UNITED STATES PATENT OFFICE

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VALVE-ACTUATED SWITCH


This invention relates to igniting devices, and its general object is to provide an improved switch for igniters for fuel burners and the like that lights the fuel simultaneously with the opening of the control valve of the fuel pipe line to the burner.

One of the important objects of the invention is to provide a valve actuated switch that can be easily installed on the valve of a burner so as to be operated by said valve when the latter is opened, but does not in any way interfere with the proper operation thereof.

A still further object of the present invention is to provide a device of the character set forth, that is extremely simple in construction, inexpensive to manufacture and install, and efficient in operation and service.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing my invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:

Figure 1 is a side elevation of my improved igniting device applied to a valve.

Figure 2 is a sectional view taken approximately on line 2—2 of Figure 1.

Figure 3 is a sectional view taken approximately on line 3—3 of Figure 2.

Figure 4 is a sectional view taken approximately on line 4—4 of Figure 1.

Figure 5 is a perspective view of the upper plate which forms a part of the contact-breaking means of my device.

Figure 6 is a similar view of the lower plate which cooperates with the upper plate.

Referring to the drawings in detail, the reference numeral 1 indicates the core of a valve for controlling the supply of fuel to a gas burner and the like, and 2 indicates the casing for the core which as clearly shown in Figure 3 has extending from diametrically opposite sides thereof nipples 3 that are threaded for the purpose of being disposed in the fuel supply pipe line for a burner or the like as will be apparent.

The casing is reduced at its upper end to provide a shoulder, and secured to the reduced portion through the medium of a screw 4 is a sleeve 5 which has formed therewith and extending therefrom a substantially rectangular shape projection 6 provided with a longitudinally disposed groove 7 and an outwardly inclined top 8.

Arranged for slidable movement in the groove 7 as clearly shown in Figure 3 is the bottom plate 9 that is provided with a longitudinally disposed slot 10 which accommodates the head 11 of a bolt 12. The head 11 is in the form of a bearing for slidable receiving the bottom plate 9 and is formed with a cap for engagement with the plate as shown. The bolt 12 is passed through a slot 13 formed in the projection 6 and is adjustably received in the slot 13 by a nut. The forward end of the plate 9 is reduced and formed with and rising from said forward end is a lug 14 having a beveled upper side as best shown in Figure 3.

Mounted for slidable movement on the inclined top 8 of the projection 6 is an upper plate 15 which cooperates with the lower plate through the instrumentality of a lug 16 that depends from one end of the upper plate 15 and is arranged for engagement with the lug 14 during certain positions of the plate 15. The upper plate 15 is formed with a centrally disposed opening to accommodate the shank of a headed stud 17 and secured to the stud 17 is one end of a link 18 while the opposite end of said link is pivotally secured to a stem bracket 19 that is fixed in the reduced upper end of the core 1 wherein movement of the core through the instrumentality of its handle for disposing the bore of said core in registration with the bores of the nipples 3 will operate my device in a manner which will be presently described.

Secured to the sides of the projection 6 are strips 20 having flanges 21 bent at right angles to the bodies thereof and overlying the upper plate 15 to hold the latter in operative position with respect to the inclined top.
The outer end of the projection 6 is enlarged as at 22 and secured to this enlarged end through the medium of screw bolts 23 in a block 24 formed from insulating material. The block 24 is provided with a bore within which is disposed the squared head 25 of a terminal bolt 26, while mounted for slidable movement through the block and squared head 25 respectively is a plunger bolt 27 having a head 28 arranged in the path of the lug 14 so that it will be engaged thereby in the manner as shown in Figure 3.

The plunger bolt 27 is spring pressed and for this purpose I provide a coil spring 29 that surrounds the same and has its end convolutions engaging the block 24 and the head 28 respectively. The plunger bolt 27 is threaded to accommodate a nut whereby its distance of travel through the block may be adjusted the lug 14 of the plate 21 being insulated from the head of the plate 21 as best shown in Figure 3. A battery of known construction and this battery carries an electrode 30 which is insulated therefrom by insulating members 31. The electrode has one of its ends bent at right angles to the body thereof and this end is disposed in close association with one of the fuel passages as shown but is spaced from the burner to provide a spark gap.

