



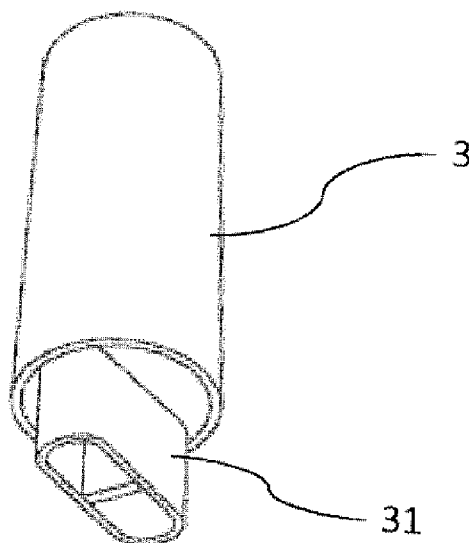
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(54) Titre : DISPOSITIF POUR PRODUIRE UNE BOISSON  
(54) Title: DEVICE FOR PRODUCING A BEVERAGE



**Fig. 1**

(57) **Abrégé/Abstract:**

Proposed is a device for producing a beverage, more particularly a cold beverage, comprising a cartridge mount having a cartridge holder for holding a cartridge filled with a beverage substance, wherein: the cartridge holder has a receiving opening; the cartridge holder has a water supply for introducing water into the cartridge and a compressed air supply for introducing compressed air into the cartridge; the cartridge holder can be transferred between a loading position, in which the cartridge can be inserted into or removed from the receiving opening, and an operating position, in which a beverage can be produced in the cartridge and dispensed from a beverage outlet of the cartridge by the introduction of the water and the compressed air into the cartridge and by the interaction of the water with the beverage substance; the cartridge holder has a first holding element and a second holding element between which the receiving opening is formed; the first holding element is moveable in relation to the second holding element in order to transfer the cartridge holder from the loading position to the operating position or from the operating position to the loading position.

## ABSTRACT

Proposed is a device for producing a beverage, more particularly a cold beverage, comprising a cartridge mount having a cartridge holder for holding a cartridge filled with a beverage substance, wherein: the cartridge holder has a receiving opening; the cartridge holder has a water supply for introducing water into the cartridge and a compressed air supply for introducing compressed air into the cartridge; the cartridge holder can be transferred between a loading position, in which the cartridge can be inserted into or removed from the receiving opening, and an operating position, in which a beverage can be produced in the cartridge and dispensed from a beverage outlet of the cartridge by the introduction of the water and the compressed air into the cartridge and by the interaction of the water with the beverage substance; the cartridge holder has a first holding element and a second holding element between which the receiving opening is formed; the first holding element is moveable in relation to the second holding element in order to transfer the cartridge holder from the loading position to the operating position or from the operating position to the loading position.

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**SPECIFICATION**

5 Title

Device for producing a beverage

10 **Prior art**

The present invention proceeds from a device for producing a beverage.

15 **Disclosure of the invention**

It is an object of the present invention to make available a device for producing a beverage while using replaceable cartridges, in which the loading and unloading of the device with cartridges is significantly simplified and thus offers the user an ease of operation that is increased in comparison to the devices of the generic type known from the prior art.

In principle, devices for producing a beverage by means of cartridges and corresponding cartridges are known from publication US 2004/191 372 A1. This publication discloses a coffee machine in which a coffee beverage is capable of being generated by a machine by means of a cartridge in which coffee granules are contained. To this end, the cartridge by a user is manually placed in a brewing chamber which can be swung open. Further devices for producing beverages by means of pre-portioned cartridges are known from publications US 2016/272 414 A1, US 2016/068 334 A1, US 2015/335 197 A1, and US 2011/210 140 A1.

30

The object of the present invention is achieved by a device as claimed in claim 1.

The device according to the invention has the advantage that the cartridge is received in a receptacle opening that is accessible from outside the device. The receptacle opening herein is formed by two separate holding elements, wherein the first holding element is movable in relation to the other holding element. Simple inserting of the cartridge by a user is enabled in this way, while reliable fixing of the cartridge, in particular in a correct orientation, is at the same time guaranteed in the operating position. The cartridge mounting is easy to operate and by virtue of view movable parts is at the same time low-

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maintenance. Moreover, the inserting of the cartridge and the transferring from the loading position to the operating position are performed with short paths for the moving parts so that the overall time for preparing the beverage is advantageously minimized.

- 5 The explanations made in the context of this subject matter of the present invention also apply in analogous manner to the other subject matter of the present invention and vice versa.

- 10 The present invention relates to a device having a cartridge mounting which supports and/or guides the cartridge. The cartridge has a cavity in which a beverage substrate and/or a foodstuff substrate is situated. Said substrate is preferably liquid and is in particular a concentrate, and for producing the beverage or the foodstuff is mixed with a solvent, in particular water, and then is collected in a container, in particular a glass, which preferably stands on a support plate of the device that is disposed below the mounting.
- 15 The beverage substrate and/or foodstuff substrate comprises preferably liquid pre-mix component parts for soft drinks such as soda pops and juices that contain caffeine, carbon dioxide, fruit, and/or sugar, beer (mixer) beverages, or other alcoholic or non-alcoholic (mixer) beverages.
- 20 The cartridge is preferably provided so as to be substantially bottle-shaped and has in particular a cartridge neck. The cartridge is particularly preferably inserted into the cartridge mounting with the opening pointing downward, that is to say in the direction of gravity.
- 25 It is provided according to the invention that the cartridge receptacle has a first holding element and a second holding element, wherein the first holding element has the receptacle opening, and wherein the first holding element, for transferring the cartridge receptacle from the loading position to the operating position, or from the operating position to the loading position, is configured so as to be movable relative to the second
- 30 holding element. The second holding element particularly preferably has a clearance which in the operating position interacts in a form-fitting and/or force-fitting manner with the first holding element. The stability of the device is advantageously further increased on account thereof, since the cartridge when being inserted into the first holding element in the loading position now is securely held along the entire circumference of the cartridge
- 35 neck. The second holding element herein advantageously secures the first holding element in the operating position.

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It is provided according to the invention that the second holding element has a further receptacle opening, and wherein the first and the second holding element are disposed relative to one another in such a manner that the receptacle opening and the further receptacle opening are disposed so as to be congruent and mutually offset along an axial direction. The receptacle opening and/or the further receptacle opening are particularly preferably provided so as to be circular or oval. On account of two substantially congruent ring elements being provided in such a case, said two substantially congruent ring elements particularly preferably in the operating position being disposed so as to interact in a locking manner, the stability of the device is advantageously significantly increased.

