(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 283 045 B1**

(12) # EUROPEAN PATENT SPECIFICATION

(45) Date of publication of patent specification: **24.07.91 Bulletin 91/30**

(51) Int. Cl.[5]: **F04C 18/02**

(21) Application number: **88104390.5**

(22) Date of filing: **18.03.88**

(54) **Scroll type compressor.**

(30) Priority: **20.03.87 JP 67354/87**
20.03.87 JP 67355/87

(43) Date of publication of application:
21.09.88 Bulletin 88/38

(45) Publication of the grant of the patent:
24.07.91 Bulletin 91/30

(84) Designated Contracting States:
DE FR GB IT SE

(56) References cited:
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US-A- 3 311 293
US-A- 4 065 279

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EP 0 283 045 B1

Description

This invention relates to a scroll type compressor and more particularly, to a motor driven scroll compressor having the compression and drive mechanisms within a hermetically sealed container.

Scroll type fluid displacement apparatus are well known in the prior art. For example, U.S. Patent No. 801,182 issued to Creux discloses such an apparatus which includes two scrolls, each having a circular end plate and a spiroidal or involute spiral element. The scrolls are maintained angularly and radially offset so that both spiral elements interfit to form a plurality of line contacts between their spiral curved surfaces to thereby seal off and define at least one pair of fluid pockets. The relative orbital motion of the two scrolls shifts the line contacts along the spiral curved surfaces and, as a result, the volume of the fluid pockets increases or decreases, dependent on the direction of the orbital motion. Thus, a scroll type fluid displacement apparatus may be used to compress, expand or pump fluids.

Furthermore, U.S. Patent No. 4,560,330 for example, discloses such a hermetic type scroll compressor which includes a fixed scroll, orbiting scroll, rotation preventing device and driving mechanism in one sealed container.

In this hermetic type scroll compressor, the essentially inseparable container is sealed by welding or other means so that leakage of refrigerant gas from the container is completely prevented.

While the above mentioned hermetic type scroll compressor prevents leakage of refrigerant gas from the container, this hermetic type scroll compressor can hardly be disassembled and reassembled for inspection, and repair or exchange of parts.

It is a primary object of this invention to improve hermetic scroll compressor container to facilitate disassembling and reassembling of a hermetic type scroll compressor by releasably and hermetically securing a first casing and a second casing through the center block to form the hermetically sealed container.

It is another object of this invention to improve hermetic type scroll compressor manufacturing and maintenance efficiencies by assembling a first housing and a second housing of a hermetic type scroll compressor separately so that the first housing, second housing and components therein can be disassembled, reassembled and inspected independently.

It is yet a further object of this invention to provide a releasably hermetic securing mechanism which also provides alignment means for aligning appropriate components within the first casing with appropriate components within the second casing.

US-A-2 331 878 discloses a vane pump, the housing of which is composed of two shells secured together by bolts. An additional closure plate is provided on one of said shells and a tube project through one of these shells. This complicates assembling and disassembling of the device. Moreover, no center block is provided which could serve as support means for the motor or other parts of the device.

These shortcomings are overcome and the above indicated objects are achieved by a scroll type compressor as characterized in claim 1.

Further objects, features and other aspects of this invention will be understood from the detailed description of the preferred embodiment of this invention with reference to the annexed drawings.

Figure 1 is a vertical longitudinal sectional view of a hermetic type scroll compressor in accordance with one embodiment of this invention.

Figure 2 is a vertical longitudinal sectional view of a hermetic type scroll compressor in accordance with another embodiment of this invention.

Figure 1 depicts a hermetic type scroll refrigerant compressor 1 in accordance with a first embodiment of the present invention. Compressor 1 includes first cup shaped casing 10, second cup shaped casing 20 and center block 30 which is attached to first cup shaped casing 10 and second cup shaped casing 20. Opening or bore 31 is formed in the center of center block 30 for receiving drive shaft 11. Radial projection 301 is formed in the inner peripheral surface of opening 31. Drive shaft 11 is rotatably supported in opening 31 by bearing 33. Bearing 33 firmly fits in opening 31. Outer ring 33a of bearing 33 is stopped at a rear end surface of radial projection 301. Nut 34 is screwed on drive shaft 11 and faces one end surface of inner ring 33b of bearing 33. Flange 111 located at one end of drive shaft 11 faces the other end surface of inner ring 33b of bearing 33. Axial motion of drive shaft 11 is thereby prevented by flange 111 and nut 34. Rotor 40a of motor 40 surrounds drive shaft 11. Rotor 40a may be firmly inserted over drive shaft 11.

