Sept. 21, 1926. 1,600,857

S. J. WOODS

GAS LIGHTING DEVICE

Filed Dec. 2, 1924 2 Sheets-Sheet 1

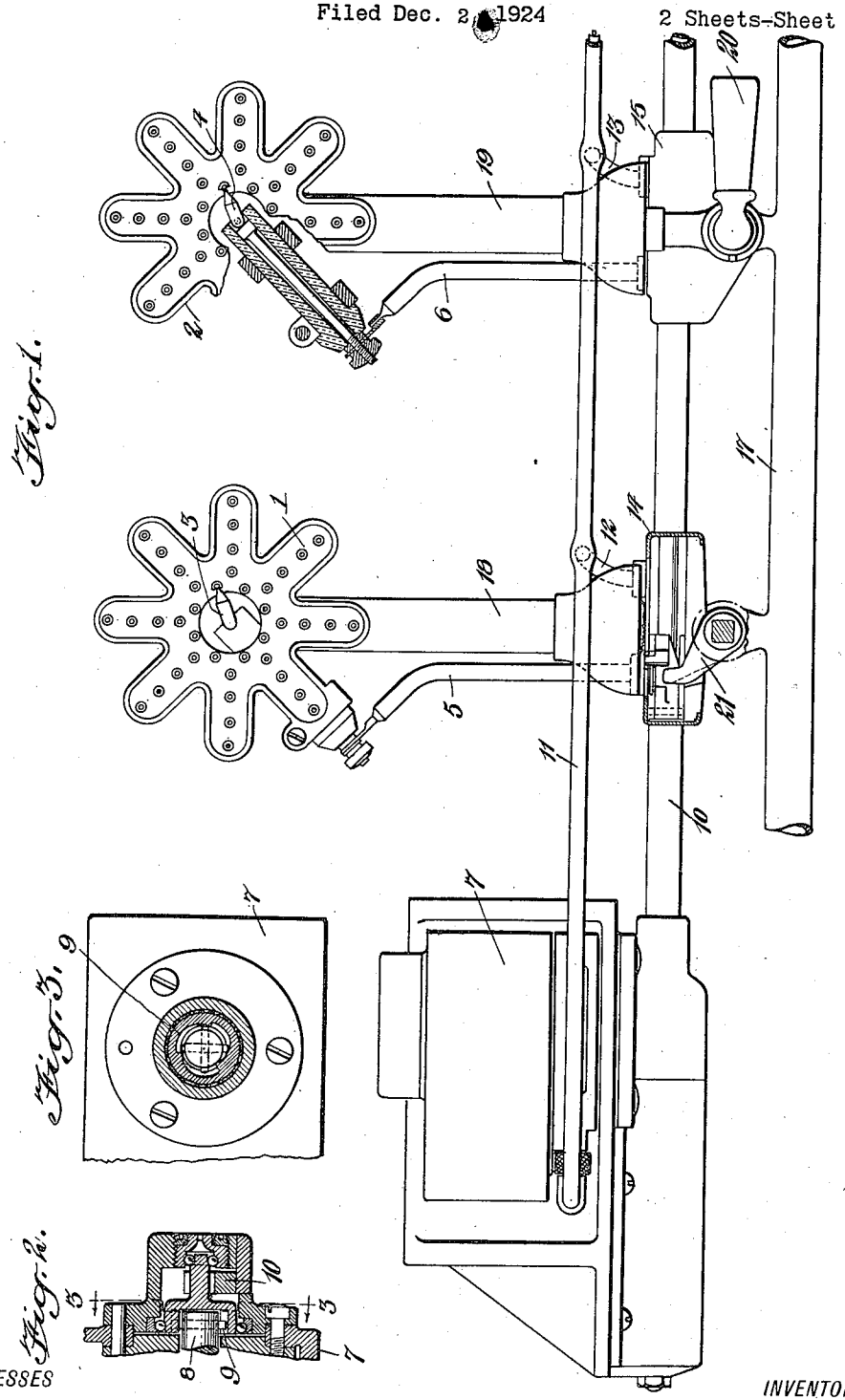


Fig. 1.