10 This is because that in this case the cartridge along the circumference of the cartridge neck thereof is held by two elements instead of only one, as in the case, for example, of the first and the second holding element being configured so as to be U-shaped. Moreover, such an axial displacement which is preferably provided so as to be parallel with the longitudinal axis of the cartridge is more stable, and the risk of a wrong positioning, for example on account of slippage, of the cartridge is minimized.

It is provided according to the invention that the first and the second holding element in the axial direction are mutually spaced apart in the loading position, and are moved closer to one another in the operating position as compared to the loading position. The first holding element in the vertical, thus in particular the axial, direction is particularly preferably disposed above the second holding element. A stable and compact construction of the cartridge mounting is particularly advantageously implementable on account thereof.

According to one further preferred embodiment, it is provided that the first holding element comprises a ring component, and wherein the second holding element has a U-shaped convexity which is open in the direction of the ring component, wherein the first holding element in relation to the second holding element is capable of being tilted about a rotation axis. Particularly preferably, the ring component is tilted in relation to the second holding element in the loading position; the cross section of the ring component in the operating position is most particularly preferably parallel with a plane of main extent of the second holding element. On account thereof, a simple operation is enabled and at the same time a high stability is advantageously guaranteed since the cartridge is held by the ring component on the entire circumference of the cartridge neck, and at the same time a simple insertion of the cartridge by a user is enabled on account of the inclination of the ring component.

According to one further preferred embodiment, it is provided that the device has a hand lever for transferring the cartridge receptacle from the loading position to the operating

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position, or from the operating position to the loading position, wherein the hand lever is linked to the first and/or the second holding element. The hand lever particularly preferably interacts with a mechanism in such a manner that the cartridge receptacle in the operating position is locked, in particular in a reversible manner. On account thereof, transferring the  
5 cartridge receptacle between the positions is enabled in a particularly simple manner. Thanks to the lever, the effort in terms of force required by the user for transferring herein is minor.

According to one further preferred embodiment, it is provided that the hand lever is  
10 pivotable between a first activating position in which the cartridge receptacle is in the loading position, and a second activating position in which the cartridge receptacle is in the operating position, wherein the hand lever comprises a handle which in the first activating position at least in part encloses the cartridge receptacle. On account thereof, a particularly ergonomic ease of operation of the device is advantageously achieved.  
15 Additionally, an additional safeguard is implemented on account of the handle in part enclosing the cartridge receptacle.

#### **Description of the figures**

20

The invention will be explained hereunder by means of figures 1 to 8. These explanations are merely exemplary and do not limit the general concept according to the invention. The explanations apply to the device according to the invention and in analogous manner to the method according to the invention. Identical parts herein are identified by the same  
25 reference signs. The individual drawings herein are numbered from left to right and from top to bottom.

In the figures:

30 fig. 1 shows a cartridge as is used in the device according to the invention, according to one potential embodiment of the present invention;

figs. 2a-2d show a cartridge mounting according to a first embodiment not according to the invention, when transitioning from a loading position to an operating  
35 position;

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- figs. 3a-3d show a cartridge mounting according to a second embodiment not according to the invention, when transitioning from the loading position to the operating position;
- 5 figs. 4a-4d show a cartridge mounting according to a third embodiment not according to the invention, when transitioning from the loading position to the operating position;
- 10 figs. 5a -5d show a cartridge mounting according to a fourth embodiment according to the present invention, when transitioning from the loading position to the operating position;
- 15 figs. 6a-6d show a cartridge mounting according to a fifth embodiment not according to the invention, when transitioning from the loading position to the operating position;
- 20 figs. 7a-7d show a cartridge mounting according to a sixth embodiment not according to the invention, when transitioning from the loading position to the operating position; and
- 25 figs. 8a-8d show a cartridge mounting according to a seventh embodiment not according to the invention, when transitioning from the loading position to the operating position.
- 30 A cartridge 3 according to a potential embodiment of the present invention, as is used in the device according to the invention, is illustrated in figure 1. The cartridge 3 here is configured so as to be substantially cylindrical and at one end has a cartridge neck 31 in which an infeed, in particular for water, and an outlet for the finished beverage are provided. A cartridge 3 of this type herein can also have arbitrary other shapes. It is essential above all herein that the cartridge 3 can be inserted into the device and in particular that the cartridge neck 31 can interact with a cartridge mounting 1 of the device so as to be securely held. The cartridge 3 contains a beverage substance which by way of interaction with water forms a beverage.
- 35 A cartridge mounting 1 according to a first embodiment not according to the invention, when transitioning from a loading position to an operating position, is illustrated in a plurality of intermediate steps in figures 2a-2d. The cartridge mounting 1 illustrated herein is part of a beverage preparation device which for reasons of clarity is however not

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illustrated here. The beginning of the beverage preparation cycle herein is illustrated in figure 2a. A cartridge receptacle comprises a first holding element 11 which here has a substantially semi-circular clearance, wherein the first holding element 11 is spaced apart from a second holding element 11 which together with the first holding element 11 forms a  
5 circular receptacle opening 2 so as to transfer the cartridge mounting 1 to a loading position. To this end, said first holding element 11 is displaced along a displacement direction A which here is provided so as to be linear.

10 The cartridge 3 here is provided so as to be substantially frustoconical and is inserted into the clearance of the first holding element 11, where said cartridge 3 by virtue of the shape thereof and of gravity is held in a form-fitting manner. This is illustrated in figure 2b.

15 In order for a beverage to be prepared, the cartridge mounting 1 is transferred from the loading position to an operating position in which the first holding element 11 and the second holding element 12 are in mutual contact and thus present the form of a circular receptacle opening 2. The first holding element 11 and the second holding element 12 consequently comprise peripheral portions (of a circle) which when interacting hold, or fix, respectively, the cartridge 3 in its position.

20 To this end, a hand lever 4 which according to the embodiment illustrated is attached to the second holding element 12 but could likewise be attached to the first holding element 11, here is transferred from a vertical position to a horizontal position. By way of a corresponding mechanism, for example a gearbox, the first holding element 11 is moved closer to the second holding element 12 on account of the movement of the hand lever 4.  
25 This is illustrated in figure 2c.

Finally, the operating position is illustrated in figure 2d. The cartridge 3 is securely held by the cartridge receptacle in which the cartridge neck 31 is jammed between the first and the second holding element 11, 12. The hand lever 4 is situated in a horizontal position,  
30 preferably so as to be parallel with planes of main extent of the holding elements 11, 12.

