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LOCK STRUCTURE AND COOKING APPLIANCE

Abstract

A lock structure includes a mounting member, a locking member, and a limiting member. The mounting member is connected to one of a door assembly or a cavity assembly, and the other of the door assembly or the cavity assembly is provided with a connecting part. The locking member is connected to the mounting member, and the locking member is configured to move between a locked position and an unlocked position. In the locked position, the locking member is connected to the connecting part. In the unlocked position, the locking member is separated from the connecting part. When the locking member is located in the locked position, and the limiting member operates in a first state, the limiting member is configured to limit the locking member. When the limiting member operates in a second state, the limiting member releases the locking member.

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATIONS [0001] This application is a continuation of International Application No. PCT/CN2024/103996, filed on Jul. 5, 2024, which claims priority to Chinese Patent Application No. 202310825443.3 filed with China National Intellectual Property Administration on Jul. 6, 2023 and entitled “LOCK STRUCTURE AND COOKING APPLIANCE”, the entire contents of which are herein incorporated by reference.

FIELD

[0002] The present application relates to the technical field of food processing equipment, and particularly relates to a lock structure and a cooking appliance.

BACKGROUND

[0003] After a cooking appliance finishes cooking, users can directly open a door assembly. At this moment, the temperature of the food that has just been cooked is usually high, and there is a possibility of scalding the users. This is especially likely to cause accidents when children use the cooking appliance to cook food.

SUMMARY

[0004] The present application aims to solve at least one of the technical problems existing in the prior art.

[0005] In view of this, according to a first aspect, the present application provides a lock structure for a cooking appliance. The cooking appliance comprises a cavity assembly and a door assembly. The lock structure comprises: a mounting member, and the mounting member is configured to be connected to one of the door assembly and the cavity assembly, and the other one of the door assembly and the cavity assembly is provided with a connecting part; a locking member, and the locking member is connected to the mounting member, and the locking member can move between a locked position and an unlocked position, when in the locked position, the locking member is configured to be connected to the connecting part, and when in the unlocked position, the locking member is separated from the connecting part; a limiting member, and the limiting member is connected to the mounting member, when the locking member is located in the locked position and the limiting member operates in a first state, the limiting member is configured to limit the locking member, and when the limiting member operates in a second state, the limiting member releases the limitation on the locking member.

[0006] In addition, the lock structure in the above technical solution provided according to the present application can further comprise the following additional technical features.

[0007] In some technical solutions, the locking member is provided with a plug-in part, and the locking member is rotatably connected to the mounting member. When in the locked position, the plug-in part is configured to engage with the connecting part, and the plug-in part can rotate under the pulling of the connecting part, to make the locking member rotate towards the unlocked position.

[0008] In some technical solutions, the locking member is provided with a to-be-pushed part, and

the to-be-pushed part is configured to be pushed by the connecting part, to make the locking member rotate towards the locked position.
[0009] In some technical solutions, a first side of the plug-in part is provided with a limiting surface, and a second side of the plug-in part is provided with a inclined surface. The limiting surface is configured to limit the connecting part. A first end of the plug-in part is distal from a rotation center of the locking member. From the first end of the plug-in part to the second end of the plug-in part, a distance between the limiting surface and the inclined surface increases.
[0010] In some technical solutions, the lock structure further comprises: a rotating shaft, which is connected to the mounting member, and the locking member is provided with a shaft hole, and the rotating shaft passes through the shaft hole; a boss, which is connected to the rotating shaft, and the locking member is located between the boss and the mounting member, the locking member is provided with a limiting groove, the limiting groove is in communication with the shaft hole, when the boss is misaligned with the limiting groove, the boss is configured to prevent the locking member from disengaging from the rotating shaft, when the boss is aligned with the limiting groove, the boss can pass through the limiting groove.
[0011] In some technical solutions, one of the locking member and the limiting member is provided with a slot. When the locking member is in the locked position and the limiting member operates in the first state, the other one of the locking member and the limiting member is inserted into the slot.
[0012] In some technical solutions, the limiting member comprises: a solenoid valve body, which is connected to the mounting member; an output shaft, which is connected to the solenoid valve body. In the first state, the output shaft moves to a first position relative to the solenoid valve body, and the output shaft limits the locking member; in the second state, the output shaft moves to a second position, and the output shaft is separated from the locking member.
[0013] In some technical solutions, the limiting member further comprises a guiding member, and the guiding member is connected to the mounting member, the guiding member is provided with a guiding hole, and the output shaft passes through the guiding hole.
[0014] In some technical solutions, the output shaft comprises: a shaft body, which is connected to the solenoid valve body; a first limiting part, which is connected to the shaft body, and the first limiting part passes through the guiding hole and is configured to limit the locking member; a second limiting portion, which is connected to the first limiting part, and when the output shaft is at the first position, the second limiting part contacts the side of the guiding member away from the locking member.
[0015] In some technical solutions, the limiting member further comprises an elastic member which is connected to the output shaft and the solenoid valve body. When the output shaft is at the first position, the elastic member is in an elastically deformed state; when the output shaft is at the second position, the elastic member is in an original state.
[0016] According to a second aspect, the present application provides a cooking appliance, which comprises: a cavity assembly; a door assembly, which is connected to the cavity assembly in an openable and closable manner; the lock structure as described in any of the above technical solutions; and the mounting member is arranged on one of the cavity assembly and the door assembly, and a connecting part is provided on the other one of the cavity assembly and the door assembly.
[0017] In some technical solutions, based on the mounting member being provided on the cavity assembly, the connecting part comprises a door hook.
[0018] The additional aspects and advantages of the present application will become apparent in the following description, or be learned through the practice of the present application.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] The above and/or additional aspects and advantages of the present application will become apparent and easily understandable from the description of the embodiments in conjunction with the accompanying drawings,

