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(54) A railway vehicle brake block holder.

(57) A railway vehicle brake block holder (11) for a brake unit (1) with brake block hangers (9) pivotally attached to a fixed part (8) of the unit and to the brake block holder. A force transmitting arrangement between the only axially movable brake unit push rod (3) and the brake block holder includes a cradle (14) in the brake block holder and a corresponding force transmitting member (15) therein acted on by the push rod.

In order to ensure that the force transmitting member (15) can only move under relatively high forces at least one, preferably Ω-shaped, prestressed spring (16) in a suitable recess (17) in said member biases the latter against the cradle (14).

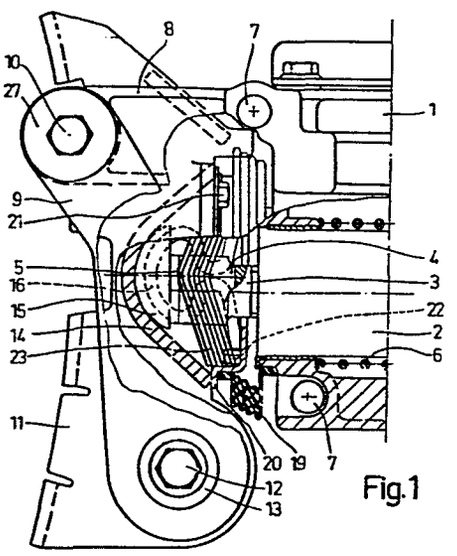

Fig.1

EP 0 077 586 A1

A RAILWAY VEHICLE BRAKE BLOCK HOLDER

Technical Field

This invention relates to a railway vehicle brake block holder, preferably for a brake unit, with means for its suspension, including brake block hangers pivotally attached to a fixed part, preferably a bracket, of the brake unit and to the brake block holder. Further, there is an arrangement for connection to a brake force applying push rod, this arrangement being at or near the center of the brake block holder and including a curved cradle. In this cradle is arranged a force transmitting member having a front surface for force receiving cooperation with a push plate at the end of the push rod.

Background Art

A railway vehicle brake block holder of this kind is disclosed in EP 0018050. The present invention is an improvement over the design shown therein.

A railway vehicle brake block holder is intended to act as a mounting means for a brake block or brake shoe, which transmits a braking force to a wheel of the vehicle and is replaced after having been worn out.

The brake block holder is conventionally suspended at its center as viewed from the side, preferably by means of brake block hangers, and the brake force is normally also applied to the brake block holder center, for example by means of a push rod.

The available space at a railway vehicle wheel is often very limited, and it is therefore of outmost importance to keep the external dimensions of the arrangement at a minimum. The conventional solution with brake block holder hangers extending upwards from the center of the brake block holder past the whole holder to a fixed part on the housing of a brake unit is not optimal in this respect, especially if the brake unit itself is compact and a special bracket extending out from the unit is required for the brake block holder suspension.

In the prior art design referred to above each brake block hanger therefore extends downwardly beyond the center of the brake block holder from its pivotal attachment to the fixed part of the brake unit and is pivotally attached to the lower part of the brake block holder.

As already said, the force transmitting arrangement between the push rod and the brake block holder is at or near the center of the brake block holder. The push rod is normally only axially movable, whereas the

brake block holder due to its suspension will move along an arc. This means that relative movements between these two parts must be admitted. For that reason the brake block holder is provided with a curved cradle, in which is arranged a force transmitting member having a front surface with a shape corresponding to the cradle (or in other words an arcuate shape) and a flat back surface for force receiving cooperation with a push plate at the end of the push rod.

Due to the flat surfaces of the push plate and the force transmitting member in the cradle relative lateral movements will be permitted.

In order to ensure that the force transmitting member does not move except under the influence of relatively high forces there are means for keeping the force transmitting member in place in the cradle. In the prior art design these means are of the frictional type and comprise plungers in through bores in said member, the plungers being biased by springs into engagement with flat side walls in the brake block holder.

Practical experience has shown that under certain circumstances this solution is not optimal. The spring biased plungers frictionally cooperating with said flat surfaces may namely give rise to non-desirable wear under the influence of the movements and vibrations occuring at normal operation of a railway vehicle.

The Invention

A better solution to the problem of limiting the movements of the force transmitting member in the cradle to the desirable extent is according to the invention attained in that the means for keeping the force transmitting member in place in the cradle comprise at least one, preferably Ω-shaped, prestressed spring in a suitable recess in the force transmitting member for biasing said member against the cradle.

