

LID FOR A PRESSURE COOKER, AND PRESSURE COOKER COMPRISING A LID
DESCRIPTION

FIELD OF THE INVENTION

[0001] The invention relates to a lid for a pressure cooking pot. In particular, the invention relates to a lid for pressure cooking pots having a pouring edge, these pots also being usable as conventional pots.

BACKGROUND OF THE INVENTION

[0002] Pressure cooking pots are cooking devices which operate by the principle of increasing the boiling point. Such pressure cooking pots are provided with a lid having a pressure relief valve, via which the desired working pressure of the pot is determined. Food can thus be cooked at temperatures of generally approximately 120 °C in a much shorter time.

[0003] Pressure cooking pots are formed as pressure containers and must meet high safety requirements. Conventional pressure cooking pots generally comprise a pot, which is provided with peripheral grooves or the like, in which an adapted lid can be latched. Pressure cooking pots are generally unsuitable for use as a normal cooking pot for depressurised cooking owing to the latching means provided on the pot.

[0004] European patent EP 1416837 B1 (inventor: Horst Schulz) therefore proposes a lid for a pressure cooking pot, which lid comprises claws curved in a U-shaped manner by means of which the lid can be latched on the pouring edge of a pot shaped "normally".

[0005] This pot provided with a pouring edge is much more suitable for use as a normal cooking pot. One

drawback is that the entire lid of the pot has to be changed for normal, depressurised use.

[0006] According to the teaching of EP 1416837 B1, the latching claws can be removed for cleaning. This is relatively complex, however, since a nut on the underside of the lid has to be detached for this purpose. To this end, a tool generally has to be used.

[0007] The lid provided with the claws is also hardly suitable for use as a normal cooking pot lid in the unlatched state. It is therefore necessary to have a second lid available for depressurised operation of the cooking pot.

[0008] Furthermore, the design of the lid is relatively involved and complicated.

OBJECT OF THE INVENTION

[0009] The object of the invention is to provide a lid for a pressure cooking pot, the manageability of which is improved.

[0010] In particular, one object of the invention is to convert the lid, in a simple manner, to a normal lid without latching. Assembly and cleaning of the lid are also to be simplified.

SUMMARY OF THE INVENTION

[0011] The object of the invention is solved by a lid for a pressure cooking pot according to any one of the independent claims.

[0012] Preferred embodiments and developments of the invention are to be inferred from the respective dependent claims.

[0013] The invention relates to a lid for a pressure cooking pot, in particular a lid which can be latched on conventional pots with a pouring edge.

[0014] The lid comprises an edged lid with a seal and a grip. An edged lid is understood to mean a lower lid with a peripheral web or edge and which comprises a seal and can be inserted into the pot. The lid further comprises a grip, which is normally formed as a button and by means of which the lid can be lifted off from the pot.

[0015] In order to create a pressure-tight container, the lid can be latched on the cooking pot.

[0016] According to the invention, the grip comprises means in order to be lifted off from the edged lid together with at least part of a latching mechanism.

[0017] The lid thus comprises two modules, namely a lower lid module with an edged lid, and an upper module with a grip and a latching mechanism.

[0018] Since means for removing said grip from the edged lid together with the latching mechanism are provided on the grip itself, it can be removed in a very simple manner, for example without screws having to be detached from the lower part of the lid.

[0019] The edged lid comprises means to which the grip can be fixed. Once the grip together with the latching mechanism has been removed, the grip can be replaced by a conventional grip without a latching mechanism.

[0020] A normal lid is thus produced from the edged lid together with this further grip, said lid being well-suited for conventional cooking.

[0021] Owing to this simple exchangeability, the user does not need to have two different lids available, namely a lid for pressure cooking and a lid for depressurised cooking.

[0022] The cleaning of the lid is also facilitated since the mechanism for removing the grip and the latching mechanism is provided in the upper side of the lid.

[0023] An actuation of a screw for example on the underside of the lid generally hinders the cleaning process, since the underside may be dirtied by food residues after the cooking process. In a development of the invention the grip can be fixed to a valve attached preferably centrally on the edged lid.