[0020] FIG. **1** shows a schematic view of the structure of a cooking appliance in some embodiments of the present application;

[0021] FIG. **2** shows an enlarged view of part A in FIG. **1**;

[0022] FIG. **3** shows an exploded view of a cooking appliance in some embodiments of the present application; and

[0023] FIG. **4** shows an exploded view of a lock structure in some embodiments of the present application.

[0024] Reference signs: **100** lock structure, **110** mounting member, **120** locking member, **121** plug-in part, **122** to-be-pushed part, **123** limiting surface, **124** inclined surface, **125** shaft hole, **126** limiting groove, **127** slot, **130** limiting member, **131** solenoid valve body, **132** output shaft, **133** guiding member, **134** guiding hole, **135** shaft body, **136** first limiting part, **137** second limiting part, **138** elastic member, **140** rotating shaft, **150** boss, **200** cavity assembly, **300** door assembly, **310** connecting part, **311** jack, **320** door seal, **330** door tooth, **340** door surface.

DETAILED DESCRIPTION OF THE APPLICATION

[0025] To more clearly understand the above purposes, features and advantages of the present application, the present application will be further detailed hereinafter in combination with the accompanying drawings and embodiments. It should be indicated that in the case of no conflict, the embodiments and the features in the embodiments of the present application can be combined with each other.

[0026] Many details are illustrated in the following description for the convenience of a thorough understanding to the present application, but the present application can further be implemented using other embodiments other than these described herein. Therefore, the protection scope of the present application is not limited to the specific embodiments disclosed in the following text.

[0027] A lock structure **100** and a cooking appliance provided according to some embodiments of the present application are described hereinafter by referring to FIG. **1** to FIG. **4**.

[0028] In combination with FIG. **1**, FIG. **2** and FIG. **3**, in the embodiments of the present application, a lock structure **100** is provided, and the lock structure **100** is for a cooking appliance. The cooking appliance comprises a cavity assembly **200** and a door assembly **300** connected to each other. The lock structure **100** comprises a mounting member **110**, a locking member **120** and a limiting member **130**; the mounting member **110** is configured to be connected to one of the door assembly **300** and the cavity assembly **200**, and the other one of the door assembly **300** and the cavity assembly **200** is provided with a connecting part **310**; the locking member **120** is connected to the mounting member **110**, and the locking member **120** can move between a locked position and an unlocked position, when in the locked position, the locking member **120** is configured to be connected to the connecting part **310**, and when in the unlocked position, the locking member **120** is separated from the connecting part **310**; the limiting member **130** is connected to the mounting member **110**, when the locking member **120** is located in the locked position and the limiting member **130** operates in a first state, the limiting member **130** is configured to limit the locking member **120**, and when the limiting member **130** operates in a second state, the limiting member **130** releases the limitation on the locking member **120**.

[0029] The lock structure **100** provided in some embodiments is for a cooking appliance, and the cooking appliance comprises the door assembly **300** and the cavity assembly **200**. The mounting member **110**, the locking member **120** and the limiting member **130** serve as a child lock and play a role of assisting the connection between the door assembly **300** and the cavity assembly **200**. By adding the lock structure **100** to one of the door assembly **300** and the cavity assembly **200**, when

the door assembly **300** closes the cavity assembly **200**, the lock structure **100** restricts the door assembly **300** from opening the cavity assembly **200**, to realize the function of a child lock.

[0030] In some embodiments, it is taken as an example for illustration that the lock structure **100** is arranged on the cavity assembly **200**.

