United States Patent Application Publication	20250257876
Kind Code	A1
Publication Date	August 14, 2025
Inventor(s)	Baker; David W. et al.

BBQ OVEN

Abstract

The present application relates to a BBQ oven, comprising an oven, a loading container and a mixing unit. The loading container is arranged on the oven, having a loading inlet on the top and a discharge outlet at the bottom; the mixing unit includes a mixing driver positioned on the side wall of the loading container and a mixer connected to the mixing driver. The BBQ oven requires no manual turning to prevent fuel arching as the mixing unit consisting of the mixing driver and the mixer connected to the mixing driver can mix and split fuel being arched by turning of the mixer driven by the mixing driver, and thereby reduces the labor work intensity.

Inventors: **Baker; David W. (Lakeside, OR), Baker; Jason E. (Scottsdale, AZ), Ping; Wang (Wuhan, CN)**

Applicant: **GMG Products, LLC** (Lakeside, OR)

Family ID: **87882823**

Appl. No.: **19/193749**

Filed: **April 29, 2025**

Related U.S. Application Data

parent US continuation 17765437 20220330 parent-grant-document US 12287096 WO continuation PCT/CN22/78958 20220303 child US 19193749

Publication Classification

Int. Cl.: **F24B1/02** (20060101); **A47J36/32** (20060101); **A47J37/07** (20060101); **F24B5/06** (20060101); **F24B13/04** (20060101)

U.S. Cl.:

CPC **F24B1/028** (20130101); **A47J36/32** (20130101); **A47J37/0704** (20130101); **A47J37/0786** (20130101); **F24B5/06** (20130101); **F24B13/04** (20130101); A47J2202/00 (20130101)

Background/Summary

PRIORITY CLAIM [0001] This application is a continuation of U.S. patent application Ser. No. 17/765,437 filed Mar. 30, 2022; which is a U.S. National Phase of International Patent Application No. PCT/CN2022/078958 filed Mar. 3, 2022, the contents of which is incorporated herein by reference.

FIELD OF THE INVENTION
[0002] The present invention relates to the BBQ field, in particular to a BBQ oven.
BACKGROUND OF THE INVENTION
[0003] Existing BBQ ovens require users to successively load fuel, and thus have a hopper provided on the oven for fuel loading; during fuel loading, the fuel being load may arch to block the hopper, resulting in obstructed loading.
[0004] In the prior art, manual fuel turning is required to split arched fuel. Due to inefficiency of such manual turning, fuel arching still occurs to adversely affect fuel supply to the hearth. Besides, manual turning consumes both time and effort.
SUMMARY OF THE INVENTION
[0005] An embodiment of the present application provides a BBQ oven to solve the problem of time-and effort-consuming constant manual turning required in the related art, by which fuel arching may still occur to adversely affect fuel supply to the hearth.
[0006] The present invention provides a BBQ oven comprising: [0007] An oven; [0008] A loading container which is provided on the oven. The loading container has a loading inlet on the top and a discharge outlet at the bottom; [0009] A mixing unit which includes a mixing driver positioned on the side wall of the loading container and a mixer connected to the mixing driver.
[0010] In some embodiments, the mixer comprises a sleeve, a linking rod and a mixing rod; the sleeve is fixed on the driving shaft of the mixing driver; the linking rod is positioned inside of the sleeve; the mixing rod has one end connected flexibly to the linking rod and the other end extend beyond the side wall of the sleeve.
[0011] In some embodiments, the mixing rod has a groove on its side wall; the linking rod fits in the groove.
[0012] In some embodiments, the groove is arc-shaped.
[0013] In some embodiments, the sleeve comprises a sleeve body and a gland; the gland is arranged on the sleeve body in a removable manner; the sleeve body is concave inwards to form a chute; the linking rod is arranged flexibly in the chute.
[0014] In some embodiments, the mixing rod has hardness of above HRC 35.
[0015] In some embodiments, the present invention still comprises: [0016] A hearth which is arranged in the oven; [0017] A casing which is provided on the oven and communicating to the hearth. The casing has an opening that communicates to the discharge outlet; [0018] A loading mechanism which is positioned in the casing and used for loading of the hearth; [0019] An air supply mechanism which is positioned in the casing and used for air supply to the hearth; [0020] A temperature sensor which is arranged on the oven and used for collecting the ambient temperature; [0021] A controller which is connected to the temperature sensor and used for receiving the ambient temperature collected by the temperature sensor; the ambient temperature received is used for control over operation of the loading mechanism and the air supply mechanism.
[0022] In some embodiments, the loading mechanism comprises a loading driver, a feeding tube

and a spiral transmission shaft; the feeding tube is positioned in the casing; the spiral transmission shaft is positioned in the feeding tube; the loading driver is connected to the spiral transmission shaft for driving; [0023] The feeding tube has a material-receiving port and a feeding port; the material-receiving port communicates to the opening on the casing; the feeding port communicates to the hearth.

