

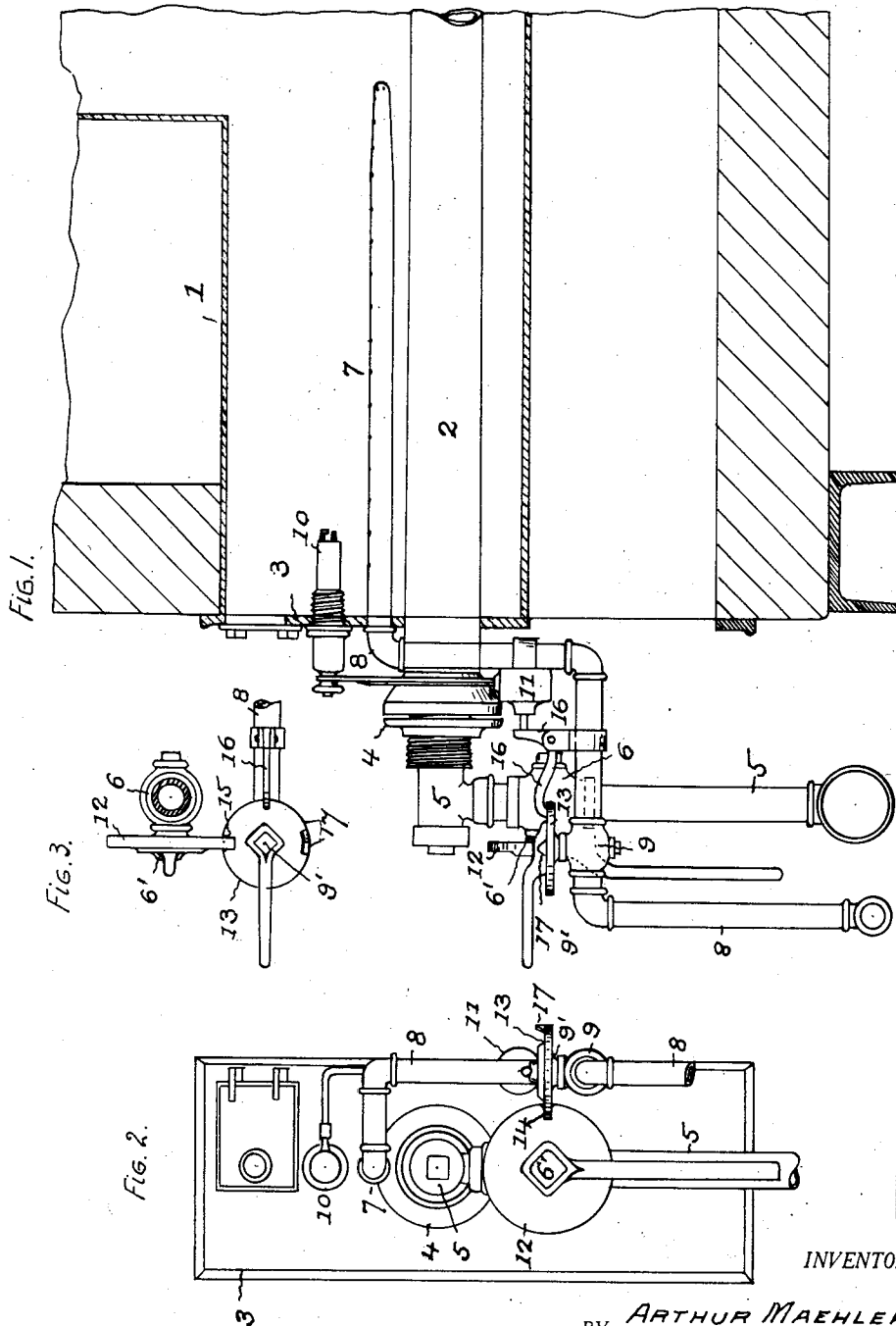
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SAFETY FUEL SUPPLY FOR DRYING AND ENAMELING OVENS

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SAFETY-FUEL SUPPLY FOR DRYING AND ENAMELING OVENS.

