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(54) **INTERCHANGEABLE CHAMBER FOR A DEVICE AND A METHOD FOR THE ADDITIVE MANUFACTURING OF A THREE-DIMENSIONAL OBJECT**

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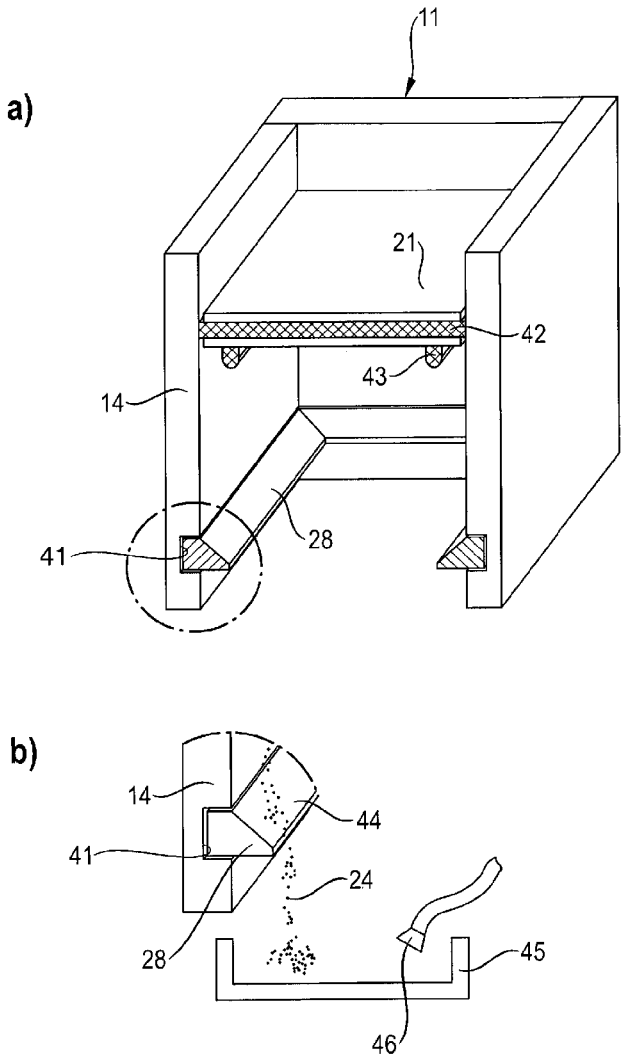
(57) **ABSTRACT**

An interchangeable chamber for a device for manufacturing a three-dimensional object by selectively layer-wise solidifying building material, preferably powdery building material, at locations corresponding to the cross-section of the object to be manufactured in the respective layer, includes a container having an upper edge and a lower edge, a wall and a height-adjustable platform provided in the container, wherein the wall of the container has at its inside a first sealing device which adjoins the platform in a sealing position in such a way that the first sealing device and the platform cooperate for sealing the container towards the lower edge.



