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(71) Applicant: **Railcare Group AB**
932 32 Skelleftehamn (SE)

(72) Inventor: **Marklund, Ulf**
932 91 Bureå (SE)

(74) Representative: **Ehrner & Delmar Patentbyrå AB**
Drottninggatan 33, plan 4
111 51 Stockholm (SE)

(54) **A DRIVE ARRANGEMENT FOR DRIVING A RAILWAY TRUCK**

(57) A drive arrangement (102) for driving a railway truck (2), the railway truck (2) being arranged to carry a work unit (6). The drive arrangement (102) comprises two drivable wheels (104) rotatably connected to a wheel unit (106). The drive arrangement (102) comprises a first pressure cylinder (108) connected to the wheel unit (106) and connectable to the work unit (6). The drive arrangement (102) comprises a first arm (114) pivotally connected to the wheel unit (106) and pivotally connectable to the work unit (6). The drive arrangement (102) comprises a second arm (214) pivotally connected to the wheel unit (106) and pivotally connectable to the work unit (6), wherein the second arm (214) is at least partially located at a distance from the first arm (114). Each arm (114, 214) is located at a distance from the first pressure cylinder's (108) attachment to the work unit (6).

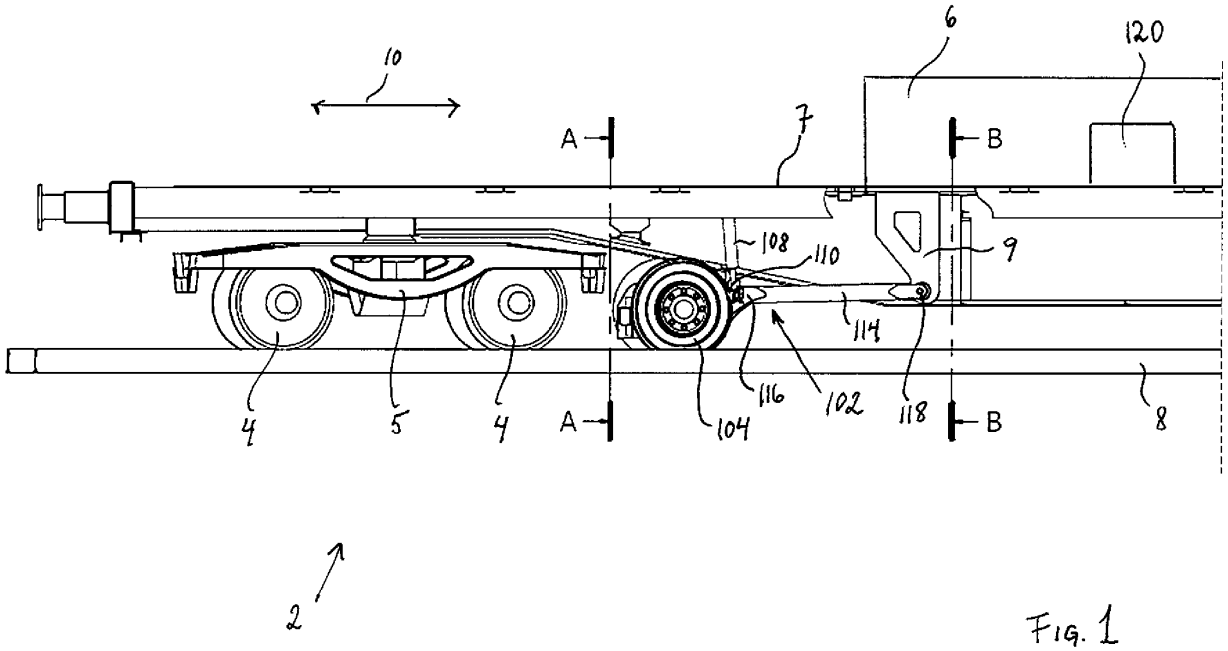

Fig. 1

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Description

Technical Field

[0001] Aspects of the present invention relate to a drive arrangement for driving a railway truck, the railway truck being arranged to carry a work unit.

Background

[0002] When maintaining or working on a railway track or the area around the railway track, often a work unit, which provides the support needed for performing the work or maintenance work, is carried by a railway truck having wheels. The work unit may e.g. be an excavator, a suction unit etc.

[0003] Conventionally, such a work unit is located on an ordinary railway truck. Such a railway truck is arranged to be driven by a locomotive or the like and has no driving means of its own. Therefore, when such a railway truck is arranged to carry a work unit either a locomotive should be used, or a separate driving means should be provided.

Summary

[0004] The inventors of the present invention have identified the need to improve the work on or the maintenance work of a railway track, or the area around the railway track, when using a work unit placed on a railway truck.

[0005] The object of the present invention is thus to improve the work on or the maintenance work of a railway track, or the area around the railway track, when using a work unit carried by a railway truck.

[0006] Another object of the present invention is to improve the flexibility of the work on or the maintenance work of a railway track, or the area around the railway track when using a work unit located on a railway truck.

[0007] According to a first aspect of the invention, at least one of the above-mentioned objects is attained by a drive arrangement for driving a railway truck having wheels, the railway truck being arranged to carry a work unit. The drive arrangement comprises two drivable wheels rotatably connected to a wheel unit, wherein the wheel unit being arranged to keep the drivable wheels of the drive arrangement at a certain distance from one another. Further, the drive arrangement comprises a first pressure cylinder having a first end and a second end, where the first end of the first pressure cylinder is connected to the wheel unit. The second end of the first pressure cylinder is connectable to the work unit, wherein the first pressure cylinder is arranged to, in an active position, push the wheels of the drive arrangement into engagement with a railway track. The drive arrangement comprises a first arm having a first end and a second end, wherein the first end of the first arm is pivotally connected to the wheel unit. The second end of the first arm is pivotally connectable to the work unit such that the second end of the first arm is positioned at a distance from the second end of the first pressure cylinder. Further, the drive arrangement comprises a second arm having a first end and a second end. The first end of the second arm is pivotally connected to the wheel unit, and the second end of the second arm is pivotally connectable to the work unit such that the second end of the second arm is located at a distance from the second end of the first pressure cylinder. The first end of the first arm is located at a distance from the first end of the second arm.

