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(54) **Rocker arrangement**

Schwingenanordnung

Arrangement d'une bielle coulissante

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EP 1 481 870 B1

Description

[0001] This invention relates to a rocker arrangement suitable for use in a railway vehicle.

[0002] One design of railway vehicle includes a pair of side frames each of which defines a pair of pedestals. A saddle is associated with each pedestal, the pedestal being supported by the associated saddle through a number of suspension springs. Relative vertical and horizontal movement between the saddle and the associated pedestal is damped by means of friction wedges which are urged against angled surfaces of the pedestal by some of the suspension springs and bear against generally vertically extending surfaces of the saddle.

[0003] Each saddle is carried by an axle and wheel set through a rocker arrangement which typically comprises a component having a part-spherical surface mounted within the saddle, and an adaptor member arranged to co-operate with the axle or bearing of the wheelset and having a dished surface into which the said component extends and against which the part-spherical surface bears to allow the saddle and its associated springs to articulate relative to the adaptor member and wheelset. It is thought that it may be desirable to damp the operation of the rocker arrangement.

[0004] US 6142081 and GB 823090 disclose examples of alternate rocker arrangements in which a resilient component is located between the rocker member and adaptor member. Such arrangements can however be improved.

[0005] According to the present invention there is provided a rocker arrangement for use in a railway vehicle. The arrangement comprise an adaptor member, a rocker member and at least one resiliently deformable component. The adaptor member is arranged to cooperate with an axle or bearing of a wheel set of the railway vehicle. The rocker member and the adaptor member have co-operating surfaces which bear against each other to allow the rocker member to tilt relative to the adaptor member. The at least one resiliently deformable component is located on the adaptor member at a position laterally spaced to one side of the co-operating surfaces and is arranged to act on the adaptor member to apply a restoring force in the event of tilting of the rocker member relative to the adaptor member.

[0006] By this means lateral accelerations of the wheel set of the railway vehicle are better reacted by the tilting operation of the rocker and saddle.

[0007] The resiliently deformable component conveniently includes first and second deformable elements located on opposing sides of the co-operating surfaces. The deformable elements may be interconnected, for example by being mounted upon a common support plate. The elements are conveniently blocks of rubber or rubber-like material.

[0008] The rocker member is conveniently shaped to define a part-spherical projection arranged to extend into a dished part of the adaptor member.

[0009] The invention will further be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a view illustrating part of a railway vehicle incorporating a rocker arrangement in accordance with an embodiment of the invention; and

Figures 2 and 3 are sectional and side views illustrating the rocker arrangement of the vehicle of Figure 1.

[0010] The railway vehicle illustrated in Figure 1 comprises a pair of side frames 10, part of only one of which is illustrated, each side frame 10 being shaped to include a pair of pedestals 12. Each pedestal includes a pair of inclined surfaces 14 defining therebetween a cavity into which part of a saddle 16 extends. Suspension springs 18 are provided between the saddle 16 and the pedestal 12 to support the pedestal 12 the suspension springs 18 allowing some vertical and horizontal movement of the pedestal 12 relative to the saddle 16.

[0011] A pair of friction wedges 20 are provided, each wedge 20 being urged by some of the suspension springs 18 into engagement with the angled surfaces 14 of the pedestal 12, the arrangement being such that the friction wedges 20 are urged into engagement with substantially vertical surfaces 22 of the saddle 16, the friction wedges 20 serving to damp vertical and horizontal movement between the pedestal 12 and the saddle 16.

[0012] The saddle 16 is carried by an axle 24 of a wheelset of the vehicle through a rocker arrangement 26.

[0013] As shown most clearly in Figures 2 and 3, the rocker arrangement 26 comprises an adaptor member 28 arranged to co-operate with the axle 24 in the usual manner. The upper surface of the adaptor member 28 is shaped to define a dished region 30. A rocker member 32 is bolted or otherwise rigidly secured to the saddle 16, the rocker member 32 including, on its underside, a projection 34 having a part-spherical surface 36 located, at least in part, within the dished region 30 of the adaptor member 28. The rocker arrangement 26 thus allows a degree of articulation between the saddle 16 and the axle 24.

