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(71) Applicant: **SSAB Technology AB**
101 21 Stockholm (SE)

(72) Inventor: **Coulson, Brian**
Bishop Auckland, DL14 0NT (GB)

(74) Representative: **Valea AB**
Box 1098
405 23 Göteborg (SE)

(54) **A BUCKET**

(57) The disclosure relates to a bucket (1) for a wheel loader, the bucket (1) having a longitudinal extension in a longitudinal direction (L), a width extension in a width direction (W) and a height extension in a height direction (H), the bucket (1) comprising:
- a top portion (2),
- a first and a second side wall (3, 4) separated in the width direction (W),
- a floor section (5) extending from a front lower edge (6) of the bucket (1) up to the top portion (2),
wherein
the front lower edge (6), the first and second side walls (3, 4) and the top portion (2) form a bucket opening (7) facing in the longitudinal direction (L), corresponding to a forward direction (F) of the bucket (1),
the floor section (5) comprises a center section (52), a first lateral side section (54) and a second lateral side section (56), wherein the center section (52) is provided between the first and second lateral side sections (54, 56), as seen in the width direction (W),
each one of the first and second lateral side sections (54, 56) having a sloped profile (S) extending in the width direction (W) and in a rearward direction (R) of the bucket (1) from the center section (52) towards a respective one of the first and second side walls (3, 4) such that bucket pockets (542, 562) are formed inside the bucket (1) on respective sides of the center section (52), as seen in the width direction (W).

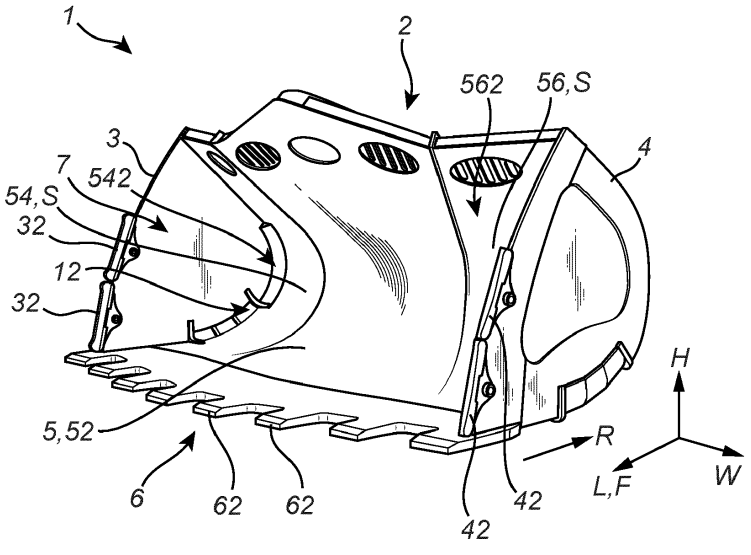

Fig. 1

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Description

TECHNICAL FIELD

[0001] The present disclosure relates to a bucket for a wheel loader.

BACKGROUND

[0002] Buckets for moving earth material may be designed for different purposes and for different types of working machines, such as excavators and wheel loaders.

[0003] A bucket for a wheel loader may vary in size and shape. Even though there exist many different bucket designs for wheel loaders, there is still a strive to develop improved bucket configurations, such as buckets having a high productivity and which are cost-effective.

SUMMARY

[0004] In view of the above, an object of the disclosure is to provide an improved bucket for a wheel loader which at least partly alleviates one or more drawbacks of the prior art, or which at least provides a suitable alternative. A further object of the disclosure is to provide a bucket for a wheel loader in which at least one of the following advantages is achieved: 1) facilitated manufacturing of the bucket, 2) a smoother dig, and 3) increased productivity.

[0005] At least one of the objects is at least partly achieved by a bucket according to claim 1.

[0006] Thus, there is provided a bucket for a wheel loader, the bucket having a longitudinal extension in a longitudinal direction, a width extension in a width direction and a height extension in a height direction. The bucket comprises:

- a top portion,
- a first and a second side wall separated in the width direction,
- a floor section extending from a front lower edge of the bucket up to the top portion, wherein

  the front lower edge, the first and second side walls and the top portion form a bucket opening facing in the longitudinal direction, corresponding to a forward direction of the bucket,
  the floor section comprises a center section, a first lateral side section and a second lateral side section, wherein the center section is provided between the first and second lateral side sections, as seen in the width direction,
  each one of the first and second lateral side sections has a sloped profile which extends in the width direction and in a rearward direction of the bucket from the center section towards a respective one of the first and second side walls such that bucket pockets are formed inside the bucket on respective sides of the center section, as seen in the width direction.

[0007] The rearward direction is opposite to the forward direction.

[0008] By the provision of a bucket as disclosed herein, an improved bucket is achieved. More specifically, by the bucket configuration, e.g., by the configuration of the first and second lateral side sections, a bucket having increased productivity is achieved. By the configuration of the center section and the first and second lateral side sections, a cost effective bucket may also be achieved. For example, by the sloped profiles as disclosed herein, at least one of the following benefits may be achieved: the filling volume of the bucket may be increased without significantly changing the standard dimensions required for tipping, the inside of the bucket may have a smooth shape which facilitates insertion and removal of earth material into/out of the bucket, filling of the bucket may be quicker, the depth of how the bucket crouches into a heap may be increased, a length between the front lower edge and a wheel loader connection point may be kept according to standard dimensions.

