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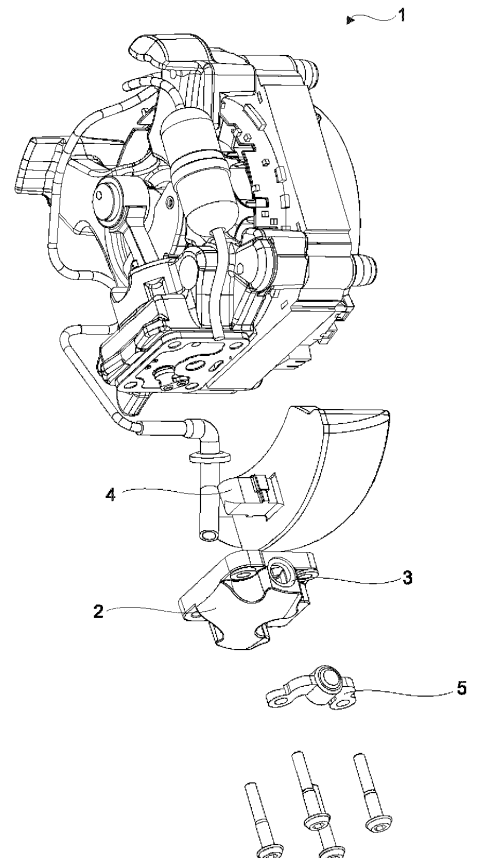
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(54) **A COMPRESSOR HAVING IMPROVED ASSEMBLY METHOD AND FIXING MEANS PROVIDING THE SAME**

(57) A compressor (1) suitable for cooling appliances comprises: a casing; a motor composed of a stator and a rotor; a cylinder (2) that is disposed in the casing and that enables the refrigerant to be sucked and pumped; a piston that is operated in the cylinder (2); a cylinder head (3) that enables the refrigerant sucked and pumped into the cylinder (2) by means of the piston to be directed wherein the cylinder head (3) comprises a first outlet (4) providing the refrigerant to exit the cylinder head (3); a muffler head (5) that extends from inside the cylinder head (3) toward the cylinder (2); and an element (5) attached onto the cylinder head (2) having an inlet and a second outlet wherein the inlet is configured to coincide with the first outlet (3) such that the refrigerant enters the element (5) after exiting the cylinder head (2).

Figure 1



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Description

[0001] The present invention relates to a compressor, in particular to a compressor having assembly method and fixing means providing the same.

[0002] Hermetically sealed reciprocating compressor are commonly used in a wide range of applications such as cooling appliances and air conditioning appliances. In compressors, the refrigerant passes through the coolant cycle and enters the compressor. The refrigerant is pumped by means of the motor and the piston. The piston does reciprocating motion forcing the refrigerant towards the cylinder head. After passing through the cylinder head, the refrigerant reenters the coolant cycle. A problem with the state of the art is that the welding or assembly of the coolant cycle piping to the cylinder head is cumbersome. Another problem faced with the compressors of the state of the art is that the coolant cycle is relatively short resulting in reduced heat loss during the pumping and sucking of the coolant.

[0003] A prior art publication in the technical field of the present invention may be referred to as WO2017211704A1 among others, the document disclosing a compressor comprising an elastic suction muffler.

[0004] A prior art publication in the technical field of the present invention may be referred to as US2017356437A1 among others, the document disclosing a compressor wherein the compressor comprises a head fastening and its components to the block of a compressor.

[0005] A prior art publication in the technical field of the present invention may be referred to as US2017356437A1 among others, the document disclosing a compressor wherein the compressor comprises a discharge arrangement for a compressor, comprising a fluid communication means

[0006] An objective of the present invention is to provide an element wherein the element provides reduction of noise and vibration of the compressor.

[0007] Another objective of the present invention is to provide a longer path for the refrigerant to flow through, which in turn helps reduce the overall temperature of the compressor.

