April 26, 1932. P. SHANNON 1,855,997

UNDERCARRIAGE CONSTRUCTION FOR TRUCKS AND THE LIKE

Filed May 29, 1929 2 Sheets-Sheet 1

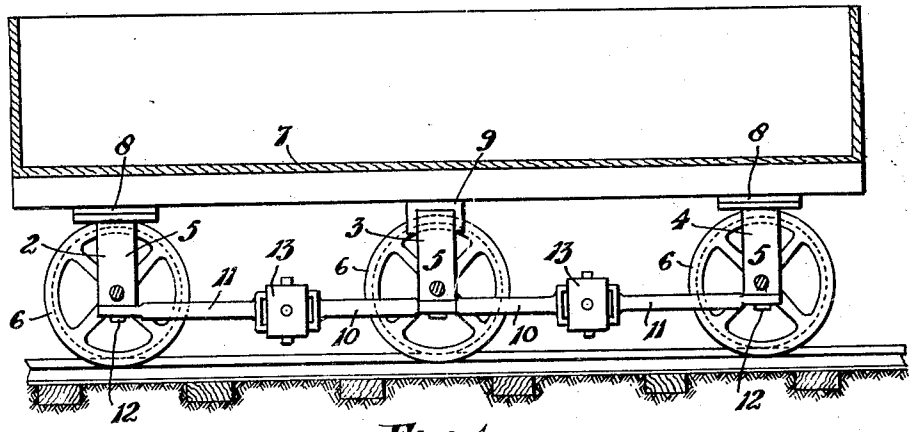


Fig. 1.

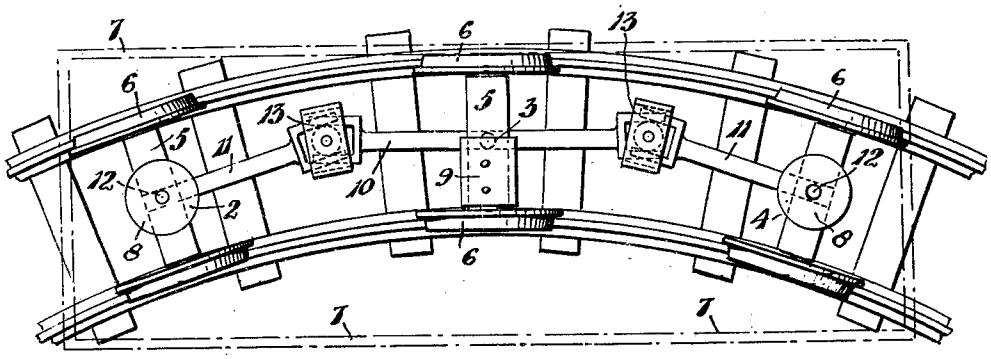


Fig. 2.

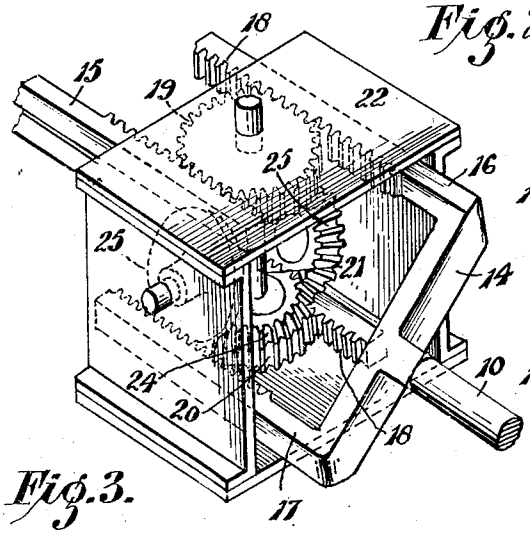


Fig. 3.

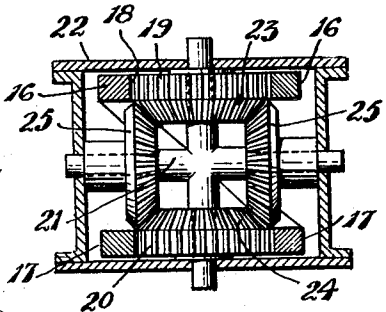


Fig. 4.

