Feb. 7, 1933. W. E. MILLER 1,896,675

IGNITION MEANS

Filed March 15, 1929

FIG. 1.

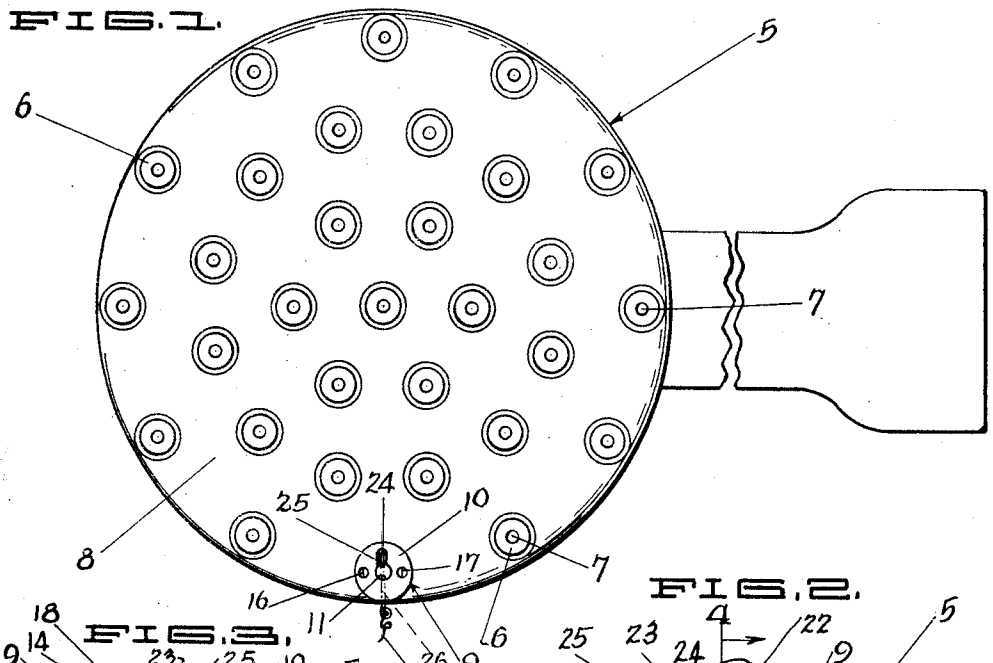


FIG. 3.

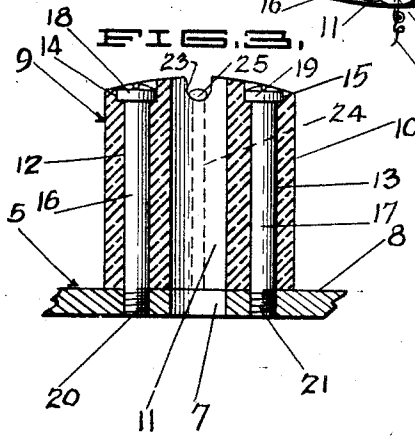


FIG. 2.

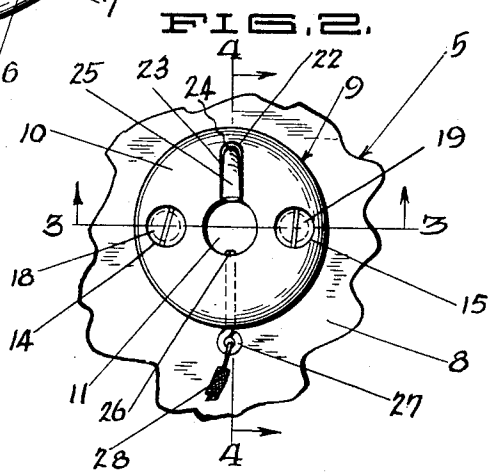
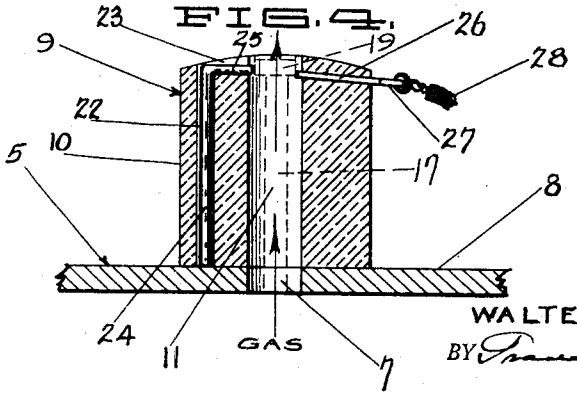


FIG. 4.



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UNITED STATES PATENT OFFICE

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IGNITION MEANS

Application filed March 15, 1929. Serial No. 347,407.

The present invention relates broadly to improvements in ignition means, but more particularly to improvements in spark ignition devices for gas furnaces.

