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(54) RAILWAY WAGON UNDERFRAME, IN PARTICULAR TANK WAGON

(57) The object of the invention is a railway wagon underframe, in particular tank wagon.

The undeframe is characterized in that, each bolster (7) has two webs, inner (10) and outer (11) of different heights joined in the central part by walls (12) symmetrical with respect to the longitudinal axis of the underframe, from the bottom it is closed with a bolster lower flange (13), formed from a sheet metal and from the top with a bolster upper flange (15), formed from a sheet metal, the bolster upper flange (15) being supported by the upper edges of the inner (10) and outer (11) web, and its cross-section resembling the stretched letter "Z".

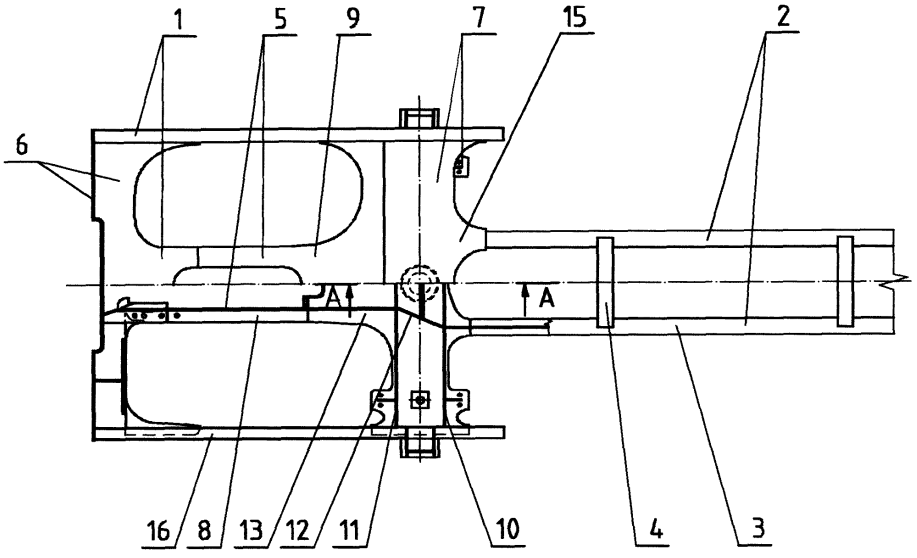

Fig. 1

EP 3 299 245 A1

Description

[0001] The object of the invention is a railway wagon underframe, in particular tank wagon.

[0002] The underframe for freight wagons, in particular tank wagons known from the Polish utility model No. PL60303Y1 is characterized in that the outermost parts of the underframe, composed of the buffer beam and the coupling bar such that the lower planes of the coupling bar and the longitudinal members form one plane, are connected by means of anchor plates to both ends of the central part composed of longitudinal members connected by means of a torsion bar at the king-pin support. The ends of buffer beams are connected to appropriate ends of torsion bars by means of side sills formed from K-bar whose vertical longitudinal frame has a welded horizontal flat rod, with fifth wheel coupling side sheet metals mounted thereon, joined with saddle webs set on torsion bars and paired by washers.

[0003] An underframe of a freight wagon with spindles for attaching containers is known from Polish Patent Publication No. PL201607B1. Side sills of the underframe are composed of beams, which contain horizontal belts and horizontal lower belts connected by vertical webs, the vertically oriented spindles being connected to the upper belts and are next to them on the jibs. The side sill webs are located asymmetrically with respect to the vertical axis of symmetry of its cross-section such that they are offset in the direction of the spindles, the vertical axis of each spindle passing through the shear centre of the cross-section of the side sill.

[0004] A frame of a wagon, in particular a tank wagon, known from a Polish Patent Publication No. PL186 041B1 has two independent sets of bolsters, each consisting of two transverse webs joined in the central part of the beam with two vertical walls arranged in parallel and symmetrically with respect to the longitudinal axis of the frame. As the extension of these walls, two longitudinal front walls are attached to the front web, terminated by a thick vertical front plate. In analogy to the above, two rear longitudinal vertical walls are attached to the rear web, to the ends of which a transverse vertical rear appropriately thick plate is attached. The central part of the bolster is topped with a sheet metal bent at the centre longitudinally with a radius corresponding to the outside diameter of the tank. From the bottom the central part of the bolster is covered with a plate, to which a known king-pin mounting flange is attached. Upper horizontal sheet metals and bottom sheet metals covering the ends of the bolster have variable shapes with longitudinal dimensions increasing in the direction of the middle plate and bottom plate and towards the outer beams. The above upper and lower sheet metals on each side of the bolster are connected by a vertical bracket arranged obliquely to the longitudinal axis of the frame. One vertical edge of the bracket is connected to the rear web and the other one to the outer beam. From the front, arched vertical ribs are mounted to the lower sheet metal to eliminate the stress concentration in the horizontal sheet metals from the drawbar coupling box. Vertical ribs connected with the webs by means of the ends are mounted at the lower sheet metals in places where the side bearings are fastened. Independent assembly of the drawbar coupling box, whose other end is connected to the buffer beam assembly, is fastened to the front transverse plate of a bolster. The end of the independent top beam assembly is fastened to the rear plate of the bolster. This beam, apart of known C-section cross-bars, has horizontal sheet metal cross-bars with extended ends, which are used to connect them to the webs.

