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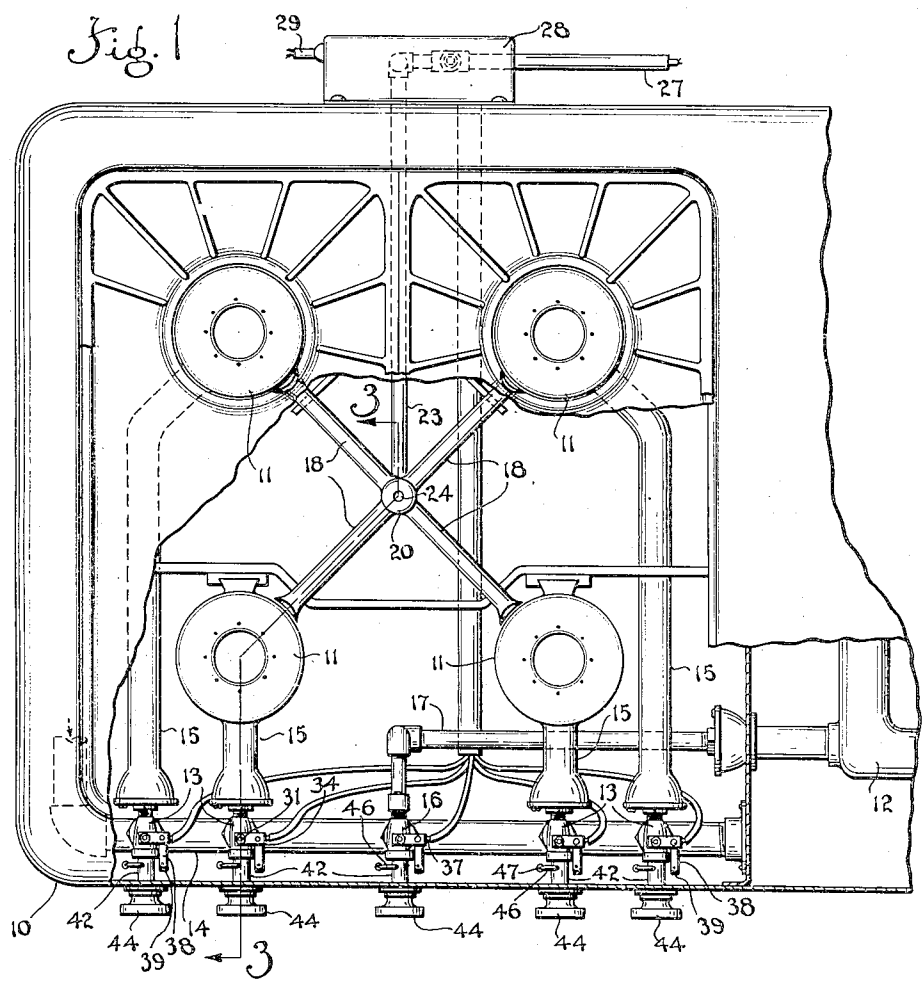
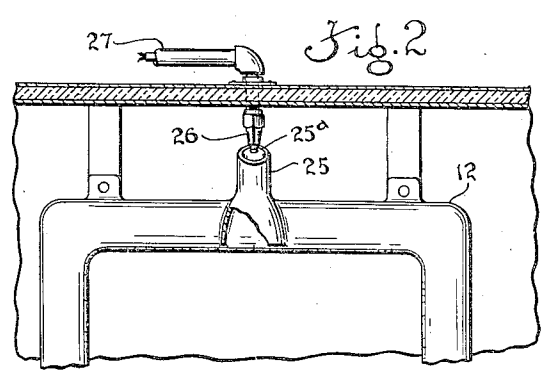
F. A. CAMP

