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(73) Patenthaver: **Carogusto AG, Fehlwiesstrasse 1, 8580 Amriswil, Schweiz**

(72) Opfinder: **GRENDELMEIER, Thomas, , 8634 Hombrechtikon, Schweiz**

(74) Fuldmægtig i Danmark: **CHAS. HUDE A/S, Langebrogade 1, 2. B2, 1411 København K, Danmark**

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Device for preparing foods using steam

Description

[0001] The invention relates to a device according to the preamble of claim 1 for preparing foods received in a vessel, in particular ready meals, (using steam), the device comprising a steam generator unit for generating unit, a steam delivery unit having a steam probe containing at least one steam discharge opening, the steam delivery unit being connected to the steam generator unit in a steam-conducting manner via a steam feed line, and drive means, for the, translational, displacement of the steam delivery unit relative to a rinsing device, preferably disposed below the steam delivery unit along the vertical, having a rinsing tank and rinsing water application means, in particular comprising a rinsing nozzle for rinsing, in particular spraying, the steam probe after a food preparation process (using rinsing water), the rinsing tank being in fluid communication with a drain line section for discharging dirty rinsing water.

[0002] From DE 10 2015 221 005 1, a device for preparing foods received in a vessel using steam is known in which a steam delivery unit, to which steam is supplied by means of a steam generator unit, can be displaced in a translational manner relative to a rinsing device in the vertical direction. The rinsing device comprises a tubed rinsing tank which is mounted from above on a work surface. The rigid drain line which is in fluid communication with the rinsing tank may be blocked when the known device is operated; a laborious dismantling of the fixed tubing may be required in order to clear the blockage.

[0003] DE 10 2012 202 318 B4 also discloses a food preparation device which has a tubed rinsing tank.

[0004] Starting from the aforementioned state of the art, the object of the invention is to indicate a device for preparing foods received in a vessel which can be cleaned in a facilitated manner. Preferably, the device or its rinsing device can be mounted in a simple manner or without great effort.

[0005] Said object is attained by a device having the features of claim 1, i.e., concerning a generic device, by the fact that a drain funnel is fixed to the drain line section, wherein the drain funnel can be detached from a rinsing tank, in particular without any tools being required, for cleaning and/or exchange purposes and is sealed in relation to the rinsing tank by sealing means. The drain line section can be realized in one piece, in particular in a monolithic manner, with the drain funnel or as a separate component which is fixed to the drain funnel.

[0006] Advantageous embodiments of the invention are disclosed in the dependent claims.

[0007] The idea of the invention is to provide a drain funnel in the bottom area of the rinsing tank via which dirty rinsing water can flow towards the drain line section which is realized in one piece with the drain funnel or which is preferably fixed to drain funnel on the outlet side through a discharge opening of the drain funnel. According to the invention, the drain funnel is fixed so as to be detachable to or in the rinsing tank in order be able to remove the drain funnel from the rinsing tank, in particular without any tools being required, for cleaning and/or exchange purposes of the drain funnel and/or of the drain line section. In order to avoid a leakage of rinsing water in an area between the drain funnel and the rinsing tank in a reliable manner, sealing means are provided which are disposed so as to be detachable at the rinsing tank and/or the drain funnel and which preferably also have the fixing function for realizing the detachable connection between the rinsing tank and the drain funnel, as will be explained below. If the drain or the drain line section is blocked in practice, the drain funnel and the drain line section connected or fixed thereto can be detached from the rinsing tank in a simple manner without any tools being required and the drain funnel can be cleaned. In this way, it is also possible to exchange the drain funnel and/or the drain line section in a simple manner in the case of wear. In a particularly preferred embodiment which will be described in detail below, the drain line section has a free end which leads to a siphon or a collecting vessel, for example, and which is, in particular loosely, inserted or protrudes into the siphon or the collecting vessel to not have to separate the drain line section from a counterpart, in particular a pipe sleeve or a similar

drain line connection before the drain funnel and the drain line section are removed. The drain funnel is the drain of the rinsing tank and is preferably inserted so as to be detachable into a mounting opening on the bottom side of the rinsing tank, in particular from above, i.e. from the direction of an upper rinsing tank opening.