In house heating systems using gas burners, it is customary practice to install an ordinary spark plug in the combustion chamber of the heater for the purpose of igniting the gas upon the opening of the burner valve, this function being generally controlled by the opening of the valve, which acts to simultaneously close the spark plug circuit.

While ignition means of this character are practicable in a measure, they are not without an inherent weakness, in that they soon become inoperative through fouling and carbon deposits, due to their location in the midst of combustion, a location inseparable from their character.

The primary object of my invention is to provide an improved sparking device for hot-air furnaces in which the sparking device is substituted for one of the burner tips of the furnace burner and through which the fuel gas flows and is ignited by internally located sparking elements safely removed from combustion products.

A further object of the invention is the provision of an improved sparking device provided with a central gas-fuel port in which is mounted the ignition tips of the device, thereby assuring perfect protection to these tips against all possibility of injury from heat, soot, carbon, or other products of combustion.

An additional object of the invention is the provision of a sparking device of the character designated that is of simple and cheap construction and practically indestructible.

The invention possesses other objects and features of advantage, some of which, together with the foregoing, will be more clearly set forth in the following description and accompanying drawing forming a part of this specification, and in which similar characters of reference, throughout, refer to like parts.

It is to be understood that, though a preferred form of my invention has been here shown, I do not restrict myself to this showing, as there are other forms and variations of the invention that may be indulged in without departing from the spirit of the invention.

Referring to the drawing:

Figure 1 is a plan view of an ordinary gas burner, with one of its tips removed and my improved sparking devices substituted therefor;

Figure 2 is an enlarged plan view of the sparking device per se;

Figure 3 is an axial section thereof, as indicated by the line 3—3 in Figure 2, showing the method of attaching the device to the top plate of the burner; and

Figure 4 is an axial section taken at right angles to Figure 3 and showing the central gas port and the relative arrangement of the sparking elements.

Referring more particularly to the drawing, the numeral 5, in a general way, indicates an ordinary gas burner of stove or furnace type provided with the usual integrally formed tips 6 having centrally disposed outlet ports 7 formed therein and communicating interiorly with the common gas supply chamber of the burner.

In applying my ignition device to a burner in actual practice, one of the tips is removed by sawing it off at its base flush with the upper plate 8 of the burner, thereby leaving a port 7 through this plate, as indicated in Figures 3 and 4.

The improved sparking device 9 comprises a cylinder 10 constructed of highly compressed porcelain provided with an axially disposed port 11 extending therethrough and adapted to communicate with the burner port 7 when mounted in place. The porcelain cylinder, as thus formed, is further provided with spaced openings 12 and 13 having counter-sunk upper ends 14 and 15 in which are mounted screws 16 and 17 having heads 18 and 19 and threaded lower ends 20 and 21, respectively, the threaded ends of the screws being screwed into properly spaced threaded openings tapped into the burner plate 8 for the purpose.

A bore 22 is formed in the cylinder 10 at right angles to the openings 12 and 13, this

bore being counter-sunk at its upper end, as indicated at 23, with its lower end communicating with the upper surface of the plate 8. An L-shaped element 24 is fitted into this bore, with its lower end contacting the plate 8 and its upper end 25 extending horizontally into the recess 23 and terminating just inside the port 7. A second element 26 is imbedded in the wall of the cylinder 10, with its inner end terminating in the port 7 diametrically opposite that of the element 24 and its outer end terminating in a loop 27, for the attachment of an electric wire 28 forming the positive side of the circuit, not shown, the negative side being grounded through the plate 8 by the element 24.

The porcelain cylinders are first moulded in plastic form and highly compressed to solidify and render compact the material, after which the openings 7, 12, 13 and 22 are die-formed, the opening for the element 26 being cored and the core melted out during the baking process following.

It is observable from the foregoing description that the tips 25 and 26 are both positioned below the line of combustion, with their extremities extending slightly within the gas port 11, thereby causing these elements to provide a jump spark diametrically across the upper end of the port 11 and directly through the escaping column of gas, thus insuring ignition of the gas at the tip of the sparking device 9.

Having thus described my invention, I claim, and desire to secure by Letters Patent:

1. A sparking device of the class described, comprising, in combination with a gas burner having a plurality of burner tips, a refractory element adapted for substitution for one of said tips and having a gas port extending therethrough and communicating with the gas supply chamber of the burner, and spark-gap tips arranged in said port below the upper end of said refractory element and adapted, when energized, to cause a spark to bridge the gap and ignite the gas column as discharged through said port.

2. A sparking device of the class described, comprising, in combination with a gas burner having a plurality of burner tips, means comprising a refractory element having a port therein adapted to register with one of the burner ports, spark-gap elements positioned in said port slightly below the upper end of said element and diametrically opposed to each other, and means for clamping said cylinder to said burner.

In testimony whereof I hereunto affix my signature.

WALTER E. MILLER.