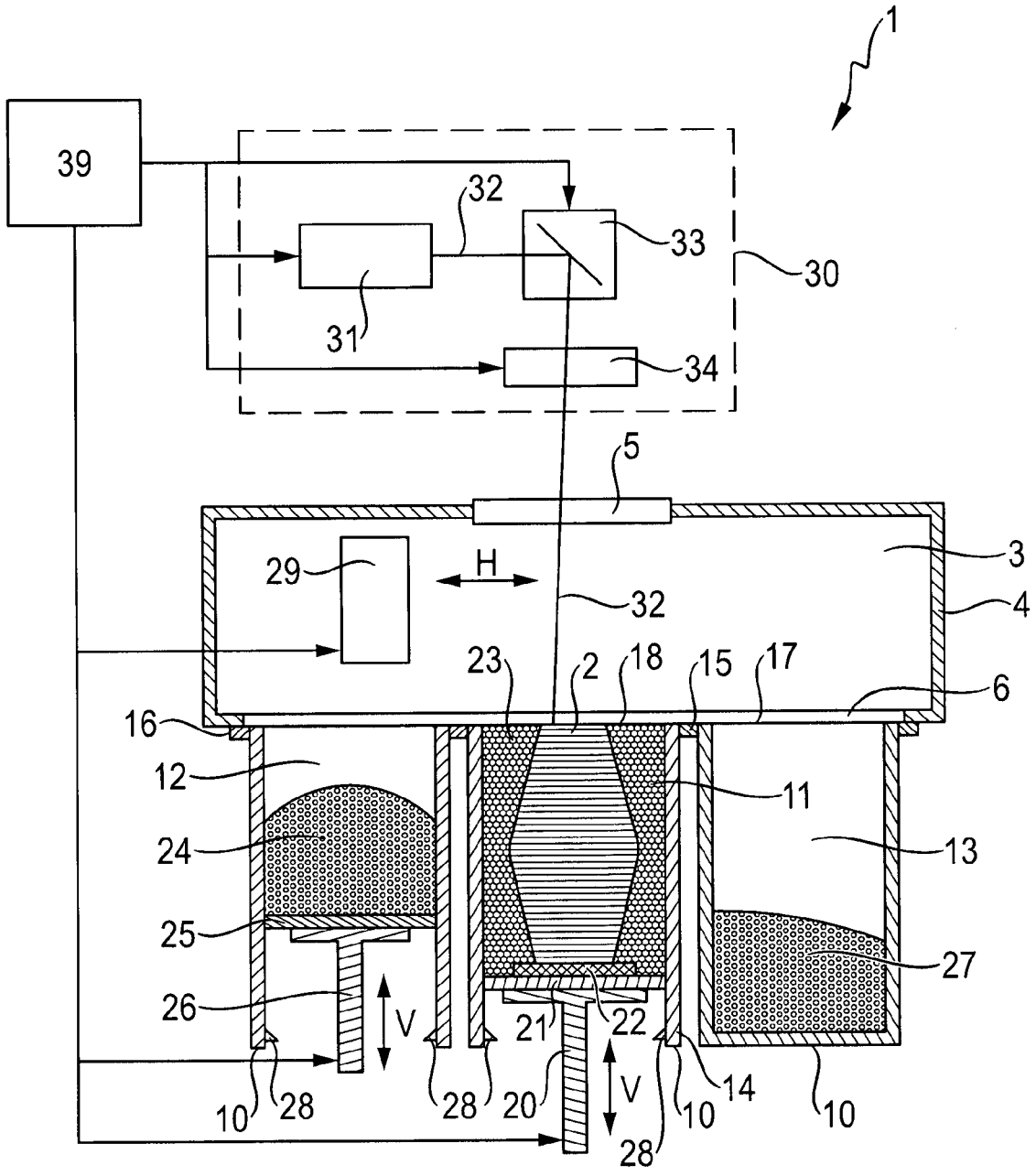

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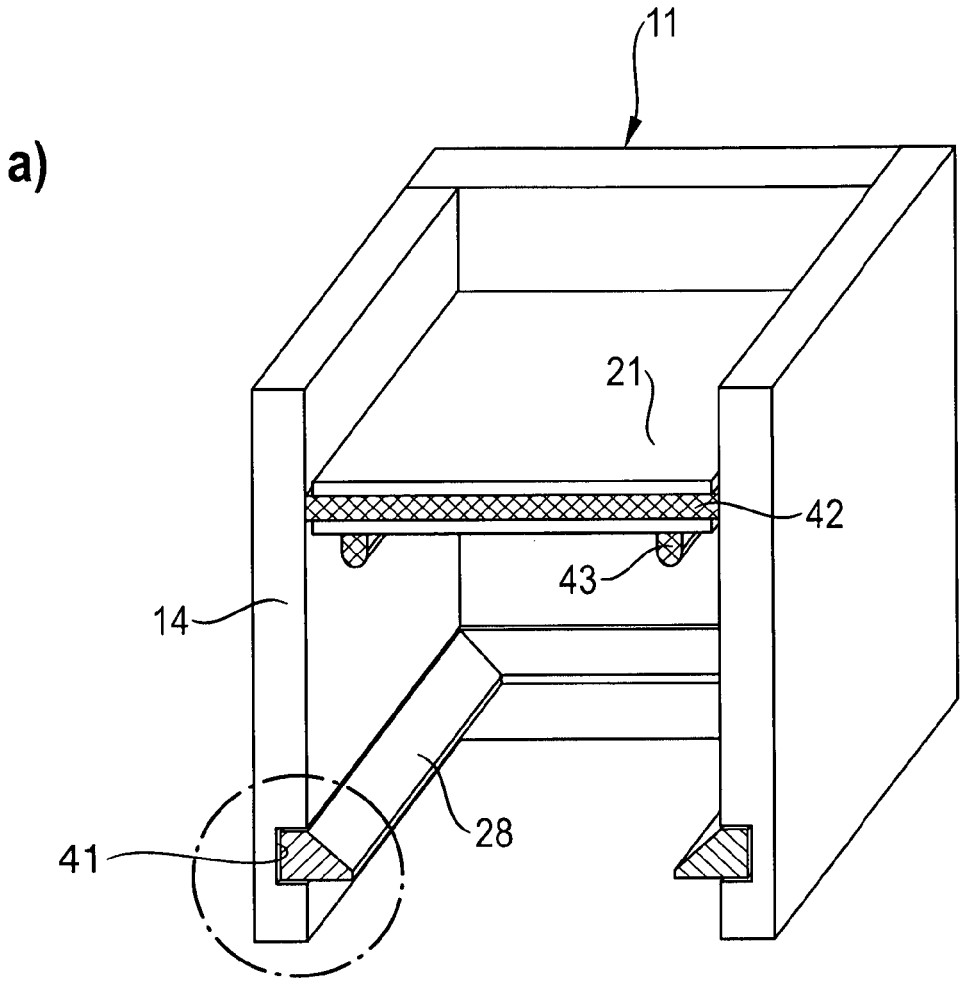
Fig. 1