In order to prevent any unintentional opening of the cartridge receptacle, the cartridge mounting 1 can be provided in such a manner that the hand lever 4 in the operating position locks the cartridge receptacle in a reversible manner. This can take place, for  
35 example, by a knuckle joint. In order for the cartridge receptacle to be transferred from the operating position back to the loading position, the user in this case would have to move the hand lever 4 from the horizontal into the vertical position, preferably counter to an initial resistance.

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The cartridge receptacle has a water infeed (not illustrated here) for directing water into the cartridge 3, as well as a compressed air infeed for directing compressed air into the cartridge 3. The water infeed and the compressed air infeed herein can be disposed on  
5 the second holding element 12, for example, and/or be connected to the latter. In operation, water is directed into the cartridge 3, said water interacting with the beverage substance in the cartridge 3 and generating a beverage. The beverage is forced out of the cartridge 3 by directing compressed air into said cartridge 3, and said beverage is dispensed by way of a beverage outlet of the device into a beverage container, for  
10 example a glass or a cup.

Having completed the beverage preparation, the cartridge receptacle is preferably transferred from the operating position to the loading position, and the now empty cartridge 3 is disposed of. This can take place manually or automatically.

15 A cartridge mounting 1 according to a second embodiment not according to the invention is illustrated when transitioning from the loading position to the operating position in figures 3a to 3d. The second embodiment herein corresponds substantially to the first embodiment described in conjunction with figures 1a-1d, so that reference in principle is  
20 made to the explanations pertaining thereto.

The point of differentiation lies in particular in that the hand lever 4 in the loading position now assumes a horizontal position, and for transferring the cartridge receptacle from the loading position to the operating position is moved to a vertical position in which the hand  
25 lever 4 is aligned so as to be parallel with the longitudinal axis of the cartridge 3.

The hand lever 4 herein is preferably at least in part disposed above the cartridge 3 such that the cartridge 3 cannot be removed from the cartridge mounting 1 in the operating position.

30 A cartridge mounting 1 according to a third embodiment not according to the invention is illustrated while transitioning from the loading position to the operating position in figures 4a to 4d. In terms of the general function mode of the cartridge mounting 1 illustrated, reference is made to the preceding explanations. The differences between this  
35 embodiment and the previously described embodiments are in particular explained hereunder.

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According to the third embodiment illustrated, the first holding element 11 is provided in the form of a ring construction element. The first holding element 11 thus completely encompasses the cartridge neck 31 and fixes the latter.

- 5 The ring construction element herein in the operating position is almost completely disposed in a U-shaped clearance of the second holding element 12. The ring construction element in the loading position herein, is spaced apart from the clearance along a linear displacement direction A which here is provided so as to be parallel with a plane of main extent of the second holding element 12, as has been described above.

10

- The transfer between the loading position and the operating position, or vice versa, respectively, here too is caused by a hand lever 4 which here, by contrast to the first and the second embodiment, however is disposed only on one side of the second holding element 12. The hand lever 4 here has a wider grip so that a user can more comfortably  
15 operate the lever.

As in the second embodiment, the hand lever 4 according to the third embodiment in the operating position is vertically aligned.

- 20 The cartridge 3 is presently provided so as to be cylindrical, wherein the cartridge neck 31 has a smaller diameter. On account thereof, a shoulder by way of which the cartridge 3 can bear on the ring construction element of the first holding element 11, for example, is formed above the cartridge neck 31.

- 25 A cartridge mounting 1 according to a fourth embodiment according to the present invention is illustrated when transitioning from the loading position to the operating position in figures 5a to 5d. In terms of the general functional mode of the cartridge mounting 1 illustrated, reference is made to the preceding explanations. The differences between this embodiment and the previously described embodiments are in particular explained  
30 hereunder.

- According to the embodiment illustrated, the first holding element 11 as well as the second holding element 12 are configured so as to be annular, wherein the first holding element 11 has the receptacle opening 2, and the second holding element 12 has a further  
35 receptacle opening 2'. Both holding elements 11, 12 in the loading position herein are mutually spaced apart in an axial manner, that is to say parallel with a central axis that runs through the openings. The first holding element 11 and the second holding element 12 herein can have identical diameters, in particular internal diameters, or else said first

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holding element 11 and said second holding element 12 can have dissimilar diameters, as is illustrated here.

5 However, according to this embodiment it is in any case provided that the first holding element 11 and the second holding element 12 are disposed so as to be mutually congruent. This means in particular that in the present case, in which the receptacle openings 2, 2' are provided so as to be circular, the central axes of both holding elements 11, 12 are thus identical.

10 In the loading position, the cartridge 3 is inserted in the axial direction into the first holding element 11. The transfer to the operating position here takes place, for example, by way of pressure on a rim-shaped flange of the first holding element 11. Alternatively or additionally, a corresponding mechanism and/or a hand lever can be used here too.

15 The first holding element 11 and the second holding element 12 are moved closer to one another in the operating position. The person skilled in the art understands that the operating position can be defined in particular in that the water infeed and the compressed air infeed are, in particular fluidically, connected to the infeed of the cartridge 3 and/or the beverage outlet is, in particular fluidically, connected to the outlet of the cartridge 3.

20 A cartridge mounting 1 according to a fifth embodiment not according to the invention when transitioning from the loading position to the operating position is illustrated in figures 6a to 6d. Here too, reference is made in principle to the explanations relating in particular to the first and the second embodiment.

25 A transfer between the loading position and the operating position is again performed by a linear translation along a displacement direction A. The first holding element 11 and the second holding element 12 here are disposed so as to be capable of being partially displaceable into one another. The receptacle opening 2 formed by the first holding  
30 element 11 and the second holding element 12 in the loading position has the shape of an elongate hole into which the cartridge 3 is inserted.

The first holding element 11 thereupon is displaced in the direction of the second holding element 12 until the receptacle opening in the operating position presently has a circular  
35 shape. The cartridge is thus secured in a form-fitting and/or force-fitting manner in relation to unintentional movement.

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The transfer of the cartridge receptacle between the loading position and the operating position takes place here in that a user directly displaces the first holding element 11 in the manner of a drawer. Alternatively or additionally however, it is also conceivable for a hand lever 4 to be provided for facilitating the movement, and/or for the first holding element to have a grip, for example in the form of a clearance or a recessed grip, so as to enable improved gripping by the user.

A cartridge mounting 1 according to a sixth embodiment not according to the invention when transitioning from the loading position to the operating position is illustrated in figures 7a to 7d. In terms of the general functional mode of the device, reference is made to the above. The first holding element 11 in the present case has a frustoconical design having a hand lever 4 that is disposed on that side of the first holding element 11 that faces away from the second holding element 12.