[0031] When opening and closing the door, the user can control the limiting member **130** to lock and unlock the cooking appliance. Specifically, when the door assembly **300** closes the cavity assembly **200**, the locking member **120** is in the locked position, and the locking member **120** is connected to the connecting part **310** in the door assembly **300**. At this moment, the user can control the limiting member **130** to switch to the first state, the limiting member **130** operating in the first state limits the locking member **120**, and at this moment, the locking member **120** cannot move relative to the door assembly **300**. Before opening the cavity assembly **200**, the limiting member **130** maybe switched to the second state. The limiting member **130** in the second state is separated from the locking member **120**, at this moment, the limiting member **130** no longer limits the locking member **120**, and the user can open the cavity assembly **200** by pulling the door assembly **300**. Opening the cavity assembly **200** via two steps of operation, may improve the safety of using the cooking appliance.

[0032] In the present application, a child lock structure is added to the cooking appliance. When the locking member **120** moves to a first position, the limiting member **130** limits the movement of the locking member **120**, the locking member **120** limits the position of the door assembly **300**, thus making it difficult for the door assembly **300** to open the cavity assembly **200**, then keeping the door body in a locked state, and as a result, the cavity assembly **200** cannot be opened.

[0033] To open the cavity assembly **200**, the limitation on the door assembly **300** may be released by the locking member **120**. Therefore, the limitation on the locking member **120** may be first released by the limiting member **130**. When the limiting member **130** is separated from the locking member **120**, the locking member **120** can move relative to the mounting member **110**, and the limitation on the door assembly **300** by the locking member **120** can be released. Therefore, when opening the door, the user may first switch the limiting member **130** to the second state, which is the first step of the operation, and then the user pulls the door assembly **300** to open the cavity assembly **200**, which is the second step of the operation. Through the two steps of operation, the difficulty of opening the door is increased.

[0034] After the cooking process of the cooking appliance is completed, the temperature of the food in the cooking cavity is high, at this moment, there is a risk of scalding if the user directly opens the door to take out the food. Therefore, with the above-mentioned lock structure **100** in the present application, if the user wants to open the cavity assembly **200**, the two steps of operation for opening the door may be performed before opening the cavity assembly **200**. In this way, firstly, it can play a role of reminding the user to a certain extent, and secondly, it can prevent the occurrence of the situation where children accidentally open the cavity assembly **200**, and then greatly improve the safety of using this cooking appliance.

[0035] The locking member **120** and the limiting member **130** are installed on the mounting member **110**, and thus the lock structure **100** has an integral structure, which facilitates the assembly of the lock structure **100**.

[0036] In some embodiments, the first state and the second state refer to the operating states of the limiting member **130**.

[0037] As shown in FIG. **2**, in some embodiments, the locking member **120** is provided with a plug-in part **121**, and the locking member **120** is rotatably connected to the mounting member **110**. When in the locked position, the plug-in part **121** is configured to engage with the connecting part **310**. The plug-in part **121** can rotate under the pulling of the connecting part **310**, and the locking member **120** rotates towards the unlocked position.

[0038] The locking member **120** can rotate relative to the mounting member **110** between the locked position and the unlocked position. When the limiting member **130** is in the first state, the

limiting member **130** limits the locking member **120**, at this moment, the locking member **120** cannot rotate relative to the mounting member **110**, and the locking member **120** can limit the door assembly **300**. When the limiting member **130** is in the second state, the limiting member **130** releases the limitation on the locking member **120**, at this moment, the locking member **120** can rotate relative to the mounting member **110**, and the locking member **120** releases the limitation on the door assembly **300**.

[0039] In the following embodiments, it is taken as an example for illustrative description that the connecting part **310** is provided on the door assembly **300**, and the principle of providing the connecting part **310** on the cavity assembly **200** is the same, and will not be repeated herein again.

[0040] When the door assembly **300** closes the cavity assembly **200**, the locking member **120** is connected to the connecting part **310**. When the limiting member **130** limits the locking member **120**, the locking member **120** cannot rotate relative to the mounting member **110**, therefore, it is difficult for the locking member **120** to separate from the connecting part **310**, at this moment, even if the door assembly **300** is pulled, it is difficult to open the cavity assembly **200**. When the limiting member **130** releases the limitation on the locking member **120**, the locking member **120** can rotate freely. When the user pulls the door assembly **300**, the connecting part **310** can pull the plug-in part **121**, and the locking member **120** can rotate under the pulling of the connecting part **310**. As the locking member **120** rotates, the plug-in part **121** gradually separates from the connecting part **310**, and the plug-in part **121** no longer limits the connecting part **310**, and the cavity assembly **200** can be opened smoothly.

[0041] As shown in FIG. **2**, in some embodiments, the locking member **120** is provided with a to-be-pushed part **122**. The to-be-pushed part **122** is configured to be pushed by the connecting part **310**, to make the locking member **120** rotate towards the locked position.