[0008] By way of the innovative drive arrangement, an efficient auxiliary drive, arranged to be placed on an existing conventional railway truck, is provided. No drive for the wheels of the railway truck is needed. Instead the railway truck is driven, moved forward or backward along the railway track, by the drivable wheels of the drive arrangement. The drive arrangement does not need to be attached or anchored to the railway truck but is mounted simply by placing the work unit on the railway truck. The drive arrangement can be seen as a mobile unit, which can be moved from one railway truck to another. Advantageously, the two drivable wheels of the drive arrangement are positioned adjacent to wheels of the railway truck. By means of the pressure cylinder, the two drivable wheels of the drive arrangement can be moved between a working/active position with a sufficient pressure against the railway track and a rest/inactive position retracted from the railway track. The work unit can be any kind of apparatus for maintaining of or working on the railway track, or in the area around the railway track, e.g. an excavator, a vacuum lifting apparatus, a suction apparatus for sucking up ballast crushed stones or pebbles, an apparatus for placing ballast crushed stones along the railway track etc. By the expression "engagement with" is meant that the respective wheel is in a position in which it rolls on the railway track, i.e. the wheel is brought into engaging contact with the railway track when brought into engagement therewith. By the innovative drive arrangement, the drivable wheels are guided along the railway track in an efficient manner.

[0009] According to an advantageous embodiment of the drive arrangement according to the present invention, the length of each arm is determined at least based on the railway curve radius of the railway track. Hereby, the drive arrangement is efficiently adapted to the railway track and its curvature.

[0010] According to a further advantageous embodiment of the drive arrangement according to the present invention, the railway truck has a longitudinal extension, and the first end of the first arm is located at a distance from the first end of the second arm in a direction transversely to the longitudinal extension of the railway truck. Hereby, the stability of the structure of the drive arrangement is further improved. The longitudinal extension of the railway truck extends in a direction of movement of the railway truck, and/or in the direction of the railway track.

[0011] According to another advantageous embodi-

ment of the drive arrangement according to the present invention, the second end of the first arm and the second end of the second arm are connectable to the work unit such that the second end of the first arm is positioned at a distance from the second end of the second arm. Hereby, the stability of the structure of the drive arrangement is further improved. Further, the guidance of the driveable wheels of the drive arrangement along the railway track is further improved.

[0012] According to yet another advantageous embodiment of the drive arrangement according to the present invention, the railway truck has a longitudinal extension, and the second end of the first arm is arranged to be positioned at a distance from the second end of the second arm in a direction transversely to the longitudinal extension of the railway truck.

[0013] According to still another advantageous embodiment of the drive arrangement according to the present invention, the railway truck has a longitudinal extension, and each arm extends substantially in the direction of the longitudinal extension of the railway truck. Hereby, the stability of the structure of the drive arrangement is further improved. The guidance of the driveable wheels of the drive arrangement along the railway track is also further improved. By the expression "substantially" in this context is meant that each arm may deviate from the longitudinal extension to some degree, especially laterally, e.g. by 0°-40°.

[0014] According to an advantageous embodiment of the drive arrangement according to the present invention, the drivable wheels of the drive arrangement are arranged to be driven by at least one hydraulic engine. However, other engines are possible, e.g. at least one combustion engine, or at least one electric motor.

[0015] According to another advantageous embodiment of the drive arrangement according to the present invention, the distance between the second ends of the first and second arms exceeds the distance between the first ends of the first and second arms. Hereby, the stability of the structure of the drive arrangement is further improved. Further, the control of the wheels of the drive arrangement is improved.

[0016] According to a further advantageous embodiment of the drive arrangement according to the present invention, the drive arrangement comprises a second pressure cylinder having a first end and a second end. The first end of the second pressure cylinder is connected to the wheel unit, and the second end of the second pressure cylinder is connectable to the work unit. The second pressure cylinder is arranged to, in an active position, push the wheels of the drive arrangement into engagement with the railway track, and wherein the second end of the second arm is pivotally connectable to the work unit such that the second end of the second arm is positioned at a distance from the second end of the second pressure cylinder. By the second pressure unit, the stability and the control of the drive arrangement are further improved. Advantageously, the first and second pressure cylinders are spaced apart, i.e. placed with a distance to one another. With two pressure cylinders, the two wheels of the drive arrangement are more efficiently pressed against the railway track.

[0017] According to another advantageous embodiment of the drive arrangement according to the present invention, the first end of the first pressure cylinder is adjacent to one of the drivable wheels of the drive arrangement, and the first end of the second pressure cylinder is adjacent to the other wheel of the drive arrangement. Hereby, the control of the driveable wheels of the drive arrangement along the railway track is improved.

[0018] According to yet another advantageous embodiment of the drive arrangement according to the present invention, the first end of the first arm is adjacent to the first end of the first pressure cylinder, and the first end of the second arm is adjacent to the first end of the second pressure cylinder. Hereby, the control of the driveable wheels of the drive arrangement along the railway track is further improved.

[0019] According to still another advantageous embodiment of the drive arrangement according to the present invention, each pressure cylinder is arranged to, in an inactive position, lift the wheels of the drive arrangement from an engagement with the railway track. Hereby, the wheels of the drive arrangement are retracted from the railway track in an efficient manner, when brought to the inactive position.

[0020] According to yet another advantageous embodiment of the drive arrangement according to the present invention, the first end of each pressure cylinder is pivotally connected to the wheel unit, wherein the second end of each pressure cylinder is arranged to be pivotally connected to the work unit. Hereby, the control of the driveable wheels of the drive arrangement along the railway track is further improved.

[0021] According to an advantageous embodiment of the drive arrangement according to the present invention, the length of each arm exceeds the length of each pressure cylinder. Hereby, the control of the driveable wheels of the drive arrangement along the railway track is further improved.

[0022] According to a further advantageous embodiment of the drive arrangement according to the present invention, each pressure cylinder is a hydraulic pressure cylinder. However, it may also be a gas/pneumatic pressure cylinder.

[0023] According to another advantageous embodiment of the drive arrangement according to the present invention, the drive arrangement comprises a hydraulic pump assembly carried by the railway truck, wherein the hydraulic pump assembly is arranged to provide pressurized fluid to each pressure cylinder.