Fixed scroll 50 includes circular end plate 51 and wrap or spiral elements 52 affixed to or extending from one end surface of end plate 51. Fixed scroll 50 is fixed within the inner chamber of first cup shaped casing 10 by screws 11 screwed into end plate 51 from outside of first cup shaped casing 10. Seal ring 11b is located between an inner surface of screw flange 11a and the outer end surface of first cup shaped casing 10 to seal the connection therebetween. Circular end plate 51 of fixed scroll 50 partitions the inner chamber of first cup shaped casing 10 into two chambers, such as front chamber 18 and rear chamber 19.

Orbiting scroll 60 is disposed at the rear end side of center block 30 through later mentioned rotation preventing/thrust bearing device 45. Orbiting scroll 60 includes circular end plate 61 and wrap or spiral element 62 affixed to or extending from one end surface of circular end plate 61. Annular projection 16 is formed opposite the surface of circular end plate 61 from which spiral element 62 extends. Bearing 16d is dis-

posed within the inner peripheral wall of the annular projection 16.

Bushing 115 is attached to one end of drive shaft 11 at a radial offset through pin member 115b. Bushing 115 is inserted into annular projection 18 of orbiting scroll 60. Orbiting scroll 60 is rotatably supported by bushing 118 through bearing 16d placed on the outer peripheral surface of bushing 115.

Rotating preventing/thrust bearing device 45 is placed between the rear end surface of center block 30 and the end surface of circular end plate 61. Rotation preventing/thrust bearing device 45 includes fixed ring 451 attached on the axial end surface of annular projection 302 which is formed in the rear end surface of center block 30, orbiting ring 452 attached on the end surface of circular end plate 61, and a plurality of bearing elements, such as balls 453, placed between pockets 451a, 452a formed by rings 451, 452. The rotation of orbiting scroll 60 during orbital motion is prevented by the interaction of balls 453 with rings 451, 452. Also, the axial thrust load from orbiting scroll 60 is supported on center block 30 through balls 453. While orbiting scroll 60 orbits, the rotation of orbiting scroll 60 is prevented by rotation preventing/thrust bearing device 45.

In this situation, spiral element 62 of orbiting scroll 60 interfits spiral element 52 of fixed scroll 50 at an annular offset of 180° and at a predetermined radial offset. Spiral elements 62 and 52 define at least one pair of sealed off fluid pockets between their interfitting surfaces.

Radial projection 303 formed in the outer peripheral surface of center block 30 is fixed to the axial end surface of first cup shaped casing 10 by screws 12. Seal ring 12a is disposed within circumferential groove 12b of annular projection 302 to form a seal between the inner wall of first cup shaped casing 10 and the outer peripheral surface of annular projection 302.

The other end of drive shaft 11 is also rotatably supported by supporting block (rear bearing unit) 70 through bearing 71. Stator 40b of motor 40 is held firmly between center block 30 and rear bearing unit 70. Rear bearing unit 70 is fixed to center block 30 by screws 13 screwed into center block 30 from the rear end of rear bearing unit 70. Therefore, stator 40b is held firmly between center block 30 and rear bearing unit 70. The inner peripheral surface of stator 40b and the outer peripheral surface of rotor 40a face each other.

Rear bearing unit 70 and motor 40 are covered by second cup shaped casing 20. Flange 21a formed at opening end 21 of second cup shaped casing 20 is fixed to radial projection 303 of center block 30 by screws 14. Seal ring 14a is disposed within a circular groove 14b of flange 21a to form a seal between the front end surface of radial projection 303 and an axial end surface of flange 21a.

Wires 411 from stator 40b are connected with terminals 412a. Terminals 412a are connected to an external electrical source (not shown) through a switch (also not shown). Hermetic seal base 412 is insulated from terminals 412a and fixed to projection 413 which is formed on side surface of second cup shaped casing 20 by screws 414. Seal ring 414a is disposed within a circular groove 414b of projection 413 to form a seal between the rear end surface of hermetic seal base 412 and the axial end surface of projection 413.