[0009] Optionally, the center section has a width which corresponds to at least 20 % of a total width of the bucket, such as at least 30 % of the total width of the bucket. This may result in an improved bucket configuration where e.g. there is enough room for a wheel loader connection point at a rearward facing surface of the center section, i.e., a surface on an outside of the bucket. For example, the width of the center section may not exceed 50 % of a total width of the bucket, such as 40 % or 35 %. The center section is typically centered between the first and second side walls, as seen in the width direction. For example, the bucket shape may be symmetrical with respect to a center plane provided midway between lateral outer ends of the bucket, as seen in the width direction, wherein the center plane extends in the longitudinal direction and the height direction.

[0010] Optionally, the center section has a substantially straight profile, as seen in the width direction. This may result in improved flow of material inside the bucket. A straight profile may further be beneficial for the wheel loader connection point on the outside of the bucket, e.g., in contrast to buckets having recesses extending into the bucket in which wheel loader connection points are located. For example, by the straight profiled center section, it may be easier to attach a coupling member for a wheel loader thereto, such as by welding.

[0011] Optionally, the sloped profile of each one of the first and second lateral side sections extends from the center section to a respective corner of the bucket formed between each respective first and second side walls and the floor section. This may result in an improved inner/-outer shape of the bucket. This may also result in a cost effective configuration. For example, by said configuration, a smooth inside may be achieved where the sloped

profiles extend all the way to the respective corners. This may result in improved flow of material inside the bucket. As another example, this may also result in fewer parts needed for forming the floor section. By way of example, three separate sheet metal elements may be used for forming the floor section, e.g., two sheet metal elements for the first and second lateral side sections and one sheet metal for the center section.

[0012] Optionally, the sloped profile of each one of the first and second lateral side sections extends along a substantially straight line, as seen in a geometrical sectional plane defined by the longitudinal direction and the width direction. This may result in an improved inner/-outer shape of the bucket. This may also result in a cost effective configuration. For example, by said configuration of the first and second lateral side sections, it may be easier to form the floor section, such as by bending the first and second lateral side sections into a curved shape extending from the front lower edge of the bucket up to the top portion. As another example, a smoother inside may be achieved, which may result in improved flow of material inside the bucket.

[0013] Optionally, each one of the first and second lateral side sections is connected to the center section via a respective connection interface, wherein each respective connection interface is defined by a respective geometrical sectional plane extending along the height direction and being angled with respect to the longitudinal direction. This may result in an improved inner/outer shape of the bucket. This may also result in a reliable, robust and/or cost effective configuration, e.g., providing a substantially straight connection interface. For example, the configuration of the respective connection interfaces may facilitate attachment of the first and second lateral side sections to the center section, such as by welds extending along the substantially straight connection interfaces. As another example, the substantially straight connection interfaces may result in smoother transitions between the center section and the first and second lateral side sections. This in turn may result in improved flow of material inside the bucket.

[0014] Optionally, a minimum angle between the center section and each one of the first and second lateral side sections, as measured on an outside of the bucket and as seen in a geometrical sectional plane defined by the longitudinal direction and the width direction, is 140-170 degrees, such as 150-160 degrees. This may result in an improved inner/outer shape of the bucket, e.g., increased filling volume without significantly changing the standard dimensions required for tipping. As another example, this may result in improved flow of material inside the bucket.

[0015] Optionally, the center section and the first and second lateral side sections are separate parts with respect to each other, and wherein each one of the first and second lateral side sections is connected to the center section via a respective connection interface. This may result in a cost effective configuration, e.g., facilitated manufacturing.

[0016] Optionally, each respective connection interface comprises a rib portion which connects the respective first and second lateral side section to the center section. This may result in a reliable, robust and cost effective bucket configuration, e.g., providing an increased connection interface area and a high strength connection.

[0017] Optionally, each one of the first and second lateral side sections is connected to the center section by a weld seam. Additionally or alternatively, each one of the first and second lateral side sections may be connected to the center section by at least one mechanical attachment member. A weld seam may imply a strong, reliable and cost effective connection. A mechanical attachment member may imply a flexible configuration, e.g., allowing parts to be detached more easily if required.

[0018] Optionally, the top portion comprises a beam member extending in the width direction and being connected to each one of the center section and the first and second lateral side sections. This may result in a strong and reliable top portion, e.g., mitigating any unwanted deflections.

[0019] Optionally, the beam member comprises at least three separate parts, with a first part extending along the first lateral side section, a second part extending along the center section, and a third part extending along the second lateral side section. This may result in a cost effective configuration. For example, the beam member may thereby be easier to manufacture, i.e., by manufacturing smaller separate parts.

[0020] Optionally, the bucket further comprises a coupling member for releasably coupling the bucket to a wheel loader, i.e., a wheel loader connection point, wherein the coupling member is connected to the bucket at a rearward facing surface of the center section. The rearward facing surface may be a straight surface, i.e., without any recesses comprising wheel loader connection points. This configuration may result in a facilitated configuration which is beneficial for manufacturing.

[0021] Optionally, the top portion comprises a first and a second reinforcing member, provided at respective outer ends of the bucket, as seen in the width direction, and connecting the respective first and second side walls to the respective first and second lateral side sections, and optionally to the beam member as mentioned in the above. This may result in a reliable, robust and cost effective configuration. For example, the first and second reinforcing members may reduce unwanted deflections of the bucket.