2,212,875

ELECTRICAL IGNITION SYSTEM FOR GAS STOVES

Filed Feb. 19, 1938

2 Sheets-Sheet 1



Inventor
Fred A. Camp

By *Ralph Barrow*
Attorney

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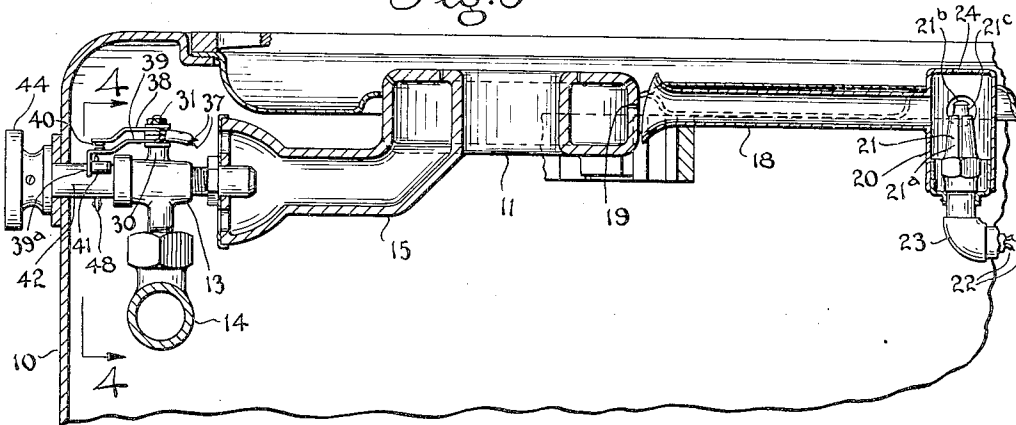
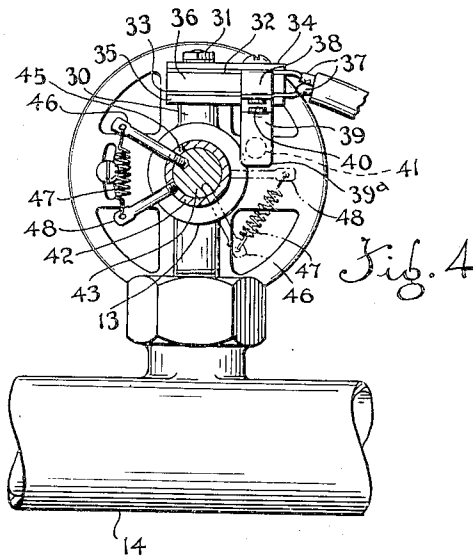
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2 Sheets-Sheet 2

Fig. 3



Inventor

Fred A. Camp

By

Ralph Barrow

Attorney

UNITED STATES PATENT OFFICE

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ELECTRICAL IGNITION SYSTEM FOR GAS STOVES

Fred A. Camp, Akron, Ohio, assignor, by direct and mesne assignments, of one-fourth to John R. Buechler, Canton, Ohio, and one-half to William L. Jones, Massillon, Ohio

Application February 19, 1938, Serial No. 191,474

3 Claims. (Cl. 158—115)

This invention relates to electrical ignition systems for gas stoves.

The general purpose of the invention is to provide a simple, effective and economical electrical ignition system for gas stoves.

Heretofore, it has been proposed to provide gas stoves with electrical ignition systems but so far these have not been entirely satisfactory and have not gone into general use.

One purpose of the present invention is to provide in combination with the usual top burners of a gas-stove, flash-back ignition tubes extending to a central chamber and electrical ignition means in said central chamber for causing a combustible mixture of gas and air coming from a burner through the flashback to become ignited and thus ignite the gas at the burner.

Another purpose of the invention is to provide automatic valve actuated means at the gas control valves for the burners whereby the gas issuing from any burner of the gas stove including the oven burner or burners may be effectively ignited without affecting the normal operation of the control valve to supply any desired flow of gas to vary the heat and flame between a minimum and maximum.

Another purpose of the invention is to provide a plurality of control valves for the usual top burners and automatic switches controlled thereby whereby a single igniter at the central chamber may be actuated by operation of any one of said valves.

The foregoing and other purposes of the invention are attained in the system illustrated in the accompanying drawings and described below. It is to be understood that the invention is not limited to the specific form thereof shown and described.

Of the accompanying drawings:

Figure 1 is a plan view partly broken away and in section of a gas stove embodying the invention.

Figure 2 is a part sectional plan at the rear of the oven burner compartment.

Figure 3 is a section on line 3—3 of Figure 1, and

Figure 4 is an enlarged section on line 4—4 of Figure 3.

Referring to the drawings, the numeral 10 designates a gas stove of a known type and in which is mounted the usual top burners 11, 11 and oven burner 12. The burners 11 are arranged to be controlled by valves 13, 13 on the usual header 14 and controlling flow of gas to the usual supply

A valve 16, similar to valves 13, on header 14 is connected by a supply line 17 to oven burner 12.

Associated with burners 11 are flash-back tubes 18, 18, the outer ends of which are associated with outlets 19, 19 from burners 11 whereby when gas is supplied to a burner 11 it will flow inwardly through a flash-back tube through an outlet 19. The tubes 18 extend to a common central chamber 20 in which is arranged an ignitor 21. This may be of any suitable type and comprise an outer electrode 21^a, an inner electrode 21^b extending beyond the end of the outer electrode and formed with an enlarged head, as shown, and an intervening insulating tube 21^c causing a spark gap measured by the distance from the head of the inner electrode 21^b to the end of outer electrode 21^a. Leads 22, 22 may be extended to the ignitor 21 through a conduit 23. Chamber 21 may be provided with an outlet 24 for gases of combustion formed in chamber 21. The ignitor is, in effect, a spark plug and does not in its detail form any part of the present invention.

The oven burner 12 is preferably formed at its rear with an upwardly and rearwardly directed flash-back tube 25 with an open end at 25^a at which is arranged an ignitor 26 similar to ignitor 21 and to which leads are extended through a conduit 27.

The supply of a sparking current for ignition purposes to the burners 11 and 12 may be provided by a unit 28 suitably secured on the back of the stove and arranged to be connected by a flexible conductor cord 29 to a source of electricity such as a house lighting and power circuit. Unit 28 may contain a vibrator and transformer as will be understood by skilled artisans and the high tension side of the transformer will be connected to the ignitors 21 and 26 through valve switches to be described associated with valves 13, these switches being in parallel in the circuit to the ignitor 21 and a similar switch associated with valve 16 and in series with the ignitor 26 and the high tension side of the transformer in unit 28.