By turning on the motor 40, a magnetic field of stator 40b is generated so that rotor 40a begins rotation, thereby rotating drive shaft 11. This rotation is transferred to orbiting scroll 60 through bushing 115. Orbiting scroll 60 begins orbital motion due to rotation prevention/thrust bearing device 45. Refrigerant gas is introduced to inner chamber 25 of second cup shaped casing 20 through inlet port 20c which is formed at the side wall of second cup shaped casing 20, and flows through front chamber 18 of first cup shaped casing 10 through bearing 33 and then through rotation preventing/thrust bearing device 45. The refrigerant gas in the front chamber is taken into the sealed fluid pockets between the fixed scroll and orbiting scroll, then moves toward the center of the spiral wraps during the orbital motion of the orbiting scroll with a resultant volume reduction and compression, and is discharged to rear chamber 19 as through hole 56 and one-way valve 56c. Discharged gas in the rear chamber then flows to an external fluid circuit (not shown) through outlet port 10c.

Referring to Figure 2, hermetic type scroll refrigerant compressor 1 is shown in accordance with another embodiment of the present invention. The same construction is accorded like numerals as that shown in Figure 1. The description of that constructions is substantially omitted to simplify the description herein.

Orbiting scroll 60 interfits fixed scroll 50. Annular projection 16 is formed opposite the surface of circular end plate 61 from which spiral element 62 is extended. Bearing 16d is disposed within the inner peripheral wall of the annular projection 16. A first center block 310 having central opening or bore 311 is disposed adjacent to rotation preventing/thrust bearing device 45. The first center block 310 is releasably and hermetically secured fixed to an axial end surface of first cup shaped casing 10 by screws 12. Seal ring 12a is disposed within a circumferential groove 12b of annular projection 312 formed at the rear end surface of the center block 310 to form a seal between the inner wall of the first cup shaped casing 10 and the outer peripheral surface of annular projection 312. A first housing 100 includes the first center block 310 and the first cup shaped casing 10 having fixed scroll 50, orbiting scroll 60 and rotation preventing/thrust bearing device 45 therein. Compression

mechanism section 110 comprises a first center block 310 and the construction to the right thereof as shown in Figure 2.

Second center block 320 rotatably supports drive shaft 11 in center block central opening or bore 321 through bearing 33. One end of drive shaft 11 is rotatably supported by rear bearing unit 70 through bearing 71. Stator 40b of motor 40 is held between the second center block 320 and rear bearing unit 70. Rear bearing unit 70 is releasably secured to the second center block 320 by screws 13. Thus, driving mechanism section 120 is to the left of first center block 310 as shown in Figure 2.

The second center block 320 is positioned firmly within second cup shaped casing 20 and against ridge 323 formed in the inner wall of the second cup shaped casing 20. A second housing 200 includes the driving mechanism section 120 and the second cup shaped casing 20. Bushing 115 is attached to one end of drive shaft 11 at a radial offset through pin member 115b.

The first housing 100 and the second housing 200 are fitted together so that bushing 115 is inserted into annular projection 16 of circular end plate 61. Drive shaft 11 is attached to orbiting scroll at a radial offset. Flange 21a formed at opening end 21 of second cup shaped casing 20 is releasably and hermetically secured to radial projection 313 of first center block 310 by screws 14 and seal ring 14a. Seal ring 14a is disposed within a circular groove 14b of flange 21a to form a seal between the front end surface of radial projection 313 and the axial end surface of flange 21a. Annular projection 322 and the recess defined by projection 312 form an alignment mechanism for aligning drive shaft 11 with the orbiting scroll when first housing 100 and second housing 200 engage first center block 310. As a result, hermetically sealed compressor housing 400 is formed.

Although illustrative embodiments of the invention have been described in detail with respect to the accompanying drawings, it is to be understood that the invention is not limited to those precise embodiments, and that various changes and modifications may be effected therein by one skilled in the art without departing from the scope of the invention.