[0024] In this embodiment of the invention, the valve housing, which is pin-shaped for example, can be used to fix a grip thereon. The grip does not therefore have to be fixed by a special threaded bolt or the like, and the valve fixed on the edged lid does not interfere when the edged lid is used as a normal lid for depressurised cooking, but is formed as a seat for the further grip.

[0025] As provided in a preferred embodiment of the invention, at least one valve is thus arranged in the grip.

[0026] This valve is used in one embodiment of the invention to fix the working pressure of the pot. This means that the valve arranged in the grip opens at the

desired working pressure and thus regulates the temperature, prevailing inside the pot, by the boiling point of water.

[0027] In an alternative embodiment of the invention however, a safety valve may also be integrated in the grip instead of the valve for fixing the working pressure, said safety valve being provided as a second valve which opens at a higher pressure in case the other valve fails and/or which locks the latching mechanism of the lid at pressure so that it cannot be opened.

[0028] In a development of the invention the valve is adjustable. For example, this is possible in a simple manner since the bias of a valve spring can be adjusted by means of a set screw.

[0029] Different pressure stages for cooking at different temperatures can be set by the user by such an adjustable valve.

[0030] In a preferred embodiment of the invention the lid can be removed via a slider mechanism. Such a slider mechanism comprises a slider, which is positively connected in one position to the collar of a fixing bolt of a valve housing for example. The slider is slid into a position by shifting a controller, in which position the positive connection is released. The grip can thus be removed in a very simple manner at the push of a button.

[0031] In a preferred embodiment of the invention the latching mechanism is actuatable by means of the grip. In particular, claws with U-shaped ends are used as a latching mechanism and engage in the pouring edge of a pot and carry out a movement directed at least in-

wardly, that is to say in the direction of the central axis of the pot, when the grip is turned.

[0032] The direction of movement of the claws preferably extends upwardly at the same time in the direction of the button. In the latched state an inwardly directed force is thus exerted onto the claws in the event of pressure build-up.

[0033] An unlatching is therefore only possible with a high expenditure of force, or is impossible, in particular at a relatively high pressure. This may also further improve the safety of the pot in combination with a safety valve, which locks the latching mechanism.

[0034] The pot preferably comprises two valves, namely a valve for fixing the working pressure and a safety valve, which for example locks the latching mechanism at pressure so that the pot cannot be opened. The safety valve may also be designed in such a way that it is actuated at a higher pressure than the other valve, should this other valve fail.

[0035] In a preferred embodiment of the invention the latching mechanism of the lid is latched in the unpressurised state by at least one of the valves. To this end for example, the pin of a safety valve engages in a corresponding recess in the grip and, when the pot is pressurised, thus blocks a rotation of the grip, with which the latching mechanism of the lid is actuated.

[0036] At least one of the valves may also actuate a pin, which is attached on the removable part of the lid - in particular on the grip.

[0037] For example, this pin may be used to visually signal to the user the pressure provided.

[0038] In one embodiment of the invention the lid comprises a middle plate, which is arranged between the grip and the edged lid and to which claws for latching of the lid are attached.

[0039] The removable module is formed with the latching mechanism and the grip above the middle plate. In particular, the middle plate is used for attachment of the latching mechanism. The grip and/or the middle plate is/are preferably connected to the edged lid so as not to be axially rotatable when the grip is fitted on, whereas the grip is fixed rotatably on the middle plate so that claws for latching the lid can be actuated by the grip.

[0040] In a development of the invention the middle plate can be removed together with the grip and a duct is arranged between the middle plate and the edged lid, through which duct steam which discharges via at least one valve can escape.

[0041] This duct can be cleaned particularly easily in the removed state.

[0042] It is also particularly advantageous if the steam only escapes through the duct between the middle plate and the edged lid, and is not diverted along the mechanical elements of the latching mechanism. Food residues which are transported together with the steam can therefore only come into contact with the duct, which can be formed so as to be easily cleanable and with no covered surfaces.