[0008] The method realized to achieve the aim of the present invention and disclosed in the first claim and the dependent claims comprises a compressor suitable to be used in a cooling appliance. The compressor comprises a casing enclosing the operational parts of the compressor. Inside the casing, a motor composed of a stator and a rotor is placed. The motor provides the force required to pump and suck the refrigerant. The motor actuates the cylinder wherein the cylinder comprises a piston doing reciprocating motion. As a result of the reciprocating motion, the refrigerant is pumped and sucked. The compressor further comprises a cylinder head wherein the cylinder head comprises a first outlet providing the refrigerant to exit the cylinder head. The

compressor further comprises a muffler head that extends from inside the cylinder head towards the cylinder. An element is attached onto the cylinder head. The element has an inlet and a second outlet. The inlet of the element is configured to coincide with the first outlet of the cylinder head. As a result, the refrigerant exiting the cylinder head enters the element. The refrigerant passes through the element and exits through the second outlet. By using the element, noise and vibration of the compressor is improved. Another advantageous effect provided by means of the element is that a longer refrigerant path is provided which in turn increases heat dissipation, improving energy efficiency of the compressor.

[0009] In an embodiment of the invention, the cylinder head comprises a fixing means onto which the element is placed. The fixing means is an integral part of the cylinder head and provides bedding for the element as the element is being placed onto the cylinder head.

[0010] In an embodiment of the invention, the fixing means has an inclined surface by means of which the holding force between the fixing means and the element is improved upon torquing the element onto the fixing means.

[0011] In an embodiment of the invention the inclined surface has a serrated surface.

[0012] In an embodiment of the invention, the element is attached onto the cylinder head via a screw. The screw passes through the element and the fixing means respectively. Screws are ease to torque.

[0013] In the compressor of the present invention, the noise and vibration level is reduced by means of the element and the assembly of the element onto the cylinder head is facilitated by means of the fixing means having an inclined surface.

[0014] The drawings are not meant to delimit the scope of protection as identified in the claims nor should they be referred to alone in an effort to interpret the scope identified in the claims without recourse to the technical disclosure in the description of the present invention.

Figure 1 - is an exploded perspective view of the compressor

Figure 2 - is an exploded view of the compressor from above

Figure 3 - is an enlarged view of the cylinder head

[0015] The following numerals are assigned to different parts demonstrated in the drawings and referred to in the present detailed description of the invention:

1. Compressor
2. Cylinder head
3. First outlet
4. Muffler head
5. Element
6. Fixing means

[0016] The present invention relates to a compressor

(1) suitable for use in cooling appliances, comprising a casing ; a motor composed of a stator and a rotor; a cylinder that is disposed in the casing and that enables the refrigerant to be sucked and pumped; a piston that is operated in the cylinder; a cylinder head (2) that enables the refrigerant sucked and pumped into the cylinder by means of the piston to be directed wherein the cylinder head (2) comprises a first outlet (3) providing the refrigerant to exit the cylinder head (2); a muffler head (4) that extends from inside the cylinder head (2) toward the cylinder.

[0017] The present invention relates to a compressor (1) further comprising an element (5) attached onto the cylinder head (2) having an inlet and a second outlet wherein the inlet is configured to coincide with the first outlet (3) such that the refrigerant enters the element (5) after exiting the cylinder head (2). In the compressor of the present invention, the operational parts of the compressor (1) are enclosed inside a casing. The compressor (1) comprises a motor composed of a stator and a rotor. The cylinder provides reciprocating motion via the piston which enables sucking and pumping of the refrigerant. The cylinder head (2) enables the refrigerant sucked and pumped. The cylinder head (2) comprises a first outlet (3) by means of which the refrigerant exits the cylinder head (2). The compressor (1) comprises the muffler head (4) that extends from inside the cylinder head (2) toward the cylinder. The compressor comprises the element (5) wherein the element has the inlet and the second outlet. The element (5) is placed onto the cylinder head (2) such that the inlet of the element (5) coincides with the first outlet provided on the cylinder head (2). The refrigerant passes through the first outlet and enters the element (5). Afterwards, the refrigerant passes through the element (5) and exits through the second outlet provided on the element (5) and rejoins the cycle of coolant refrigerant. By means of the element (5), noise and vibration of the compressor (1) is reduced which in turn affects the energy consumption and overall noise level of the compressor (1). Another advantageous effect provided by means of the element (5) is that a longer path is provided for the refrigerant which in turn decreases the temperature of the coolant, improving the operational efficiency of the compressor (1). Another advantageous effect provided by means of the element (5) is that the element (5) acts as an intermediary part between the cylinder head (2) and the coolant cycle which provides convenience during the assembly of the compressor (1).