Claims

1. A scroll type compressor (1) within a hermetically sealed housing, the compressor comprising a fixed scroll (50) fixedly disposed within said housing and having and end plate (51) from which a first wrap (52) extends into the interior of said housing, an orbiting scroll (60) having an end plate (61) from which a second wrap (62) extends, said first and second wraps (52, 62) interfitting at an angular and radial offset to form a plurality of line contacts which define at least one pair of sealed off fluid pockets, a driving mechanism including a motor (40) supported in said housing, said driving mechanism being operatively connected to said orbiting scroll (60) to effect the orbital motion of said orbiting scroll (60), rotation preventing means (45) for preventing the rotation of said orbiting scroll (60) during orbital motion whereby the volume of the fluid pockets changes during orbital motion to compress the fluid in the pockets, characterized by said housing including a first shell (10), a separate second shell (20) and a center block (30), said center block (30) having a peripheral portion (303) extending around the periphery of the compressor (1), said first shell (10) being releasably and hermetically secured to a first side of said peripheral portion (303) of said center block (30), and said second shell (20) being releasably and hermetically secured to a second side of said peripheral portion (303) of said center block (30).

2. The scroll type compressor (1) according to claim 1, characterized by said center block (30) being provided with an interior portion (301, 302) located inwardly of the peripheral portion, a portion of said rotation preventing means (45) being connected to a first side (302) of said interior portion of said center block (30), one end portion of said drive shaft (11) being rotatably supported in a second opposite side (301) of said interior portion of said center block (30), a rear bearing support block (70) releasably connected to said second side (301) of said interior portion of said center block (30), the other end portion of said drive shaft (11) being supported by said rear bearing support block.

3. The scroll type compressor (1) according to claim 1 or 2, characterized in that said center block (30) is formed as a single piece element.

4. The scroll type compressor (1) according to claim 1 or 2, characterized in that said center block (30) is formed as a single piece element having said peripheral portion (303) including receiving releasable fastening means (12, 14) for securing said first and second shells (10, 20) to said center block (30) and an interior portion (301, 302) for rotatably supporting a portion of said drive mechanism.

5. The scroll type compressor (1) according to claim 1 or 2, characterized in that said center block (30) is formed of a first block (310) and a second separate block (320), said first block (310) including a peripheral portion (313) and said first side of said interior portion of said center block (30), and said second block (320) including said second side of said interior portion of said center block (30).

6. The scroll type compressor (1) according to claim 1 or 2, characterized in that said center block (30) is formed of a first block (310) and a second separate block (320), said first block (310) having a peripheral portion (313) for receiving releasable fastening means (12, 14) for securing said first and second shells (10, 20) to said center block (30), said

second block (320) having an interior portion for rotatably supporting a portion of said drive mechanism.

7. The scroll type compressor (1) according to one of claims 1 to 6, characterized in that at least a portion of said fastening means (12, 14) securing one of said first and second shells (10, 20) to said center block element (30) is disposed within the other of said first and second shells (10, 20).

8. The scroll type compressor (1) according to one of claims 1 to 6, characterized in that at least a portion of said fastening means (12) securing said first shell (10) to said center block (30) is disposed within said second shell (20).

9. The scroll type compressor (1) according to one of claims 5 to 8, characterized in that said second block (320) has an annular projection (322) concentrically disposed about said drive shaft (11), and said first block (310) comprising an annular portion (312) concentrically disposed about said drive shaft (11) and having an annular recess in the wall thereof, said recess having an abutment surface substantially normal to the drive shaft center line, the annular projection (322) and recess cooperating to form an alignment means for aligning said drive shaft (11) with the orbiting scroll (60).

10. The scroll type compressor (1) according to one of claims 5 to 9, characterized in that the first block (310) and second block (320) each have a surface which extends radially outwardly from said first block annular portion and said second block annular projection respectively, and each surface is frustoconical.

11. The scroll type compressor (1) according to one of claims 1 to 10, characterized in that said scrolls (50, 60) are surrounded by said first shell (10) and said motor (40) including a rotor (40a) and a station (40b) are surrounded by said second shell (20).

12. The scroll type compressor (1) according to one of claims 1 to 11, characterized in that said fixed scroll (50) is releasably and hermetically secured to said first shell (10).

13. The scroll type compressor (1) according to one of claims 1 to 12, characterized by each shell (10, 20) being cup-shaped.