[0024] In some embodiments, the loading driver has an output shaft c; the cross section of the output shaft c has at least one straight edge d; [0025] The BBQ oven also comprises a coupling part which is arranged on the spiral transmission shaft and used for connecting the spiral transmission shaft and the loading driver.

[0026] In some embodiments, the spiral transmission shaft has a limit slot at the inward depression on the circumference of the external wall; [0027] The coupling part includes a bushing and a first connecting piece inserted flexibly in the bushing; the bushing is arranged on the spiral transmission shaft; when the output shaft c connects to the spiral transmission shaft, the first connecting piece runs through the bushing to the limit slot.

[0028] In some embodiments, the spiral transmission shaft has a limit collar on the side wall; when the bushing comes in contact with the limit collar, the hole on the side wall of the bushing communicates to the limit slot.

[0029] In some embodiments, the coupling part further comprises an adapter plate and a second connecting piece; the adapter plate is connected to the loading driver in a removable manner; the second connecting piece is used for fixing the adapter plate and the bushing onto the casing.

[0030] In some embodiments, the oven has a carrier rack inside; on the carrier rack is an oil plate provided; the oven has an oil plate access opening on the side wall.

[0031] In some embodiments, the carrier rack comprises a first folded plate and a second folded plate that are connected to each other; the first folded plate is fixed to the side wall of the oven; the second folded plate is positioned in the oven, and extends in the direction far away from the first folded plate to the oil plate access opening.

[0032] In some embodiments, the carrier rack also includes a third folded plate which connects the first folded plate and the second folded plate to realize indirect connection between the first folded plate and the second folded plate; the third folded plate forms an included angle with the second folded plate; the third folded plate forms a placement slot with the oven.

[0033] In some embodiments, a fire-blocking cover is provided in the hearth; the fire-blocking cover has an opening on the top, and can move along the length of the hearth; [0034] A fire deflector is provided at the top inside the fire-blocking cover; the fire deflector has a first thermally conductive surface and a second thermally conductive surface; the first thermally conductive surface forms a first air deflector a with the hearth; the second thermally conductive surface forms a second air deflector b with the hearth; the fire-blocking cover can be moved to change the area of the first air deflector a and the second air deflector b.

[0035] In some embodiments, the fire deflectors comprise a first fire deflector and a second fire deflector; the first fire deflector, the second fire deflector and the fire-blocking cover form a space of which the cross section is shaped roughly as a isosceles triangle; the first fire deflector has the side away from the space form the first thermally conductive surface; the second fire deflector has the side away from the space form the second thermally conductive surface.

[0036] In some embodiments, the present invention comprises: [0037] A case which is positioned on the oven and encloses the loading container; [0038] A power source holder which is provided on the inner side wall of the case. The power source holder and the inner wall of the case form a power source containing cavity; the power source containing cavity has an opening; [0039] A press-holding mechanism which is positioned on the side wall of the power source holder. The press-holding mechanism has one press-holding end which can move close to or away from the power source containing cavity.

[0040] In some embodiments, the press-holding mechanism includes a clip; the power source

holder has one adjustable opening on the side wall; the clip is located inside of the adjustable opening; the clip has one end connect to the power source holder, and the other end act as a press-holding end.
[0041] In some embodiments, the power source holder comprises a first side plate and two second side plates; the two second side plates are arranged in a spaced manner; the second side plates connect to the side wall of the case and the first side plate; the first side plate, the second side plates and the case form the power source containing cavity.
[0042] Benefits of the technical proposal provided in the present application include:
[0043] Embodiments of the present application provide a BBQ oven which requires no manual turning to prevent fuel arching, as the mixing unit consisting of the mixing driver and the mixer connected to the mixing driver can mix and split fuel being arched by turning of the mixer driven by the mixing driver, and thereby reduces the labor work intensity.

