L. G. BARTLETT.

AUTOMATIC GAS IGNITION AND CONTROL.

APPLICATION FILED SEPT. 24, 1909.

962,113.

Patented June 21, 1910.

Fig. 1.

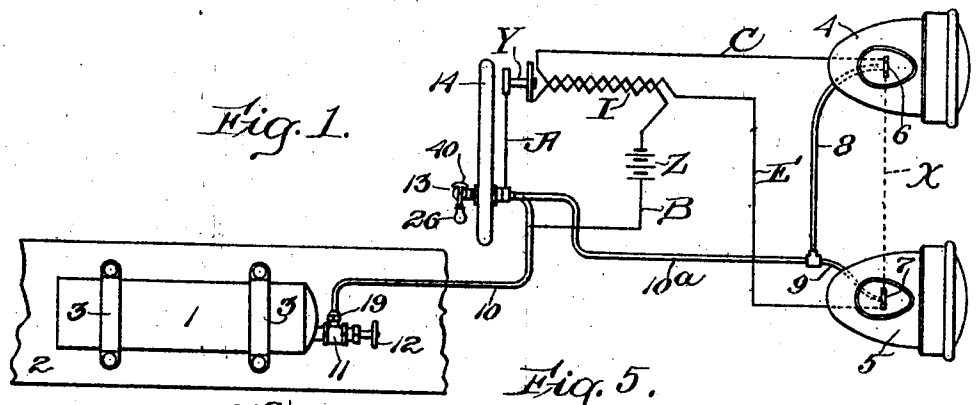


Fig. 5.

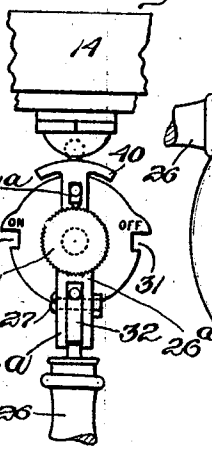


Fig. 2.

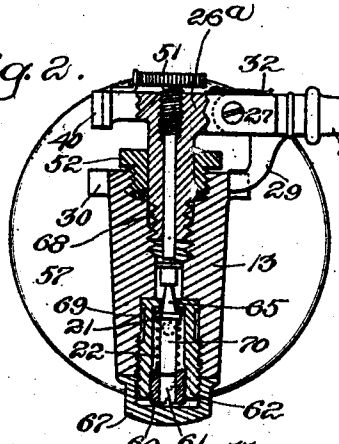
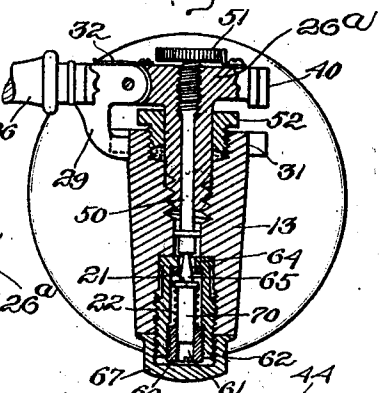


Fig. 4.



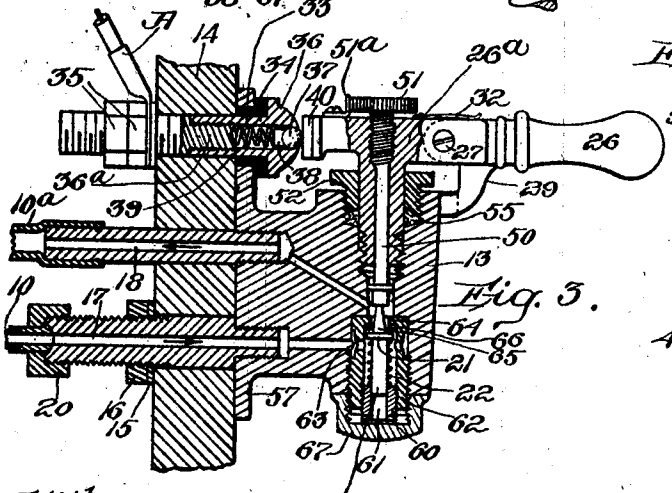
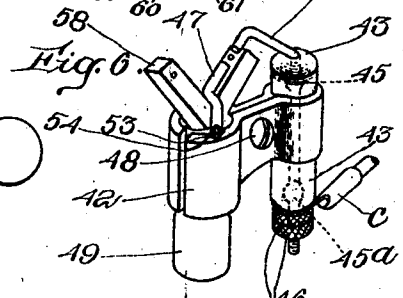


Fig. 3.