[0008] As mentioned above, the sealing means for sealing the detachable connection between the drain funnel and the rinsing tank are particularly preferably realized as, in particular sole, fixing means for the, in particular form-fitting and/or clamping and/or locking, support of the drain funnel. In other words, a particularly preferred embodiment provides to realize a detachable fixed (and obviously sealed) connection between the rinsing tank and the drain funnel via the sealing means. To this end, the sealing means are particularly preferably fixed, at least sectionwise, to the rinsing tank and/or the drain funnel, in particular by a realization in one piece, for example in the multicomponent injection molding process. In an exemplary manner, a form-fitting connection can be realized by the fact that the sealing means realize a circumferential groove in the area of the mounting opening in the rinsing tank and/or at the drain funnel on the opposite side, a corresponding circumferential bead of the opposite component in the radial direction engaging into said circumferential groove in a force-fitting, in particular locking and/or clamping manner, or vice versa.

[0009] As indicated above, it is particularly useful if the rinsing tank is realized as a multicomponent plastic part, particularly preferably a multicomponent injection-molded part. The multicomponent rinsing tank comprises an elastomer material which, at least sectionwise, realizes the sealing means and a rigid plastic material compared to the elastomer material which realizes, in particular, the tank form and/or a mounting plate section form which is preferably provided and which will be described below. In addition to the sealing means functionality for the sealed connection of the drain funnel to the rinsing tank, the elastomer material which is fixed to the rinsing tank within the scope of a multicomponent injection-molded process can also realize additional functional sections (described below) of the rinsing tank and can limit a residual steam drain line opening or realize a sealing in relation to a work surface, for example.

[0010] The detachable connection between the drain funnel and the rinsing tank is particularly preferably realized in such a manner that the drain funnel can be removed from the rinsing tank by applying a detachment force in the direction of the steam delivery unit which is disposed above the drain funnel, i.e. upwards along the vertical. In other words, the drain funnel is preferably inserted into a lower mounting opening or a mounting opening which is disposed in the area of the rinsing tank bottom in such a manner that the funnel can be removed from the mounting opening, preferably by a force in the direction of an upper rinsing tank opening, preferably within the scope of a purely translational movement, in particular while overcoming a corresponding holding force, preferably realized by the sealing means. Of course, it is also possible to realize a fixing or a detachment by a rotational movement, for example by realizing a thread connection—however, a detachment by applying a pull and/or push force in the vertical direction is preferred. The mounting can preferably be realized in a simple manner by applying a fixing force which is opposite to the aforementioned linear detachment force, the drain funnel being pressed, preferably axially, against a stop or an abutment at the rinsing tank.

[0011] In a particularly useful embodiment of the device, the drain line section is not realized in a rigid manner, but as a flexible drain hose, preferably fixed so as to be detachable to the drain funnel. With respect to the selection of the hose material, different possibilities are available. It is conceivable, for example, to realize the hose as a plastic hose, in particular a corrugated hose, or as an extruded, substantially smooth hose, in particular having an inner fabric for increasing the strength. The drain hose is particularly preferably realized in a robust manner as a metal fabric hose or metal corrugated hose.

[0012] As indicated above, the drain line section, in particular a free end of the drain hose which faces away from the drain funnel, is loosely inserted into a siphon opening and/or loosely into a collecting vessel, in particular a collecting vessel of the device which is particularly preferably disposed in an area below a work surface to be described below in order to allow for a removal of the drain line section, in particular of the drain hose together with the drain funnel, in particular without any

tools being required, without having to remove the drain line section from a counterpart, such as a pipe sleeve or clamp. Of course, it is also possible to realize a fixed, sealed mounting of the drain line section at the counterpart, in particular at a drain pipe and/or siphon.

[0013] In a preferred embodiment, the rinsing tank is surrounded by a plate-shaped or flat mounting plate section which is particularly preferably realized in one piece (monolithically) with the rinsing tank, in particular in the injection molding process. Alternatively, the mounting plate section can be realized by a separate mounting plate which is preferably made of plastic and which is preferably connected to the rinsing tank, in particular an edge of the rinsing tank, for example by screwing.