Description

BRIEF DESCRIPTION OF THE DRAWINGS
[0044] Preferred and alternative examples of the present invention are described in detail below with reference to the following drawings:
[0045] To further clarify the technical proposal of the present application, a brief description of the accompanying drawings used in embodiments of the technical proposal is given. Apparently the accompanying drawings described below are non-exclusive embodiments of the present invention, and other accompanying drawings may be derived without creative effort by persons of ordinary skill in the art based on these drawings above.
[0046] FIG. **1** is an internal structure view of the BBQ oven provided in accordance with an embodiment of the present application;
[0047] FIG. **2** is an internal structure view of the loading container provided in accordance with an embodiment of the present application;
[0048] FIG. **3** is an internal structure view of the mixing driver provided in accordance with an embodiment of the present application;
[0049] FIG. **4** is the side view of the connected linking rod and mixing rod in accordance with an embodiment of the present application;
[0050] FIG. **5** is an internal structure view of the BBQ oven provided in accordance with an embodiment of the present application;
[0051] FIG. **6** is the sectional view of the loading unit provided in accordance with an embodiment of the present application;
[0052] FIG. **7** is the sectional view of the output shaft provided in accordance with an embodiment of the present application;
[0053] FIG. **8** is a structural view of the carrier rack provided in accordance with an embodiment of the present application;
[0054] FIG. **9** is a structural view of the fire-blocking cover provided in accordance with an embodiment of the present application;
[0055] FIG. **10** is a structural view of the power source holder provided in accordance with an embodiment of the present application;
[0056] FIG. **11** is an amplified view of the structural point A in FIG. **10**.
[0057] FIG. **12** is a structural view of the oil plate provided in accordance with an embodiment of the present application.
[0058] In the drawings: **1**. Oven; **2**. Loading container; **3**. Loading inlet; **4**. Discharge outlet; **5**. Mixing unit; **51**. Mixing driver; **52**. Mixer; **521**. Sleeve; **5211** Sleeve body; **5212**. Gland; **522**. Linking rod; **523**. Mixing rod; **6**. Groove; **7**. Chute; **8**. Hearth; **9**. Loading mechanism; **91**. Loading

driver; **92**. Feeding tube; **93**. Spiral transmission shaft; **10**. Air supply mechanism; **20**. Casing; **30**. Output shaft; **301**. Bushing; **302**. First connecting piece; **303**. Adapter plate; **40**. Limit slot; **50**. Limit collar; **60**. Carrier rack; **601**. First folded plate; **602**. Second folded plate; **603**. Third folded plate; **70**. Oil plate; **701**. Base plate; **702**. Limit plate; **703**. Turned edge; **80**. Oil plate access opening; **90**. Placement slot; **100**. Oil guide; **1001**. Oil guide inlet; **1002**. Oil guide outlet; **200**. Case; **300**. Power source holder; **3001** First side plate; **3002**. Second side plates; **400**. Power source containing cavity; **500**. Press-holding mechanism; **600**. Adjustable opening; **700**. Fire-blocking cover; **800**. Fire deflectors; **8001**. First fire deflector; **8002** Second fire deflector; **900**. First thermally conductive surface; **1000**. Second thermally conductive surface; a. First air deflector; b. Second air deflector; c. Output shaft; d. Straight edge.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0059] To further clarify the objects, technical proposal and advantages of embodiments in accordance with the present application, a clear and complete description of the technical proposal in the embodiments of the present application is given below in combination with the accompanying drawings of the embodiments. Apparently the embodiments described above are demonstrative other than exclusive. All other embodiments derived without creative effort by persons of ordinary skill in the art based on the embodiments of the present application are covered by the present invention defined by the claims.

[0060] To solve the problems described above, reference is made to the accompanying drawings **1**-**12**. The present application discloses a BBQ oven which provides a solution to the problem of time-and effort-consuming constant manual turning required in the related art, by which fuel arching may still occur to adversely affect fuel supply to the hearth.

[0061] The present application provides a BBQ oven, comprising an oven **1**, a loading container **2** and a mixing unit **5**. The loading container **2** is provided on the oven **1**, having a loading inlet **3** on the top and a discharge outlet **4** at the bottom; the mixing unit **5** includes a mixing driver **51** provided on the side wall of the loading container **2** and a mixer **52** connected to the mixing driver **51**.

[0062] In the present application, as shown in FIG. **1**, the cross section of the loading container **2** is right trapezoid-shaped. For convenient loading, the loading inlet **3** has a wide opening, and the discharge outlet **4** has a narrow opening; the mixing driver **51** and the mixer **52** are both provided on the inclined side wall of the loading container **2**; the rotation shaft of the mixing driver rotates in parallel to the inclined side wall; when “arching” (namely material accumulation) occurs, the mixing driver **51** will drive the mixer **52** to move the material, so as to realize arching interruption.

[0063] Further, the mixer **52** comprises a sleeve **521**, a linking rod **522** and a mixing rod **523**; the sleeve **521** is fixed on the driving shaft of the mixing driver **51**; the linking rod **522** is provided inside of the sleeve **521**; the mixing rod **523** has one end connected flexibly to the linking rod **522** and the other end extend beyond the side wall of the sleeve **521**.