Revendications

1. Compresseur (1) du type à spirales enfermé dans un carter hermétiquement fermé, le compresseur comprenant une spirale fixe (50) montée en position fixe à l'intérieur dudit carter et possédant un flasque (51) sur lequel fait saillie un premier enroulement de spirale (52) qui pénètre à l'intérieur dudit carter, une spirale à mouvement orbital (60) possédant un flasque (61) sur lequel fait saillie un second enroulement de spirale (62), lesdites première et seconde spirales (52, 62) étant emboîtées l'une dans l'autre avec un certain décalage angulaire et radial pour former une pluralité de contacts linéaires qui définissent au moins une paire de poches à fluide enfermées, un mécanisme d'entraînement comprenant un moteur (40) supporté dans ledit carter, ledit mécanisme d'entraînement étant relié fonctionnellement à ladite spirale à mouvement orbital (60) pour déterminer un mouvement orbital de ladite spirale à mouvement orbital (60), des moyens d'interdiction de la rotation (45) servant à empêcher ladite spirale à mouvement orbital (60) de tourner pendant son mouvement orbital, de sorte que le volume des poches à fluide varie pendant le mouvement orbital pour comprimer le fluide contenu dans les poches, caractérisé en ce que ledit carter comprend une première coquille (10), une seconde coquille (20) séparée de la première et un bloc central (30), ledit bloc central (30) possédant une partie périphérique (303) qui s'étend sur le tour de la périphérie du compresseur, ladite première coquille (10) étant fixée de façon démontable et à joint étanche à un premier côté de ladite partie périphérique (303) dudit bloc central (30), et ladite seconde coquille (20) étant fixée de façon démontable et à joint étanche à un second côté de ladite partie périphérique (303) dudit bloc central (30).

2. Compresseur (1) du type à spirales selon la revendication 1, caractérisé en ce que ledit bloc central (30) est muni d'une partie intérieure (301, 302) située à l'intérieur par rapport à la partie périphérique, une partie desdits moyens d'interdiction de la rotation (45) étant reliée à un premier côté (302) de ladite partie intérieure dudit bloc central (30), une partie d'extrémité dudit arbre d'entraînement (11) étant montée rotative dans un second côté opposé (301) de ladite partie intérieure dudit bloc central (30), et par un bloc (70) support de palier arrière relié de façon démontable audit second côté (301) de ladite partie intérieure dudit bloc central (30), l'autre partie d'extrémité dudit arbre d'entraînement (11) étant supportée par ledit bloc support de palier arrière.

3. Compresseur (1) du type à spirales selon la revendication 1 ou 2, caractérisé en ce que ledit bloc central (30) est formé d'un élément en une seule pièce.

4. Compresseur (1) du type à spirales selon la revendication 1 ou 2, caractérisé en ce que ledit bloc central (30) est formé d'un élément en une seule pièce qui comprend ladite partie périphérique (303) recevant des moyens de fixation démontables (12, 14) servant à fixer lesdites première et seconde coquilles (10, 20) audit bloc central (30) et une partie intérieure (301, 302) servant à supporter libre en rotation une partie dudit mécanisme d'entraînement.

5. Compresseur (1) du type à spirales selon la revendication 1 ou 2, caractérisé en ce que ledit bloc central (30) est formé d'un premier bloc (310) et d'un second bloc (320) séparé du premier, ledit premier bloc (310) comprenant une partie périphérique (313)

et ledit premier côté de ladite partie intérieure dudit bloc central (30) et ledit second bloc (320) comprenant ledit deuxième côté de ladite partie intérieure du bloc central (30).

6. Compresseur (1) du type à spirales selon la revendication 1 ou 2, caractérisé en ce que ledit bloc central (30) est formé d'un premier bloc (310) et d'un second bloc (320), séparé du premier, ledit premier bloc (310) possédant une partie périphérique (313) destinée à recevoir des moyens de fixation démontables (12,14) qui servent à fixer lesdites première et seconde coquille (10, 20) audit bloc central (30), ledit second bloc (320) possédant une partie intérieure qui sert à supporter libre en rotation une partie dudit mécanisme d'entraînement.

7. Compresseur (1) du type à spirales selon l'une des revendications 1 à 6, caractérisé en ce qu'au moins une partie desdits moyens de fixation (12, 14) qui fixent l'une desdites première et seconde coquilles (10, 20) audit bloc central (30) sont disposés à l'intérieur de l'autre desdites première et seconde coquilles (10, 20).

8. Compresseur (1) du type à spirales selon une des revendications 1 à 6, caractérisé en ce qu'au moins une partie desdits moyens de fixation (12) qui fixent ladite première coquille (10) audit bloc central (30) sont disposés à l'intérieur de ladite seconde coquille (20).

