June 17, 1969 E. B. TIDD 3,450,123

COOKING DEVICE FOR BURNING SOLID FUEL

Filed Nov. 29, 1967

FIG. 1

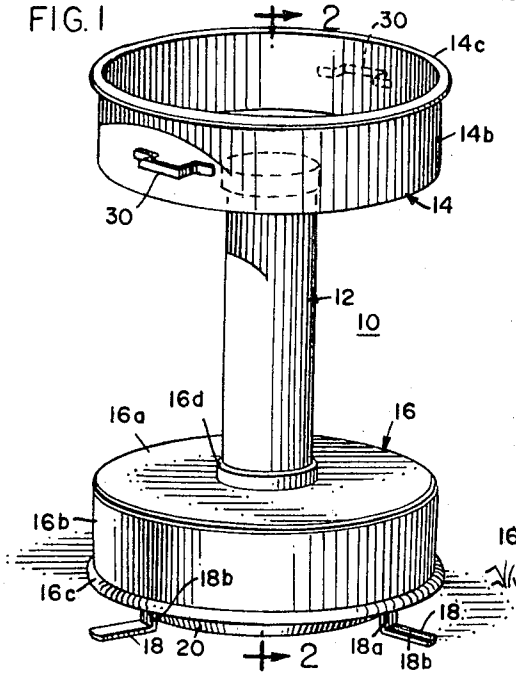


FIG. 2

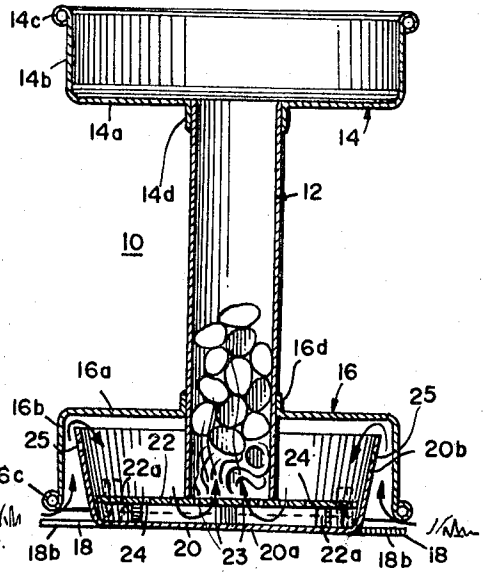


FIG. 3

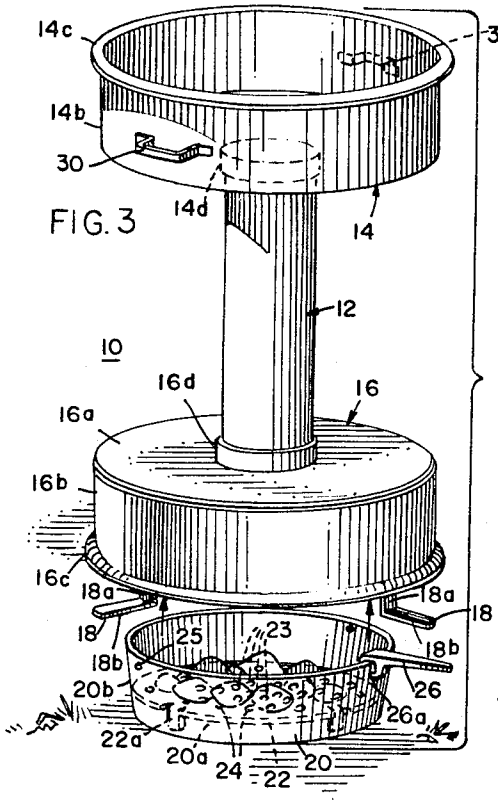
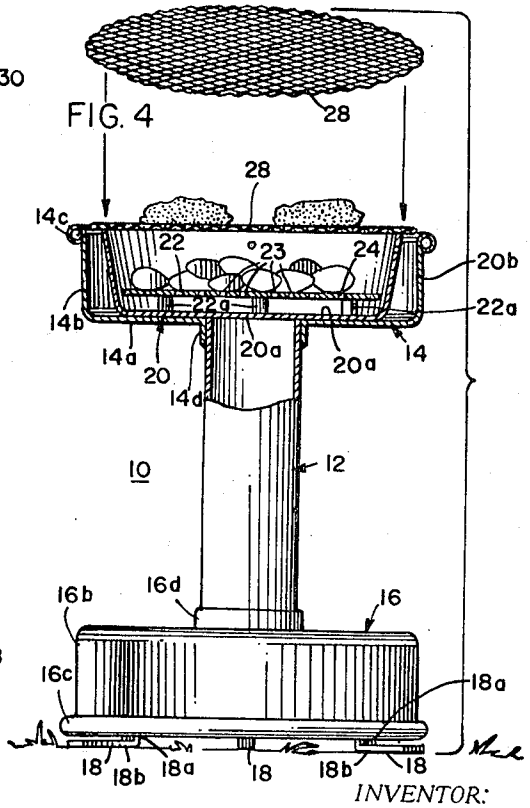