Fig. 3.

Fig. 2.

WITNESSES

Geo. W. Taylor

Robert I. Hulsizer

INVENTOR

S. J. Woods

BY Munn & Co

ATTORNEYS

Sept. 21, 1926. 1,600,857

S. J. WOODS

GAS LIGHTING DEVICE

Filed Dec. 2, 1924 2 Sheets-Sheet 2

Fig. 4.

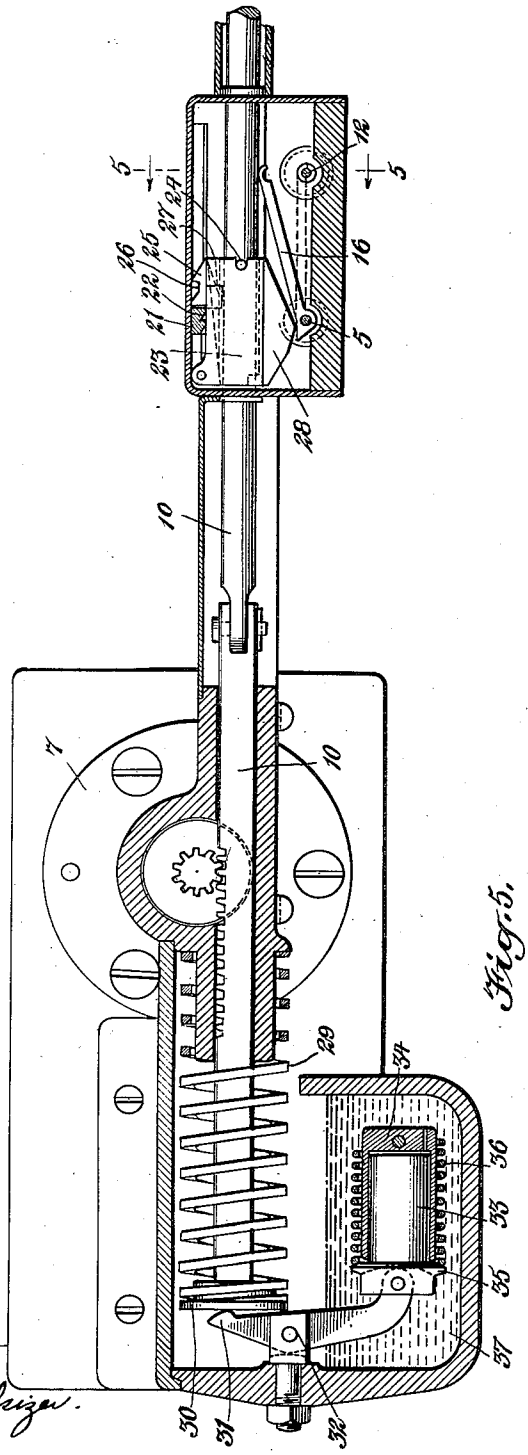
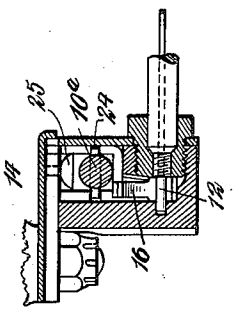


Fig. 5.



WITNESSES

Geo. W. Naylor

Robert. I. Hulsizer.

INVENTOR

S. J. Woods

BY Munn & Co

ATTORNEYS

Patented Sept. 21, 1926. 1,600,857

UNITED STATES PATENT OFFICE.

SAMUEL JOSEPH WOODS, OF NEWPORT, RHODE ISLAND.

GASLIGHTING DEVICE.

Application filed December 2, 1924. Serial No. 753,485.

This invention relates to a gas lighting device. An object of the invention concerns the provision of simple and efficient means whereby whenever a gas cock is opened magnetic means are actuated to produce a spark in the vicinity of the burner to ignite the gas.

Another object concerns the provision of simple and efficient means whereby the cock cannot be opened far enough to let any gas escape without producing a spark.