[0042] During the door opening process, the plug-in part **121** is pulled by the connecting part **310** and rotates, and the locking member **120** can rotate to the unlocked position. When the door is closed, in order to enable the locking member **120** to limit the position of the connecting part **310**, it is necessary to ensure that the locking member **120** is in the locked position. The rotation of the locking member **120** from the unlocked position to the locked position is pushed by the connecting part **310**.

[0043] Specifically, the locking member **120** is provided with the to-be-pushed part **122**. During the door closing process, the connecting part **310** comes into contact with the to-be-pushed part **122**. As the connecting part **310** moves, the to-be-pushed part **122** is pushed by the connecting part **310**. Therefore, as the connecting part **310** moves, the locking member **120** rotates from the unlocked position to the locked position. When the door assembly **300** closes the cavity assembly **200**, the locking member **120** just rotates to the locked position, and at this moment, the plug-in part **121** engages with the connecting part **310**.

[0044] By pushing the to-be-pushed part **122** by the connecting part **310**, the door assembly **300** and the locking member **120** are linked. During the door closing process, the locking member **120** can be pushed to rotate to the locked position, and there is no need to provide an electric driving structure to drive the locking member **120**, which is beneficial to simplifying the structure of the cooking appliance.

[0045] In a possible application, the connecting part **310** is provided with a jack **311**, and the plug-in part **121** can be inserted into the jack **311**. During the door opening process, the plug-in part **121** gradually rotates out of the jack **311**. During the door closing process, the movement of the connecting part **310** is synchronized with the rotation of the locking member **120**, and the plug-in part **121** gradually inserts into the jack **311**.

[0046] In other embodiments, the lock structure **100** further comprises a motor. The locking member **120** is connected to the motor, and the motor is configured to drive the locking member **120** to rotate between the locked position and the unlocked position.

[0047] In combination with FIG. **2** and FIG. **4**, in some embodiments, a first side of the plug-in part

121 is provided with a limiting surface **123**, and a second side of the plug-in part **121** is provided with an inclined surface **124**. The limiting surface **123** is configured to limit the position of the connecting part **310**. A first end of the plug-in part **121** is distal from a rotation center of the locking member **120**. From the first end of the plug-in part **121** to the second end of the plug-in part **121**, a distance between the limiting surface **123** and the inclined surface **124** increases.

[0048] The limiting surface **123** and the inclined surface **124** are respectively provided on two sides of the plug-in part **121** away from each other. When the plug-in part **121** engages with the connecting part **310**, the limiting surface **123** limits the position of the connecting part **310**, and it is difficult for the connecting part **310** to separate from the plug-in part **121**, thus ensuring that the cavity assembly **200** is in a locked state.

[0049] From the first end of the plug-in part **121** to the second end of the plug-in part **121**, the distance between the limiting surface **123** and the inclined surface **124** increases. When the connecting part **310** pulls the plug-in part **121**, the distance between the inclined surface **124** and the connecting part **310** remains basically unchanged. In this way, a certain gap can be ensured between the inclined surface **124** and the connecting part **310**, and then this avoids the contact between the inclined surface **124** and the connecting part **310**, and prevents the rotation of the plug-in part **121** from interfering with the movement of the connecting part **310**, and ensures the stability of the cooperation between the door assembly **300** and the lock structure **100**.

[0050] In combination with FIG. **2** and FIG. **4**, in some embodiments, the lock structure **100** further comprises a rotating shaft **140** and a boss **150**. The rotating shaft **140** is connected to the mounting member **110**. The locking member **120** is provided with a shaft hole **125**, and the rotating shaft **140** passes through the shaft hole **125**. The boss **150** is connected to the rotating shaft **140**, and the locking member **120** is located between the boss **150** and the mounting member **110**. The locking member **120** is provided with a limiting groove **126**, and the limiting groove **126** is in communication with the shaft hole **125**. When the boss **150** is misaligned with the limiting groove **126**, the boss **150** is configured to prevent the locking member **120** from disengaging from the rotating shaft **140**. When the boss **150** is opposite to the limiting groove **126**, the boss **150** can pass through the limiting groove **126**.

[0051] The rotating shaft **140** is provided on the mounting member **110**. The rotating shaft **140** and the mounting member **110** can be of an integrally formed structure. The shaft hole **125** is formed in the locking member **120**, and the rotating shaft **140** passes through the shaft hole **125**, thus enabling the locking member **120** to rotate around the rotating shaft **140**.

[0052] The boss **150** is provided on the side part of the rotating shaft **140**, and the boss **150** and the rotating shaft **140** can be of an integrally formed structure. Specifically, a part of the rotating shaft **140** passes through the shaft hole **125**, and the boss **150** is provided on the part of the rotating shaft **140** that passes through the shaft hole **125**. Therefore, the locking member **120** is located between the boss **150** and the mounting member **110**, and the boss **150** can limit the position of the locking member **120**, thus preventing the locking member **120** from disengaging from the rotating shaft **140** and ensuring the connection stability between the locking member **120** and the rotating shaft **140**.