[0018] The present invention relates to a compressor (1), wherein the cylinder head (2) comprises a fixing means (6) onto which the element (5) is placed. The fixing means (6) is located on the cylinder head (2). Fixing means (6) is an integral part of the cylinder head (2). The fixing means (6) provides ease of assembly.

[0019] The present invention relates to a compressor (1), comprising an inclined surface between the fixing means (6) and the element (5) upon placing the element (5) onto the fixing means (6). By means of the inclined

surface the fixing means (6) has, ease during assembly is provided for the assembly line worker. Another advantageous effect provided by the inclined surface is that the element (5) is pulled towards the cylinder head (2) as the assembly line workers torque the element (5) onto the cylinder head (2). Another advantageous effect provided by the inclined surface is that the element (5) is pulled towards the cylinder head (2) as the assembly line workers torque the element (5) providing air tightness.

[0020] The present invention relates to a compressor (1), wherein the inclined surface has a serrated surface. The serrated surface helps the element (5) being fixed onto the cylinder head (2).

[0021] The present invention relates to a compressor (1), wherein the element (5) is attached onto the cylinder head (2) via a screw, the screw passing through the element (5) and the fixing means (6) respectively. Screws provides ease of assembly.

Claims

1. A compressor (1) suitable for use in cooling appliances, comprising a casing ; a motor composed of a stator and a rotor; a cylinder that is disposed in the casing and that enables the refrigerant to be sucked and pumped; a piston that is operated in the cylinder; a cylinder head (2) that enables the refrigerant sucked and pumped into the cylinder by means of the piston to be directed wherein the cylinder head (2) comprises a first outlet (3) providing the refrigerant to exit the cylinder head (2); a muffler head (4) that extends from inside the cylinder head (2) toward the cylinder, **characterized by** an element (5) attached onto the cylinder head (2) having an inlet and a second outlet wherein the inlet is configured to coincide with the first outlet (3) such that the refrigerant enters the element (5) after exiting the cylinder head (2).
2. The compressor (1) according to claim 1, **characterized in that** the cylinder head (2) comprises a fixing means (6) onto which the element (5) is placed.
3. The compressor (1) according to claim 2, **characterized by** an inclined surface between the fixing means (6) and the element (5) upon placing the element (5) onto the fixing means (6).
4. The compressor (1) according to claim 3, **characterized in that** the inclined surface has a serrated surface.
5. The compressor (1) according to claims 2 to 4, **characterized in that** the element (5) is attached onto the cylinder head (2) via a screw, the screw passing through the element (5) and the fixing means (6) respectively.

