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(71) Applicant: **ARCELIK ANONIM SIRKETI** [TR/TR];
Karaagac Caddesi 2-6, Sutluce, 34445 Beyoglu/Istanbul
(TR).

(72) Inventors: **TURKER, Fatih**; Arcelik A.S. Sutluce Karaagac Caddesi No: 2/6, 34445 Beyoglu/Istanbul (TR). **MARASLI, Sarper**; Arcelik A.S. Sutluce Karaagac Caddesi No: 2/6, 34445 Beyoglu/Istanbul (TR). **YILDIRIM, Kerim**; Arcelik A.S. Sutluce Karaagac Caddesi No: 2/6, 34445 Beyoglu/Istanbul (TR). **TOPALOGLU, Serkan**; Arcelik A.S. Sutluce Karaagac Caddesi No: 2/6, 34445 Beyoglu/Istanbul (TR). **GUREL, Semih**; Arcelik A.S. Sutluce Karaagac Caddesi No: 2/6, 34445 Beyoglu/Istanbul (TR).

(74) Agent: **ANKARA PATENT BUREAU**; Kavaklidere Mahallesi Bestekar Caddesi No:10, 06680 Ankara (TR).

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(54) Title: A COMPRESSOR COMPRISING AN ADDITIONAL TUBE

(57) Abstract: The present invention relates to a compressor (1) comprising a body (2) which is composed of an upper casing (3) and a lower casing (4); an outlet tube (6) which is provided on the lower casing (4) and which discharges the compressed refrigerant from the body (2) for the refrigerant cycle; and a return tube (5) which enables the refrigerant completing its cycle to return to the body (2) through the lower casing (4).

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A COMPRESSOR COMPRISING AN ADDITIONAL TUBE

The present invention relates to a compressor with improved service tube for charging the refrigerant.

- 5 There are three tubes on the compressor, namely return, outlet and service tubes. The refrigerant gas circulating in the compressor is charged to the compressor body from the lower casing via a service tube. The outlet tube is the component through which the high-pressure gas compressed in the compressor is discharged from the compressor. The return pipe is the component where the gas returns to the casing in the refrigeration cycle. Said three tubes are joined, by centering, to the holes bored on the compressor lower casing. Centering and boring holes on the tubes and the casing increases production costs and production cycle times. Moreover, processes such as centering the tubes to the casing, welding an additional tube to the compressor service tube during the production of refrigerators where compressors are used, also cause the risk of refrigerant leakage, which results in cooling problems. The service tube is the component through which the refrigerant is charged to the compressor for the first time. After the refrigerant is pumped, the tube end is cut, welded, blunted and closed.
- 10
- 15

In the state of the art Japanese Patent Document No. JP2014009647, a tube structure is disclosed, which enables the refrigerant to be charged to the compressor.

- 20 The aim of the present invention is the realization of a compressor comprising an additional tube for charging the refrigerant to the compressor, wherein ease of production and cost advantage are provided.

- The compressor of the present invention comprises a lower casing, an upper casing disposed onto the lower casing and a return tube and an outlet tube provided on the lower casing. The outlet tube is the tube through which the refrigerant gas compressed by the motor and the piston is discharged from the compressor. The return tube is the tube through which the gas, which completes its cycle, returns to the compressor.
- 25

The compressor of the present invention comprises an additional tube which is provided on the return tube. The refrigerant is charged into the compressor through the

additional tube, and then the additional tube is cut, welded and closed. Thus, without opening a third tube hole on the lower casing and using a service tube, the refrigerant is charged.

5 In an embodiment of the present invention, the diameters of the additional tube and the return tube are equal to each other.

In another embodiment of the present invention, the diameters of the additional tube and the return tube can be different from each other.

In an embodiment of the present invention, the additional tube is parallel to and integrated with the return tube.

10 The outlet tube is connected to the part which contains the motor and the piston which compress the refrigerant. Therefore, the additional tube is disposed on the return tube which is positioned at the suction part. It is not possible to position the additional tube on the outlet tube and to charge the refrigerant from here.

15 By means of the present invention, a compressor is realized which is easy to manufacture.

The model embodiments related to the compressor realized in order to attain the aim of the present invention are shown in the attached figures, where:

Figure 1 – is the front view of a compressor comprising a state of the art external service tube.

20 **Figure 2** – is the front view of the compressor of the present invention.

Figure 3 – is the view of the additional tube on the return tube in the compressor of the present invention.