[0053] The limiting groove **126** is further provided in the locking member **120**, and the limiting groove **126** communicates with the shaft hole **125**. When the boss **150** and the limiting groove **126** are misaligned, the boss **150** limits the locking member **120**. When the boss **150** is opposite to the limiting groove **126**, the locking member **120** can be pulled along the axial direction of the rotating shaft **140**, and the boss **150** can pass through the limiting groove **126**, and the locking member **120** can be disassembled.

[0054] The cooperation between the boss **150** and the limiting groove **126** is beneficial to improving the convenience of disassembling and assembling the locking member **120**.

[0055] In combination with FIG. **2** and FIG. **4**, in some embodiments, a slot **127** is provided on one of the locking member **120** and the limiting member **130**. When the locking member **120** is in the

locked position and the limiting member **130** is in the first state, the other one of the locking member **120** and the limiting member **130** is inserted into the slot **127**.

[0056] When the limiting member **130** limits the locking member **120**, there is a plug-in cooperation relationship between the limiting member **130** and the locking member **120**. Illustratively, the locking member **120** is provided with the slot **127**, and the limiting member **130** is inserted into the slot **127** to limit the locking member **120**. In some embodiments, if the slot **127** is provided in the limiting member **130** and the locking member **120** is inserted into the slot **127**, the locking member **120** can further be limited.

[0057] In some embodiments, the slot **127** is provided in the locking member **120**. When the locking member **120** is in the locked position, the slot **127** is opposite to the limiting member **130**, the limiting member **130** operates in the first state, and a part of the limiting member **130** is inserted into the slot **127**, and the limiting member **130** limits the rotation of the locking member **120**.

[0058] In combination with FIGS. **2** and **4**, in some embodiments, the limiting member **130** comprises a solenoid valve body **131** and an output shaft **132**. The solenoid valve body **131** is connected to the mounting member **110**, and the output shaft **132** is connected to the solenoid valve body **131**. In the first state, the output shaft **132** moves to the first position relative to the solenoid valve body **131**, and the output shaft **132** limits the locking member **120**. In the second state, the output shaft **132** moves to the second position, and the output shaft **132** is separated from the locking member **120**.

[0059] In some embodiments, the limiting member **130** is a solenoid valve. When the solenoid valve is powered on, the output shaft **132** extends out of the solenoid valve body **131**. When the solenoid valve is powered off, at least a part of the output shaft **132** retracts into the solenoid valve body **131**. In some embodiments, the first state of the solenoid valve refers to the powered-on state of the solenoid valve, and the second state of the solenoid valve refers to the powered-off state of the solenoid valve.

[0060] When the locking member **120** rotates to the locked position, the solenoid valve is powered on, and the solenoid valve body **131** drives the output shaft **132** to move, and the output shaft **132** moves to a position where it limits the locking member **120**. For example, the output shaft **132** is inserted into the slot **127** in the locking member **120**. Since the solenoid valve is fixed on the mounting member **110** and its position is not likely to change, the output shaft **132** limits the rotation of the locking member **120**.

[0061] When the door is to be opened, the user can control the solenoid valve to be powered off. The output shaft **132** will separate from the locking member **120**, and the locking member **120** can rotate freely.

[0062] In a possible application, the axial direction of the output shaft **132** extends along a plumb direction. When the solenoid valve is powered off, the output shaft **132** freely falls under its own gravity and gradually retracts into the solenoid valve body **131**.

[0063] In a possible application, an unlocking button can be set on the cooking appliance. The unlocking button can be a physical button or a virtual button. After the user presses the unlocking button, the solenoid valve is powered on or powered off. In some embodiments, the user can control the power on and power off of the solenoid valve through an APP.

[0064] As shown in FIG. **2** and FIG. **4**, in some embodiments, the limiting member **130** further comprises a guiding member **133**. The guiding member **133** is connected to the mounting member **110**. The guiding member **133** is provided with a guiding hole **134**, and the output shaft **132** passes through the guiding hole **134**.

[0065] The guiding member **133** is installed on the mounting member **110**. For example, the guiding member **133** is locked to the mounting member **110** by locking elements such as screws, and the guiding member **133** is not likely to move relative to the mounting member **110**.

