Aug. 26, 1969 KANEKICHI HAYASHI ET AL 3,463,139

GAS INFRARED BURNER

Filed Oct. 10, 1967 2 Sheets-Sheet 1

FIG-1

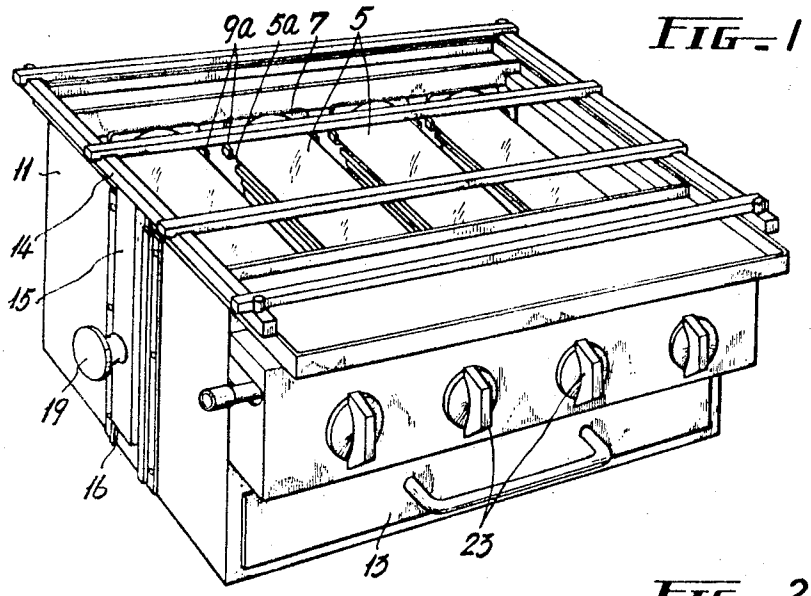
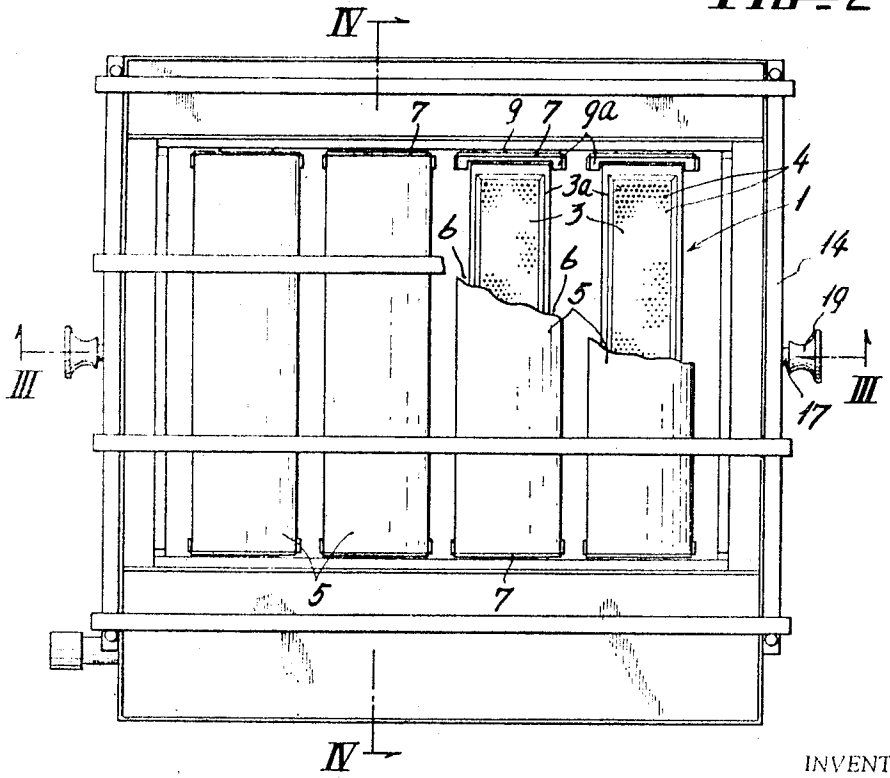