A further object concerns the provision of means whereby after the gas has been ignited and it is attempted to close the cock, the cock cannot be moved to permit the gas to flow again without causing another spark, so that the gas can under no conditions escape from the burners without being ignited.

Another object concerns the provision of means whereby the operation of the magnetic device is rendered smooth and simple so that the parts employed are little liable to require repair and replacement.

The invention is illustrated in the drawings, of which—

Figure 1 is a plan view of a portion of the apparatus;

Fig. 2 is a section through a portion of the magneto;

Fig. 3 is a section taken on the line 3—3 of Fig. 2;

Fig. 4 is a side elevation of the device with certain portions in section;

Fig. 5 is a section taken on the line 5—5 of Fig. 4.

The form of the invention shown in the drawings is a preferred form, although it is understood that modifications in the construction and arrangement of the parts and in the character of the materials used may be adopted without departing from the spirit of the invention as set forth in the appended claims.

In its general aspects the invention comprises a gas-burning apparatus in which a plurality of gas burners are employed, each one fed from a gas pipe by means of gas cocks which are adapted to be opened. All of the cocks are associated with a shaft which is adapted to be moved by the actuation of any cock to the open position. This shaft is connected to a magneto which, as the shaft is advanced upon the opening of any cock, is not actuated, but when the shaft has moved a definite distance the connection between the cock and the shaft is broken so as to permit the shaft to move back quickly under the action of the spring, whereupon the magneto is actuated to produce a spark in devices associated in circuit therewith and disposed adjacent the burner so that the gas issuing from the burners is ignited.

In a further aspect the invention contemplates a latching means associated with the shaft and adapted to cooperate with the gas cock so that as the gas cock is moved back to shut off the gas it engages with the shaft latch just at the point in its movement where the gas is shut off, so that it cannot be moved forward to open position again and permit the gas to escape without having been moved to its complete closed position. By reason of this arrangement gas cannot be sustantially shut off and then opened against without the producing of a spark.

A still further aspect of the invention concerns the provision of cushioning means in association with a sliding shaft whereby its sudden release from any particular cock is cushioned to prevent wear of the parts and shock to the apparatus, as well as to delay the return of the shaft until the armature of the magneto stops revolving.

The invention as shown in the drawings is the preferred form and is adapted to be related to a gas-burning device comprising a plurality of burners 1 and 2. Associated with these burners are suitable sparking pins 3 and 4 connected by wires 5 and 6 to a switching apparatus to be hereinafter described. A magneto 7 is mounted in connection with the burners and is of any suitable construction. The magneto shaft 8 (see Figs. 2 and 3) is connected by a suitable ratchet clutch mechanism 9 to a rod 10 so that as the rod is moved in one direction the shaft of the magneto is moved, but when the rod is moved in the opposite direction the shaft of the magneto is not moved. The details of this clutch mechanism are no part of the invention and, therefore, are not fur-

ther described. Any other suitable type of ratchet clutch can be used, the idea being to actuate the magneto only on one direction of movement of the rod 10. The magneto is connected by a wire 11 to various auxiliary wires 12 and 13. These wires 12 and 13, in conjunction with the wires 5 and 6, respectively, enter casings 14 and 15 associated with the various gas cocks. On their inner ends these wires are adapted to be connected by a link 16 in each casing. This link is shown in Fig. 4 and is operated to close the connection between the two wires in the casings whenever the gas cock is open to a certain degree.

A gas pipe 17 is connected in the usual manner to the burner pipes 18 and 19, and the flow of gas therethrough is regulated by gas cocks such as 20. On each cock an arm 21 is disposed. These arms extend into the casings 14 and 15 and above the rod 10 which passes through each casing. On its forward end surfaces each of the arms 21 is provided with notches such as 22. Within each casing and surrounding the rod 10 is a carriage 23 slidable on the rod but engageable therewith through a pin 24 against which the front edge of the carriage is adapted to abut. On the upper surface of the carriage there is pivoted a latch arm 25. This latch arm, on its upper surface, has a groove 26 formed therein into which the projections on the lower surface of the arm 21 is adapted to engage. This latch arm 25 is pivoted and when depressed is adapted to enter a slot 27 in the side of the casing so that when the latch 25 is depressed the carriage cannot be moved forward.

