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Fijalkowski

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[54] **GAS FIRED COOKER IGNITION SYSTEM**

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[52] **U.S. Cl.** **431/191**

[51] **Int. Cl.** **F23q 21/00**

[58] **Field of Search** 431/191, 192, 193; 126/41

[56] **References Cited**

UNITED STATES PATENTS

818,131	4/1906	Taylor	431/193
2,022,033	11/1935	Furlong	431/191 X
546,923	9/1895	Groebbels	431/192
3,592,179	7/1971	Hahn	431/191
3,628,903	12/1971	Hoyt	431/192

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[57] **ABSTRACT**

A gas fired cooker ignition system including, in combination, a gas burner mounted in a housing and adapted to be lighted from a flame source generated externally of the housing. The housing includes an upstanding wall having an ignition port therein and the burner includes at least one gas outlet directing gas flow in the general direction of said ignition port. A hollow flash tube is mounted in said housing and includes an inner, open end spaced apart and generally facing said gas outlet of said burner. The flash tube is mounted to slope upwardly towards said inner end and includes an outer end provided with an ignition opening adjacent said ignition port of said housing wall. The flash tube is detachably secured to the housing wall, the ignition opening of the tube spaced closely adjacent the ignition port so that a flame source introduced into the housing through said port will flash through the tube and ignite the gas from the burner.