[0024] According to a second aspect of the invention, at least one of the above-mentioned objects is also attained by a railway truck drive arrangement, wherein the railway truck drive arrangement comprises at least one drive arrangement according to any of the claims 1 to 14,

or according to any embodiment disclosed above or below, and wherein the railway truck drive arrangement comprises the work unit arranged to be carried by the railway truck. The advantages of the railway truck drive arrangement and its embodiment correspond to the advantages of the drive arrangement embodiments mentioned above.

[0025] The above-mentioned features and embodiments of the drive arrangement and the railway truck drive arrangement, respectively, may be combined in various possible ways providing further advantageous embodiments. Further applications and advantages of the present invention will be apparent from the following detailed description.

Brief Description of the Drawings

[0026] The present invention will now be described, for exemplary purposes, in more detail by way of embodiments and with reference to the enclosed drawings, in which:

Fig. 1 is a schematic side view of a left side of a railway truck provided with an embodiment of the drive arrangement;
Fig. 2 is a schematic side view of a right side of the railway truck of Fig 1 provided with an embodiment of the drive arrangement;
Fig. 3 is a schematic bottom view (as seen from below) of the left side of the railway truck of Fig. 1;
Fig. 4 is a schematic bottom view (as seen from below) of the right side of the railway truck of Fig. 2;
Fig. 5 is a section along the line A-A of Fig. 1;
Fig. 6 is a section along the line B-B of Fig. 1;
Fig. 7 is a section along the line C-C of Fig. 2; and
Fig. 8 is a section along the line D-D of Fig. 2.

Detailed Description

[0027] With reference to Fig. 1, the left side of a railway truck 2 with wheels 4 is schematically shown, on to which an embodiment of the drive arrangement 102 is positioned for driving the railway truck 2. The wheels 4 of the railway truck 2 may be mounted to a bogie 5 of the railway truck 2. For the railway truck 2, there is no drive connected to the wheels 4 of the railway truck 2. The railway truck 2 is arranged to carry a work unit 6 which is located on a support 7 of the railway truck 2. Thus, the work unit 6 is arranged to be carried by the railway truck 2. The work unit 6 may be any kind of apparatus for maintaining or working on a railway track 8 or the surroundings of the railway track 8. With reference to Fig. 2, the right side of the railway truck 2 with wheels 4 is schematically shown, on to which an additional embodiment of the drive arrangement 102 is positioned for driving the railway truck 2. The drive arrangement 102 of Fig. 2 is identical to the drive arrangement 102 of Fig. 1. With reference to Figs. 1 and 5, each drive arrangement 102 comprises two drivable wheels 104 rotatably connected to a wheel unit 106. The wheel unit 106 is arranged to keep the drivable wheels 104 of the drive arrangement 102 at a certain distance from one another, which depends on the width of the railway track 8. In Fig. 1, the drivable wheels 104 of the drive arrangement 102 are in an active position, where the drivable wheels 104 are in engagement with the railway track 8. In Fig. 2, the drivable wheels 104 of the drive arrangement 102 are in an inactive, or rest, position, where the drivable wheels 104 have been lifted (or retracted) from the engagement with the railway track 8.

[0028] With reference to Figs. 1, 2 and 6, the drive arrangement 102 includes an elongated first pressure cylinder 108 with a first end 110 and a second end 112. The first end 110 of the first pressure cylinder 108 is connected to the wheel unit 106, and the second end 112 of the first pressure cylinder 108 is connectable to the work unit 6. The first pressure cylinder 108 is arranged to, in the active position, push the wheels 104 of the drive arrangement 102 into engagement with the railway track 8. The drive arrangement 102 comprises an elongated second pressure cylinder 208 with a first end 210 and a second end 212. The first end 210 of the second pressure cylinder 208 is connected to the wheel unit 106, and the second end 212 of the second pressure cylinder 208 is connectable to the work unit 6. The second pressure cylinder 208 is also arranged to, in the active position, push the wheels 104 of the drive arrangement 102 into engagement with the railway track 8. With reference to Fig. 2, each pressure cylinder 108, 208 is arranged to, in the inactive position, lift the wheels 104 of the drive arrangement 102 from an engagement with the railway track 8. With reference to Figs. 5 and 6, the first and second pressure cylinders 108, 208 are spaced apart, i.e. placed with a distance to one another. Each pressure cylinder 108, 208 may be a hydraulic pressure cylinder, or a gas/pneumatic cylinder.

[0029] With reference to Figs. 1 and 6, the drive arrangement 102 comprises an elongated first arm 114 with a first end 116 and a second end 118. The first end 116 of the first arm 114 is pivotally connected (pivotally mounted or pivotally attached) to the wheel unit 106. The second end 118 of the first arm 114 is pivotally connectable to the work unit 6 such that the second end 118 of the first arm 114 is positioned (located) at a distance from the second end 112 of the first pressure cylinder 108. As shown in Figs. 1, the second end 118 of the first arm 114 is connected to a mounting member 9 of the work unit 6. With reference to Figs. 2, 6 and 7, the drive arrangement 102 comprises an elongated second arm 214 with a first end 216 and a second end 218. The first end 216 of the second arm 214 is pivotally connected to the wheel unit 106. The second end 218 of the second arm 214 is pivotally connectable to the work unit 6 such that the second end 218 of the second arm 214 is positioned at a distance from the second end 112 of the first pressure cylinder 108. Further, the second end 218 of the second arm 214

is pivotally connectable to the work unit 6 such that the second end 218 of the second arm 214 is positioned at a distance from the second end of the second pressure cylinder 208. As shown in Figs. 2, the second end 218 of the second arm 214 is connected to a mounting member 19 of the work unit 6. Each mounting member 9, 19 of the work unit 6 extends below the support 7 of the railway truck 2.

[0030] The wheel unit 106 is arranged to be mechanically supported by the first and second pressure cylinders 108, 208 and the first and second arms 114, 214.

[0031] With reference to Figs. 3 and 4, the railway track 8, the railway truck 2 and the drive arrangements 102 are shown from below. The length of each arm 114, 214 may be determined at least based on the railway curve radius of the railway track 8.