[0014] It is particularly useful if the mounting plate section is disposed below a work surface or if the work surface rests on the mounting plate section and the rinsing tank can be accessed through a work surface opening, i.e. from above in the vertical direction. An upper circumferential edge of the rinsing tank can extend through the work surface opening and/or is flush with an upper work surface of the work surface opening. It is also conceivable to dispose the entire rinsing tank below the upper side of the work surface. In order to avoid a moisture penetration into an area above the mounting plate section, i.e. in an area between the work surface and the mounting plate section, the mounting plate section and/or the rinsing tank is/are preferably sealed by an elastomer seal, in particular in relation to a bottom side of the work surface and/or in relation to a circumferential edge of the work surface opening in the radial direction. It is particularly useful if it is an integral elastomer seal of the mounting plate section and/or of the rinsing tank which is preferably realized together with the mounting plate section and/or the rinsing tank in the injection molding process.

[0015] In a particularly useful embodiment of the device, a support section, preferably made of plastic, for the steam delivery unit is realized at the mounting plate section, the support section being preferably spaced apart from an upper rinsing tank opening in the radial direction and/or realized by (or, alternatively, fixed to) the mounting plate section, the steam delivery unit resting on said support section in a lower rinsing position. A corresponding opening in the work surface is

preferably assigned to the support section, said opening being preferably spaced apart from the work plate opening which is assigned to the rinsing tank. The support section extends preferably through said opening upwards in the vertical direction.

[0016] In an additional or alternative advantageous embodiment of the invention, an opening is realized in the mounting plate section, the opening being preferably spaced apart from an upper rinsing tank opening in the radial direction and/or limited by an elastomer material, particularly preferably realized or injected within the scope of a multicomponent injection molding process, a residual steam drain line being received in said opening. Such an embodiment can preferably be realized in the multicomponent injection molding process and increases the functionality of the assembly, comprising the mounting plate section and the rinsing tank.

[0017] In a particularly preferred embodiment, a rinsing nozzle mounting opening is realized in the rinsing tank, a rinsing nozzle for applying a rinsing water spray jet to the steam probe being disposed in the rinsing nozzle mounting opening.

[0018] Further advantages, features and details of the invention can be derived from the following description of preferred exemplary embodiments and from the drawings.

[0019] In the following,

Fig. 1 is a sectional view of a device for preparing foods received in a vessel, comprising a steam generator unit which can be displaced in the vertical direction and a shown rinsing tank, integrated into a work surface,

Fig. 2 is a perspective representation of the rinsing tank according to Fig. 1 and a drain funnel which can be inserted so as to be detachable into said rinsing tank, a drain line section realized as a flexible hose being fixed to the drain funnel,

Fig. 3 is a representation of the rinsing tank without a work surface, the rinsing tank being surrounded by a mounting plate section realized in a monolithic manner with said rinsing tank, and

Fig. 4 is a representation of the rinsing tank and the mounting plate section in a view from below.

[0020] In the figures, the same elements and elements having the same function are referenced with the same reference numerals.

[0021] In Fig. 1, a sectional view of a device 1 for preparing foods received in a vessel, in particular ready meals, is shown. More specifically, Fig. 1 shows a rinsing device 2 which has a rinsing tank 3 which can be accessed through a work surface opening 4 from above in the vertical direction. Work surface opening 4 is located in a work surface 5 which has a horizontal orientation and which is made of stainless steel, for example.

[0022] A steam generator unit of the device for generating steam and a steam delivery unit which is connected to the steam generator unit in a steam-conducting manner via a steam feed line are not shown, wherein the steam delivery unit can be realized as described in DE 10 2015 221 005 A1, for example, and shown in the figures, in particular Fig. 1, of said disclosure. The steam delivery unit can be displaced by means of corresponding drive means in a translational manner along a vertical axis relative to a vessel in which foods are received, the vessel being located in an area above rinsing tank 3 shown in Fig. 1, in particular supported by a support carriage which can be displaced in the horizontal direction, in order to prepare or heat the foods. The steam delivery unit preferably comprises a cover for covering the vessel in a sealed manner in order to define a steam chamber. The steam is applied to the foods via a steam probe as shown in DE 10 2015 221 005 A1, for example—the steam probe is preferably realized and disposed or driven in order to steam and mix the foods at the same time in order to cause an improved thermal energy distribution.

[0023] Rinsing water application means, in particular comprising a rinsing nozzle,

are not shown, wherein said rinsing nozzle can be inserted or mounted into a rinsing nozzle opening 6 in rinsing tank 3 shown in Fig. 2.