[0014] In accordance with the invention, resiliently deformable components 38 in the form of blocks of a rubber or rubber-like material are located on opposite sides of the rocker member 32, the resiliently deformable components being located between the saddle 16 and the adaptor member 28 and arranged such that in the event of relative tilting occurring between the saddle 16 and the adaptor member 28, as permitted by the rocker arrangement 26, at least part of at least one or the other of the components 38 will be compressed, such compression serving to damp the relative tilting motion and further serving to apply a restoring force urging the saddle 16 and adaptor member 28 towards their original positions. In the arrangement illustrated in the accompanying drawings, the components 38 are mounted upon respec-

tive support plates 40 which are interconnected by a cross-member 42 so as to adopt an H configuration. However, it will be appreciated that other configurations may be used, if desired. Further, retainer members 44 are secured to the saddle 16 in order to securely retain the components 38 in position, in use.

[0015] Although one specific embodiment of the invention has been described herein, it will be appreciated that the invention may be modified in numerous ways without departing from the scope of the invention. For example, the rocker member 32 may be modified to include flanges with which the components 38 engage rather than the components 38 co-operating directly against the saddle 16. It may further be possible to modify the shape of the components 38, or possible to include, for example, a greater number of components 38 in the rocker arrangement 26.

Claims

1. A rocker arrangement (26) for use in a railway vehicle, the arrangement (26) comprising:-

   an adaptor member (28) arranged to cooperate with an axle or bearing of a wheel set of the railway vehicle,
   a rocker member (32), the rocker member (32) and the adaptor member (28) having co-operating surfaces (36,30) which bear against each other to allow the rocker member (32) to tilt relative to the adaptor member (28), and
   at least one resiliently deformable component (38) located on the adaptor member (28) at a position laterally spaced to one side of the co-operating surfaces (36,30) and arranged to act on the adaptor member (28) to apply a restoring force in the event of tilting of the rocker member (32) relative to the adaptor member (28).

2. An arrangement according to Claim 1, wherein the resiliently deformable component (38) includes first and second deformable elements (38) located on opposing sides of the co-operating surfaces (36,30).

3. An arrangement according to Claim 2, wherein the deformable elements (3 8) are connected.

4. An arrangement according to Claim 3, wherein the deformable elements (3 8) are mounted on a common support plate (40).

5. An arrangement according to any of Claims 2 to 4, wherein the deformable elements (38) are blocks of rubber or rubber-like material.

6. An arrangement according to any of the preceding claims, wherein the rocker member (32) is shaped to define a projection(34) having a part-spherical co-operating surface (36) arranged to extend into a dished part (30) of the adaptor member (28) having a dish shaped co-operating surface.

7. An arrangement according to any of Claims 2 to 6, further comprising retainer members (44) to retain the deformable elements (38) in position.

8. An arrangement according to any of the preceding claims, wherein the rocker member (32) is arranged to be secured to a saddle (16) of the railway vehicle.

9. An arrangement according to claim 8 wherein the at least one resiliently deformable component (38) is located between the adaptor member (28) and saddle (16).

10. An arrangement according to any one of claims 1 to 8, wherein the at least one resiliently deformable component (38) is located between the adaptor member (28) and the rocker member (32).

Patentansprüche

1. Schwingenanordnung (26) für die Verwendung bei einem Eisenbahnfahrzeug, wobei die Anordnung (26) umfasst:

   ein Adapterbauelement (28), das angeordnet ist, um mit einer Achse oder mit einem Lager einer Radgruppe des Eisenbahnfahrzeugs zusammenzuarbeiten,
   ein Schwingenbauelement (32), wobei das Schwingenbauelement (32) und das Adapterbauelement (28) zusammenarbeitende Flächen (36, 30) aufweisen, die gegeneinander drücken, um es dem Schwingenbauelement (32) zu ermöglichen, sich relativ zu dem Adapterbauelement (28) zu neigen, und
   mindestens ein elastisch verformbares Bauteil (38), das bei einer Position an dem Adapterbauelement (28) angeordnet ist, die seitlich zu einer Seite der zusammenarbeitende Flächen (36, 30) beabstandet ist und so angeordnet ist, dass sie auf das Adapterbauelement (28) wirkt, um eine Wiederherstellungskraft in dem Fall der Neigung des Schwingenbauelements (32) relativ auf das Adapterbauelement (28) auszuüben.