[0022] Optionally, the floor section extends along a curved profile from the front lower edge of the bucket up to the top portion, wherein the curved profile comprises at least two different radii, as seen in a geometrical sectional plane defined by the longitudinal direction and the height direction. For example a first radius proximate the front lower edge may be larger than a second radius provided further inside the bucket, as seen along the

extension of the curved profile from the front cutting edge up to the top portion. This may result in improved flow of material inside the bucket. For example, material further inside the bucket may due to the smaller second radius be released earlier from the bucket when tipping. This may in turn increase the speed by which the material is released from the bucket during tipping.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] With reference to the appended drawings, below follows a more detailed description of embodiments of the disclosure cited as examples.

[0024] In the drawings:

Fig. 1 shows a front perspective view of a bucket according to an example of the present disclosure,

Fig. 2 shows a rear perspective view of a bucket according to an example of the present disclosure,

Fig. 3 shows a schematic view from above of a bucket according to an example of the present disclosure,

Fig. 4 shows a schematic view from above of a rear profile of a bucket according to an example of the present disclosure, and

Fig. 5 shows a perspective view of a bucket according to the present disclosure when mounted to a wheel loader.

[0025] The drawings show diagrammatic exemplifying embodiments of the present disclosure and are thus not necessarily drawn to scale. It shall be understood that the embodiments shown and described are exemplifying and that the disclosure is not limited to these embodiments. It shall also be noted that some details in the drawings may be exaggerated in order to better describe and illustrate the disclosure. Like reference characters refer to like elements throughout the description, unless expressed otherwise. Some reference characters in some of the drawings may have been omitted for clarity.

DETAILED DESCRIPTION OF EXAMPLE EMBODIMENTS

[0026] Fig. 1 shows a front perspective view of a bucket 1 for a wheel loader according to an example of the present disclosure. Fig. 2 shows a rear perspective view of a bucket 1 according to an example of the present disclosure, e.g., the bucket 1 shown in Fig. 1.

[0027] The bucket 1 has a longitudinal extension in a longitudinal direction L, a width extension in a width direction W and a height extension in a height direction H. For example, the longitudinal direction L and the width direction W may be substantially parallel to a horizontal plane when the bucket 1 is provided on a flat horizontally extending surface. Accordingly, the height direction H may correspond to a vertical direction when the bucket 1 is provided on a flat horizontally extending surface. For example, the directions L, W and H may correspond to a Cartesian coordinate system.

[0028] The bucket 1 comprises:

- a top portion 2,
- a first and a second side wall 3, 4 separated in the width direction W,
- a floor section 5 extending from a front lower edge 6 of the bucket 1 up to the top portion 2.

[0029] As shown in e.g. Fig. 1, the front lower edge 6 may comprise front cutting teeth 62, such as eight front cutting teeth 62. It shall be noted that any number of front cutting teeth may be provided in alternative examples. Also, in some alternative examples there may be no teeth on the front lower edge

[0030] As further shown in Fig. 1, the floor section 5 may extend along a curved profile from the front lower edge 6 up to the top portion 2.

[0031] As further shown in e.g. Fig. 1, the front lower edge 6, and/or the top portion 2, may have an arrow shape with a tip midway between lateral outer ends of the bucket 1, as seen in the width direction W. However, in alternative examples, the front lower edge and/or the top portion may have a substantially straight shape, as seen in the width direction W.

[0032] The front lower edge 6, the first and second side walls 3, 4 and the top portion 2 form a bucket opening 7 facing in the longitudinal direction L, corresponding to a forward direction F of the bucket 1.

[0033] The floor section 5 comprises a center section 52, a first lateral side section 54 and a second lateral side section 56. The center section 52 is provided between the first and second lateral side sections 54, 56, as seen in the width direction W.

[0034] Each one of the first and second lateral side sections 54, 56 has a sloped profile S extending in the width direction W and in a rearward direction R of the bucket 1 from the center section 52 towards a respective one of the first and second side walls 3, 4 such that bucket pockets 542, 562 are formed inside the bucket 1 on respective sides of the center section 52, as seen in the width direction W. Accordingly, the bucket pockets 542, 562 will increase the filling volume of the bucket 1.

[0035] As shown in Figs. 1 and 2, the sloped profiles S may be present on both the inside (Fig. 1) and on the outside (Fig. 2) of the bucket 1.

[0036] As shown, the center section 52 may have a width which corresponds to at least 20 % of a total width of the bucket 1, such as at least 30 % of the total width of the bucket 1. The width of the center section 52 may for example be measured substantially at a height of the bucket 1 midway between a lowest and a highest point of the bucket 1.

[0037] As further shown, the center section 52 may have a substantially straight profile, as seen in the width direction W. The substantially straight profile may be present on both the inside (Fig. 1) and on the outside (Fig. 2) of the bucket 1.

[0038] The sloped profile S of each one of the first and second lateral side sections 54, 56 may as shown extend from the center section 52 to a respective corner 12, 14 of the bucket 1 formed between each respective first and second side walls 3, 4 and the floor section 5. The respective corner 12, 14 may be an inside and/or an outside corner of the bucket 1.

[0039] Fig. 3 depicts a schematic view from above of a bucket 1 according to the present disclosure, e.g. the bucket 1 shown in Figs. 1 and/or 2.

[0040] With reference to e.g. Fig. 3, the sloped profile S of each one of the first and second lateral side sections 54, 56 may as shown extend along a substantially straight line, as seen in a geometrical sectional plane defined by the longitudinal direction L and the width direction W. As another example not shown, the sloped profile of each one of the first and second lateral side sections may extend along a curved profile, as seen in a geometrical sectional plane defined by the longitudinal direction L and the width direction W. For example, the sloped curved profile may be a concave or convex profile, as seen on the inside of the bucket. Consequently, the sloped profile on the outside of the bucket may thereby have a convex or concave profile.

