Feb. 24, 1942. P. VERPLANCK 2,274,016

OVERHEAD CAR HANGER

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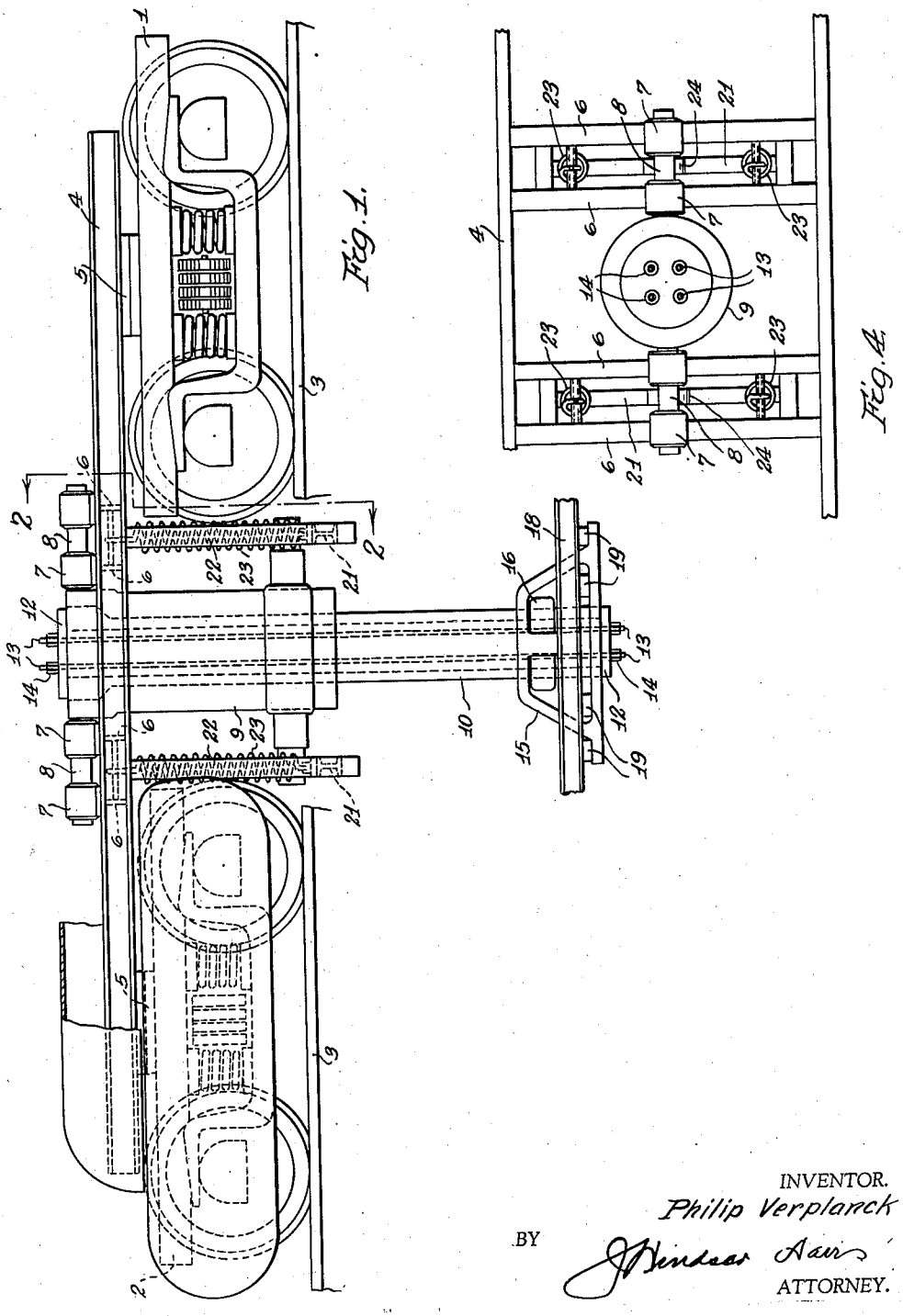


Fig. 1.

Fig. 4.

