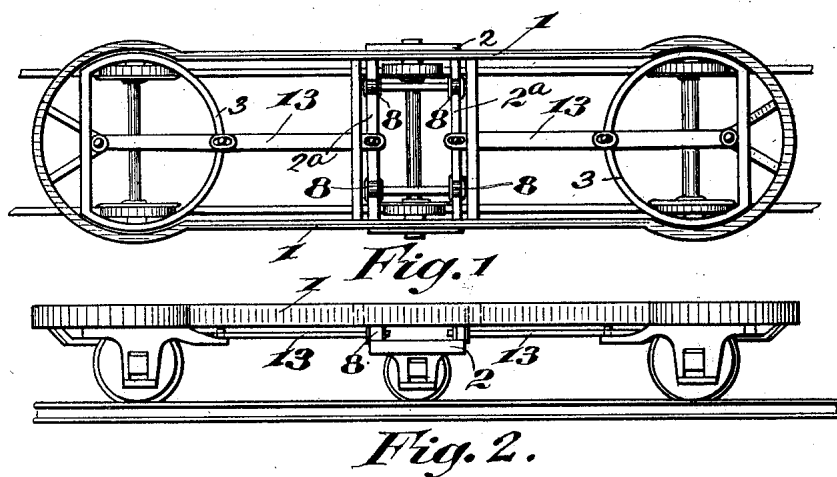


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AXLE TRUCK OF RAILWAY AND TRAMWAY VEHICLES.
APPLICATION FILED SEPT. 6, 1910.

1,093,755.

Patented Apr. 21, 1914.
2 SHEETS—SHEET 1.



Witnesses:

L. H. Gauvin
E. J. Gauvin

THOMAS WALTER BARBER
Inventor

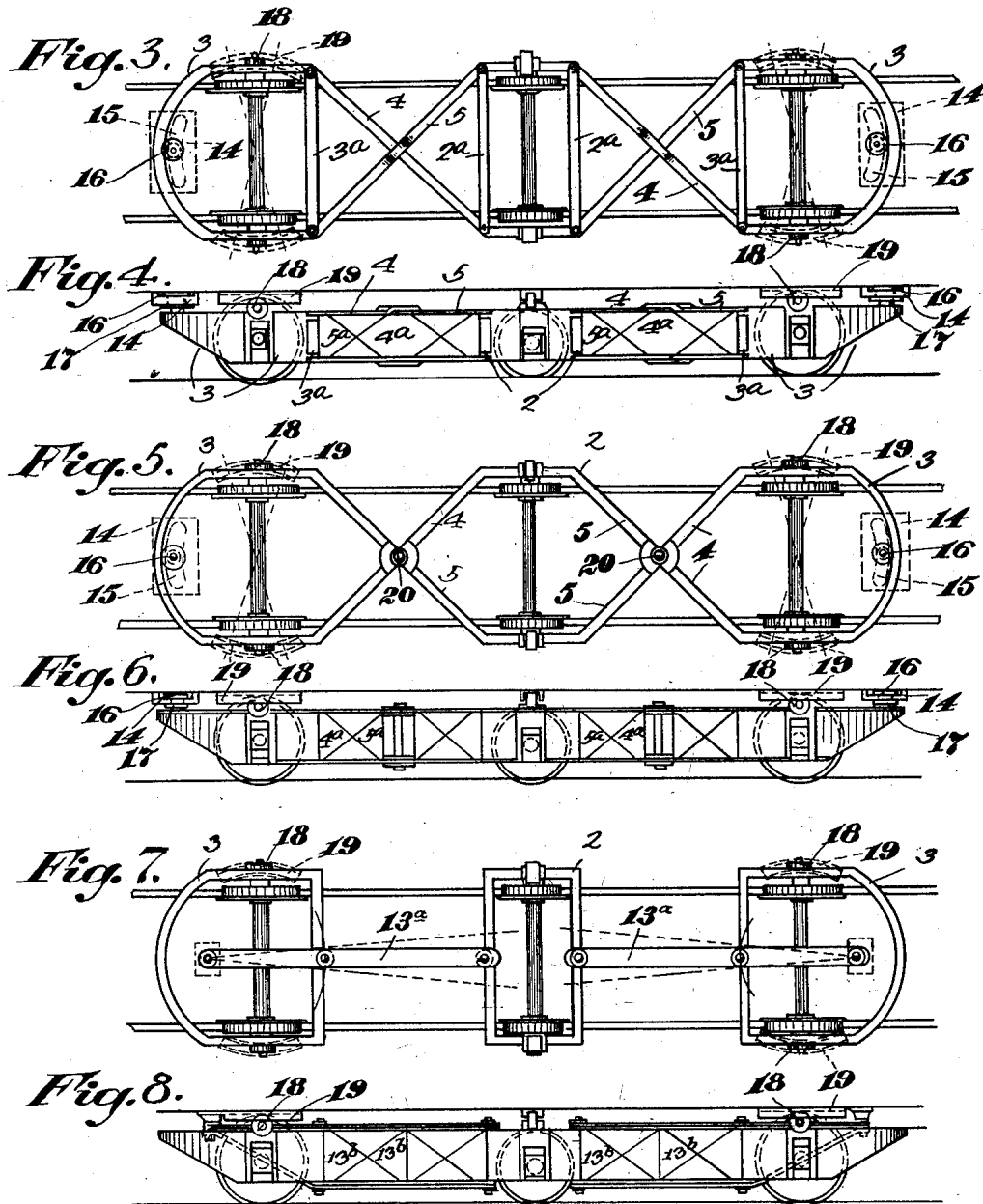
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Attorneys

UNITED STATES PATENT OFFICE.

