

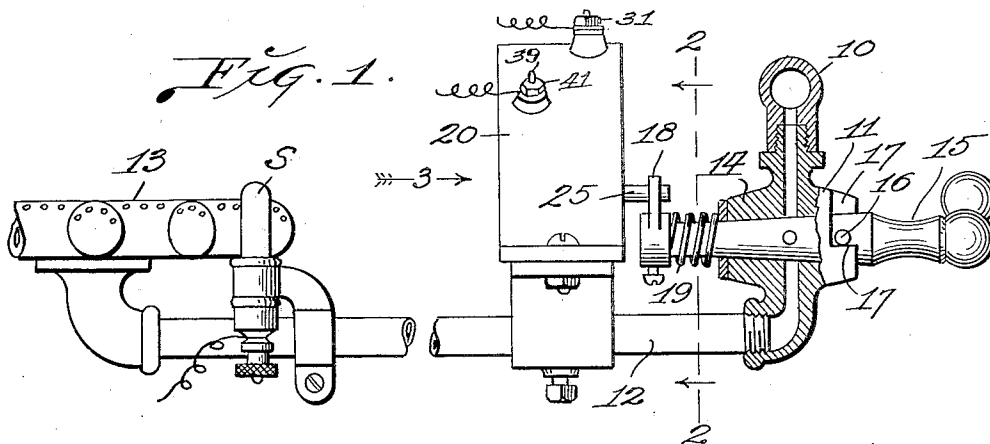
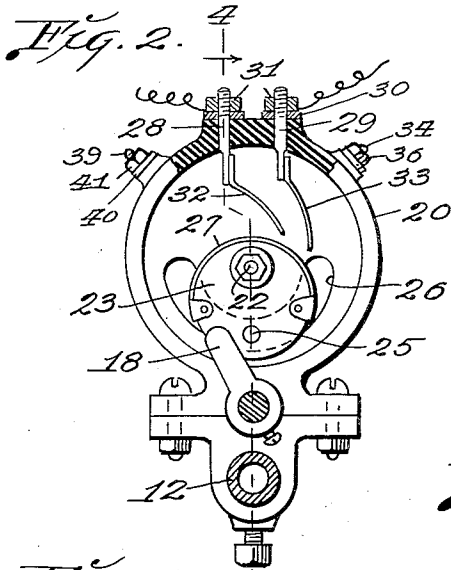
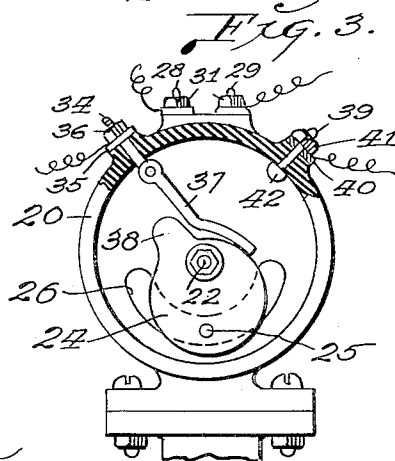
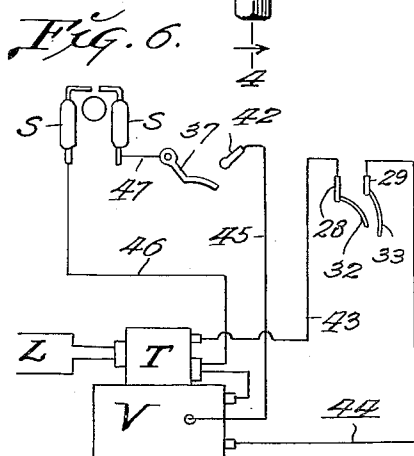
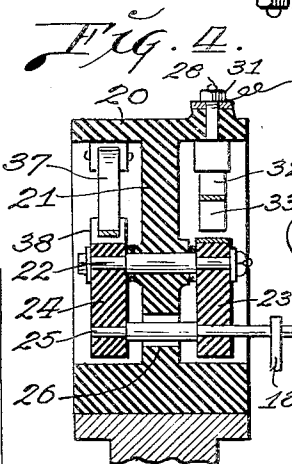
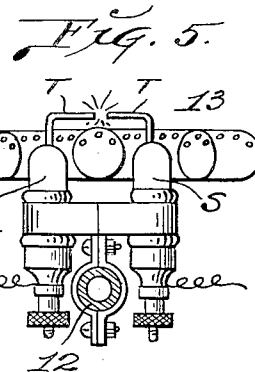
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W. J. REEVES

