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(54) **BASE UNIT FOR ASSEMBLING A CRANKCASE OF A RECIPROCATING COMPRESSOR**

BASISEINHEIT ZUM ZUSAMMENBAU EINES KURBELGEHÄUSES EINES KOLBENVERDICHTERS
UNITÉ DE BASE POUR L'ASSEMBLAGE DU CARTER D'UN COMPRESSEUR À PISTON

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Description

[0001] The present invention relates to a base unit for assembling a crankcase of a reciprocating compressor.

[0002] A crankcase for a reciprocating compressor is known in the art. Such crankcase is designed to hold the crankshaft, which is placed along a predefined orientation. The orientation of the crankshaft defines a longitudinal axis of the crankcase. Such crankcase comprises a housing, which has the function to hold the crankshaft. The housing has two sidewalls, which develops substantially parallel to each other and to the longitudinal axis of the crankcase.

[0003] A plurality of access port is located on the side walls. Each access port allows a respective connecting rod, which is in turn connected to a piston, to attach to the crankshaft. The access port are arranged on the side walls in such a way as to balance the load on the crankshaft itself during the normal functioning of the compressor.

[0004] A disadvantage of the known crankcase is that it is manufactured by casting and it is tailor-made for the specific application. This also applies to very big crankcases, which can house for example a crankshaft with up to ten pistons. Therefore, a faulty cast has the consequence of wasting an entire crankcase, with corresponding productivity and economic losses.

[0005] A crankcase according to the state of the art is disclosed in prior art document US 4,714,060 A.

SUMMARY

[0006] A first aspect of the invention is therefore a base unit for assembling a crankcase of a reciprocating compressor. Such base unit comprises a housing configured to hold at least part of a crankshaft. An access port is placed onto the housing, and is configured to hold a connecting rod attached to a piston. The base unit has at least an interface zone, also placed on the housing, which is configured to be coupled with another interface zone of another base unit in order to assemble the crankcase.

[0007] An advantage of the base unit is that it allows a modular approach to the assembling a crankcase, since many base unit can be assemble in order to build a crankcase according to the specifications. In turn, this allows an increased productivity of the fabrication process.

[0008] A second aspect of the invention is a kit for assembling a crankcase comprising a plurality of base units. At least a connecting device is provided in order to attach the base units to each other onto the respective interface zones. This allows to optimize the assembly procedure for the reciprocating compressors.

[0009] A third aspect of the invention is a crankcase comprising at least a base unit as described above.

[0010] A fourth aspect of the invention is therefore directed to a method for assembling the crankcase. The method comprises the steps of providing at least two

base units and attaching the base units to each other onto the respective interface zones.

[0011] A fifth aspect of the invention is therefore directed to a method for upgrading a crankcase. This method comprises the step of providing a further base unit. This further base unit can be attached to the crankcase, in particular by placing an interface zone of the new base unit into contact with the interface zone of a base unit already part of the crankcase. This has the advantage of being able to update an already built crankcase instead of having to build a new one.

[0012] Further details and specific embodiments will refer to the attached drawings, in which:

Figure 1 and 2 are perspective views of a first embodiment of a base unit for assembling a crankcase of a reciprocating compressor; and

Figure 3 is a perspective view of a detail of a second embodiment of a base unit for assembling a crankcase of a reciprocating compressor.

DETAILED DESCRIPTION

[0013] The following description of exemplary embodiments refers to the accompanying drawings. The same reference numbers in different drawings identify the same or similar elements. The following detailed description does not limit the invention. Instead, the scope of the invention is defined by the appended claims.

[0014] Reference throughout the specification to "one embodiment" or "an embodiment" means that a particular feature, structure, or characteristic described in connection with an embodiment is included in at least one embodiment of the subject matter disclosed. Thus, the appearance of the phrases "in one embodiment" or "in an embodiment" in various places throughout the specification is not necessarily referring to the same embodiment. Further, the particular features, structures or characteristics may be combined in any suitable manner in one or more embodiments.

[0015] Therefore, a base unit for assembling a crankcase 101 of a reciprocating compressor will be described, also referring the attached figures in which it will be indicated with the number 1.

[0016] The base unit 1 comprises a housing 2, which is configured to hold at least part of a crankshaft 100. Indeed, the housing 2 has a longitudinal axis "A", which defines an orientation for the crankshaft 100. The housing 2 has a first 2a and a second end 2b, opposite to each other and substantially aligned along the longitudinal axis "A". The longitudinal axis "A" lays on a longitudinal plane which is transversal with respect to both the first 2a and the second end 2b.

[0017] The housing 2 is substantially U-shaped and has an open side from which the crankshaft 100 can be inserted. Once the crankshaft 2 has been placed in the housing 2, a pluralities of crosspieces 17 are installed on

the housing 2 in order to increase the structural rigidity of the housing 2 itself.

[0018] With additional detail, the housing 2 comprises a support plate 11. The support plate 11 is preferably rectangular in shape, and is configured to rest onto a support surface (not shown).