[0043] The lid preferably consists of two separable modules, wherein one module comprises a grip and the

latching mechanism for latching the lid on the pouring edge of a pot, and the other module comprises an edged lid for covering the pot.

[0044] The invention further relates to a lid for a pressure cooking pot - in particular having one or more of the above-described features - which comprises an edged lid with a seal and at least one valve.

[0045] According to the invention a latching mechanism is arranged on a middle plate, which is in turn arranged between the edged lid and grip.

[0046] The middle plate can be removed from the edged lid together with the latching mechanism, wherein a duct is formed between the middle plate and the edged lid, through which duct steam, which discharges from at least one valve, can be released into the open.

[0047] Owing to the use of a duct arranged between a middle plate and an edged lid, it is possible to largely prevent steam from coming into contact with the mechanics of the latching mechanism and to prevent particles present in the steam from contaminating the latching mechanism, which is relatively difficult to clean.

[0048] The invention further relates to a lid for a pressure cooking pot, which comprises an edged lid with a seal and at least one valve for fixing the working pressure.

[0049] Furthermore, the lid comprises a safety valve and a grip. According to the invention at least one of the valves is arranged in the grip, and, in particular if it is attached to the edged lid, can serve as a seat to which the grip of the lid is fixed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0050] The invention will be explained hereinafter in greater detail with reference to drawings Fig. 1 to Fig. 10.

[0051] In the drawings:

[0052] Fig. 1 shows a schematic sectional view of a pressure cooking pot with the lid fitted.

[0053] Fig. 2 shows a detail of the sectional view illustrated in Fig. 1.

[0054] Fig. 3 shows a perspective view of a lid for a pressure cooking pot.

[0055] Fig. 4 shows a perspective view of an upper module with the latching mechanism.

[0056] Fig. 5 shows a perspective view of the lower module of a lid.

[0057] With reference to Fig. 6 and Fig. 7, details of the grip will be explained

[0058] Fig. 8 shows a perspective view of a lid, which is cut along a plane lying on the centre axis of the lid.

[0059] Fig. 9 shows a further sectional view of a lid.

[0060] With reference to Fig. 10, details of a middle plate of the lid will be explained.

[0061] With reference to Fig. 11 and Fig. 12, the latching mechanism of a lid will be explained in greater detail.

DETAILED DESCRIPTION OF THE DRAWINGS

[0062] Fig. 1 shows a schematic sectional view of a pressure cooking pot 1 according to one embodiment of the invention.

[0063] The pressure cooking pot 1 comprises a pot 3 with a pouring edge 4 and a lid 2.

[0064] The pressure cooking pot 1 is formed as a pressure container. A latching mechanism can be actuated via the grip 6, with which latching mechanism the lid 2 is latched on the pouring edge 4 of the pot. The pot is sealed by the lip seal 5.

[0065] The lid 2 comprises a valve 7 for fixing the working pressure and a safety valve 8.

[0066] Fig. 2 shows a detailed view of the lid illustrated in Fig. 1, in which the details, in particular the valve arrangement, can be better seen.

[0067] The lid 2 comprises an edged lid 9 which is fitted on the pot and which is provided with a seal (5 in Fig. 1).

[0068] A first valve 7 is attached to the edged lid 9, via which valve the working pressure of the pressure cooking pot is fixed. The valve 7 (in this case only the valve housing is illustrated) is fixed centrally on the edged lid 9 by a nut 10.

[0069] Furthermore, the lid 2 comprises a grip 6, which is attached rotatably on the housing of the valve 7. For this purpose, the housing of the valve 7 comprises a peripheral groove 12, in which the grip 6 can be fixed by means of the slider 11. For this purpose, a duct 26 for a spring (not illustrated) is preferably provided, with which the slider 11 is pressed outwardly.

[0070] By pressing on the slider 11, said slider 11 can be displaced against the force of the spring into a position in which the positive connection in the groove 12 in the housing of the valve 7 is released.

[0071] The grip 6 is further connected rotatably to a middle plate 15.