10 Claims, 3 Drawing Figures

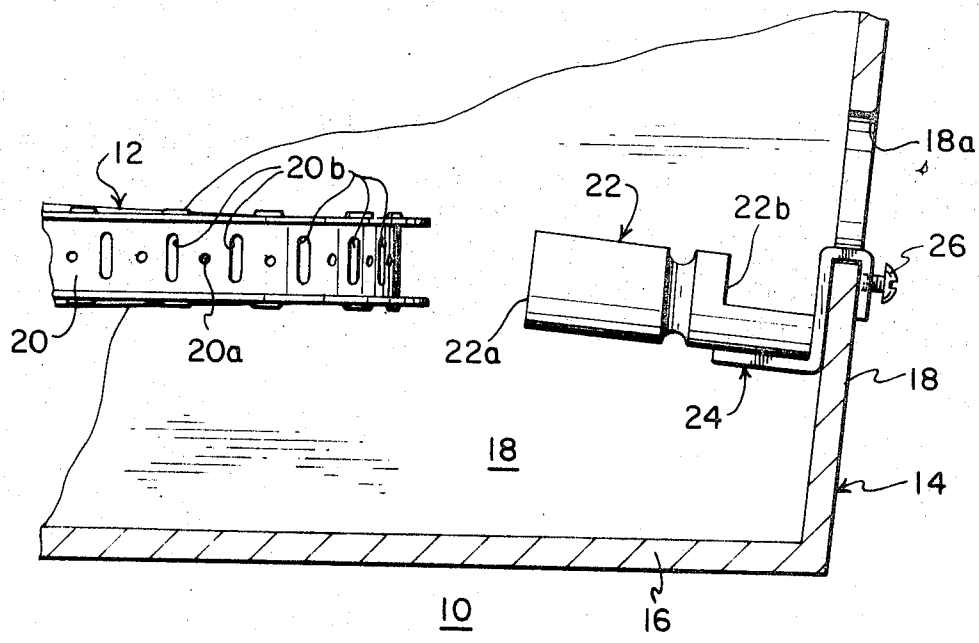


FIG. 1

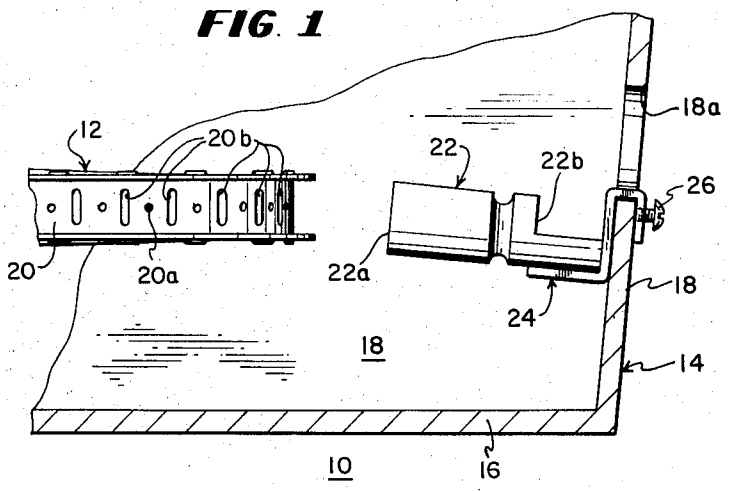


FIG. 2

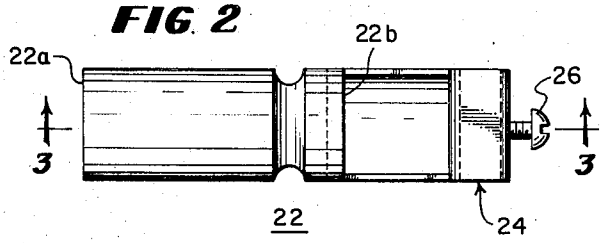
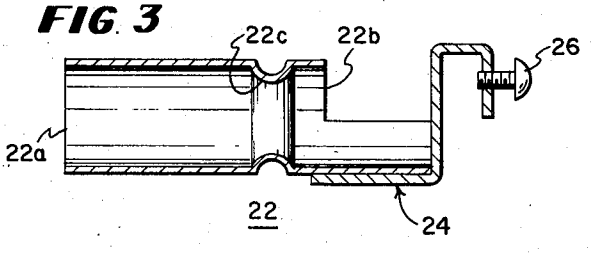


FIG. 3



GAS FIRED COOKER IGNITION SYSTEM

The present invention is directed towards a gas fired cooking device ignition system, and more particularly towards a system for igniting or lighting a gas fired burner provided in a housing or enclosure of an outdoor barbeque broiler or the like.

One of the problems associated with gas fired cooking devices (especially those mounted out of doors), is to provide a reliable and safe system for igniting or lighting the burner without causing a concussive type ignition which is both frightening and often dangerous to a person attempting to light a cooking unit. Gas fired barbeque grills and the like which are mounted out of doors are subjected to wide changes in ambient temperature and wind conditions and often changing ambient conditions cause difficulty in lighting the gas burner which is generally rather fully enclosed in a burner box or housing. Pilot lights or electric ignition systems commonly used on indoor cooling units are not satisfactory because of the wide range of ambient atmospheric conditions which the outdoor cooking units must face. For example, it is costly and difficult to keep a pilot light burning all of the time for an outdoor barbeque grill which is only used intermittently. Moreover, relatively complex electric ignition systems are costly and are relatively difficult to maintain because of the continuous exposure to the wind, rain and snow in an outdoor location.

It is therefore an object of the present invention to provide a new and improved, gas fired cooking unit ignition system.

More particularly, it is an object as to provide a new and improved flash tube ignition system for a gas fired cooker.

Another object of the present invention is to provide a new and improved gas fired cooking device including a gas burner housed in an enclosure, which burner can be easily lit or ignited with a flame source generated outside of the housing and without any of the annoying concussive type ignition or flame propagation oftentimes associated with outdoor cooking units and the like of the prior art.

Still another object of the invention is to provide a new and improved flash tube ignition system for an outdoor cooking unit, which system is simple and safe in operation, and extremely reliable even though ambient atmospheric conditions such as wind and temperature may vary widely and even though the cooking unit may be open or closed or cold or hot.

Another object of the present invention is to provide a new and improved flash tube ignition system for a gas fired cooking unit which is safe, reliable and easy to use.

Yet another object of the present invention is to provide a new and improved flash tube ignition system for an outdoor, gas fired broiler which is reliable in operation even though the broiler may be hot or cold and even though the ambient temperature and wind condition may vary widely from time to time.

The foregoing and other objects and advantages of the present invention are accomplished in an illustrated embodiment comprising a cooking unit having an ignition system for lighting a gas burner mounted in a housing or enclosure from a flame source generated externally of said housing. The housing includes an upstanding wall having an ignition port therein and the burner

includes at least one burner opening directing gas flow in the general direction of the ignition port. The ignition system comprises a hollow, flash tube having an open inner end spaced apart from and generally facing the burner part and the opposite end of the tube is provided with an ignition opening adapted to be positioned closely adjacent the ignition port in the housing wall. When a match or other suitable flame source generated externally of the housing is introduced into the housing through the port the flash tube carries the flame conveniently to cause ignition of the gas burner. The flash tube is detachably mounted on the burner housing and slopes upwardly toward the inner end so that draft characteristics through the flash tube are sufficient to insure ignition of the burner even though ambient thermal draft characteristics around the housing may vary because the broiler is hot or cold, or has a lid or cover open or closed.