Fig. 6.



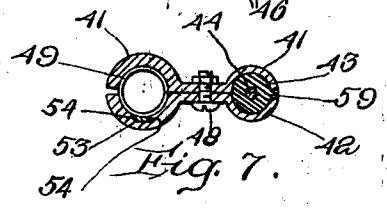


Fig. 7.

Witnesses:

Arthur F. Randall

A. L. Mercer

Inventor:

Louis G. Bartlett

by J. S. Reed

Atty.

UNITED STATES PATENT OFFICE.

LOUIS G. BARTLETT, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR TO AUTO-LIGHTER & EQUIPMENT COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

AUTOMATIC GAS IGNITION AND CONTROL.

962,113. Specification of Letters Patent. Patented June 21, 1910.

Application filed September 24, 1909. Serial No. 519,344.

To all whom it may concern:

Be it known that I, LOUIS G. BARTLETT, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Automatic Gas Ignition and Control, of which the following is a specification.

My invention relates to improvements in automatic gas ignition and control and is especially adapted to the controlling and igniting of the gas in the lights of an automobile, directly from the seat.

In the accompanying drawings which illustrate a construction embodying my invention, Figure 1 is a diagrammatic view of the lighting system showing the acetylene head lights connected with the usual charged gas tank with the controller or ignition mechanism interposed therein and suitably mounted on the dashboard of the automobile. Fig. 2 is a front elevation of the controlling device showing the operating mechanism partly in section with the handle locked in non-operating position. Fig. 3 is a central vertical section of the controller with the operating handle in midway position showing the lighting circuit closed and the gas being turned on to the burners. Fig. 4 is a similar view to Fig. 2 showing the operating handle locked in position after the lights have been ignited allowing the same to remain burning. Fig. 5 is a top plan view of the controller with parts broken away and with the handle in the position shown in Fig. 3. Fig. 6 is a perspective view of one of the acetylene burners showing the manner of mounting the electrodes. Fig. 7 is a central cross sectional view of the burner shown in Fig. 6.

Like characters of reference refer to like parts throughout the several views.

1 represents the usual charged acetylene gas tank located on the running board or step 2 of an automobile and secured thereon by suitable straps 3.

4 and 5 represent the usual head lights carrying burners 6 and 7 respectively, mounted therein, and connected with tank 1 through branch tubes 8 and 9 and the main conduit 10^a and 10.

The usual needle valve 11 is located on tank 1 and is operated by the handle 12 to turn off the supply of gas when the system is not in use.

13 is a controller mounted on the dashboard 14 and secured thereto by plate 57, nut 16 and washer 15.

17 is a gas inlet port through the controller 13 and 18 is a gas outlet port from the same.

The main conduit 10 is comprised perferably of a piece of copper tubing, one end of the same being connected with valve 11 by a suitable union 19, the other end being connected with the inlet port 17 in the controller 13 by a union 20. The outlet port 18 is connected by a piece of rubber tubing forming a continuation of the main conduit with branches 8 and 9.

Mounted in the lower part of the body of the controller 13 is a threaded valve casing 62 having a peripheral recess 69 with orifices 63 located therein and in position to connect the gas inlet port 17 with the inside of said casing.

64 is a port controlled by the valve 21 and adapted to connect the inside of said valve casing 62 with the outlet port 18.

66 is a fiber washer forming a seat for valve 21, the lower part or stem 70 of said valve being slidable in an opening 61 of the adjustable bushing 60 which is threaded and adapted to be adjusted within the lower part of the valve casing 62 to regulate the tension of the spring 22 which is mounted over valve stem 70 and assists in holding valve 21 closed.

67 is a nut adapted to be screwed over the lower end of the valve casing 62 and against the lower part of the body of the controller 13 to prevent leakage of the gas.