FIG. 4



INVENTOR:

EDWIN B. TIDD

BY

Mason, Kolehmainen, Rathburn & Wyss

ATT'YS

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COOKING DEVICE FOR BURNING SOLID FUEL

Edwin B. Tidd, 314 Oxford Road,
Kenilworth Village, Ill. 60043

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ABSTRACT OF THE DISCLOSURE

A cooking device adapted to burn solid fuel comprising an upright, hollow flue open at the top and bottom for containing a quantity of fuel in the lower end portion thereof during an initial period of ignition and combustion of said fuel. The flue extends upwardly above the upper level of a quantity of fuel placed therein and directs and confines an updraft of air and combustion gases during said initial period. Base means is secured to the flue and extends outwardly thereof for supporting the flue in an upright position from the ground or other surface. Fire pan means is provided including a bottom wall larger than the lower end of said flue for containing said fuel within the flue during said initial period while the fire pan means is positioned beneath the flue. The fire pan means is adapted to receive and contain the charge of burning fuel after said initial period when discharged or dumped from the flue upon upward relative movement of the flue above the fire pan. The fire pan is thus bodily moveable with the burning fuel thereon to a position resting on top of the upright flue for cooking.

The present invention relates to a new and improved cooking device adapted to burn solid fuel and, more particularly, relates to cooking devices commonly termed outdoor grills, and the like, which normally use charcoal briquettes as fuel.

One of the problems in prior devices of this type is in getting a fire started because, normally, charcoal briquettes are difficult to ignite and require a long time before they are red hot and ready for cooking. One method commonly used is to soak the briquettes with petroleum starter fluid and ignite the fluid, hoping the briquettes will begin to burn. This method is often unsatisfactory because if enough fluid is used to make starting easy, the smoke produced from the coals after ignition contains petroleum fumes for some time thereafter and often gives the meat cooked on the coals an objectionable taste or odor. Another means often used for starting the combustion of charcoal briquettes is an electric heater. However, these heaters require a source of electrical power in the near vicinity and, because it is often desirable to cook with charcoal in areas where no electric power is available, this means of starting is not possible. Moreover, electric starting units are expensive and sometimes burn out or become inoperative, after a relatively small number of fires have been started therewith. The cooking device of the present invention is especially adapted to burn charcoal briquettes and to eliminate the aforementioned problems. Moreover, in the cooking device of the present invention, the time required before a bed of red hot coals, suitable for cooking is ready is greatly reduced.

It is an object of the present invention to provide a new and improved cooking device of the character described and especially adapted to burn solid fuel, such as charcoal briquettes and the like.

More specifically, it is an object of the present invention to provide a new and improved cooking device of the type described in which no petroleum starter fluid, gas, or electric heating units are needed to facilitate starting.

Another object of the present invention is the provision of a new and improved cooking device of the type described wherein the time interval required before the charcoal briquettes are in a red hot condition suitable for cooking is greatly reduced.

Still another object of the present invention is the provision of a new and improved cooking device of the character described wherein an upstanding flue is used for accelerating the starting period to obtain a bed of red hot coals within a relatively short time.

Still another object of the present invention is the provision of a new and improved cooking device of the character described in which the flue means used for speeding up the starting period also serves as a pedestal or support means for supporting a fire pan containing the red hot coals during the cooking process.

