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(54) **SIDE BEARER**

GLEITSTÜCK

GALET DE GLISSOIR

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(73) Proprietor: **SCT Europe Limited**
Kirkcaldy
Fife KY1 3UF (GB)

(72) Inventors:
• **AITKEN, Alan, John**
Fife KY8 5PS (GB)

• **TAYLOR, David**
Fife KY12 3AR (GB)
• **JAMIESON, Wayne**
Fife KY8 3AH (GB)

(74) Representative: **Dunlop, Brian Kenneth Charles**
Wynne-Jones, Lainé & James LLP
Essex Place
22 Rodney Road
Cheltenham
Gloucestershire GL50 1JJ (GB)

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Description

[0001] This invention relates to a side bearer for use on a railway vehicle.

[0002] It is usual to mount side bearers between a railway bogie and the associated vehicle under-frame to restrict or damp movement between the under-frame and the bogie. A typical side bearer comprises a lower component secured to the bolster of the bogie, compression springs seated on the lower component and the upper component seated onto the springs. The upper component carries a bearing plate arranged to engage a surface of the vehicle under-frame, and allow free movement between the surfaces in the horizontal plane. This movement is sliding movement and is controlled by friction.

[0003] In use, two such side bearers are used on each bogie, the side bearers being located symmetrically each side of the bogie central pivot. The side bearers serve to control sideways tilting movement of the vehicle whilst at the same time allow the vehicle to pass around rail curves.

[0004] In curving movement of the vehicle, the resultant angular movement between the under-frame and the bogie may not be friction damped initially, in the longitudinal direction. This is due to slack resulting from air spaces in the side bearer arrangement. This is undesirable, EP1488978 shows a side bearer having a resiliently mounted friction pad and inclined mounting surfaces.

[0005] The present invention consists in a side bearer for a railway bogie having a longitudinal axis, including a lower component for attachment to the bogie, an upper component carrying a friction bearing plate for receiving a part of a vehicle to be supported on the bogie and having a pair of divergent lower surfaces and including a mounting for mounting the upper component on the lower component for relative vertical movement, the mounting including first and second elements having respective inclined surfaces for receiving respective lower surfaces of the upper component, spring means for supporting the first and second elements and guide means for guiding the first and second elements for vertical movement characterised in that the first and second elements are horizontally separable by a downward vertical movement of the upper component for thereby urging them against the guide means for generating a substantially constant vertical damping force between the first and second elements and the guide means.

[0006] It will be appreciated that such an arrangement provides a constant longitudinal friction damping of movement between a bogie and vehicle under-frame even when the angular motion is small.

[0007] The upper component may have a first pair of surfaces extending in opposite longitudinal directions and the spring means may include a pair of springs and each may have an element for a respective first surface mounted thereon.

[0008] The guide means may include an upstanding wall or walls on the lower components.

[0009] In arrangements where the vehicle underframe is likely to experience forces high enough to induce a breakout, it may be desirable to provide limited longitudinal resilience so that the transition to break out is progressive. For example, the guide means may include at least one resiliently mounted shoe and preferably there are respective shoes for the first and second elements. In either case there may be a fixed abutment for the or each shoe for limiting longitudinal movement of the shoe.

[0010] Preferably the or each element is in the form of a wedge, in which case the vertical face of the wedge may engage the guide means and in particular, the upstanding wall. As these elements are effectively mounted fore and aft on the bogie, this engagement prevents the longitudinal movement whilst allowing vertical movement.

[0011] Although the invention has been defined above it is to be understood it includes any inventive combination of the features set out above or in the following description.

[0012] The invention may be performed in various ways and a specific embodiment will now be described, by way of example, with reference to the accompanying drawings in which:

Figure 1 is a perspective view of a bogie bolster carrying two side bearers;

Figure 2 is a front view of the bolster of Figure 1;

Figure 3 is a section along the line III-III;

Figure 4 is a view along the line IV-IV, partly in section, illustrating the side bearer in more detail;

Figure 5 is a plan view of the arrangement of Figure 4;

Figure 6 is a scrap sectional view showing alternative guide means.

