July 18, 1939. B. B. KAHN 2,166,442

COOKING STOVE

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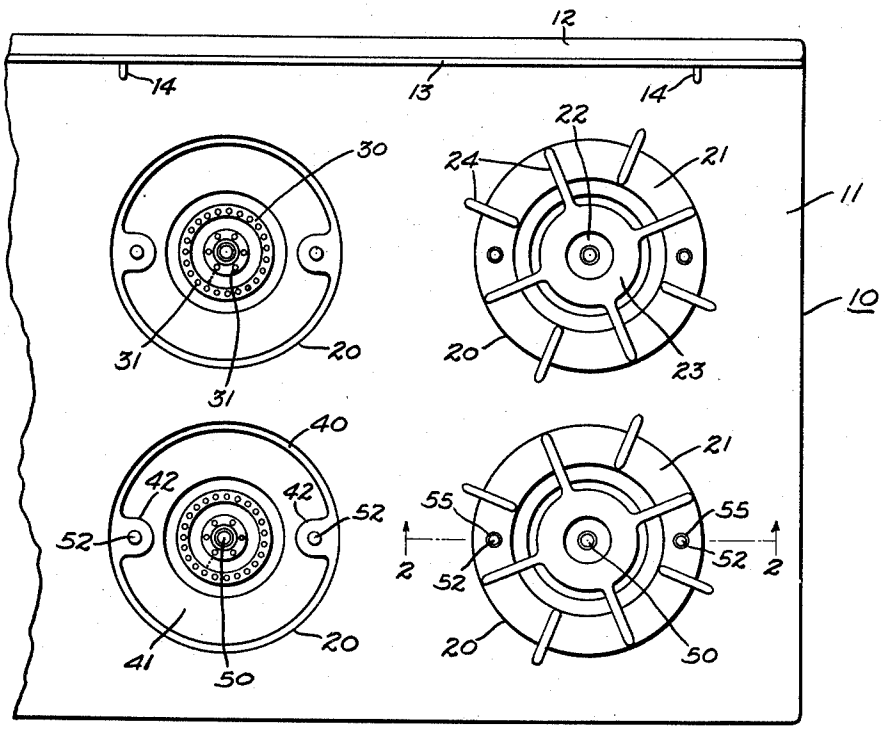


Fig. 1

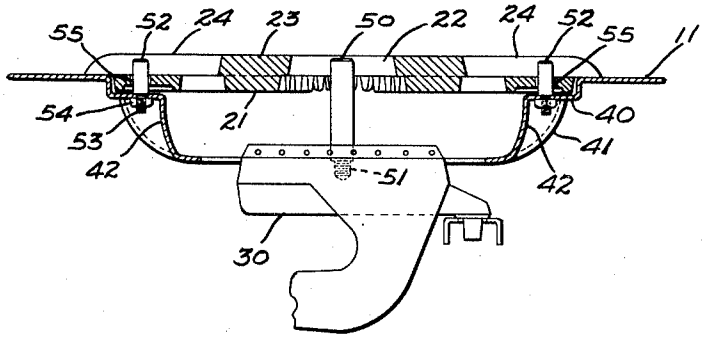


Fig. 2

INVENTOR
Bertrand B Kahn
BY
Maréchal & Noe
ATTORNEYS

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COOKING STOVE

Bertrand B. Kahn, Cincinnati, Ohio, assignor to The Estate Stove Company, Hamilton, Ohio, a corporation of Ohio

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9 Claims. (Cl. 126—214)

This invention relates to stoves and more particularly to a cooking stove in which a removable grate positioned over the cooking top burner of the stove normally maintains a space between the vessel or article to be heated and the burner which assures proper combustion taking place. When however the grate is removed, a vessel or other object may be placed directly upon the burner, resulting in improper combustion, and causing the generation of noxious gases.

It is accordingly one of the principal objects of the invention to provide simple and effective means operable when the grate over a cooking top burner is removed to prevent an object placed over the burner from interfering with the proper operation of the burner.

It is another object of the invention to provide a fluid fuel stove with means operative when the grate is removed to keep the combustion space above the burner substantially free of any objects which might interfere with the proper combustion of the fuel and thereby provide for the escape of poisonous fumes caused by incomplete combustion or smothering of the flame.

A further object is the provision of an anti-smothering means for stove burners which does not interfere with the normal use of the grates, and which may cooperate therewith to locate the grate in proper position.

Other objects and advantages will be apparent from the following description, the appended claims, and the accompanying drawing which illustrates by way of example a preferred embodiment of the invention in which like reference characters designate like parts in the several views, and in which:

Fig. 1 is a top plan view showing the cooking top portion of a stove embodying the invention, certain parts of the stove being broken away and removed; and

Fig. 2 is a sectional view taken in the plane of the line 2—2 in Fig. 1 with parts thereof shown in elevation.