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ELECTRIC GAS LIGHTER

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INVENTOR,
WALTER J. REEVES
BY *Martin O. Smith* ATTY.

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ELECTRIC GAS LIGHTER

Walter J. Reeves, Glendale, Calif.

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3 Claims. (Cl. 200—53)

My invention relates to an electric gas lighter and has for its principal object, the provision of a relatively simple, practical and inexpensive device that may be conveniently associated with gas burners for the purpose of automatically producing an electric spark that ignites the gas issuing from the jet openings of a burner simultaneously with the operation of the valve that controls the flow of gas to the burner.

My improved gas lighting device, while particularly designed for the lighting of the burners of gas stoves, may be conveniently employed for lighting the gas burners of furnaces, water heaters or any appliance having a gas burner associated therewith.

A further object of my invention is, to provide an electric gas lighter that is actuated by the opening movement of the valve that controls the flow of gas to the burner and which lighting device in no wise interferes with the subsequent adjustment or movement of the valve to control the amount of gas delivered to the burner. In other words, after the gas burner has been lighted, the valve may be manipulated to increase or decrease the gas flow to the burner without actuating the electric lighting device.

With the foregoing and other objects in view my invention consists in certain novel features of construction and arrangements of parts that will be hereinafter more fully described and claimed and illustrated in the accompanying drawing in which:

Fig. 1 is an elevational view of my improved electric gas lighter, the same being shown associated with the gas burner and gas flow control valve of a gas stove and with the gas control valve in vertical section.

Fig. 2 is a vertical section taken on the line 2—2 of Fig. 1.

Fig. 3 is an elevational view partly in section taken looking in the direction indicated by the arrow 3 in Fig. 1.

Fig. 4 is a vertical section taken on the line 4—4 of Fig. 2.

Fig. 5 is an elevational view of a gas burner and showing the spark plugs that are utilized for producing an electric spark to light the gas issuing from the burner jets.

Fig. 6 is a diagrammatic view of the electrical circuits utilized in my improved gas lighter.

Referring by numerals to the accompanying drawing which illustrates a preferred embodiment of my invention associated with the burner of a gas stove, 10 designates the gas supply pipe and connected thereto is a conventional gas flow

control valve that includes a housing 11 to which is connected one end of a pipe 12 that leads to the gas burner 13.

Arranged for rotation within housing 11, is the usual valve plug 14, on the outer end of which is mounted a handle 15.

The rotary movement of the plug is limited by a pin 16 that is seated in said plug and which pin engages shoulders 17 that are formed on the housing.

Secured on the inner end of the valve plug, is one end of a short arm or finger 18 that engages and actuates a part of the electric lighting device when the valve plug is partially rotated so as to permit gas to flow from the supply pipe 15 through pipe 12 to the burner.

Interposed between the rear end of the housing 14 and the finger 18, is an expansive coil spring 19 that functions to maintain a fluid pressure tight joint between the valve plug and housing.

Supported on pipe 12 or upon a part of the burner 13, is a pair of conventional spark plugs S, the terminals T of which are positioned adjacent each other and adjacent certain of the jet openings in the burner so that the gas issuing from said jet openings will flow past said terminals and be ignited by the spark that is produced between said terminals.

Suitably mounted on a fixed support, preferably the pipe 12 to the rear of the gas control valve, is a housing 20 of insulating material, preferably porcelain and said housing having an integral centrally arranged partition 21.