[0066] The guiding hole **134** is provided in the guiding member **133**, and the output shaft **132**

passes through the guiding hole **134**, and the output shaft **132** can slide within the guiding hole **134**. The guiding hole **134** plays a role of limiting the output shaft **132**. When the output shaft **132** limits the locking member **120**, if the door assembly **300** is subjected to a pulling force at this moment, the connecting part **310** will exert a pulling force on the locking member **120**, and the locking member **120** has a tendency to rotate. At this moment, the output shaft **132** will be pushed by the locking member **120**. By limiting the output shaft **132** through the guiding hole **134**, the output shaft **132** is not prone to deformation, which is beneficial to improving the limiting stability of the output shaft **132** to the locking member **120**.

[0067] The guiding hole **134** can further play a guiding role for the output shaft **132**, to ensure that the output shaft **132** can stably cooperate with the locking member **120** and improving the stability of the cooperation between the output shaft **132** and the locking member **120**.

[0068] As shown in FIG. **2** and FIG. **4**, in some embodiments, the output shaft **132** comprises a shaft body **135**, a first limiting part **136**, and a second limiting part **137**. The shaft body **135** is connected to the solenoid valve body **131**. The first limiting part **136** is connected to the shaft body **135**. The first limiting part **136** passes through the guiding hole **134** and is configured to limit the position of the locking member **120**. The second limiting part **137** is connected to the first limiting part **136**. When the output shaft **132** is in the first position, the second limiting part **137** contacts the side of the guiding member **133** that faces away from the locking member **120**.

[0069] The shaft body **135** is connected to the solenoid valve body **131**, and the solenoid valve body **131** is configured to drive the shaft body **135** to move. The first limiting part **136** is connected to the shaft body **135**. The first limiting part **136** can pass through the guiding hole **134** and slide within the guiding hole **134**. The second limiting part **137** is connected to the first limiting part **136**. Along the radial direction of the output shaft **132**, the cross-sectional area of the second limiting part **137** is greater than that of the first limiting part **136**. The first limiting part **136** can pass through the guiding hole **134**, while the second limiting part **137** cannot extend into the guiding hole **134**. When the shaft body **135** limits the locking member **120**, the second limiting part **137** contacts the side of the guiding member **133** that faces away from the locking member **120**. The second limiting part **137** is configured to limit the movement stroke of the shaft body **135**, and this prevents the occurrence of the situation where the first limiting part **136** moves excessively and causes damage to the locking member **120**.

[0070] In a possible application, the first limiting part **136** is locked to the shaft body **135** by locking elements such as screws, and the second limiting part **137** and the first limiting part **136** are of an integrally formed structure.

[0071] In combination with FIG. **2** and FIG. **4**, in some embodiments, the limiting member **130** further comprises an elastic member **138**. The elastic member **138** is connected to the output shaft **132** and the solenoid valve body **131**. When the output shaft **132** is in the first position, the elastic member **138** is in a state of elastic deformation, and when the output shaft **132** is in the second position, the elastic member **138** is in an original state.

[0072] The elastic member **138** is located between the output shaft **132** and the solenoid valve body **131**. When the output shaft **132** moves relative to the solenoid valve body **131**, the output shaft **132** will cause the elastic member **138** to undergo elastic deformation. When the solenoid valve is powered off, the elastic member **138** drives the output shaft **132** to move and return to its original position.

[0073] Specifically, the elastic member **138** is sleeved on the output shaft **132**, and the two ends of the elastic member **138** are respectively connected to the output shaft **132** and the solenoid valve body **131**. When the output shaft **132** moves relative to the solenoid valve body **131**, the output shaft **132** drives the first end of the elastic member **138** to move, causing the elastic member **138** to be compressed. When the solenoid valve is powered off, the output shaft **132** freely falls under the action of gravity. At this moment, the elastic member **138** further provides a restoring push force to the output shaft **132**, which can effectively prevent the occurrence of the situation where the output

shaft **132** fails to return to its original position due to jamming, and is beneficial to improving the working stability of the solenoid valve.

[0074] In combination with FIG. **1**, FIG. **2** and FIG. **3**, in the embodiments of the present application, a cooking appliance is provided, which comprises the cavity assembly **200**, the door assembly **300** and the lock structure **100** in any of the above embodiments. The door assembly **300** is connected to the cavity assembly **200** in an openable and closable manner. The mounting member **110** is provided on one of the cavity assembly **200** and the door assembly **300**, and the connecting part **310** is provided on the other one of the cavity assembly **200** and the door assembly **300**. By adding the lock structure **100** on either the door assembly **300** or the cavity assembly **200**, when the door assembly **300** closes the cavity assembly **200**, the lock structure **100** restricts the door assembly **300** from opening the cavity assembly **200**, thus realizing the function of a child lock.

[0075] In some embodiments, it is taken as an example for illustrative description that the lock structure **100** is provided on the cavity assembly **200**.