The lower surface of the carriage is provided with a cam surface 28 which, as the carriage is moved forward, is adapted to depress the link 16 and connect the two wires 5 and 12, in one case, and 6 and 13 in the other. The end of the arm 21 rests on the top of the carriage and back of the rear edge of the latch 25, so that as the arm 21 is moved forward as the gas cock is opened it carries the carriage with it and the carriage engages with the pin 24 on the rod 10 and moves the rod forward. This forward movement of the rod, however, does not move the magneto shaft, by reason of the ratchet clutch slipping in this direction of movement of the rod. However, as will be perceived from a consideration of Fig. 1, as the arm 21 moves far enough forward it will swing by the lateral edge of the latch 25 whereby the latch will be disengaged therefrom. At this instant, a spring 29 connected to the rear end of the rod 10 will be brought into play to move the rod 10 in the opposite direction and at high speed. This direction of movement of the rod will cause the magneto shaft to operate, whereby the magneto will cause a series of sparks to jump between one of the spark pins and the burner from which the gas is escaping, thereby igniting the gas.

On the rear end of the rod 10 is a disk or head 30 against which the end of the spring 29 engages. This head is adapted to engage one end 31 of a lever pivoted at 32, the other end of which is connected to a piston 33 movable within a cylinder 34. The piston has a flanged head 35 thereon against which one end of a spring 36 is adapted to bear. This cylinder and piston are immersed in fluid, preferably oil, 37 so that as the piston moves out of the cylinder the liquid will flow thereby into the cylinder, and as the piston moves back into the cylinder the liquid will cushion the movement thereof. By cushioning the movement of the piston, the movement of the lever is cushioned, so that as the head 30 on the rod 10 contacts with the end 31 of the lever, the further movement of the rod 10 rearward is cushioned to prevent too great a shock on the apparatus due to the spring 29, and to delay the return of the shaft 10 so as to allow the link 16 to keep the circuit closed until the armature of the magneto stops revolving.

Assuming that the arm 21 has slipped by the latch 25 and the latch to which it is connected is fully open (see Fig. 4), and if, now, the arm is moved backward, it must be understood that the carriage 23 and the rod 10 are contacting in normal position as shown in the figure. As the arm moves backward it contacts with the front beveled edge of the latch 25. This causes the latch to be depressed into the slot 27 and the under surface of the arm 21 engages with the upper surface of the latch whereby the grooves and notches on these members will cause an engagement. At this particular point in the movement of the arm the gas is supposed to be entirely closed off, and by reason of its locking engagement the arm 21 cannot be moved forward again because the front end of the latch 25 is abutting the forward edge of the slot 27 and cannot be moved, and since the carriage 23 is connected to this pivoted latch member the carriage cannot be moved, and since the carriage cannot be moved it is evident that the rod cannot be moved. However, if the arm 21 is swung fully rearward to its closed position, as shown in Fig. 4, then it rides beyond the rear end of the latch 25, which will thereby be permitted to spring up into normal position as shown in Fig. 4. Thereafter any further forward movement of the arm 21 will cause the latch 25 and the carriage 23 to be moved forward and cause the action as above described.

It will thus be apparent that I have provided a simple and efficient device whereby upon the opening of any cock the gas escaping therefrom will be ignited. It will also

be apparent that as soon as the gas cock has been advanced to its full open position the magneto and its associated parts, as the case may be, are returned to normal condition. It is, furthermore, apparent that if an attempt should be made to shut off the gas and then open the cock again before it has been returned to its full closed position, this attempt will fail because of the latching arrangement above described.

What I claim is:—

1. A gas lighting device, which comprises a burner, a sparking device associated therewith, a gas valve, a magneto in circuit with the sparking device, a rod connecting the valve with the magneto, means whereby the rod is moved when the gas valve is being opened, a ratchet clutch between the rod and the magneto, said clutch slipping on the forward movement of the rod, means associated with the gas valve and the rod to permit the rod to be released from engagement with the valve when the valve has been opened to a predetermined extent, and means for causing the rod to be moved in the opposite direction at high speed when released, said clutch acting in this rearward movement to turn the shaft of the magneto to produce a spark in the sparking device whereby the gas is ignited.

