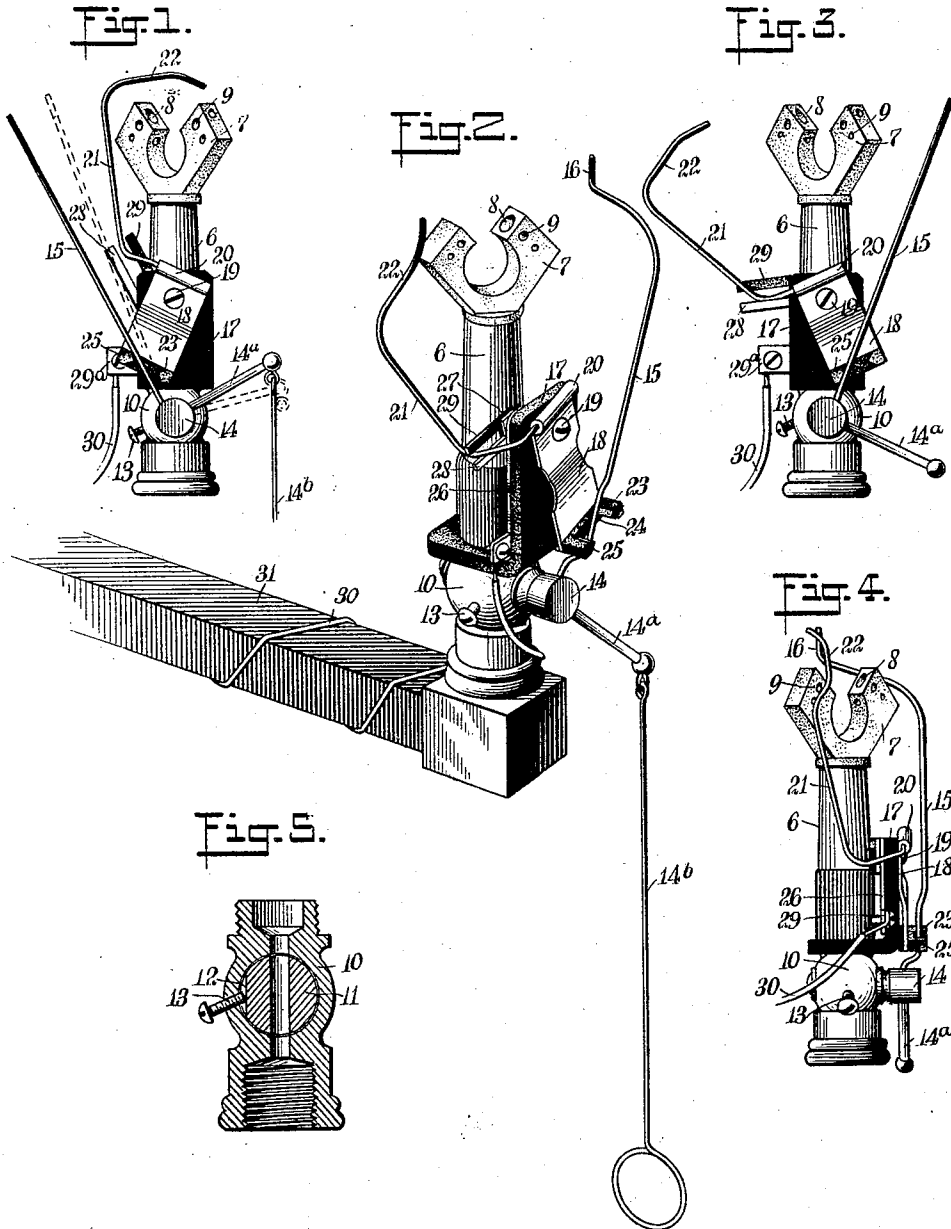


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ACETYLENE GAS LIGHTER.
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Patented Nov. 7, 1911.



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ACETYLENE-GAS LIGHTER.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HENRY VAN HOEVENBERG, a citizen of the United States, and a resident of Lake Placid Club, in the county of Essex and State of New York, have invented a new and Improved Acetylene-Gas Lighter, of which the following is a full, clear, and exact description.

My invention relates to gas lighters, my more particular purpose being to provide a gas lighter suitable for use in connection with acetylene gas and possessing certain advantages of construction and operation, as hereinafter described.