[0041] As further shown, each one of the first and second lateral side sections 54, 56 may be connected to the center section 52 via a respective connection interface CI1, CI2, wherein each respective connection interface CI1, CI2 is defined by a respective geometrical sectional plane P1, P2 extending along the height direction H and being angled with respect to the longitudinal direction L. For example, each geometrical sectional plane P1, P2 may be angled away from the longitudinal direction L, such as by an angle of 5-40 degrees. As shown, each geometrical sectional plane P1, P2 may be angled towards an associated lateral outer end of the bucket 1, as seen in the width direction W.

[0042] Fig. 4 depicts a schematic view from above of a rear profile of a bucket 1 according to an example of the present disclosure, e.g., the bucket 1 shown in Figs. 1, 2 and/or 3.

[0043] A minimum angle $\alpha 1$ between the center section 52 and each one of the first and second lateral side sections 54, 56, as measured on an outside of the bucket 1 and as seen in a geometrical sectional plane defined by the longitudinal direction L and the width direction W, may be 140-170 degrees, such as 150-160 degrees. Accordingly, in some examples, a corresponding angle on the inside of the bucket 1 may be 360 degrees minus the angle $\alpha 1$ on the outside of the bucket 1, i.e., 360 - $\alpha 1$.

[0044] The center section 52 and the first and second lateral side sections 54, 56 are preferably separate parts with respect to each other, and each one of the first and second lateral side sections 54, 56 is connected to the center section 52 via the respective connection interface CI1, CI2.

[0045] As further shown in Fig. 2, each respective connection interface CI1, CI2 (i.e. as shown in Fig. 3) may comprise a rib portion 82, 84 which connects the respective first and second lateral side section 54, 56 to the center section 52. The rib portions 82, 84 may for example be bent profiles, such as bent sheet metal profiles. The bucket 1 may be configured so that the rib portions 82, 84 are more visible and present on the outside of the bucket 1 than on the inside of the bucket 1. For example, the connection interfaces CI1, CI2 on the inside of the bucket 1 may be formed as a substantially smooth intersection between the center section 52 and the respective first and second lateral side sections 54, 56. Thereby, improved flow of material inside the bucket 1 may be achieved.

[0046] Each one of the first and second lateral side sections 54, 56 may be connected to the center section 52 by a weld seam, preferably via the above mentioned rib portions 82, 84.

[0047] As shown in e.g. Figs. 2 and 3, the top portion 2 may comprise a beam member 9 extending in the width direction W and being connected to each one of the center section 52 and the first and second lateral side sections 54, 56. For example, the beam member 9 may have a hollow cross section and/or be made of sheet metal. As such, a light-weight, reliable and robust beam member can be provided.

[0048] As shown in Fig. 3, the beam member 9 may comprise at least three separate parts 92, 94, 96, with a first part 92 extending along the first lateral side section 54, a second part 94 extending along the center section 52, and a third part 96 extending along the second lateral side section 56. For example, the first part 92 and the second part 94 may be connected to each other via the rib portion 82, such as via a weld seam. In a similar way, the third part 96 and the second part 94 may be connected to each other via the rib portion 84, such as via a weld seam.

[0049] The bucket 1 may as shown in Figs. 2 and 3 further comprise a coupling member 16 for releasably coupling the bucket 1 to a wheel loader. The coupling member 16 is connected to the bucket 1 at a rearward facing surface 522 of the center section 52. In the shown example, the rearward facing surface 522 is a straight surface, i.e., without any recesses comprising wheel loader connection points. Instead, as shown, the coupling member 16 is preferably extending outwardly away from the bucket 1 and the rearward facing surface 522 of the center section 52.

[0050] In the shown example, the coupling member 16 comprises three connection interfaces 162, 164, 166 for the wheel loader, being offset from each other in the with direction W and/or in the height direction H, each one having a pin hole for receiving a connection pin for connecting the bucket 1 to the wheel loader. It shall be noted that more or fewer connection interfaces may be used.

[0051] Each coupling member 16, forming the respective connection interfaces 162, 164, 166, may be manufactured by sheet metal elements, such as sheet metal elements which are welded to the rearward facing surface 522 of the center section 52. As shown, each coupling member 16, forming the respective connection interfaces 162, 164, 166, may be formed by a respective pair of sheet metal elements which are perpendicular to and extending outwardly and away from the rearward facing surface 522 of the center section 52. The respective pair of sheet metal elements may as shown comprise at least one pin hole as mentioned in the above.

[0052] The top portion 2 may as shown in Fig. 2 comprise a first and a second reinforcing member 22, 24, provided at respective outer ends of the bucket 1, as seen in the width direction W, and connecting the respective first and second side walls 3, 4 to the respective first and second lateral side sections 54, 56, and optionally to the beam member 9. For example, similar to the above, the first and a second reinforcing member 22, 24 may be made of sheet metal, e.g., bent sheet metal profiles. In the shown example, the first and the second reinforcing members 22, 24 are substantially triangle shaped, as seen from the outside of the bucket 1. Thereby, the first and second lateral side sections 54, 56 are allowed to be connected to the respective first and second side walls 3, 4 and optionally to the beam member 9 in a robust and reliable manner, e.g., by weld seams via the first and a second reinforcing member 22, 24.