Figure 4 - is the view of the compressor of the present invention from a different angle.

25 The elements illustrated in the figures are numbered as follows:

1. Compressor
2. Body

3. Upper casing

4. Lower casing

5. Return tube

6. Outlet tube

5 7. Additional tube

The compressor (1) comprises a body (2) which is composed of an upper casing (3) and a lower casing (4); an outlet tube (6) which is provided on the lower casing (4) and which discharges the compressed refrigerant from the body (2) for the refrigerant cycle; and a return tube (5) which enables the refrigerant completing its cycle to return
10 to the body (2) through the lower casing (4).

The compressor (1) of the present invention comprises an additional tube (7) which is provided on the return tube (5) and which enables the refrigerant to be charged into the body (2). Thus, the gas required for the operation of the compressor (1) can be charged to the body (2) at the beginning via the return tube (5) which is the part allowing the
15 entry of gas and enabling the compressor (1) to perform its suction task. The additional tube (7) on the return tube (5) is the component where the gas is pumped into the body (2) through the lower casing (4) at the beginning. After the gas charging process is completed, the additional tube (7) is preferably blunted by welding and closed. In case of any malfunction, the additional tube (7) can be opened again to be
20 used for charging gas again.

The compressor (1) of the present invention comprises the lower casing (4) having only the return tube (5) and the outlet tube (6). Thus, the need for using a third service tube on the lower casing (4) is eliminated.

The compressor (1) of the present invention comprises the additional tube (7) the end
25 of which is blunted and closed after the refrigerant is charged.

In an embodiment of the present invention, the compressor (1) comprises the additional tube (7) which is integrated with the return tube (5). Thus, any leak between the return tube (5) and the additional tube (7) is prevented.

In an embodiment of the present invention, the compressor (1) comprises the additional tube (7) which is provided on the return tube (5) so as to be parallel to the return tube (5). Thus, the refrigerant gas is enabled to reach the lower casing (4) through the return tube (5) with a smoother flow.

- 5 In an embodiment of the present invention, the compressor (1) comprises the additional tube (7) with a diameter equal to the diameter of the return tube (5). Thus, the charging of the gas is facilitated.

By means of the present invention, a compressor (1) is realized, wherein ease of production is provided and the refrigerant gas is charging in a practical manner
10 without any leaks.

CLAIMS

1. A compressor (1) **comprising** a body (2) which is composed of an upper casing (3) and a lower casing (4); an outlet tube (6) which is provided on the lower casing (4) and which discharges the compressed refrigerant from the body (2) for the refrigerant cycle; and a return tube (5) which enables the refrigerant completing its cycle to return to the body (2) through the lower casing (4), **characterized by** an additional tube (7) which is provided on the return tube (5) and which enables the refrigerant to be charged into the body (2).
2. A compressor (1) as in Claim 1, **characterized by** lower casing (4) having only the return tube (5) and the outlet tube (6).
3. A compressor (1) as in Claim 1 or 2, **characterized by** the additional tube (7) the end of which is blunted and closed after the refrigerant is charged.
4. A compressor (1) as in Claim 3, **characterized by** the additional tube (7) which is integrated with the return tube (5).
5. A compressor (1) as in any one of the Claims 1 to 4, **characterized by** the additional tube (7) which is provided on the return tube (5) so as to be parallel to the return tube (5).
6. A compressor (1) as in any one of the above claims, **characterized by** the additional tube (7) with a diameter equal to the diameter of the return tube (2).