[0013] The side bearer 10, which is illustrated in the accompanying drawings, has a lower component 11, which is bolted to a bogie bolster 12 as can be seen in Figures 1 to 3. It will be understood other securing means could be used. The lower component 11 carries an upstanding, generally rectangular wall 13, which as will be set out below, acts as the guide means. Located within the wall 13 are a pair of fore and aft stops 14, which are themselves secured to the bolster 11, as can best be seen in Figure 3. Encircling each stop, and located thereby, are respective springs 15 that in turn support an upper component 16, in a manner described below. The upper component 16 can move vertically on the springs 15 and this vertical movement is limited, in a downward direction, by the stops 14. The upper component carries a bearing plate or friction pad 17, which is designed to engage against an associated surface mounted upon or forming part of a vehicle under frame (not shown) of the associated wagon body.

[0014] As can be seen in Figures 3 and 4 the upper component 16 has a downward projection 18 that defines a pair of inclined surfaces 19 which extend in opposite longitudinal directions. Separate wedge elements 20 are

disposed intermediate the respective surfaces 19 and springs 15 to transmit the vertical load, imposed by the wagon body, to their respective spring 18.

[0015] Each wedge 20 has an inclined surface 21 and a vertical surface 22. The interaction between the respective engaging inclined surfaces 19 and 21 urges the vertical surface 22 against the wall 13, which thereby guides the surface 22 for vertical movement, but prevents any outward longitudinal movement of the wedge 20 and hence of the upper component 16.

[0016] The springs 15 thus hold the friction pads 17 in constant contact with the friction surface provided on the vehicle under frame. Any vertical movement occurring as a result of pitch or roll of the vehicle is thus accommodated by the springs 15 compressing and forces the wedges 20 apart into constant contact with the respective portions of the inner vertical surface of the wall 13 resulting in constant vertical clamping of the wedges 20. Thus constant damping between the bogie and the vehicle under frame is maintained in the longitudinal direction of the vehicle. In the event that relative vertical movement between the bogie and the vehicle under frame reaches a predetermined level then the wedges 20 will contact the stops 14 preventing any further vertical movement.

[0017] It can be seen from Fig.4 that the upper component 16 can move away from the horizontal orientation by differential vertical compression of the springs 15, whilst maintaining the wedges 20 in vertical contact with the wall 13, so as to accommodate tilt of the vehicle caused by the rails.

[0018] Figure 6 illustrates an alternative embodiment wherein the guide means is constituted by a shoe 23 resiliently mounted on a fixed upstanding abutment 24. The shoe 23 may be in the form of a ring with at least two longitudinal disposed opposed resilient mountings 25 or there may be a pair of shoes 23, one for each wedge element 20.

[0019] It will be seen that the shoe 23 is C shaped in section and the upright part 26 of the C provides the vertical guide surface 27 which is engaged by the vertical surface 22 of the respective wedge 20. In normal use, the arrangement functions exactly as in the previous embodiment. However, when the vehicle underframe experiences a force, which will overcome the frictional force generated at the bearing plate 17, instead of a stepped break out occurring the resilient mounting or mountings 25 will allow sufficient longitudinal movement of the shoe or shoes 23 to provide a progressive transition to break out, thus avoiding a sudden jolt. It will be noted that the vertical frictional engagement between the wedges 20 and shoes 23 will be maintained throughout.

[0020] The or each resilient mounting 25 is mounted on the fixed abutment 24, so as to define a gap 29 between the legs 30 of the shoe 23 and the abutment 28. This gap, which will normally be of the order of a few millimetres, allows the longitudinal movement to take place before the legs 30 of shoe 23 lock up against the abutment 28. The resilient mounting 25 typically includes

an extremely stiff elastomeric bush 31. The stiffness of the bush 31 is preferably selected such that resilient movement will only take place under forces in the region of the breakout force. Typically it will have a stiffness around half that of steel.