[0053] Each connection interface between the different members and sections of the bucket 1 may be provided by weld seams. Additionally or alternatively, any connection interface between the different members and sections of the bucket 1 may be provided by mechanical fastening members, such as screws, bolts and/or rivets.

[0054] The floor section 5 may as shown in e.g. Fig. 1 and Fig. 2 extend along a curved profile from the front lower edge 6 of the bucket 1 up to the top portion 2, wherein the curved profile may comprise at least two different radii r1, r2, as seen in a geometrical sectional plane defined by the longitudinal direction L and the height direction H. For example, a first radius r1 proximate the front lower edge 6 may be larger than a second radius r2 provided further inside the bucket 1, as seen along the extension of the curved profile from the front cutting edge 6 up to the top portion 2. The radii r1, r2 are here measured on the inside of the bucket. By way of example, the first radius r1 may be in the range of 900-5000 mm, and/or the second radius r2 may be in the range of 350-2000 mm, and wherein r1 > r2. As further shown, the floor section 5 may extend along a substantially straight profile from the front lower edge 6 to the portion of the floor section 5 having the first radius r1. The substantially straight profile may be configured so that the bucket 1 can be safely placed on a ground surface without tipping over in a forward and/or rearward direction. Additionally, or alternatively, the bucket 1 may further comprise a ground supporting member, such as a skid plate on the bottom of the bucket below the coupling member, which is arranged to prevent the bucket from tipping over in a forward and/or rearward direction when it is placed on a ground surface.

[0055] As further shown in e.g. Figs. 1 and 2, the bucket 1 may comprise additional elements/members, such as wear elements 142, which may be detachable, at respective outside corners 12, 14 of the bucket 1, and wear elements 32, 42, which may be detachable, on the respective side walls 3, 4, located at the opening 7 of the bucket 1.

[0056] The bucket 1 may as further shown in Fig. 2 comprise a reinforcing member 26 at the top portion 2, located in the middle of the bucket 1, as seen in the width direction W. As shown, the reinforcing member 26 may be formed by bent sheet metal which is formed in an arrow shape with a tip pointing in the forward direction F of the bucket 1.

[0057] The first and a second side walls 3, 4 and/or the floor section 5, i.e., the center section 52 and the first and second lateral side sections 54, 56, are preferably made by sheet metal. For example, as shown, the center section 52 and the first and second lateral side sections 54, 56, are preferably made by bent sheet metal elements.

[0058] It is to be understood that the present invention is not limited to the embodiments described above and illustrated in the drawings; rather, the skilled person will recognize that many changes and modifications may be made within the scope of the appended claims.

Claims

1. A bucket (1) for a wheel loader, the bucket (1) having a longitudinal extension in a longitudinal direction (L), a width extension in a width direction (W) and a height extension in a height direction (H), the bucket (1) comprising:

- a top portion (2),
- a first and a second side wall (3, 4) separated in the width direction (W),
- a floor section (5) extending from a front lower edge (6) of the bucket (1) up to the top portion (2),

wherein

the front lower edge (6), the first and second side walls (3, 4) and the top portion (2) form a bucket opening (7) facing in the longitudinal direction (L), corresponding to a forward direction (F) of the bucket (1),
the floor section (5) comprises a center section (52), a first lateral side section (54) and a second lateral side section (56), wherein the center section (52) is provided between the first and second lateral side sections (54, 56), as seen in

the width direction (W),
each one of the first and second lateral side sections (54, 56) having a sloped profile (S) extending in the width direction (W) and in a rearward direction (R) of the bucket (1) from the center section (52) towards a respective one of the first and second side walls (3, 4) such that bucket pockets (542, 562) are formed inside the bucket (1) on respective sides of the center section (52), as seen in the width direction (W).

2. The bucket (1) according to claim 1, wherein the center section (52) has a width which corresponds to at least 20 % of a total width of the bucket (1), such as at least 30 % of the total width of the bucket (1).

3. The bucket (1) according to claim 1 or 2, wherein the center section (52) has a substantially straight profile, as seen in the width direction (W).

4. The bucket (1) according to any one of the preceding claims, wherein the sloped profile (S) of each one of the first and second lateral side sections (54, 56) extends from the center section (52) to a respective corner (12, 14) of the bucket (1) formed between each respective first and second side walls (3, 4) and the floor section (5).

5. The bucket (1) according to any one of the preceding claims, wherein the sloped profile (S) of each one of the first and second lateral side sections (54, 56) extends along a substantially straight line, as seen in a geometrical sectional plane defined by the longitudinal direction (L) and the width direction (W).

6. The bucket (1) according to any one of the preceding claims, wherein each one of the first and second lateral side sections (54, 56) is connected to the center section (52) via a respective connection interface (CI1, CI2), wherein each respective connection interface (CI1, CI2) is defined by a respective geometrical sectional plane (P1, P2) extending along the height direction (H) and being angled with respect to the longitudinal direction (L).

7. The bucket (1) according to any one of the preceding claims, wherein a minimum angle (α1) between the center section (52) and each one of the first and second lateral side sections (54, 56), as measured on an outside of the bucket (1) and as seen in a geometrical sectional plane defined by the longitudinal direction (L) and the width direction (W), is 140-170 degrees, such as 150-160 degrees.

8. The bucket (1) according to any one of the preceding claims, wherein the center section (52) and the first and second lateral side sections (54, 56) are separate parts with respect to each other, and wherein each one of the first and second lateral side sections (54, 56) is connected to the center section (52) via a respective connection interface (CI1, CI2).