The first holding element herein is connected to the second holding element 12 by way of a rotation axis B and is provided so as to be capable of being tilted relative to the second holding element 12. This is illustrated in particular in figure 7b. According to the embodiment illustrated, the first holding element 11 herein is in part disposed in a clearance of the second holding element 12, said clearance having a shape corresponding to that of the first holding element 11.

In order for the cartridge receptacle to be transferred to the loading position, a user grips the hand lever 4 and tilts the first holding element 11 such that the latter is disposed at an angle in relation to a plane of main extent of the second holding element 12, thus is inclined in relation to a horizontal, for example at an angle of 30° - 60°, in particular at an angle of 45°.

The cartridge 3, the cartridge neck 31 thereof preferably having a shape that is adapted to the internal face of the first holding element 11, is inserted into the first holding element 11, and the cartridge receptacle is transferred to the operating position by tilting the first holding element 11.

On account of the inclined disposal of the first holding element 11 in the loading position, the cartridge 3 is capable of being comfortably inserted into the device by a user, and the first holding element 11 on account of the hand lever 4 and the tilting about the rotation axis B is capable of being transferred to the operating position in a simple manner.

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Finally, a cartridge mounting 1 according to a seventh embodiment of the present invention is illustrated while transitioning from the loading position to the operating position in figures 8a to 8d. The seventh embodiment herein has similarities with the first and the second embodiment respectively, and the six embodiment, which is why reference is made in principle to the respective explanations.

In a manner similar to the sixth embodiment, the first holding element 11 is likewise disposed so as to be capable of being tilted about a rotation axis B, relative to the second holding element 12. However, the first and the second holding element 11, 12 herein, in a manner similar to the first embodiment, have in each case one substantially semi-circular or U-shaped clearance such that a circular receptacle opening 2 is formed in the operating position.

The first holding element 11 in the loading position is pivoted relative to the second holding element 12 by an angle of 90°. The person skilled in the art understands that a multiplicity of further angles are also possible as long as the cartridge 3 is capable of being inserted into the cartridge mounting 1.

The cartridge neck 3 here has a partially encircling collar which is provided so as to interact in a form-fitting and/or force-fitting manner with a correspondingly shaped receptacle channel of the second holding element 12. The cartridge 3 is consequently inserted laterally into the clearance of the second holding element 12 so that the collar engages in the channel or groove.

In order for the cartridge receptacle to be transferred to the operating position, the first holding element 11 by a hand lever 4 that is integral to said first holding element 11 is pivoted upward until said first holding element 11 together with the second holding element 12 forms a continuous face, or a circular receptacle opening 2, respectively, in which the cartridge 3 is securely held. The cartridge mounting 1 preferably comprises a locking mechanism so as to prevent any unintentional pivoting of the first holding element 11 in the operating position.

After the preparation of the beverage, the first holding element 11, optionally after releasing a locking mechanism, is again pivoted downward, and the cartridge 3 is retrieved on account of a linear translation of the cartridge receptacle and subsequently is disposed of.

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**List of reference signs**

- |    |    |   |                            |
|----|----|---|----------------------------|
|    | 1  | - | Cartridge mounting         |
| 5  | 2  | - | Receptacle opening         |
|    | 2' | - | Further receptacle opening |
|    | 3  | - | Cartridge                  |
| 10 | 4  | - | Hand lever                 |
|    | 11 | - | First holding element      |
| 15 | 12 | - | Second holding element     |
|    | 31 | - | Cartridge neck             |
| 20 | A  | - | Displacement direction     |
|    | B  | - | Rotation axis              |

**AMENDED PATENT CLAIMS**

1. A device for producing a beverage having a cartridge mounting (1) having a  
5 cartridge receptacle for receiving a cartridge (3) filled with a beverage substance,  
wherein the cartridge receptacle comprises a receptacle opening, wherein the  
cartridge receptacle has a water infeed for directing water into the cartridge (3)  
and a compressed air infeed for directing compressed air into the cartridge (3),  
10 wherein the cartridge receptacle is capable of being transferred between a loading  
position in which the cartridge (3) is capable of being inserted into the receptacle  
opening or capable of being retrieved from the receptacle opening, and an  
operating position in which, by directing the water and the compressed air into the  
cartridge (3) and by the water interacting with the beverage substance, a  
15 beverage is capable of being generated in the cartridge (3) and capable of being  
directed out of a beverage outlet of the cartridge (3), characterized in that the  
cartridge receptacle has a first holding element (11) and a second holding element  
(12), wherein the first holding element (11) has the receptacle opening, and  
wherein the first holding element (11), for transferring the cartridge receptacle  
20 from the loading position to the operating position, or from the operating position  
to the loading position, is configured so as to be movable relative to the second  
holding element (12), wherein the second holding element (12) has a further  
receptacle opening, and wherein the first and the second holding element (11, 12)  
are disposed relative to one another in such a manner that the receptacle opening  
25 and the further receptacle opening are disposed so as to be congruent and  
mutually offset along an axial direction, wherein the first and the second holding  
element (11, 12) in the axial direction are mutually spaced apart in the loading  
position, and are moved closer to one another in the operating position as  
compared to the loading position.
- 30 2. The device as claimed in claim 1, wherein the device has a hand lever (4) for  
transferring the cartridge receptacle from the loading position to the operating  
position, or from the operating position to the loading position, wherein the hand  
lever (4) is linked to the first and/or the second holding element (11, 12).
- 35 3. The device as claimed in claim 2, wherein the hand lever (4) is pivotable between  
a first activating position in which the cartridge receptacle is in the loading  
position, and a second activating position in which the cartridge receptacle is in  
the operating position, wherein the hand lever (4) comprises a handle which in the  
first activating position at least in part encloses the cartridge receptacle.

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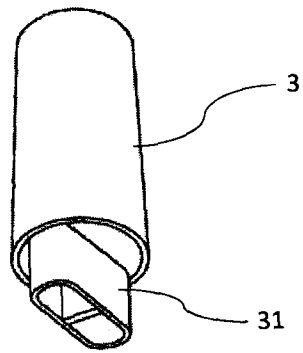