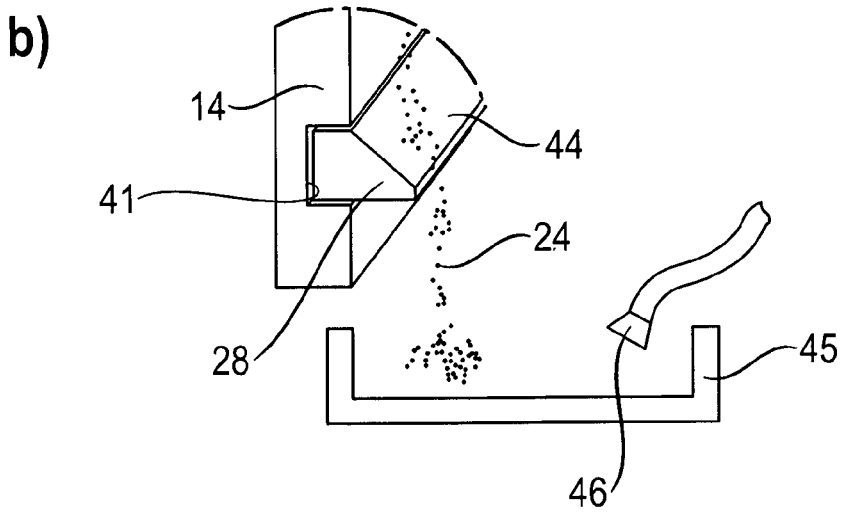


Fig. 2

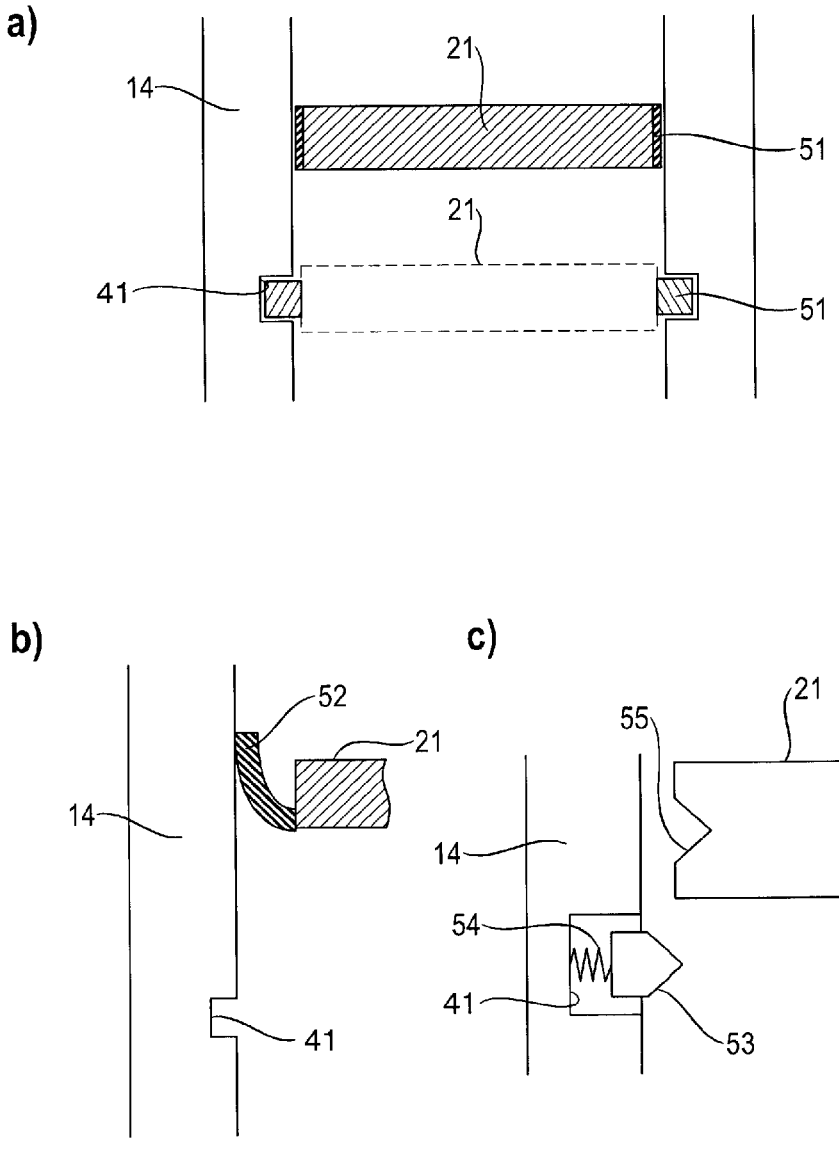


Fig. 3

INTERCHANGEABLE CHAMBER FOR A DEVICE AND A METHOD FOR THE ADDITIVE MANUFACTURING OF A THREE-DIMENSIONAL OBJECT

[0001] The present invention relates to an interchangeable chamber for a device for manufacturing a three-dimensional object by selective layer-by-layer solidification of building material.

[0002] Devices and methods of this kind are used, for example, in rapid prototyping, rapid tooling or additive manufacturing. An example of such a process is known as "selective laser sintering or laser melting". Therein, a thin layer of a powdery building material is repeatedly applied, and the building material is selectively solidified in each layer by selective irradiation of locations corresponding to a cross-section of the object to be manufactured with a laser beam.

[0003] DE 195 14 740 C1 describes a device for manufacturing a three-dimensional object from pulverulent building material comprising a building container in which the object is built up in layers and an adjoining storage container for the pulverulent building material. The storage container has a bottom that can be displaced in a vertical direction. An applicator pushes powdery building material from the storage container to the building container and applies it there as a layer.