A tapered stem 65 extends upwardly from valve 21 through the opening 64 and is adapted to regulate the flow of gas through port 64 by increasing or decreasing said opening as the valve is moved a greater or less distance from its seat on fiber washers 66.

Mounted in the top of the body of the controller 13 is a holder 26^a, the lower portion of which is threaded into the body of the controller, so that when said holder 26^a is turned in one direction, it is depressed within said body and raised when turned in the opposite direction. Centrally mounted within the holder is an adjustable striker 50, the upper end of which is threaded into the holder 26^a and carries a thumb nut 51 for adjusting the same, the spring 51^a secured to the top of the holder 26^a being adapted to retain the thumb nut 51 and

striker 50 in adjusted position. The lower end of the striker 50 projects beneath the holder 26ª and is adapted upon the movement of said holder in one direction to engage the upper part of the stem 65 and depress the valve 21 from its seat as shown in Fig. 3 allowing the gas to pass from the inlet 17 through orifices 63, port 64 and outlet port 18 (as indicated by arrows) into the continuation 10ª of the main conduit to burners 6 and 7. A reverse movement of the holder 26ª withdraws the striker 50 from the stem 65 allowing valve 21 to be closed by the pressure of the gas assisted by the spring 22, thereby cutting off the flow of gas to the burners 6 and 7.

The handle 26 is pivoted at 27 into the bifurcated portion 27ª of the holder 26ª and is adapted to operate the same.

29 is a latch mounted on the lower part of the handle 26 and is operated by the spring 32 to engage either of the slots 31 or 30 to lock the holder 26ª in "off" or "on" position respectively.

55 is suitable packing against the stem of the holder 26ª by a stuffing nut 52 to prevent leakage of the gas.

The contact supporting member 36 is mounted on the face plate 57 and insulated therefrom by an insulating bushing 34 and wooden dashboard 14, and secured in position by nuts 35 and connected by a wire A with the primary winding of an induction coil I having the usual interrupter or vibrator Y located in the primary circuit of the same. The opposite end of the primary winding of the coil I is connected with one pole of battery 7 while the opposite pole of said battery is grounded on the copper tubing or conduit 10.

C and E are wires connecting each end of the secondary winding of coil I with an insulated electrode on the burners 6 and 7 respectively, each of said burners carrying a grounded electrode completing the secondary circuit through the frame of the automobile as indicated by dotted lines X.

The contact 36 carries a recess 33 in which is mounted the ball 37 held outwardly against the contracted opening in said recess by means of a cup 38 and a spring 39, the same forming a yielding rolling contact. The member 36ª is threaded within the contact 36 and holds the spring 39 and ball 37 in position therein. The holder 26ª carries the segmental arm 40 adapted to engage with the ball contact 37 intermediate the open and closed positions of valve 21 thereby closing the primary circuit through the coil I and inducing a jump spark at each of the burners 6, 7. The cup 38 between the ball 37 and spring 39 prevents the ball from wedging into the open end of the spring, which would cause an unreliable contact. The ball contact 37 with the segmental arm 40 constitutes the switch for closing the circuit. Each burner comprises a lava tip 58 with the usual gas vents therein and a metal stem 49 securing the same to the lamp.

41 and 42 are metal clamps adapted to be mounted over the stem of the burner and also over the insulated support holding the same in suitable position.

44 is an electrode molded in the support 43 and flattened at 45 and 45ª to prevent the electrode from turning therein. The lower end of electrode 44 is threaded and the nuts 46 are mounted thereon forming a binding post for either of the secondary wires C and E as the case may be. The rib 59 on the insulating support 43 is adapted to be mounted between the two corresponding outer ends of the clamps 41 and 42 to position and prevent the same from turning therein.

It is found to be essential that the terminal electrodes shall be in and maintain an exact alinement with the gas vents so that the spark will be projected through the path of the escaping gas to ignite the same, as otherwise, if the electrodes were displaced from their maintained position, the gas would accumulate in the lamps and an explosion would subsequently take place.