[0032] With reference to Figs. 3, 6 and 7, the first end 116 of the first arm 114 is located at a distance from the first end 216 of the second arm 214. With reference to Figs. 1 and 6, the railway truck 2 has a longitudinal extension 10 in a direction of movement of the railway truck 2 and/or in the direction of the railway track 8. The first end 116 of the first arm 114 is located at a distance from the first end 216 of the second arm 214 in a direction transversely 122 to the longitudinal extension 10 of the railway truck 2.

[0033] With reference to Fig. 3, the second end 118 of the first arm 114 and the second end 218 of the second arm 214 are connectable to the work unit 6 such that the second end 118 of the first arm 114 is positioned (located) at a distance from the second end 218 of the second arm 214 in a direction 122 transversely to the longitudinal extension 10 of the railway truck 2. With reference to Figs. 3 and 4, the distance between the second ends 118, 218 of the first and second arms 114, 214, in a direction 122 transversely to the longitudinal extension 10 of the railway truck 2, exceeds the distance between the first ends 116, 216 of the first and second arms 114, 214 in a direction 122 transversely to the longitudinal extension 10 of the railway truck 2.

[0034] With reference to Figs. 1-4, each arm 114, 214 extends substantially in the direction of the longitudinal extension 10 of the railway truck 2. As shown in Figs. 3-4, each arm 114, 214 may laterally form an angle with the longitudinal extension 10 of the railway truck 2. Each angle is at least based on the railway curve radius of the railway track 8. The respective angle may, e.g., be 0°-40°, and may change along the railway track 8. In Fig. 3, the wheels 104 of the drive arrangement 102 are situated in a curve of the railway track 8, and the arms 114, 214 in Fig. 3 are laterally displaced in relation to the arms 114, 214 in Fig. 4. Further, as shown in Figs. 1 and 2, the length of each arm 114, 214 exceeds the length of each pressure cylinder 108, 208.

[0035] With reference to Fig. 5, the drivable wheels 104 of the drive arrangement 102 are advantageously arranged to be driven by at least one hydraulic engine, e.g. one hydraulic engine 124, 126 for each wheel 104. Each hydraulic engine 124, 126 is mounted to each wheel 104 adjacent to each wheel 104.

[0036] With reference to Figs. 1 and 6, the first end 116 of the first arm 114 is adjacent to the first end 110 of the first pressure cylinder 108. The first end 216 of the second arm 214 is adjacent to the first end 210 of the second pressure cylinder 208. With reference to Fig. 6, the first end 110 of the first pressure cylinder 108 may be adjacent to one of the drivable wheels 104 (a first wheel) of the drive arrangement 102, and the first end 210 of the second pressure cylinder 208 may be adjacent to the other wheel 104 (a second wheel) of the drive arrangement 102. The first end 116 of the first arm 114 may be adjacent to one of the drivable wheels 104 of the drive arrangement 102, and the first end 216 of the second arm 214 may be adjacent to the other wheel 104 of the drive arrangement 102.

[0037] With reference to Figs. 5 and 6, the first end 110, 210 of each pressure cylinder 108, 208 is pivotally connected (pivotally mounted) to the wheel unit 106, and the second end 112, 212 of each pressure cylinder 108, 208 is arranged to be pivotally connected to the work unit 6. In Figs. 4 and 5, the wheels 104 of the drive arrangement 102 are situated in a curve of the railway track 8, and the pressure cylinders 108, 208 in Figs. 4 and 5 are laterally displaced in relation to the cylinders 108, 208 in Fig. 7.

[0038] With reference to Fig. 1, the drive arrangement 102 comprises a hydraulic pump assembly 120 carried by the railway truck 2 on the support 7, and the hydraulic pump assembly 120 is arranged to provide pressurized fluid to each pressure cylinder 108, 208 and to each hydraulic engine 124, 126. For illustrative purposes, the pipes/tubes between the hydraulic pump assembly 120 and the pressure cylinders 108, 208 and the hydraulic engines 124, 126 are left out.

[0039] A railway truck drive arrangement is also provided, which comprises at least one drive arrangement 102 as disclosed above with reference to the embodiments, and wherein the railway truck drive arrangement comprises the work unit 6 arranged to be carried by the railway truck 2, as disclosed above.

[0040] By the term "connected", if nothing else is mentioned, is meant "mechanically connected", e.g. mounted or attached.

[0041] The features of the different embodiments of the drive arrangement and the railway truck drive arrangement disclosed above may be combined in various possible ways providing further advantageous embodiments.

[0042] The invention shall not be considered limited to the embodiments illustrated but can be modified and altered in many ways by one skilled in the art, without departing from the scope the appended claims.

Claims

1. A drive arrangement (102) for driving a railway truck (2) having wheels (4), the railway truck (2) being arranged to carry a work unit (6), wherein the drive arrangement (102) comprises two drivable wheels (104) rotatably connected to a wheel unit (106), the wheel unit (106) being arranged to keep the drivable wheels (104) of the drive arrangement (102) at a certain distance from one another, wherein the drive arrangement (102) comprises a first pressure cylinder (108) having a first end (110) and a second end (112), the first end (110) of the first pressure cylinder (108) being connected to the wheel unit (106), and the second end (112) of the first pressure cylinder (108) being connectable to the work unit (6), wherein the first pressure cylinder (108) is arranged to, in an active position, push the wheels (104) of the drive arrangement (102) into engagement with a railway track (8), wherein the drive arrangement (102) comprises a first arm (114) having a first end (116) and a second end (118), the first end (116) of the first arm (114) being pivotally connected to the wheel unit (106), wherein the second end (118) of the first arm (114) is pivotally connectable to the work unit (6) such that the second end (118) of the first arm (114) is positioned at a distance from the second end (112) of the first pressure cylinder (108), wherein the drive arrangement (102) comprises a second arm (214) having a first end (216) and a second end (218), the first end (216) of the second arm (214) being pivotally connected to the wheel unit (106), wherein the second end (218) of the second arm (214) is pivotally connectable to the work unit (6) such that the second end (218) of the second arm (214) is positioned at a distance from the second end (112) of the first pressure cylinder (108), and wherein the first end (116) of the first arm (114) is located at a distance from the first end (216) of the second arm (214).