2. Anordnung nach Anspruch 1, in der das elastisch verformbare Bauteil (38) erste und zweite verformbare Elemente (38) beinhaltet, die an gegenüberliegenden Seiten der zusammenarbeitende Flächen (36, 30) angeordnet sind.

3. Anordnung nach Anspruch in der die verformbaren

Elemente (38) miteinander verbunden sind.

4. Anordnung nach Anspruch 3, in der die verformbaren Elemente (38) auf einer gemeinsamen Trägerplatte (40) montiert sind.

5. Anordnung nach einem der Ansprüche von 2 bis 4, in der die verformbaren Elemente (38) Blöcke aus Gummi oder einem gummiähnlichen Werkstoff sind.

6. Anordnung nach einem der vorstehenden Ansprüche, in der das Schwingenbauelement (32) geformt ist, um einen Vorsprung (34) zu definieren, der eine teilsphärische zusammenarbeitende Fläche (36) aufweist, die angeordnet ist, um sich in einen gekümpelten Abschnitt (30) des Adapterbauelements (28) zu erstrecken, das eine gekümpelt geformte zusammenarbeitende Fläche aufweist.

7. Anordnung nach einem der Ansprüche von 2 bis 6, die ferner Rückhaltebauelemente (44) beinhaltet, um die verformbaren Elemente (38) in Position zu halten.

8. Anordnung nach einem der vorstehenden Ansprüche, in der das Schwingenbauelement (32) angeordnet ist, um an einem Sattel (16) des Eisenbahnfahrzeugs sicher gehalten zu werden.

9. Anordnung nach Anspruch 8, in der das mindestens eine verformbare Bauteil (38) zwischen dem Adapterbauelement (28) und dem Sattel (16) angeordnet ist.

10. Anordnung nach einem der Ansprüche von 1 bis 8, in der das mindestens eine verformbare Bauteil (38) zwischen dem Adapterbauelement (28) und dem Schwingenbauelement (32) angeordnet ist.

Revendications

1. Agencement basculant (26) destiné à un véhicule ferroviaire, l'agencement (26) comprenant :

un organe adaptateur (28) agencé pour coopérer avec un essieu ou une portée d'une ensemble de roues d'un véhicule ferroviaire,
un organe basculant (32), l'organe basculant (32) et l'organe adaptateur (28) présentant des surfaces coopérantes (36, 30) qui portent l'une contre l'autre pour permettre à l'organe basculant (32) de basculer par rapport à l'organe adaptateur (28), et
au moins un composant élastiquement déformable (38) situé sur l'organe adaptateur (28) dans une position latéralement espacée sur un côté des surfaces coopérantes (36, 30) et agencé pour agir sur l'organe adaptateur (28) afin d'appliquer une force dans le cas d'un basculement de l'organe basculant (32) par rapport à l'organe adaptateur (28).

2. Agencement selon la revendication 1, dans lequel le composant élastiquement déformable (38) comprend des premier et second éléments déformables (38) situés sur des côtés opposés des surfaces coopérantes (36, 30).

3. Agencement selon la revendication 2, dans lequel les éléments déformables (38) sont reliés.

4. Agencement selon la revendication 3, dans lequel les éléments déformables (38) sont montés sur une plaque de support commune (40).

5. Agencement selon l'une quelconque des revendications 2 à 4, dans lequel les éléments déformables (38) sont des blocs de caoutchouc ou de matière semblable à du caoutchouc.

6. Agencement selon l'une quelconque des revendications précédentes, dans lequel l'organe basculant (32) est conformé de manière à définir une saillie (34) présentant une surface coopérante partiellement sphérique (36) agencée pour s'étendre dans une partie en cuvette (30) de l'organe adaptateur (28) présentant une surface coopérante en forme de cuvette.