[0004] WO 2000/021736 A1 describes a laser sintering device in which an interchangeable container in which a height-adjustable workpiece platform is integrated as a bottom is inserted into a process chamber. After sintering the object, the interchangeable container can be removed from the building chamber in order to allow it to cool outside the sintering machine. Immediately after removing the interchangeable container, a new interchangeable container can be inserted into the laser sintering device.

[0005] The task of the present invention is to provide an alternative or improved device or method for the additive manufacturing of a three-dimensional object by layerwise application and selective solidification of a building material using an interchangeable chamber which has at least one height-adjustable platform.

[0006] This object is accomplished by an interchangeable chamber according to claim **1** or **12**, a device according to claim **13** and a method according to claim **15**. Further developments of the invention are indicated in the dependent claims, respectively. The method may also be further developed by the features of the devices described below or in the dependent claims or vice versa, or the features of the devices may also be used for mutual further development.

[0007] The interchangeable chamber according to the invention is destined for being inserted into a device for producing a three-dimensional object by selective layerwise solidification of building material, preferably a powdery building material, at locations corresponding to the cross-section of the object to be manufactured in the respective layer. The interchangeable chamber comprises a container having an upper edge and a lower edge, a wall and a height-adjustable platform provided in the container. The wall of the container has on its inside a first sealing device connecting to the platform in a sealing position in such a way that the first sealing device and the platform cooperate to seal the container towards the lower edge. With such an interchangeable chamber, it is for example possible to reliably seal the container at the bottom so that the interchangeable chamber can be handled and transported outside the device without the operator coming into contact with the powder leaving the interchangeable chamber and without the environment being contaminated with powder.

[0008] Preferably, the platform has a second sealing device which seals against an inside of the wall of the container and/or against the first sealing device. This may, for example, improve the sealing effect.

[0009] Preferably, the first sealing device is designed in such a way that, when the interchangeable chamber is positioned as intended, building material impinging on the first sealing device is conveyed further substantially towards the lower edge of the interchangeable chamber. This may, for example, prevent the sealing effect from being impaired by building material remaining on the sealing device.

[0010] Preferably, the first sealing device has at least one surface section which protrudes into the inside of the container, wherein the at least one surface section preferably is directed obliquely in the direction of the lower edge of the interchangeable chamber. This allows, for example, building material impinging on the first sealing device to slip on the surface section towards the bottom edge of the interchangeable chamber.

[0011] Preferably, the first sealing device is arranged substantially on the inside of the wall of the container so as to extend circumferentially therein. This allows, for example, a circumferential sealing to be achieved.

[0012] Preferably, the first sealing device comprises a sheet metal and/or metal molded part and/or a part consisting of an elastic polymer, preferably silicone rubber, inserted into the wall of the container. This makes it possible, for example, to implement the seal by means of a part that is easy to manufacture.

[0013] Preferably, the first sealing device is arranged closer to the lower edge than to the upper edge, preferably at or near the lower edge, wherein preferably the sealing position is a position of the platform in a lower region of the container. Thus, for example, it is possible to use as large a portion of the container as possible.

[0014] Preferably, the sealing position is a position of the platform in the container in which the platform can be coupled to and/or uncoupled from a carrier device provided in the device. In this way, for example, the platform can be coupled to the carrier device and/or uncoupled from this device in a sealed state.

[0015] Preferably, the first sealing device on the one hand and the platform and/or the second sealing device on the other hand cooperate in the sealing position in such a way that building material cannot pass there between, preferably the container is closed in a gas-tight manner towards the bottom. This allows, for example, an advantageous sealing of the container at the bottom.

[0016] Preferably, the second sealing device is arranged on the side of the platform facing the lower edge of the container and/or wherein the second sealing device is arranged on the platform at a distance from the inside of the wall of the container. This allows, for example, the second sealing device to cooperate well with the first.

[0017] Preferably, the second sealing device comprises an elastic seal, preferably a seal made of rubber or silicone foam. This can, for example, improve the sealing effect.

[0018] Another interchangeable chamber according to the invention is destined for being inserted into a device for manufacturing a three-dimensional object by selective lay-

erwise solidification of building material, preferably powdery building material, at locations corresponding to the cross-section of the object to be manufactured in the respective layer. The interchangeable chamber comprises a container having an upper edge and a lower edge, a wall and a platform provided in the container, and a deflecting device which is provided on the inside of the wall of the container and is designed in such a way that, when the interchangeable chamber is positioned in accordance with its intended purpose, building material impinging on the deflecting device is conveyed further towards the lower edge. Preferably, the interchangeable chamber formed as described above, and the deflecting means is the first sealing means. This makes it possible, for example, to deviate powder trickling down on the inside of the container wall in a suitable form, for example towards a collecting tray provided in the device.

[0019] The device according to the invention serves for manufacturing a three-dimensional object by selectively solidifying building material layer by layer at locations corresponding to the cross section of the object to be manufactured in the respective layer. The device comprises an interchangeable chamber according to the invention which can be removed from the device and inserted into it. By means of such a device it is possible, for example, to create objects in quick succession. Furthermore, the effects described for the interchangeable chamber can be achieved.