Fig. 1

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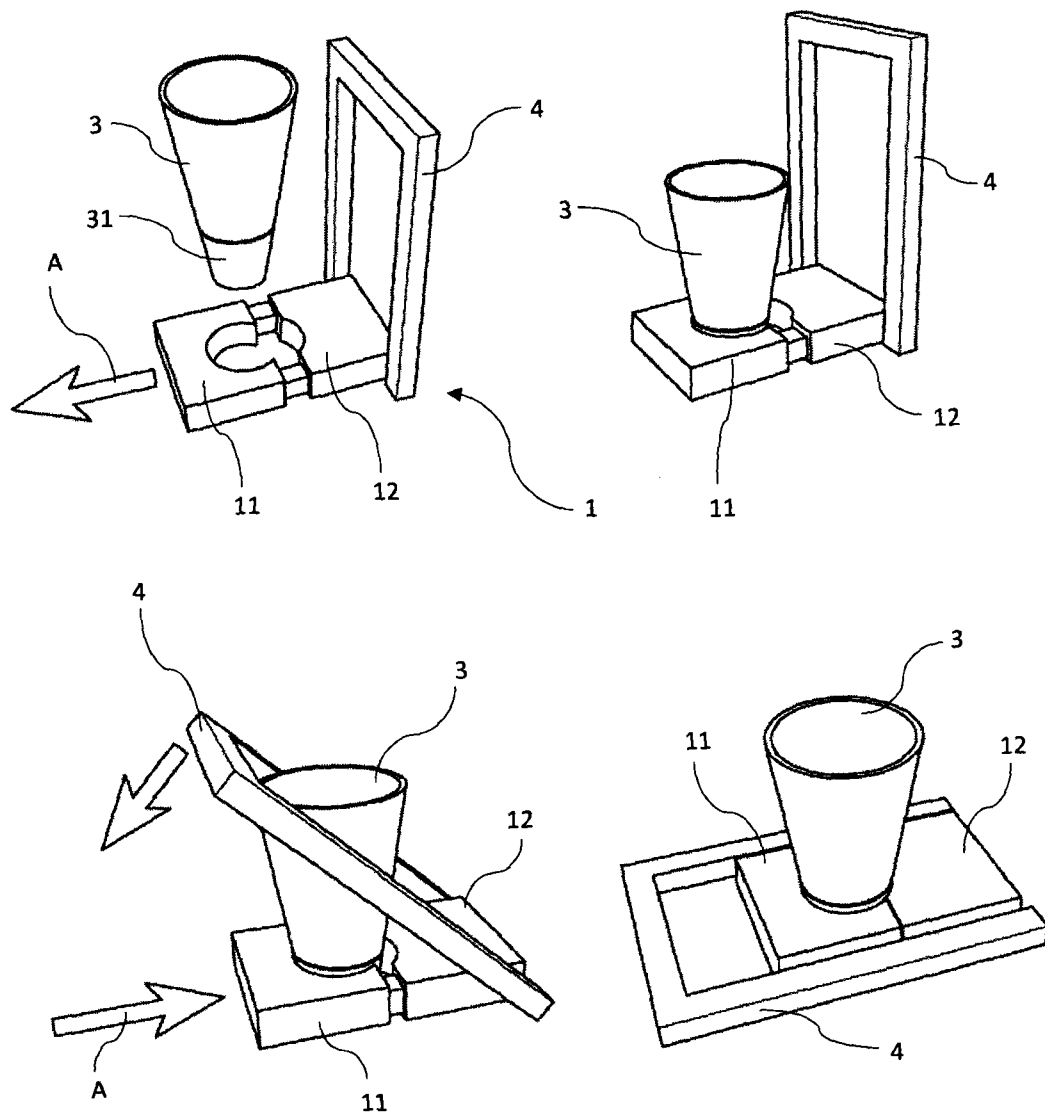


Fig. 2 a)-d)

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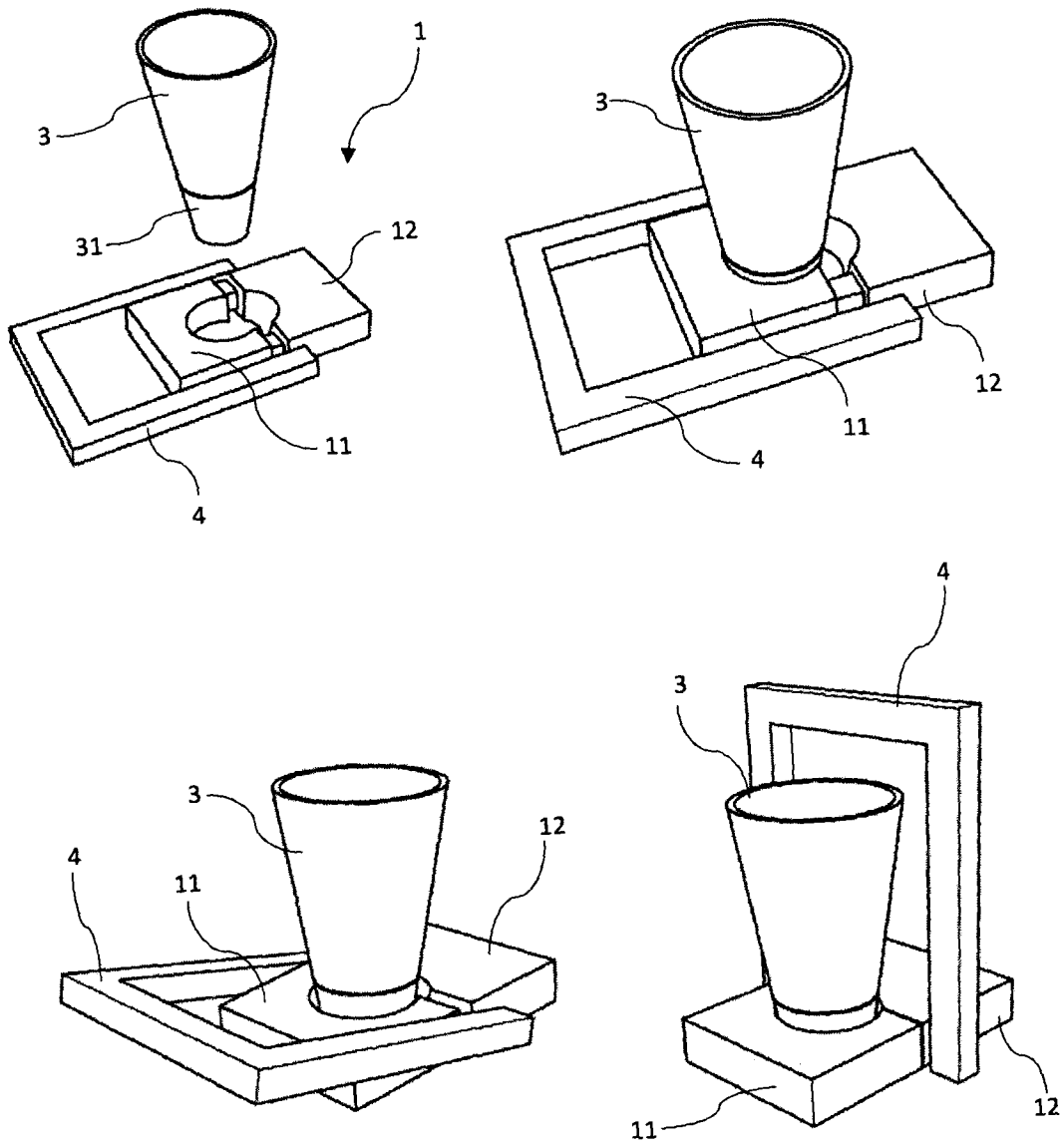