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

FIG. 1 is a fragmentary vertical sectional view of a cooking unit including a gas fired burner and an ignition system constructed in accordance with the features of the present invention;

FIG. 2 is a top plan view of a flash tube ignition system constructed in accordance with the features of the present invention; and

FIG. 3 is a longitudinal vertical sectional view taken substantially along lines 3—3 of FIG. 2

Referring now more particularly to the drawings, in FIG. 1, therein is illustrated a gas fired cooking device or barbeque broiler **10** which includes a gas fired burner **12** mounted inside a relatively large housing and enclosure having a lower pan like section **14** and a grill and removable cover (not shown). The lower section of the enclosure around the burner includes a bottom wall **16** and a peripheral, upstanding side wall **18**. The burner **12** is preferably of the type shown and described in detail in the copending U. S. Pat. application, Ser. No. 65,151, filed Aug. 19, 1970 which application is assigned to the same assignee as the present invention, although other types of gas fired burners can be utilized. The burner **12** includes a peripheral side wall **20** spaced a considerable distance inwardly of the housing wall **18** and the burner wall has a plurality of spaced apart, circular gas ports **20*a*** and alternately spaced, vertical gas slots **20*b*** for directing a combustible mixture of air and natural gas outwardly in a general direction toward the peripheral side wall **18** of the cooker housing.

In accordance with the present invention, the barbeque cooker **10** includes a flash type ignition system for igniting gas from the burner comprising an elongated hollow, flash tube **22** formed of thin sheet metal tubing, and extending between the burner wall **20** and the housing wall **18**. The flash tube **22** is preferably circular in transverse cross section and includes an open, inner end **22*a*** which is spaced opposite of and directly in facing communication with the burner wall port **20*a*** and slots **20*b***. The opposite or outer end of the flash tube **22** is formed with a notched out ignition opening **22*b*** on the upper half thereof, which opening extends inwardly from the outer end and is aligned closely adjacent to and just below an ignition port or opening **18*a*** formed in the upstanding, peripheral wall **18** of the broiler housing section **14**.

Intermediate the inner and outer ends of the flash tube, the tube wall is formed with an inwardly rolled, flow constriction 22*c* wherein the transverse, cross sectional flow area of the flash tube is reduced substantially below the cross sectional flow area at opposite ends of the tube. As illustrated in FIG. 1, the flash tube is detachably supported in the cooker housing 14 with its inner end mounted at an elevation above the outer end, so that the tube slopes upwardly to provide a natural draft toward the burner ports 20*a* and slots 20*b* formed in the peripheral wall 20 of the burner 12. For the purpose of detachably supporting the flash tube in the burner housing in the proper, strategic position with the proper slope, a generally L-shaped support bracket 24 formed of a thin sheet metal strip is secured to the outer end portion of the flash tube. The support bracket 24 includes a lower leg preferably attached to a bottom wall portion of the flash tube adjacent the outer end by spot welding and an upstanding leg which closes or blocks off the outer end of the flash tube on a plane perpendicular to the longitudinal axis of the tube. A short hook portion is integrally formed on the upstanding leg at the upper end in order to conveniently attach the bracket 24 to the housing wall 18. The hook portion extends through the ignition port 18*a* as illustrated and the flash tube can be easily inserted or withdrawn through the port 18*a*. A cap screw 26 is provided for securing the hooked end portion of the support bracket 24 in position as shown in FIG. 1 attached to the upstanding wall 18 of the burner housing. The threaded shank of the cap screw projects through a suitable, threaded bore provided in the downwardly extending leg of the hook end, to permit ready attachment or detachment of the flash tube.

