

(No Model.)

F. W. ACKERMAN.  
ELECTRICAL GAS COCK.

No. 579,249.

Patented Mar. 23, 1897.

Fig. 1.

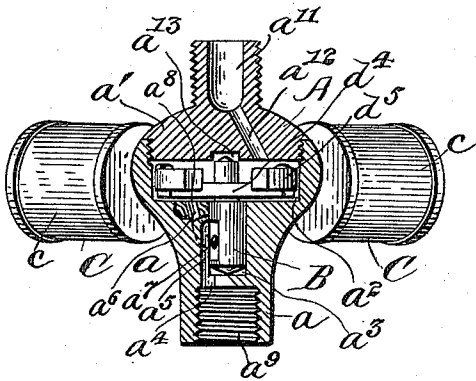


Fig. 2.

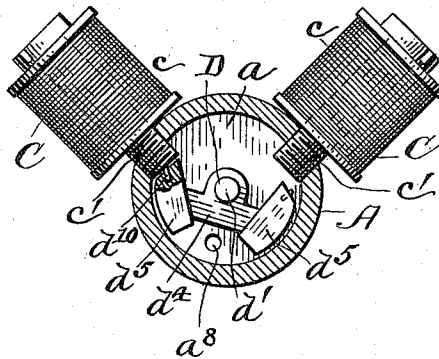


Fig. 5.

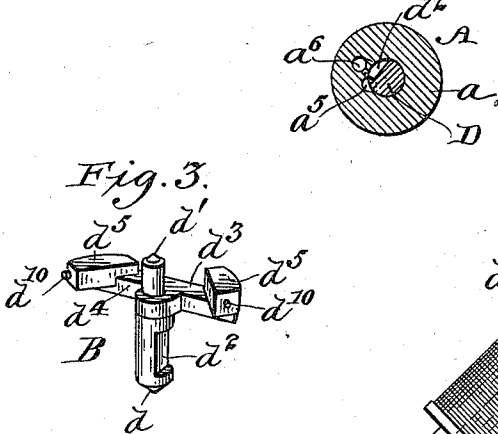


Fig. 4.

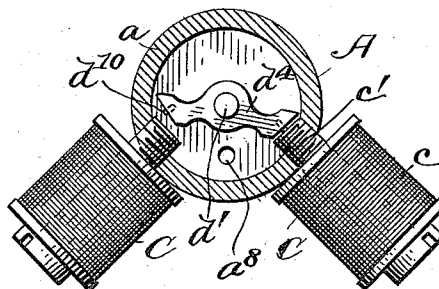
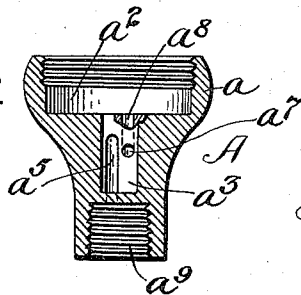


Fig. 6.



WITNESSES

Everance.  
 L. P. Clift

INVENTOR

Frank W. Ackerman  
By his Atty  
Wm Fletcher

# UNITED STATES PATENT OFFICE.

FRANK W. ACKERMAN, OF CORNING, NEW YORK, ASSIGNOR OF ONE-HALF  
TO FRANK P. FOSTER, OF SAME PLACE.

## ELECTRICAL GAS-COCK.

SPECIFICATION forming part of Letters Patent No. 579,249, dated March 23, 1897.

Application filed July 11, 1896. Serial No. 598,849. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK W. ACKERMAN, a citizen of the United States, residing at Corning, in the county of Steuben and State of New York, have invented certain new and useful Improvements in Electrical Gas-Cocks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in electrically-controlled gas-cocks, and has more particular relation to valves which do not cut off the entire supply of gas, but always leave sufficient to supply a pilot-flame, so that the illuminating-jet is always ready to be turned up.

The invention consists of the combination, with a casing, of an oscillating valve mounted therein and adapted to control the gas-supply, an armature mounted upon said valve, and electromagnets applied in the casing, so as to exert their force upon the armature at a tangent to its direction of oscillation.

It also consists of certain other novel constructions, combinations, and arrangements of parts, all of which will be hereinafter more particularly set forth and claimed.

In the accompanying drawings, forming part of this specification, Figure 1 represents a central vertical section through the device embodying my invention. Fig. 2 represents a horizontal section through the same. Fig. 3 represents a detail perspective view of the oscillating-valve and its armature. Fig. 4 represents a horizontal section of my valve with a modified form of armature applied thereto. Fig. 5 represents a horizontal section through the lower part of the valve and casing, and Fig. 6 represents a broken vertical section through the valve-casing.