Figure 1

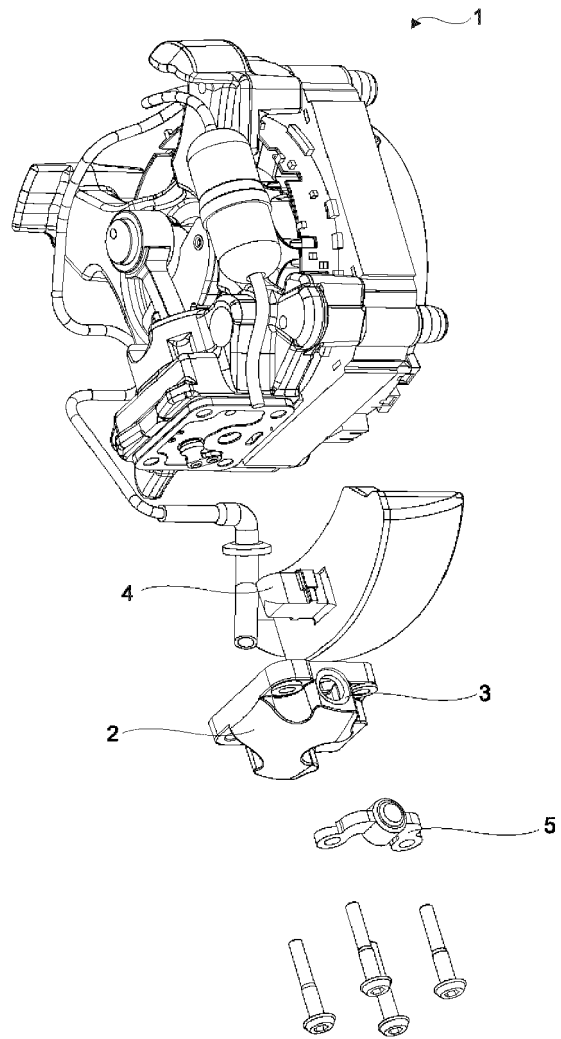


Figure 2

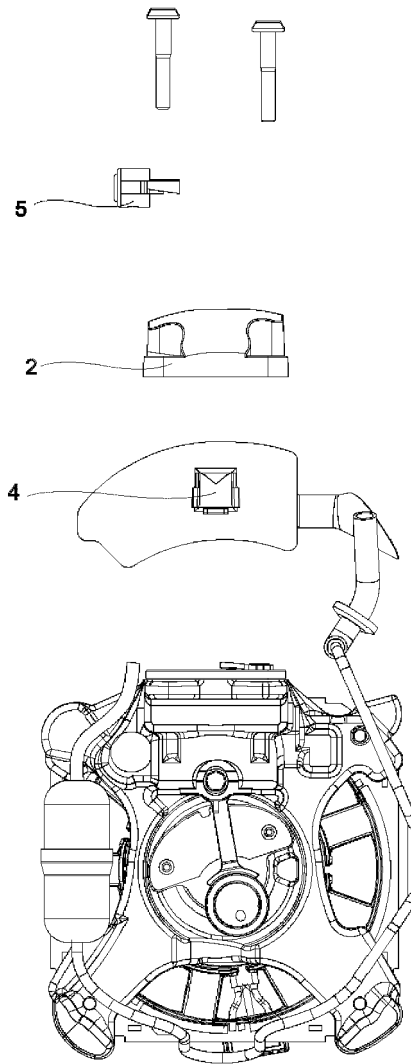
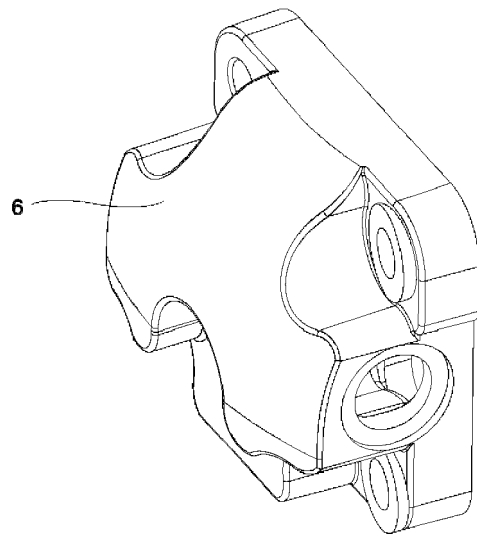


Figure 3





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Application Number
EP 21 19 9946

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1 The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 11 January 2022	Examiner Olona Laglera, C
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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ANNEX TO THE EUROPEAN SEARCH REPORT
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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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