Claims

1. A side bearer (10) for a railway bogie (12) having a longitudinal axis, including a lower component (11) for attachment to the bogie (12), an upper component (16) carrying a friction bearing plate (17) for receiving a part of a vehicle to be supported on the bogie and having a pair of divergent lower surfaces (19) and including a mounting (13, 15, 20, 22/23, 24, 25, 30) for mounting the upper component (16) on the lower component (11) for relative vertical movement, the mounting including first and second elements (20) having respective inclined surfaces (21) for receiving respective said lower surfaces (19) of the upper component (16), spring means (15) for supporting the first and second elements (20) and guide means (13/23) for guiding the first and second elements (20) for vertical movement **characterised in that** the first and second elements (20) are horizontally separable by a downward vertical movement of the upper component (16) for thereby urging them against the guide means (13/23) for generating a substantially constant vertical damping force between the first and second elements (20) and the guide means (13/23).
2. A side bearer as claimed in claim 1 wherein the upper component (16) has a pair of first surfaces extending in opposite longitudinal directions; the spring means (15) includes a pair of springs (15) and an element for each first surface mounted on a respective spring.
3. A side bearer as claimed in claim 1 or claim 2 wherein the guide means includes an upstanding wall or walls (13) on the lower component (11).
4. A side bearer as claimed in claim 1 or claim 2 wherein the guide means includes at least one resiliently mounted shoe (23).
5. A side bearer as claimed in claim 4 including a longitudinally resiliently mounted shoe (23) for each of the first and second elements.
6. A side bearer as claimed in claim 4 or 5 further including an abutment for the or each shoe for limiting longitudinal movement of the shoe.
7. A side bearer as claimed in any one of the preceding claims wherein the first or second element, or each element is in the form of a wedge.

Patentansprüche

1. Gleitstück (10) für ein Eisenbahn-Drehgestell (12) mit einer Längsachse, das eine untere Komponente (11) zur Anbringung des Drehgestells (12) und eine obere Komponente (16) aufweist, die eine Reibungslagerplatte (17) zur Aufnahme eines Teils eines Fahrzeugs trägt, das auf dem Drehgestell abgestützt ist und ein Paar divergierender unterer Oberflächen (19) aufweist sowie ein Lager (13, 15, 20, 22 / 23, 24, 25, 30) zur Lagerung der oberen Komponente (16) auf der unteren Komponente (11) zwecks relativer Vertikalbewegung, wobei das Lager mit ersten und zweiten Elementen (20) versehen ist, die entsprechende geneigte Oberflächen (21) zur Aufnahme der entsprechenden genannten unteren Oberflächen (19) der oberen Komponente (16) besitzen sowie eine Federvorrichtung (15) zur Abstützung der ersten und zweiten Elemente (20) und eine Führungsvorrichtung (13/23) zur Führung der ersten und zweiten Elemente (20) bei vertikaler Bewegung, **dadurch gekennzeichnet, daß** die ersten und zweiten Elemente (20) durch eine vertikale Abwärtsbewegung der oberen Komponente (16) waagrecht trennbar sind, um sie **dadurch** gegen die Führungsvorrichtung (13 / 23) zu drücken, um eine im wesentlichen konstante, senkrechte Dämpfungskraft zwischen den ersten und zweiten Elementen (20) und der Führungsvorrichtung (13 / 23) zu erzeugen.
2. Gleitstück nach Anspruch 1, **dadurch gekennzeichnet, daß** die obere Komponente (16) ein Paar erste Oberflächen aufweist, die sich in entgegengesetzte Längsrichtungen erstrecken, und daß die Federvorrichtung (15) mit einem Paar Federn (15) versehen ist sowie einem Element für jede erste Oberfläche, das auf einer entsprechenden Feder gelagert ist.
3. Gleitstück nach Anspruch 1 oder 2, **dadurch gekennzeichnet, daß** die Führungsvorrichtung eine oder mehrere auf der unteren Komponenten (11) stehende Wände (13) aufweist.
4. Gleitstück nach Anspruch 1 oder 2, **dadurch gekennzeichnet, daß** die Führungsvorrichtung wenigstens einen federnd gelagerten Schuh (23) aufweist.
5. Gleitstück nach Anspruch 4, **gekennzeichnet durch** einen in Längsrichtung federnd gelagerten Schuh (23) für jedes der ersten und zweiten Elemente.
6. Gleitstück nach Anspruch 4 oder 5, ferner **gekennzeichnet durch** einen Anschlag für den oder jeden Schuh zur Begrenzung der Längsbewegung des Schuhs.

7. Gleitstück nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, daß** das erste oder zweite Element oder jedes Element die Form eines Keils hat.

