

T. J. LITTLE, JR.
ELECTRIC GAS COCK.
APPLICATION FILED JULY 23, 1910.

1,047,907.

Patented Dec. 17, 1912.

Fig. 1.

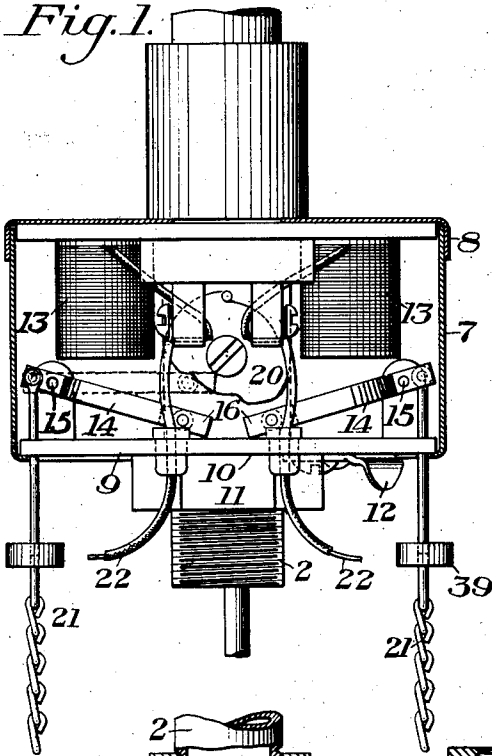


Fig. 2.

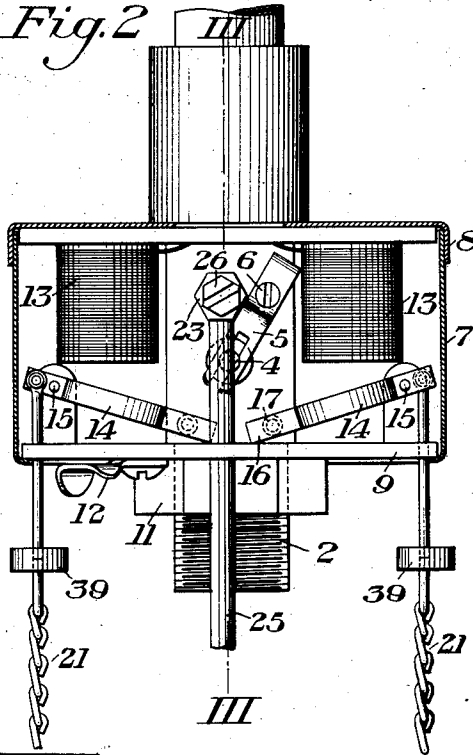


Fig. 3.

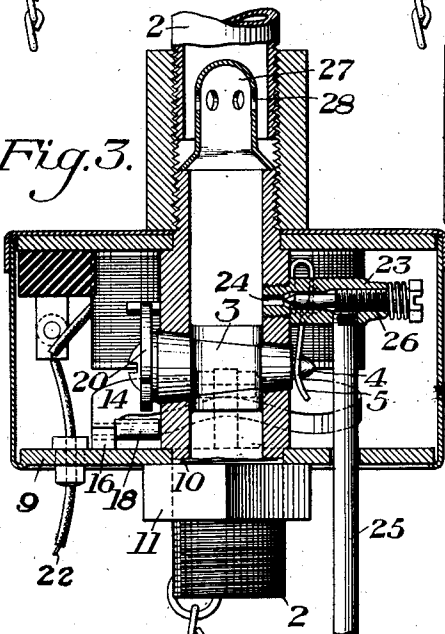


Fig. 4.