2. A gas lighting device, which includes a gas valve, a rod associated with said valve for movement thereby, a carriage associated with said rod, an arm on said valve engaging with a portion of said carriage, means on the rod engageable by said carriage when moved in a given direction whereby the rod is moved forwardly as the valve is opened, and means whereby the arm releases the carriage at a predetermined point in its movement, and means for returning the rod to normal position at high speed when so released.

3. A gas lighting device, which includes a gas valve, a rod associated with said valve for movement thereby, a carriage associated with said rod, an arm on said valve engaging with a portion of said carriage, means on the rod engageable by said carriage when moved in a given direction whereby the rod is moved forwardly as the valve is opened, means whereby the arm releases the carriage at a predetermined point in its movement, means for returning the rod to normal position at high speed when so released, and a magneto operatively connected to said rod for operation upon the return movement of the rod.

4. A gas lighting device, which comprises a rod, a carriage loosely mounted on said rod, a pin on the rod engageable by said carriage, a pivoted latch member on said carriage, a fixed casing surrounding the rod and the carriage and having a slot therein into which said latch lever is adapted to be depressed, an arm on said gas valve projecting into said casing and engageable with said latch lever whereby the movement of the arm to open the valve causes it to engage with the lever and move the carriage and the rod forward, means whereby the arm will swing by the lever at a predetermined point in its movement, and spring means for returning the rod to normal position at high speed when so released.

5. A gas lighting device, which includes a fixed casing, a gas valve, an arm on said valve projecting into said casing, a rod extending through said casing, a carriage slidable on said rod, a pin on the rod engageable with said carriage, a pivoted latch lever on the carriage projecting normally above the upper surface thereof, said arm lying back of said lever, said casing having a slot into which said lever may be depressed, said arm in its movement adapted to spring by the lever at a predetermined point in its movement, means for returning the rod to normal position when said carriage is released, said lever being depressed by engagement therewith of the arm as the arm is returned to normal position, and means on the lower surface of the arm and the upper surface of the lever for causing them to interlock as the arm rides over the lever to prevent the reverse movement of the arm until it has been returned to full normal position.

6. A gas lighting device, which includes a fixed casing, a gas valve, an arm on said valve projecting into said casing, a rod extending through said casing, a carriage slidable on said rod, a pin on the rod engageable with said carriage, a pivoted latch lever on the carriage projecting normally above the upper surface theerof, said arm lying back of said lever, said casing having a slot into which said lever may be depressed, said arm in its movement adapted to spring by the lever at a predetermined point in its movement, means for returning the rod to normal position when said carriage is released, said lever being depressed by engagement therewith of the arm as the arm is returned to normal position, and means on the lower surface of the arm and the upper surface of the lever for causing them to interlock as the arm rides over the lever to prevent the reverse movement of the arm until it has been returned to full normal position, said latch lever when depressed lying in said slot in the casing, whereby the carriage cannot be moved forward during said depression.

7. A gas lighting device, which comprises a rod, a carriage on said rod, a casing in which said carriage is disposed, a gas valve, an arm on said valve engageable with said carriage to move the carriage and the rod forward, the lower surface of the carriage having a cam thereon, and a circuit-closing link in the casing engageable with said cam

member on the carriage during the movement of the carriage by the arm on the gas valve to close a given circuit at a predetermined point in the movement of the carriage.

8. A gas lighting device, which comprises a rod, a magneto associated therewith, a latch clutch between the rod and the magneto to cause the movement of the magneto in only one direction of movement of the rod, a gas valve, means associated therewith to engage the rod and move it forwardly, spring means engaging the rod and tending to return it to normal position when released by the gas valve, and a cushioning member engaging with the rod on its return movement to retard its return to normal position.

SAMUEL JOSEPH WOODS.