FIG-2



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FIG. 3

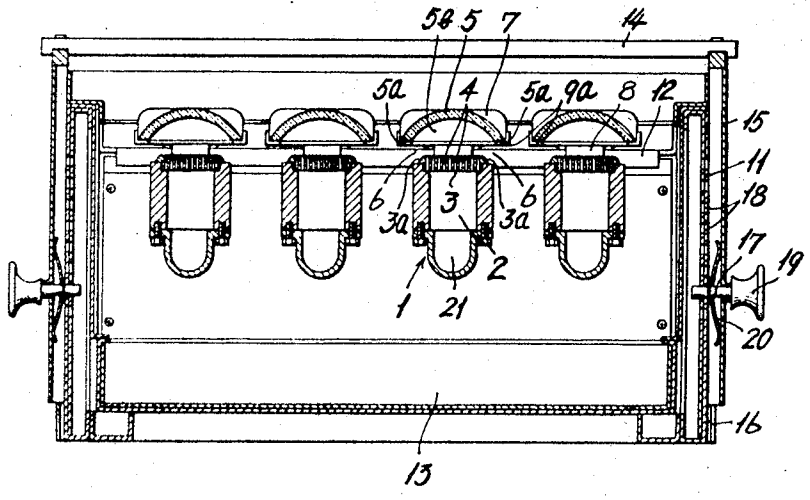
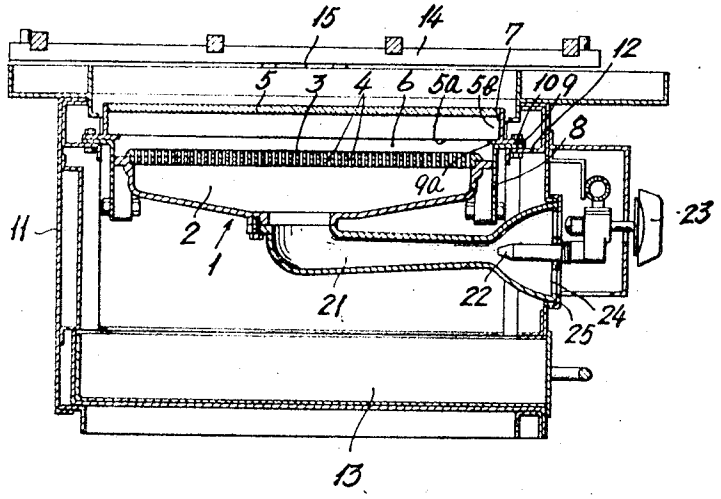


FIG. 4



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GAS INFRARED BURNER

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Int. Cl. F24c 3/08
U.S. Cl. 126—39 8 Claims

ABSTRACT OF THE DISCLOSURE

A burner having a burner plate covered by an arch which transmits a portion of the heat generated at the plate while absorbing and releasing the balance of the heat. The arch serves to protect the plate from dripping grease and the like and to direct such waste into a drawer which is readily removed.

General explanation of drawing

FIGURE 1 is a perspective view of a cooking apparatus having a gas infrared burner according to the present invention;

FIGURE 2 is a plan view of the apparatus of FIG. 1 with a portion thereof broken away;

FIGURE 3 is a sectional view taken along line III—III in FIG. 2; and

FIGURE 4 is a sectional view taken along line IV—IV in FIG. 2.

Detailed explanation of the invention

This invention relates to a gas infrared burner chiefly for use in cooking, and has as an object the provision of a gas infrared burner which can be used at high thermal efficiency with its burner plate protected from dripping wastes.

According to the present invention, there is provided an improved gas infrared burner characterized in that a unit provided with a refractory burner plate having a multitude of small gas openings is further provided with a tunnel shaped covering plate or arch of heat resisting glass or glass ceramic material which forms air gaps between the opposed edges of the covering plate and the burner plate, and which is provided additionally with end plates to close the opposite end openings of said covering plate.

According to another feature of this invention, the gas infrared burner is placed at the upper portion of the interior of a casing so as to form a gas cooking apparatus, and this casing is provided at the bottom portion of its interior with a drawer which is adapted to contain sand or water therein or to have its inner surface coated with a heat resisting synthetic resin film such as Teflon film.

An example of the invention will next be explained with reference to the accompanying drawing in which element **1** is a conventional gas infrared burner unit comprising a gas chamber **2** provided at the upper surface thereof with a burner plate **3** made of refractory material and having a multitude of small gas openings **4** therein. Each burner unit **1** (of which there are four in the illustrated apparatus) is provided at the top thereof with a tunnel shaped covering plate **5** of heat resisting glass or glass ceramic material to form air gaps **6** between the opposite lower side edges *5a* of covering plate **5** and the opposite side edges *3a* of the burner plate **3**. Each unit is additionally provided with end plates **7** to close the opposite end openings *5b* of covering plate **5**. Each burner unit **1** moreover has at each end an outwardly extending bracket **8** and each end plate **7** is placed with its base plate **9** on the same to be fastened thereto by a screw **10**. The base

plate **9** extends inwardly to form an edge *9a* and the covering plate **5** is detachably placed with its corresponding end portion on the same.