Revendications

1. - Galet de glissoir (10) pour un bogie de chemin de fer (12) ayant un axe longitudinal, comprenant un composant inférieur (11) destiné à être fixé au bogie (12), un composant supérieur (16) portant une plaque de coussinet (17) pour recevoir une partie d'un véhicule destiné à être supporté sur le bogie et ayant une paire de surfaces inférieures divergentes (19) et comprenant un moyen de montage (13, 15, 20, 22/23, 24, 25, 30) pour monter le composant supérieur (16) sur le composant inférieur (11) en vue d'un mouvement vertical relatif, le moyen de montage comprenant des premier et second éléments (20) ayant des surfaces inclinées respectives (21) pour recevoir lesdites surfaces inférieures respectives (19) du composant supérieur (16), un moyen de ressort (15) pour supporter les premier et second éléments (20) et un moyen de guidage (13/23) pour guider les premier et second éléments (20) en vue d'un mouvement vertical, **caractérisé par le fait que** les premier et second éléments (20) sont séparables horizontalement par un mouvement vertical descendant du composant supérieur (16), permettant ainsi de les solliciter contre le moyen de guidage (13/23) pour générer une force d'amortissement verticale sensiblement constante entre les premier et second éléments (20) et le moyen de guidage (13/23).
2. - Galet de glissoir selon la revendication 1, dans lequel le composant supérieur (16) a une paire de premières surfaces s'étendant dans des directions longitudinales opposées, le moyen de ressort (15) comprend une paire de ressorts (15) et un élément pour chaque première surface montée sur un ressort respectif.
3. - Galet de glissoir selon l'une des revendications 1 ou 2, dans lequel le moyen de guidage comprend une ou des parois dressées (13) sur le composant inférieur (11).
4. - Galet de glissoir selon l'une des revendications 1 ou 2, dans lequel le moyen de guidage comprend au moins un patin (23) monté de manière élastique.
5. - Galet de glissoir selon la revendication 4, comprenant un patin (23) monté longitudinalement et de manière élastique pour chacun des premier et second éléments.

6. - Galet de glisseur selon l'une des revendications 4 ou 5, comprenant en outre une butée pour le ou chaque patin afin de limiter un déplacement longitudinal du patin.

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7. - Galet de glisseur selon l'une quelconque des revendications précédentes, dans lequel le premier ou second élément ou chaque élément se présente sous la forme d'un coin.

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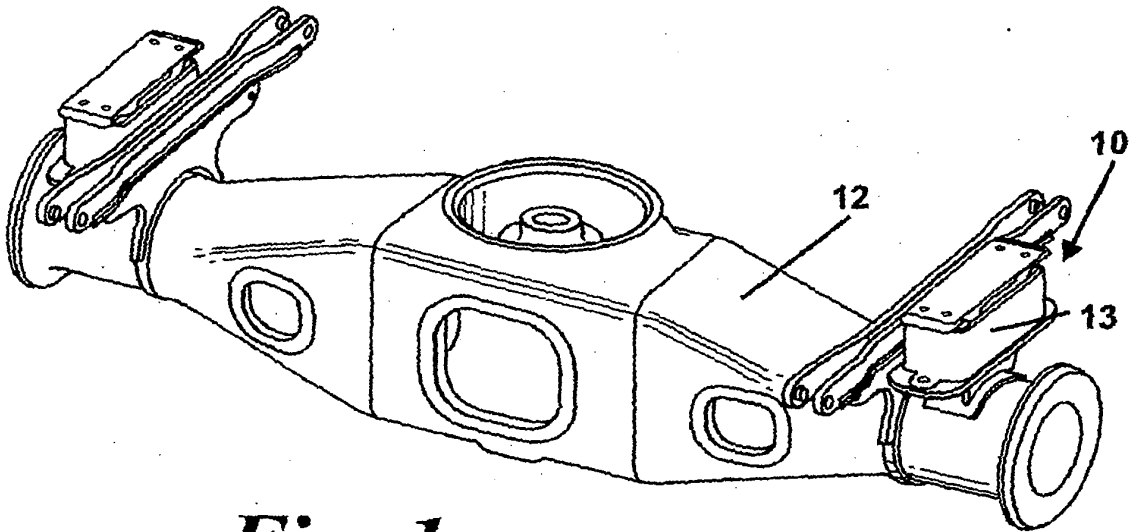