The switches associated with valves 13 and 16 may be identical. The valve body may have thereon a post 30 on which is mounted and secured by nut 31, a switch unit comprising two conductors 32 and 33 enclosed by outer insulation blocks 34 and 35 and an intermediate insulating block 36 for supporting the conductors 32 and 33 in spaced electrically insulated relation. Leads 37, 37 from the unit 28 may be connected respectively to said conductors in the switch unit.

Arms 38 and 39 of yielding or springy conducting material may be extended from conductors 32 and 33 respectively and may support normally spaced contacts at 40. Arm 39 may have a downward extension 39^a thereon on which is a pin 41 arranged to be engaged to flex arm 39 upwardly and establish electrical contact at 40 closing the switch.

The switch is adapted to be actuated by the valve by providing a sleeve 42 around the usual rotary valve stem 43 and connected with the valve operating knob or handle 44 in which sleeve 42 is an arcuate slot 45 through which extends a valve-operating arm 46 which is connected with valve stem 43. A tension spring 47 is connected to arm 46 and to an arm 48 secured on sleeve 42 which permits a yielding relative turning movement between sleeve 42 and the valve stem as determined by the arcuate length of slot 45.

The arrangement of arms 46 and 48 and slot 45 is such that when knob 44 is turned clockwise the parts will be in the relative positions shown in full lines at the left of Figure 4, the valve being fully closed to cut off gas to a burner. Upon turning knob 44 counter-clockwise, sleeve 42 turns first without any effect on the valve stem against the action of spring 47 until the right end of slot 45 engages arm 46, thereafter valve stem 43 turning with sleeve 42, opens the valve. The parts are so arranged that arm 46 may be moved sufficiently fully to open the valve in this manner. At the limit of such opening movement arm 48 will engage pin 41 and press it upwardly to close the switch contacts 40 thus establishing an arcing current at the burner ignitor. Upon thereafter releasing knob 44, the spring 47 will cause sleeve 42 to turn clockwise on the valve stem 43, thus disengaging arm 48 from the switch, disconnecting current to the ignitor. The burner will now be operating with maximum flame and heat. If it is desired to adjust the valve to produce a lesser flame and heat, this may be done as will be understood by merely turning valve knob 44 clockwise to the desired adjustment. The operation of the switch does not affect the operation of the valve between maximum and minimum positions, the yielding connection permitting movement of the switch actuator beyond movement of the valve stem to actuate the switch and then automatically retracting the switch actuator to disconnect the ignitor upon release of the valve-operating handle after the burner has been ignited.

It will be understood that upon operation of any of the stove valves fully to open the same, the ignitor will automatically light the burner controlled by that valve, either by the flash-back principle from the central chamber 21 for any top burner or by the flash-back principle at the end of tube 25 of the oven burner. Thereafter release of the valve or reverse movement thereof to lower the flame will automatically disconnect the ignitor.

Modifications of the invention may be resorted to without departing from the spirit thereof or the scope of the appended claims.

What is claimed is:

1. In a gas stove a combined valve and electrical ignition switch structure, said structure comprising a rotary valve stem, a sleeve relatively rotatable thereon, said stem having an arm thereon, said sleeve having a slot through which said arm extends and limiting relative rotation of said sleeve on said stem, switch contacts supported on the valve body, an arm on said sleeve for operating said switch contacts, a valve and switch operating handle connected to said sleeve and yielding means normally holding said switch-operating arm in a retracted position out of engagement with the switch when the valve is fully opened, said yielding means permitting operation of said handle to turn said sleeve beyond fully open position of the valve to cause said switch-operating arm to actuate said switch, said yielding means urging said arm out of engagement with said switch when said handle is released.

2. The combination in a gas stove of a valve controlling the supply of gas, a burner to which the gas is supplied, and electrical ignition means of the arcing type associated with the burner, and a switch associated with said valve for operating said ignition means, of a single means for operating said valve and electrical ignition means including an element connected to said valve for operating the same, a second element yieldingly connected to the first element and manually operable fully to open said valve and simultaneously with the full opening of the valve to engage and actuate said switch to operate the ignition means, the second element upon manual release thereof being yieldingly moved out of cooperative engagement with said switch to disconnect said ignition means, said second element being manually operable, either partially or wholly, to close said valve to adjust said burner as required without affecting said switch.

3. The combination in a gas stove of one or more burners and one or more flash-back ignition tubes associated therewith of an electrical ignitor associated with said flash-back tubes to ignite gas issuing therefrom and means for supplying an arcing current to said ignitor, said means including valves controlling said burners and automatic switches associated with said valves, said valves including manually operable elements yieldingly connected to the same whereby the valves are operable to fully open positions, said elements and said switches operably associated whereby a switch is simultaneously operated by an element when a valve is fully opened, said element being yieldingly disengaged from said switch to disconnect said ignitor upon manual release of said element, said element being operable to close or partially close said valve to adjust a burner as desired.

FRED A. CAMP.