The electrode 47 is flattened at its lower end at 53 and is grounded on and positionally mounted in the flat recess 54 in the clamp 42 which prevents the electrode from turning.

48 is a screw for securing the clamps 41 and 42 firmly around the burner itself and also causes the clamp to firmly grip the insulated electrode 44 and the grounded electrode 47 in relative position to the burner to ignite the gas at the same.

The operation of the system is as follows: The handle 26 is lifted against the tension of spring 32 throwing the latch 29 out of engagement with the slot 31 permitting the operator to move the handle from the "off" position as shown in Fig. 2 to the intermediate position as shown in Figs. 3 and 5, the segment 40 engaging the ball contact 37 closing the circuit through the coil I and causes a jump spark to be projected between the terminals at each burner 6 and 7. During this movement and subsequent to the initial engagement of the segment 40 with the ball contact 37, the striker 50 engages the upper end of the valve stem 65, said striker 50 being depressed by the movement of the threaded holder 26ª; immediately upon the engagement of the striker 50 with the valve stem 65, the valve 21 is thrown from its seat against the pressure of the gas and the tension of spring 22 allowing the gas to be admitted from the inlet port 17, through port 64 and outlet port 18 to the burners 6 and 7. The gas is now ignited by the jump spark at

the burners, which spark is maintained to insure the lighting of the gas by means of the segmental arm 40. The handle 26 is now moved in the same direction until the latch 29 engages the notch 30 (see Fig. 4) cutting out the spark by reason of the segmental arm 40 being removed from contact 37. The handle 26 is now released locking the controller in "on" position and permitting the lights to remain burning in the lamps 4 and 5.

The handle 26 together with the striker 50 and arm or lug 40 constitutes coacting mechanism for closing the circuit and for opening the valve to allow the gas to flow to the burners where it is ignited by the sparks passing between the electrodes.

The flame at the burners 6 and 7 is adapted to be regulated from the seat of the automobile by operating the thumb nut 51 to raise or lower the striker 50, which, operating upon the upper stem of valve 65 will raise or lower the tapered portion of said valve stem 65 within port 64. This will increase or decrease the volume of gas flowing through said port in the direction indicated by arrows, Fig. 3, permitting the proper regulation of the flame.

To extinguish the lights from the seat, the operator lifts the handle 26 disengaging the latch 29 from the notch 30 moving the handle 26 in a reverse direction from that heretofore described, said movement causing the striker 50 to withdraw from contact with the upper part of valve stem 65 permitting valve 21 to close by the pressure of the gas assisted by spring 22. The gas supply now being cut off, the lights are immediately extinguished at the burners 6 and 7. The valve 11 at the tank may be used to shut off the supply at the tank if required.

Having thus described the nature of my invention and set forth a construction embodying the same, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In an ignition attachment for gas burners, a divided clamp adapted to be secured to the burner, a grounded electrode positionally gripped by said clamp, an insulated electrode positionally gripped by said clamp in relation to said burner and said grounded electrode, and means for preventing the turning or displacement of said electrodes.

2. In an ignition attachment for gas burners, a divided clamp adapted to be clamped to the burner, a grounded electrode adapted to be gripped to said burner by said clamp, an insulated electrode adapted to be positionally gripped by said clamp in relation to said burner and said grounded electrode, and means for securing said clamp together.

3. In an ignition attachment for gas burners, a divided clamp adapted to be clamped to the burner, a grounded electrode adapted to be gripped to said burner by said clamp, an insulated electrode adapted to be positionally gripped by said clamp in relation to said burner and said grounded electrode, means for securing said clamp together, and means for preventing the turning or displacement of said electrodes.

4. In an ignition attachment for gas burners, a divided clamp adapted to be secured to the burner and provided with an angular recess located in said clamp, a grounded electrode adapted to be positionally gripped within said recess to said burner by said clamp, an insulating support having a peripheral recess on the exterior thereof for positioning the same within said clamp, an electrode secured within said insulating support, and projecting means for preventing the turning of said electrode within said support.

