

Dec. 17, 1929.

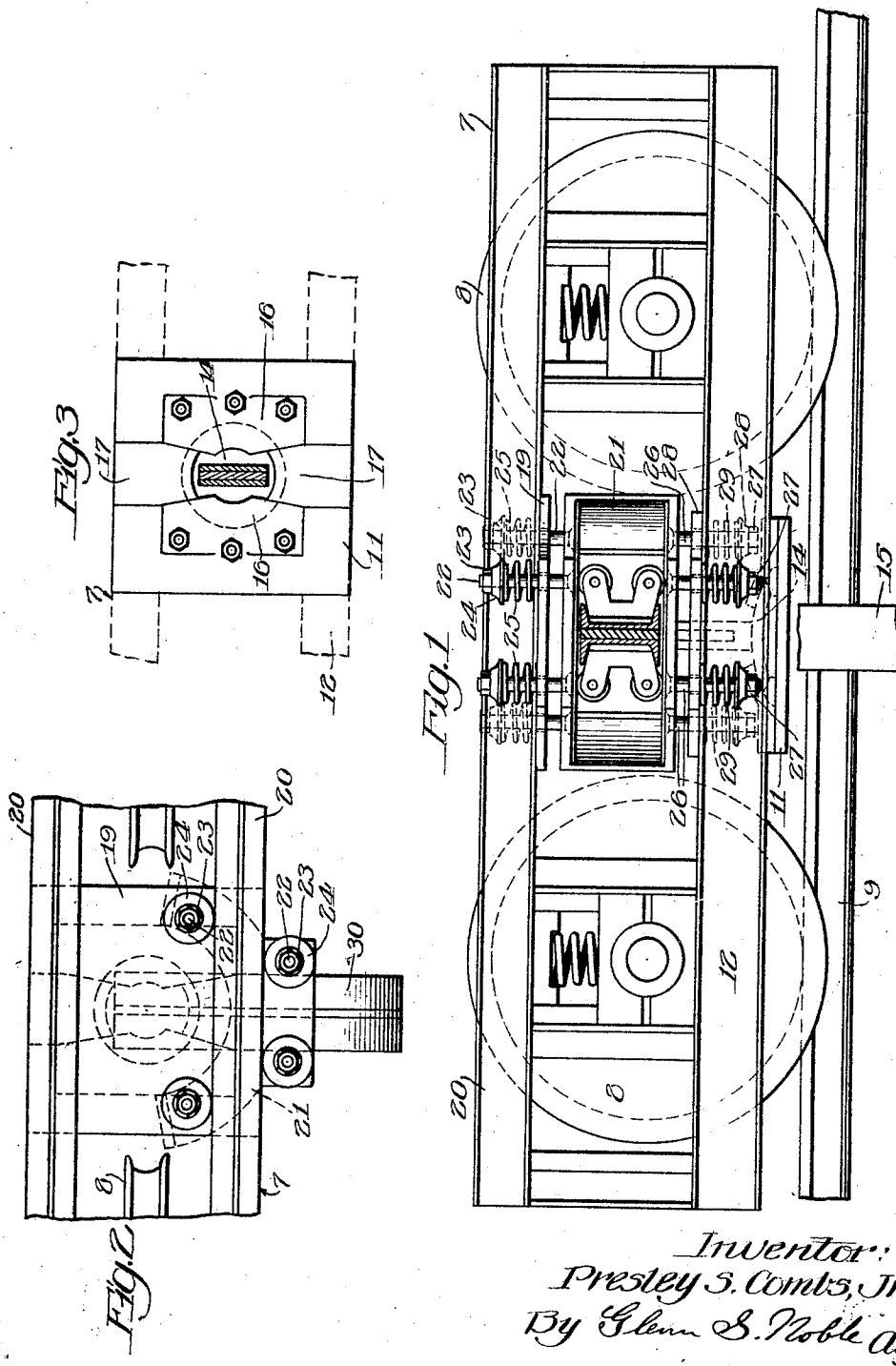
P. S. COMBS, JR

1,740,416

MONORAIL CAR TRUCK

Original Filed Nov. 29, 1926

2 Sheets-Sheet 1



Inventor:
 Presley S. Combs, Jr.
 By Glenn S. Noble Atty.

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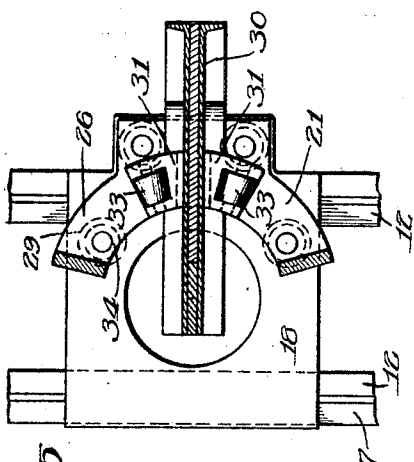


