the drawings, the cylindrical portion 23 has the cylindrical shape having sealed end portions. The rotor 3 is provided in the cylindrical portion 23 in a state that the rotor 3 is capable of rotating in a clockwise direction. The rotor 3 can hermetically separate the degassing chamber 22 from the outlet port 25. This makes it possible to easily and reliably decompress the degassing chamber 22. In this regard, an upper side of the housing 2 is hermitically sealed with the kneaded composition stored in the kneading apparatus 100.

[0048] The rotor 3 has plural (in the configuration shown in the drawings, four) partitioning plates 31 for partitioning an inside of the cylindrical portion 23 into plural spaces (in the configuration shown in the drawings, spaces 231, 232, 233 and 234). In the configuration shown in the drawings, each of the partitioning plates 31 is arranged at equal (angle) intervals (in the configuration shown in the drawings, 90 degree intervals). The rotor 3 rotates by driving of a motor (driving force) not shown in the drawings. Due to the rotation of the rotor 3, the kneaded composition is delivered to the outlet port 25 by the partitioning plates 31.

[0049] In the degassing apparatus 300, a gap is formed between an inner peripheral surface of the cylindrical portion 23 and a distal end portion of the partitioning plate 31. This makes it possible to prevent the partitioning plate 31 from scratching the inner peripheral surface of the cylindrical portion 23 while the rotor 3 rotates. As a result, it is possible to prevent pulverized materials constituted of the same material as the partitioning plate 31 or the cylindrical portion 23 from being mixed into the resin

formed in the cylindrical portion 23 constitutes a space of the degassing chamber 26.

[0077] Further, the conduit line 43 of the decompression mechanism 4 is connected to the cylindrical portion 23, namely a right side of the degassing chamber 26 (in communicating with the inside of the degassing chamber 22).

[0078] Due to the rotation of the rotor 3, each of the four spaces 231-234 formed in the cylindrical portion 23 is rotated. The space of the four spaces 231-234 in communicating with the conduit line 43 (in the configuration shown in Fig. 3, space 232), is configured to be decompressed through the conduit line 43 to thereby be changed into the decompression state.

[0079] As shown in Fig. 3, in this degassing apparatus 1, the kneaded composition introduced from the inlet port 24 of the degassing apparatus 1 is delivered to the lower side of the degassing apparatus 1 through the conduit line 21 by its own weight. Next, the kneaded composition is stored in the space 231 formed in the cylindrical portion 23 in communicating with the conduit line 21.

[0080] From a state shown in Fig. 4 to a state shown in Fig. 5, the degassing apparatus has a non-communicating state in which the space 231 does not communicate with the inlet port 24 and the outlet port 25. During the non-communicating state, the kneaded composition stored in the space 231 is degassed. According to the degassing apparatus 1 of the second embodiment, the same effect as the first embodiment described above can be obtained.

What is claimed is:

1. A degassing apparatus comprising:

a housing having an inlet port from which a material that has been kneaded is introduced, a degassing chamber in which the kneaded material is degassed and an outlet port from which the kneaded material that has been degassed is discharged;

a decompression device that decompresses the degassing chamber; and

a separating device that hermetically separates the outlet port from the degassing chamber,

wherein in a state that the outlet port is hermetically separated from the degassing chamber by the separating device, and then the degassing chamber is decompressed by the decompression device, the material introduced into the degassing chamber is degassed.

2. The degassing apparatus as claimed in claim 1, wherein the housing further has a cylindrical portion which is formed into cylindrical shape and provided between the inlet port and the outlet port,

wherein the separating device is rotatably provided in the cylindrical portion and has a rotor having plural partitioning plates which partition an inside of the cylindrical portion into plural spaces, and

wherein the material is delivered to the outlet port with the partitioning plates by rotation of the rotor.

3. The degassing apparatus as claimed in claim 2, wherein the degassing chamber is provided between the inlet port and the cylindrical portion.

4. The degassing apparatus as claimed in claim 2, wherein the decompression device has a conduit line which communicates with the degassing chamber and the degassing chamber has the plural spaces of the cylindrical portion, and

wherein each of the plural spaces is allowed to be rotated by the rotation of the rotor, and one space of the plural spaces, which communicates with the conduit line, is decompressed through the conduit line.