Fig. 1

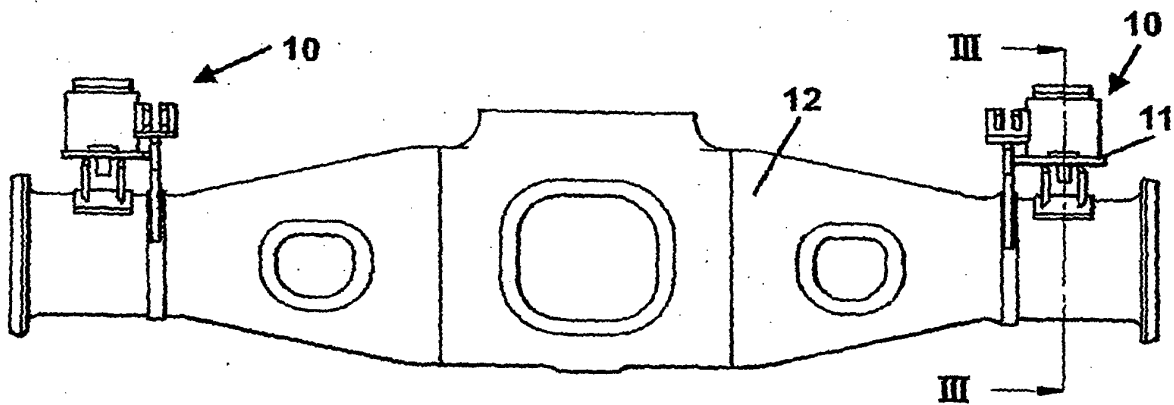


Fig. 2

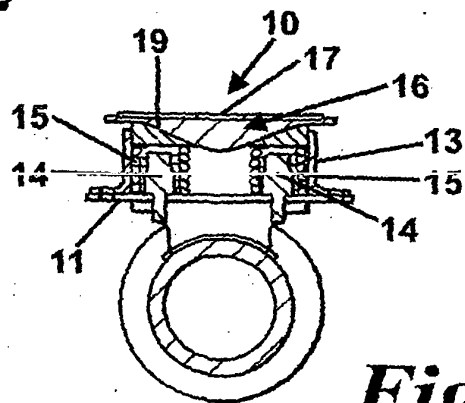


Fig. 3

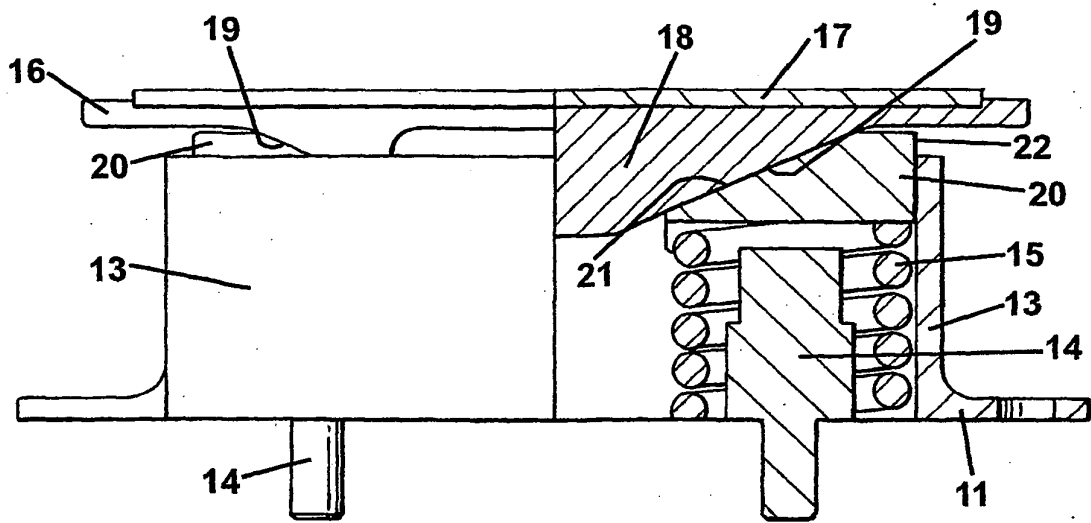


Fig. 4