In the present design, as well as in the prior art design, the connection arrangement between the push rod and the brake block holder includes holding means in the form of a bundle of leaf springs extending through an axial slot in the push rod and abutting the push plate with its central part.

In the practical embodiment an Ω-shaped spring is arranged on either side of the leaf spring bundle and in parallel therewith.

Further, in this practical embodiment the legs of the Ω-shaped springs and the ends of the leaf spring bundle are supported by a cover

attached to the brake block holder and having a central opening for the push rod. This cover is preferably provided with two diametrically opposed heads for guiding the leaf spring bundle.

The brake block holder according to the invention is, as said, preferably to be used together with a brake unit but is equally applicable to brake block holders used separately and actuated by a push rod in a separate brake rigging of any suitable kind. It is especially to be noted that the invention is not limited to the use together with a brake block holder of the type covered by EP 0018050.

Brief Description of Drawings

The invention will be described in further detail below reference being made to the accompanying drawings, in which Fig 1 is a side view, partly in section, of a brake block holder suspension according to the invention on a brake unit (only shown in part), Fig 2 is a top view, partly in section (lower part), of the same device, and Fig 3 is a front view, partly in section, of the same device.

Detailed Description of a Preferred Embodiment

A conventional brake unit 1 is in the shown case of the type having not shown means for transforming a certain movement of a not shown piston under the action of a fluid under pressure admitted thereto into a movement perpendicular thereto of a sleeve 2, preferably containing a slack adjuster of any conventional kind. Of the slack adjuster only a threaded spindle 3, which is only axially movable and below is called a push rod, is shown and extends out of the brake unit 1.

The push rod 3 is near its end provided with an axial slot 4 for a purpose to be described and has its end formed as a push plate 5. A return spring 6 for the sleeve 2 is arranged around the same and acts with its shown, left hand end on the brake unit housing and with its right hand end on a not shown abutment on the sleeve 2. The brake unit 1 is provided with holes 7 for mounting of the brake unit to a suitable, not shown part of a rail vehicle underframe in the vicinity of a not shown wheel.

The brake unit 1 is provided with two fixed suspension brackets 8 extending forward in the same general direction as the spindle 3.

A brake block hanger 9 is pivotally attached to each of these brackets 8 by means of a bracket screw 10. A special journal and sealing

arrangement at the pivotal connection between the members 8-10 is shown in the upper left part of Fig 3. It consists of a hanger bushing 25, pressed into the hanger 9, a bushing 26, between these a low friction plastic journal bearing (not shown), a washer 27, and two sealing rings 28.

A brake block holder 11 with conventional, not further described means for releasably mounting of a not shown brake block or brake shoe is pivotally attached to the brake block hangers 9 by means of a common brake block holder screw 12 in inserts 13 in the brake block hangers 9. These inserts 13 are serrated at their ends abutting each other and are pressed into engagement with their respective hanger 9.

Also in this case a special journal and sealing arrangement as shown in the lower part of Fig 3 is provided at the pivotal connection between the members 11 and 13. It consists of a holder bushing 29 pressed into a corresponding hole in the holder 11, a low friction plastic journal bearing 30 and sealing rings 31.

It is to be noted that the connection between the brake block hangers 9 and the brake block holder 11 is at the lower part of the brake block holder 11, which primarily extends upwards between the brake block hangers 9, as appears clearly in Figs 1 and 3.

Between the two side-walls 11′ of the brake block holder 11 is welded an inner wall 14 in the form of a "cradle". A force transmitting member 15 has a front surface with an arcuate shape corresponding to the shape of the cradle 14, a flat back surface for engagement with the push plate 5 and a flat side surface near the brake holder side-walls 11′. The center of said arc lies to the right of the push plate 5 as viewed in Fig 1, thus making the force transmitting member 15 self-adjusting.

A rubber bellows 19 for preventing the intrusion of moist, dirt and the like is arranged between the brake unit 1 and a cover 20, which is attached to the brake block holder 11 by means of screws 21. In the cover 20 are attached (for example by welding) two diametrically opposed heads 22, which are both indicated in Fig 3 but of which only one is indicated in Fig 1.

In order to hold the force transmitting member 15 in place in the formed cradle two substantially Ω -formed, prestressed springs 16 are arranged in suitable recesses 17 in the member 15 and with their legs abutting the cover 20.

