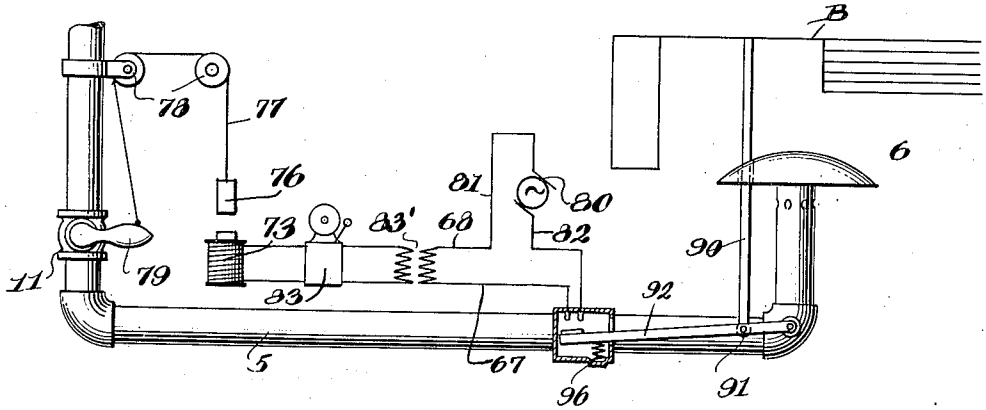
July 10, 1928.

1,676,671

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ELECTRIC CONTROL DEVICE

Original Filed Feb. 25, 1921




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Patented July 10, 1928. 1,676,671

# UNITED STATES PATENT OFFICE.

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## ELECTRIC CONTROL DEVICE.

Original application filed February 25, 1921, Serial No. 447,664. Divided and this application filed October 28, 1922. Serial No. 597,567.

The present invention relates to improvements in electric control devices for automatic gas appliances and it consists in a division of my co-pending application, Serial Number 447,664, filed February 25, 1921.

It is an object of the present invention to provide for the automatic closing of the valves which govern the supply of gas to pilot burners, whenever, for any reason, the pilot flame becomes extinguished; to the end that the disagreeable and noxious odors given off from the leaking pilot may be entirely avoided and the use of appliances of this character made generally safer and less disagreeable.

The invention is used particularly in connection with automatic gas water heaters, gas furnaces, gas steam boilers, radiators, gas stoves and the like automatic gas appliances which require a constantly burning pilot from which the main burner becomes ignited whenever the services of the appliances are called into play. This flame is of course small to reduce as much as possible the consumption of gas and by reasons of unevennesses in the flow, temporary clogging of the gas pipe, or for many other reasons, such as drafts of air, this pilot becomes extinguished while the gas is allowed to flow on and escape into the building.

It is the purpose of the invention to provide for the closing of the gas controlled valve by thermostatic means coupled with an electrically operated device and in some cases with an audible signal to make it known that the pilot light has gone out and as a consequence that it will be impossible to start the main burner.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claim appended hereto.

In the drawing, the single figure shows a side view, with parts indicated diagrammatically, of a device constructed according to the present invention.

The thermostat bar 90 is shown as arranged alongside the burner 6 and as being pivoted, at 91, near the pivoted end of the switch arm 92. Such switch arm is pivoted to the burner elbow or to some fixed support and the contact free end of the switch arm 92 is disposed through a vertically elongated slot in the side of a housing containing the spring 96 for normally urging the contact arm 92 upwardly to close the two spaced contacts in the upper part of the housing. These contacts are in a circuit 81, 82 containing the source of electromotive force 80. In the circuit is also the primary of a transformer 83', the secondary of which is in circuit with the audible alarm or bell 83 and the solenoid winding 73. The bell and solenoid winding are in parallel. The armature 76 for the solenoid is suspended by a cord or flexible connection 77 above the core of the solenoid. The cord 77 passes over a pair of horizontally spaced pulleys 78 and extends down at its other end to the external swinging arm 79 of the valve 11 for controlling the flow of gas to the burner 6.

In operation, the burner 6 may be ignited only after the valve 11 is opened and this is accomplished by swinging the handle 79 manually down to the horizontal position, which elevates the armature 76 through the flexible connection 77. The heat from the burner elongates the thermostatic bar 90 causing movement of the switch arm 92 to open the circuit. This condition prevails until the burner is extinguished, whereupon the thermostatic bar will contract drawing with it the switch arm 92 and causing closing of the circuit 81, 82, whereby the audible signal 83 and solenoid 73 will be energized in a well known manner. The energizing of the solenoid 73 will result in the drawing down or attraction of the armature 76, the pulling upon the cord 77 and the consequent swinging of the valve arm 79 upwardly to close the valve 11 and prevent the escape of the gas.

It will be noted that the contacts and the means for bridging or closing the contacts are located away from the zone of the flame and its heat.

It is obvious that various changes and modifications may be made in the details of construction and design of the above specifically described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the following claim.

What is claimed is:

In a safety control for gas appliances, the combination of a pilot burner, a valve controlling the supply of gas to the burner, a thermostat disposed so as to act in one di-

rection in the presence of the flame on the pilot burner and to react in the absence of such flame, a solenoid for closing said valve, the core of said solenoid connected by a flexible element trained over pulleys to a handle of the valve, an electric circuit including said solenoid and having normally open contacts therein, means for bridging said contacts, said contacts and bridging means being located away from the zone of the flame and its heat, said thermostat being disposed relatively to said last named means, whereby to cause closing of the contacts upon the extinguishing of the pilot flame.

In testimony that I claim the foregoing as my invention I have signed my name hereunder.

GERHARDT F. SCHWARTZ.