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Figure 1

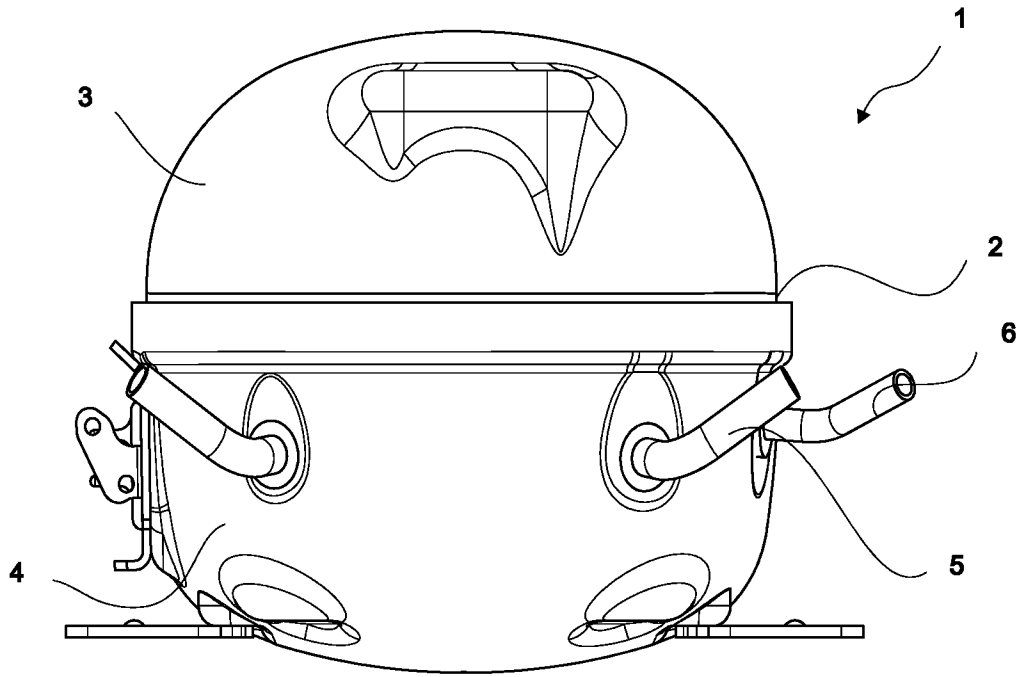
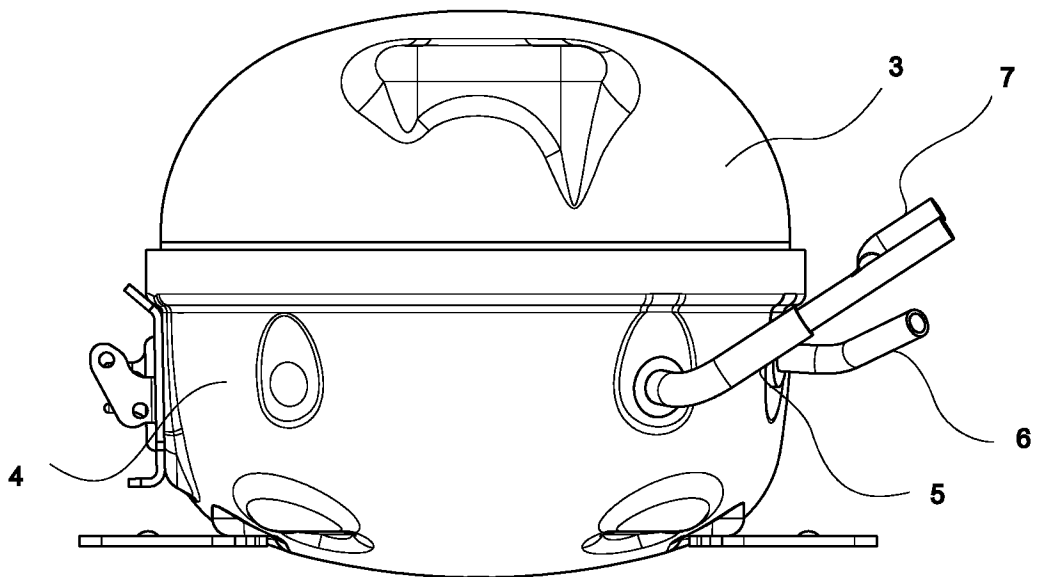