[0072] By rotating the grip 6, the lid can be latched via claws, as will be illustrated in greater detail hereinafter with reference to further drawings.

[0073] The edged lid 9 also comprises a further valve, which is arranged deaxially and which is formed in this embodiment as a safety valve 8. The safety valve 8 is also fixed on the edged lid 9. The valve 8 is formed as a spherical valve with a ball 18, which is pressed against a sealing face by means of a spring. A sealing ring 17 acts as the seal of the valve housing.

[0074] It is understood that further sealing means may also be provided in relation to the valve 7.

[0075] The upper part of the valve 8 comprises an upper part 13, by means of which a pin 14 arranged in the grip 6 can be actuated.

[0076] Using the pin 14, it is possible to determine whether the pot is pressurised.

[0077] The upper part 13, which engages in a recess in the grip 6 at pressure, prevents the grip 6 from being turned when the pot is pressurised, and thus prevents the latching mechanism from being actuated.

[0078] Furthermore, the pressure can be released from the pressure cooking pot by pressing down on the pin 14 so as to then open the pressure cooking pot.

[0079] Both the valve housing of the valve 7 and the valve housing of the valve 8 have lateral ducts 19, via which steam can escape into a duct 16 formed between the edged lid 9 and the middle plate 15.

[0080] Since the middle plate 15 can be removed together with the grip 6, the duct 16 is particularly easy to clean. In particular, steam does not discharge at the claws of the latching mechanism as a result of this arrangement.

[0081] Fig. 3 shows a perspective view of a lid. The edged lid 9, which is enclosed by three U-shaped claws 20 can be seen. The claws 20 are coupled to the grip 6 via connecting webs 22.

[0082] The grip 6 has a button 11, via which the entire lid can be removed. To actuate the latching mechanism, the grip 6 can be rotated at the button 21. The claws 20 move inwardly when latching the pot and grip beneath the pouring edge of the pot.

[0083] To remove the module comprising the grip and the latching mechanism, the slider 11 can be pressed and an

upper module, which comprises the latching mechanism, can be removed.

[0084] The components of the upper module are illustrated in perspective view according to Fig. 4.

[0085] The three claws 20, which are coupled to grip 6 via connecting webs 22 can be seen.

[0086] Once this module has been removed, the edged lid 9, which comprises a peripheral seal 5, remains, as illustrated in the perspective view according to Fig. 5. Furthermore, the valve 7, which comprises a groove 12 for fixing of the grip, is attached to the edged lid. In this view, ducts arranged on the housing of the valve 7 and via which the steam can escape can be seen clearly.

[0087] The safety valve 8 is also arranged on the edged lid and also comprises ducts 32, via which the pressure can escape.

[0088] This lower module of the lid can now be provided with a new grip (not illustrated) without a latching mechanism and can thus be used as a lid for depressurised cooking.

[0089] This grip preferably covers both the valve 7 and the safety valve 8. Owing to the use of the valve 7 as a retaining pin for the grip and owing to the fact that the valve 8 is arranged in the direct vicinity, it is possible to cover both valves with one grip. The lid thus does not differ visually from a conventional lid for depressurised cooking. A second lid does not have to be kept available for depressurised cooking.

[0090] Fig. 6 shows a perspective view of the grip 6, which comprises a slider for removing the grip 6, together with the latching mechanism (not illustrated). The slider is fixed in the grip with a pin 23.

[0091] Fig. 7 illustrates a perspective view of the slider 11.

[0092] The slider 11 comprises a recess 24 of greater diameter and a further recess 25 of smaller diameter intersecting this recess 24. In the basic state, that is to say if the slider 11 is not pressed in, the recess of smaller diameter 25 sits beneath a collar arranged on the valve housing and thus ensures a positive connection.

[0093] When the slider is pressed, it is moved from its idle position into a position in which the recess of greater diameter coincides axially with the collar of the corresponding valve. The positive connection is thus released and the grip can be removed.

[0094] The pin 23 prevents the slider 11 from being pushed out of its housing, which is formed by the grip 6, by the provided spring (not illustrated).