My invention comprehends an electrically-operated gas lighter having two movable contact arms and mechanism connected with said arms for actuating the same, the parts being so arranged that the contact arms are brought into engagement with each other, a current is completed through them, and the arms are next separated in or near the path of the flame and are finally brought back to their respective normal positions, the arms in being thus brought back into normal position, making an idle contact, but without closing the electric circuit.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is an elevation showing a gas burner equipped with my improved igniter mechanism, the parts being in normal position and the burner being idle; Fig. 2 is a perspective showing the position of the parts immediately after the gas is turned on and the spark is struck; Fig. 3 is an elevation, showing the appearance of the parts when the lever arm is being raised a little incidental to its restoration to normal position; Fig. 4 is an elevation showing the relative positions of various parts; Fig. 5 is a detail showing in section the valve for handling the gas and a limiting stop for said valve.

It may be stated at the start that great difficulty is usually experienced in efforts to light acetylene gas by aid of a spark. One reason for this is that in lighters as ordinarily constructed and operated, the electric current (or static discharge made by aid of inductive action from such current) is not generally employed to the best advantage. I therefore seek to make the spark as strong as possible. I do this by avoiding

waste of the current except at the precise instant when the spark is to be made. I then cause the current to be quickly completed and as quickly broken, carefully avoiding any necessity for accidentally completing the circuit a second time, as the contact members, after making the spark, are brought back to normal position.

At 6 is a gas pillar and mounted upon the latter is a burner tip 7 provided with flame openings 8 and air holes 9. The pillar 6 is mounted upon a valve casing 10 containing a valve plug 11 which is provided with a tangential slot 12, and fitting into this slot is a limiting screw 13. By adjusting this screw the rotary play of the valve plug may be adjusted within proper limits at will. The plug 11 is provided with a head 14 and extending from the latter is an arm 14^a from which hangs a handle 14^b whereby the plug may be turned. Connected rigidly with the head 14 and extending upwardly therefrom is an arm 15 provided with a contact portion 16, this contact portion being kept bright by rubbing against its mate, thus avoiding the necessity for using platinum.

Mounted upon the valve casing 10 is a plate 17 of insulating material. A plate 18 of metal is mounted upon the plate 17 of insulating material by aid of a pivot 19. The upper end of the plate 18 carries a bearing sleeve 20, and extending into this bearing sleeve and projecting upwardly from the same is an arm 21 provided with a contact portion 22, this arm, including the contact portion, being so constructed and arranged, like the arm 15 and its contact portion 16, as to be kept bright by rubbing; the necessity for platinum thus being avoided. Two lugs 23, 25, separated by a gap 24, are mounted upon the lower portion of the plate 18, the arm 15 extending upwardly, through the gap, between the lugs.

Mounted upon the back of the plate 17 of insulating material is a metallic plate 26, and pivotally mounted upon the latter is a rocking member 27 provided with a metallic arm 28 and with an arm 29 of insulating material separated slightly from the member 28 of metal. The arm 21 extends loosely between the metallic arm 28 and the arm 29 of insulating material, so as to allow for a little lost motion when the arm 21 is rocked. The rocking member 27 is actuated entirely by movements of the arm 21. The

plate 26 is provided with a binding post 29^a and connected with the latter is an insulated wire 30, this insulated wire being connected with a battery and in electrical communication with a spark coil for momentarily intensifying a current or electric discharge through the wire. The valve casing is mounted upon a metallic gas fixture 31 which is grounded and in communication with the battery and spark coil which are also grounded in the usual manner.

The operation of my device is as follows: I will suppose that the movable parts are in their respective normal positions, as indicated in Fig. 1. The rotary valve now occupies one of its extreme positions, to wit, the one which it assumes when it is turned to its limit in a contraclockwise direction. Such being the case, the gas is cut off and the metallic arm 21 is in its uppermost position and engages the arm 29 of insulating material. There is now no connection between the metallic arms 21 and 28. Neither is there any connection between the metallic arms 15 and 22. The operator now grasps the handle 14^b and pulls it downward. When the arm 14^a moves from its position indicated by full lines in Fig. 1 to its position indicated by dotted lines in said figure, the metallic arm 15 moves also into its position indicated by dotted lines in said figure. Upon reaching this position the arm 15 begins to press against the lug 23 and in doing this causes the plate 18 to turn slightly upon its pivot 19. This movement of the plate 18 causes the contact arm 21 to move angularly downward to the left upon the pivot 19 as a center, and consequently to engage the contact arm 28. While the contact arms 27 and 28 are now in direct engagement, no current is flowing, because there is as yet no contact between the contact arms 15 and 21. The downward movement of the handle 14^a, however, soon carries the contact arm 15 far enough to bring the contact portion 16 of this arm into engagement with the contact portion 22 of the contact arm 21. This completes the following circuit: ground, battery and spark coil (not shown), wire 30, binding post 29^a, plate 26, rocking member 27, contact arm 28, contact arm 21 including contact portion 22, contact portion 16, contact arm 15, to valve casing 10 and metallic gas fixture 31, thence back to ground. As the movement of the handle 14^b is continued, the contact arm 15 moves still farther to the right, so that the contact portion 16 is moved abruptly out of engagement with the contact portion 22. This takes place in the path of the gas, which now, in consequence of the turning of the valve plug, is escaping from the openings 8. The breaking of the circuit causes a spark to take place, and as this spark is in the path of the escaping gas, the latter is