[0005] The essence of the underframe according to the invention consists in that each bolster has two webs, inner and outer, of different heights joined in the central part by walls symmetrical with respect to the longitudinal axis of the underframe. The bolster is closed from the top with a bolster lower flange and bolster upper flange, made of sheet metals. The bolster upper flange is supported by upper edges of the inner web and outer web, and in the cross-section its shape is similar to the stretched letter "Z".

[0006] Preferably, the outer web incorporated in the bolster at the central part of the underframe has a height equal to the height of the central part of the underframe and which is smaller than the height of the outer web enclosed in the bolster from the coupling bar side and having a height equal to the height of the coupling bar.

[0007] Railway wagon underframe, in particular tank wagon allows the fifth wheel couplings of the tank mounted on the lowered part of the bolster to be mounted on the wagon of the tank with a bigger diameter, and thus to increase the tank capacity without increasing the length of the wagon, in particular for long railway wagons railway regulations make it impossible to increase the length of the wagon. Moreover, it
allows lowering the height of the bearing beams of the central part and thus lowering the mass of the whole underframe, as a result of which the capacity of the wagon increases.

[0008] The object of the invention in the embodiment is shown in the drawing, which in Fig. 1 presents an underframe in a top view, with a partial cross-section, Fig. 2 - A-A cross-section through the bolster.

[0009] A railway wagon underframe, in particular on a tank wagon has two outermost parts of the undeframe 1 interconnected with the central part 2. Central part of the undeframe 2 consists of two bearing beams 3 parallel to each other connected with cross-bars 4. The outermost part of the undeframe 1 consists of a coupling bar 5 consisting of two parallel angles 8 covered with a coupling bar upper flange 9 formed from a sheet metal. Buffer beam 6 shaped like a welded C-section is fastened on one end of the coupling bar 5 and the bolster 7 is fastened on the other end of the coupling bar 5. The bolster 7 with a box construction has two webs, inner 10 and outer 11 one of different heights, connected with walls 12 arranged symmetrically with respect to the longitudinal axis

of the underframe connected in the central part, from the bottom it is closed with a bolster lower flange 13 formed from a sheet metal and from the top with a bolster upper flange 15 also formed from a sheet metal. The inner web 10 arranged in the bolster 7 from the central part of the underframe 2 has a smaller height equal to the height of the central part of the underframe 2, and the outer web 11 arranged in the bolster from the side of the coupling bar 5 has a higher height equal to the height of the coupling bar 5. A bolster upper flange 15 is supported by the upper edges of the inner 10 and outer webs, and its cross-section resemble the stretched letter "Z". King-pin mounting flange 14 is attached to the bolster lower flange 13. From the top the coupling chamber is closed with the upper sheet metal 15 shaped so that it compensates for differences in heights of webs 10 and 11. Moreover, lateral ends of the bolsters 7 are connected to the ends of the buffer beam 6 by means of external beams 16.

List of designations:

[0010]

1. the outermost part of the underframe,
2. the central part of the underframe,
3. bearing beam,
4. crossbar,
5. coupling bar,
6. buffer beam,
7. bolster,
8. angle,
9. coupling bar upper flange,
10. inner web,
11. outer web,
12. wall,
13. bolster lower flange,
14. flange,
15. bolster upper flange,
16. external beam.

Claims

1. A railway wagon underframe, in particular tank wagon comprising two outermost parts of the undeframe interconnected with the central part, having two bearing beams parallel to each other connected with cross-bars, while each outermost part of the underframe has a coupling bar, consisting of two parallel angles covered with a coupling bar upper flange, buffer beam shaped like a C-section being fastened on one end of the coupling bar and the bolster with a box construction formed of two parallel webs being fastened on the other end of the coupling bar, **characterized in that** each bolster (7) has two webs, inner (10) and outer (11) of different heights joined in the central part by walls (12) symmetrical with respect to the longitudinal axis of the underframe, wherein the bolster (7) is closed from the bottom and from the top with a bar lower flange (13) and bolster upper flange (15), made of sheet metals, while the bolster upper flange (15) is supported by the upper edges of the inner (10) and outer (11) web, and in the cross-section its shape is similar to the stretched letter "Z".

2. An underframe according to claim 1 **characterized in that,** the outer web (10) incorporated in the bolster (7) at the central part of the underframe (2) has a height equal to the height of the central part of the underframe (2) and which is smaller than the height of the outer web (11) enclosed in the bolster (7) from the coupling bar side (5) and having a height equal to the height of the coupling bar (5).