9. The bucket (1) according to claim 8, wherein each respective connection interface (CI1, C12) comprises a rib portion (82, 84) which connects the respective first and second lateral side section (54, 56) to the center section (52).

10. The bucket according to claim 8 or 9, wherein each one of the first and second lateral side sections (54, 56) is connected to the center section (52) by a weld seam.

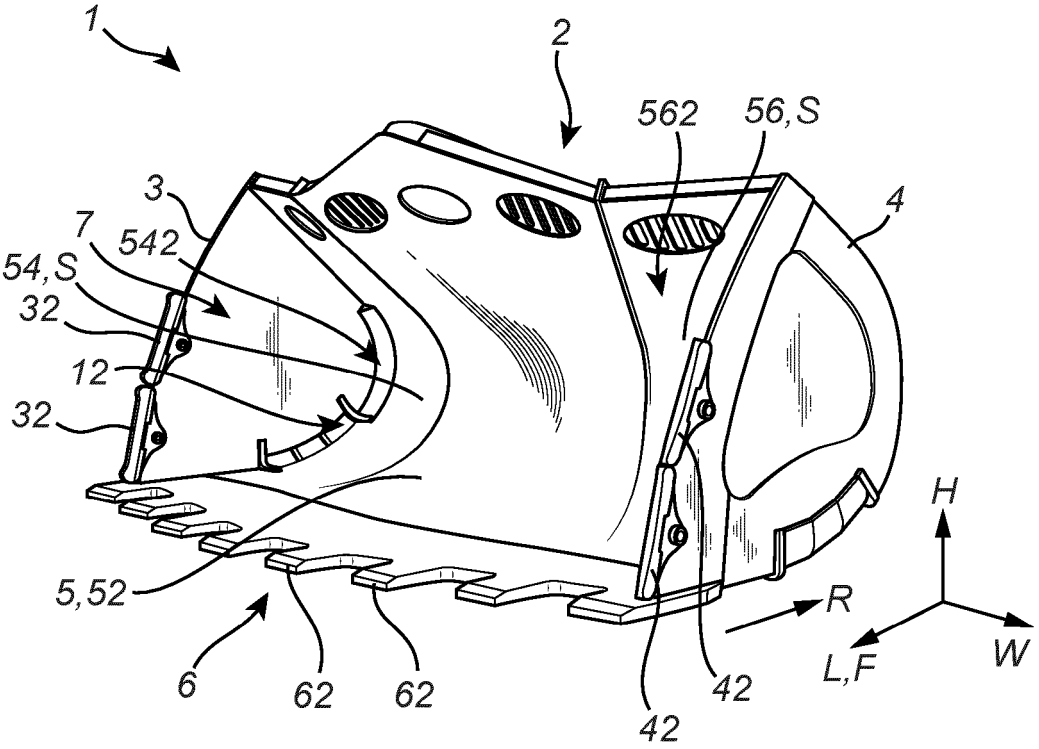
11. The bucket (1) according to any one of the preceding claims, wherein the top portion (2) comprises a beam member (9) extending in the width direction (W) and being connected to each one of the center section (52) and the first and second lateral side sections (54, 56).

12. The bucket (1) according to claim 11, and when being dependent on any one of claims 8-10, wherein the beam member (9) comprises at least three separate parts (92, 94, 96), with a first part (92) extending along the first lateral side section (54), a second part (94) extending along the center section (52), and a third part (96) extending along the second lateral side section (56).

13. The bucket (1) according to any one of the preceding claims, further comprising a coupling member (16) for releasably coupling the bucket (1) to a wheel loader, wherein the coupling member (16) is connected to the bucket (1) at a rearward facing surface (522) of the center section (52).

14. The bucket (1) according to any one of the preceding claims, wherein the top portion (2) comprises a first and a second reinforcing member (22, 24), provided at respective outer ends of the bucket (1), as seen in the width direction (W), and connecting the respective first and second side walls (3, 4) to the respective first and second lateral side sections (54, 56), and optionally to the beam member (9) according to any one of claims 11-12.

15. The bucket (1) according to any one of the preceding claims, wherein the floor section (5) extends along a curved profile from the front lower edge (6) of the bucket (1) up to the top portion (2), wherein the curved profile comprises at least two different radii, as seen in a geometrical sectional plane defined by the longitudinal direction (L) and the height direction (H).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562
56,S
3
4
7
542
54,S
32
12
32
5,52
6
62
62
42
42
42
H
R
L,F
W