lighted. The handle movement being still further continued, the arms 15 and 21 are moved completely out of the path of the flame. The apparatus remains in this condition as long as desired, the flame being continuous. When it is desired to extinguish the flow of gas, the operator pushes the handle 14^b upwardly. This causes the plug 11 to rotate in a contraclockwise direction, first cutting off the supply of gas and then causing the plate 18 to swing in a clockwise direction upon its pivot 19.

On order to give the valve a sufficient turning movement to completely stop the flow of gas before the plate 18 begins to turn, the lugs 23, 25 are spaced some little distance apart so that there is a lost motion between the arm 15 and these lugs. That is to say, the arm 15 turns, upon the axis of the valve plug as a center, for a little distance before the arm 15 engages the lug 25. As the hand-controlled movement continues, the rocking of the plate 18 lifts the arm 21 out of engagement with the arm 28, thus precluding the idea of any current now flowing through any of the contact mechanism. The hand-controlled movement being still further continued, the contact portion 16 is brought into engagement with the contact portion 22, but no current now flows for the reason that there is no electrical communication between the contact arm 21 and the contact arm 28, and the circuit is therefore open. The result is that the contact portion 16 merely makes a so-called wiping engagement with the contact portion 22, no spark is made, no battery energy is wasted, and the respective arms 15, 21 are carried on to their normal positions. When the various parts again occupy the positions indicated in Fig. 1, it will be noted that the contact arm 21 is disengaged from the contact arm 28, so that there is no possibility of any current flowing until the handle 24 is again depressed to a predetermined distance, so as to affect the position of the plate 18.

As may be seen from the foregoing description, no battery current can flow when the device is being restored to its normal position, and consequently no spark can be made at this moment. Moreover (when the circuit is closed, incidental to the opening of the valve and preparatory to the lighting of the gas, the duration of the flow is reduced to a minimum, the idea being, not merely to conserve the energy of the battery upon principles of economy, but also to insure that the voltage and current will be at a maximum during the minute interval of time that the current is allowed to flow. The quick wiping action of the contact portion 16 against the contact portion 22 need not be of longer duration than that required to enable the spark coil to build up its magnetic field.

Practical trials of the apparatus above described have shown that it is capable of use for lighting acetylene gas, and that, too, under conditions peculiarly trying.

5 Having thus described my invention, I claim as new and desire to secure by Letters Patent:

10 1. A device of the character described, comprising a pair of contact members adapted to move in opposite directions and also to engage and disengage each other, mechanism for completing an electric circuit between said contact members as the same are moved relatively to each other in one direction, and means controllable by movements of one of said contact members for maintaining said electric circuit open when said members move in the opposite direction relatively to each other.

20 2. A device of the character described, comprising a member of insulating material, a plate pivotally mounted thereupon and adapted to rock, a valve, a contact arm connected with said valve and in operative
25 relation to said plate for the purpose of

rocking the same, another contact arm connected with said plate, said contact arms being provided respectively with contact portions for the purpose of facilitating the formation of a spark, a rocking member 30 carrying an arm of conducting material and an arm of insulating material, said rocking member being disposed partially within the path of one of said contact arms, and an electric circuit connected with the conducting member carried by said rocking member 35 for the purpose of completing a circuit when said arms are moved relatively to each other in one direction and of preventing the completion of a circuit when said 40 arms are moved relatively to each other in the opposite direction.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY VAN HOEVENBERG.

Witnesses:

WALTON HARRISON,
PHILIP D. ROLLHAUS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."