2. A drive arrangement (102) according to claim 1, wherein the railway truck (2) has a longitudinal extension (10), and wherein the first end (116) of the first arm (114) is located at a distance from the first end (216) of the second arm (214) in a direction (122) transversely to the longitudinal extension (10) of the railway truck (2).

3. A drive arrangement (102) according to claim 1 or 2, wherein the second end (118) of the first arm (114) and the second end (218) of the second arm (214) are connectable to the work unit (6) such that the second end (118) of the first arm (114) is positioned at a distance from the second end (218) of the second arm (214).

4. A drive arrangement (102) according to claim 3, wherein the railway truck (2) has a longitudinal extension (10), and wherein the second end (118) of the first arm (114) is arranged to be positioned at a distance from the second end (218) of the second arm (214) in a direction (122) transversely to the longitudinal extension (10) of the railway truck (2).

5. A drive arrangement (102) according to claim 3 or 4, wherein the distance between the second ends (118, 218) of the first and second arms (114, 214) exceeds the distance between the first ends (116, 216) of the first and second arms (114,214).

6. A drive arrangement (102) according to any of the claims 1 to 5, wherein the railway truck (2) has a longitudinal extension (10), and wherein each arm (114, 214) extends substantially in the direction of the longitudinal extension (10) of the railway truck (2).

7. A drive arrangement (102) according to any of the claims 1 to 6, wherein the drivable wheels (104) of the drive arrangement (102) are arranged to be driven by at least one hydraulic engine.

8. A drive arrangement (102) according to any of the claims 1 to 7, wherein the drive arrangement (102) comprises a second pressure cylinder (208) having a first end (210) and a second end (212), and wherein the first end (210) of the second pressure cylinder (208) is connected to the wheel unit (106), and the second end (212) of the second pressure cylinder (208) is connectable to the work unit (6), wherein the second pressure cylinder (208) is arranged to, in an active position, push the wheels (104) of the drive arrangement (102) into engagement with the railway track (8), and wherein the second end (218) of the second arm (214) is pivotally connectable to the work unit (6) such that the second end (218) of the second arm (214) is positioned at a distance from the second end of the second pressure cylinder (208).

9. A drive arrangement (102) according to claim 8, wherein the first end (110) of the first pressure cylinder (108) is adjacent to one of the drivable wheels (104) of the drive arrangement (102), and wherein the first end (210) of the second pressure cylinder (208) is adjacent to the other wheel (104) of the drive arrangement (102)

10. A drive arrangement (102) according to claim 8 or 9, wherein the first end (116) of the first arm (114) is adjacent to the first end (110) of the first pressure cylinder (108), and wherein the first end (216) of the second arm (214) is adjacent to the first end (210) of the second pressure cylinder (208).

11. A drive arrangement (102) according to any of the claims 8 to 10, wherein each pressure cylinder (108,

208) is arranged to, in an inactive position, lift the wheels (104) of the drive arrangement (102) from an engagement with the railway track (8).

12. A drive arrangement (102) according to any of the claims 8 to 11, wherein the first end (110, 210) of each pressure cylinder (108, 208) is pivotally connected to the wheel unit (106), and wherein the second end (112, 212) of each pressure cylinder (108, 208) is arranged to be pivotally connected to the work unit (6).

13. A drive arrangement (102) according to any of the claims 8 to 12, wherein the length of each arm (114, 214) exceeds the length of each pressure cylinder (108, 208).

14. A drive arrangement (102) according to any of the claims 8 to 13, wherein the drive arrangement (102) comprises a hydraulic pump assembly (120) carried by the railway truck (2), and wherein the hydraulic pump assembly (120) is arranged to provide pressurized fluid to each pressure cylinder (108, 208).

15. A railway truck drive arrangement, wherein the railway truck drive arrangement comprises at least one drive arrangement (102) according to any of the claims 1 to 14, and wherein the railway truck drive arrangement comprises the work unit (6) arranged to be carried by the railway truck (2).