Fig. 5

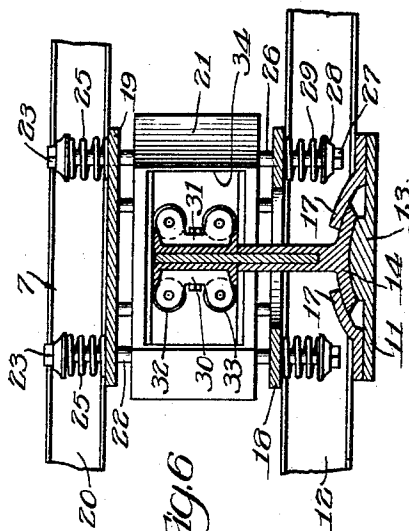


Fig. 6

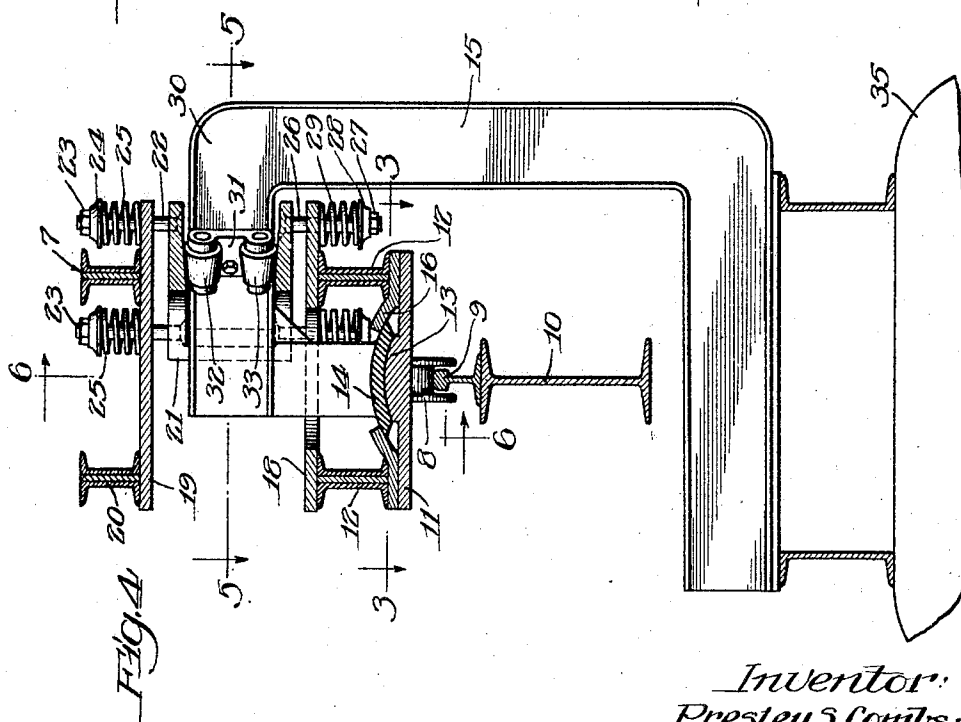


Fig. 4

Inventor:
 Presley S. Combs, Jr.
 By Glenn S. Noble, Atty.

UNITED STATES PATENT OFFICE

FRESLEY S. COMBS, JR., OF CHICAGO, ILLINOIS, ASSIGNOR TO MONORAIL ENGINEERING CORPORATION, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

MONORAIL CAR TRUCK

Substitute for application Serial No. 151,425, filed November 29, 1926. This application filed October 5, 1929. Serial No. 397,712.

This application is a substitute for applicant's prior application, Serial No. 151,425, filed November 29, 1926.

This invention relates to monorail car construction and more particularly to means for providing a certain amount of flexibility or yielding between the car trucks and the hangers. In monorail structures, particularly of the over-running type in which the cars are suspended from overhead rails on which the trucks run, I have found it necessary or advisable to provide means whereby the hangers, which are rigidly secured to the car bodies, may have a certain amount of play or swinging movement longitudinally with respect to the truck and also laterally with respect to the same, and in order to provide such relative movements, I have devised a universal joint connection between the hanger and the trucks, which forms one of the novel features of this invention. Inasmuch as the trucks are held upright by the weight of the car, I have provided resilient means tending to hold these parts in normal position.

The longitudinal oscillation or movement is particularly necessary to permit the trucks to readily accommodate themselves to vertical variations or curves in the track so as to avoid undue strains which would be occasioned if the hangers were rigidly secured to the trucks.

The objects of this invention are to provide a novel connection between a monorail truck and the car hanger or hangers; to provide a universal joint connection between the truck and the hanger and resilient means tending to hold these parts in predetermined or normal position; to provide a monorail truck and hanger with a ball and socket joint connection and with means tending to hold the parts in normal position while permitting the swinging movement of the truck on the joint in a horizontal direction; to provide a monorail truck and hanger with a universal joint connection and a resiliently mounted cage or housing on the truck which is engaged by rollers on the arm of the hanger for tending to hold the parts in normal position; and to provide such other advantages and novel features as will appear more fully from the following description.