Yet another object of the present invention is the provision of a new and improved cooking device of the character described which is neat in appearance, low in cost, easy to use, and maintain.

Briefly, the foregoing and other objects and advantages of the present invention are accomplished in one embodiment thereof which comprises an upright, hollow flue open at the top and bottom for holding a quantity of solid fuel, such as charcoal briquettes, in the lower end portion thereof during an initial starting period. The flue extends upwardly above the upper level of the fuel quantity therein and directs and confines an updraft of air and combustion gases during the initial starting period, thereby producing rapid burning and shortening the time required before the coals can be used for cooking. A base member is secured to the flue and extends outwardly thereof for supporting the flue in an upright position from the ground or other surface. Fire pan means, including a bottom wall larger than the lower end of the flue is provided for closing the lower end of the flue to contain the fuel in the lower end portion during the initial starting period. The fire pan means is adapted to receive and hold a bed of burning coals received from the flue upon upward relative movement of the flue away from the fire pan after the coals are red hot and suitable for cooking. The fire pan means is bodily moveable with the hot coals thereon to a position on top of the flue for cooking, and the flue thus serves the dual purpose of supporting the cooking pan after the coals are hot, as well as providing for fast starting action.

In using the cooker of the present invention, the fire pan means is initially placed on the ground or other surface, and the flue is then centered over the fire pan in an upright position supported by the base means. Several pieces of newspaper are crumpled and dropped into the flue from the open top end thereof, and the last piece of paper is ignited before it is dropped into the flue. When the paper in the flue is burning after a period of less than a minute or so, a number of charcoal briquettes are dropped into the top end of the flue onto the paper. After a short period of time, for example, eight to ten minutes later, the charcoal briquettes are red hot because of the chimney action in the flue, and the flue and base are lifted upwardly to deposit the red hot coals in a spread condition across the bottom of the fire pan. The fire pan is then placed by means of a lifting handle into position on top of the flue which acts as a support pedestal during the cooking process thereafter.

For a better understanding of the present invention, reference should be had to the following detailed description when taken in conjunction with the drawings in which:

FIG. 1 is a perspective view of a new and improved cooking device characterized by the features of the present invention;

FIG. 2 is a vertical cross-sectional view taken substantially along lines 2—2 of FIG. 1 and showing the fire

pan in place beneath the flue in position for starting the fire;

FIG. 3 is an exploded view similar to FIG. 1 but illustrating the unit as it is lifted away from the fire pan after the fire has been started and the coals are red hot for cooking; and

FIG. 4 is a sectional view similar to FIG. 2 illustrating the fire pan containing the red hot coals after it is in position on top of the flue for cooking.

Referring now more specifically to the drawings, therein is illustrated a new and improved cooking device adapted for burning solid fuel, such as charcoal briquettes and the like. The cooking device is referred to generally by the reference numeral **10** and includes an upright, hollow flue **12** open at its upper and lower ends. A cup-shaped pan support member **14** is secured to the upper end of the flue pipe **12** in coaxial alignment with the vertical axis of the flue. The pan support member **14** includes an annular bottom wall **14***a* and an integrally formed, upstanding peripheral sidewall or skirt **14***b*. The upper edge of the sidewall **14***b* is provided with a rolled rim **14***c* which strengthens the member and improves the appearance thereof. A centrally disposed opening is formed in the bottom wall **14***a* to receive the upper end of the flue pipe **12**, and around the opening is provided an integrally formed, downwardly depending, annular flange **14***d* which is welded or otherwise secured to the flue.