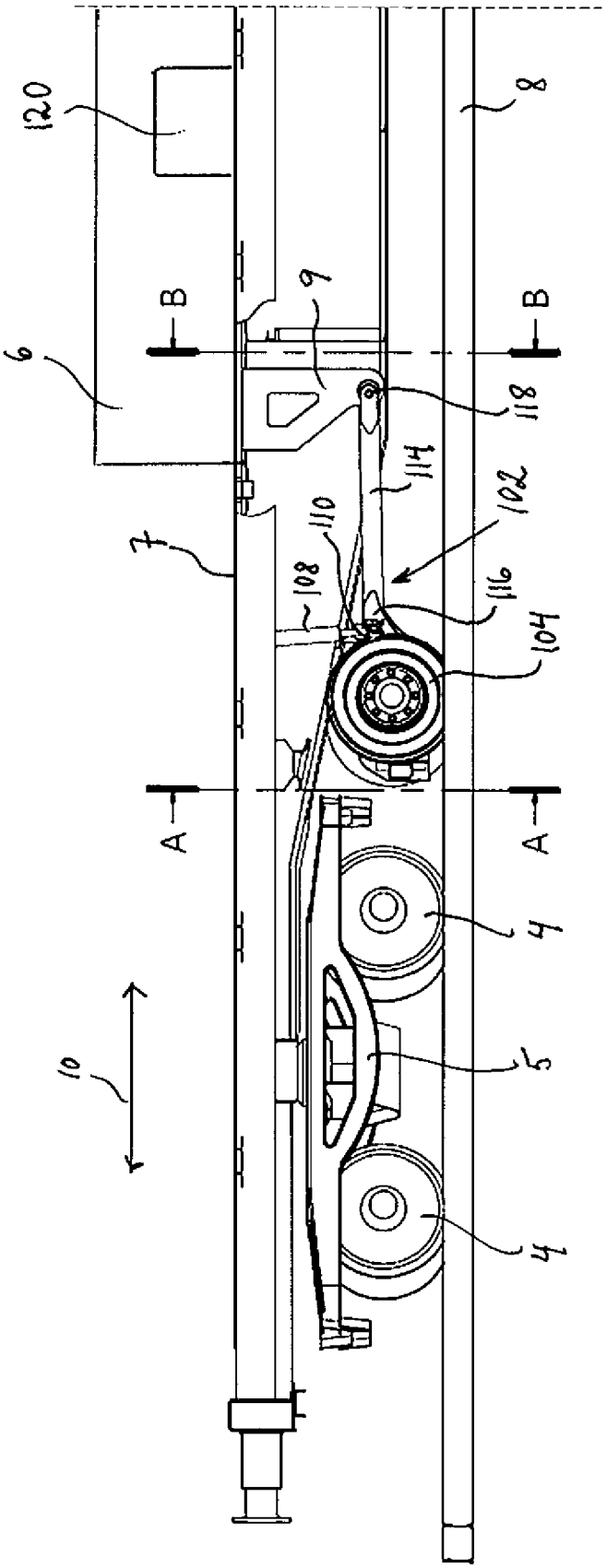
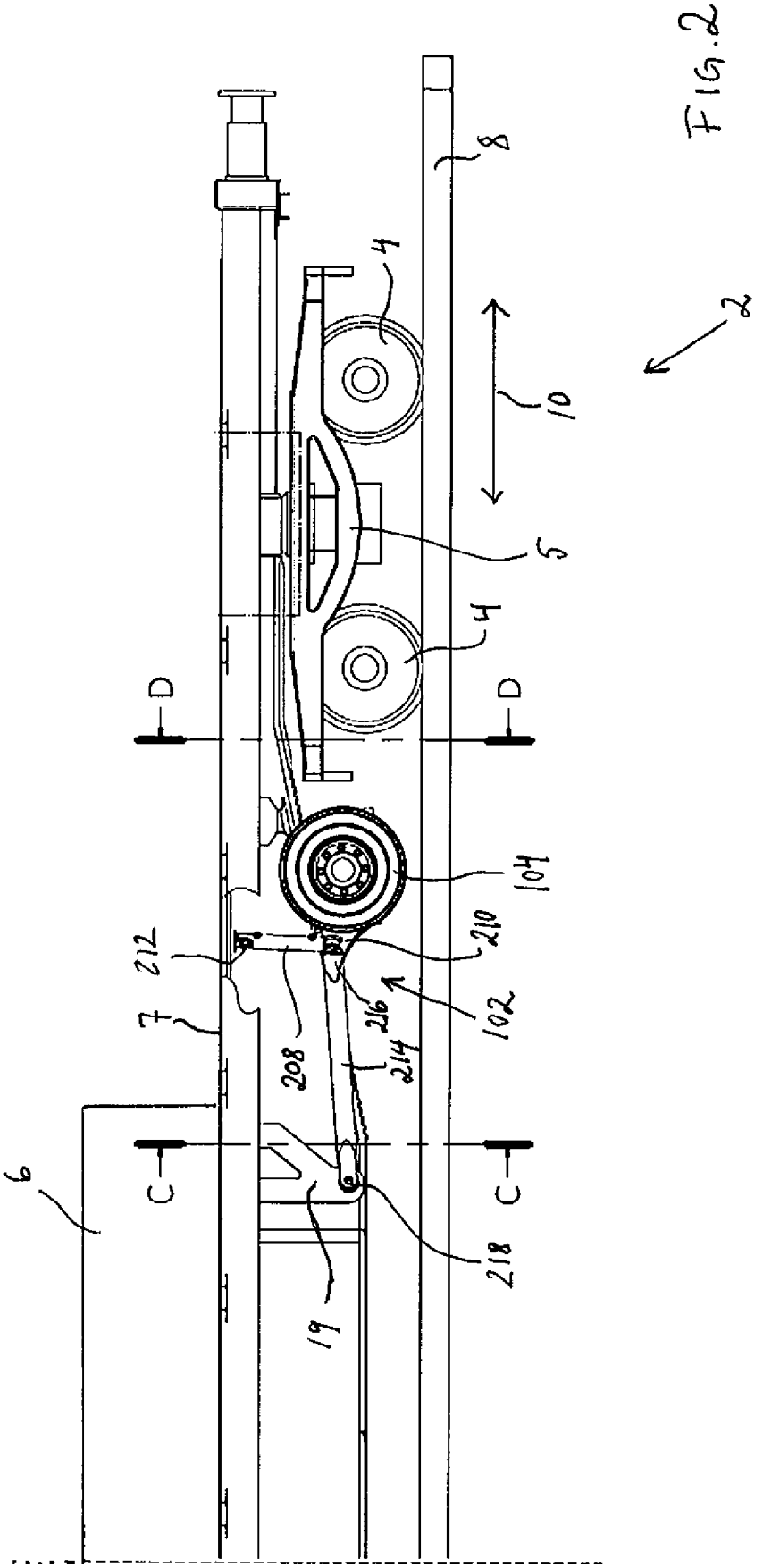