[0019] Preferably, the housing 2 has two end walls 8, which are placed on the ends 2a, 2b of the housing 2. The end walls 8 are substantially perpendicular to the above mentioned longitudinal plane. More preferably, the end walls 8 are substantially parallel to each other. In use, the end walls 8 are oriented substantially in a vertical direction, and thus are transversal, and preferably perpendicular, to the support plate 11.

[0020] With more detail, each end wall 8 has a seat 9 configured to accept a crankshaft 100 of suitable size. In particular, the seat 9 has a concave, preferably semicircular shape so that it is able to receive bearings (not shown). A closure 12 can be placed onto the seat 9 in order to lock the shaft 100 in the seat 9.

[0021] The housing 2 also comprises two side walls 10, placed transversally and preferably perpendicularly to the above mentioned end walls 8. The side walls 10 are substantially parallel to each other. Such side walls 10 are each attached to a further housing 13, which is designed to hold a crosshead for a piston (not shown in the drawings). According to different embodiments of the invention, the further housings 13 can either be made as a single piece with the housing 2 or they can be built separately and then attached to the housing 2 in a later phase.

[0022] With more detail, an access port 3 is placed onto the housing 2. Such access port 3 is configured to hold a connecting rod for a piston (not shown in the drawings). Specifically, the access port 3 is placed onto the side wall 10, so that the above mentioned connecting rod can link the crosshead to the shaft 100 inside the base unit 1. In the embodiments shown in the figures each side wall 10 has a single access port 3. In different embodiments, not shown, each side wall can have more than one access port 3.

[0023] According to the embodiments shown in the attached figures, the base unit 1 has at least an interface zone 4 on the housing 2. Preferably, the interface zone 4 lays on a plane transversal to the longitudinal axis "A" of the housing 2. In detail, the interface zone 4 is configured to be coupled with another interface zone 4 of the base unit 1 for assembling the crankcase 101. In other words, two base units 1 can be joined together in order to assemble a crankcase 101. Details on the method for assembling a crankcase 101 will be given in a following portion of the present disclosure.

[0024] The base unit 1 has two interface zones 4, which are placed respectively onto the first 2a and onto the second end 2b of the housing 2. Indeed, the interface zones 4 are parallel to each other. Advantageously, this allows to chain-link an arbitrary number of base units 1. With additional detail, each interface zone 4 is placed

onto a respective end wall 8. In particular, each interface zone 4 is placed onto an outer surface 8a of the end walls 8. The base units are arranged so that their open sides face on the same side.

[0025] With additional detail, the interface zone 4 is provided with at least a socket 5, which is configured to receive a connecting device (not shown). The connecting device has the function of fixing the interface zone 4 to another base unit 1. Preferably, the interface zone 4 is provided with at least two sockets 5, placed on opposite sides of the longitudinal plane of the housing 2. Indeed, in the embodiments shown in the figures the interface zone 4 is provided with a plurality of sockets 5, placed substantially symmetrically with respect to the longitudinal plane.

[0026] With greater detail, the embodiment from figures 1 and 2 is provided with twelve sockets 5. Specifically, the sockets 5 are arranged so that there are six sockets 5 on each side of the longitudinal plane.

[0027] Similarly, the embodiment from figure 3 is provided with four sockets 5. These sockets 5 are arranged so that there are two sockets 5 on each side of the longitudinal plane.

[0028] In further embodiments, not shown in the drawings, there can be any number of sockets 5. Preferably, the number of the sockets 5 and their arrangement are the same on each interface zone 4 of the base unit 1. Alternatively, if justified by design considerations, the number of the sockets 5 and their arrangement can differ between the two interface zones 4.

[0029] According to the embodiments shown in the attached figures, each socket 5 is a hole 6. Advantageously, either a centering pin or a bolt (both are not shown in the figures) can be installed in the holes 6.

[0030] An embodiment of the present invention also relates to a kit for assembling a crankcase 101. Such kit comprises one or more base units 1, such as the one described above. A suitable number of connecting devices is provided, so that the base units 1 can be attached together. In particular, the base units 1 can be attached on their respective interface zones 4, as explained above.

[0031] Optionally a spacer device 15 can be inserted between two base units 1. Such spacer device is used in case the cylinders that have to be attached to the crankcase 101 are particularly large. Indeed, if that is the case, a suitable spacer device 15 is used so that enough space is restored between two base units 1. Specifically, the spacer device 15 has two ends 15a, which are opposite and which can be attached to a respective base unit 1 as will be explained in a following part of the present disclosure.

[0032] With greater detail, the spacer device 15 comprises at least a perimetral wall 14. In use, such perimetral wall 14 extends around the crankshaft 100. In the embodiment shown in the figures, the spacer device 15 comprises just one perimetral wall 14 which is U-shaped. This particular shape of the spacer device 15 allows the admittance of the crankshaft from the open side of spacer

device 15. Both spacer device 15 and base unit 1 have the open sides face on the same side in order to allow the entry of the crankshaft 100. In alternative embodiments, not shown, the spacer device 15 can comprise any number of perimetral walls 14 which can be arranged differently.