[0024] After one or several preparation processes, the steam generator unit can be displaced downwards along the vertical, in particular until the steam probe protrudes into shown rinsing tank 3, rinsing tank 3 being closed by an aforementioned cover of the steam delivery unit. The steam delivery unit is supported by a support section 7 in the aforementioned (lower) rinsing position, said support section 7 being realized in a monolithic manner with rinsing tank 3 at a mounting plate section 8 shown in Fig. 3, mounting plate section 8 being realized in one piece with rinsing tank 3. Alternatively, mounting plate section 8 (and thus support section 7) is a component which is separate from and fixed to rinsing tank 3. Aforementioned mounting plate section 8 (irrespective of whether said mounting plate section 8 is realized in one piece with or separate from rinsing tank 3) is disposed below work surface 5—i.e. work surface 5 rests on mounting plate section 8 in the mounted state. The combination of mounting plate section 8 and rinsing tank 3 is sealed in relation to work surface 5, more specifically in relation to a bottom side of work surface 5 by means of an annular elastomer seal 9 which is injected upon mounting plate section 8 and/or rinsing tank 3 in the two component injection molding process, for example.

[0025] Fig. 3 shows that a drain funnel 10 is located at the bottom of rinsing tank 3, drain funnel 10 being sealed in relation to rinsing tank 3 via sealing means 11. Drain funnel 10 has a central drain opening 12 which leads to a drain line section 13 which is realized as a corrugated hose and which is fixed to drain funnel 10, more specifically an extension of drain funnel 10, in the present case by means of a fixing clamp 14.

[0026] The flexible drain hose or drain line section 13 can be removed together with drain funnel 10 from rinsing tank 3 without any tools being required—all that is needed is to apply a detachment force to drain funnel 10, the detachment force being oriented towards an upper rinsing tank opening 15 in the vertical direction.

[0027] In the shown exemplary embodiment, drain funnel 10 is retained in the fixing

position shown in Fig. 3 by means of sealing means 11. Said sealing means 11 are realized in one piece with rinsing tank 3 within the scope of the two component injection molding process and have an annular groove in which a corresponding circumferential bead of drain funnel 10 is received.

[0028] In Fig. 2, drain funnel 10 and drain line section 13 realized as a flexible hose are shown in the dismantled state.

[0029] As mentioned above, support section 7 is realized at mounting plate section 8. Said support section 7 extends through an opening 16 assigned thereto in work surface 5, in fact at a radial distance to rinsing tank 3. The sealing for the purpose of avoiding a water ingress into an area between mounting plate section 8 and the bottom side of work plate 5 is realized via an elastomer seal 17 which surrounds support section 7 and which is realized in one piece with mounting plate section 8, preferably within the scope of the two component injection molding process.

[0030] As mentioned above, rinsing nozzle opening 6 is located in rinsing tank 3 (cf. Fig. 2); in the representation according to Fig. 3, a rinsing nozzle 18 of the rinsing water application means is mounted in said rinsing nozzle opening 6.

[0031] An (additional) opening 19 is provided in mounting plate section 8 at a radial distance to rinsing tank 3, opening 19 being surrounded by elastomer material and being used for receiving a residual steam drain line.

[0032] A corresponding or aligned opening in work surface 5 is assigned to opening 19.

Reference signs

[0033]

1	device
2	rinsing device
3	rinsing tank
4	work surface opening
5	work surface
6	rinsing nozzle opening
7	support section
8	mounting plate section
9	elastomer seal
10	drain funnel
11	sealing means
12	drain opening
13	drain line section
14	fixing clamp
15	upper rinsing tank opening
16	opening in work surface
17	elastomer seal
18	rinsing nozzle
19	opening in mounting plate section