[0020] Preferably, the device comprises a collecting device and/or a suction device for receiving building material leaking from the interchangeable chamber. This can, for example, prevent contamination of the device with building material.

[0021] The method according to the invention serves for manufacturing a three-dimensional object by selectively layer-by-layer solidifying building material at locations corresponding to the cross-section of the object to be manufactured in the respective layer using an interchangeable chamber according to the invention, For the insertion and/or withdrawal of the interchangeable chamber into or from the device, the platform is brought into the sealing position in the container, and/or during the manufacturing process of the three-dimensional object, the platform is not or at least only for a short time in the sealing position in the container. In this way, for example, the effects of the interchangeable chamber described above can be achieved in the production of a three-dimensional object.

[0022] Further features and purposes of the invention result from the description of implementation examples on the basis of the attached figures.

[0023] FIG. **1** is a schematic view, partially depicted in section, of a device for the additive manufacturing of a three-dimensional object according to an embodiment of the present invention.

[0024] FIG. **2***a* schematically shows sealing devices in a container included in the device shown in FIG. **1**, here in perspective cross-sectional view.

[0025] FIG. **2***b* schematically shows a functionality of a sealing device during operation of the device shown in FIG. **1** in a detailed view from FIG. **2***a*.

[0026] FIGS. **3***a* to **3***c* schematically show, in sectional views, various configurations of sealing devices which can be used in the context of the invention.

[0027] In the following, an embodiment of the present invention is described with reference to FIG. **1**. The device shown in FIG. **1** is a laser sintering or laser melting device **1**. To build an object **2**, it contains a process chamber **3** having a chamber wall **4**. On the upper side of the process chamber **3**, a coupling window **5** is arranged, and on the lower side of the process chamber **3**, an opening **6** is formed in the chamber wall **4**.

[0028] An interchangeable chamber **10**, which can be inserted into and removed from the device **1**, is docked to the process chamber **3** from below. The interchangeable chamber **10** contains three containers which are arranged vertically when the interchangeable chamber **10** is positioned as intended, i.e. in the position in which manufacturing of the object **2** is carried out, and they are therefore also referred to as shafts. Among these containers are a building container **11**, a storage container **12** and an overflow container **13**.

[0029] The containers **11**, **12**, **13** have container walls **14**, which can be arranged separately from each other, but adjacent containers may also have a common container wall **14**. If containers **11**, **12**, **13** are formed with separate container walls **14**, one or more working plates **15** may be arranged between them. One or more flanges **16** are arranged on the side of the interchangeable chamber **10** for docking the interchangeable chamber **10** to the process chamber **3**.

[0030] The containers **11**, **12**, **13** are open at the top. A working plane **17** is defined by the top edge of the building container **11**, whereby the area of the working plane **17** within the opening of the building container **11**, which can be used to manufacture the object **2**, is referred to as a build area **18**. Preferably, the interchangeable chamber **10** is formed in such a way that the upper edges of the storage tank **12** and the overflow tank **13** are also located in the working plane **17**, and preferably also the upper surface(s) of the working plate(s) **15** and/or of the flange or flanges. When the interchangeable chamber is positioned as intended, the working plane **17** is essentially horizontal.

[0031] The building container **11** is used for the layer-wise building of the three-dimensional object. In the building container **11**, a support **20** movable in a vertical direction V is arranged, on which a base plate **21** is attached, which closes off the building container **11** downwards and thus forms its bottom. The base plate **21** may be a plate formed separately from the support **20** which is attached to the support **20**, or it may be formed integrally with the support **20**. Depending on the powder and the process used, a building platform **22** may also be placed on the base plate **21** as a building base on which the object **2** is built. The object **2**, however, may also be built on the base plate **21** itself which then serves as a building support. In FIG. **1**, the object **2** to be formed in the building container **11** on the building platform **22** below the working level **17** is shown in an intermediate state with several solidified layers, surrounded by unsolidified building material **23**.

[0032] The storage container **12** serves to accommodate a powdery building material **24** which can be solidified by electromagnetic radiation. It is formed as a dosing shaft in which a platform **25**, which forms the base of the storage container **12**, rests on a post **26**, which can be moved in the vertical direction V.

[0033] The overflow container **13** is used to receive excess powder **27**. It is arranged on the side of the building container **11** opposite to the storage container **12**.

[0034] A sealing device **28** is arranged at the lower part of the building container **11** and/or the storage container **12**.

[0035] Further, the laser sintering device **1** comprises an applicator **29** movable in a horizontal direction H for apply-

ing the building material **15** within the build area **18**. Preferably, the applicator **29** extends transversely to its direction of movement H across the entire area to be coated.

[0036] The laser sintering device **1** further comprises an irradiation device **30** with a laser **31** which generates a laser beam **32** which is deflected by a deflection device **33** and focused by a focusing device **34** via the coupling window **5** at the top of the process chamber **3** onto the working plane **17**.