The cooker **10** also includes an inverted, cup-shaped base member **16**, preferably identical to the pan support member **14**. The base member **16** includes an annular top wall **16***a* facing the wall **14***a* and an integrally formed, downwardly depending sidewall or skirt **16***b* around the periphery of the bottom wall with a rolled lower edge or rim **16***c*. The top wall **16***a* is formed with a centrally disposed opening for receiving the lower end portion of the flue **12**, and the opening is defined by an upwardly extending, annular flange **16***d* which is secured to the outer surface of the flue **12** by appropriate means, such as welding or the like. It should be noted that the junction of the top wall **16***a* and the flue is spaced upwardly above the lower, open end of the flue, and accordingly the flue projects downwardly into the base member, as best shown in FIG. 2. The pan support member **14** and the base member **16**, being identical in shape, are formed with a single die member, thus reducing fabrication costs. However, if preferred, these members could be of different sizes and shapes to accommodate various sizes required. The base member **16** supports the flue **12** in an upright position from the ground or other surface on which the cooking device **10** is placed, and to this end a plurality of radially spaced, L-shaped support legs **18** are attached to the lower portion of the skirt wall **16***b* to hold the lower rim **16***c* slightly above the ground or other surface on which the cooker is resting. Each L-shaped leg includes a vertical element **18***a* secured to the skirt wall **16***b* and projecting downwardly below the rolled rim **16***c* an outwardly extending, horizontal foot portion **18***b* adapted to rest on the ground. The lower, rolled edge **16***c* is spaced above the surface on which the cooker is resting in order to permit combustion air to enter the base member from around the periphery thereof. The legs **18** also provide for increased stability of the cooking device. However, if separate legs are not used, suitable openings are provided in the skirt wall **16***b* to permit combustion air to flow into the base when the lower edge of the base is resting directly on the ground.

The base member **16** serves as an enclosure or a housing for a fire pan **20** adapted to contain a bed of hot coals for cooking. The fire pan **20** includes a circular bottom wall **20***a* substantially larger in diameter than the diameter of the flue **12** and an upstanding, integrally formed peripheral sidewall **20***b* having a maximum diameter less than the diameter of the skirt wall **16***b* of the base member. Accordingly, as shown in FIG. 2, air can freely pass through the space between the rim **16***c* and the ground and then flow upwardly between the skirt wall **16***b* of the base and the sidewall **20***b* of the pan **20**.

A circular, perforated grate **22** is mounted in the fire pan **20** to support the bed of coals above the bottom wall **20***a* which is resting on the ground during the starting period. The grate includes a plurality or cluster of air holes **23** (FIG. 3) in the central portion thereof and a plurality of air holes **24** spaced outwardly toward the periphery thereof. Because the grate **22** is spaced upwardly above the bottom wall **20***a* of the fire pan, air flow between the grate and bottom wall keep the bottom wall cool so that it does not burn or overheat the ground or other surface beneath the cooking device. The grate is elevated above the bottom wall **20***a* by means of a plurality of integrally formed, downwardly depending legs **22***a* radially spaced along the periphery of the grate. Even though hot coals are resting on the grate, the bottom wall **20***a* is relatively cool and thus the grass beneath the cooker is not damaged during operation.

As shown in FIG. 2, during the starting period, the fire pan **20** with the grate **22** therein, is placed within the base member **16** and combustion air entering the base beneath the rim **16***c* flows upwardly between the sidewall **16***b* and the pan sidewall **20***b*. This air flows downwardly into the pan **20** around the sidewall **20***b* and passes through the outer openings **24** in the grate **22**. The air flows toward the center of the fire pan beneath the grate and passes upwardly through the centrally located holes **23** therein into the lower end of flue **12**.

When a fire is to be started, the fire pan **20** is positioned in the base member **16** and centrally disposed below the flue **12**. When placed in this position, as shown in FIG. 2 of the drawings, the grate **22** is centered below and closes the lower end of the flue **12**. To start the fire, several sheets of newspaper are torn into pieces and the pieces are crumpled and dropped into the flue from the top open end thereof. The last piece of paper is lighted before it is dropped into the flue and after a short period of time to permit the paper already in the flue to ignite and burn, a quantity of briquettes are then dumped into the flue **12** on top of the burning paper. A hot fire rapidly develops in the flue because of the updraft therein, which is confined by the flue. Because the flue is relatively small in diameter with respect to the base member **16**, and the combustion air supply is somewhat restricted, the velocity of the air combustion gases flowing upwardly is relatively high, and this produces an intense fire in the charcoal briquette within a short period of time. During the initial period of ignition and combustion of the charcoal, air for combustion is supplied via the tortuous flow path previously described and eventually passes upwardly into the burning coals in the lower end of the flue through the centrally located holes **23** in the grate. The quantity of charcoal briquettes required in relatively small and the upper level of the briquettes, after they are deposited in the flue for starting, is well below the upper open end of the flue. During the starting period, the charcoal briquettes are confined in a relatively small area within the lower end of the flue by the grate **22**, and after a period of from eight to ten minutes, the charcoal is red hot and is suitable for use in cooking. When the coals are thus ready to be used for cooking, the flue **12** and the pan support member **14** and base member **16** attached thereto are lifted upwardly above the fire pan **20** as illustrated in FIG. 3. When this occurs, the red hot coals in the lower end portion of the flue are dumped out onto the grate **22** and spread across the grate into a bed of coals ready for cooking. The cooker, after being lifted above the fire pan, as described, is moved to one side and set back down. The fire pan is then lifted by means of a removable handle member **26** and placed in a cooking position within the pan support member **14** as shown in FIG. 4. The handle member or lifter **26** is adapted to grip the upper edge of the pan sidewall, and for this