[0064] In the present application, the mixing driver **51** is preferably a mixing motor available on the market; when the mixing motor drives the drive shaft, the sleeve **521** will be driven along to realize rotation of the mixing rod **523**; as the mixing rod **523** is connected to the linking rod **522**, it can be understood that the mixing rod can move in two perpendicular directions; compared with the conventional movement in one direction, the mixing rod **523** in the present application has a wider range of movement to realize better “arching interruption”.

[0065] Based on the embodiment above, to realize rotation, the mixing rod **523** has a groove **6** on the side wall; the linking rod **522** fits the groove **6**.

[0066] As shown in FIG. **4**, the mixing rod **523** can rotate in the groove **6**; for smooth and stable rotation of the linking rod **522**, the groove **6** is arc-shaped.

[0067] In the present application, for convenient arrangement and detachment, the sleeve **521** comprises a sleeve body **5211** and a gland **5212**; the gland **5212** is provided on the sleeve body **5211** in a removable manner, specifically by use of screw or bolt connection; the sleeve body **5211**

sinks inwards to form a chute **7**; the linking rod **522** is arranged flexibly in the chute **7**.
[0068] As shown in FIG. **3**, if the linking rod **522** is fixed, then the rotating range of the mixing rod **523** is also fixed; to enlarge the rotating range of the mixing rod **523**, the linking rod **522** is flexibly provided in the chute **7**. As the chute **7** has both sides arranged close to the linking rod, its moving range is limited. Therefore, in the present application, the linking rod **522** mainly moves from the top opening to the bottom of the chute, or from the bottom to the top opening of the chute; as the linking rod **522** is movable, the rotating range of the mixing rod **523** is enlarged, which may help split “arched” material.
[0069] The linking rod **522** is movable, and thus can move when the mixing driver **51** rotates. It should be understood that when the linking rod **522** is located at the chute bottom and the mixing rod **523** fits the gland **5212**, the linking rod **522** should have a part remain in the groove **6** to prevent the mixing rod **523** from fall from the sleeve body **5211**.
[0070] Further, considering frequent collision between the mixing rod **523** frequently collides and the linking rod **522**, the mixing rod **523** should have hardness of above HRC 35.
[0071] Further, the BBQ oven according to the application still comprises a hearth **8**, a casing **20**, a loading mechanism **9**, an air supply mechanism **10**, a temperature sensor (not shown in the figure) and a controller (not shown in the figure).
[0072] The oven **1** has a hearth **8** inside; the loading mechanism **9** is provided in the casing **20** and used for loading the hearth **8**; the air supply mechanism **10** is provided in the casing **20**, and used for supplying air to the hearth **8**; the temperature sensor is provided on the oven **1**, and used for collecting the ambient temperature; the controller connected with the temperature sensor is used for controlling operations of the loading mechanism **9** and the air supply mechanism **10** based on the ambient temperature received from the temperature sensor.
[0073] In the present application, the loading mechanism **9** adopts a spiral transmission shaft and is driven by a motor, with a controller connected to the motor signal to control the rotating speed of the motor; the air supply mechanism **10** adopts a fan currently available on the market, with a controller connected to the motor signal to control the rotating speed of the fan; a controller connecting to the motor and a controller connecting to a fan described above are present in prior art, and thus no further explanation will be given.
[0074] During specific implementation, the temperature sensor collects the ambient temperature. For example, when low ambient temperature data collected in winter is transmitted to the controllers, the controllers will control the loading mechanism **9** to load more fuel and control the air supply mechanism **10** to supply more air; when high ambient temperature data collected in summer is transmitted to the controllers, the controllers will control the loading mechanism **9** to reduce loading and control the air supply mechanism **10** to reduce air supply.
[0075] Based on the embodiment described above, the loading mechanism **9** comprises a loading driver **91**, a feeding tube **92** and a spiral transmission shaft **93**; the feeding tube **92** is provided in the casing **20**; the spiral transmission shaft **93** is provided in the feeding tube **92**; the loading driver **91** is connected to the spiral transmission shaft **93** for driving;
[0076] The feeding tube **92** has a material-receiving port and a feeding port; the material-receiving port communicates to the opening on the casing **20**; the feeding port communicates to the hearth **8**.
[0077] The loading driver **91** adopts a motor driving the spiral transmission shaft **93** to rotate, in realization of material transport.
[0078] Further, the loading driver has an output shaft c; the cross section of the output shaft c has at least one straight edge d;
[0079] The BBQ oven also comprises a coupling part **30** which is provided on the spiral transmission shaft **93** and used for connecting the spiral transmission shaft **93** and the loading driver **91**.
[0080] In conventional solutions, the feeding screw head and the feeding motor output shaft are connected via drive pins or screws; pins and screws have limited load-bearing capacity, and are