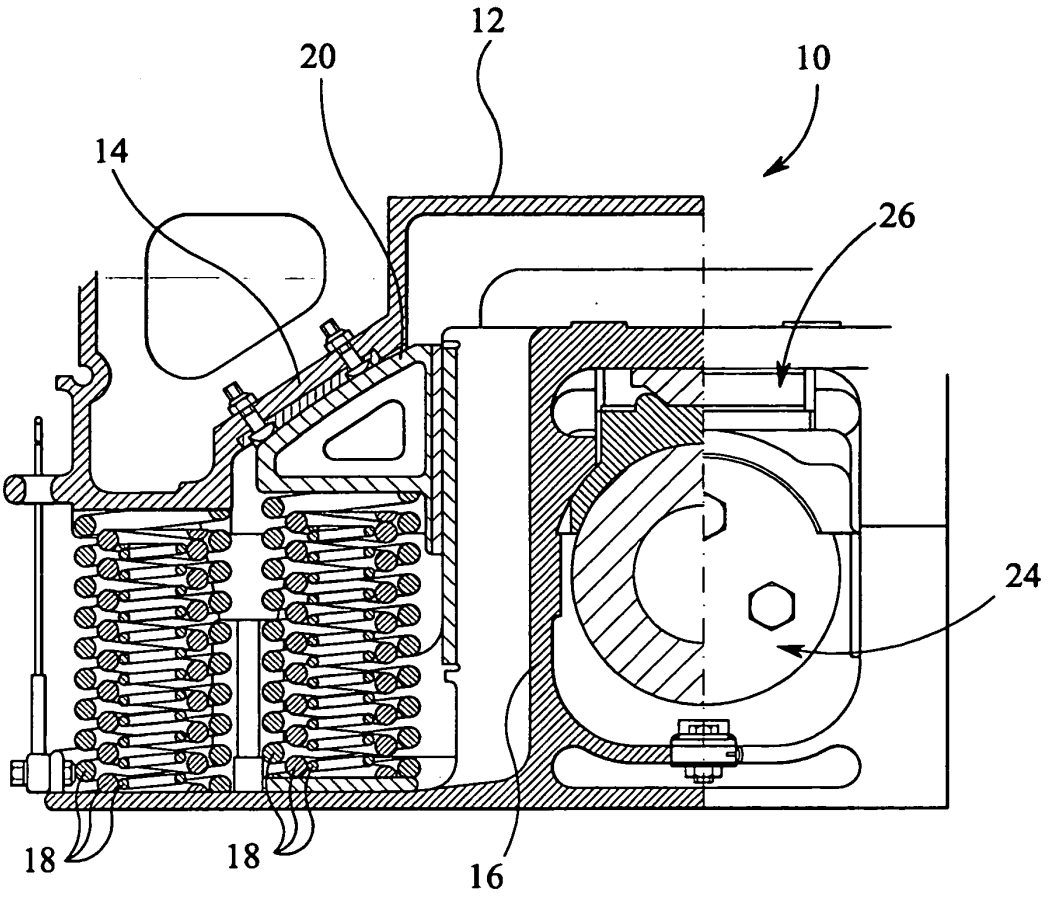
7. Agencement selon l'une quelconque des revendications 2 à 6, comprenant en outre des organes de retenue (44) pour retenir les éléments déformables (38) en position.

8. Agencement selon l'une quelconque des revendications précédentes, dans lequel l'organe basculant (32) est agencé pour être fixé à une selle (16) du véhicule ferroviaire.

9. Agencement selon la revendication 8 dans lequel le au moins un composant élastiquement déformable (38) est situé entre l'organe adaptateur (28) et la selle (16).

10. Agencement selon l'une quelconque des revendications 1 à 8, dans lequel le au moins un composant élastiquement déformable (38) est situé entre l'organe adaptateur (28) et l'organe basculant (32).