[0037] Finally, the laser sintering device **1** comprises a control unit **39** which controls the individual components of the device **1** in a coordinated manner for carrying out the building process. Alternatively, the control unit may also be arranged partially or completely outside the device. The control unit may include a CPU the operation of which is controlled by a computer program (software). The computer program may be stored separately from the device on a storage medium from which it can be loaded into the device, in particular into the control unit.

[0038] Before manufacturing the object **2** by means of device **1**, the storage container **12** is filled with powdery building material **24**. Then the interchangeable chamber **10** prepared in this way is docked to the process chamber **3**. During operation, the carrier **20** is then lowered by a height corresponding to the desired layer thickness for the application of a powder layer. The applicator **19** first moves to the side of the storage container **12** facing away from the building container **11** (on the left in the drawing). Then, the bottom **25** of the storage container **12** is raised by means of a post **26** driven by a lifting device (not shown in the Fig.) until the surface of the powder supply protrudes upwards beyond the lower edge of the applicator **19**. As the applicator travels across the build area **18** (to the right in the drawing), it takes this powdery building material **24** protruding beyond its lower edge along, moves it to the build area **18** onto the building base or a pre-existing powder layer and pulls it out to form a powder layer. The application is performed at least across the entire cross-section of the object **2** to be manufactured, preferably across the entire build area **18**, i.e. the area delimited by the container wall **14** of the build container **11**. On the side of build area **8** opposite the storage container **12**, excess powder **27** falls into the overflow container **13**.

[0039] The cross-section of the object **2** to be manufactured is then scanned by the laser beam **32** so that the powdery building material **24** is solidified at the locations corresponding to the cross-section of the object **2** to be manufactured. In this process, the powder grains are partially or completely melted at these locations by means of the energy introduced by the radiation, so that after cooling they are connected to each other in the form of a solid. These steps are repeated until object **2** is completed. The interchangeable chamber **10** is then undocked from the process chamber **3** and removed from the device **1**. If another object **2** is to be manufactured, an appropriately prepared further interchangeable chamber **10** is inserted into the process chamber **3**, and the building of the next object **2** can start.

[0040] The interchangeable chamber **10** removed from the device **1** can cool down outside the device **1**. Afterwards, the manufactured object **2** can be extracted from the interchangeable chamber **10**.

[0041] The height-adjustable platforms, i.e. the base plate **21** in the building container **11** and the base **25** of the storage container **12**, are sealed against the respective container wall **14** so that during operation of the device **1**, leakage of the powdery build-up material **24** is avoided as far as possible. Since platform **21**, **25** has to remain movable within the respective container **11**, **12**, the sealing effect of this sealing is limited. A small amount of the powder may therefore trickle through the seal between the container wall **14** and the platform **21**, **25** and fall downwards into the device where it can purposefully be collected and suctioned off.

[0042] Powder may also trickle through the lateral seal of platform **21**, **25** when the interchangeable chamber **10** is removed from device **1** and during its transport outside the device **1** and lead to contamination of the environment. To prevent this, the sealing device **28** is provided in the building container **11** and/or the storage container **12**.

[0043] After the end of a building job, the respective platform **21**, **25** is moved downwards so far that it sits on the sealing device **28**. The sealing device **28** and the platform **21**, **25** work together to close the container **11**, **12** towards its lower edge. This reliably seals the space between the platform **21**, **25** and the container wall **14**, so that powder is prevented from escaping. Preferably, the container **11**, **12** is also sealed gas-tight at the bottom thereby.

[0044] This position of the platform **21**, **25**, in which it interacts with the sealing device **28**, is designated as a sealing position. The sealing position is preferably also the position of the platform **21**, **25** in the container **11**, **12**, in which it can be coupled to and/or uncoupled from a carrier device **20**, **26** provided in the device.

[0045] FIG. **2***a* schematically shows a perspective cross-sectional view of a container included in the interchangeable chamber **10**. As an example, the building container **11** is shown, but the explanations also apply to the storage container **12**. The holder **10** for the platform **11** has been omitted for better clarity.

[0046] As can be seen from FIG. **2***a*, the (first) sealing device **28** (here referred to as "first sealing device") is arranged circumferentially near the lower edge of the container **11** on the inside of the container wall **14**, so that platform **21** can rest on it with its entire circumference. Preferably the sealing device **28**, as shown in FIG. **2***a*, is inserted into a groove **41** in the container wall **14**. It may, for example, comprise a sheet metal and/or a metal molded part and/or a part made of silicone rubber.

[0047] FIG. **2***a* shows other sealing devices attached to the platform **21**. A sealing device **42** running around the outside of platform **21** serves to seal the space between the platform **21** and the container wall **14** during the operation of the device **1**, i.e. also during the vertical movement of the platform **21**.

[0048] A sealing device **43** (here referred to as "second sealing device **43**") located below the platform **21** (here referred to as "second sealing device") is arranged circumferentially in the vicinity of the edge of the platform **21** in such a way that it rests on the first sealing device **28** and cooperates with it when the platform **21** is in the sealing position. It may be spaced from the inside of the container wall **14** as long as a reliable seal is ensured in the sealing position in cooperation with the sealing device **28**.

[0049] The sealing devices **42**, **43** preferably comprise an elastic seal. This means that the sealing may be made of an elastic material, such as rubber or silicone foam, or it may be formed by its design in such a way that it is subjected to a deflection under a force, for example in the form of a leaf spring.