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UNDERCARRIAGE CONSTRUCTION FOR TRUCKS AND THE LIKE

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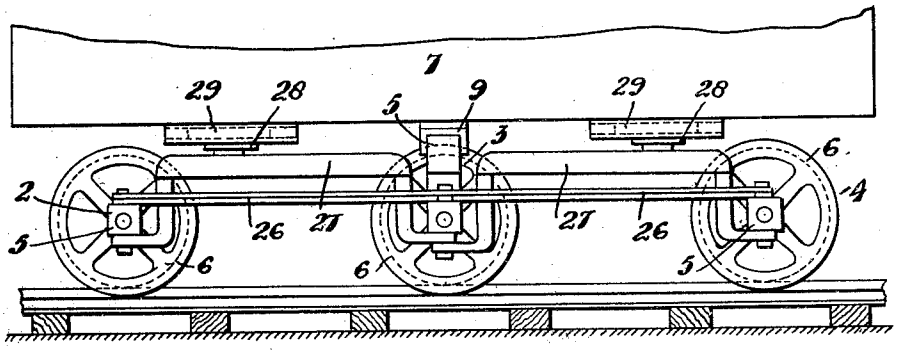


Fig. 5.

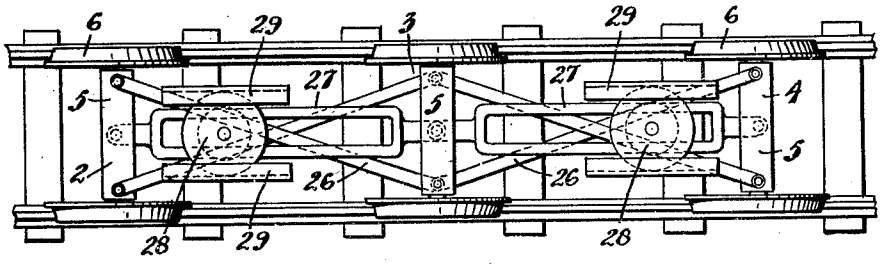


Fig. 6.

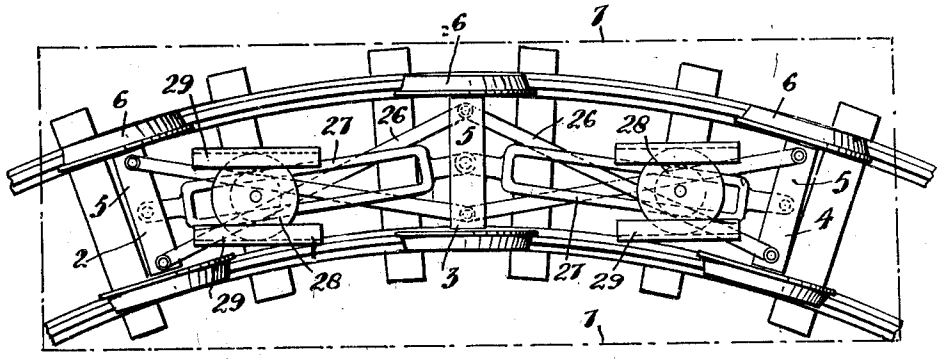


Fig. 7.

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UNITED STATES PATENT OFFICE

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UNDERCARRIAGE CONSTRUCTION FOR TRUCKS AND THE LIKE

Application filed May 29, 1929, Serial No. 367,042, and in Australia September 28, 1928.

This invention relates to an improved undercarriage construction particularly adaptable for railway trucks, tramway cars, mechanical excavating machines and the like.

The chief object of the invention is to provide an undercarriage construction which is capable of safely negotiating sharp turns in the rail track. The improved undercarriage consists essentially of a central floating bogie capable of transverse slidable movement relatively to the car body, two end bogies swivelly connected to the car body, and flexible connecting means between the central bogie and the two end bogies whereby the bogies are capable of coacting movement when rounding curves.

In the accompanying drawings:—

Figure 1 is a sectional side view of an undercarriage construction according to my invention.

Figure 2 is a view in plan showing the action of the undercarriage when rounding a curve.

Figure 3 is a perspective view illustrating portion of the flexible connecting means between the bogies of the undercarriage.

Figure 4 is a cross-sectional detail view of Figure 3.

Figure 5 is a sectional side view showing an undercarriage construction according to an alternative form of the invention.

Figure 6 is a view in plan of Figure 5.

Figure 7 is a similar view to Figure 6, but showing the action of the undercarriage when rounding a curve.

The improved undercarriage construction according to the form of the invention illustrated in Figures 1 to 4 comprises three bogies 2, 3 and 4, each consisting of a frame structure 5 and wheels 6. The two outer bogies 2 and 4 have their frame structures 5 swivelly connected to the underside of the car body 7 by turntables 8. The central bogie 3 is of the floating type, and it has its frame structure 5 transversely slidable in a channel-shaped guide 9 which is secured to the underside of the car body.

The three bogies are interconnected by flexible coupling means consisting of a central bar 10 and two end bars 11. The central bar 10 is fixedly secured midway of its length to the frame structure of the central bogie 3, while the two end bars 11 have their outer ends rigidly connected at 12 to the frame structures of the swivelly mounted bogies 2 and 4.