FIG 1



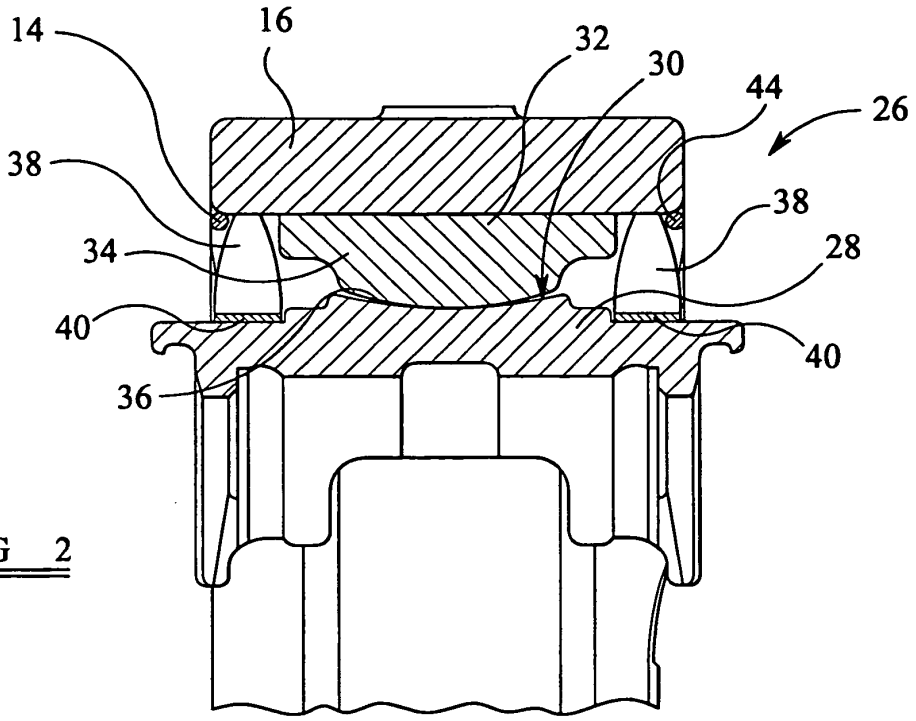


FIG 2

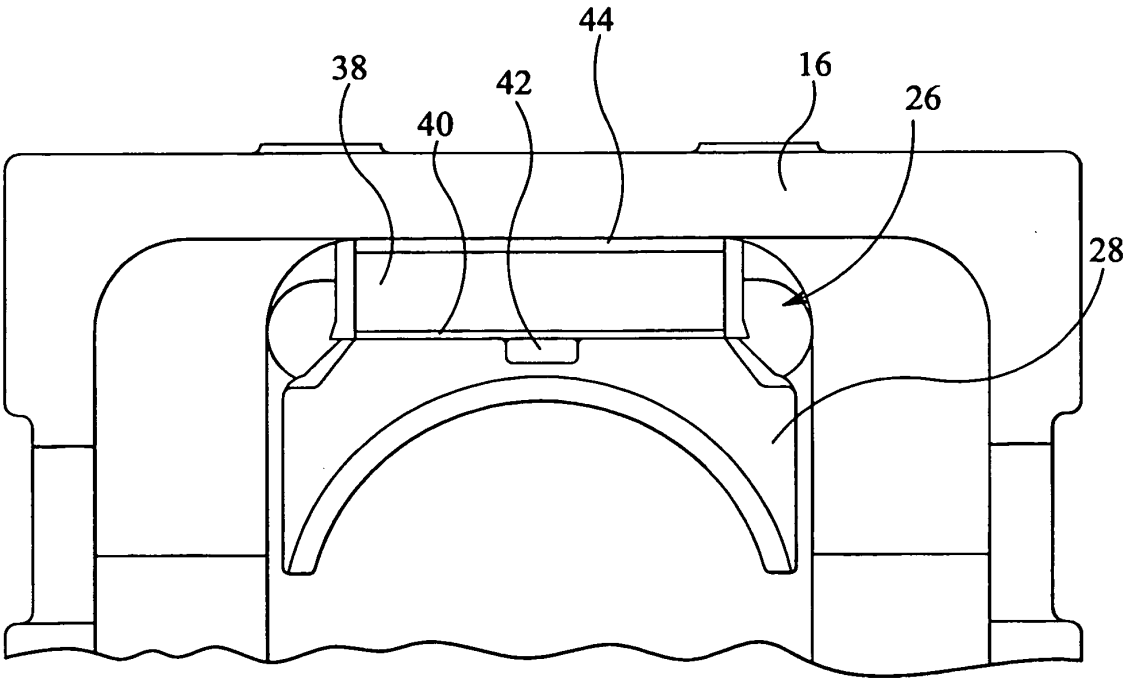


FIG 3

REFERENCES CITED IN THE DESCRIPTION

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