[0076] When opening and closing the door, the user can control the limiting member **130** to lock and unlock the cooking appliance. Specifically, when the door assembly **300** closes the cavity assembly **200**, the locking member **120** is in the locked position, and the locking member **120** is connected to the connecting part **310** of the door assembly **300**. At this moment, the user can control the limiting member **130** to switch to the first state. The limiting member **130** operating in the first state limits the locking member **120**, and at this moment, the locking member **120** cannot move relative to the door assembly **300**. Before opening the cavity assembly **200**, the limiting member **130** may be switched to the second state. The limiting member **130** in the second state is separated from the locking member **120**, at this moment, the limiting member **130** no longer limits the locking member **120**, and the user can open the cavity assembly **200** by pulling the door assembly **300**. Opening the cavity assembly **200** via two steps of operation may improve the safety of using the cooking appliance.

[0077] In the present application, a child lock structure is added to the cooking appliance. When the locking member **120** moves to the first position, the limiting member **130** limits the movement of the locking member **120**. The locking member **120** limits the door assembly **300**, making it difficult for the door assembly **300** to open the cavity assembly **200**, and thus keeping the door body in a locked state, and as a result, the cavity assembly **200** cannot be opened.

[0078] In order to open the cavity assembly **200**, it the limitation on the door assembly **300** may be released by the locking member **120**. Therefore, the limitation on the locking member **120** may be first released by the limiting member **130**. When the limiting member **130** is separated from the locking member **120**, the locking member **120** can move relative to the mounting member **110**, and the limitation on the door assembly **300** by the locking member **120** can be released. Therefore, when opening the door, the user may first switch the limiting member **130** to the second state, which is the first step of the operation, and then the user pulls the door assembly **300** to open the cavity assembly **200**, which is the second step of the operation. Through the two steps of operation, the difficulty of opening the door is increased.

[0079] After the cooking process of the cooking appliance is completed, the temperature of the food in the cooking cavity is high, at this moment, there is a risk of scalding if the user directly opens the door to take out the food. Therefore, with the above-mentioned lock structure **100** in the present application, if the user wants to open the cavity assembly **200**, the two steps of operation for opening the door may be performed before opening the cavity assembly **200**. In this way, firstly, it can play a role of reminding the user to a certain extent, and secondly, it can prevent the occurrence of the situation where children accidentally open the cavity assembly **200**, and then greatly improve the safety of using this cooking appliance.

[0080] The locking member **120** and the limiting member **130** are installed on the mounting member **110**, and thus the lock structure **100** has an integral structure, which facilitates the

assembly of the lock structure **100**.
[0081] In some embodiments, the door assembly **300** comprises a door seal **320**, a door tooth **330** and a door surface **340** which are connected in sequence.
[0082] In some embodiments, based on the mounting member **110** being arranged on the cavity assembly **200**, the connecting part **310** comprises a door hook.
[0083] When the mounting member **110** is arranged on the cavity assembly **200**, at this time, the locking member **120** is configured to cooperate with the door hook.
[0084] Specifically, the mounting member **110** is locked on the cavity assembly **200**. When the door assembly **300** closes the cavity assembly **200**, the locking member **120** engages with the door hook. The locking member **120** limits the movement of the door hook, and at this moment, it is difficult for the user to directly pull the door assembly **300**. When the locking member **120** releases the limitation on the door hook, the user can open the cavity assembly **200** by pulling the door assembly **300**.
[0085] By providing the lock structure **100** in some embodiments in the cooking appliance, it is possible to achieve opening the door by two steps, and achieve unlocking by one button, and achieve a convenient effect of opening the door by a single-hand operation; a screen can be provided on the cooking appliance, and operation and control are carried out through the screen, which is convenient and clear.
[0086] The cooking appliance can be an induction cooker, an oven, an integrated steam oven, etc.
[0087] In the present application, the term of “multiple” refers to two or more than two, unless otherwise clearly defined. The terms “mount”, “couple”, “connect”, “fix” and the like should be understood in a broad sense, for example, the term “connect” can be a fixed connection, a detachable connection, or an integral connection; the term “couple” can be a direct connection, or an indirect connection through an intermediate medium. For those of ordinary skill in this field, the specific meanings of the above terms in the present application can be understood according to the specific situations.
[0088] In the description of the present application, the description of the terms of “an embodiment”, “some embodiments”, “specific embodiment” and the like is intended to mean that the specific features, structures, materials or characteristics described in combination with the embodiments or examples are included in at least one embodiment or example of the present application. In the description, the illustrative expression of the above terms may not indicate the same embodiment or example. In addition, the specific features, structures, materials or characteristics as described may be combined with each other in an appropriate method in one or more of any embodiments or examples.
[0089] The above-mentioned are merely some embodiments of the present application and are not intended to limit the present application, and for one skilled in the art, various modifications and changes may be made to the present application. Any modifications, equivalent substitutions, improvements and so on made within the spirit and principle of the present application should be covered within the scope of protection of the present application.