Arranged in electrical connection with the electrode 30 through the medium of a conductor 32 is the secondary coil 33 of a coil unit, while the primary coil 34 of said unit is in electrical connection with the terminal bolt 26 by a conductor 35 and in electrical connection with a source of electrical energy 36 through the medium of a conductor 37. The source of electrical energy or battery 38 is grounded to the burner, valve or part of a stove having the burner and valve secured thereto. A conductor 39 leads from the source of energy or battery 38 to the ground connection as shown.

From the above description and disclosure of the drawings, it will be obvious that I have provided an igniting device that will furnish a hot spark for lighting the fuel of the burner as shown, and the ignitor is put into operation simultaneously with the opening of the control valve for the fuel, due to the lugs of the respective plates 9 and 11 contacting each other, when the valve is turned on. The lug 16 will carry the plate 9 for disposing the lug 14 of the plate 9 in contacting engagement with the head of the plunger bolt 27. When this contact is made, the lug 16 will leave the lug 14 which will result in the contact being broken between the lug 14 and the head 28 of the plunger bolt, as the plate 9 is provided with a coil spring 39 which normally urges said plate 9 to its rearward position. The coil spring 39 is fixed to the casing 2 and the plate 9 as best shown in Figure 2.

When the lug 14 engages the head 28, the current is passed through the primary coil, with the result when the lug 14 leaves the head 28, the circuit is broken through the primary coil and is transferred to the secondary coil, therefore causing a spark between the electrode and the burner for igniting the fuel.

It is thought from the foregoing description that the advantages and novel features of my invention will be readily apparent.

I desire it to be understood that I may make changes in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What I claim is:

1. A valve-actuated switch, a sleeve, a projection formed with said sleeve and extending therefrom, plates mounted for slidably movement on said projection, cooperating lugs formed with said plates and being disposed whereby the lug of one plate engages the other for moving the latter plate and a plunger bolt arranged in the path of the lug of the last mentioned plate to be engaged thereby.

2. In a valve-actuated switch, a sleeve, a projection formed with said sleeve, plates mounted for movement on said projection, means connecting one of said plates for movement, lugs formed with said plates and cooperating with each other, whereby the engagement of one lug with the other will move the plate having the last mentioned lug formed thereon, and a plunger bolt insulated from said projection and arranged in the path of the last mentioned lug to be engaged thereby.

3. In a valve-actuated switch, a sleeve, a projection formed with said sleeve, plates slidably mounted and carried by said projection, cooperating lugs formed with said plates and arranged in a manner whereby the lug of one plate engages the other for moving the plate carrying the last mentioned lug, a block of insulating material carried by said projection, a plunger bolt slidably mounted through said block, a head formed with said plunger bolt and arranged in the path of the last mentioned lug to be engaged thereby, and a terminal bolt electrically connected with the plunger bolt.

4. In a valve-actuated switch, a sleeve, a projection formed therewith, an enlarged outer end formed with said projection, a plate mounted for slidably movement in a groove formed in said projection, a plate slideable at an inclination and carried by said projection, cooperating lugs formed with said plates, means for moving one of said plates for disposing the lug of one plate in engagement with the lug of the other plate for moving the latter plate, a plunger rod carried by the enlarged portion of said projection and being insulated therefrom, and a head formed on said plunger rod and ar-
ranged in the path of the last mentioned lug.

5. In a valve-actuated switch, a sleeve, a projection formed with said sleeve and being
provided with a groove with a slot communicating with said groove, a slotted plate
mounted for slidable movement in said groove, means passing through the slots and
slidably securing said plate in said groove, a second plate mounted for slidable move-
ment at an inclination, a movable stem bracket,
and a link between the stem bracket and
inclined plate for moving the latter, lugs
formed with said plates and disposed in co-
operative association with respect to each
other.

6. In a valve-actuated switch, a pair of
sliding plates, one of said plates being in-
clined, lugs formed with said plates and be-
ing arranged whereby the lug of one plate
e engages the lug of the other plate for mov-
ing said last mentioned plate, spring means
for urging said last mentioned plate in a di-
rection opposite from that in which it is
moved by the lugs, a spring pressed plunger
bolt arranged in the path of the lug of the
last mentioned plate, and the lugs being
formed to cooperate for carrying the last
mentioned plate to a position to cause the lug
thereof to momentarily contact the plunger
bolt.

In testimony whereof I affix my signature.

WALTER J. MACKEY.