It is customary in a cooking stove to provide the cooking top with one or more grates which separate a vessel or other object to be heated from the burners positioned below the grates. In the case of a fluid fuel stove, such for example as a gas stove, the grates normally serve to provide a combustion space above the burner for the burning of the fuel. These grates are usually made removable to provide access to the burner and facilitate cleaning, and may become lost or misplaced when thus removed. If an attempt is made to heat an object over a burner when the grate is removed, the object, if smaller than the grate opening, will enter into the space normally provided above the burner and interfere with the proper operation of the burner. In the case of a gas stove such entry of an object into the combustion space above the burner, particularly if the object has a solid bottom, may cause incomplete combustion or completely smother the flame, thereby permitting poisonous fumes to escape into the room.

In modern gas ranges it is also customary to provide the stove with a solid top and to provide the burner with a shield or well which substantially encloses the burner except at the grate opening in the cooking top and which serves to direct the heat upwardly towards the grate opening. With such a structure the grates are usually provided with portions which extend upwardly above the cooking top of the stove to hold a vessel slightly above the level of the cooking top to provide a draft space for the burner around the edges of the vessel. Similarly, objectionable operation may result in such construction when the grate is removed where a vessel is sufficiently large to completely cover the grate opening or a smaller vessel is seated within the well formed by this shield, the shield seriously interfering with proper combustion and discharge of the products of combustion.

In accordance with the present invention, a construction is provided which assures proper operation at all times, and when the grate is removed. Referring to the drawing which discloses a preferred embodiment of the invention, the stove, only a portion of which is shown in the drawing, is designated generally by the reference numeral 10 and is provided with a cooking top 11, a back 12 and a cover member 13 adapted to swing on the hinges 14 to cover the cooking top when the latter is not in use.

The cooking top 11 comprises a solid plate provided with a plurality of grate openings 20 adapted to receive removable grates 21. The grates for the burners shown on the left side of Fig. 1 have been removed to show the stove structure with the grates removed. The grate 21 is provided with a central opening 22 and with a plurality of raised portions or ribs 23 and 24 which extend above the cooking top and serve to space a vessel or other object placed on the grate above the cooking top to provide a draft space for the burner.

A burner 30 is suitably supported below each of the grate openings 20. The burner may be of any desired type and is provided with a

plurality of gas ports 31. The burners illustrated at the left side of Fig. 1 are of the double-duty type in which the burner is provided with two circular rows of gas ports.

The cooking top is provided with a recessed shoulder 40 which extends around the periphery of the grate opening and is adapted to receive the grate 21 thereon. For the purpose of directing the heat from the burner toward the grate opening an annular curved shield 41 surrounds the burner adjacent the gas ports and extends upwardly and outwardly to the inside edge of the shoulder 40, the shoulder 40 and shield 41 preferably being made integral with the cooking top 11, thus providing an imperforate shield member forming a central well. The shield 41 is provided with a plurality of upraised bosses 42 adjacent the periphery of the grate opening, a pair of such bosses being diametrically opposed. The bosses terminate flush with the shoulder 40 and the top of the boss forms a continuation of the shoulder surface.

The grate 21 normally provides a combustion space above the burner and prevents the entry of solid objects into this space. For the purpose of preventing the entry into this space of an object which might smother the flame, cause incomplete combustion or otherwise interfere with the proper operation of the burner when the grate is removed, an anti-smothering lug or pin 50 is carried by the burner and extends upwardly into the space normally occupied by the grate. The pin 50 is provided with a threaded portion 51 at its lower end which is screwed into the burner 30 at the center thereof and its upper end is received within the center opening 22 of the grate when the grate is in place. A pair of anti-smothering lugs or pins 52 are also mounted on the upraised bosses 42 of the shield member 41 and extend upwardly into the space normally occupied by the grate. The pins 52 are provided with threaded portions 53 which pass through openings provided in the top of the bosses 42 and are engaged by nuts 54 which secure the pins 52 in place.

The pins 50 and 52 preferably extend above the cooking top and terminate just short of the top of the upraised portions 23 and 24 of the grate as shown in Fig. 2. The grate 21 is provided with openings 55 which are adapted to receive the pins 52 when the grate is in place. The openings 55 are only slightly larger than the pins 52 and cooperate with the pins to position the grate.

While the anti-smothering means 50 and 52 are shown as round pins it is evident that they may comprise lugs of any desired shape. It is also evident that either the center lug 50 or the side lugs 52 may be used alone and that one, two or more lugs may be carried by the burner or positioned around the periphery of the grate opening. It is furthermore evident that the burner lug 50 may be formed integral with the burner or supported on the burner by any desired means other than the threaded connection shown, and that the outside lugs 52 may likewise be made integral with the shield 41 or other portion of the stove structure or otherwise rigidly attached thereto, such, for example, as by means of rivets or the like.

As will be clear from the foregoing, if it is attempted to place a vessel of larger diameter over the burner with the grate removed, a plurality of outside lugs would serve to hold the vessel at some spacing above the burner and provide a space between the bottom of the vessel and the well. The one or more center pins would serve to prevent the seating of a small diameter vessel directly within the well and upon the burner. With the construction shown embodying a center lug and a pair of diametrically arranged outside lugs the vessel cannot rest level, thus discouraging attempts to operate the burner without the grate in place as well as providing a draft space for the burner.