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This invention relates to that type of drying and enameling ovens in which heat employed in the operation of the oven is furnished by burners of the gaseous fuel type, and more especially to that form of the same in which the burners are incased to provide indirect heating units within the oven chamber with said units having means for a separate discharge of the products of combustion to the outer atmosphere. And the present improvement has for its various objects:

To provide intercontrolling means between the control valve in the fuel supply pipe to the burner of the heater, and the like control valve in the fuel supply pipe to the pilot light burner, whereby the said valves are positively held against either an opening or a closing movement except in proper order or sequence, the purpose being to prevent an accidental or other escape of unconsumed gaseous fuel into the oven chamber and a liability of the explosion of such gaseous fuel in said chamber and the consequent damage to the oven structure and surrounding objects.

A further object is to provide in connection with the intercontrolled means above referred to, of an electric spark ignition means, and wherein the operating means of a switch controlling the electric circuit of said ignition means is operatively connected with the operating means of the pilot light valve, so that the opening and the closing movements of said pilot light valve will effect a corresponding closing and opening of the circuit of said switch mechanism, all as will hereinafter more fully appear.

In the accompanying drawing:

Fig. 1 is a side elevation showing the preferred form of the safety controlling means applied to a drying and enameling oven, the oven structure being shown in section.

Fig. 2, is a detail front elevation, with the parts shown in a position in which the burner valve is in a closed condition and locked against rotation and in which the pilot light valve is also in a closed condition ready for an opening movement.

Fig. 3, is a detail top view, with the parts in the position set forth in connection with Fig. 2.

Like reference numerals indicate like parts in the several views.

The oven structure may be of the usual rectangular form, with its indirect heating units arranged adjacent to the side walls of the chamber of the oven, as described in detail in a companion application for Letters Patent, Serial No. 127,276.

In the construction shown in Fig. 1, the casing 1 of the indirect heating unit is arranged in a lower corner portion of the oven chamber, and contains the horizontally arranged tubular burner 2 formed with the usual longitudinal series of jet orifices. The forward end of the tubular burner 2 extends out through a front plate 3 fixed on the front wall of the oven structure for attachment to the usual fuel and air mixing head 4, and the gaseous fuel supply pipe 5 in which is arranged a shut-off valve 6.

In operative relation to the tubular burner 2 aforesaid, the pilot light is arranged with said pilot light comprising a horizontally arranged tubular member 7 formed with the usual longitudinal series of jet openings. The forward end of said tubular member 7 also passes out through the front plate 3 aforesaid and has connection with a gaseous fuel supply pipe 8 in which is arranged a shut-off valve 9.

In operative relation to the aforesaid tubular member 7 of the pilot light, an electric ignition means, usually a spark gap plug 10, passes through an orifice in the aforesaid front plate 3, with its electric supply line provided with a controlling switch 11.

In connection with a burner system such as above described, the present invention involves an inter-controlling connection between the movable members thereof, as follows:—

The shut-off valves 6 and 9 of the fuel supply pipes 6 and 8, are arranged in adjacent relation, one to the other, and with the respective movable members 6' and 9' in right-angle relation one to the other and with said valve members carrying fixed circular disks 12 and 13 in like right-angle relation with their perimeter of one disk intersecting the perimeter of the other disk with a view to an interlocking engagement of said disks as hereinafter described.

Individual notches 14 and 15 are formed in the perimeters of the disks 12 and 13, with said notches so positioned in relation

one to the other that with the notch of one disk aligned with the perimeter of the companion disk, the perimeter of said companion disk is free to move in the notch of the first mentioned disk in a closing or opening of the fuel supply valve with which the last mentioned disk constitutes a part.

In the described movement or shift of the last mentioned disk its perimeter has direct engagement in the notch of the first mentioned disk to prevent any movement of the same and an opening or closing movement of the fuel shut-off valve of which it constitutes a part.