Each gas infrared burner as above is placed at the upper portion of the interior of a casing **11** and is secured by its brackets **8** to receiving edges **12** of the casing **11** by screws **10**, whereby a cooking apparatus is formed.

The casing **11** has at the bottom portion of the interior thereof a drawer **13** which is adapted to contain sand or water or to have its inner surface coated with a heat resisting synthetic film such as Teflon film, so that juice or fat and oil or the like dropping from the foodstuff to be cooked during the cooking operation may be received therein for facilitating the removal thereof as the occasion demands.

The casing **11** has at its upper surface a receiving frame **14** for supporting a cooking device such as a pan, a pot, a gridiron or the like. This frame **14** is attached to the top ends of supporting rods **16** which are slidable up and down in guide grooves **16** provided in the side surfaces of the casing **11** and may be set at any desired height by a pin **17** inserted through openings **18** arranged vertically at regular intervals. The pin **17** has at its outer end a knob **19** and is urged inwards by a resilient plate **20**. Element **21** is a gas mixing tube having at its outer end a gas supply nozzle **22** provided with a gas cock **23** and an air supply opening **24** having a control valve **25**.

The operation of the above apparatus is as follows: When gas is supplied to the gas infrared burner unit **1** to be burned thereby, the burner plate **3** becomes red-hot and thermic rays radiate upwards to pass through the covering plate **5** positioned over the burner plate **3** and, at the same time, a part of the thermic rays which is not passed through the covering plate **5** is absorbed in said plate **5** to produce a secondary radiant heat for heating foodstuff above said plate **5**. When foodstuff is heaated over the covering plate **5**, oil, fat, juice or the like extracted therefrom drops but is intercepted by the covering plate **5** so that there is no fear that the same will drop on the burner plate **3** to disturb the burning. The oil, fat or the like dropping on the covering plate **5** falls down or is splashed sidewards and is received by the drawer **13** for being easily removed at any desired time. During the burning operation, the burning exhaust gas, after filling the space formed within the tunnel shaped covering plate **5**, of which the opposite ends are closed by the end plates **7**, goes down along the inner surface of the covering plate **5** and reaches its opposite side lower edges, whereupon the same is discharged gradually therefrom through the air gaps **6**. Accordingly, the covering plate restrains the discharge of heat from the inner side thereof to heighten the heat radiant efficiency at the outer surface thereof.

Thus, in this invention, the burner plate is protected from oil and fat or juice or the like while at the same time thermal efficiency is heightened. Additionally, the removal of the dripping oil and fat or the like can be easily effected by means of the drawer.

What is claimed is:

1. A gas infrared burner apparatus comprising at least one gas infrared burner unit including a refractory burner plate provided with a multitude of small gas openings, a tunnel shaped covering plate above said burner plate and of heat resisting material and having lower side edges spaced from and defining air gaps with said burner plate, said tunnel shaped covering plate having an arcuate cross section with a higher central region and lower side regions for conducting drippings downward from said higher central region by gravity, and end plates to close the ends of said covering plate.

2. Apparatus as claimed in claim **1** comprising a casing enclosing said unit, and a drawer in said casing below said unit to receive drippings therefrom.

3. Apparatus as claimed in claim 2, wherein said covering plate is glass.

4. Apparatus as claimed in claim 2, wherein said covering plate is of a glass ceramic material.

5. Apparatus as claimed in claim 2 comprising support means supporting the covering plate above the burner plate and on which the covering plate loosely rests, said end plates being fixed on said means.

6. Apparatus as claimed in claim 5 comprising adjustable means above said covering plate for supporting cooking implements above the latter at an adjustable height.

7. Apparatus as claimed in claim 5 comprising a plurality of said units arranged in parallel side-by-side relationship.

8. Apparatus as claimed in claim 5, wherein said support means includes spaced brackets supporting opposite ends of said covering plate and including flanges laterally bracketing the covering plate.

References Cited

UNITED STATES PATENTS

2,870,828	1/1959	Hess	126—39
2,898,846	8/1959	Del Francia	126—41
2,921,176	1/1960	Scofield	431—328
3,241,542	3/1966	Lotter.	
3,267,924	8/1966	Payne	126—41
3,369,536	2/1968	Fannon et al.	431—328

EDWARD G. FAVORS, Primary Examiner

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99—446; 126—215; 431—328