A bundle of leaf springs 23, bent to an open V-shape as appears from Fig 1, is arranged in the cover 20 guided by the two heads 22 and extends

through the axial slot 4 in the adjuster spindle 3 and is in contact with the push plate 5 on the push rod 3.

The leaf springs 23 will keep the holder substantially perpendicular to the push rod 3 or in other words substantially vertical in the shown case irrespective of the position of the hangers. The leaf springs 23 will also keep the different parts in the device together in a substantially play-free manner. Moreover the forces from the shocks and vibrations during normal service of the vehicle will be taken up by the leaf springs 23 so as to prevent the force transmitting means 15 from moving except when required during braking.

Modifications are possible within the scope of the appended claims.

CLAIMS

1. A rail vehicle brake block holder, preferably for a brake unit (1), with means for its suspension, including brake block hangers (9) pivotally attached to a fixed part, preferably a bracket (8), of the brake unit and to the brake block holder (11), and with an arrangement for connection to a brake force applying push rod (3), this arrangement beeing substantially at or near the center of the brake block holder and including a curved cradle (15) having a front surface with a shape corresponding to the cradle and a flat back surface for force receiving cooperation with a push plate (5) at the end of the push rod, c h a r a c t e r i z e d by at least one, preferably Ω-shaped, prestressed spring (16) in a suitable recess (17) in the force transmitting member (15) for biasing said member against the cradle (14).

2. A brake block holder according to claim 1, in which the connection arrangement between the push rod (3) and the brake block holder (11) includes holding means in the form of a bundle of leaf springs (23) extending through an axial slot (4) in the push rod (3) and abutting the push plate (5) with its central part, c h a r a c t e r i z e d in that an Ω-shaped spring (16) is arranged on either side of the leaf spring bundle (23) and in parallel therewith.

3. A brake block holder according to claim 2, c h a r a c t e r i z e d in that the legs of the Ω-shaped springs (16) and the ends of the leaf spring bundle (23) are supported by a cover (20) attached to the brake block holder (11) and having a central opening for the push rod (3).

4. A brake block holder according to claim 3, c h a r a c t e r i z e d in that the cover (20) is provided with two diametrically opposed heads (22) for guiding the leaf spring bundle (23).

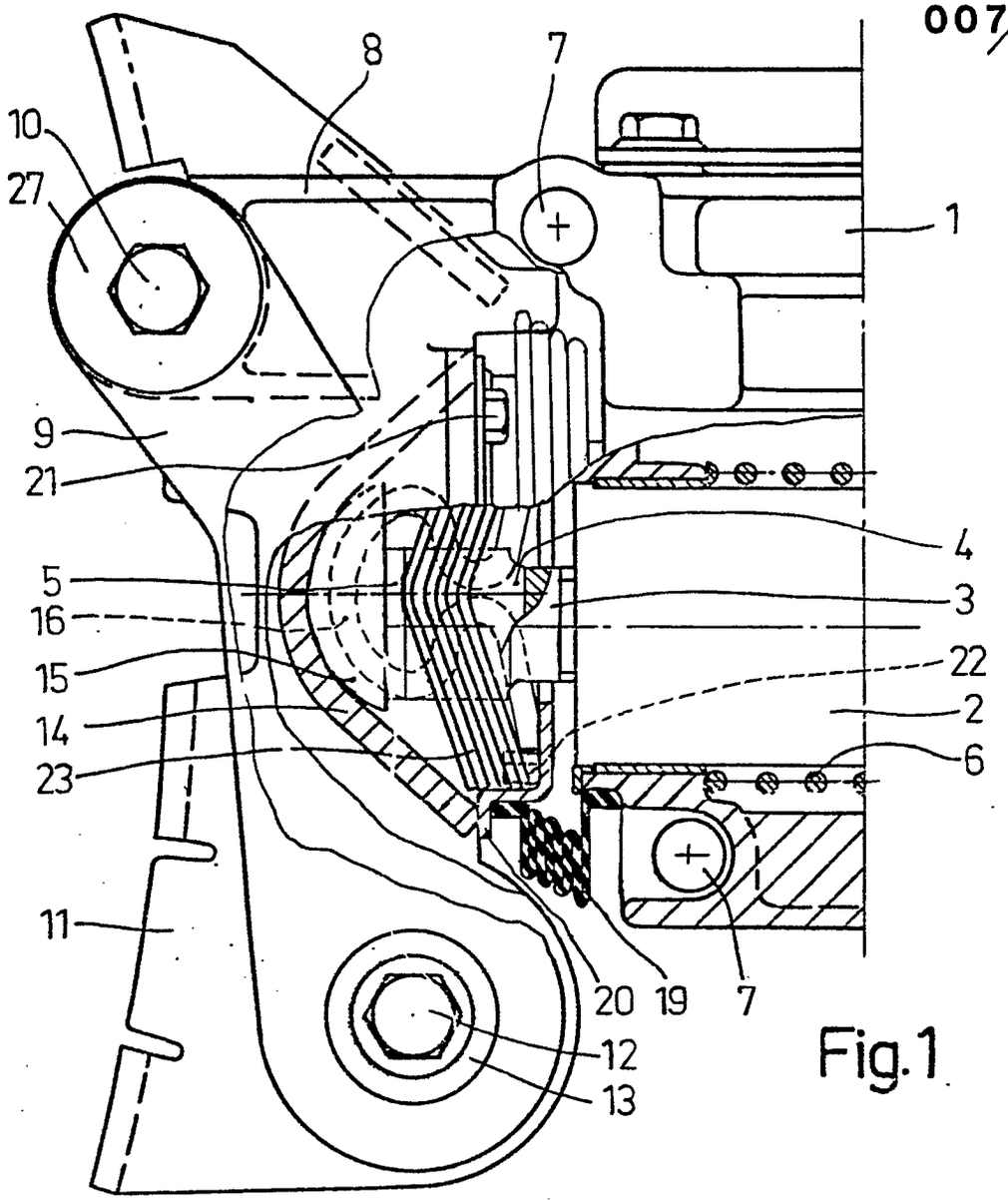
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Fig.1