In the practical use of the construction above described and in the initial portion of its operation, the shut-off valves 6 and 9 in the fuel supply pipes 5 and 8 are in a closed condition with the perimeter of the disk 13 of the pilot light shut-off valve 9 in locking engagement with the notch 14 of the disk 12 of the burner shut-off valve 6, to hold the same in its closed condition.

With a turning movement of the aforesaid disk 13, in attaining and opening of the shut-off valve 9 and a supply of gaseous fuel to the pilot light burner 7, the notch 15 in said disk 13 is brought into alignment with the perimeter of the disk 12, to release the above mentioned locking engagement and admit of the disk 12 being turned by its operating handle to attain an opening of the shut-off valve 6 and a supply of gaseous fuel to the tubular burner 2. And in this last mentioned movement of the disk 12, its perimeter moves into a locking position in the notch 15 of the disk 13 of the pilot light shut-off valve 9, to prevent a closing of such shut-off valve 9, until the burner valve 6 and associated parts are returned to the closed condition first described.

With the described interconnection of the shut-off valves and their operative connections, the pilot light must be first started before gaseous fuel can be supplied to the heating burner, and the pilot light supply of fuel cannot be shut-off until the fuel supply to the heating burner has been first shut off.

Another part of this invention involves an automatic control connection between the operating mechanism of the pilot light shut-off valve 9 and the make and break switch 11 of the electric supply line to the ignition means or spark plug 10, aforesaid, to attain an action of said spark plug 10 simultaneous with the opening of the pilot light supply valve 9, and to such end a connection of parts is provided, as follows:—

A bell-crank lever 16 is pivoted on a convenient stationary part of the structure, with one of its arms in operative contact with the stem of the movable member of the make and break switch 11 aforesaid, and with its other end arranged in the path of a cam projection 17 fixed on the disk 13 of the pilot light shut-

off valve 9, with said projection so positioned that in an opening movement of the valve 9, the cam projection 17 will operate the bell crank 16 and the movable member of the switch 11 to close the circuit of said switch and supply electro-motive force to the ignition means or spark plug 10, aforesaid.

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

1. In a control system for gaseous fuel heating means, the combination of a burner, a pilot light, separate supply pipes to said burner and pilot light, shut-off valves arranged in said supply pipes, circular disks having positive operative connection with the movable members of said valves, said disks being arranged in right-angle relation to each other with their perimeters in intersecting relation, each disk having a peripheral notch for alternating locking engagement with the perimeter of the other disk.

2. In a control system for gaseous fuel heating means, the combination of a burner, a pilot light, separate supply pipes to said burner and pilot light, shut-off valves arranged in said supply pipes, circular disks, having fixed attachment to the movable members of said valves, said disks being arranged in right angle relation to each other with their perimeters in intersecting relation, each disk having a peripheral notch for alternating locking engagement with the perimeter of the other disk.

3. In a control system for gaseous fuel heating means, the combination of a burner, a pilot light, an ignition spark plug, separate supply pipes to said burner and pilot light, shut-off valves in said supply pipes, an electric supply line connected to said spark plug and provided with a switch, circular disks having positive operative connections with the movable members of said valves, said disks being arranged in right angle relation to each other with their perimeters in intersecting relation, each disk having a peripheral notch for alternate locking engagement with the perimeter of the other disk with the disk associated with the pilot light shut-off valve carrying a cam projection, and operative connections between said cam projection and the movable connections between said cam projection and the movable member of the aforesaid switch in the supply line to the spark plug.

4. In a control system for gaseous fuel heating means, the combination of a burner, a pilot light, an ignition spark plug, separate supply pipes to said burner and pilot light, shut-off valves in said supply pipes, an electric supply line connected to said spark plug and provided with a switch, circular disks having fixed attachment to the movable members of said valves, said disks being arranged in right-angle relation to

each other with their perimeters in intersect-
ing relation, each disk having a peripheral
notch for alternate locking engagement with
the perimeter of the other disk, with the
5 disk associated with the pilot light shut-off
valve carrying a cam projection, and opera-
tive connections between said cam projec-

tion and the movable member of the afore-
said switch in the supply line to the spark
plug.

Signed at Chicago, Illinois, July, 1926.

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