A single-axle wheel set (10) with outer suspension supports for railway vehicles with pendulum-type suspension. This wheel set (10) consists of a flat, horizontal chassis on which the independent, movable wheels are mounted, and upright suspension supports situated at the outer part of the wheels and joined to each other at their upper part by means of a crosspiece (22) to form a portico, in whose upper part suspension springs are provided.
Description

Field of the Invention

[0001] The present invention refers to improvements introduced into the suspension chassis of single-axle wheel sets of railway vehicles provided with pendulum-type suspension, comprising a chassis on which independent, movable wheels are mounted, said chassis having a pendulum-type suspension system with its suspension springs arranged in the upper part of upright supporting means.

Previous State of the Art

[0002] Until now, single-axle wheel sets of low-floor railway vehicles with pendulum-type suspension have incorporated a chassis with a yoke shape in which the vertical suspension supports were mounted on the wheel area.

[0003] This prior art, in relation to which we may mention Spanish patents Nos. 424615, 454721, 474678 and 527222, is represented in Fig. 1 of the attached drawings, which diagrammatically show a suspension system currently used in railway vehicles of the mentioned type.

[0004] Moreover, European patent 0884231, "Single-axle wheel set with independent movable wheels for articulated car-transporting wagons", discloses a single-axle wheel set with a chassis of similar shape to that described in the preamble of claim 1.

[0005] In said Fig. 1, a single-axle wheel set chassis of the known type is generally indicated with 1, with a yoke shape having end parts 4, 4' in the shape of an inverted U on which the wheels R are mounted with the corresponding bearing boxes (not shown) which belong to this type of single-axle wheel set. The suspension supports 2, 2' are precisely mounted on said parts 4, 4', each of which suspension supports ends in its upper part in a shock-absorbing spring, especially of the pneumatic type 3, 3'.

[0006] However, this type of suspension chassis of the prior art has the drawback that it limits the maximum diaphragm passage width between carriages to a size of about 800 mm, as its frame 5 must be housed between the inner legs 6, 6' of the yoke-shaped chassis 1 and the suspension supports 2, 2'.

Summary of the Invention

[0007] In order to be able to have diaphragm passages of greater width, so as to facilitate the transit of passengers between the carriages and, therefore, to offer them more comfort when they move among the areas accessible to them inside the train, a new type of single-axle wheel set has been designed with a suspension system characterised in that the chassis of said single-axle wheel set is a flat, horizontal chassis, and in that the suspension supports are made up of a framework in the form of a portico, the lower ends of the upright legs of said portico being attached to said flat chassis at points situated on the outer part of said wheels and whose upper crosspiece incorporates shock-absorbing springs close to its outer ends.

[0008] In a preferred embodiment of the invention, the attachment points of the lower ends of the legs of said portico are situated directly upon the outer bearing boxes of each wheel.

[0009] In accordance with another preferred embodiment of the invention, the anchoring of the system of articulated bars which control the position of the wheel set in relation to the boxes of the carriages between which said wheel set is arranged, is in the outer, lower part of the legs of said portico.

Brief description of the drawings

[0010] The single-axle wheel set in accordance with the invention will now be described in more detail, with reference to the attached drawings, in which:

Fig. 1 shows, diagrammatically, a suspension system currently used in railway vehicles of the type to which the present invention refers; and

Fig. 2 shows, diagrammatically, a suspension system in accordance with the present invention.

Detailed description of the preferred embodiments

[0011] With reference to the drawings, Fig. 1 of the same, as already described, diagrammatically represents the general arrangement of a single-axle wheel set in accordance with the prior art for railway vehicles with pendulum-type suspension.

[0012] With reference now to Fig. 2, this represents the new wheel set 10 with a suspension portico in accordance with the present invention. This wheel set 10 has a flat, horizontal chassis B, on whose end parts the wheels R are mounted.

[0013] Externally with respect to each one of the wheels R of said wheel set 10, the lower ends of a framework in the form of a portico are fixed to the chassis at 40, 40', said framework being made up of uprights 20, 20' with a quadrangular cross-section but which, in general, may be of any shape, whether polygonal or circular, and an upper, substantially straight horizontal cross-piece 22. Shock-absorbing springs, especially of the pneumatic type, are mounted close to the upper end of each of said cross-piece 22. Said springs enable, in a known way, the box of the carriage thus suspended to adopt the position required for taking a curve. Finally, 50 indicates the frame of the diaphragm allowing passengers to move between carriages.

[0014] In accordance with a first preferred embodiment of the invention, the lower ends of the uprights 20, 20' are mounted directly upon the bearing boxes which
support the outer end of each independent wheel of the wheel set 10.

[0015] In accordance with another preferred embodiment of the invention, the single-axle wheel set 10 can be provided with an anchoring for linking to it a system (indicated in general with the number 60) of articulated wheel set guide bars for controlling its position in relation to the boxes of the carriages between which the wheel set 10 is arranged.

[0016] As may be observed in said Fig 2 of the drawings, this particular solution will allow a passage diaphragm to be provided with greater maximum widths than those allowed by suspension systems of the prior art, reaching about 1200 mm, which is appreciably greater than what is normally found in railway equipment currently in use and which may even allow two passengers carrying suitcases to pass each other as they move between carriages.

[0017] Other advantages provided by the new wheel set in accordance with the present invention are:

- it allows greater auxiliary volume for the pneumatic suspension springs; and
- the portico-type structure provides the wheel set unit with greater mechanical strength.

Claims

1. A single-axle wheel set with outer suspension supports for pendulum-type railway vehicles comprising a chassis on which independent, movable wheels are mounted, said chassis having a pendulum-type suspension system with its suspension springs arranged in the upper part of upright supporting means, characterised in that the chassis is a flat, horizontal chassis, and in that the suspension supports are made up of a framework in the form of a portico, the lower ends of the upright legs of said portico being attached to said flat chassis at points situated on the outer part of said wheels and whose upper crosspiece incorporates shock-absorbing springs close to its outer ends.

2. A single-axle wheel set in accordance with claim 1, characterised in that the attachment points of the lower ends of the legs of said portico are situated directly upon the outer bearing boxes of each wheel.

3. A single-axle wheel set in accordance with claim 1, characterised in that the anchoring of the system of articulated bars which control the position of the wheel set in relation to the boxes of the carriages between which said wheel set is arranged, is in the outer, lower part of the legs of said portico.