In the accompanying drawings illustrating this invention—

Figure 1 is a side view of a truck showing the hanger mounting;

Figure 2 is a plan view of a portion of the same;

Figure 3 is a sectional view taken on the line 3—3 of Figure 4;

Figure 4 is a vertical sectional view;

Figure 5 is a sectional view taken on the line 5—5 of Figure 4; and

Figure 6 is a sectional view taken on the line 6—6 of Figure 4.

As shown in these figures, parts are illustrated diagrammatically or broken away for convenience in illustration, as will be readily understood from the different views.

The car truck 7 which may be constructed in any ordinary or preferred manner is provided with wheels 8 which run on a rail 9 which may be supported as by means of beams 10 and posts or supporting members (not shown).

A plate or casting 11 is secured to the lower beams 12 of the truck and has a central curved or spherical bearing 13. This is engaged by a similarly curved socket or bearing member 14 which projects downwardly and is rigidly secured to the upper end of the U-shaped hanger 15. These two bearing members form a ball and socket joint or pivot between the truck and hanger so as to permit a substantially universal swinging movement between these parts. The pivot or bearing member 14 is held in engagement with the pivot or bearing 13 by means of keepers 16 and 17 which are secured to the truck frame and which project over the upper curved surface of the bearing 14.

A plate 18 is secured to the lower truck beams 12 and a similar plate 19 is secured to the upper truck beams 20, and a cage or housing 21 is resiliently supported, as by means of any suitable springs, between these plates. In the present instance, pins or bolts 22 are secured to the upper portion of the housing and project upwardly through holes in the plate 19 and are provided with nuts 23 and washers 24 which engage with springs 25, resting on the upper surface of the plate 19.

Similar bolts 26 project downwardly through the plate 18 and are provided with nuts 27 and washers 28 which coact with the springs 29 on the lower side of the plate 18. In this manner, the housing is yieldingly supported between the plates 18 and 19. The upper horizontal arm 30 of the hanger or support 15 is provided on either side with brackets 31 in which are mounted upper rollers 32 and lower rollers 33. These rollers are adapted to engage with or roll on the adjacent upper and lower surfaces of the housing 21 and are preferably made conical or tapered so as to engage with the similarly tapered or bevelled surfaces of the housing. As shown in Figure 6, the housing 21 has an opening 34 through which the arm 30 projects and is allowed sufficient play for its relative movement with respect to the truck.

By means of this arrangement, it will be seen that the weight of the car body 35 and the load carried thereby will be supported on the universal joints between hangers and the trucks, and at the same time the truck may have a limited movement in all directions, except vertically, with respect to the hanger, but this movement is resisted by the action of the rollers 32 and 33 which engage with the housing 21 and any movement of this housing with respect to the truck is opposed by the springs which tend to hold it in central or normal position. On account of this novel yielding support between the hangers and the trucks, the trucks are permitted such movement as may be desirable for the best operation of the system.

While I have shown a preferred form of my invention, it will be evident to those skilled in the art that changes may be made in the details of construction without departing from the essential engineering principles involved, and therefore I do not wish to be limited to the exact form herein shown and described, except as specified in the following claims, in which I claim:

1. The combination with a monorail truck, of a hanger having a universal joint connection therewith, a cage resiliently mounted in the truck, and means on the hanger for engagement with the cage throughout the range of movement of the hanger and tending to hold the hanger in normal position with respect to the truck.

2. The combination with a truck, of a car hanger, a ball and socket joint between the truck and hanger, a housing mounted for vertical movement in the truck, springs tending to hold the housing in normal position, and means on the hanger engaging with the housing, the arrangement being such that the hanger is permitted to swing in all directions with respect to the truck, such movement however being resisted by the springs which tend to return the parts to normal position.

3. In an apparatus of the character set

forth, the combination with a truck having wheels for supporting the same on a single rail, of a car, a substantially U-shaped hanger for supporting the car from the truck, a ball and socket connection between the hanger and truck, a housing having opposed bearing faces, bolts engaging with said housing and projecting through portions of the truck, springs engaging with said bolts and truck and tending to hold the housing in centralized position, brackets on the hanger, and rollers on the brackets engaging with the bearing faces of the housing.

4. The combination with a monorail truck having a substantially spherical bearing in the lower portion thereof, of a car hanger having a correspondingly shaped bearing member engaging with the first named bearing, means tending to hold the bearing members in engagement with each other, upper and lower plates on said truck, a housing having opposed upper and lower bearing surfaces, bolts secured to the upper portion of said housing and passing through the upper plate on the truck, bolts secured to the lower portion of the housing and passing through the lower plate on the truck, springs coacting with the truck and housing and tending to hold the housing in normal position, and bearing members secured to the hanger and engaging with the bearing faces of the housing.

5. The combination with a monorail truck, of a car hanger having a universal joint connection with the truck, a cage resiliently mounted in the truck and adapted to embrace a portion of the hanger while permitting the necessary movement of the hanger with respect to the truck, said cage having oppositely disposed diverging bearing faces and conical rollers mounted on the hanger and engaging with said surfaces throughout the movement of the hanger.

PRESLEY S. COMBS, JR.