9. Compresseur (1) du type à spirales selon une des revendications 5 à 8, caractérisé en ce que ledit second bloc (320) possède une saillie annulaire (322) disposée concentriquement autour dudit arbre d'entraînement (11) et ledit premier bloc (310) comprend une partie annulaire (312) disposée concentriquement autour dudit arbre d'entraînement (11) et présente un évidement annulaire dans sa paroi, ledit évidement possédant une surface de butée sensiblement perpendiculaire à l'axe de l'arbre d'entraînement, la saillie annulaire (322) et l'évidement coopérant pour former des moyens d'alignement servant à aligner ledit arbre d'entraînement (11) sur la spirale à mouvement orbital (60).

10. Compresseur (1) du type à spirales selon une des revendications 5 à 9, caractérisé en ce que le premier bloc (310) et le second bloc (320) ont chacun une surface qui fait saillie radialement vers l'extérieur, l'une sur ladite partie annulaire du premier bloc et l'autre sur ladite partie annulaire du second bloc, et en ce que chaque surface est tronconique.

11. Compresseur (1) du type à spirales selon une des revendications 1 à 10, caractérisé en ce que lesdites spirales (50, 60) sont entourées par ladite première coquille (10) et en ce que ledit moteur (40), qui comprend un rotor (40a) et un stator (40b) est entouré par ladite seconde coquille (20).

12. Compresseur (1) du type à spirales selon une des revendications 1 à 11, caractérisé en ce que ladite spirale fixe (50) est fixée à ladite première coquille (10) de façon démontable et à joint étanche.

13. Compresseur (1) du type à spirales selon une des revendications 1 à 12, caractérisé en ce que chaque coquille (10, 20) est en forme de godet.

Patentansprüche

1. Spiraltyp-Kompressor (1) innerhalb eines hermetisch abgeschlossenen Gehäuses, mit einer fest in dem Gehäuse vorgesehenen festen Spirale (50) mit einer Endplatte (51), von der sich ein erstes Spiralelement (52) in das Innere des Gehäuses erstreckt, einer umlaufenden Spirale (60) mit einer Endplatte (61), von der sich ein zweites Spiralelement (62) erstreckt, wobei das erste und zweite Spiralelement (52, 62) mit einer winkelmäßigen und radialen Versetzung zum Bilden einer Mehrzahl von Linienkontakten, die mindestens ein Paar von abgeschlossenen Fluidtaschen abgrenzen, ineinandergreifen, einem Antriebsmechanismus mit einem in dem Gehäuse getragenen Motor (40), wobei der Antriebsmechanismus mit der umlaufenden Spirale (60) zum Bewirken der umlaufenden Bewegung der umlaufenden Spirale (60) betriebsmäßig verbunden ist, einer Rotationsverhinderungsvorrichtung (45) zum Verhindern der Rotation der umlaufenden Spirale (60) während der umlaufenden Bewegung, wodurch sich das Volumen der Fluidtaschen während der umlaufenden Bewegung zum Komprimieren des Fluids in den Taschen ändert, dadurch gekennzeichnet, daß das Gehäuse eine erste Schale (10), eine getrennte zweite Schale (20) und einen Mittelblock (30) aufweist, daß der Mittelblock (30) einen sich um den Umfang des Kompressors (1) erstreckenden Umfangsabschnitt (303) aufweist, daß die erste Schale (10) lösbar und hermetisch dicht an einer ersten Seite des Umfangsabschnittes (303) des Mittelblockes (30) befestigt ist und daß die zweite Schale (20) lösbar und hermetisch dicht an einer zweiten Seite des Umfangsabschnittes (303) des Mittelblockes (30) befestigt ist.

2. Spiraltyp-Kompressor (1) nach Anspruch 1, dadurch gekennzeichnet, daß der Mittelblock (30) mit einem innerhalb des Umfangsabschnittes angeordneten inneren Abschnitt (301, 302) versehen ist, daß ein Abschnitt der Rotationsverhinderungsvorrichtung (45) mit einer ersten Seite (302) des inneren Abschnittes des Mittelblockes (30) verbunden ist, daß ein Endabschnitt der Antriebswelle (11) drehbar in einer zweiten entgegengesetzten Seite (301) des inneren Abschnittes des Mittelblockes (30) getragen ist, daß ein hinterer Lagertragblock (70) lösbar mit der zweiten Seite (301) des inneren Abschnittes des Mittelblockes (30) verbunden ist, daß der andere Endabschnitt der Antriebswelle (11) von dem hinteren Lagertragblock getragen ist.