FIG. 1

FIG.2



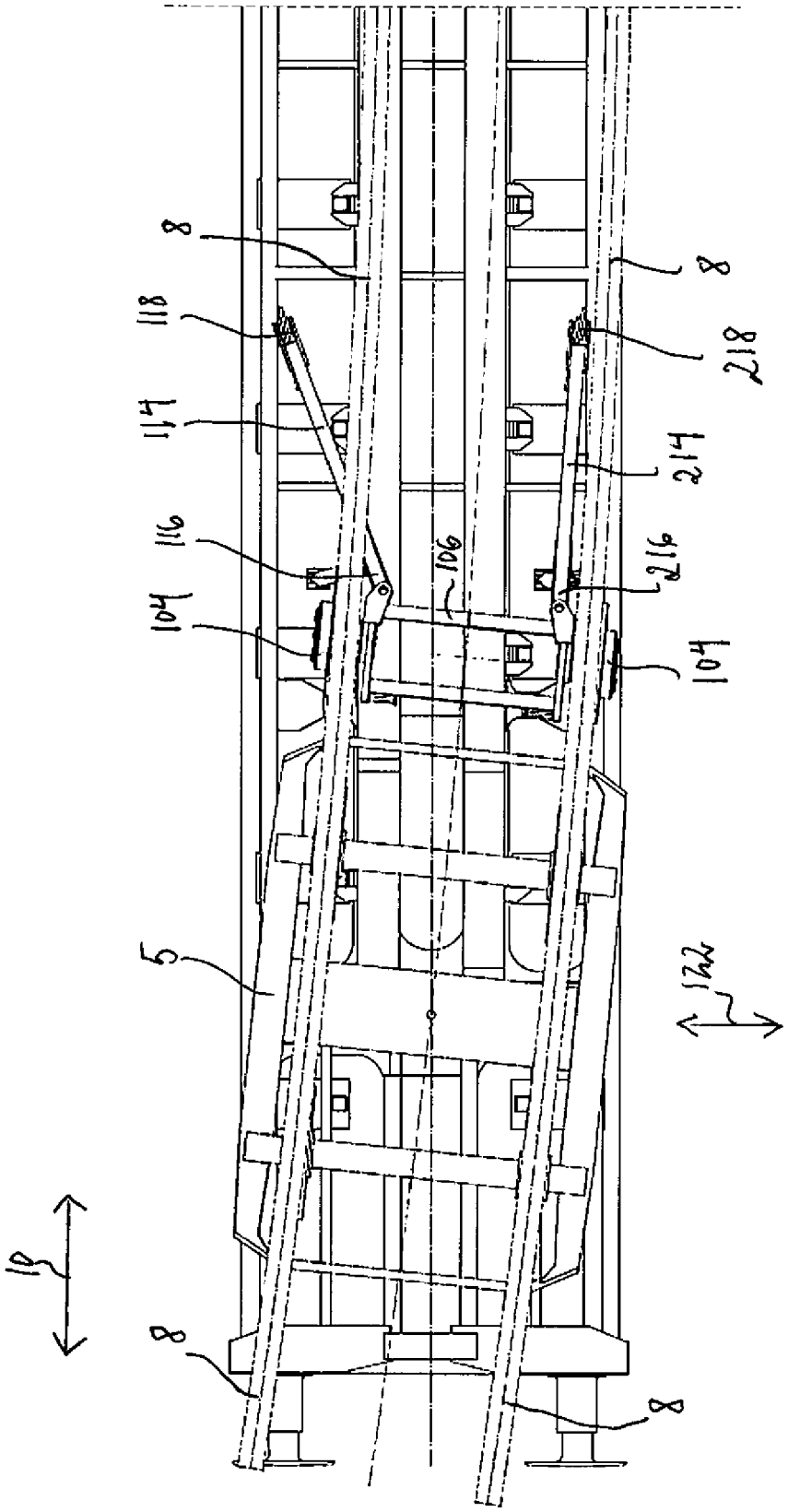


FIG. 3

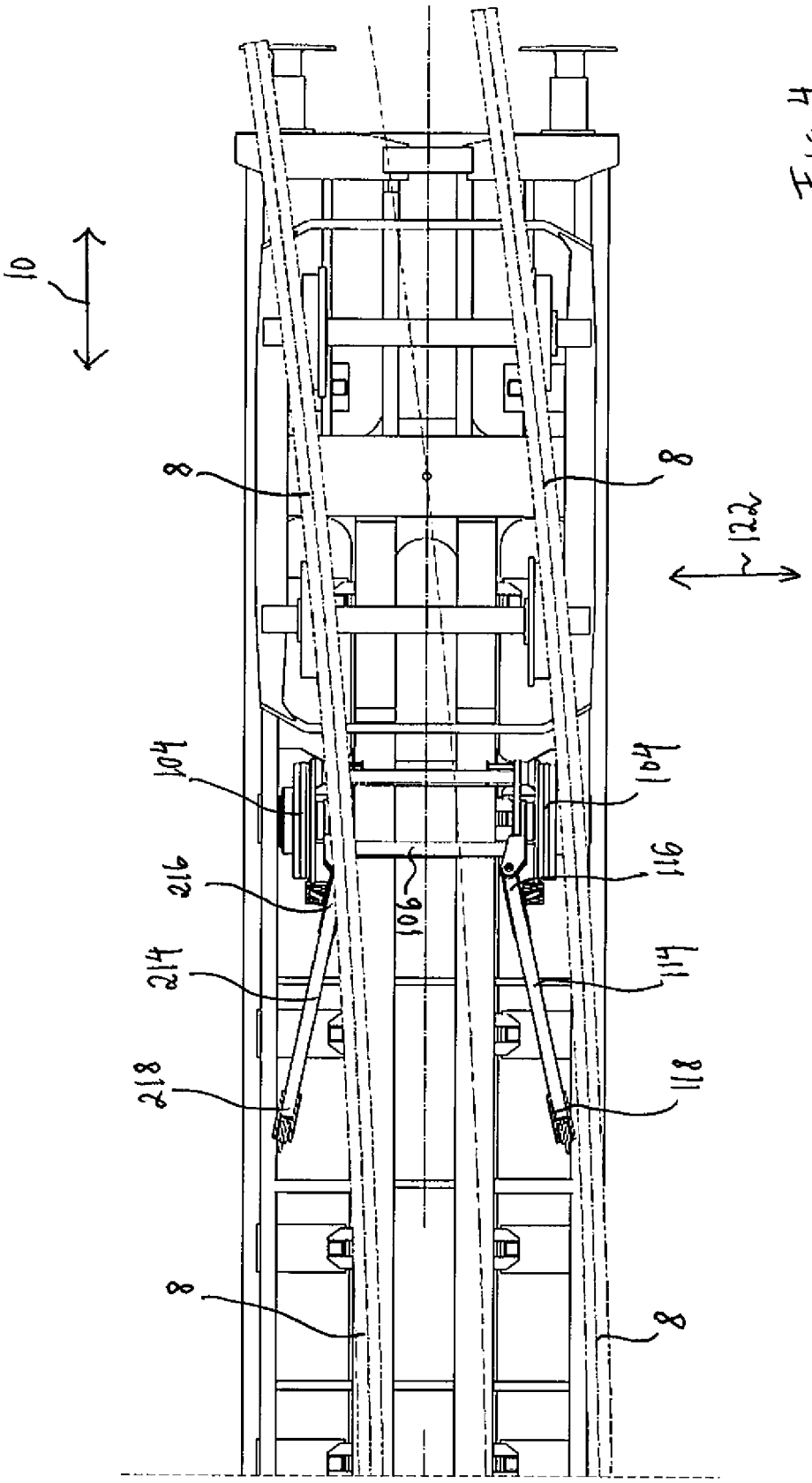
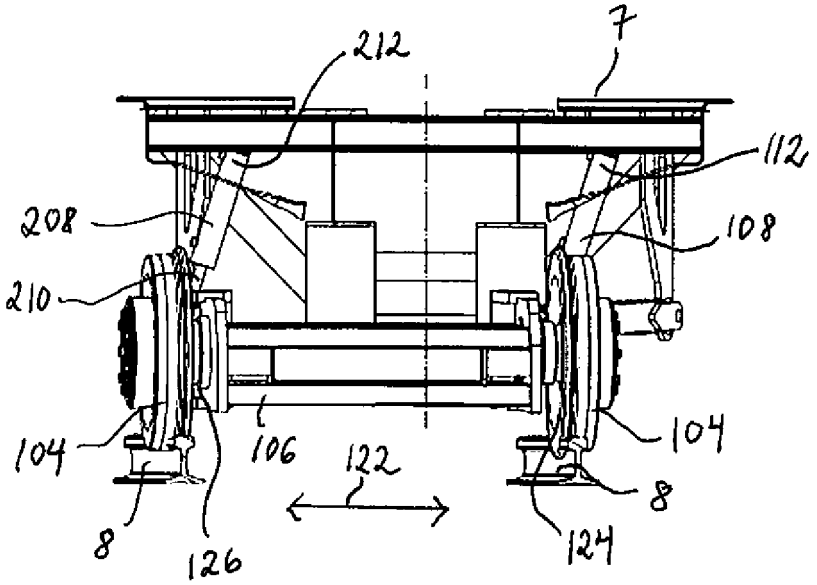
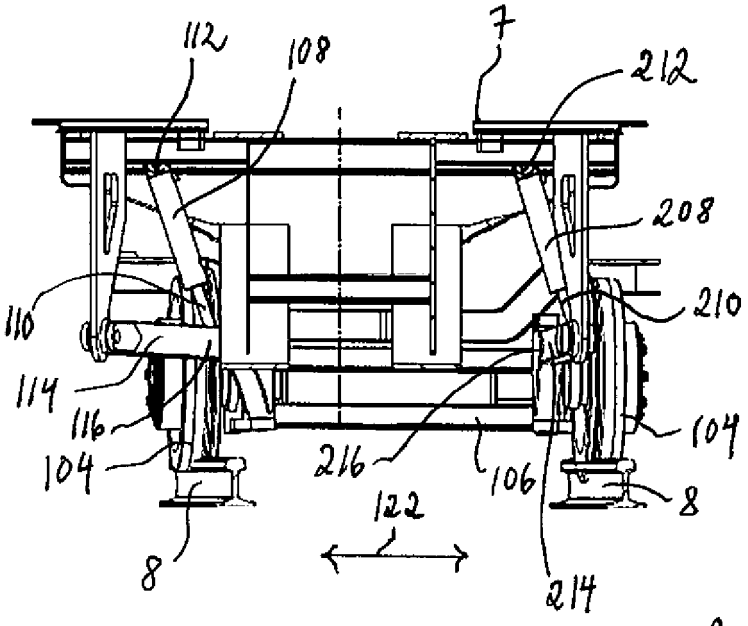