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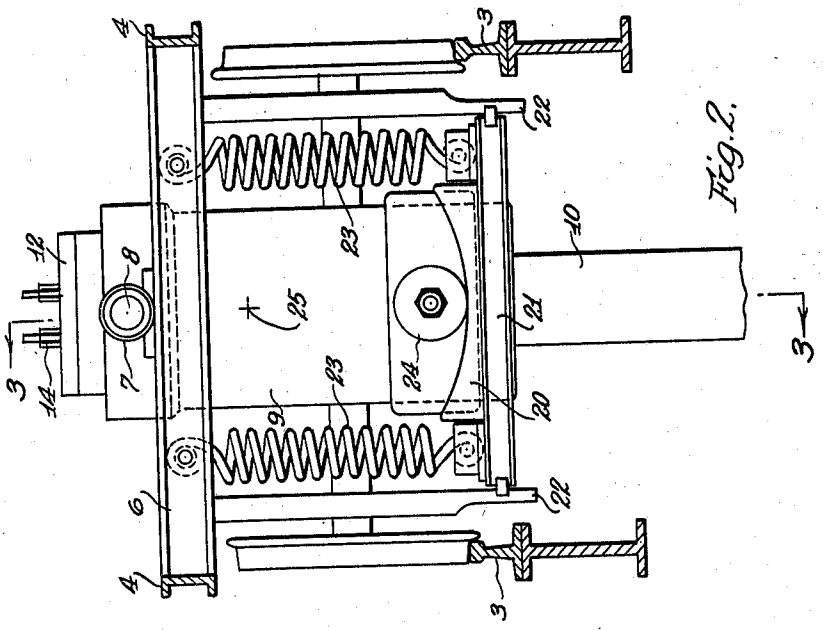


Fig. 2.

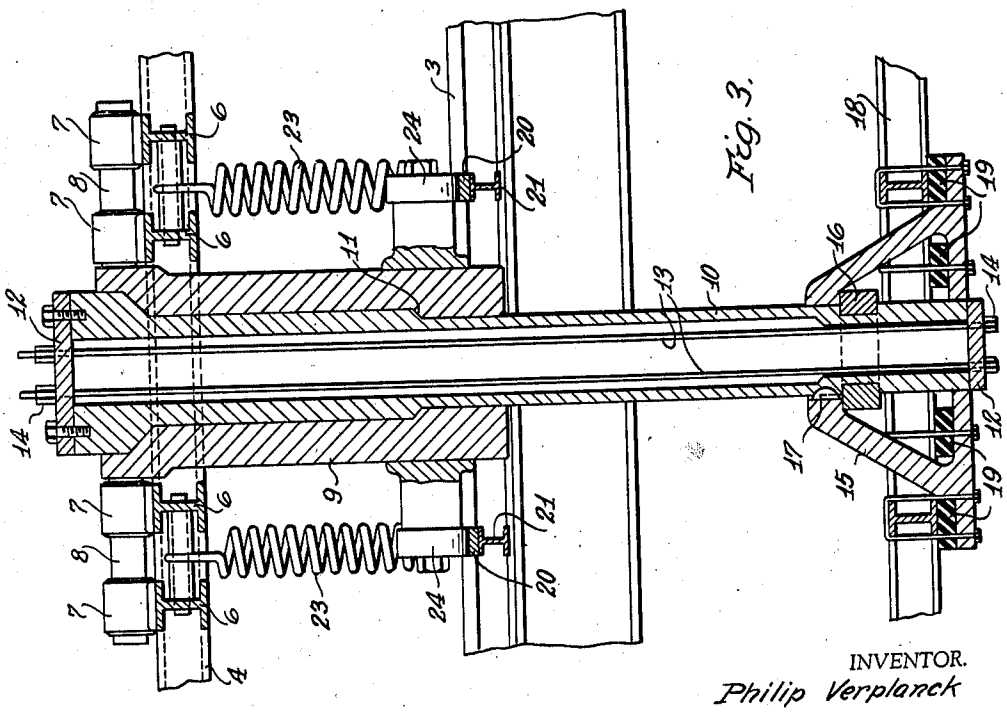


Fig. 3.

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OVERHEAD CAR HANGER

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10 Claims. (Cl. 105—148)

This invention relates to overhead car hangers and has for its primary object to provide means depending from an overhead truck assembly for supporting a car body therebeneath, said means being constructed to permit lateral swinging movement of the car body about an axis in the plane of the truck assembly, and including resilient means for opposing swinging movement and for damping side sway.

More specifically, the main object is to provide mechanism of the character above mentioned wherein the intensity of the resilient opposition to swinging movement progressively increases proportionately to the intensity of swinging movement. In this respect, the same means is employed to damp side sway or "hunting" motions as is employed to restrain the body from excessive lateral swinging movement in the presence of centrifugal force such as is present when the vehicle travels around a curve.

Another object is to provide a king pin assembly, laterally swingable about a horizontal axis, and having rollers thereon remote from the axis and engaging resiliently supported inclined tracks. The inclination of the tracks is such that movement of the rollers through an arc causes them to contact and depress the tracks. The resilient means supporting the tracks thereby acts to resiliently oppose swinging movement of the king pin assembly.