3. Spiraltyp-Kompressor (1) nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß der Mittelblock

(30) als ein einstückiges Element gebildet ist.

4. Spiraltyp-Kompressor (1) nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß der Mittelblock (30) als ein einstückiges Element gebildet ist, das einen Umfangsabschnitt (303) aufweist, der eine lösbare Befestigungsvorrichtung (12, 14) zum Befestigen der ersten und zweiten Schale (10, 20) an dem Mittelblock (30) aufnimmt und einen inneren Abschnitt (301, 302) zum drehbaren Tragen eines Abschnittes des Antriebsmechanismus enthält.

5. Spiraltyp-Kompressor (1) nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß der Mittelblock (30) als ein erster Block (310) und ein zweiter getrennter Block (320) gebildet ist, daß der erste Block (310) einen Umfangsabschnitt (313) und die erste Seite des inneren Abschnittes des Mittelblockes (30) enthält, und daß der zweite Block (320) die zweite Seite des inneren Abschnittes des Mittelblockes (30) enthält.

6. Spiraltyp-Kompressor (1) nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß der Mittelblock (30) aus einem ersten Block (310) und einem zweiten getrennten Block (320) gebildet ist, daß der erste Block (310) einen Umfangsabschnitt (313) zum Aufnehmen einer lösbaren Befestigungsvorrichtung (12, 14) zum Befestigen der ersten und zweiten Schale (10, 20) an dem Mittelblock (30) aufweist, daß der zweite Block (320) einen inneren Abschnitt zum drehbaren Tragen eines Abschnittes des Antriebsmechanismus aufweist.

7. Spiraltyp-Kompressor (1) nach einem der Ansprüche 1 bis 6, dadurch gekennzeichnet, daß mindestens ein Abschnitt der Befestigungsvorrichtung (12, 14), der eine der ersten und zweiten Schale (10, 20) an dem Mittelblockelement (30) befestigt, innerhalb der anderen der ersten und zweiten Schale (10, 20) vorgesehen ist.

8. Spiraltyp-Kompressor (1) nach einem der Ansprüche 1 bis 6, dadurch gekennzeichnet, daß mindestens ein Abschnitt der Befestigungsvorrichtung (12), der die erste Schale (10) an dem Mittelblock (30) befestigt, in der zweiten Schale (20) vorgesehen ist.

9. Spiraltyp-Kompressor (1) nach einem der Ansprüche 5 bis 8, dadurch gekennzeichnet, daß der zweite Block (320) einen konzentrisch um die Antriebswelle (11) vorgesehenen ringförmigen Vorsprung (322) aufweist und daß der erste Block (310) einen konzentrisch um die Antriebswelle (11) vorgesehenen ringförmigen Abschnitt (312) aufweist, der eine ringförmige Ausnehmung in seiner Wand aufweist, wobei die Ausnehmung eine im wesentlichen senkrecht zu der Antriebswellenmittellinie stehende Anschlagsoberfläche aufweist, der ringförmige Vorsprung (322) und die Ausnehmung zum Bilden einer Ausrichtevorrichtung zum Ausrichten der Antriebswelle (11) mit der umlaufenden Spirale (60) zusammenwirken.

10. Spiraltyp-Kompressor (1) nach einem der Ansprüche 5 bis 9, dadurch gekennzeichnet, daß sowohl der erste Block (310) als auch der zweite Block (320) eine Oberfläche aufweisen, die sich radial nach außen von dem ersten ringförmigen Blockabschnitt bzw. dem zweiten ringförmigen Blockabschnitt erstreckt, und daß jede Oberfläche kegelstumpfartig ist.

11. Spiraltyp-Kompressor (1) nach einem der Ansprüche 1 bis 10, dadurch gekennzeichnet, daß die Spiralen (50, 60) von der ersten Schale (10) umgeben sind und daß der Motor (40) mit einem Rotor (40a) und einem Stator (40b) von der zweiten Schale (20) umgeben sind.