A in the drawings represents the casing of my improved valve, B the oscillating valve, and C C the electromagnets. The casing A is made in two parts  $a$  and  $a'$ , respectively. The part  $a$  has a chamber  $a^2$  and a valve-seating recess  $a^3$  formed therein. The valve-recess is in the form of a vertical passage closed at its lower end, except for a small inlet-port  $a^4$ , that communicates with a vertical

groove  $a^5$ , formed in the wall of said recess. A passage  $a^6$  is formed in the casing, with its respective ports  $a^7$  and  $a^8$  communicating with the recess  $a^3$  and the chamber  $a^2$ . The port  $a^7$  lies in proximity to the vertical inlet-groove  $a^5$  for a purpose hereinafter described. The lower part of the casing is formed with a screw-threaded recess  $a^9$ , by means of which it may be screwed upon any ordinary gas-pipe. The oscillating valve D comprises a vertical cylinder or stem having conical bearing ends  $d$   $d$ , the lower of which is seated upon the bottom of the recess  $a^9$ , whereby the valve is supported upon an approximately needle-point with a consequential freedom of action, because of the absence of friction. This cylinder-valve is cut away at  $d^2$  to form a passage for bringing the groove  $a^5$  and the port  $a^7$  into communication. The upper portion of the cylinder-valve is provided with an armature  $d^3$ , comprising a cross-piece  $d^4$ , of brass, secured to the cylinder, and soft-iron pieces  $d^5$   $d^5$ , secured at the opposite ends of the piece  $d^4$ , so as to project outwardly at an angle therefrom.

Each of the pieces  $d^5$  is of sufficient length so that when it is energized the working end, which we will say is positive, will not be affected by the opposite or negative end being too close thereto. The operative end of each piece  $d^5$  is also provided with a small brass plug  $d^{10}$ , which prevents contact of said end with the core of the magnet. These soft-iron pieces on the opposite ends of the armatures are alternately attracted to oscillate the valve cylinder or stem and reduce the supply of gas to a minimum or increase it to its full extent by the electromagnets C C, so mounted in the casing as to exert a direct pull upon their respective armatures  $d^5$   $d^5$ . Each of these magnets comprises a spool  $c$  and a core  $c'$ , the former being wound upon the latter and the latter being screwed into the casing until they project into the desired proximity to the opposite ends of the said armature, so as to regulate the movement of the same and cut off more or less gas as desired. The upper portion  $a'$  of the casing is in the form of a cap for the chamber  $a^2$ , and is preferably screw-threaded, so as to screw into the same. This cap is provided with a screw-threaded

hollow burner attaching-nipple  $a^{11}$ , a supply-passage  $a^{12}$ , and a screw  $a^{13}$ , the latter to accommodate the upper end of the valve cylinder or stem as the latter is partially lifted from its seat by the pressure of the gas. It is this lifting of the valve from its seat that reduces the friction of operation to the lowest point and produces a valve susceptible to the slightest electrical influence.

10 In the form of my invention illustrated in Fig. 4 the armature of my valve is formed all of one piece of soft iron. Otherwise the construction and operation is substantially as heretofore described. In setting the device up the two electromagnets are connected to independent circuits, so that either one or the other may be operated at the will of the operator. When one is operated, the valve is oscillated in one direction, turning up the gas. 20 While the other is operated, the valve is oscillated in the opposite direction, turning the gas down to its lowest point and leaving only the usual pilot-flame burning. The switch or buttons for operating the circuits may be located in any desired position most convenient for operation. I do not care to limit myself to this valve operating in a vertical position, as it may be equally well employed in such places as where it is necessary for it to be placed horizontally. The cylinder, with its cut-away portion, could also extend up with the armature at its lower end with equal facility and exactness of operation. This device is designed particularly for use with 35 Welsbach burners, as the mantles are thereby not subjected to the shock incidental to other methods of ignition. As has before been mentioned, the upward pressure of the gas upon the valve partially lifts it from its seat and thus reduces the friction to a minimum. 40

It will be observed from the above description that the cap covering the valve-chamber is removable without in any way disturbing the valve or the magnets and wiring, said cap being entirely free of the same. After the 45 cap is removed the valve can be lifted out bodily to be cleaned and oiled without disturbing the magnets or the wiring.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a gas-regulating cock the combination with a casing, of an oscillating valve mounted

therein and adapted to control the gas-supply, an armature mounted upon said valve, 55 and electromagnets applied in the casing so as to exert their force upon the armature at a tangent to its direction of rotation or oscillation, substantially as described.

2. In a gas-regulating cock the combination 60 of a separable casing, an oscillating valve mounted therein and having a pendent cylindrical portion with a flattened side adapted to bring the valve-openings into communication with each other, and electromagnets for 65 oscillating or partially rotating said valve either in one direction or the other, substantially as described.

3. In a gas-regulating cock the combination of a casing, a valve mounted therein and comprising a vertical cylinder having a flattened 70 side adapted to bring the valve-openings into communication, and an armature on said cylinder, and electromagnets applied in the casing so as to exert their force upon the armature at a tangent to its direction of rotation 75 or oscillation, substantially as described.

4. In a gas-regulating cock the combination of a casing having a hollow chamber, a vertical recess, an inlet-groove formed in said recess, 80 and a passage from said recess to said chamber, a rotary or oscillating valve mounted in said recess and provided with a flattened side to bring the passage and inlet-groove into communication either more or less, an 85 armature on said valve and electromagnets for operating said armature to turn the valve either one way or the other, substantially as described.

5. In a gas-regulating cock the combination 90 of a casing comprising two separable parts, one of the parts being provided with a hollow chamber communicating with the gas-supply, a valve in said chamber for regulating the supply, and provided with an armature, elec- 95 tromagnets for actuating the valve, the other member of the casing being adapted to be removed from the lower member without breaking the connections or disturbing the magnets substantially as described. 100

In testimony whereof I hereunto affix my signature in presence of two witnesses.

FRANK W. ACKERMAN.

Witnesses:

E. T. FENWICK,  
JOHN L. FLETCHER.