purpose the sidewall is provided with several openings **25** adapted to receive a tongue-like projection **26***a* on the lifter handle.

After the fire pan containing glowing glowing red hot coals is placed in cooking position within the pan support member **14**, as shown in FIG. 4, a suitable grill **28** is lowered onto the pan and rests on the upper edge thereof. The hamburger or other food to be charcoaled is then placed on the grill for cooking in a conventional manner.

For lifting the cooker, the pan support member **14** is provided with a pair of handles **30** secured to the sidewall **14***b* on opposite sides thereof.

The cooking device **10**, as thus described, eliminates the problems of igniting and starting charcoal briquettes for use in cooking and does not require the use of petroleum starter fluids or an electric heating device. In a device constructed in accordance with the present invention, the flue **12** was constructed to be five inches in diameter and about thirty inches long. The outer diameter of the pan support member **14** and base member **16** was about fourteen and one-half inches, and the sidewalls or skirts of these members was four to five inches. Preferably, the flue, base, and pan support are fabricated from sheets of aluminized steel and may be covered with a baked porcelain coating, if desired. The pan **20** and grate **22** are fabricated of heat resistant sheet steel or cast iron.

In using this device in accordance with the present invention, two double sheets of newspaper are torn into small pieces, about eight inches by twelve inches, and are crumpled and dropped into the flue from the open upper end thereof. The last piece of newspaper is lighted before being dropped into the flue, and after ten to fifteen seconds about twelve to fifteen charcoal briquettes of ordinary size, are dumped into the flue on top of the burning newspaper. In about eight to ten minutes, an intense fire is developed in the charcoal in the lower end of the flue and the coals are in a red hot, glowing condition. At this time, the cooker is lifted by the handles **30** above and away from the fire pan **20** and grate **22**, and the coals fall from the flue into the fire pan and spread across the surface of the grate providing a bed of red hot coals ready for cooking food. The fire pan, grate, and red hot coals are then placed in cooking position in the pan support member **14** with the lifter **26**, and the grill **28** is lowered in place.

The cooker **10** is simple in construction, neat in appearance, and easy to use. It eliminates the previously recited problems encountered in starting charcoal fires by the use of the chimney effect in the flue, which also serves as a pedestal for supporting the fire pan at a convenient height for cooking The grate and fire pan arrangement insures that the ground surface beneath the fire pan is not burned or scorched during the starting period.

While the present invention has been described in accordance with an illustrative embodiment, it is intended in the appended claims to cover all improvements thereon within the skill of an ordinary artisan.

What is claimed and desired to be secured by Letters Patent of the United States is:

1. A cooking unit adapted to burn solid fuel comprising an upright, hollow flue open at the top and bottom for containing a quantity of fuel in the lower end portion thereof during an initial period of ignition and combustion, said flue extending upwardly above the upper level of said fuel therein for directing and confining an updraft of air and combustion gases during said initial period, base means secured to said flue and extending outwardly thereof for supporting said flue in upright position on a surface, and fire pan means including a bottom wall larger than the lower end of said flue for containing said fuel in said flue during said initial period while said fire pan means is placed beneath said flue, said fire pan means adapted to receive and contain burning fuel from said flue upon upward relative movement of said flue away from said bottom wall and being bodily movable with said burning fuel thereon to a position resting on the top of said flue for cooking.