Claims

1. A lock structure for a cooking appliance, wherein, the cooking appliance comprises a cavity assembly and a door assembly which are connected to each other, the lock structure comprises: a mounting member, configured to be connected to one of the door assembly or the cavity assembly, and the other one of the door assembly or the cavity assembly being provided with a connecting part; a locking member, connected to the mounting member, wherein, the locking member is configured to move between a locked position and an unlocked position, when in the locked position, the locking member is configured to be connected to the connecting part, and when in the unlocked position, the locking member is separated from the connecting part; and a limiting

member, connected to the mounting member, wherein, when the locking member is located in the locked position and the limiting member operates in a first state, the limiting member is configured to limit the locking member, and when the limiting member operates in a second state, the limiting member releases the locking member.

2. The lock structure according to claim 1, wherein, the locking member is provided with a plug-in part, and the locking member is rotatably connected to the mounting member, when in the locked position, the plug-in part is configured to engage with the connecting part, and the plug-in part is configured to rotate under a pull of the connecting part, to make the locking member rotate towards the unlocked position.

3. The lock structure according to claim 1, wherein, the locking member is provided with a to-be-pushed part, and the to-be-pushed part is configured to be pushed by the connecting part, to make the locking member rotate towards the locked position.

4. The lock structure according to claim 2, wherein, a first side of the plug-in part is provided with a limiting surface, and a second side of the plug-in part is provided with an inclined surface, the limiting surface is configured to limit the connecting part, a first end of the plug-in part is distal from a rotation center of the locking member, from the first end of the plug-in part to a second end of the plug-in part, a distance between the limiting surface and the inclined surface increases.

5. The lock structure according to claim 1, further comprising: a rotating shaft, which is connected to the mounting member, wherein the locking member is provided with a shaft hole, and the rotating shaft passes through the shaft hole; and a boss, connected to the rotating shaft, wherein, the locking member is located between the boss and the mounting member, the locking member is provided with a limiting groove, the limiting groove is in communication with the shaft hole, when the boss is misaligned with the limiting groove, the boss is configured to prevent the locking member from disengaging from the rotating shaft, when the boss is aligned with the limiting groove, the boss is configured to pass through the limiting groove.

6. The lock structure according to claim 1, wherein, one of the locking member and the limiting member is provided with a slot, when the locking member is in the locked position and the limiting member operates in the first state, the other one of the locking member and the limiting member is inserted into the slot.

7. The lock structure according to claim 1, wherein, the limiting member comprises: a solenoid valve body, connected to the mounting member; an output shaft, connected to the solenoid valve body, in the first state, the output shaft moves to a first position relative to the solenoid valve body, and the output shaft limits the locking member; in the second state, the output shaft moves to a second position, and the output shaft is separated from the locking member.

8. The lock structure according to claim 7, wherein, the limiting member further comprises: a guiding member, connected to the mounting member, the guiding member is provided with a guiding hole, and the output shaft passes through the guiding hole.

9. The lock structure according to claim 8, wherein, the output shaft comprises: a shaft body, connected to the solenoid valve body; a first limiting part, connected to the shaft body, wherein the first limiting part passes through the guiding hole and is configured to limit the locking member; and a second limiting portion, connected to the first limiting part, wherein, when the output shaft is at the first position, the second limiting part contacts a side of the guiding member away from the locking member.

10. The lock structure according to claim 7, wherein, the limiting member further comprises: an elastic member, connected to the output shaft and the solenoid valve body, wherein, when the output shaft is at the first position, the elastic member is in an elastically deformed state; when the output shaft is at the second position, the elastic member is in an original state.

11. A cooking appliance, comprising: a cavity assembly; a door assembly, connected to the cavity assembly in an openable and closable manner; and a lock structure comprising: a mounting member, configured to be connected to one of the door assembly or the cavity assembly, and the

other one of the door assembly or the cavity assembly being provided with a connecting part; a locking member, connected to the mounting member, wherein, the locking member is configured to move between a locked position and an unlocked position, when in the locked position, the locking member is configured to be connected to the connecting part, and when in the unlocked position, the locking member is separated from the connecting part; and a limiting member, connected to the mounting member, wherein, when the locking member is located in the locked position and the limiting member operates in a first state, the limiting member is configured to limit the locking member, and when the limiting member operates in a second state, the limiting member releases the locking member; wherein, the mounting member is arranged on one of the cavity assembly and the door assembly, and a connecting part is provided on the other one of the cavity assembly and the door assembly.

12. The cooking appliance according to claim 11, wherein, based on the mounting member being provided on the cavity assembly, the connecting part comprises a door hook.