prone to shear fracture due to fatigue. In the present application, the cross section of the output shaft c has a straight edge d which can largely increase the torque compared with the conventional use of pin or screw transmission. It is understood that two or three straight edges d may well be provided to increase the torque; on the other hand, the coupling part **5** in the present application may connect the spiral transmission shaft **4** and the driver **1** to prevent separation of the spiral transmission shaft **4** from the output shaft **2**.

[0081] Further, the spiral transmission shaft **93** has a limit slot **40** at the inward depression on the circumference of the external wall;

[0082] The coupling part **30** includes a bushing **301** and a first connecting piece **302** inserted flexibly in the bushing **301**; the bushing **301** is arranged on the spiral transmission shaft **93**; when the output shaft c connects to the spiral transmission shaft **93**, the first connecting piece **302** runs through the bushing **301** to the limit slot **40**; the first connecting piece **302** is a rod piece, and a pin or other connecting piece alike can be used.

[0083] The bushing **301** is provided on the spiral transmission shaft **93**; the bushing **301** has a hole, through which the first connecting piece **302** can run through and extend to the limit slot **40**; the limit slot **40** is a circular slot, and therefore can limit the axial movement of the spiral transmission shaft **93** when the bushing **301** connects to the loading driver **91**; as the limit slot **40** is circular, rotation of the output shaft c can drive rotation of the spiral transmission shaft **93**; in the present application, the first connecting piece **302** is preferably a rod piece; this design provides convenience for replacement and maintenance of the spiral transmission shaft **93**.

[0084] Based on the embodiment described above, for accurate insertion of the first connecting piece **302** into the limit slot **40** when the bushing **301** is run onto the spiral transmission shaft **93**, the spiral transmission shaft **93** has a limit collar **50** on the side wall; when the bushing **301** presses against the limit collar **50**, the opening on the side wall of the bushing **301** communicates to the limit slot **40**.

[0085] In the present application, the limit collar **50** is circular. It can be certainly understood that the limit collar **50** can be block-shaped or of other irregular shape, provided the protruding spiral transmission shaft **93** can be set.

[0086] Further, the coupling part **30** also comprises an adapter plate **303** and a second connecting piece; the adapter plate **303** is connected to the loading driver **91** in a removable manner; the second connecting piece is used for fixing the adapter plate **303** and the bushing **301** onto the casing **20**.

[0087] For easy fixation of the loading driver **91** and the bushing **301**, the coupling part **30** described in the present application still comprises an adapter plate **303** and a second connecting piece; the adapter plate **303** is connected to the driver **1** in a removable manner; the second connecting piece is used for fixing the adapter plate **303** and the bushing **301** to the feeding tube **92**.

[0088] The second connecting piece is preferably a screw, a bolt or other removable connecting piece.

[0089] Further, in the present application, the oven **1** has a carrier rack **60** inside; on the carrier rack **60** is an oil plate **70** provided; the oven **1** has an oil plate access opening **80** on the side wall.

[0090] In the present application, the oil plate **70** collects oil falling from the grates; as the oil plate **70** is erected on the carrier rack **60**, and the oven **1** has an oil plate access opening on the side wall, the user can easily take out the oil plate **70** via the oil plate access opening **80** for cleaning, so as to prevent long-time accumulation of greasy dirt.

[0091] Specifically, the carrier rack **60** comprises a first folded plate **601** and a second folded plate **602** that are connected to each other; the first folded plate **601** is fixed to the side wall of the oven **1**; the second folded plate **602** is provided in the oven **1**, and extends in the direction far away from the first folded plate **601** to the oil plate access opening **80**.

[0092] Specifically, the carrier rack **60** also includes a third folded plate **603**; the third folded plate

connects the first folded plate **601** and the second folded plate **602** to realize indirect connection between the first folded plate **601** and the second folded plate **602**; an included angle is formed between the third folded plate **603** and the second folded plate **602**; a placement slot **90** is formed between the third folded plate **603** forms and the oven **1**.

[0093] For position limit, the oil plate **70** comprises a base plate **701** and a limit plate **702** that are mutually connected; the limit plate **702** is provided at the end of the base plate **701** far away from the oil plate access opening, so that when the base plate **701** is placed on the third folded plate **603**, the limit plate **702** is located in the placement slot **90** and presses against the third folded plate **603**.