Fig. 1

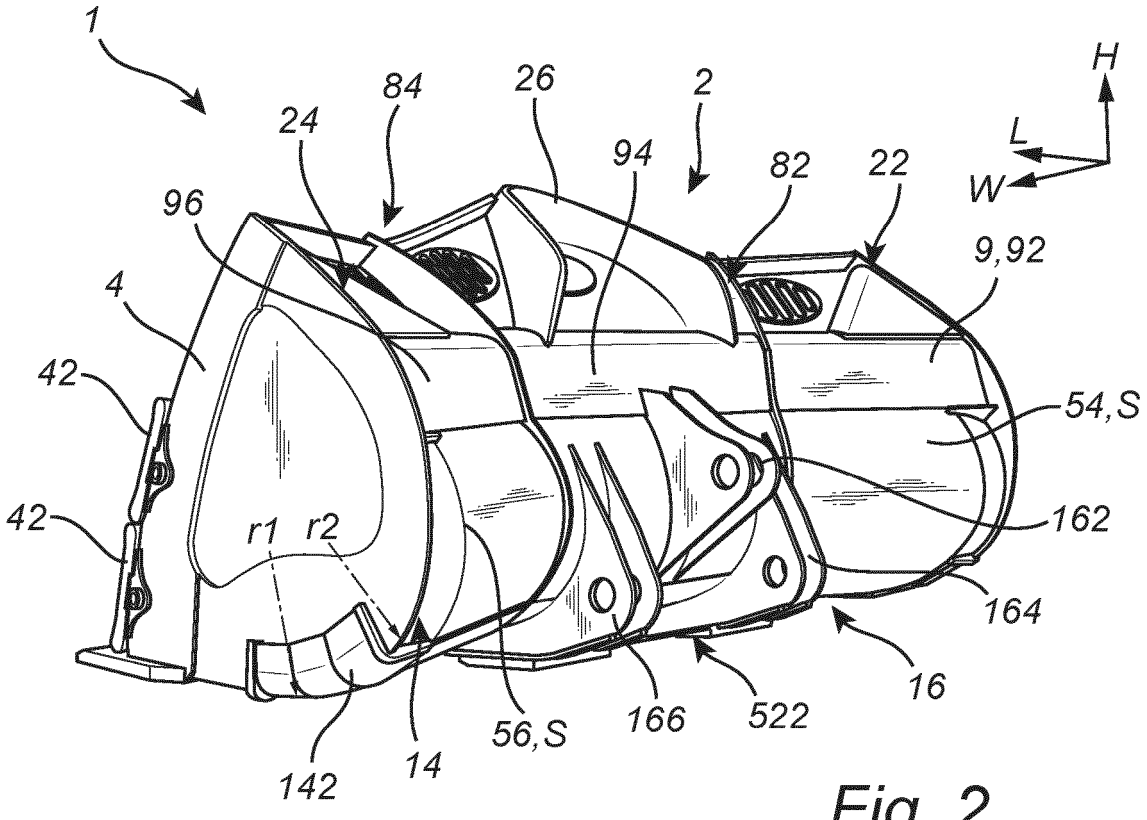
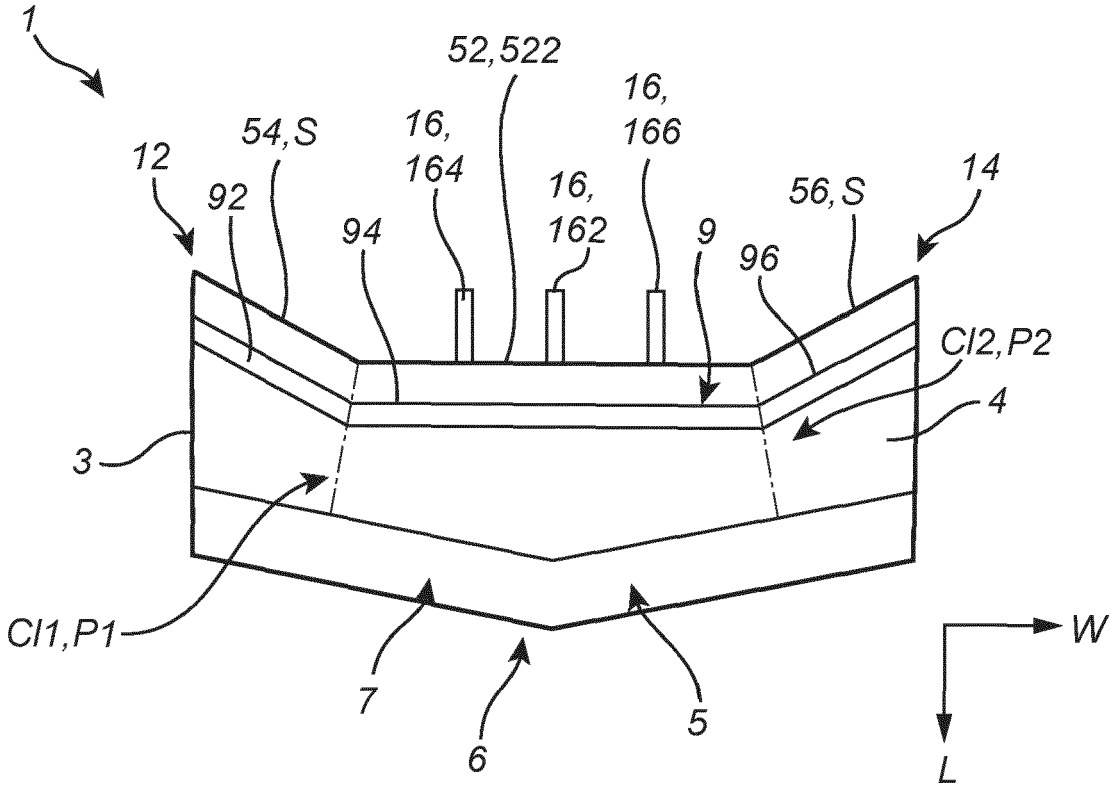

1
84
26
2
24
94
82
22
H
L
W
96
9,92
4
42
54,S
42
r1
r2
162
164
16
522
166
56,S
14
142

Fig. 2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52,522
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92
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94
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96
Cl2,P2
4
3
Cl1,P1
7
6
5
W
L