5. In an ignition attachment for gas burners, a separable clamp comprised of two opposite members each of said members having a semi-circular recess at each end thereof, one end of said members adapted to clamp the gas burner and the other end of said members adapted to clamp an insulating support, a grounded electrode adapted to be positionally gripped by said members, an electrode mounted within said insulating support, and projecting means for holding said insulated electrode in positional relation to said grounded electrode and said burner.

6. In an ignition attachment for gas burners, a divided clamp comprising two sleeves, one of said sleeves adapted to fit over and clamp the gas burner, an insulating support adapted to be mounted within and clamped by the other of said sleeves, an insulated electrode mounted within said support, and a grounded electrode gripped by said clamp, both of said electrodes being relatively positioned to ignite gas at the burner.

7. In an electrical contact, an insulated supporting member having an opening therethrough, said opening restricted at one end, a yielding contact mounted in and adapted to project through said restricted opening, a spring mounted behind said contact, and a plug adapted to secure said spring and said contact in position.

8. In an electrical contact, an insulated supporting member having an opening therethrough, said opening restricted at one end, a yielding contact mounted in and adapted to project through said restricted opening, a spring mounted behind said contact, a plug adapted to secure said spring and said contact in position, and means for securing said insulated supporting member.

9. In an apparatus of the character described, one or more burners, a gas receptacle, a gas conduit between said burner or

burners and said gas receptacle, a valve located in said conduit for admitting or cutting off the supply of gas to or from said burner or burners, a normally open electric circuit, electrodes in said circuit and located at said burner or burners for the passage of a spark and adapted to ignite the gas at said burner or burners, a switch adapted to control said circuit, and co-acting mechanism for closing said switch and subsequently engaging and opening said valve to insure the passage of a spark at said burner or burners previous to the admission of gas thereto.

10. In an apparatus of the character described, one or more burners, a gas receptacle, a gas conduit between said burner or burners and said gas receptacle, a valve located in said conduit for admitting or cutting off the supply of gas to or from said burner or burners, a normally open electric circuit, electrodes in said circuit and located at said burner or burners for the passage of a spark and adapted to ignite the gas at said burner or burners, a switch adapted to control said circuit, co-acting mechanism adapted to be operated in one direction to close said switch and subsequently engage and open said valve whereby the gas is ignited at said burner or burners and to be operated in the reverse direction to release said valve to cut off the flow of gas and extinguish the same.

11. In an apparatus of the character described, one or more burners, a gas receptacle, a gas conduit between said burner or burners and said gas receptacle, a valve located in said conduit for admitting or cutting off the supply of gas to or from said burner or burners, a spring normally holding said valve closed, a normally-open electric circuit, electrodes in said circuit and located at said burner or burners for the passage of a spark and adapted to ignite the gas at said burner or burners, a switch adapted to control said circuit, and co-acting mechanism for opening said valve against the pressure of said spring to turn on the gas and for operating said switch to close the circuit and light the gas at said burner or burners.

12. In an apparatus of the character described, one or more burners, a gas receptacle, a gas conduit between said burner or burners and said gas receptacle, a valve located in said conduit for admitting or cutting off the supply of gas to or from said burner or burners, a spring normally holding said valve closed, a removable cage forming the seat for said valve and holding said valve and said spring, a normally-open electric circuit, electrodes in said circuit and located at said burner or burners for the passage of a spark and adapted to ignite the gas at said burner or burners, a switch adapted to control said circuit, and co-acting mechanism for opening said valve against the pressure of said spring to turn on the gas and for operating said switch to close the circuit and light the gas at said burner or burners.

13. In an apparatus of the character described, one or more burners, a gas receptacle, a gas conduit between said burner or burners and said gas receptacle, a valve located in said conduit for admitting or cutting off the supply of gas to or from said burner or burners and normally held closed under the pressure of the gas in said conduit, a normally-open electric circuit, electrodes in said circuit and located at said burner or burners for the passage of a spark and adapted to ignite the gas at said burner or burners, a switch adapted to control said circuits, mechanism for opening said valve against its closing pressure to turn on the gas and for operating said switch to close the circuit to light the gas at said burner or burners, a handle pivoted to said mechanism for operating the same, and a latch carried by said handle for holding said valve in open or closed position.