The inner ends of the bars 11 are connected to the ends of the fixed central bar 10 by the pivotal couplings 13 constructed as illustrated in Figures 3 and 4. These couplings consist of interfitting jaws 14 and 15 formed respectively on the meeting ends of the two bars 10 and 11. Both jaws are angularly set, but each in an opposite direction, so that the jaws interfit as shown in Figure 3. Each jaw has upper and lower arms or prongs 16 and 17 provided on their inner faces with toothed racks 18. The racks of the upper arms 16 mesh with a gear wheel 19, while the racks of the lower arms 17 mesh with a second gear wheel 20. Both of said gear wheels 19 and 20 are loosely mounted on a four-armed spider frame 21 which is supported by an open ended casing 22 fitted around the coupling.

Formed integrally with or attached to the gear wheels 19 and 20 are bevel wheels 23 and 24 respectively which are geared together at opposite sides by bevel pinions 25. The latter pinions 25 are freely rotatable on the spider frame 21. By the coupling means described, the ends of the bars 10 and 11 are connected together in a compensatory manner which enables the connected ends of said bars to have free telescopic movement and limited pivotal movement in relation to each other.

When the truck or car is rounding a curve in the rail track, the two end bogies 2 and 4 move swivelly on their respective turntables 8, while the central floating bogie 3 moves slidably in the channel-shaped guide 9 in a direction outwardly from the longitudinal centre line of the car body. This position of the bogies is shown in Figure 2, and the relative position of the car body is indicated by the dotted line in the same figure. During the slidable movement of the central bogie, the bars 11 pivot freely at the jawed couplings 13 and allow the parts of the undercarriage to

adjust themselves according to the radius of the curve in the track. The gear wheels 19 and 20 and the associated bevel pinions permit the ends of the rods 10 and 11 to have limited telescopic movement in relation one to the other, thus providing for extensible action of the said rods during the movements of the bogies on curves in the rail track.

In the alternative form of the invention illustrated in Figures 5, 6 and 7, the rods 10—11 and the jawed couplings 13 between the bogies are dispensed with, and in lieu thereof diagonal links 26 are employed for connecting the end bogies 2 and 4 to the central floating bogie 3. These links 26 are crossed as shown in Figure 5, and at their ends they are pivoted to the frame structures of the respective bogies.

The bogies are also connected together by bars 27 pivoted to the under portions of the bogie frame structures 5. These bars support turntables 28, which are slidably mounted in guides 29 secured to the underside of the car body 7.

When the truck or car is rounding curves, the outer bogies 2 and 4 move swivelly on the turntables 28, and the central floating bogie 3 moves slidably outwardly in the channel-shaped guide 9, as shown in Figure 7, in manner similar to the previously described construction. The diagonal links 26 enable the end bogies to have required freedom of movement, while the guides 29 permit the turntables to move slidably inwardly towards each other during the movement of the bogies.

What I do claim is:—

1. An improved undercarriage construction for trucks and the like, comprising a central floating bogie, means for mounting the central floating bogie for transverse slidable movement relatively to the car body, two end bogies connected by turntables to the underside of the car body, a bar carried by the central floating bogie, bars connected to the end bogies, flexible connecting means including compensating gearing between the bar carried by the central floating bogie and the bars connected to the end bogies, and pivotal couplings between said bars and the bar of the central bogie, said couplings being constructed to permit limited telescopic movement of said connected bars, each of said pivotal couplings consisting of interfitting pronged jaws formed on the bars, racks on said jaws, and gear wheels meshing with said racks.

2. An improved undercarriage construction for trucks and the like, comprising a central floating bogie slidably mounted in guides on the underside of the car body whereby it is capable of transverse slidable movement relatively to the car body, two end bogies connected to the car body by turntables, a fixed bar carried by the central floating bogie, bars connected to the end bogies, interfitting jaws on said bars, racks formed on the prongs of said jaws, upper and lower gear wheels each meshing with a rack on each jaw, and meshing bevel pinions interconnecting said gear wheels.

3. An undercarriage construction as claimed in claim 2, and wherein the gear wheels and pinions are mounted on a spider frame supported in an open-ended casing.

4. An undercarriage construction as claimed in claim 2, and wherein the jaws are angularly set in opposite directions.

5. An undercarriage construction for trucks comprising a central bogie, means for mounting the central bogie for transverse movement, a bar mounted on the central bogie, opposite end bogies swiveled to the truck frame, each end bogie having an inwardly extended bar, rack and gear connection at the juncture ends of the several bars to permit flexible and telescopic movement and the transverse movement of the central bogie when the truck rounds a curve.

In testimony whereof I affix my signature.

PHILIP SHANNON.