Seated in the center of the partition, is a pin 22, the ends of which project into the chambers to the sides of the partition and mounted to rotate freely on the front projecting portion of said pin or that portion that is adjacent the gas valve, is a disc 23 of insulating material.

A similar disc of insulating material 24 is mounted to rotate freely on that portion of the pin 22 that projects into the chamber to the rear of partition 21. The discs 23 and 24 are eccentrically mounted on the pin 22 so that they depend therefrom by gravity and normally occupy the lower portions of the chambers in housing 20 as illustrated in Figs. 2, 3 and 4.

The lower portions of the discs 23 and 24 are connected by a pin 25 that passes through an arcuate slot 26, formed in the lower portion of partition 21 and which slot is concentric with the axis of pin 22.

The front portion of pin 25 is extended outwardly from the housing so as to occupy a posi-

tion in the path of travel of the upper portion of finger 18.

Secured to disc 23 and lying on the upper portion of the periphery thereof, is a thin strip 27 of metal.

Seated in the top of housing 20 above the chamber that is occupied by disc 23, are two pins 28 and 29, the projecting upper ends of which carry washers 30 and nuts 31 and secured to and projecting downwardly and laterally above disc 23, is a contact arm 32 of thin resilient metal. A similar contact arm 33 of thin resilient metal is secured to and extends downwardly from pin 29.

The lower portions of the contact arms 32 and 33 are normally spaced apart and when disc 23 is swung to one side upon its axis by the engagement of finger 18 with pin 25, the contact strip 27 is brought into engagement with the free ends of the contact arms 32 and 33, thereby closing one of the electric circuits of the lighting device.

Seated in the top of housing 20 to one side of the center thereof, is a pin 34, the outer end of which carries a washer 35 and a nut 36 and pivotally mounted on the end of the pin that projects into the housing, is the upper end of a contact arm 37 that normally rests on the upper portion of disc 24.

Projecting from the periphery of the disc 24, is a lug 38, which when said disc is normally positioned as illustrated in Figs. 2, 3 and 4, occupies a position below and to one side of the central portion of the swinging contact arm 37.

Seated in the upper portion of housing 20 on the opposite side from pin 34, is a pin 39, the outer end of which carries a washer 40 and nut 41 and formed on the inner end of this pin is a head 42, with which the free end of contact arm 37 engages when said arm is swung upward as a result of engagement by lug 38 on disc 24.

In Fig. 6 I have diagrammatically illustrated a simple and convenient electrical system that may be associated with the electric lighter and which system includes a conventional vibrator V and a transformer T.

The electric current supply line is connected to the transformer and the latter is electrically connected in the conventional manner to vibrator V.

Leading from transformer T to pin 28 that carries the contact arm 32 is a conductor 43 and leading from one side of the vibrator to pin 29, that carries contact arm 33, is a conductor 44.

Leading from vibrator to contact pin 39, is a conductor 45 and leading from the transformer to one of the spark plugs S is a conductor 46. A conductor 47 leads from the other one of the spark plugs to the swinging contact arm 37.

In the operation of my improved electric gas lighter, the operating parts thereof under normal conditions or with the gas valve closed, occupy the positions as illustrated in Figs. 1 to 4 inclusive.

To permit gas to flow to and through the burner and to light the gas as it issues from the jets of the burner, handle 15 is engaged and rotated approximately a quarter turn so as to bring the port in the valve plug into registration with the duct through valve housing 14 and as a result of this movement gas will flow from supply line 10 to the burner.

As the valve plug is rotated finger 18 will swing laterally and the engagement of said finger with the projecting end of pin 25 will swing disc 23 laterally and upwardly and due to the eccentric

mounting of said disc, the contact strip 27 on the periphery of said disc will be carried into contact with the free ends of the contact arms 32 and 33, thereby closing the circuit through conductors 43 and 44 that are connected respectively to the transformer and vibrator.