Fig. 3 a)-d)

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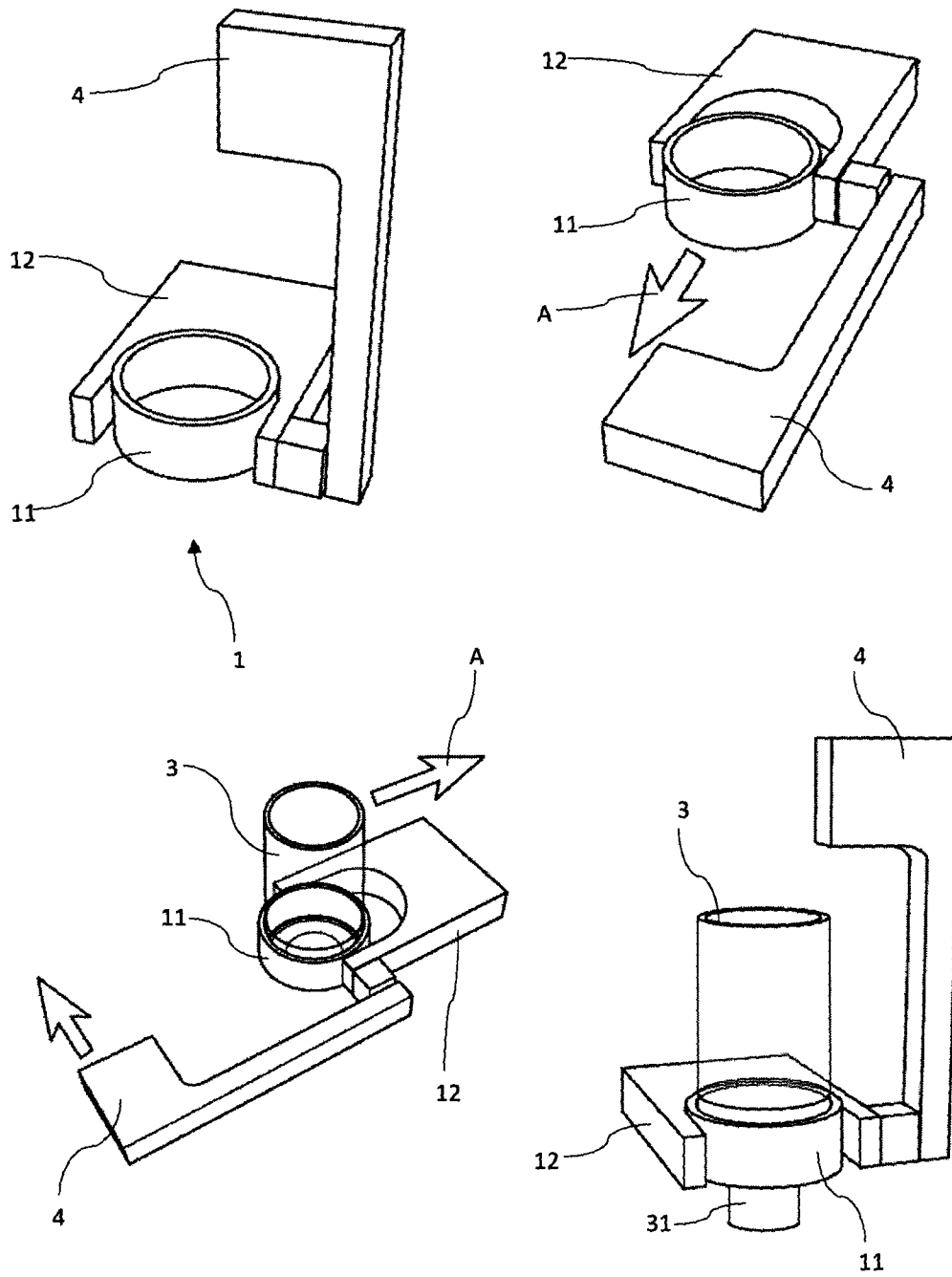


Fig. 4 a)-d)

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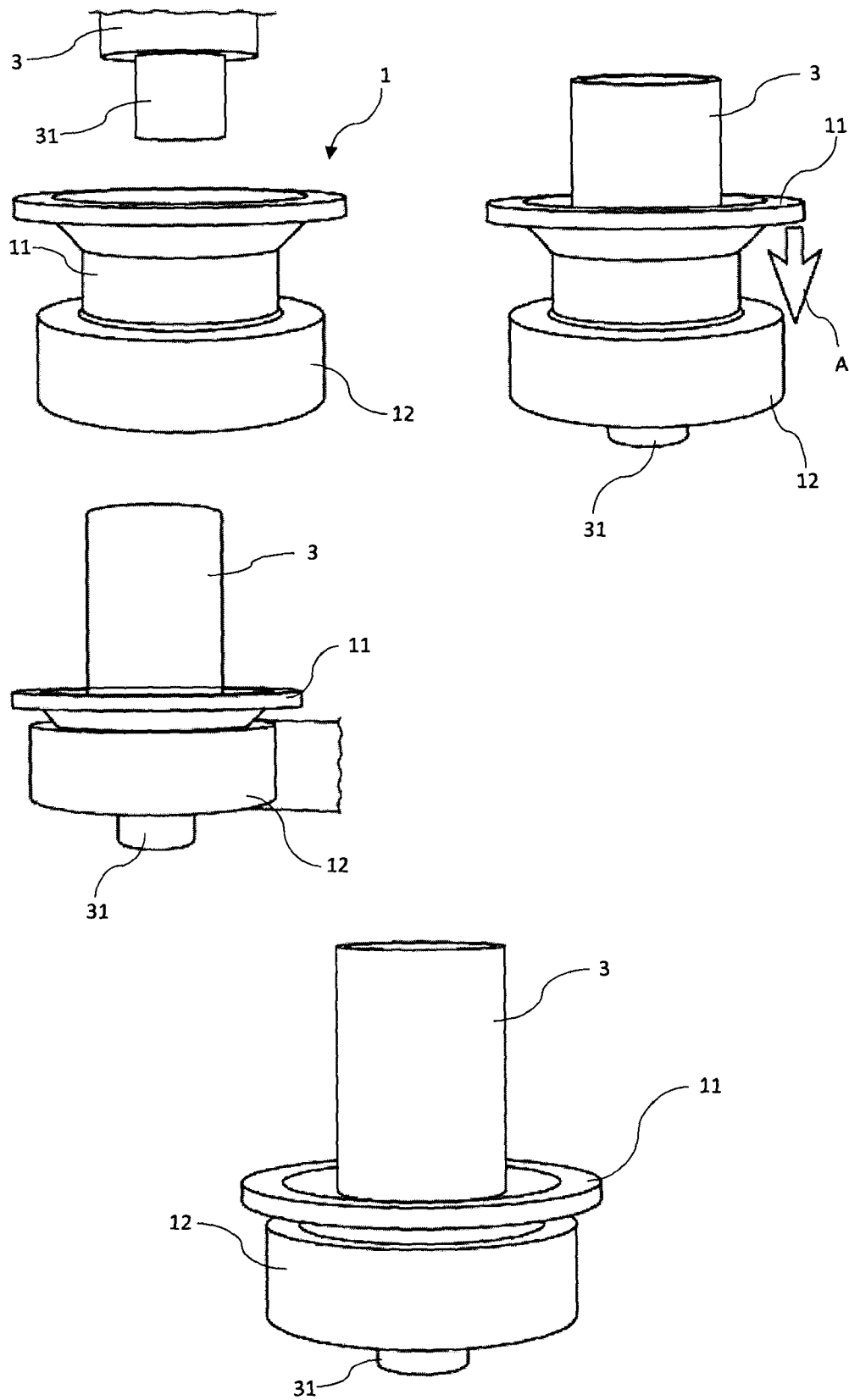