[0033] In detail, the spacer device 15 is configured to be connected to the base units 1 onto the respective interface zones 4. Indeed, the spacer device 15 has a pair of interface zones 16 itself. These interface zones 16 are opposite to each other. In other words, the interface zones 16 are placed each onto a respective end 15a of the spacer device 15. The interface zones 16 are configured to be attached to respective interface zones 4 of respective base units 1. For this reason, the interface zones 16 are substantially similar to the interface zones 4 of the base unit 1, therefore they will not be further detailed in the present disclosure.

[0034] Although a known crankshaft can be used with the crankcase 101 according to the above described embodiment of the invention, the kit can also comprise a crankshaft 100 configured to be inserted into the housing 2 of the base unit 1. In detail, the crankshaft 100 comprises a plurality of segments 102. Each segment 102 is configured to be housed into a respective base unit 1 and to be joined with at least another segment 102 in order to define the crankshaft 101. In other words, the crankshaft 100 is also modular, being composed by a variable number of segments 102. Advantageously, each segment 102 has a length substantially equal to the length of its respective base unit 1 along the longitudinal axis "A". Furthermore, the number of segments 102 is preferably the same as the number of base units 1 in the crankcase. Preferably, each segment 102 is configured to be attached to two connecting rods.

[0035] Additionally, the crankshaft may comprise one or more further segment 103. Each further segment 103 is configured to be attached to two segments 102. Preferably, each further segment 103 has the same length along the longitudinal axis "A" as the spacer device 15. Indeed, in use, each further segment 103 is placed inside the spacer device 15.

[0036] Preferably, in each kit according to the embodiments of the present invention the base units 1 have all the same length along the longitudinal axis "A". Advantageously, this enables a better modularity for the crankcase 101 built using the above described kit. Of course such length can vary depending on design specification. Furthermore, if necessary a single kit can comprise base units 1 of different length or size.

[0037] Another embodiment of the present invention relates to a method for assembling the above described crankcase 101. Two or more of the base units 1 are provided with the appropriate number of spacer device 15.

[0038] These base units 1 are attached to each other. Optionally, if the spacer devices 15 are used, they are each inserted between two base units 1. The interface zones 4, 16 are joined. In particular, pins (not shown) are

inserted inside a subset of sockets 5. The remaining sockets 5 of adjacent interface zones 4, 16 are then secured with bolts. A crankshaft is inserted in the seats 9 of the base units 1. If necessary, a crankshaft 100 is assembled by any required number of segments 102 and further segments 103, which are joined by means known to the person skilled in the art.

[0039] Another embodiment of the present invention relates to a method of upgrading a crankcase 101, for example if an additional pair of pistons (with respective connecting rods) is deemed necessary. In this case, another base unit 1 is attached to a base unit 1 already part of the crankcase 101, in particular at one end of the crankcase 101. If necessary, a spacer device 15 can be inserted between the previous crankcase 101 and the new base unit 1. Also, if a known single-piece crankshaft was installed in the previous crankcase 101 it has to be replaced. Otherwise, if the above discussed crankshaft 100 was used, it can be adjusted by adding a new segment 102 and, if required, a new further segment 103. Any number of base units 1 can be added this way.

Claims

1. Base unit (1) for assembling a crankcase (101) of a reciprocal compressor, comprising a housing (2) configured to hold at least part of a crankshaft (100), said housing (2) having a first (2a) and a second end (2b) opposite to each other and substantially aligned along a longitudinal axis (A) and defining an orientation for said crankshaft (100); an access port (3) placed onto said housing (2) and configured to hold a connecting rod for a piston; wherein the base unit (1) has two interface zones (4) placed respectively onto the first (2a) and onto the second end (2b) of said housing (2), each interface zone (4) laying on a plane transversal to said longitudinal axis (A), each interface zone (4) being configured to be coupled with another interface zone (4) of another base unit (1) for assembling said crankcase (101), said base unit (1) being **characterized in that** said housing (2) is substantially U-shaped in order to have an open side face (17) from which said at least a part of a crankshaft (100) can be inserted by displacing it in direction transversal to said longitudinal axis (A).
2. Base unit (1) according to the previous claim, wherein said interface zones (4) are parallel to each other.
3. Base unit (1) according to any one of the previous claims, wherein said interface zone (4) is provided with at least a socket (5) configured to receive a connecting device for fixing said interface zone (4) to another base unit (1).
4. Base unit (1) according to the previous claim, wherein said socket (5) comprises a hole (6) adapted to

receive either a screw or a pin.