[0094] As shown in FIG. **2**, when the limit plate **702** contacts the third folded plate **603**, the third folded plate **603** will press against the limit plate **702** to prevent fall of the oil plate **70** from the carrier rack **60**.

[0095] In the present application, for easy drip of oil from the oil plate **70**, the whole base plate **701** and the second folded plate **602** are arranged inclined, and the second folded plate **602** has the end close to the third folded plate **603** higher than the other end; therefore, in the present application, the placement slot (**90**) formed between the third folded plate **603** and the oven **1** can contain the limit plate **702** when the oil plate **70** is set in place.

[0096] To prevent oil splash, the base plate **701** has both sides extend upwards with turned edges **703** along the length of the base plate **701**; the length of the turned edges **703** can be set as appropriate.

[0097] For guiding oil out of the oven **1**, an oil guide **100** is provided on the oven **1**; the oil guide **100** has an oil guide inlet **1001** at one end, and an oil guide outlet **1002** at the other end; the oil guide **100** is arranged inclined; the oil guide inlet **1001** is located below the oil plate **70**, and is used for collecting oil guided out by the oil plate **70**; the oil guide inlet **1001** is higher than the oil guide outlet **1002**.

[0098] In the present application, the BBQ oven still comprises a fire-blocking cover **700** and fire deflectors **800**; the fire-blocking cover **700** provided on the hearth **8** has an opening on the top and can move along its length relative to the hearth **8**; the fire deflectors **800** provided on the top inside the fire-blocking cover **700** have the first thermally conductive surface **900** and the second thermally conductive surface **1000**; the first thermally conductive surface **900** forms a first air deflector a with the hearth **8**; the second thermally conductive surface **1000** forms a second air deflector b with the hearth **8**; the fire-blocking cover **700** can move to adjust the area of the first air deflector a and the second air deflector b.

[0099] During specific implementation, as shown in FIG. **9**, heat produced in the hearth **8** dissipates through the second air deflector b, the first air deflector a and the opening on the top of the fire-blocking cover **700**; when it is only required to heat the right side of the grates, it is simply needed to move the fire-blocking cover **700** leftwards; at this time, heat will mainly dissipate along the second thermally conductive surface **1000**, and relatively less heat will dissipate via the first air deflector a due to the reduced area; therefore, movement of the fire-blocking cover **700** can change the area of the first air deflector a and the second air deflector b to meet the searing needs at different parts, so as to prevent waste of resources.

[0100] Further, in the present application, the fire deflectors **800** comprise a first fire deflector **8001** and a second fire deflector **8002**; the first fire deflector **8001**, the second fire deflector **8002** and the fire-blocking cover **700** form a space of which the cross section is shaped roughly as a isosceles triangle; the first fire deflector **8001** has the side away from the space form the first thermally conductive surface **900**; the second fire deflector **8002** has the side away from the space form the second thermally conductive surface **1000**.

[0101] Further, the BBQ over according to the present application still comprises a case **200**, a power source holder **300** and a press-holding mechanism **500**; the case **200** is arranged on the oven **1** and encloses the loading container **2**; the power source holder **300** is arranged on the inner side wall of the case **200**; inner walls of the power source holder **300** and the case **200** enclose to form a

power source containing cavity **400**; the power source containing cavity has an opening; the press-holding mechanism **500** is provided on the side wall of the power source holder **300**; the press-holding mechanism **500** has a press-holding end which can move close to or away from the power source containing cavity **400**.

[0102] As shown in FIG. **10** and FIG. **11**, in the present application, the power source holder **300** is provided on the inner side wall of the case **200**; the inner side walls of the power source holder **300** and the case **200** enclose to form the power source containing cavity **400**; therefore, the power source can be placed in the power source containing cavity **400** other than outside of the oven, thereby having reduced the risk of damage.

[0103] On the other hand, as the power source holder **300** has a press-holding mechanism **500** provided on the side wall, and the press-holding mechanism **500** has a press-holding end that can move close to or away from the power source containing cavity **400**, when the power source is placed in the power source containing cavity **300**, the press-holding end moves close to the power source containing cavity **400** to hold the power source; when the press-holding end moves away, the power source is removed from the power source containing cavity **400**.

[0104] Based on the embodiment described above, the press-holding mechanism **500** includes a clip; the power source holder **300** has one adjustable opening **600** on the side wall; the clip is located inside of the adjustable opening **600**; the clip has one end connect to the power source holder **300**, and the other end act as a press-holding end.