Fig. 4



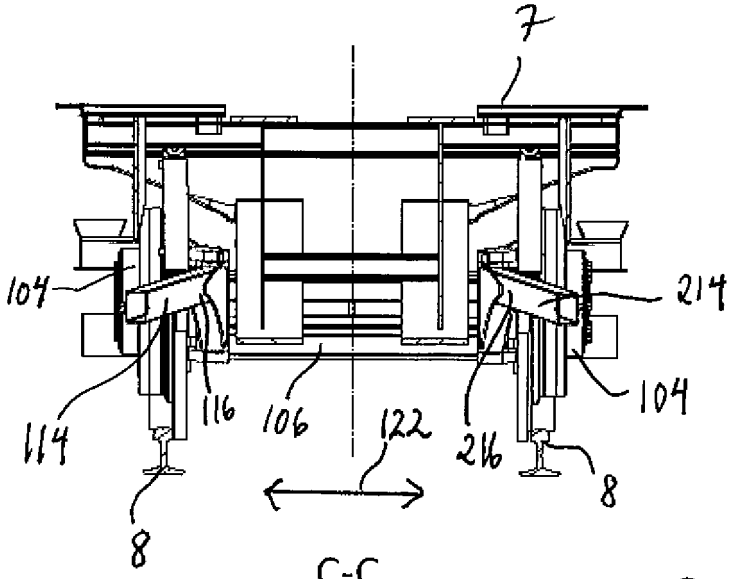
A-A

FIG. 5



B-B

FIG. 6



C-C

FIG. 7

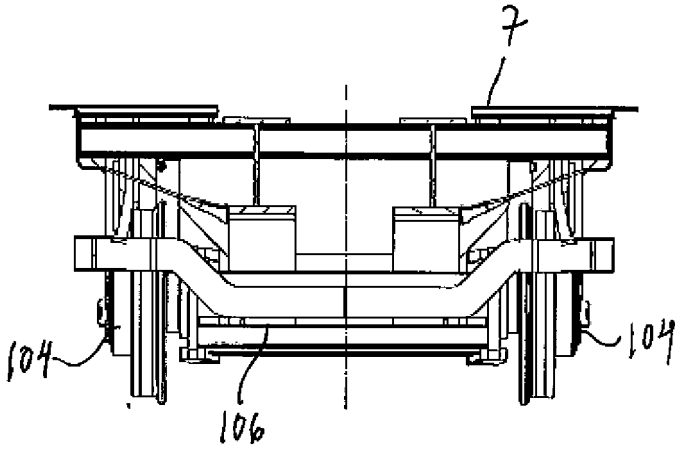


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FIG. 8

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EUROPEAN SEARCH REPORT

Application Number
EP 18 16 6247

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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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	24 September 2018	Crama, Yves

CATEGORY OF CITED DOCUMENTS

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