As a result of the closing of this circuit, a vibratory current is set up through the spark plug circuit that includes conductors 45, 46 and 47 and the contacts 37 and 42.

As disc 23 is swung laterally and upwardly as just described, the pin 25 that connects the lower portion of discs 23 and 24 will correspondingly swing disc 24 to one side so that the lug 38 engages and swings contact arm 37 upwardly into engagement with contact 42, thus closing the spark plug circuit and a spark or sparks will be produced between the terminals T of the spark plug to ignite the gas issuing from the jet openings of burner 13.

After the upper end of finger 18 passes beneath pin 25 to rock the discs 23 and 24 as just described, the discs will drop back to their normal positions by gravity and the valve handle 15 may now be shifted slightly in either direction to control the flow of gas from supply pipe 10 to the burner 13 and this adjustment of gas flow is accomplished without reestablishing the electric circuits between the contacts, the spark plugs and the transformer and vibrator.

It will be understood that when disc 23 swings backward to its normal position, disc 24 likewise swings back to its normal position, due to the connecting pin 25 and as disc 24 swings back to its normal position the lug 38 moves away from arm 37 so as to permit the latter to swing by gravity away from contact 42, such action occurring after the gas has been lighted by the spark produced between the terminals of the spark plugs.

Thus it will be seen that I have provided an electric gas lighter that is relatively simple in construction, inexpensive of manufacture and very effective in performing the functions for which it is intended.

It will be understood that minor changes in the size, form and construction of the various parts of my improved electric gas lighter may be made and substituted for those herein shown and described without departing from the spirit of my invention, the scope of which is set forth in the appended claims.

I claim as my invention:

1. In an electric gas lighter, a switch comprising a housing, a partition within said housing, said partition being provided in its lower portion with an arcuate slot, a pair of spaced resilient contact members projecting into the housing on one side of the partition, a member pivotally mounted on said partition adjacent the ends of said spaced contacts and above said slot, a contact member carried by said pivotally mounted member and adapted to engage the ends of the spaced contacts when the pivotally mounted member is swung upon its axis in one direction, a member located on the other side of the partition within the housing and connected to the axis of said pivotally mounted member so as to swing simultaneously therewith, a lug projecting from said last mentioned member, a contact arm pivotally mounted in the housing adjacent the lug on said pivotally mounted member, a fixed contact in the housing which fixed contact is adapted to be engaged by the pivotally mounted contact when the

same is swung on its axis by the engagement therewith of said lug and a pin connecting the lower portions of said pivotally mounted members, which pin passes through the arcuate slot in said partition and projections beyond the side of the housing for engagement with a part of a gas control valve.

2. In an electric gas lighter, a switch comprising a housing, a partition within said housing, said partition being provided in its lower portion with an arcuate slot, a pin extending through the center of said partition, discs loosely mounted on the ends of said pin, a member connecting the lower portions of the members carried by said pin, which last mentioned member passes through the arcuate slot in the partition, one end of which last mentioned member projects beyond the side of the housing to be engaged by a part of an adjacent gas control valve and pairs of contacts arranged within the housing on opposite sides of the partition therein, which contacts are closed

by the members depending from said pin as said depending members are swung in one direction.

3. In an electric gas lighter, a switch comprising a housing, a partition within said housing, said partition being provided in its lower portion with an arcuate slot, a pin extending through the center of said partition, discs loosely mounted on the ends of said pin, a member connecting the lower portions of the members carried by said pin, which last mentioned member passes through the arcuate slot in the partition, one end of which last mentioned member projects beyond the side of the housing to be engaged by a part of an adjacent gas control valve, pairs of normally open contacts arranged within the housing on opposite sides of the partition therein, a lug projecting from the periphery of one of said discs for closing one pair of said contacts and a conductor carried by the periphery of the other disc for closing the other pair of contacts when the discs are swung in one direction.

WALTER J. REEVES.