THOMAS WALTER BARBER, OF SOUTH NORWOOD, LONDON, ENGLAND.

AXLE-TRUCK OF RAILWAY AND TRAMWAY VEHICLES.

1,093,755.

Specification of Letters Patent.

Patented Apr. 21, 1914.

Application filed September 6, 1910. Serial No. 580,719.

To all whom it may concern:

Be it known that I, THOMAS WALTER BARBER, a subject of the King of Great Britain, residing at South Norwood, London, S. E., England, have invented certain new and useful Improvements in Axle-Trucks of Railway and Tramway Vehicles; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention to be hereinafter described relates to railway rolling stock, and more particularly to curve adjusting connections between car axles.

Broadly speaking, it comprises front and rear axles adapted to support a car frame, a member arranged between the front and rear axles and adapted to have movement laterally of the track, and curve adjusting connections between the laterally moving member and the front and rear axles.

In order to more clearly disclose the construction, operation and use of the invention, reference should be had to the accompanying drawings forming part of the present application.

Throughout the several figures of the drawings, like reference characters designate the same parts.

Figure 1 represents a top plan view of a simple form of my invention; Fig. 2, a side elevation of the same; Fig. 3, a top plan view of a modification of my invention; Fig. 4, a side elevation of the same; Fig. 5, a top plan view of a further modification thereof; Fig. 6, a side elevation of the same; Fig. 7, a top plan view of a further modification of my invention, this form more nearly resembling the simple construction set forth in Figs. 1 and 2; and Fig. 8 represents a side elevation of the same.

The main object of this invention is to provide means which will absolutely insure the proper slant or inclination of the front and rear axles of the car as it travels around a curve in the track so that they will be in line with the radii of said curve.

A further object is to provide a truck frame so braced and strengthened that it will form a unit in itself independent of the base of the body for vertical rigidity, thus providing a truck that will relieve the base of the body of all stress and strain here-

tofore experienced in operating such vehicles.

Referring now in detail to the drawings, 1 designates a metallic truck frame rigid in both a vertical and horizontal plane and having enlarged circular ends forming bearings for the two end axle trucks turning therein, thus providing safe, durable and strong bearings for said trucks and obviating the difficulty found in using the common king pin or bolt with the modern motor driven cars. Metallic rods or link levers 13 pivoted at their outer ends to brackets integral with each end of said frame respectively connect said end trucks, by means of slot and pin engagement with the inner part thereof, to a middle axle truck 2, by means of a similar engagement, located in the longitudinal center of said frame and having lateral motion with relation thereto, its office being to radiate the front and rear axle trucks when passing around a curve. It is found necessary to have a sliding connection between the ends of said link levers 13 and said axle truck 2. This is provided by the small slot near the end of said levers which engages the pin, see Fig. 1. A sliding engagement, as is obvious, is not needed, between the end axle trucks and the link levers 13. Of course it is to be understood that all wheels are to be provided with flanges, in order that they may grip the tracks when passing around a curve especially and shift the position of the center axle truck to radiate the two end axle trucks to the proper degree. The center truck 2 is provided with roller bearings 8 to facilitate its lateral movement for the purpose above set forth. In passing around a curve this truck 2 will move laterally with relation to said frame 1 and will thereby move the inner ends of the rods or link levers 13, which are pivoted at their outer ends and have pin and slot engagement with said end axle trucks as above explained. It follows therefore that said link levers 13 when so moved will simultaneously swivel or radiate said end trucks according to the lateral position of said truck 2, which position will depend upon the arc of the curve of the track. This form is the simplest form shown in the accompanying drawings.

In the modification shown in Figs. 3 and 4 I dispense with the frame 1 and form my axle truck frames and connecting means of

such strength and depth that they are vertically rigid, though horizontally flexible. To attain this the end axle trucks 3 are formed of solid plate metal. The same is true of the central axle truck 2. Each end truck in this construction is near U-shape and has its inner ends connected by the member 3^a formed of an upper and a lower metallic beam connected by bracing struts or truss work, or truss work and plates. The middle axle truck 2 is provided with a similar connecting and bracing member 2^a on each side of the axle.