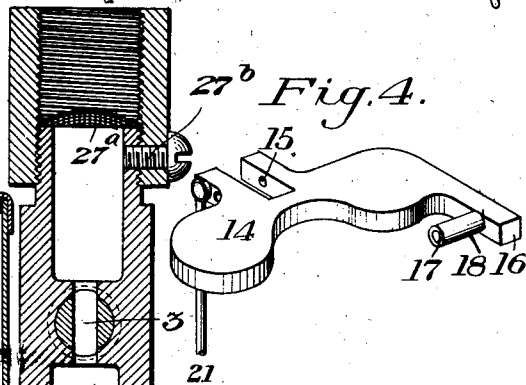
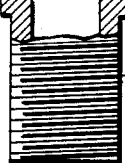


Fig. 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

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ELECTRIC GAS-COCK.

1,047,907.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, THOMAS J. LITTLE, JR., a resident of Woodbury, county of Gloucester, State of New Jersey, have invented a new and useful Improvement in Electric Gas-Cocks, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figures 1 and 2 are sectional side elevations of a gas cock embodying my invention, taken from opposite sides; Fig. 3 is a vertical section on the line III—III of Fig. 2; Fig. 4 is a perspective view of one of the armature levers removed; Fig. 5 is a detail view hereinafter referred to.

My invention has relation to electrically actuated gas cocks, and is designed to provide a simple and reliable device of this character, which can be actuated electrically from a distance and also mechanically.

A further object of my invention is to simplify and improve the construction of the actuating parts and of the casing.

Referring to the accompanying drawings, the numeral 2 designates a gas supply pipe having therein a cut-off valve 3, which is shown as of the rotary tapered plug type, this valve being mounted so as to turn easily in its seat. In order to adjust the valve, its smaller end is provided with a headed stud or screw 4, which is engaged by a slotted spring 5 having a tension-adjusting screw 6. By means of this spring and screw, the valve may be adjusted from time to time to take up wear or looseness and keep it properly seated in a manner to turn easily.

7 designates a casing, which is preferably watertight consisting of a top portion fitted around the pipe 2, and having a depending flange 8, within which the cylindrical body portion of the casing is slipped upwardly. The bottom plate 9 of the casing has a shouldered engagement at 10, with the lower end of the pipe 2, and the lower edge of the cylindrical body portion is turned inwardly underneath the marginal portion of the bottom plate, the latter being secured by a nut 11, threaded on the lower projecting end of the pipe 2. A latch 12 which is pivoted to the bottom plate is adapted to be turned into position to engage the flanged edge of the body portion of the casing, and thus secure the latter in place.

13 designates electromagnets which are

arranged in two pairs within the upper portion of the casing at opposite sides thereof, and each pair of which is arranged to act upon an armature lever 14. These levers are pivoted at 15 within the lower portion of the casing, and are each provided with an arm extension 16, having a projecting stud 17, on which is mounted an antifriction roller 18. These rollers are arranged to engage a cam plate 20, which is secured to one end of the valve stem, the two rollers engaging said plate upon opposite sides of its pivotal center. To the outer arm of each armature lever is connected a depending link and chain 21, which provides means whereby either armature lever may be actuated mechanically. The windings of each pair of electromagnets are connected in series, and are supplied with current by a connection 22, the other terminal of each winding being preferably grounded through the casing and pipe. The connections 22 lead to a suitable switch, such as the usual double push button switch, not shown, by means of which either pair of magnets can be energized and deenergized. When one pair of magnets is energized, the corresponding armature lever is raised to bring its roller into contact with the cam plate, thereby turning the valve to admit gas to the burner to which it is to be supplied; and when the other pair of magnets is energized, the valve is rotated in the reverse direction to cut off the gas supply.

23 is a plug which is screwed into the pipe 2, within the casing 7, and which has a by-pass 24, connecting with a pipe 25, leading to the usual pilot light of the burner.

26 is a needle valve for regulating the by-pass.

In order to prevent dust and dirt carried by the gas from getting into the valve, and thus interfering with its proper operation, I preferably provide the pipe 2 with a dust guard or trap 27. This is shown as consisting of a dome-shaped device, placed within the pipe 2, and having near its upper end a series of lateral perforations 28 for the gas. The dust and dirt which are entrained in the gas will, to a very large extent, fail to pass through these perforations and will be trapped in the space surrounding the device.