5. Base unit (1) according to any one of the preceding claims, wherein the housing (2) has two end walls (8), which are placed on the ends (2a, 2b) of the housing (2) laying on said transversal planes, each end wall (8) having a seat (9) configured to accept a crankshaft (100) of suitable size, wherein the seat (9) of each end wall (8) has a concave, preferably semicircular, shape so that it is able to receive bearings. 5
6. Kit for assembling a crankcase (101) comprising a plurality of base units (1) according to any one of the previous claims, also comprising at least a connecting device configured to attach two of said base units (1) to each other onto the respective interface zones (4). 10
7. Kit according to the previous claim, also comprising a spacer device (15) insertable between two base units (1) and configured to be connected to said base units (1) onto the respective interface zones (4). 15
8. Kit according to the previous claim, wherein said spacer device (15) has two interface zones (16) opposite to each other and configured to be attached to respective interface zones (4) of respective base units (1). 20
9. Kit according to claim 7 or 8, wherein said spacer device (15) comprises at least a perimetral wall (14) for extending around a part of the crankshaft (100), said perimetral wall (14) being U-shaped for allowing the admittance of the crankshaft (100) from the open side of the spacer device (15), wherein both spacer device (15) and the base units (1) have the open sides face on the same side in order to allow the entry of the crankshaft (100). 25
10. Kit according to any of the claims from 6 to 9, also comprising a crankshaft (100) configured to be inserted into said housing (2). 30
11. Kit according to the previous claim, wherein said crankshaft (100) comprises a plurality of segments (102) for assembling said crankshaft (100), each crankshaft segment (102) being configured to be housed into a respective base unit (1) and to be joined with at least another crankshaft segment (102) in order to define said crankshaft (100). 35
12. Kit according to the previous claim, wherein each segment (102) has a length substantially equal to the length of its respective base unit (1) along said longitudinal axis (A). 40
13. Crankcase (101) comprising a plurality of base units 45

(1) according to any of the claims from 1 to 5.

14. Method for assembling a crankcase (101) according to claim 13, comprising the steps of providing at least two of said base units (1); attaching said base units (1) to each other onto the respective interface zones (4). 5
15. Method for upgrading a crankcase (101) according to claim 13, comprising the steps of providing a further base unit (1), attaching said further base unit (1) to said crankcase (101). 10

15 Patentansprüche

1. Basiseinheit (1) zum Zusammenbau eines Kurbelgehäuses (101) eines Kolbenverdichters, umfassend ein Gehäuse (2), das dazu ausgestaltet ist, mindestens einen Teil einer Kurbelwelle (100) zu halten, wobei das Gehäuse (2) einen ersten (2a) und einen zweiten Endabschnitt (2b) aufweist, die einander gegenüber liegen und im Wesentlichen entlang einer Längsachse (A) ausgerichtet sind und eine Ausrichtung für die Kurbelwelle (100) definieren; eine Zugangsöffnung (3), die auf dem Gehäuse (2) angeordnet ist und dazu ausgestaltet ist, eine Verbindungsstange für einen Kolben zu halten; wobei die Basiseinheit (1) zwei Verbindungsbereiche (4) aufweist, die jeweils an dem ersten (2a) und an dem zweiten Endabschnitt (2b) des Gehäuses (2) angeordnet sind, wobei jeder Verbindungsbereich (4) in einer Ebene quer zu der Längsachse (A) liegt, wobei jeder Verbindungsbereich (4) dazu ausgestaltet ist, zum Zusammenbauen des Kurbelgehäuses (101) mit einem anderen Verbindungsbereich (4) einer anderen Basiseinheit (1) gekoppelt zu sein, wobei die Basiseinheit (1) **dadurch gekennzeichnet ist, dass** das Gehäuse (2) im Wesentlichen U-förmig ist, so dass es eine offene Seitenfläche (17) aufweist, von welcher aus der mindestens eine Teil einer Kurbelwelle (100) durch Verschieben desselben in eine Richtung quer zu der Längsachse (A) einsetzbar ist. 35
2. Basiseinheit (1) nach dem vorstehenden Anspruch, wobei die Verbindungsbereiche (4) parallel zueinander sind. 40
3. Basiseinheit (1) nach einem der vorstehenden Ansprüche, wobei der Verbindungsbereich (4) mit mindestens einer Fassung (5) bereitgestellt ist, die dazu ausgestaltet ist, eine Verbindungsvorrichtung zum Befestigen des Verbindungsbereichs (4) an einer anderen Basiseinheit (1) aufzunehmen. 45
4. Basiseinheit (1) nach dem vorstehenden Anspruch, wobei die Fassung (5) eine Bohrung (6) umfasst, die dazu angepasst ist, eine Schraube oder einen Stift 50

aufzunehmen.