[0095] Fig. 8 shows a perspective view of a lid, said view being cut along a plane extending axially. The U-shaped claws 20, which can grip beneath the pouring edge of a pot (not illustrated) can be seen clearly. The pot is sealed via the lip seal 5.

[0096] Fig. 9 shows a sectional view of the module, which comprises the grip 6 and the claws 20.

[0097] A middle plate 15 is provided to fix the grip 6 and the claws 20 and, in the assembled state, lies between the edged lid 9 and the grip 6.

[0098] Further details will be explained with reference to Fig. 10, which shows a perspective view of the middle plate 15.

[0099] The middle plate 15 comprises a central recess 27, which in the assembled state is slid over the valve (7 in Fig. 1) arranged centrally on the edged lid.

[0100] Furthermore, the middle plate 15 comprises a further recess 28, which in the assembled state is slid over the second valve (8 in Fig. 1).

[0101] Since the housing of the safety valve sits in the recess 28 arranged deaxially, the middle plate is not axially rotatable in relation to the edged lid in the assembled state. The middle plate 15 further comprises the duct 16, through which steam escapes between the middle plate and the edged lid in the assembled state. It is understood that the duct 16 may comprise edge seals, which are not illustrated in greater detail in this embodiment. For example, a groove may be formed at the edge for attachment of a seal.

[0102] Fig. 11 shows further details of the middle plate 15 and of the latching mechanism. The middle plate 15 comprises an edge web 31, which is recessed in the region of the connecting webs 22 to the claws 20.

[0103] As already described, the middle plate is fixed axially in the assembled state owing to the recess 28.

[0104] The connecting webs 22 comprise recesses 33, which cooperate with the grip, as illustrated hereinafter.

[0105] The middle plate 15 comprises circular segment-shaped grooves 29.

[0106] Fig. 12 shows a perspective view of the underside of the grip 6. The grip 6 comprises pins 30, which, in the assembled state, engage in the recesses 33 in the connecting webs 22 illustrated in Fig. 11. If the grip 6 is now turned relative to the middle plate 15, the pins 30 extend into the grooves 29 and the claws can thus be moved outwardly or inwardly.

[0107] The pins 30 are preferably mushroom-shaped and may be used to fix the middle plate, connecting webs 22 and grip 6, since these have a greater diameter beneath the recesses 29.

[0108] The recess 27 and a tubular portion 34 arranged on the grip 6 may also form a hinge, which holds together the middle plate and the grip.

[0109] The lid 6 further comprises the recess 35, in which the upper part of the safety valve (8 in Fig. 2) can engage, and thus prevents a turning of the grip when pressurised.

[0110] A pressure cooking pot with simplified handling is provided by this invention.

LIST OF REFERENCE NUMERALS

1	pressure cooking pot
2	lid
3	pot
4	pouring edge
5	seal
6	grip
7	valve
8	safety valve
9	edged lid
10	nut
11	slider
12	groove
13	upper part, safety valve
14	pin
15	middle plate
16	duct
17	sealing ring
18	ball
19	duct, central valve
20	claw
21	button
22	connecting web
23	pin
24	recess
25	recess
26	duct
27	recess
28	recess
29	groove
30	pin
31	web
32	duct
33	recess
34	tubular section
35	recess

CLAIMS

1. A pressure cooker (1) comprising:

a) a lid (2) including:

- i) an upper module including a closure unit (6), a middle plate (15) and fixing claws (20); and
- ii) a lower module including an edged lid (9) comprising a sealing lip (5) and valves (7, 8); and

b) a pot (3) comprising a pouring edge (4), adapted to cooperate with the sealing lip (5) of the lid (2) to seal the cooker for pressurized cooking via the fixing claws (20);

wherein the closure unit (6) comprises means for enabling an easily manageable separation of the upper module from the lower module such that the lower module can act as a lid for the pot during non-pressurised cooking.

2. The cooker according to claim 1, characterised in that the closure unit (6) can be fixed by fixing claws (20) to a cylindrical valve support (7) attached preferably centrally in the edged lid (9).