Another object is to provide means for resiliently opposing swinging movement of the king pin assembly having rollers thereon spaced from the axis of swinging movement, which comprises resiliently supported, concave track members, contacted by said rollers, and having radii shorter than the radii of the arcs through which said rollers move when the king pin assembly swings laterally. This difference in the radii acts to produce an inclined plane of varying angularity at the points of contact of the rollers with the track members and, therefore, results in increasing opposition by the resilient track supporting means. The least opposition is produced when the king pin assembly is vertically disposed, and as it swings laterally, the opposition progressively increases in value.

Other objects and advantages will become more fully apparent as reference is made to the accompanying drawings wherein my invention is illustrated, and in which:

Fig. 1 is a side elevation of a truck unit,

Fig. 2 is a view taken on the line 2—2 of Fig. 1,

Fig. 3 is a view taken on the line 3—3 of Fig. 2, and

Fig. 4 is a fragmental plan view.

In Fig. 1 there is illustrated a single truck unit having a king pin assembly depending therefrom for supporting a car body. This unit, however, constitutes the support for but one end of the car body, and it will be understood, therefore, that two of such units are provided with one connected to the car body near each end thereof. Inasmuch as both of the units used in a complete vehicle are identical in construction it has been deemed necessary to illustrate but one here.

The unit illustrated comprises two rail vehicle trucks 1 and 2 which may be of any special or conventional construction, and which are adapted to traverse overhead rails 3. Supported by the two trucks is a main frame composed of two longitudinally extending side girders 4 connected to respective trucks by the usual king pin means generally designated 5. Cross members 6, arranged in parallel pairs, with the pairs disposed on opposite sides of the longitudinal center of the main frame, unite and are supported by the side frame members 4.

Mounted on the cross members 6 are bearings 7 supporting trunnions 8 which carry a king pin jacket 9, the jacket 9 thus being supported for swinging movement laterally of the unit about an axis extending longitudinally of the vehicle, but being prevented from swinging fore and aft. Depending from the king pin jacket 9 is a king pin 10, extending entirely through the jacket, and depending from the bottom thereof. The jacket and king pin have coacting internal and external bearing surfaces 11 by which the king pin is supported for rotation relative to the jacket.

The king pin 10 consists of a hollow, generally cylindrical body, having caps 12 on opposite ends thereof tied together by a multiplicity of safety cables 13 and nuts 14 to support the load in case of failure of the king pin. Attached to the lower end of the king pin 10 is a bracket 15, retained on the king pin by a two-piece collar 16, which fits into a groove in the king pin, and which is held against rotation by a key 17. A car body frame 18 is supported on the bracket 15 by rubber pads 19.

In order that the jacket 9 and the king pin 10 be restrained from excessive swinging movement, such as is caused by centrifugal force when the vehicle travels around a curve, as well as lateral motion or sway of the "hunting" type, means is provided for resiliently opposing lateral swinging movement. This means comprises two concave tracks 20 supported by transversely extending beams 21. The beams 21 are mounted on vertical

guides 22 and are normally pulled upwardly by tension springs 23 connected to opposite ends thereof. On opposite sides of the king pin jacket 9 are mounted rollers 24 which engage respective curved tracks 20.

The tracks 20 are concavely curved and have a shorter radius of curvature than the radius of the arc through which the rollers move when the jacket and king pin swing about the axis of the trunnions 8. Referring to Fig. 2, the center of curvature of the track 20 is indicated at 25, and it will be observed that the center 25 is spaced some considerable distance below the axis of the trunnions 8. Therefore, with the springs 23 under a predetermined normal tension, the difference in radii will act to produce an inclined plane of varying angle at the point of contact of the rollers on the concave tracks. The tracks are, therefore, pushed downwardly as the king pin jacket swings laterally, and as they are pushed downwardly the tension on the springs 23 is increased. The least tension is present when the axis of the king pin jacket is vertical, the greatest tension when the king pin jacket is swung to the maximum permissible position, and the tension progressively varies between these two positions.

Although a specific embodiment of the invention has been illustrated and described, it will be understood that various changes may be made within the scope of the appended claims without departing from the spirit of the invention, and such changes are contemplated.

What is claimed is:

1. In combination, a pair of rail trucks, a main frame articulately connecting said trucks in spaced relation, transverse members on said main frame between the trucks, bearings supported by said transverse members, a king pin jacket having trunnions thereon, said trunnions being disposed in said bearings and supporting said jacket for lateral swinging movement, a king pin mounted in said jacket and having its lower end depending therefrom beneath said trucks, means on the depending end of said king pin for attachment to a car body, and resilient means carried by the truck and connected to said jacket for opposing lateral swinging movement of said jacket and king pin.