5. Basiseinheit (1) nach einem der vorstehenden Ansprüche, wobei das Gehäuse (2) zwei Stirnwände (8) aufweist, die auf den Endabschnitten (2a, 2b) des Gehäuses (2) angeordnet sind und auf den Querebenen liegen, wobei jede Stirnwand (8) eine Aufnahme (9) aufweist, die dazu ausgestaltet ist, eine Kurbelwelle (100) geeigneter Größe aufzunehmen, wobei die Aufnahme (9) jeder Stirnwand (8) eine konkave, vorzugsweise halbrunde Form aufweist, so dass sie zum Aufnehmen von Lagern geeignet ist. 5
6. Bausatz zum Zusammenbauen eines Kurbelgehäuses (101), umfassend eine Vielzahl von Basiseinheiten (1) nach einem der vorstehenden Ansprüche, ferner umfassend mindestens eine Verbindungsvorrichtung, die dazu ausgestaltet ist, zwei der Basiseinheiten (1) an den jeweiligen Verbindungsbereichen (4) miteinander zu verbinden. 10
7. Bausatz nach dem vorstehenden Anspruch, ferner umfassend eine Abstandsvorrichtung (15), die zwischen zwei Basiseinheiten (1) einsetzbar und dazu ausgestaltet ist, mit den Basiseinheiten (1) an den jeweiligen Verbindungsbereichen (4) verbunden zu werden. 15
8. Bausatz nach dem vorstehenden Anspruch, wobei die Abstandsvorrichtung (15) zwei Verbindungsbereiche (16) aufweist, die einander gegenüberliegen und dazu ausgestaltet sind, an jeweilige Verbindungsbereiche (4) jeweiliger Basiseinheiten (1) angebracht zu werden. 20
9. Bausatz nach Anspruch 7 oder 8, wobei die Abstandsvorrichtung (15) mindestens eine umlaufende Wand (14) umfasst, die sich um einen Teil der Kurbelwelle (100) erstreckt, wobei die umlaufende Wand (14) U-förmig ist, sodass die Aufnahme der Kurbelwelle (100) von der offenen Seite der Abstandsvorrichtung (15) aus ermöglicht wird, wobei die offenen Seiten sowohl der Abstandsvorrichtung (15) als auch der Basiseinheiten (1) zur selben Seite gerichtet sind, um den Eintritt der Kurbelwelle (100) zu ermöglichen. 25
10. Bausatz nach einem der Ansprüche 6 bis 9, ferner umfassend eine Kurbelwelle (100), die zum Einsetzen in das Gehäuse (2) ausgestaltet ist. 30
11. Bausatz nach dem vorstehenden Anspruch, wobei die Kurbelwelle (100) eine Vielzahl von Segmenten (102) zum Zusammenbauen der Kurbelwelle (100) umfasst, wobei jedes der Kurbelwellensegmente (102) dazu ausgestaltet ist, in einer jeweiligen Basiseinheit (1) untergebracht und mit mindestens einem weiteren Kurbelwellensegment (102) zusammen- 35

gefügt zu werden, um die Kurbelwelle (100) zu definieren.

12. Bausatz nach dem vorstehenden Anspruch, wobei jedes Segment (102) eine Länge aufweist, die im Wesentlichen gleich der Länge seiner jeweiligen Basiseinheit (1) entlang der Längsachse (A) ist. 40
13. Kurbelgehäuse (101), umfassend eine Vielzahl von Basiseinheiten (1) nach einem der Ansprüche 1 bis 5. 45
14. Verfahren zum Zusammenbauen eines Kurbelgehäuses (101) nach Anspruch 13, umfassend die Schritte des Bereitstellens von mindestens zwei der Basiseinheiten (1); Verbinden der Basiseinheiten (1) miteinander an den jeweiligen Schnittstellenbereichen (4). 50
15. Verfahren zum Erweitern eines Kurbelgehäuses (101) nach Anspruch 13, umfassend die Schritte des Bereitstellens einer weiteren Basiseinheit (1), Anbringen der weiteren Basiseinheit (1) an das Kurbelgehäuse (101). 55

Revendications

1. Unité de base (1) pour assembler un carter-moteur (101) d'un compresseur alternatif, comprenant un boîtier (2) configuré pour maintenir au moins une partie d'un vilebrequin (100), ledit boîtier (2) présentant une première (2a) et une deuxième extrémité (2b) opposées l'une à l'autre et sensiblement alignées le long d'un axe longitudinal (A) et définissant une orientation pour ledit vilebrequin (100) ; un orifice d'accès (3) placé sur ledit boîtier (2) et configuré pour maintenir une bielle pour un piston ; dans lequel l'unité de base (1) présente deux zones d'interface (4) placées respectivement sur la première (2a) et sur la deuxième extrémité (2b) dudit logement (2), chaque zone d'interface (4) définissant un plan transversal par rapport audit axe longitudinal (A), chaque zone d'interface (4) étant configurée pour être raccordée avec une autre zone d'interface (4) d'une autre unité de base (1) pour assembler ledit carter (101), ladite unité de base (1) étant **caractérisée en ce que** ledit logement (2) est sensiblement en forme de U afin d'avoir une position latérale ouverte (17) à partir de laquelle au moins une partie d'un vilebrequin (100) peut être insérée en le déplaçant dans la direction transversale par rapport audit axe longitudinal (A). 30
2. Unité de base (1) selon la revendication précédente, dans laquelle lesdites zones d'interface (4) sont parallèles entre elles. 35