[0105] When the chip is free, the press-holding end is located in the power source containing cavity **400**. As shown in FIG. **11**, the press-holding end of the chip is far away from the opening end of the power source containing cavity **400**, and turning of the far-away end and the end connecting to the power source holder **300** makes an easy access for the power source; when the power source is placed in the power source containing cavity **400**, the press-holding end of the chip will press the power source to prevent the power source falling.

[0106] As shown in FIG. **11**, the power source holder **300** comprises a first side plate **3001** and two second side plates **3002**; the two second side plates **3002** are arranged in a spaced manner; the second side plates **3002** connect to the side wall of the case **200** and the first side plate **3001**; the first side plate **3001**, the second side plates **3002** and the case **200** form the power source containing cavity **400**.

[0107] Further, to make maintenance of the BBQ oven and replacement of the power source easy, the case **200** has an access panel on the side wall; the access panel is provided on the case **200** in a removable manner by using screws or otherwise according to prior art.

[0108] Surely to further protect the power source and prevent the power source falling, the access panel is provided with a press-holding plate on one side in the case **200**; when the access panel is positioned on the case **200**, the press-holding plate will press against the power source and prevent the power source from falling; the press-holding plate is not limited in shape, and can be provided based on the actual conditions.

[0109] In the description of the application, it should be noted that words indicating directions or relative positions, such as “up” and “down”, are only used for convenience of description and simplified description of the application, other than for indicating or implying the specific position of a device or element, or the specific way of constructing and operating such device or element, and shall by no means be taken to limit the application. Unless otherwise expressly provided and defined, terms such as “arrangement”, “linking” and “connection” should be broadly interpreted. For example, a connection can be a fixed connection, a detachable connection or an integrated connection; a mechanical connection or an electrical connection; a direct connection, an indirect connection via an intermediate medium; or internal communication between two elements. It is required that persons of ordinary skill in the art should understand the specific meanings of the terms above in the present application based on specific circumstances.

[0110] It should be noted that, in the present application, words indicating relations such as “first”

and “second” are simply used for distinguishing one entity or operation from another entity or operation, without necessarily requiring or implying any actual relationship or sequence between these entities or operations. Besides, words like “include”, “comprise” or any other variants of the foregoing should be non-exclusive. Namely, any process, method, item or equipment comprising a series of elements comprises not only such elements, but also other elements that are not expressly listed or inherent elements of such process, method, item or equipment. Unless otherwise limited, an element defined by the statement “comprising a/an . . . ” does not preclude inclusion of other similar elements in the process, method, item or equipment of the element.

[0111] All the specific ways of implementing the present application described above are intended to make those skilled in the art understand or realize the present application. These embodiments may have various modifications and alterations apparent to those skilled in the art, and the general principle defined herein may be realized in other embodiments without departing from spirit and scope of the application. For this purpose, the present application is not limited to the embodiments provided herein, and should include the widest scope of consistency with the principle and novel features of the present invention.

[0112] While the preferred embodiment of the invention has been illustrated and described, as noted above, many changes can be made without departing from the spirit and scope of the invention. Accordingly, the scope of the invention is not limited by the disclosure of the preferred embodiment. Instead, the invention should be determined entirely by reference to the claims that follow.

Claims

1. A BBQ oven, comprising: an oven; a loading container which is arranged on the oven, wherein the loading container has a loading inlet on the top and a discharge outlet at the bottom; and a mixing unit comprising: a mixing driver having a driving shaft and positioned on a wall of the loading container; and a mixer connected to the mixing driver, wherein the mixer comprises: a mixing rod having a groove and one end extending beyond a side wall of the sleeve; and a linking rod configured to fit in the groove of the mixing rod.

2. The BBQ oven of claim 1, further comprising a sleeve fixed on the driving shaft of the mixing drive, and wherein the linking rod is arranged inside the sleeve.

3. The BBQ oven of claim 1, wherein the groove is arc shaped.

4. The BBQ oven of claim 1, wherein: the sleeve comprises a sleeve body and a gland; the gland is positioned on the sleeve body in a removable manner; the sleeve body is concave inwards to form a chute, and the linking rod is arranged flexibly in the chute.

5. The BBQ oven of claim 1, wherein the mixing rod has hardness of above HRC 35.

6. The BBQ oven of claim 1, wherein the oven has a carrier rack configured as an oil plate and an oil plate access opening.

7. The BBQ oven of claim 6, wherein the carrier rack comprises a first folded plate and a second folded plate that are connected to each other, wherein the first folded plate is fixed to the side wall of the oven and the second folded plate is positioned in the oven and extends in the direction far away from the first folded plate towards the oil plate access opening.