[0050] FIG. **2***b* shows a portion of the container wall **14** indicated in FIG. **2***a* by a dotted circle during operation of the device **1**. Here powder **24** passing between the container wall **14** and the platform **21** may trickle downwards along the container wall **14** and hit the sealing device **28**. However, the latter is designed in such a way that the powder **24** does not remain on it but is conveyed further in the direction of the lower edge. The sealing device **28** thus also acts as a deflecting device for the powder **24** hitting it.

[0051] For this purpose, the sealing device **28** has a bevel **44**, i.e. a surface section that protrudes into the inside of the container and points obliquely towards the lower edge of the interchangeable chamber. This bevel is formed sufficiently steep so that the powder **24** trickles further out of the interchangeable chamber **10** and comes to rest under the interchangeable chamber **10** in the device **1** in a collecting tray **45** and/or is suctioned off by a suction device **46**. This prevents powder **24** from remaining on the sealing surface between the sealing device **28** and the platform **21**, which would impede an effective sealing fit.

[0052] FIG. **3** shows further possibilities for the end seal between the container wall **14** and the platform **21**.

[0053] FIG. **3***a* shows a sealing device **51** which is arranged on the outer circumference of platform **21** and is formed elastically. As soon as the platform **21** reaches the groove **41** during lowering, the sealing device **51** moves forward into the groove **41** and thereby achieves an end seal between the container wall **14** and the platform **21**.

[0054] The sealing device **52** shown in FIG. **3***b* is formed as an elastic sealing lip which is also arranged on the outer circumference of the platform **21**. As soon as the platform **21** reaches the groove **41** during lowering, the sealing lip **52** flaps into the groove and thereby achieves an end seal between the container wall **14** and the platform **21**.

[0055] The sealing device shown in FIG. **3***c* has a wedge-shaped sealing element **53** elastically mounted in the groove **41**, for example with a spring **54**. A wedge-shaped groove **55** is formed on the outer circumference of the platform **21**. As soon as the platform **21** reaches the groove **41** during lowering, the wedge-shaped sealing element **53** moves forward into the wedge-shaped groove **55** and thereby achieves an end seal between the container wall **14** and the platform **21**.

[0056] The sealing device **28** is not restricted to the shapes described above. It can have any shape which is suitable for cooperating with the height-adjustable platform **21**, **25** to close the container **11**, **12** downwards. It can, for example, also be formed merely by a step in the container wall **14** or by a position on the container wall **14** manufactured (e.g. ground) with a sufficient degree of precision (e.g. with a specified tolerance) in order to seal against the height-adjustable platform **21**, **25**.

[0057] In the laser sintering device **1** described above, the height-adjustable platforms **21**, **25** for inserting and/or removing the interchangeable chamber **10** into the device **1** or out of it are brought into their sealing position. This makes it possible to handle and transport the interchangeable chamber **10** outside the device **1** without the operator coming into contact with powder leaving the interchangeable chamber **10** and without the environment being contaminated with powder. The sealing device **28** also acts as an end stop for the height-adjustable platforms **21**, **25** and prevents them from falling out downwards.

[0058] During the manufacturing process of the three-dimensional object **2**, however, the platforms **21**, **25** are moved upwards, and they therefore are not or at least only briefly in the sealing position. In this state, however, powder escaping from the interchangeable chamber **10** can easily be collected in a collecting device or suctioned off by means of a suction device.

[0059] While the interchangeable chamber described above contains three containers, two of which have a height-adjustable platform, the present invention can also be applied to interchangeable chambers with more or less than three containers and with more or less than two height-adjustable platforms, in particular also to a single container with a height-adjustable platform.

[0060] Although the present invention has been described with reference to a laser sintering or laser melting device, it is not restricted to laser sintering or laser melting. It may be applied to any method for the additive manufacturing of a three-dimensional object by applying and selectively solidifying a building material layer-by-layer.

[0061] The irradiation device may comprise for example one or more gas or solid state lasers or any other type of laser such as laser diodes, especially VCSEL (Vertical Cavity Surface Emitting Laser) or VECSEL (Vertical External Cavity Surface Emitting Laser), or an array of those lasers. In general, any device by which energy in form of wave or particle radiation can be selectively applied onto a layer of the building material may be used as an irradiation device. Instead of a laser, another light source, an electron beam or any other energy or radiation source which is suitable for solidifying the building material may be used, for example. Instead of the deflection of a beam, irradiation by means of a moveable row irradiator may be used. The invention may also be applied to selective mask sintering, in which a mask and an extended light source are used, or to high-speed sintering (HSS) wherein a material that increases (absorption sintering) or reduces (inhibition sintering) the absorption of the radiation at the corresponding positions may selectively be applied onto the building material, whereupon irradiation is unselectively carried out by a large-area irradiation or by means of a moveable row irradiator.

[0062] Instead of the introduction of energy, the selective solidification of the applied building material can, for example, also be achieved by other methods such as 3D printing, for example by means of the application of an adhesive. In this example, the solidification direction would be the direction in which the adhesive is applied to the powder surface. In general, the invention relates to the additive manufacturing of an object by means of a layer-by-layer application and selective solidification of a building material not depending on the manner in which the building material is solidified.