While the form of apparatus herein described constitutes a preferred embodiment of the invention, it is to be understood that the invention is not limited to this precise form of apparatus, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. In a stove provided with a cooking top having a grate opening therein, a burner supported below said opening, a removable grate positioned over said burner at said opening to normally maintain a space above said burner, a lug carried by said burner substantially centrally of said grate opening, a plurality of other lugs supported below said heating top and positioned adjacent the periphery of said opening, said lugs extending upwardly into the space normally occupied by said grate, and said grate being provided with openings adapted to receive said lugs.

2. In a stove provided with a cooking top having a grate opening therein, a burner supported below said opening, a removable grate positioned over said burner at said opening to normally maintain a space above said burner, and a plurality of spaced upstanding lugs all positioned within a central vertical plane passing through said grate opening, said lugs extending upwardly into the space normally occupied by said grate, and said grate being provided with openings adapted to receive said lugs.

3. In a stove provided with a substantially solid cooking top having at least one grate opening therein, a burner supported below said opening, an annular shield surrounding said burner and extending to the periphery of said opening, a removable grate positioned over said burner at said opening to normally maintain a combustion space above said burner, said grate having portions thereof extending above said cooking top, a plurality of spaced upstanding lugs carried by said shield, an upstanding lug carried by said burner substantially centrally of the grate opening, said lugs extending above the cooking top for a distance not greater than the height of said upwardly extending portions of the grate, and said grate being provided with openings adapted to receive said lugs.

4. In a stove provided with a cooking top having a grate opening therein, a burner supported below said opening with the top portion thereof positioned at a substantial distance beneath said cooking top, a removable grate positioned over said burner at said opening to normally maintain a substantial combustion space above the top of said burner and permanently provide a passage upwardly through said grate opening with a cooking vessel thereon for the discharge of the products of combustion, and means comprising a fixed upwardly extending member projecting above the top of said burner into the space normally occupied by said grate and adapted to cause tilting of a vessel placed above the burner with the grate removed to maintain a discharge passage for said products of combustion upwardly through

said grate opening, said means thereby discouraging use of the stove with the grate removed and serving to maintain a proper combustion space above the burner and prevent smothering of the burner flame.

5. In a stove provided with a cooking top having a grate opening therein, a burner supported below said opening with the top portion thereof positioned at a substantial distance beneath said cooking top, a removable grate positioned above said burner at said opening to normally support a cooking vessel at a substantial distance above the top of the burner and provide a passage upwardly through said grate opening for discharge of the products of combustion, a substantially annular shield extending upwardly from substantially the level of said burner into substantially the plane of said grate and enclosing a substantial combustion space above the burner, and a fixed upwardly extending member arranged substantially central of said grate opening and projecting above the top of said burner into the space normally occupied by said grate to cause tilting of a vessel placed above the burner with the grate removed and to maintain a discharge passage for said products of combustion upwardly through said grate opening.

6. In a stove provided with a cooking top having a grate opening therein, a burner supported below said opening, a removable grate positioned above said burner at said opening to normally support a cooking vessel and provide a passage upwardly through said grate opening for discharge of the products of combustion, and means comprising a plurality of fixed upwardly extending members projecting into the space normally occupied by said grate and arranged to cause tilting of a vessel placed above the burner with the grate removed and to maintain a discharge passage for said products of combustion.

7. In a stove provided with a cooking top having a grate opening therein, a burner supported below said opening with the top portion thereof positioned at a substantial distance beneath said cooking top, a removable grate positioned over said burner at said opening to normally maintain a substantial combustion space above the top of said burner and provide a passage upwardly through said grate opening for the discharge of the products of combustion, an imperforate shield substantially enclosing the vertical space between said burner and said grate, and a fixed upwardly extending member projecting above the top of said burner into the space normally occupied by said grate and adapted to cause tilting of a vessel placed above the burner with the grate removed to maintain a discharge passage for said products of combustion upwardly through said grate opening.

8. In a stove provided with a cooking top having a grate opening therein, a burner supported below said opening, a removable grate positioned over said burner at said opening to normally maintain a combustion space above said burner and provide a passage upwardly through said grate opening for the discharge of the products of combustion, a shield substantially enclosing the space between said burner and said grate, and means comprising a plurality of fixed upwardly extending members projecting above the plane of said cooking top into the space normally occupied by said grate and arranged to cause tilting of a vessel placed above the burner with the grate removed to maintain a discharge passage for said products of combustion.

9. In a stove provided with a cooking top having a grate opening therein, a burner supported below said opening with the top portion thereof positioned at a substantial distance beneath said cooking top, a removable grate positioned over said burner at said opening to normally support a cooking vessel at a substantial distance above the top of the burner and provide a substantial combustion space above said burner top, said grate having portions thereof extending above the top of said cooking top to provide a passage upwardly through said grate opening for the continuous discharge of products of combustion with a cooking vessel in position thereon, and means comprising a fixed upwardly extending member projecting above the top of said burner and above the top of said cooking top into the space normally occupied by said grate and arranged to cause tilting of a vessel placed above the burner with the grate removed to maintain a discharge passage for said products of combustion upwardly through said grate opening.

BERTRAND B. KAHN.