5. The degassing apparatus as claimed in claim 4 having a non-communicating state in which the one space does not communicate with the inlet port and the outlet port, wherein the material in the degassing chamber is degassed in the non-communicating state.

6. The degassing apparatus as claimed in claim 2, wherein a gap is formed between an inner peripheral surface of the cylindrical portion and a distal end portion of the partition plate and a width of the gap is set to be equal to or less than 0.2 mm.

7. The degassing apparatus as claimed in claim 2, wherein at least a surface of the rotor is constituted of a nonmetallic material.

8. The degassing apparatus as claimed in claim 2, wherein at least an inner peripheral surface of the cylindrical portion is constituted of a nonmetallic material.

9. The degassing apparatus as claimed in claim 1, wherein a retention time of the material in the degassing apparatus is equal to or less than 1 minute.

10. The degassing apparatus as claimed in claim 1

wherein when the degassing chamber is decompressed by the decompressing device, the pressure in the degassing chamber is set to be equal to or less than 60 kPa.

11. The degassing apparatus as claimed in claim 1, wherein the inlet port is connected to a discharge passage of a kneading device in which the material is kneaded.

12. The degassing apparatus as claimed in claim 1, wherein the material includes a resin and fine particles.

the drawings, the cylindrical portion 23 has the cylindrical shape having sealed end portions. The rotor 3 is provided in the cylindrical portion 23 in a state that the rotor 3 is capable of rotating in a clockwise direction. The rotor 3 can hermetically separate the degassing chamber 22from the outlet port 25. This makes it possible to easily and reliably decompress the degassing chamber 22. In this regard, an upper side of the housing 2 is hermitically sealed with the kneaded composition stored in the kneading apparatus 100.

[0048] The rotor 3 has plural (in the configuration shown in the drawings, four) partitioning plates 31 for partitioning an inside of the cylindrical portion 23 into plural spaces (in the configuration shown in the drawings, spaces 231, 232, 233 and 234). In the configuration shown in the drawings, each of the partitioning plates 31 is arranged at equal (angle) intervals (in the configuration shown in the drawings, 90 degree intervals). The rotor 3 rotates by driving of a motor (driving force) not shown in the drawings. Due to the rotation of the rotor 3, the kneaded composition is delivered to the outlet port 25 by the partitioning plates 31.

[0049] In the degassing apparatus 1, a gap is formed between an inner peripheral surface of the cylindrical portion 23 and a distal end portion of the partitioning plate 31. This makes it possible to prevent the partitioning plate 31 from scratching the inner peripheral surface of the cylindrical portion 23 while the rotor 3 rotates. As a result, it is possible to prevent pulverized materials constituted of the same material as the partitioning plate 31 or the cylindrical portion 23 from being mixed into the resin

formed in the cylindrical portion 23 constitutes a space of the degassing chamber 26.

[0077] Further, the conduit line 43 of the decompression mechanism 4 is connected to the cylindrical portion 23, namely a right side of the degassing chamber 26 (in communicating with the inside of the degassing chamber 26).

[0078] Due to the rotation of the rotor 3, each of the four spaces231-234formed in the cylindrical portion 23 is rotated. The space of the four spaces 231-234 in communicating with the conduit line 43 (in the configuration shown in Fig. 3, space 232), is configured to be decompressed through the conduit line 43 to thereby be changed into the decompression state.

[0079] As shown in Fig. 3, in this degassing apparatus 1, the kneaded composition introduced from the inlet port 24 of the degassing apparatus 1 is delivered to the lower side of the degassing apparatus 1 through the conduit line 21 by its own weight. Next, the kneaded composition is stored in the space 231 formed in the cylindrical portion 23 in communicating with the conduit line 21.

[0080] From a state shown in Fig. 4 to a state shown in Fig. 5, the degassing apparatus has a non-communicating state in which the space 231 does not communicate with the inlet port 24 and the outlet port 25. During the non-communicating state, the kneaded composition stored in the space 231 is degassed. According to the degassing apparatus 1 of the second embodiment, the same effect as the first embodiment described above can be obtained.