3. Unité de base (1) selon l'une quelconque des revendications précédentes, dans laquelle ladite zone d'interface (4) est dotée d'au moins une douille (5) configurée pour recevoir un dispositif de connexion pour fixer ladite zone d'interface (4) à une autre unité de base (1). 5
4. Unité de base (1) selon la revendication précédente, dans laquelle ladite douille (5) comprend un trou (6) adapté pour recevoir soit une vis, soit une goupille. 10
5. Unité de base (1) selon l'une quelconque des revendications précédentes, dans lequel le logement (2) comprend deux parois d'extrémité (8), qui sont placées sur les extrémités (2a, 2b) du logement (2) disposées sur lesdits plans transversaux, chaque paroi d'extrémité (8) présentant un logement (9) configuré pour accepter un vilebrequin (100) de dimension appropriée, dans laquelle le logement (9) de chaque paroi d'extrémité (8) présente une forme concave, de préférence semi-circulaire, de façon à pouvoir recevoir des paliers. 15 20
6. Kit d'assemblage d'un carter (101) comprenant une pluralité d'unités de base (1) selon l'une quelconque des revendications précédentes, comprenant en outre au moins un dispositif de connexion configuré pour fixer deux desdites unités de base (1) entre elles sur les zones d'interface (4) respectives. 25 30
7. Kit selon la revendication précédente, comprenant en outre un dispositif d'espacement (15) pouvant être inséré entre deux unités de base (1) et configuré pour être relié auxdites unités de base (1) sur les zones d'interface (4) respectives. 35
8. Kit selon la revendication précédente, dans lequel ledit dispositif d'espacement (15) présente deux zones d'interface (16) opposées l'une à l'autre et configurées pour être fixées à des zones d'interface (4) respectives d'unités de base (1) respectives. 40
9. Kit selon la revendication 7 ou 8, dans lequel ledit dispositif d'espacement (15) comprend au moins une paroi périmétrique (14) s'étendant autour d'une partie de vilebrequin (100), ladite paroi périmétrique (14) étant en forme de U pour permettre l'entrée du vilebrequin (100) par le côté ouvert du dispositif d'espacement (15), dans lequel le dispositif d'espacement (15) et les unités de base (1) présentent les faces latérales ouvertes sur le même côté afin de permettre l'entrée du vilebrequin (100). 45 50
10. Kit selon l'une quelconque des revendications 6 à 9, comprenant en outre un vilebrequin (100) configuré pour être inséré dans ledit boîtier (2). 55
11. Kit selon la revendication précédente, dans lequel ledit vilebrequin (100) comprend une pluralité de segments (102) pour assembler ledit vilebrequin (100), chaque segment de vilebrequin (102) étant configuré pour être logé dans une unité de base respective (1) et pour être relié à au moins un autre segment de vilebrequin (102) afin de définir ledit vilebrequin (100).
12. Kit selon la revendication précédente, dans lequel chaque segment (102) présente une longueur sensiblement égale à la longueur de son unité de base respective (1) le long dudit axe longitudinal (A).
13. Carter-moteur (101) comprenant une pluralité d'unités de base (1) selon l'une quelconque des revendications 1 à 5.
14. Procédé d'assemblage d'un carter-moteur (101) selon la revendication 13, comprenant les étapes consistant à prévoir au moins deux desdites unités de base (1) ; fixer lesdites unités de base (1) l'une à l'autre sur les zones d'interface (4) respectives.
15. Procédé de mise à niveau d'un carter-moteur (101) selon la revendication 13, comprenant les étapes consistant à prévoir une autre unité de base (1), en fixant ladite autre unité de base (1) audit carter-moteur (101).