12. Spiraltyp-Kompressor (1) nach einem der Ansprüche 1 bis 11, dadurch gekennzeichnet, daß die feste Spirale (50) lösbar und hermetisch dicht an der ersten Schale (10) befestigt ist.

13. Spiraltyp-Kompressor (1) nach einem der Ansprüche 1 bis 12, dadurch gekennzeichnet, daß jede Schale (10, 20) becherförmig ist.

FIG. 1

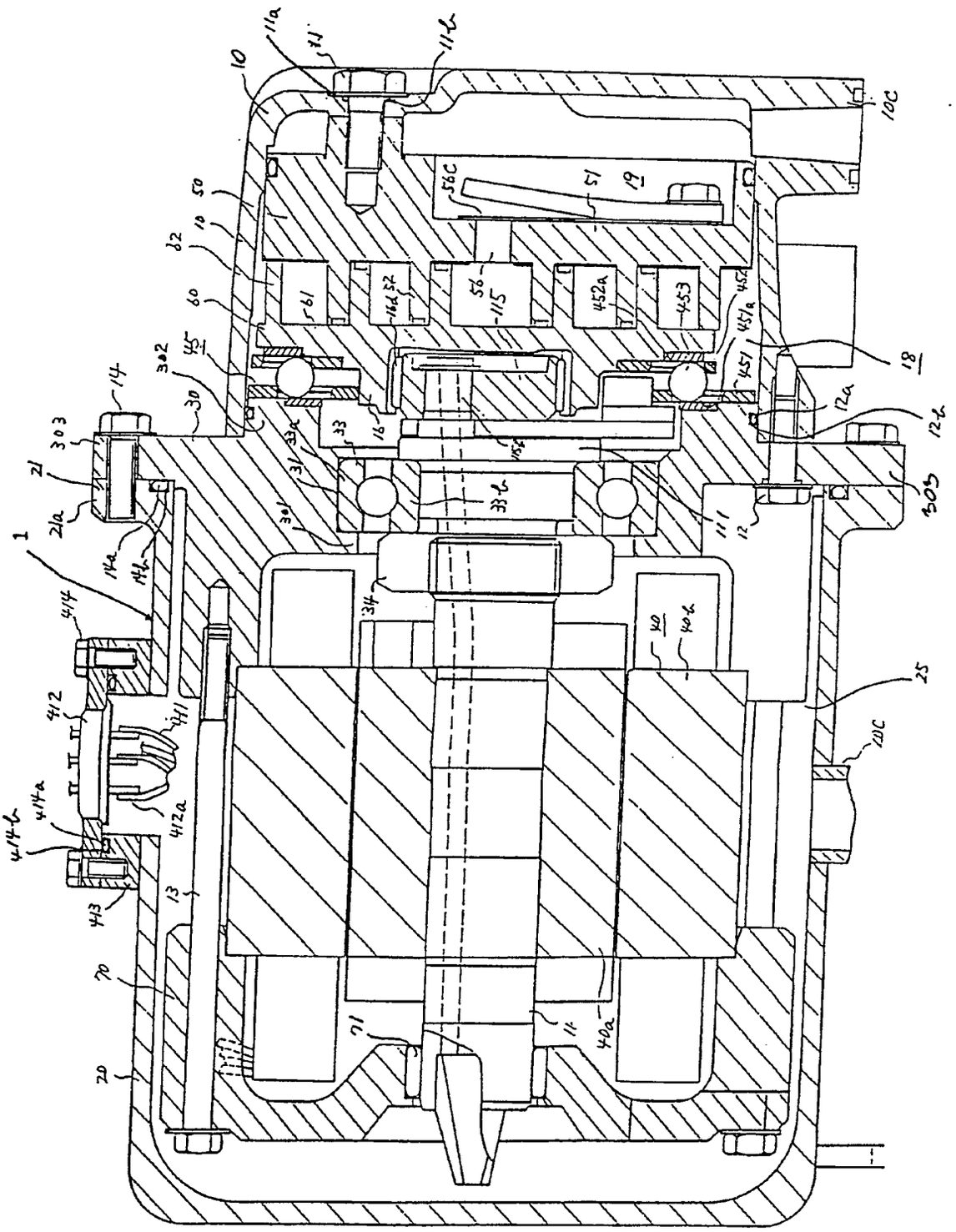

FIG. 2