3. The cooker according to either claim 1 or claim 2, characterised in that the closure unit (6) comprising fixing claws (20) has a slider (11) guided resiliently by means of a fixed guide pin (23) and mounted in a horizontally displaceable manner with recesses engaging in one another, wherein a recess (24) performs the guiding function together with the valve support (7), and a recess (25) performs the latching function in conjunction with the groove (12).

4. The cooker according to at least one of claims 1 to 3, characterised in that the horizontally movable slider (11) integrated in the closure unit (6) has means guided outwardly from the closure unit which enable its functional manageability.

5. The cooker according to at least one of claims 1 to 4, characterised in that the upper lid module is closed towards the edged lid (9) by an axially fixed

middle plate (15) basically guiding connecting webs (22) and claws (20), connects, on the side of the middle plate remote from the edged lid, to the centrally rotatably mounted (34) closure unit (6), which effects a radial movement of the claws from the axial movement of the closure unit via vertically oriented drivers (30) guided in circular segment-shaped grooves (29) in the middle plate and engaging rotatably in the connecting webs, and the closure unit has, on the side remote from edged lid, a button-like cavity formed as a grip (21) for receiving the movable slider (11) and the fixed guide pin (23) as well as a cooking pin (14) showing the pressurised state.

6. The cooker according to at least one of claims 1 to 5, characterised in that the edged lid (9), as part of the lower lid module, receives the working pressure valve (7) and pressure relief or safety valve (8) characteristic of pressurised pressure cooking pots via its duct-like discharge openings (16) for working pressure (19) and overpressure (32) formed in the base and towards the middle plate (15).

7. The cooker according to at least one of claims 1 to 6, characterised in that the middle plate (15) fixed in position by the cylindrical valve connecting piece (8) contains recesses or bores (27, 28) for receiving or passing through the cylindrical valve connecting piece (7, 8) and the discharge openings (19, 32) thereof, the steams exiting here open on their side of the middle plate remote from the edged lid (9) in a sealed duct (16) defined by a doubly formed boundary - a gap (36) for receiving a seal -, wherein the duct lid is formed by the base of the rotatable closure unit (6) facing the edged lid, and via the lateral discharge opening thereof enter the atmosphere without contacting the closure device of the upper lid module.

8. The cooker according to at least one of claims 1 to 7, characterised in that the relative movement in the axial direction between the closure unit (6) and the middle plate (15) is given by the longitudinal extension of the grooves (29) in the middle plate extending in a circular segment-shaped manner and of the drivers (30) of the closure unit moving therein, and the extended cooking pin

(14) of a pressurised cooking pot (3) prevents a relative movement between the closure unit and the middle plate owing to the fixing in the bore (35) of the closure unit.

9. The cooker according to at least one of claims 1 to 8, characterised in that, the surface of the edged lid (9) remote from the cooking pot (3) forms a mechanical interface, when the upper lid module is removed, for receiving other functional parts - such as a standard middle button or a special vapour button - so as to form, with the edged lid, a conventional cooking pot lid for a depressurised cooking pot or a low-pressure cooking pot.

10. The cooker according to at least one of claims 1 to 9, characterised in that the middle connecting pieces (7, 19) formed for example as a hollow cylinder and of which the end - formed as a fixing groove (12) - remote from the edged lid (9) forms part of the closure device between the upper and lower lid module by the slider (11), to be actuated manually, of the closure unit (6) and - beyond this function - is also a carrier of working pressure, pressure relief or safety valves formed on the pressure cooking pot.

11. A pressure cooker lid (2) comprising:

- a) an upper module including a closure unit (6), a middle plate (15) and fixing claws (20); and
- b) a lower module including an edged lid (9) comprising a sealing lip (5) adapted to cooperate with a pouring edge (4), of a pot (3) to seal the pot to form a pressurised cooker via the fixing claws (20), and including valves (7, 8);

wherein the closure unit (6) comprises means for enabling an easily manageable separation of the upper module from the lower module such that the lower module can act as a lid for the pot during non-pressurised cooking.