Fig. 3

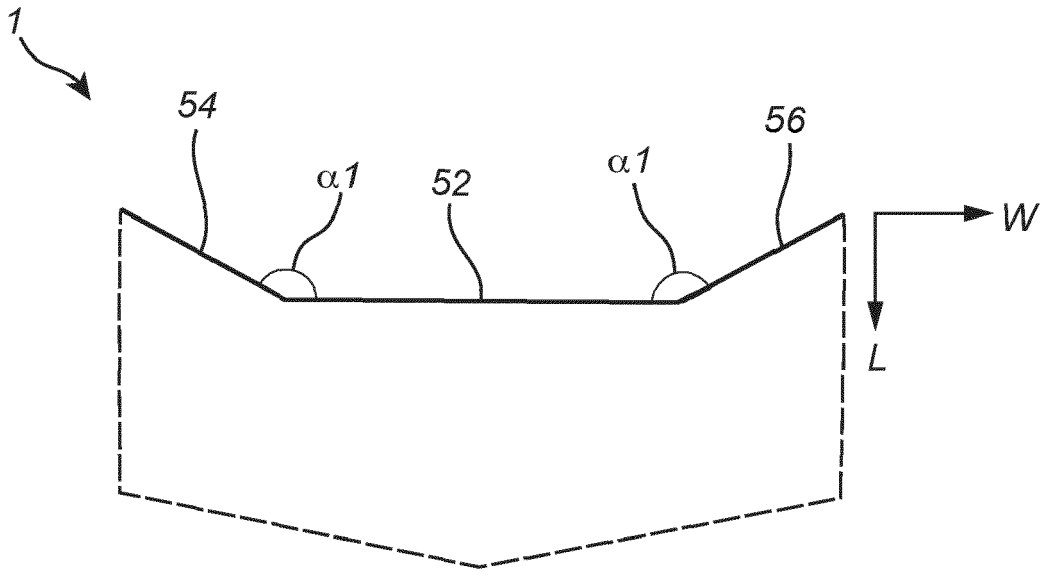
1
54
α1
52
α1
56
W
L

Fig. 4

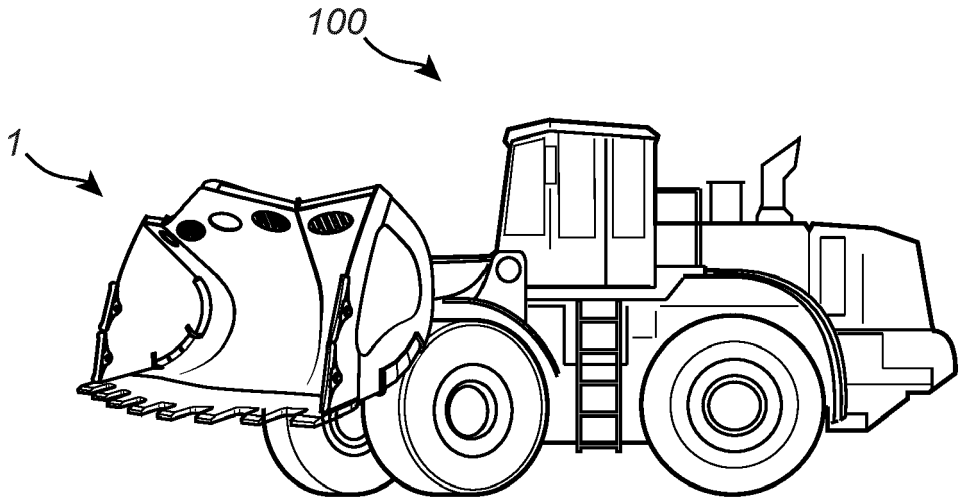

Fig. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 23 18 3776

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 1 473 416 A1 (LEONARDI BENNE DI LEONARDI VAL [IT]) 3 November 2004 (2004-11-03)	1-6, 8-10,13	INV. E02F3/40
A	* paragraphs [0009], [0015]; figures 1-3 *	7,11,12, 14,15	
X	US 10 246 849 B2 (CATERPILLAR UNDERGROUND MINING PTY LTD [AU]) 2 April 2019 (2019-04-02)	1-6,8-15	
A	* column 2, line 57 - column 5, line 62; figures 1-6 *	7	
X	WO 2018/170554 A1 (TAURUS IP PTY LTD [AU]) 27 September 2018 (2018-09-27) * paragraphs [0022] - [0025], [0026], [0027]; figures 1-7 *	1,3-6,8, 10,13-15	
X	US 11 668 068 B2 (CATERPILLAR UNDERGROUND MINING PTY LTD [AU]) 6 June 2023 (2023-06-06) * column 4, line 33 - column 6, line 25; figures 1-3,8,9 *	1-6, 8-11,13, 15	
			TECHNICAL FIELDS SEARCHED (IPC) E02F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	6 November 2023	Luta, Dragos

CATEGORY OF CITED DOCUMENTS

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06-11-2023

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1473416 A1	03-11-2004	AT E329092 T1	15-06-2006
		DE 602004001086 T2	23-11-2006
		EP 1473416 A1	03-11-2004
		ES 2263105 T3	01-12-2006
US 10246849 B2	02-04-2019	AU 2017228636 A1	12-04-2018
		US 2018087236 A1	29-03-2018
WO 2018170554 A1	27-09-2018	NONE	
US 11668068 B2	06-06-2023	AU 2021229907 A1	29-09-2022
		CA 3169778 A1	10-09-2021
		CN 115298392 A	04-11-2022
		US 2021277623 A1	09-09-2021
		WO 2021174305 A1	10-09-2021

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