2. The cooking unit of claim **1** including a perforated grate spaced above said bottom wall of said fire pan means for supporting said fuel and containing said fuel in said flue during said initial period.

3. The cooking unit of claim **1** wherein said base means includes a top wall spaced above and overlying said fire pan means when placed in position beneath the lower end of said flue during said initial period.

4. The cooking unit of claim **3** wherein said base means includes a continuous skirt wall extending downwardly from said top wall outwardly of said flue for enclosing said fire pan means.

5. The cooking unit of claim **4** including a plurality of leg means projecting downwardly from the lower edge of said skirt wall for supporting said base means and providing an air inlet space between the lower edge of said skirt wall and the surface on which the cooking unit is resting.

6. The cooking unit of claim **3** wherein the top wall of said base means is joined to said flue above the lower end thereof.

7. The cooking unit of claim **1** including pan support means secured adjacent the upper end of said flue and extending outwardly thereof for supporting said fire pan means in position for cooking.

8. The cooking unit of claim **1** wherein said pan support means includes a bottom wall and a continuous skirt wall extending upwardly thereof around said fire pan means when placed on said bottom wall.

9. A cooking unit for use with solid fuel comprising an upright flue open at both ends, base means extending outwardly from said flue for supporting the same in upright position from the ground or other surface, and fire pan means having a bottom wall larger than the lower end of said flue adapted to contain a quantity of fuel in the lower end portion thereof when said fire pan means is resting on the ground with the bottom wall beneath said flue, said fire pan means adapted to contain said burning fuel received from said flue when it is lifted upwardly and being bodily movable to a cooking position resting on top of said flue.

10. The cooking unit of claim **9** including pan support means extending outwardly of said flue adjacent the upper end for supporting said fire pan in cooking position.

11. The cooking unit of claim **10** including a perforated grate spaced above said bottom wall of said fire pan means and adapted to close the lower end of said flue when said bottom wall is disposed beneath said flue.

12. The cooking unit of claim **9** wherein said base means includes a top wall joined to said flue and a depending skirt wall for enclosing the upper portion of said fire pan means when said bottom wall thereof is disposed beneath said flue.

13. The cooking unit of claim **10** wherein said pan support means includes a bottom wall secured to said flue and a skirt wall extending upwardly thereof for limiting lateral movement of said fire pan means when placed in cooking position.

14. The cooking unit of claim **13** wherein said base means includes a top wall joined to said flue and a depending skirt wall for enclosing the upper portion of said fire pan means when said bottom wall thereof is disposed beneath said flue.

15. The cooking unit of claim **14** wherein said base means and pan support means are identical in shape, said top wall of said base means being secured to said flue above the lower end thereof.

16. A cooking unit for using solid fuel comprising a cup-shaped base having an annular top wall and a continuous skirt wall depending downwardly from the periphery thereof, an upstanding hollow flue having a

diameter substantially smaller than said top wall and projecting above and below a central opening therein, a cup-shaped pan support member having an annular bottom wall secured to the upper end of said flue and a continuous skirt wall extending upwardly around the periphery of said bottom wall, a fire pan for holding a bed of burning fuel including a floor and an upstanding annular sidewall having a diameter less than said skirts but greater than said flue, a perforated grate mounted in said fire pan spaced above said floor and adapted to close the lower end of said flue when said fire pan is within said base, and means providing an inlet for airflow into said base around the periphery thereof for supplying combustion air for said fuel through said grate into the lower end of said flue.

17. The cooking unit of claim **16** wherein said base and said pan support members are identical and the top wall and bottom wall thereof, respectively, are sealingly secured around the exterior of said flue.

18. The cooking unit of claim **16** wherein the upper edge of said fire pan is spaced below the top wall of said base when said fire pan is enclosed within said base.

19. The cooking unit of claim **16** wherein the lower end of said flue rests upon said grate when said fire pan is positioned within said base.

20. The cooking unit of claim **16** wherein said last mentioned means comprises a plurality of legs projecting downwardly of the lower edge of said skirt wall for supporting the same spaced above the ground or other surface.

References Cited

UNITED STATES PATENTS

3,192,918	7/1965	Ridgway	126—25
3,209,743	10/1965	Stewart et al.	126—25

FREDERICK KETTERER, *Primary Examiner.*