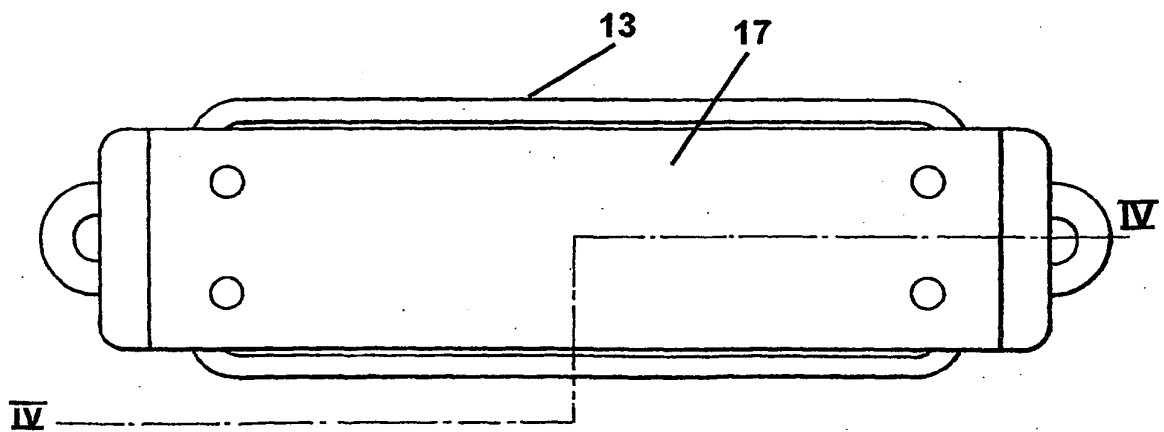


Fig. 5

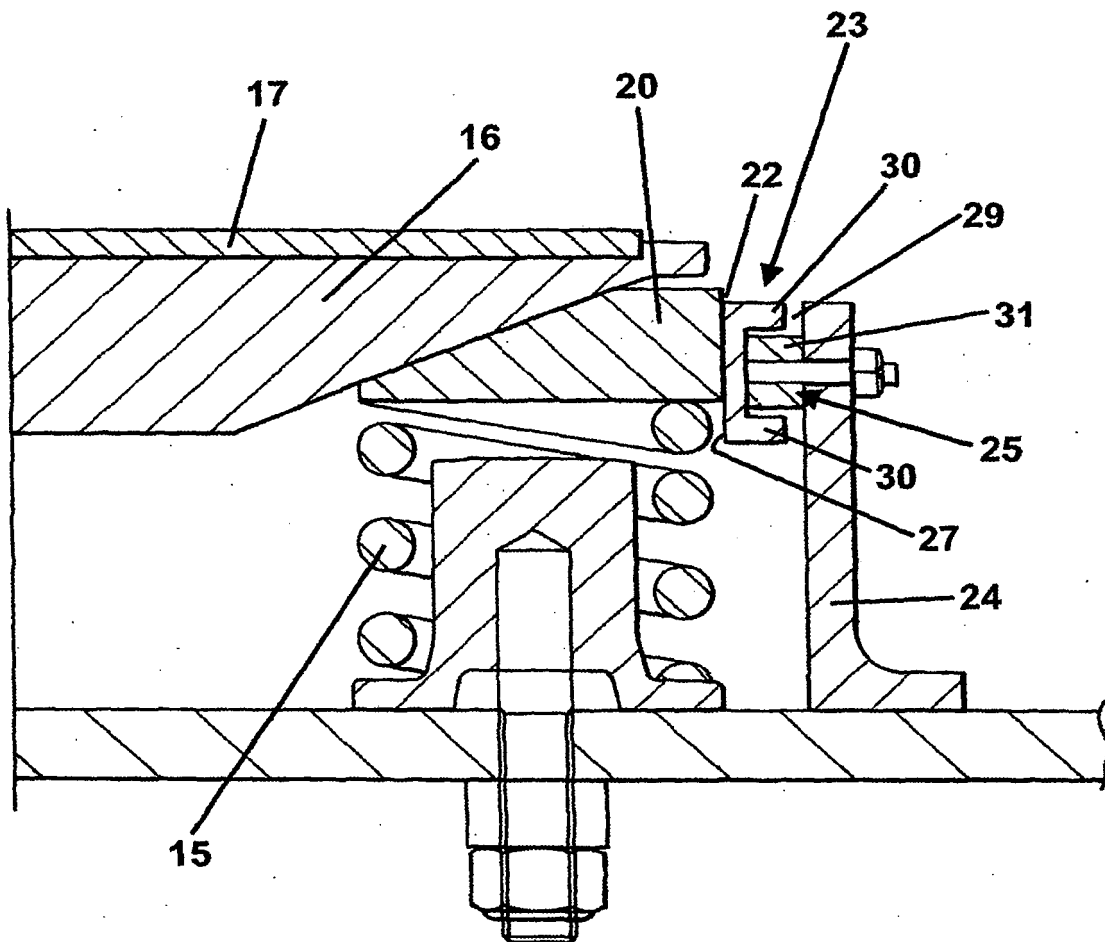


Fig. 6

REFERENCES CITED IN THE DESCRIPTION

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