2. In combination, a pair of rail trucks, a main frame articulately connecting said trucks in spaced relation, transverse members on said main frame between the trucks, bearings supported by said transverse members, a king pin jacket having trunnions thereon, said trunnions being disposed in said bearings and supporting said jacket for lateral swinging movement, a king pin mounted in said jacket and having its lower end depending therefrom beneath said trucks, means on the depending end of said king pin for attachment to a car body, rollers mounted on said jacket spaced from its axis of swinging movement and adapted to be moved through an arcuate path when said jacket swings laterally, and elements resiliently supported on said truck in the path of movement of said rollers and adapted to be forced from said path by contact of the rollers therewith.

3. In combination, a pair of rail trucks, a main frame articulately connecting said trucks in spaced relation, transverse members on said main frame between the trucks, bearings supported by said transverse members, a king pin jacket having trunnions thereon, said trunnions being disposed in said bearings and supporting said jacket for lateral swinging movement, a king pin mounted in said jacket and having its lower end depending therefrom beneath said trucks, means on the depending end of said king pin for attachment to a car body, rollers mounted on said jacket spaced from its axis of swinging movement and adapted to be moved through an arcuate path when said jacket swings laterally, concave track members having curved surfaces with radii shorter than the radii of the arcuate paths of the rollers, means movably supporting said track members on said truck for contact with said rollers, and resilient means urging said track members into pressure engagement with respective rollers.

4. In combination, an overhead rail vehicle truck, a king pin assembly, means mounting said king pin assembly on said truck with its lower end depending beneath the truck, said means including a pivot arranged to allow said king pin assembly to swing laterally of the truck, springs attached to said truck with one spaced laterally outwardly on each side of the king pin assembly, and means connecting said springs to said king pin assembly in such manner that both springs constantly exert forces tending to oppose swinging movement of the king pin assembly in either direction.

5. In combination, an overhead rail vehicle truck, a king pin assembly, means mounting said king pin assembly on said truck with its lower end depending beneath the truck, said means including a pivot arranged to allow said king pin assembly to swing laterally of the truck, springs attached to said truck with one spaced laterally outwardly on each side of the king pin assembly, and means connecting said springs to said king pin assembly in such manner that both springs are normally under tension, said last named means also including means for increasing the tension on both springs incident to swinging movement of the king pin assembly.

6. In combination, an overehad rail vehicle truck, a king pin assembly, means mounting said king pin assembly on said truck in a position depending therefrom, said means including a pivot arranged to allow for lateral swinging movement about an axis extending longitudinally of the truck, projecting elements mounted on said assembly spaced from the axis of its swinging movement and adapted to move through an arc incident to swinging movement thereof, inclined members adapted to be supported in the path of arcuate movement of said elements and adapted to be forced from said path by swinging movement of said assembly, and resilient means connected to said truck and inclined members and normally supporting said members in said path, said resilient means opposing movement of said members from said path.

7. In combination, an overhead rail vehicle truck, a kin pin assembly, means mounting said king pin assembly on said truck in a position depending therefrom, said means including a pivot arranged to allow for lateral swinging movement about an axis extending longitudinally of the truck, projecting elements mounted on said assembly spaced from its axis of swinging movement and adapted to move through an arc incident to swinging movement thereof, concave track members having curved surfaces with radii shorter than the radii of the arcs through which said elements move, and resilient means connected to said truck and track members and maintaining said track members in pressure engage-

ment with said projecting elements and thereby opposing swinging movement of the king pin assembly.

8. In combination, an overhead rail vehicle truck, a king pin assembly, means mounting said king pin assembly on said truck in a position depending therefrom, said means including a pivot arranged to allow for lateral swinging movement, projecting elements mounted on said assembly spaced from its axis of swinging movement and adapted to move through an arc incident to swinging movement thereof, concave track members having curved surfaces with radii shorter than the radii of the arcs through which said elements move, means movably supporting said track members on the truck for contact with said elements, and resilient means urging said track members into pressure engagement with said elements.

9. In combination, an overhead rail vehicle truck, a king pin assembly, means mounting said king pin assembly on said truck in a position depending therefrom, said means including a pivot arranged to allow for lateral swinging movement, projecting elements mounted on said assembly spaced from its axis of swinging movement and adapted to move through an arc incident to swinging movement thereof, concave track members having curved surfaces with radii shorter than the radii of the arcs through which said elements move, guide means supporting said track members on said truck for vertical movement and for contact with said projecting elements, and resilient means pressing said track members into pressure contact with said elements.

10. In combination, a rail vehicle truck having bearings thereon, a king pin jacket, fore and aft trunnions on said jacket received in said bearings and supporting said jacket for lateral swinging movement, a king pin rotatably mounted in said jacket and having its lower end depending therefrom, a car body supporting bracket mounted on the depending end of said king pin, and resilient means mounted on said truck and connected to the jacket opposing lateral swinging movement of said jacket, said resilient means including means rendered operative by swinging movement for progressively increasing its opposition to swinging movement proportionately to the extent of swinging movement.

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