14. In an apparatus of the character described, one or more burners, a gas receptacle, a gas conduit between said burner or burners and said gas receptacle, a valve located in said conduit for admitting or cutting off the supply of gas to or from said burner or burners and normally held closed under pressure, a normally-open electric circuit, electrodes in said circuit and located at said burner or burners for the passage of a spark and adapted to ignite the gas at said burner or burners, a switch adapted to control said circuit, and co-acting mechanism for engaging and opening said valve to turn on the gas and for operating said switch to close the circuit to light the gas at the burner or burners.

15. In an apparatus of the character described, one or more burners, a gas receptacle, a gas conduit between said burner or burners and said gas receptacle, a valve located in said conduit for admitting or cutting off the supply of gas to or from said burner or burners and normally held closed under pressure, a normally open electric circuit, electrodes in said circuit and located at said burner or burners for the passage of a spark and adapted to ignite the gas at said burner or burners, a switch adapted to control said circuit, and co-acting mechanism for opening said valve against its closing pressure to turn on the gas and for operating said switch to close the circuit to light the gas at said burner or burners.

16. In an apparatus of the character described, one or more burners, a gas receptacle, a gas conduit between said burner or burners and said gas receptacle, a valve lo-

cated in said conduit for admitting or cutting off the supply of gas to or from said burner or burners and normally held closed under pressure, a normally open electric circuit, electrodes in said circuit and located at said burner or burners for the passage of a spark and adapted to ignite the gas at said burner or burners, a switch adapted to control said circuit, and co-acting mechanism for engaging and opening said valve against its closing pressure to turn on the gas and for operating said switch to close the circuit to light the gas at said burner or burners.

17. In an apparatus of the character described, one or more burners, a gas receptacle, a gas conduit between said burner or burners and said gas receptacle, a valve located in said conduit for admitting or cutting off the supply of gas to or from said burner or burners and normally held closed under pressure, a striker for opening said valve, a normally-open electric circuit, electrodes in said circuit and located at said burner or burners for the passage of a spark and adapted to ignite the gas at said burner or burners, a switch adapted to control said circuit, and a handle for operating said striker to open said valve against its closing pressure to turn on the gas and for operating said switch to close the circuit to light the gas at said burner or burners.

18. In an apparatus of the character described, one or more burners, a gas receptacle, a gas conduit between said burner or burners and said gas receptacle, a valve located in said conduit for admitting or cutting off the supply of gas to or from said burner or burners and normally held closed under pressure, an adjustable striker for opening said valve, a normally open electric circuit, electrodes in said circuit and located at said burner or burners for the passage of a spark and adapted to ignite the gas at said burner or burners, a switch adapted to control said circuit, and a handle for operating said striker to open said valve against its closing pressure to turn on the gas and for operating said switch to close the circuit to light the gas at said burner or burners.

19. In an apparatus of the character described, one or more burners, a gas receptacle, a gas conduit between said burner or burners and said gas receptacle, a valve located in said conduit for admitting or cutting off the supply of gas to or from said burner or burners and normally held closed under pressure, a cage holding said valve and forming a seat therefor, a normally-open electric circuit, electrodes in said circuit and located at said burner or burners for the passage of a spark and adapted to ignite the gas at said burner or burners, a switch for controlling said circuit, and co-acting mechanism for opening said valve against its closing pressure to turn on the gas and for operating said switch to close the circuit and light the gas at said burner or burners.

20. In an apparatus of the character described, one or more burners, a gas receptacle, a gas conduit between said burner or burners and said gas receptacle, a valve located in said conduit for admitting or cutting off the supply of gas to or from said burner or burners and normally held closed under pressure, a removable cage holding said valve and forming a seat therefor, a normally-open electric circuit, electrodes in said circuit and located at said burner or burners for the passage of a spark and adapted to ignite the gas at said burner or burners, a switch for controlling said circuit, and co-acting mechanism for opening said valve against its closing pressure to turn on the gas and for operating said switch to close the circuit and light the gas at said burner or burners.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses, this eighteenth day of September A. D. 1909.

LOUIS G. BARTLETT.

Witnesses:

A. L. MESSER,

ARTHUR F. RANDALL.