Patentkrav

1. Indretning (1) til forarbejdning af fødevarer der er optaget i en beholder, især færdigretter, hvilken indretning (1) omfatter: en dampgenerende enhed til generering af damp, en damptilførselsenhed med en dampsonde der omfatter mindst én dampudledningsåbning, hvilken damptilførselsenhed er forbundet med den dampgenerende enhed på en dampledende måde via en damptilførselsledning, og drivmidler til især translatorisk forskydning af damptilførselsenheden i forhold til en skylleindretning (2) der er foretrukket anbragt under damptilførselsenheden langs den lodrette retning, og som omfatter en skylletank (3) og skyllevandspåføringsmidler, der især omfatter et sprøjtemundstykke (18) til skylning af dampsonden efter en fødevareforarbejdningsproces, hvilken skylletank (3) er i væskekommunikation med en afstrømningsledningssektion (13) til udledningen af forurenet skyllevand,
kendetegnet ved, at
en afløbstragt (10) der omfatter afstrømningsledningssektionen (13), er fastgjort til skylletanken (3), hvilken afløbstragt (10) kan løsnes fra skylletanken (3), især uden brug af værktøj, til rengørings- og/eller udskiftningsformål og er tætnet i forhold til skylletanken (3) med tætningsmidler (11).

2. Indretningen ifølge krav 1,
kendetegnet ved, at
tætningsmidlerne (11) er især udformet som enkelte fikseringsmidler til fastholdelse af afløbstragten (10), især formtilpassende og/eller fastspændende og/eller låsende.

3. Indretningen ifølge krav 2,
kendetegnet ved, at
skylletanken (3) er udformet som en flerkomponentplastdel, især en flerkomponent sprøjtestøbt del der omfatter: et elastomermateriale som mindst sektionsvist udformer tætningsmidlet (11), og et plastmateriale som er stift i forhold til elastomermaterialet.

4. Indretning ifølge et hvilket som helst af kravene 1 til 3,

kendetegnet ved, at

afløbstragten (10) indsættes i en nedre monteringsåbning på skylletanken (3) og fastgøres til skylletanken (3) således, at den kan aftages på en sådan måde, at afløbstragten (10) kan fjernes fra skylletanken (3) ved at påføre en frigørende kraft langs den lodrette retning af damptilførselsenheden.

5. Indretning ifølge et hvilket som helst af de foregående krav,

kendetegnet ved, at

afstrømningsledningssektionen (13) er udført som en fleksibel afløbsslange, der især er løseligt fastgjort til afløbstragten (10).

6. Indretning ifølge et hvilket som helst af de foregående krav,

kendetegnet ved, at

afstrømningsledningssektionen (13) er fastgjort til en hævert, eller løst indsat i denne, eller munder foretrukket ud på en løs måde i en opsamlingsbeholder, foretrukket indretningen (1).

7. Indretning ifølge et hvilket som helst af de foregående krav,

kendetegnet ved, at

skylletanken (3) er omgivet af en pladeformet monteringspladesektion (8), der foretrukket er udført i ét stykke med skylletanken (3).

8. Indretningen ifølge krav 7,

kendetegnet ved, at

skylletanken (3) kan tilgås gennem en arbejdsfladeåbning (4) på en arbejdsflade (5), som hviler på monteringspladesektionen (8), hvilken monteringspladesektion (8) og/eller skylletank (3) er tætnet, især i forhold til en underside af arbejdsfladen og/eller i forhold til en kant af arbejdsfladen, der åbner i radial retning med en elastomer tætning, og er foretrukket udført i ét stykke på monteringspladesektionen (8) og/eller skylletanken (3).

9. Indretning ifølge krav 7 eller 8,

kendetegnet ved, at

en støttesektion (7) der foretrukket er fremstillet af plast til damptilførselsenheden, er udformet på monteringspladesektionen (8), hvilken støttesektion (7) er foretrukket radialt adskilt fra en øvre skylletankåbning (15) og/eller er udformet af monteringspladesektionen (8), og mod hvilken støttesektion (7) damptilførselsenheden ligger an i en nedre skylleposition.

10. Indretning ifølge et hvilket som helst af de foregående krav,

kendetegnet ved, at

der er udformet en åbning i monteringspladesektionen (8), hvilken åbning er foretrukket radialt adskilt fra en øvre skylletankåbning (15) og/eller er foretrukket begrænset af et integreret, elastomert materiale, i hvilken åbning en restdampafløbsledning er optaget.

11. Indretning ifølge et hvilket som helst af de foregående krav,

kendetegnet ved, at

en skylledysemonteringsåbning er udformet i skylletanken (3), i hvilken der er anbragt en skylledyse (3) til at påføre dampsonden en skyllevandssprøjtestråle.