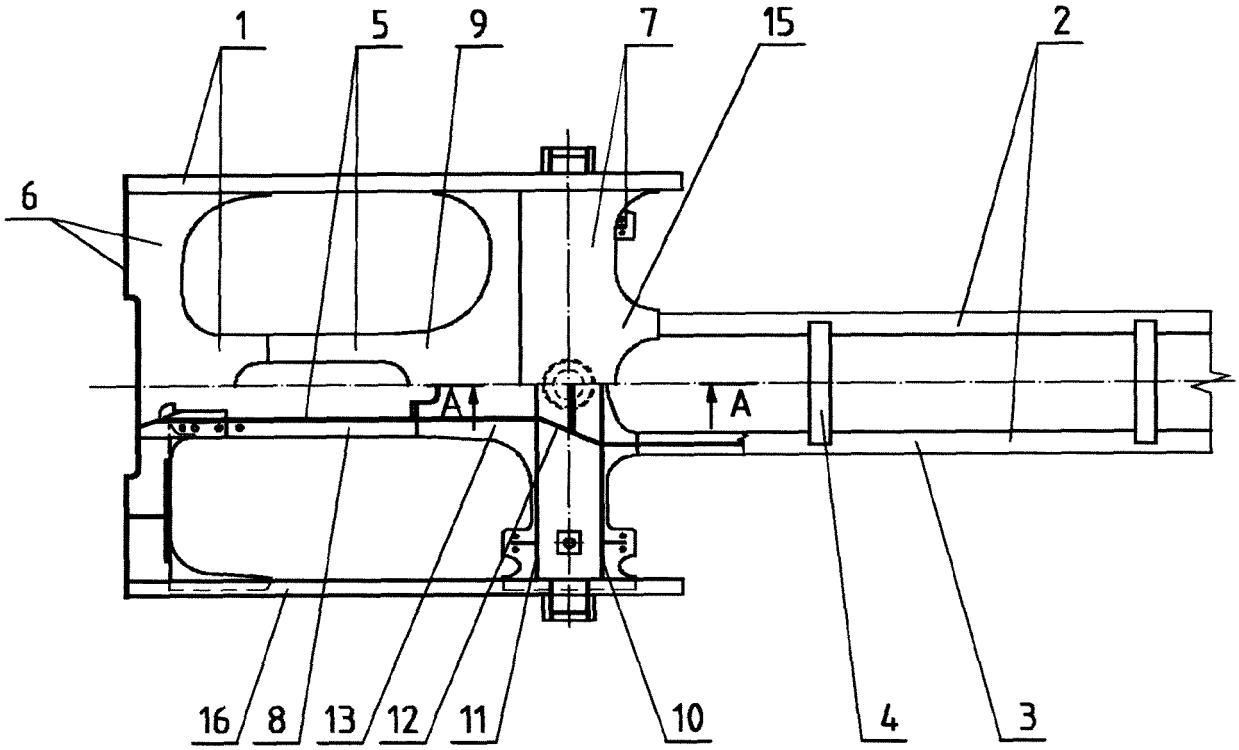

Fig. 1

A-A

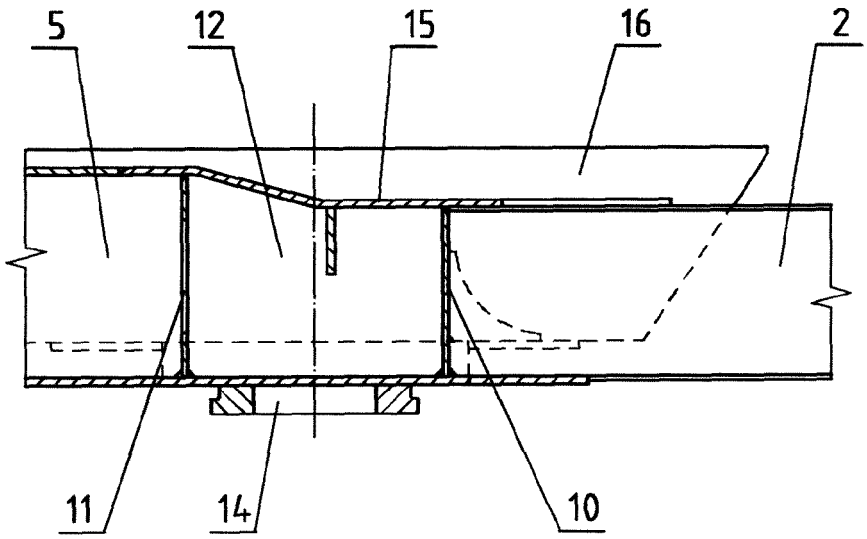

Fig. 2

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EUROPEAN SEARCH REPORT

Application Number
EP 17 46 0061

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	12 February 2018	Awad, Philippe

CATEGORY OF CITED DOCUMENTS

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- PL 201607 B1 **[0003]**
- PL 186041 B1 **[0004]**