8. A BBQ oven, comprising: an oven having a hearth; a casing provided on the oven and communicating with the hearth, the casing having an opening that communicates with the discharge outlet; a loading mechanism positioned in the casing and used for loading of the hearth, the loading mechanism comprising: a feeding tube positioned in the casing and having a spiral transmission shaft with a limit slot at an inward depression on the circumference of an external wall, wherein the feeding tube has a material-receiving port and a feeding port, wherein the material-receiving port communicates to the opening on the casing and the feeding port communicates to the hearth; and a loading driver connected to the spiral transmission shaft for

driving, the loading driver comprising: an output shaft with a cross section of at least one straight edge; and a coupling part arranged on the spiral transmission shaft and used for connecting the spiral transmission shaft and the loading driver; and an air supply mechanism that is positioned in the casing and used for air supply to the hearth; a temperature sensor which is arranged on the oven and used for collecting the ambient temperature; and a controller which is connected to the temperature sensor and used for receiving ambient temperature collected by the temperature sensor, so as to control operation of the loading mechanism and the air supply mechanism.

9. The BBQ oven of claim 8, wherein the coupling part includes a bushing and a first connecting piece inserted flexibly in the bushing; and the bushing is arranged on the spiral transmission shaft and the first connecting piece runs through the bushing to the limit slot when the output shaft connects to the spiral transmission shaft.

10. The BBQ oven of claim 8, further comprising: a loading container that is arranged on the oven, wherein the loading container has a loading inlet on the top and a discharge outlet at the bottom; and a mixing unit that includes a mixing driver positioned on a wall of the loading container and a mixer connected to the mixing driver.

11. The BBQ oven of claim 8, wherein the spiral transmission shaft has a limit collar on the wall, and a hole on a wall of the bushing communicates to the limit slot when the bushing comes in contact with the limit collar.

12. The BBQ oven of claim 8, wherein the coupling part further comprises an adapter plate and a second connecting piece, wherein the adapter plate is connected to the loading driver in a removable manner and the second connecting piece is used for fixing the adapter plate and the bushing onto the casing.

13. A BBQ oven, comprising: an oven; a carrier rack configured as an oil plate and having an oil plate access opening on a side wall, wherein the carrier rack comprises: a first folded plate fixed to a side wall of the oven; a second folded plate positioned in the oven and extending in a direction away from the first folded plate towards the oil plate access opening; and a third folded plate connecting the first folded plate and the second folded plate to realize indirect connection between the first folded plate and the second folded plate, wherein an angle is formed between the second and third folded plates and a placement slot is formed between the third folded plate and the oven.

14. The BBQ oven of claim 13, further comprising: a loading container that is arranged on the oven, wherein the loading container has a loading inlet on the top and a discharge outlet at the bottom; and a mixing unit that includes a mixing driver positioned on a wall of the loading container and a mixer connected to the mixing driver.

15. The BBQ oven of claim 13, further comprising: a fire-blocking cover having an opening on the top and configured to move along the length of the hearth; and a first fire deflector at the top inside the fire-blocking cover, the first fire deflector having a first thermally conductive surface that forms a first air deflector with the hearth, and a second thermally conductive surface that forms a second air deflector with the hearth, wherein the fire-blocking cover is configured moveable to change the area of the first air deflector and the second air deflector.

16. The BBQ oven of claim 15, further comprising a second fire deflector, wherein: the first fire deflector, the second fire deflector and the fire-blocking cover form a space of which the cross section is shaped roughly as an isosceles triangle; the first fire deflector has a side away from the space which forms the first thermally conductive surface; and the second fire deflector has a side away from the space that forms the second thermally conductive surface.

17. A BBQ oven, comprising: an oven; a loading container which is arranged on the oven, wherein the loading container has a loading inlet on the top and a discharge outlet at the bottom; a case provided on the oven and enclosing the loading container; a power source holder having an adjustable opening arranged on a wall of the case, wherein the power source holder and the wall form a power source containing cavity having an opening; and a press-holding mechanism arranged on the wall of the power source holder, wherein the press-holding mechanism has one

press-holding end that can move close to or away from the power source containing cavity, the press-holding mechanism having a clip positioned inside of the adjustable opening, the clip having one end connected to the power source holder and the other end acting as a press-holding end.

18. The BBQ oven of claim 17, further comprising a mixing unit which includes a mixing driver positioned on a wall of the loading container and a mixer connected to the mixing driver.

19. The BBQ oven of claim 17, wherein: the power source holder comprises a first side plate and two second side plates; the second side plates are arranged in a spaced manner, wherein the second side plates connect to a side wall of the case and the first side plate; and the first side plate, the second side plates and the case form the power source containing cavity.