The end axle trucks 3 are connected to the middle truck 2 by means of crossed radiating links 4 and 5 respectively formed of an upper and lower metallic beam strengthened, braced and held together by struts, truss work or truss work and plates as at 4^a and 5^a. This form differs from the form above described in the manner of connecting the same to the car body. In the present form the end axle trucks 3 have no circular bearing, but of course must be able to turn or swivel. To permit such action I have provided a metallic plate 14 secured to the bottom of the car body and provided with a curved slot 15, through which passes a cam-bolt 16 which is fastened securely through the ends of said trucks 3 respectively, washers 17 being inserted between the bottom face of said plates and the top face of said trucks to form a bearing on which the end trucks 3 may easily turn and shift their positions according to the curve being traversed.

It has been found advisable to provide rollers 18 mounted on and traveling with end axle trucks 3 and working in arc grooves 19 in the lower face of the car body bottom to govern the turning of said trucks 3 and prevent the same from passing around too sharp curves, thus preventing any chance of derailing the car in such manner.

The form illustrated in Figs. 5 and 6 is also of the vertically rigid and horizontally flexible type. It is made up essentially of two end axle trucks 3 and one center axle truck 2, all three axle trucks being substantially of the same size and pivotally connected together at the two points 20 for horizontal flexing. In this form the outer ends and sides of the end axle trucks 3 are made of deep or broad solid plate metal, the same being true of the sides of the center axle truck 2. From the inner ends of said end axle trucks 3 a V-shaped part 4 projects inward toward the center truck. From the ends of each side of the center truck 2 a V-shaped part 5 projects outward toward the end axle trucks 3. Said V-shaped parts 4 and 5 respectively are pivotally connected at 20 for flexibility in a horizontal plane. These V-shaped parts 4 and 5 are formed of upper and lower metallic beams, braced,

strengthened and joined together by struts, truss work, or plates and truss work as at 4^a and 5^a respectively. This form is provided with the same means of attachment and the same means for governing the movement of the end axle trucks above described in connection with Figs. 3 and 4.

The modification illustrated in Figs. 7 and 8 is composed of two end axle trucks of D-shape and a center axle truck of smaller size and rectangular shape, all of said trucks being formed throughout of deep or broad solid plate metal. A link 13^a pivotally connected at its outer end to a king bolt secured to the bottom of the car body and connected by bolt to the straight inner part of the end axle truck 3, midway thereof, in each instance and secured at its inner end by a sliding connection to the near side of the center axle truck 2, midway thereof, connects said end trucks 3 to the center truck 2. Each link 13^a is composed of an upper and lower metallic beam braced, strengthened and joined together by struts, truss work, or truss work and plates, as at 13^b. This form is provided with the rollers 18 and arc grooves 19. However the end axle trucks will swivel or turn around the king-bolt which connects the body to the link lever 13^a. This connection is the only connection between the car body and the axle truck as a whole.

The chief advantage of the deep and vertically rigid construction set forth in Figs. 3 to 8 is that it forms a truck independent of the car body for vertical rigidity. It is a unit in itself. Thus all strains which would otherwise be received and absorbed by the car body are received and absorbed by the axle truck. In all constructions heretofore known and relating to this art the individual axle trucks have been connected to the car body, using the same as a foundation. In such construction when an obstruction is encountered by a wheel or the wheels there is a tendency to force the wheels back, hence great strain on the car body. This strain is of course multiplied as the mounting of the wheels &c. act as a cant lever. By having the individual axle trucks joined and braced together to form one complete unit, as in the present application, this very objectionable feature is eliminated.

Changes may be made in the construction, arrangement and disposition of the several parts of the invention, and it is meant to include all such within this application, wherein only preferred forms have been disclosed.

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

1. In the running gear of cars, the combination of a truck-frame composed of two end sections and a middle section jointed

together with double joints to insure vertical stability, an axle mounted in each section, a roller at each end of the end sections and a car body having arc grooves in its bottom which receive said rollers to limit the movement of the end trucks.

2. In the running gear of cars, the combination of a truck-frame composed of two end sections and a middle section jointed together for horizontal flexure, an axle mounted in each section, a roller at each end of the end sections and a car body having arc grooves in its bottom which receive said rollers to limit the movement of the end trucks.

3. In the running gear of cars, the combination of a truck-frame composed of two end sections and a middle section jointed together with double joints to give vertical stability and devices for effecting such double jointing, each of said devices consisting of two parallel beams and intervening parts and being pivoted at each end in two different horizontal planes to one of said sections substantially as set forth.

4. In the running gear of cars, a truck-frame composed of two end sections and a

middle section, in combination with pairs of crossed links, each of which consists of two horizontal beams and intervening parts and is pivotally connected at each end in two different horizontal planes to one of said sections.

5. In the running gear of cars, the combination of a truck frame, vertically rigid and horizontally flexible, composed of two end sections and a middle section jointed together with double joints to give vertical stability, an axle mounted in each section, an arc-slotted plate attached to the bottom of the car body at each end thereof, a grooved roller on each end section of said frame working in said slot, the edges of said plate fitting in the groove of said roller, and a roller on each end of the end axles working in an arc groove in the bottom of the car body to limit the movement of the end trucks in relation to the same.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

THOMAS WALTER BARBER.

Witnesses:

WILLIAM HOLMES,
JULES ASTIER.