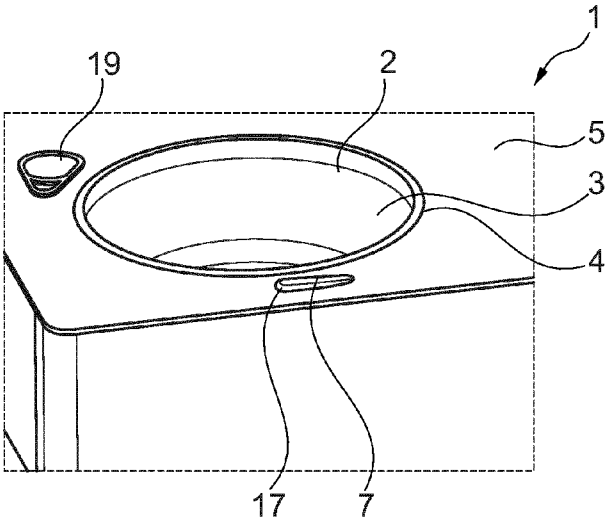


Fig. 1

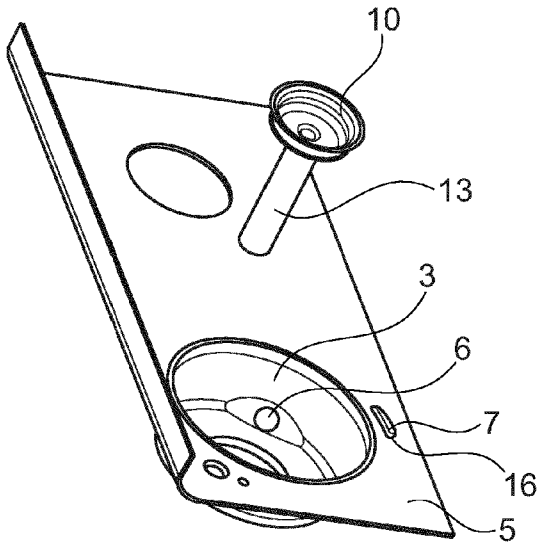


Fig. 2

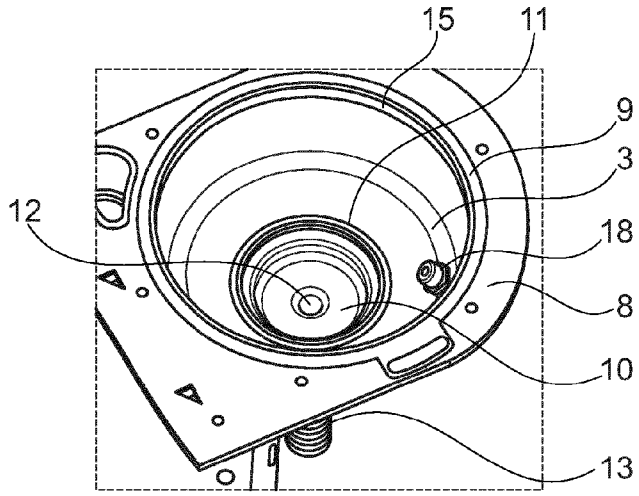


Fig. 3

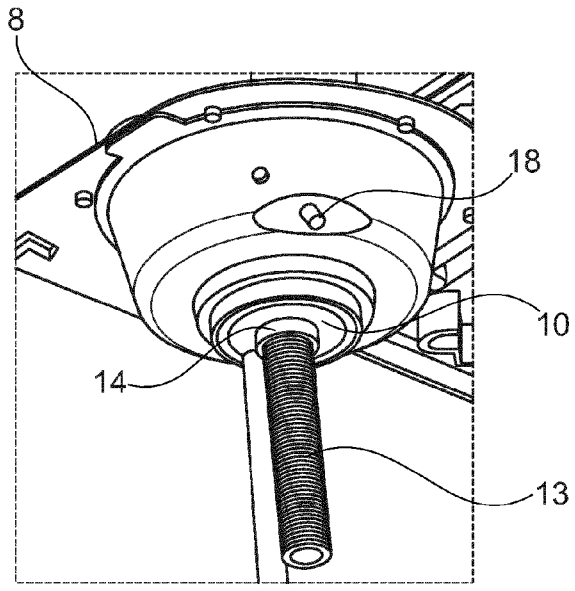


Fig. 4