Figure 2



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Figure 3

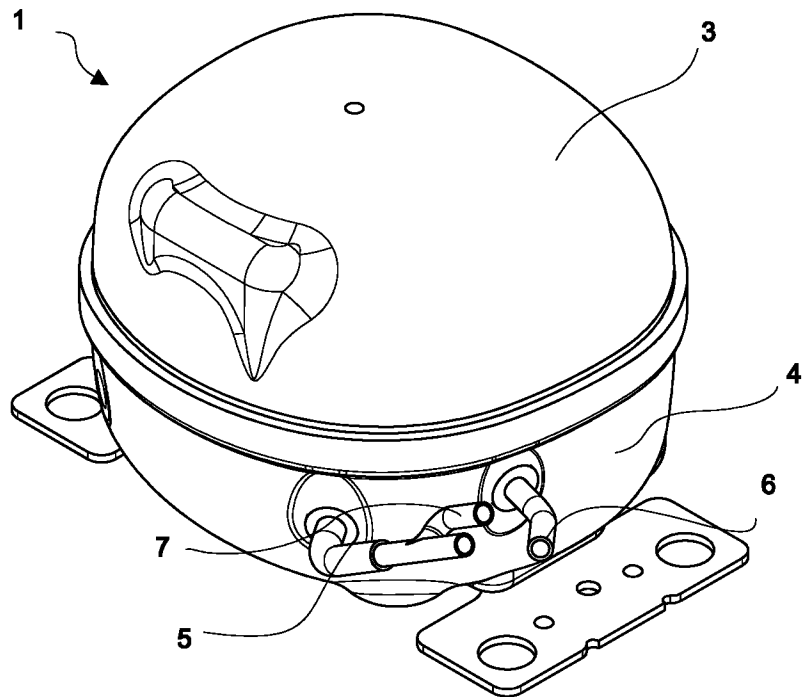
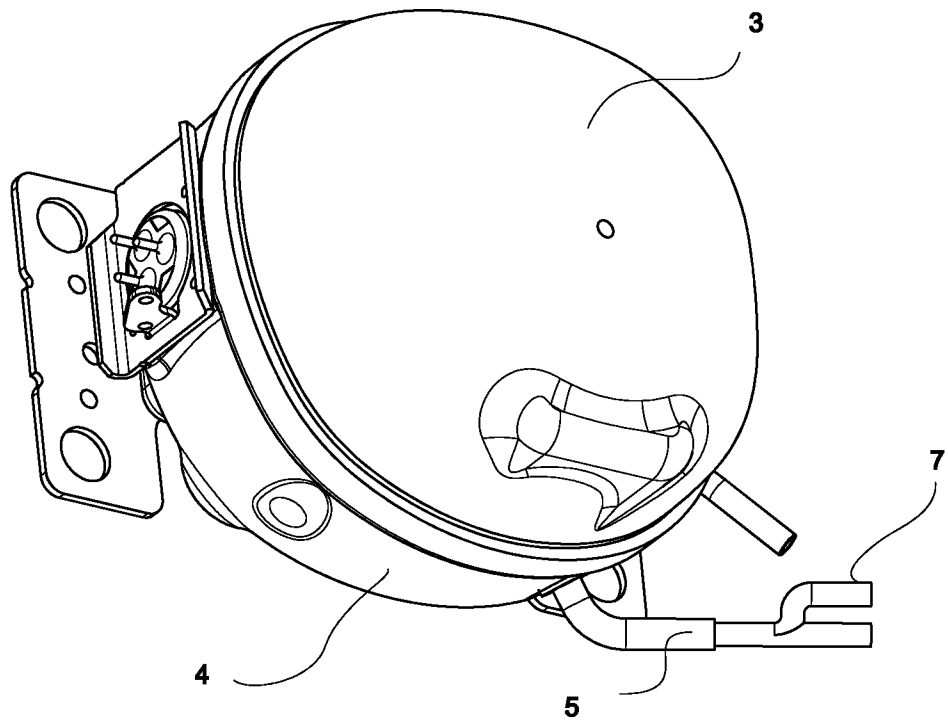


Figure 4



INTERNATIONAL SEARCH REPORT

International application No.

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A. CLASSIFICATION OF SUBJECT MATTER

F25B 45/00 (2006.01)i; F25B 31/02 (2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

F25B 45/00; F25B 31/02

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Turkpatent Database

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO Abstract & Fulltext Databases, WPI Data. Search Terms Used: tube, compress, charge, refrigerant, body, upper casing, lower casing, an outlet tube, discharge, return tube, additional tube, charged into the body, refrigerant is charged, blunted, closed

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2016138922 A1 (ARCELIK AS [TR]) 09 September 2016 (2016-09-09) Abstract, Claim 1, Figure 1	1-6
X	US 3336936 A (MULLINS JOHN W) 22 August 1967 (1967-08-22) Abstract, Figure 1	1-6
X	JP H03160285 A (SANYO ELECTRIC CO) 10 July 1991 (1991-07-10) Abstract, Figure 1	1-6



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

“A” document defining the general state of the art which is not considered to be of particular relevance

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“X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

“Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

“&” document member of the same patent family

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Name and mailing address of the ISA/TR

Turkish Patent and Trademark Office (Turkpatent)
Hipodrom Caddesi No. 13
06560 Yenimahalle
Ankara
Turkey

Telephone No. +903123031000

Facsimile No. +903123031220

Authorized officer

Nafiz KUTLU

Telephone No. +903123031226