[0063] Various types of powder may be used as the building material, in particular metal powders, plastic powders, ceramic powders, sand, filled or mixed powders. Therein, powder may also be provided in the form of a suspension. Instead of powder, other suitable materials may also be used as a building material.

1. Interchangeable chamber for a device for producing a three-dimensional object by selective layerwise solidification of building material at locations corresponding to the cross-section of the object to be manufactured in the respective layer, the interchangeable chamber comprising

a container having an upper edge and a lower edge, a wall and a height-adjustable platform provided in the container, wherein

the wall of the container has on its inside a first sealing device **7** connecting to the platform in a sealing position in such a way that the first sealing device and the platform cooperate to seal the container towards the lower edge.

2. Interchangeable chamber according to claim **1**, wherein the platform has a second sealing device which seals against an inside of the wall of the container and/or against the first sealing device.

3. Interchangeable chamber according to claim **1**, wherein the first sealing device is designed in such a way that, when the interchangeable chamber is positioned as intended, building material impinging on the first sealing device is conveyed further substantially towards the lower edge of the interchangeable chamber.

4. Interchangeable chamber according to claim **1**, wherein the first sealing device has at least one surface section which protrudes into the inside of the container.

5. Interchangeable chamber according to claim **1**, wherein the first sealing device is arranged substantially on the inside of the wall of the container so as to extend circumferentially therein.

6. Interchangeable chamber according to claim **1**, wherein the first sealing device comprises a sheet metal and/or metal molded part and/or a part consisting of an elastic polymer inserted into the wall of the container.

7. Interchangeable chamber according to claim **1**, wherein the first sealing device is arranged closer to the lower edge than to the upper edge.

8. Interchangeable chamber according to claim **1**, wherein the sealing position is a position of the platform in the container in which the platform can be coupled to and/or uncoupled from a carrier device provided in the device.

9. Interchangeable chamber according to claim **1**, wherein the first sealing device on the one hand and the platform and/or the second sealing device on the other hand cooperate in the sealing position in such a way that building material cannot pass there between.

10. Interchangeable chamber according to claim **1**, wherein the second sealing device is arranged on the side of the platform facing the lower edge of the container and/or wherein the second sealing device is arranged on the platform at a distance from the inside of the wall of the container.

11. Interchangeable chamber according to claim **1**, wherein the second sealing device comprises an elastic seal.

12. Interchangeable chamber for a device for manufacturing a three-dimensional object by selective layerwise solidification of building material, at locations corresponding to the cross-section of the object to be manufactured in the respective layer, the interchangeable chamber comprising:

a container having an upper edge and a lower edge, a wall and a platform provided in the container, and

a deflecting device which is provided on the inside of the wall of the container and is designed in such a way that, when the interchangeable chamber is positioned in accordance with its intended purpose, building material impinging on the deflecting device is conveyed further towards the lower edge

the deflecting means is the first sealing means.

13. Device for manufacturing a three-dimensional object by selectively solidifying building material layer by layer at locations corresponding to the cross section of the object to be manufactured in the respective layer, comprising

an interchangeable chamber according to claim **1**, wherein the interchangeable chamber can be removed from the device and inserted into it.

14. Device according to claim **13**, wherein the device comprises a collecting device and/or a suction device for receiving building material leaking from the interchangeable chamber.

15. A method for manufacturing a three-dimensional object by selectively layer-by-layer solidifying building material at locations corresponding to the cross-section of the object to be manufactured in the respective layer using an interchangeable chamber according to claim **1**, wherein

for the insertion and/or withdrawal of the interchangeable chamber into or from the device the platform is brought into the sealing position in the container, and/or wherein

during the manufacturing process of the three-dimensional object, the platform is not or at least only for a short time in the sealing position in the container.

16. Interchangeable chamber according to claim **1**, wherein the building material is a powdery building material.

17. Interchangeable chamber according to claim **4**, wherein the at least one surface section is directed obliquely in the direction of the lower edge of the interchangeable chamber.

18. Interchangeable chamber according to claim **6**, wherein the first sealing device comprises a part consisting of silicone rubber.

19. Interchangeable chamber according to claim **7**, wherein the first sealing device is arranged at or near the lower edge.

20. Interchangeable chamber according to claim **7**, wherein the sealing position is a position of the platform in a lower region of the container.

21. Interchangeable chamber according to claim **9**, wherein the container is closed in a gas-tight manner towards the bottom.

22. Interchangeable chamber according to claim **11**, wherein the second sealing device comprises a seal made of rubber or silicone foam.

23. Interchangeable chamber according to claim **12**, wherein

the interchangeable chamber an interchangeable chamber for a device for producing a three-dimensional object by selective layerwise solidification of building material at locations corresponding to the cross-section of the object to be manufactured in the respective layer, the interchangeable chamber comprising

a container having an upper edge and a lower edge, a wall- and a height-adjustable platform provided in the container, wherein

the wall of the container has on its inside a first sealing device connecting to the platform in a sealing position in such a way that the first sealing device and the platform cooperate to seal the container towards the lower edge, and

the deflecting means is the first sealing means.

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