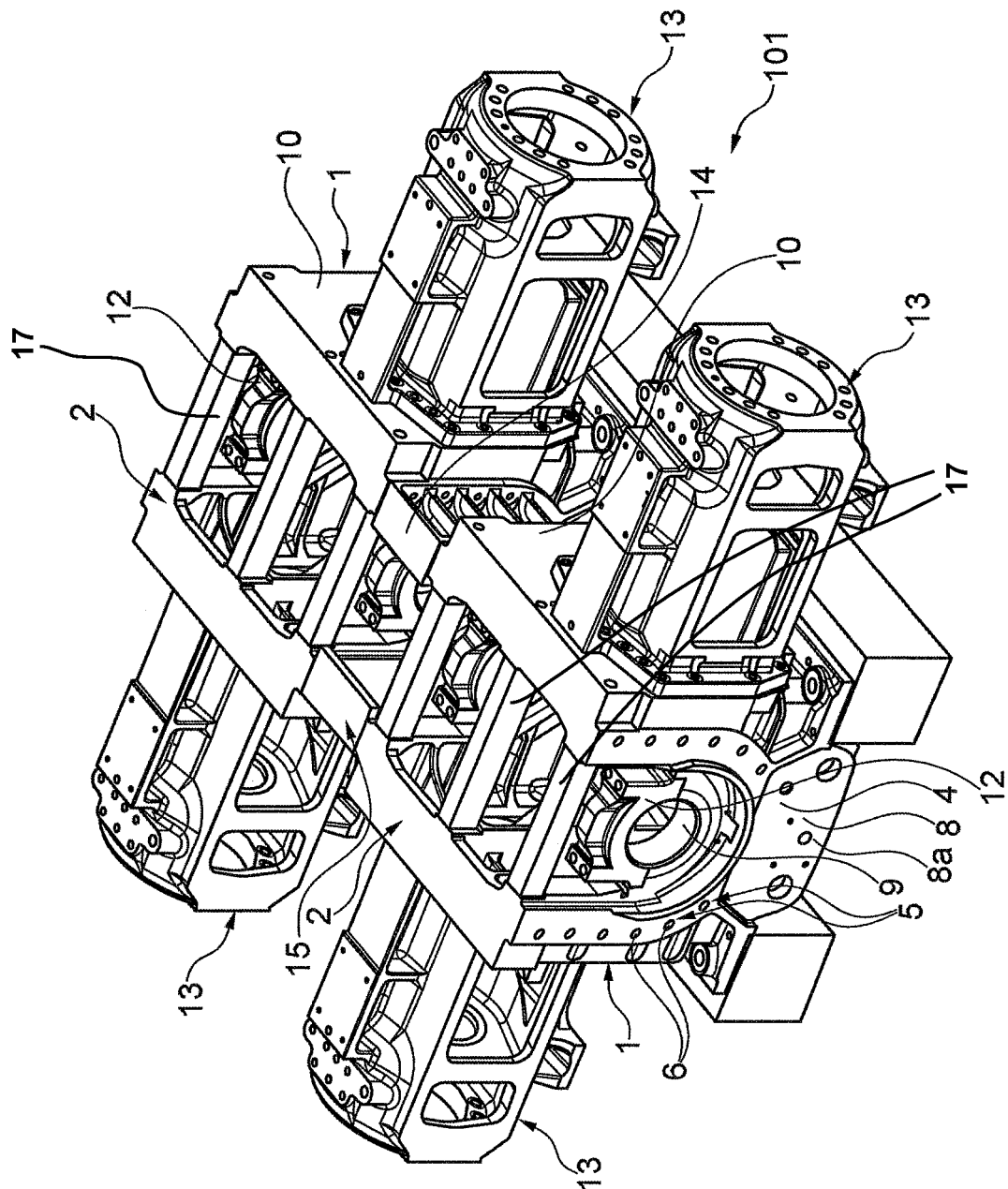


Fig. 1

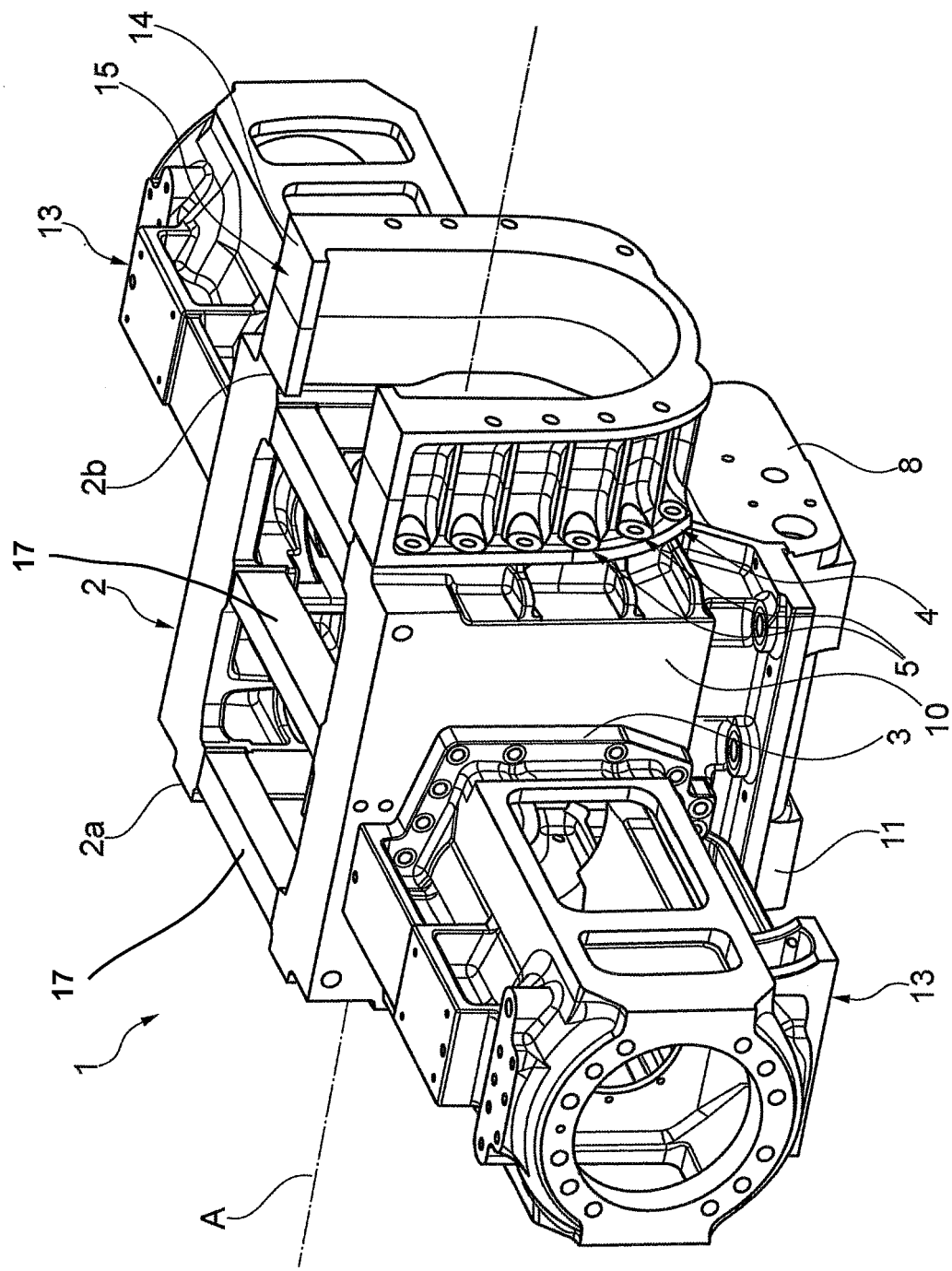


Fig. 2

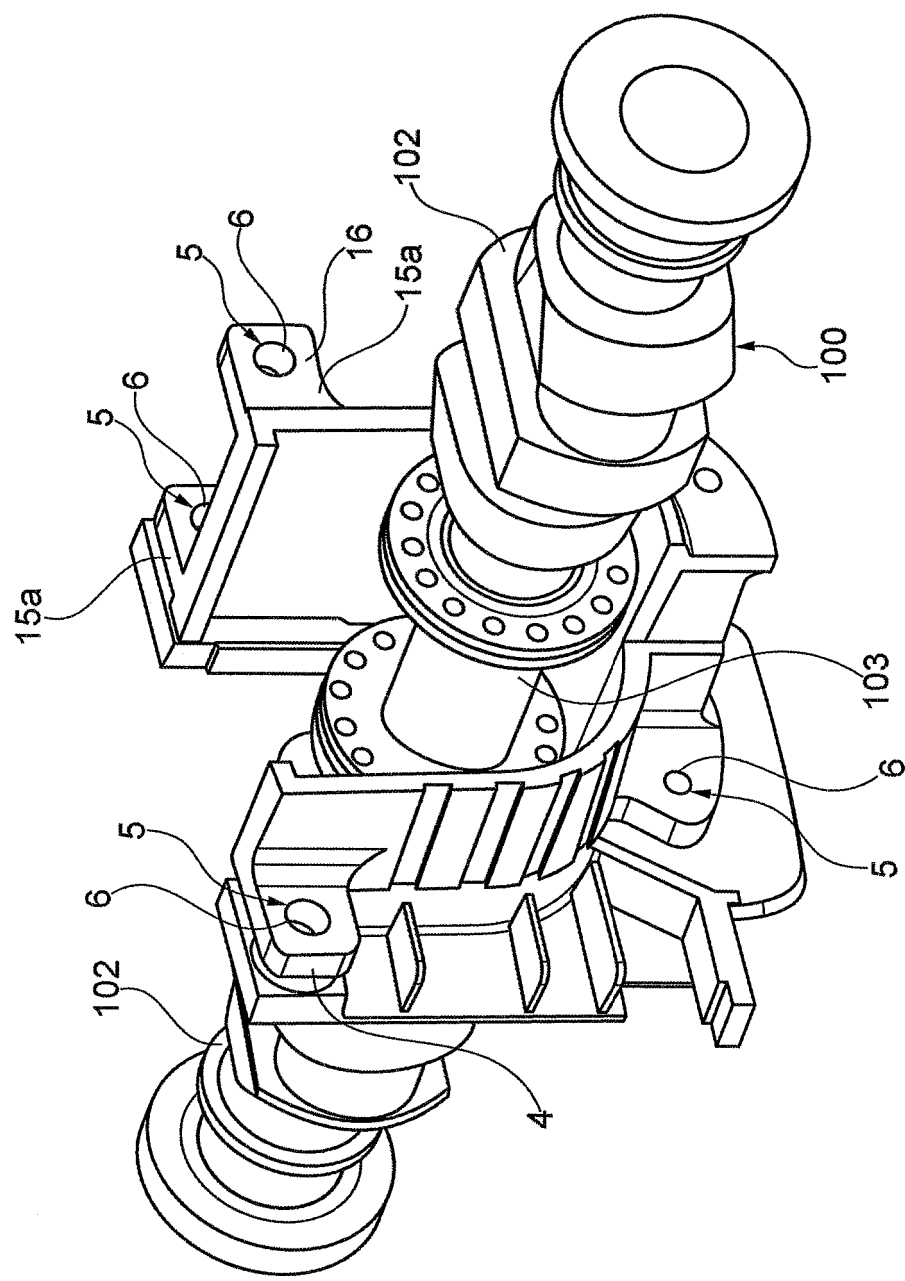


Fig. 3

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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