Fig. 5 a)-e)

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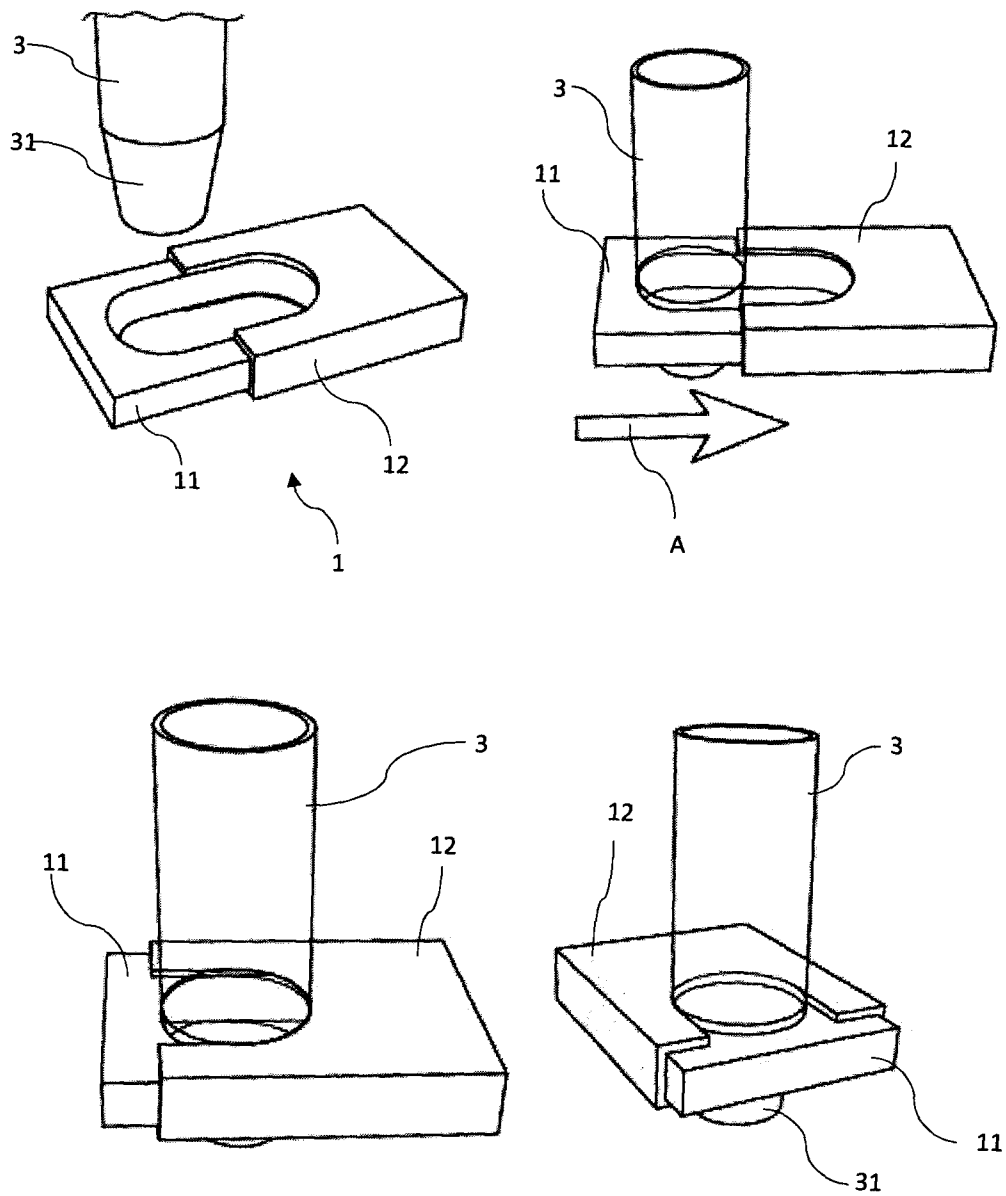


Fig. 6 a)-d)