Claims

1. A degassing apparatus being configured so as to be connected to a kneading apparatus that kneads a material and has an outlet port from which the material kneaded by the kneading apparatus is discharged, said degassing apparatus comprising:

a housing having an inlet port that communicates with the outlet port of the kneading apparatus in a connecting state that the degassing apparatus is connected to the kneading apparatus so that the material having been kneaded is introduced therefrom, a degassing chamber in which the kneaded material is degassed and an outlet port that is opened to an outside of the degassing apparatus in the connecting apparatus in the connecting state so that the kneaded material having been degassed is discharged to the outside;

a decompression device that decompresses the degassing chamber; and

a separating device that hermetically separates the outlet port of the housing from the degassing chamber,

wherein in a state that the outlet port of the housing is hermetically separated from the degassing chamber by the separating device, and then the degassing chamber is decompressed by the decompression device, the material introduced into the degassing chamber is degassed.

2. The degassing apparatus as claimed in claim 1, wherein the housing further has a cylindrical portion which is formed into cylindrical shape and provided between the inlet port and the outlet port,

wherein the separating device is rotatably provided in the cylindrical portion and has a rotor having plural partitioning plates which partition an inside of the cylindrical portion into plural spaces, and

wherein the material is delivered to the outlet port with the partitioning plates by rotation of the rotor.

3. The degassing apparatus as claimed in claim 2, wherein the degassing chamber is provided between the inlet port and the cylindrical portion.

4. The degassing apparatus as claimed in claim 2, wherein a gap is formed between an inner peripheral surface of the cylindrical portion and a distal end portion of the partition plate and a width of the gap is set to be equal to or less than 0.2 mm.

5. The degassing apparatus as claimed in claim 2, wherein at least a surface of the rotor is constituted of a nonmetallic material.

6. The degassing apparatus as claimed in claim 2, wherein at least an inner peripheral surface of the cylindrical portion is constituted of a nonmetallic material.

7. The degassing apparatus as claimed in claim 1, wherein the degassing apparatus is configured so that a retention time of the material is set to be equal to or less than 1 minute by controlling a driving of the rotor.

8. The degassing apparatus as claimed in claim 1, wherein the degassing apparatus is configured so that the pressure in the degassing chamber is set to be equal to or less than 60 kPa by decompressing the degassing chamber with the decompressing device.

9. The degassing apparatus as claimed in claim 1, wherein the inlet port is connected to a discharge passage of a kneading device in which the material is kneaded.

10. The degassing apparatus as claimed in claim 1, wherein the degassing apparatus is configured so as to use the material including a resin and fine particles.

11. A system of kneading and degassing a material, the system comprising:

a kneading apparatus that kneads the material, the kneading apparatus having an outlet port from which the material kneaded by the kneading apparatus is discharged; and

the degassing apparatus of claim 1 which is connected to the kneading apparatus.

12. A degassing apparatus comprising:

a housing having an inlet port from which a material that has been kneaded is introduced, a degassing chamber having a cylindrical portion formed into cylindrical shape, the degassing chamber in which the kneaded material is degassed, and an outlet port from which the kneaded material that has been degassed is discharged;

a decompression device having a conduit line communicated with the degassing chamber, the decompression device that decompresses an inside of the degassing chamber; and

a separating device rotatably provided in the cylindrical portion and having a

rotor with plural partitioning plates, the plural partitioning plates partitioning an inside of the cylindrical portion into plural spaces, the separating device that hermetically separates the outlet port from the degassing chamber,

wherein each of the plural spaces is allowed to be rotated and the material degassed is delivered to the outlet port with the partitioning plates by a rotation of the rotor,

wherein in a state that the outlet port is hermetically separated from the degassing chamber by the separating device, and then the inside of the degassing chamber including one space of the plural spaces, which is communicated with the conduit line, is decompressed through the conduit line by the decompression device, the material introduced into the degassing chamber is degassed.

13. The degassing apparatus as claimed in claim 12 having a non-communicating state in which the one space does not communicate with the inlet port and the outlet port, wherein the material in the degassing chamber is degassed in the non-communicating state.