Instead of the dome-shaped device 27, I may employ an arched gauze 27^a, as shown

in Fig. 5, this resting on the top of the casing containing the valve 3. In this figure, I also show a hole bored through the wall of the passage and provided with a screw plug 27^b. By taking out this plug, gasoline, benzin or some other cleaning agent may be injected, which will enter the valve cavity and clean it from adhering gum or dirt, which would retard its proper action. Thus, if the valve becomes gummed, so that it will not work properly by the magnets, I unscrew the plug, inject a cleaning liquid and then replace the plug. This will loosen and remove the dirt and cause the valve to resume its proper action.

It will be understood that this lighting means may be used to either light the main burner or to light a pilot burner, which, in turn, will light the main burner. Where an interrupter is used, it is preferably arranged in series, one armature being used to make a broken contact and cause the igniting spark.

The electric cock may be used on one or more burners, and with any desirable form of ignition. I may also operate the valve by hand, when it becomes gummed or the battery becomes weak.

The advantages of my invention result from the simplicity of construction of the device as a whole; and from the arrangement of armature levers and antifriction rollers arranged to operate upon the cam plates without appreciable frictional loss, so that a small amount of current in the magnets will be sufficient to operate the valve.

In order to render easier the operation of the armature lever and lessen the work done by the magnets, I preferably add some counterweights 39 to the chain rods or to the chains where the chains are short, so that these weights will partially counterbalance the armature levers. This enables the operation to be carried out with less current because the magnets in this case need only to overcome the slight difference in weight between the armature lever and the chain and weight in addition to the power required to shift the valve.

I claim:

1. In an electric gas cock, the combination with a gas valve having a cam secured thereto and provided with two faces, of electromagnets arranged at opposite sides respectively of the valve, and armatures arranged to be attracted by the respective magnets, each of said armatures having an anti-friction roller normally out of engagement with the cam, the arrangement being such that the roller on the attracted arma-

ture will strike the cam a sharp blow to give the valve a rotary movement and then roll along the cam surface to rotate the valve to its extreme position; substantially as described.

2. An electric gas cock having a valve, a disk secured to said valve, a plurality of projections on said disk, a stop adapted to be engaged alternately by the projections to limit the movement of the valve, a plurality of cam surfaces on said disk, electromagnets on opposite sides respectively of the valve, and armatures arranged to be attracted by the respective magnets, each of said armatures having an anti-friction roller normally out of engagement with the cam, the arrangement being such that the roller on the attracted armature will strike the cam a sharp blow to give the valve a rotary movement and then roll along the cam surface to rotate the valve to its extreme position; substantially as described.

3. The combination with a gas valve having a cam secured thereto and provided with two faces, of electromagnets arranged at opposite sides respectively of the valve, armatures arranged to be attracted by the respective magnets, each of said armatures having an anti-friction roller normally out of engagement with the cam, the arrangement being such that when one of the armatures is actuated its roller will strike a sharp blow to give the valve a rotary movement and then roll along the cam surface to shift the valve to its extreme position, and a chain pull connected to each armature and adapted to mechanically actuate said armature independently of the other armature to shift the valve; substantially as described.

4. In an electric gas cock, the combination with a gas valve having a cam secured thereto and provided with two faces, of electromagnets arranged at opposite sides respectively of the valve, and armatures arranged to be attracted by the respective magnets, each of said armatures having an engaging portion normally out of engagement with the cam, the arrangement being such that said engaging portion on the attracted armature will strike the cam a sharp blow to give the valve a rotary movement and then travel along the cam surface to rotate the valve to its extreme position.

In testimony whereof, I have hereunto set my hand.

THOMAS JAMES LITTLE, JR.

Witnesses:

JOSEPH H. JOHNSON,
W. G. THOMPSON.