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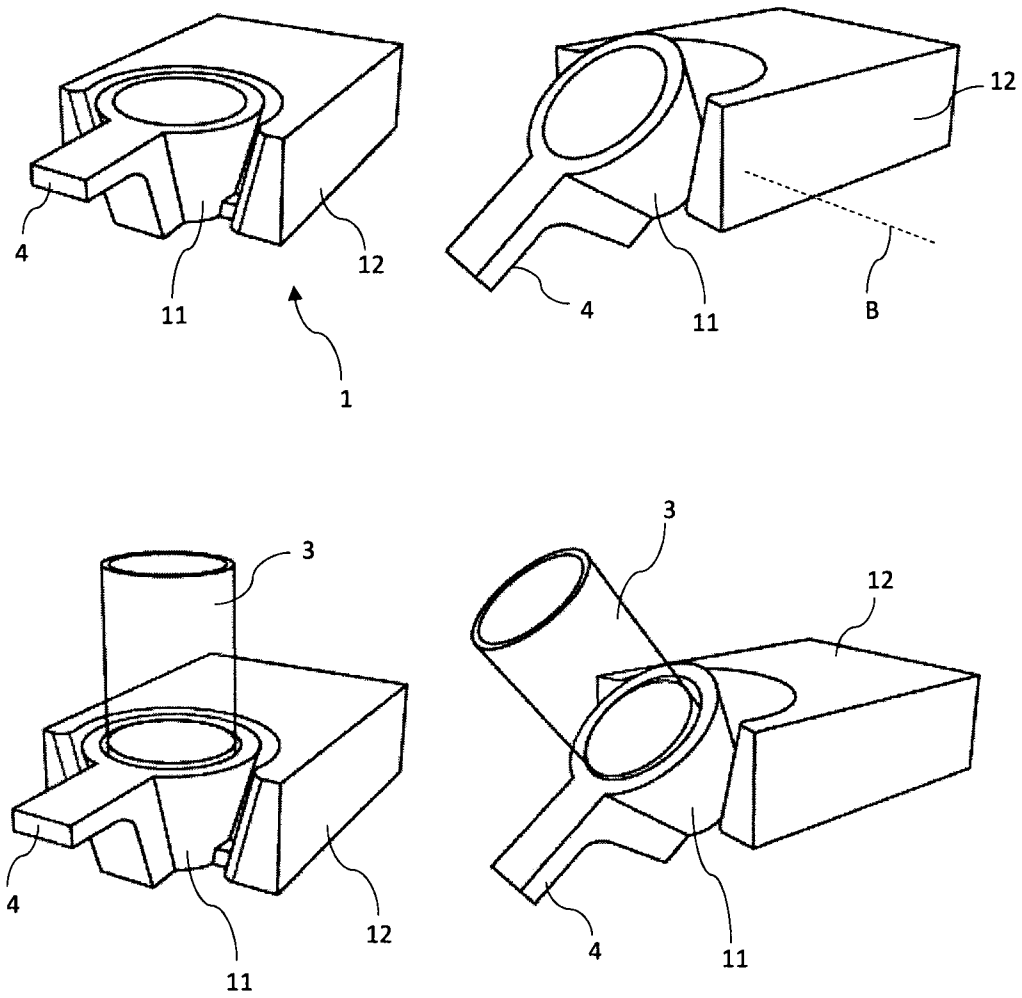


Fig. 7 a)-d)

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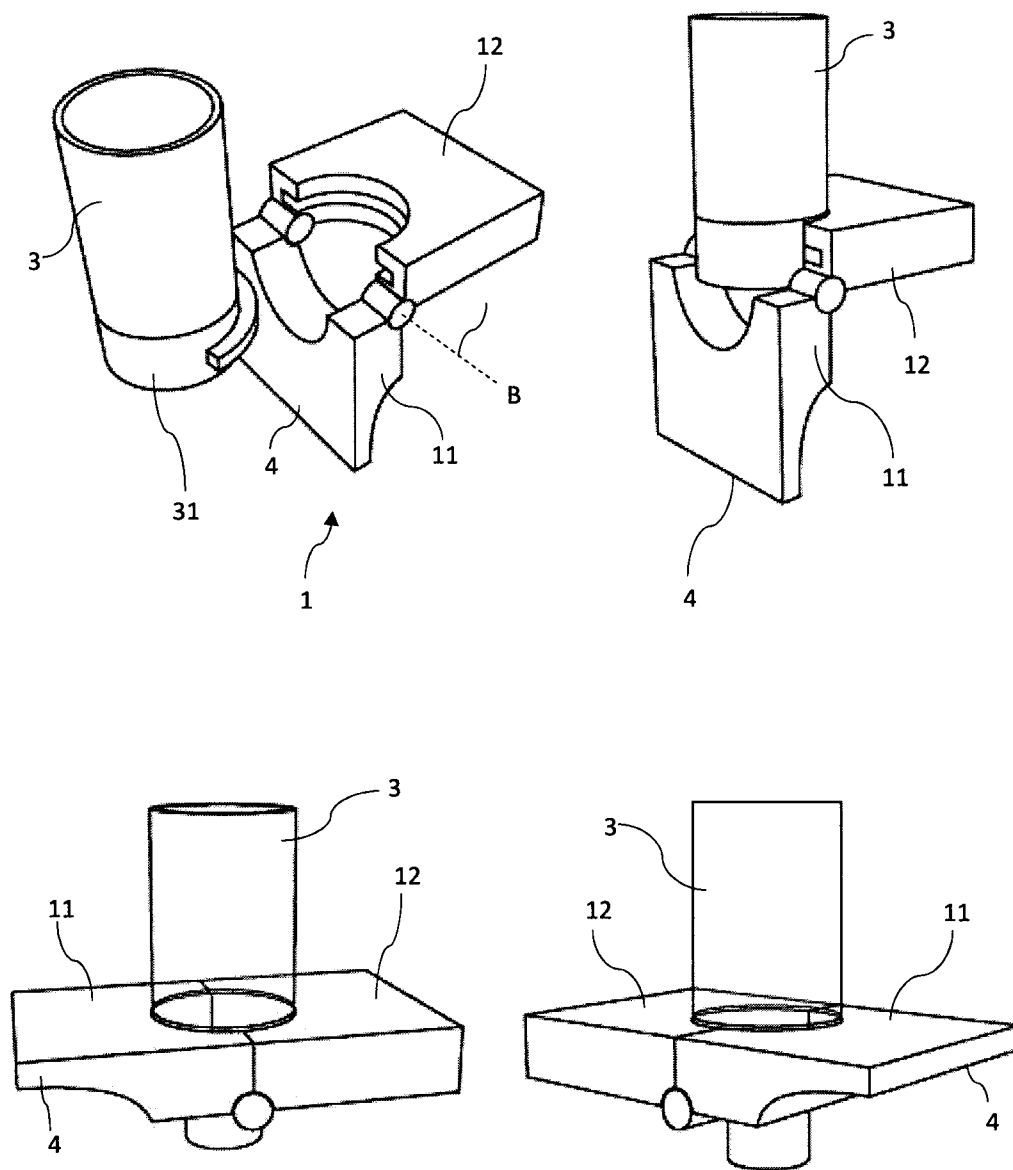
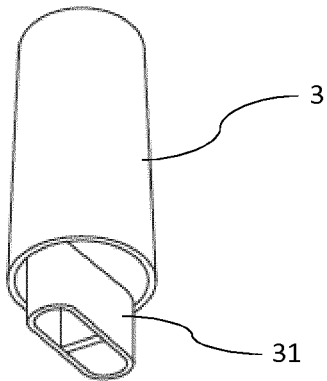


Fig. 8 a)-d)



**Fig. 1**