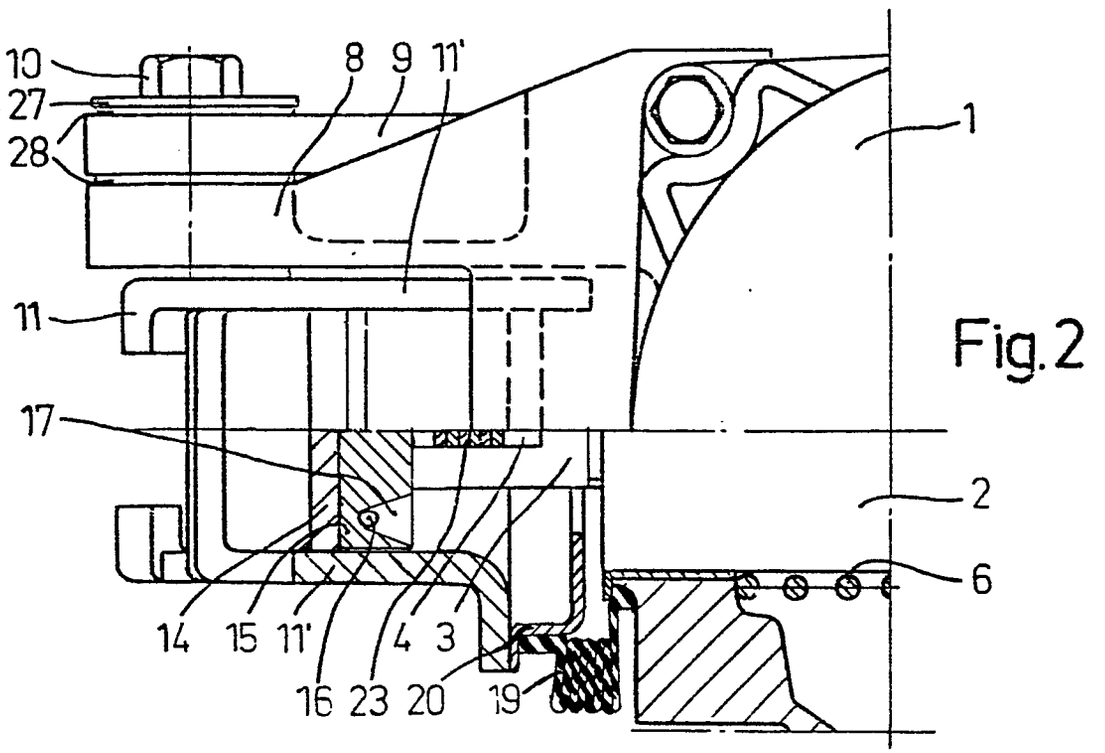
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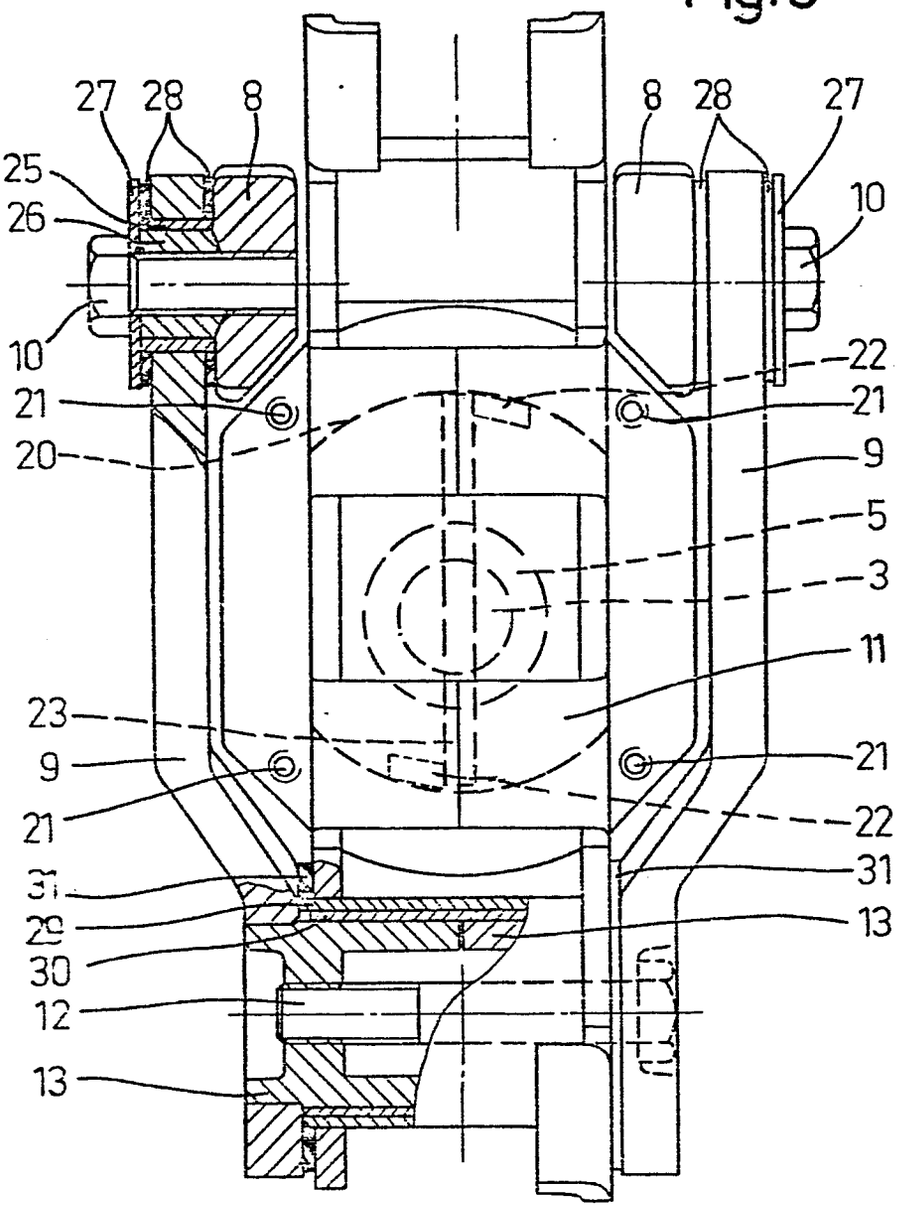
Fig.2

Fig.3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EUROPEAN SEARCH REPORT

0077586

Application number

EP 82 20 1268

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
A,D	EP-A-0 018 050 (SAB INDUSTRI) *The whole document; figures 1-3*	1	B 61 H 1/00 F 16 D 65/06
A	US-A-2 469 504 (JOHNSON)	1	

TECHNICAL FIELDS SEARCHED (Int. Cl. ³)

B 61 H 1/00
F 16 D 65/00
F 16 D 69/00

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	19-01-1983	BRAEMS C.G.I.

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