The flash tube 22 is especially designed and strategically located between the wall port 18*a* and the burner 12 in order to provide for a rapid ignition of the air-gas mixture emananting from the ports and slots of the burner 12 when it is turned on. This rapid and controlled ignition prevents an accumulatin or buildup of gas in the burner housing 14 and in prior art units accumulations of gas before ignition often cause a concussive or semi-explosive type ignition which is both dangerous and annoying. When gas is turned on to supply the burner 12, the air-gas mixture from the peripheral ports and slots 20*a* and 20*b* flows outwardly towards the upstanding side wall 18 of the burner housing 14. Some of this gas flows into the inner, open end 22*a* of the flash tube and passes downwardly through the restriction 22*c*. The restriction tends to limit and prevents an excessive amount of gas from flowing toward the outer end of the tube so that when a match or other external flame source is introduced into the interior of the housing through the ignition port 18*a* only a small portion of the air-gas mixture from the burner is initially ignited. After ignition occurs in the area immediately above the outer ignition opening 22*a* of the flash tube, the flame subsequently flashes back and through the upwardly sloped tube towards the inner end 22*a* adjacent the burner. The flame then rapidly ignites the air-gas mixture flowing from the ports and slits 20*a* and 20*b* around the peripheral wall 20 of the gas burner 12.

It has been found in numerous tests conducted with the cooking unit and ignition system as shown and described, that rapid and effective ignition or lightoff of the gas mixture from the burner 12 occurs when a match or other flame source externally generated is momentarily positioned in the ignition port 18*a* of the housing wall 18. It is not necessary to try and push the flame completely inside the housing. Merely placing the flame in the vicinity immediately above the outer ignition opening 22*b* in the flash tube is sufficient to cause rapid ignition to take place regardless of the ambient conditions around the cooking unit 10. Ignition takes place in a rapid and efficient manner and without a concussive type ignition with the accompanying noise and excessive flame. with the flash tube 22, the gas-air mixture from the burner 12 can be easily ignited or lit by a small match or other flame source externally of the housing. The ignition system is reliable in a variety of different conditions whether the burner and housing are hot or cold, or whether the lid or cover of the cooker 10 is in place or emoved and in a variety of different ambient weather conditions including relatively high winds and relatively cold temperatures. The flash tube ignition system 22 is simple of construction, reliable in operation, relatively inexpensive and easy to install, clean and use. A cooker 10 equipped with a flash tube 22 as described is an extremely versatile device capable of use in all kinds of ambient weather conditions out of doors.

Although the present invention has been described with reference to a single illustrative embodiment thereof, it should be understood that numerous other modifications and embodiments can be devised by those skilled in the art that will fall within the spirit and scope of the principles of this invention.

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

1. A device for lighting a gas burner mounted in a housing from a flame source generated outside said housing; said housing including an upstanding wall having an ignition opening therein and said burner including at least one burner port directing gas flow in the general direction of said opening and spaced therefrom; said device comprising a hollow flash tube having opening means at an inner end spaced apart from and generally facing said burner port, said tube including an ignition opening defined adjacent an outer end of said tube; and means for mounting said tube in said housing sloping upwardly from said other end toward said inner end with said ignition opening thereof spaced adjacent said ignition opening in said housing wall.

2. The device of claim 1 wherein said mounting means is secured to said outer end of said flash tube for supporting said tube with said ignition opening thereof at least partially below said ignition opening of said housing wall.

3. The device of claim 1 wherein said flash tube includes flow constricting means for reducing the cross-sectional flow area thereof intermediate said ignition opening and said opening means at said inner end.

4. The device of claim 1 wherein said mounting means includes means extended through said ignition opening in said housing wall for detachably securing said flash tube to said burner housing.

5. The device of claim 1 wherein said flash tube is of circular cross-section and said opening means includes at least a portion thereof spaced above the level of said burner port.

6. The device of claim 5 wherein said ignition opening of said flash tube is formed on an upper portion thereof.

7. In combination, a burner enclosure including an upstanding wall with an external ignition port therein, a gas fired burner mounted in said housing including at least one burner port directing gas outwardly in a general direction toward said ignition port and spaced apart therefrom, and a flash tube for lighting said burner from a flame source generated externally of said housing and introduced through said ignition port, said tube having openings at opposite ends and sloping upwardly in a direction away from said ignition port toward said burner port, one of said tube openings spaced apart from a generally facing said burner port and the other tube opening adjacent to and spaced below said ignition port.

8. The combination of claim 7 including support means for detachably securing said flash tube to said housing wall adjacent said ignition port.

9. The combination of claim 7 including flow constricting means in said flash tube between said openings.

10. The combination of claim 8 wherein said support means includes a portion partially closing off the end of said tube adjacent said ignition port.

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