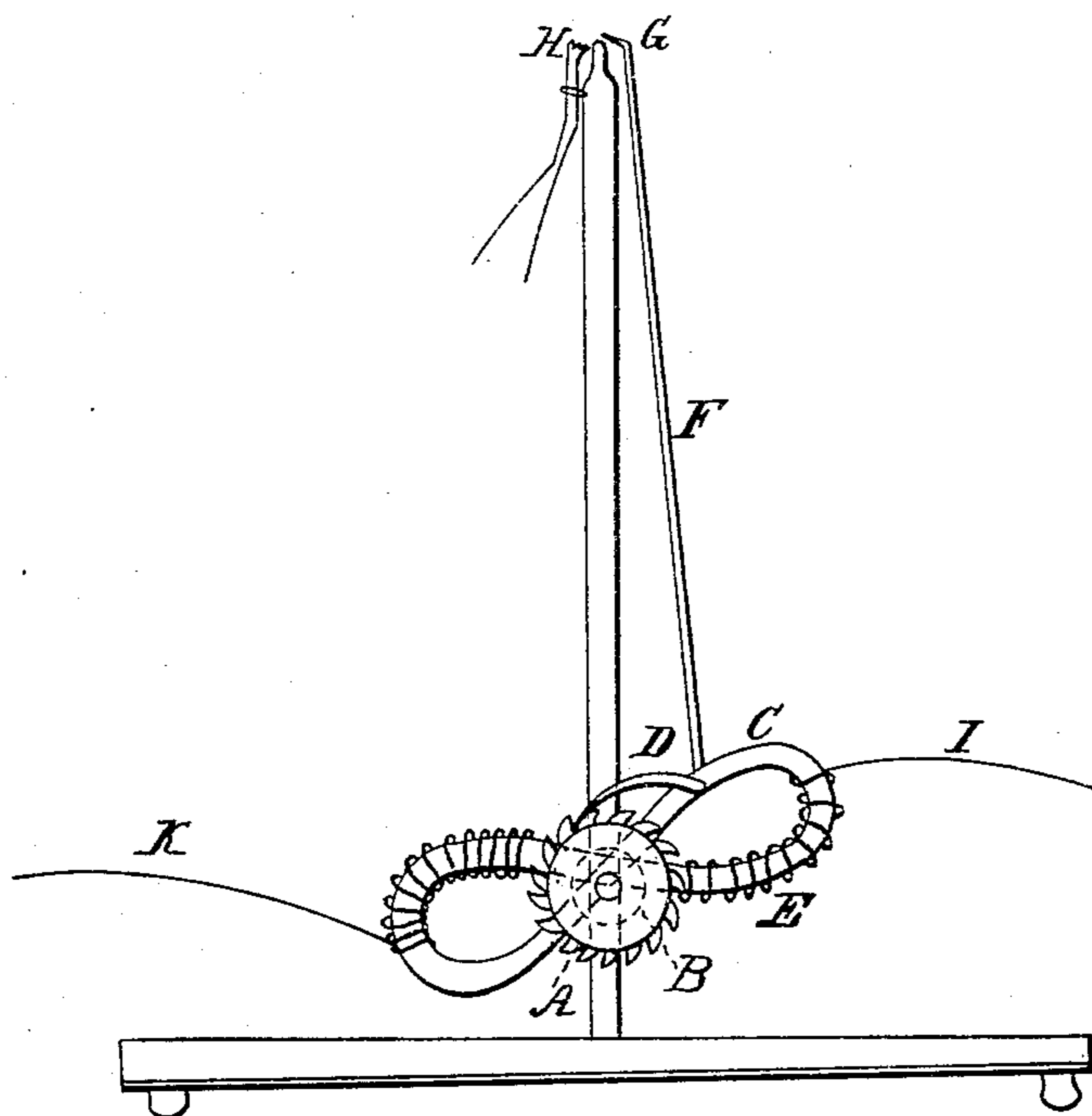


C. W. SMITH.
Electric Gas Lighter.

No. 20,305.

Patented May 18, 1858.



UNITED STATES PATENT OFFICE.

CHAS. W. SMITH, OF EVANS, NEW YORK.

IMPROVED DEVICE FOR REGULATING BY ELECTRICITY THE ISSUE OF GAS FROM BURNERS.

Specification forming part of Letters Patent No. 20,305, dated May 18, 1858.

To all whom it may concern:

Be it known that I, CHARLES W. SMITH, of the town of Evans, county of Erie, and State of New York, have invented a new and Improved Method of Lighting Gas by Electricity; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference thereon.

The nature of my invention consists, first, in the operation of the supply-cock of a gas-burner or series of burners, by means of the attraction or repulsion between the poles of a fixed temporary magnet, and a vibrating permanent magnet, having its center of vibration in the axis of the supply-cock, actuating it through the intervention of a pawl borne upon the vibrating magnet and a ratchet fixed upon the axis of the supply-cock; secondly, in deflecting the jet of gas upon an ignited platina coil, situated and fixed entirely without the jet by means of a thin slip of metal, or its equivalent, attached to a rod borne upon the vibrating magnet.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

I place upon the supply-cock A a ratchet, B, and also moving freely upon it a magnet, bent somewhat in the form of the letter S, this magnet carrying a pawl which catches the teeth of the ratchet. Another temporary or electro magnet bent in the form of a reversed S lies alongside of this magnet, and being fixed alternately attracts and repels it according to the direction of the current. As often as it is repelled the pawl catching in the ratchet will partially rotate it, and thus the gas may be partially turned on and shut off as often as desired; or, if preferred, the action of the current may be used only to repel the permanent magnet, and the reverse motion may be produced by making the two ends of the permanent magnet of unequal weight, in which case it will drop back as soon as the circuit is broken. The object of this arrangement is to obtain an increased force to operate upon the supply-cock, which is sometimes turned with difficulty, and at the same time to keep the

supply of gas and consequent size of the flame under the control of the operator.

The repulsion between temporary and permanent magnets, and also the use of a pawl and ratchet to regulate the size of the flame, have both been separately employed in the arrangement patented in England by Lemuel Cooper; but no one, so far as I am aware, has heretofore combined the two arrangements, so as to secure the advantages of both.

I also place upon the vibrating magnet a small rod, F, bearing upon its upper extremity a thin strip of metal, G, so placed as to be thrown in a jet of gas by the vibration of the magnet in such a way as to deflect a portion of the jet upon the coil H, or its equivalent, heated by the action of the galvanic current, and permanently fixed entirely without the flame, thus igniting the jet.

I am aware that A. Wilson, of Boston, Massachusetts, has employed an arrangement by which the coil itself is thrown in the jet; but my arrangement is superior, because it allows the delicate platina coil to be permanently fixed out of the way of injury.

Having thus described my invention, I wish it to be understood that I do not claim the use of the attraction and repulsion of temporary and permanent magnets to obtain an increased force for actuating the supply-cock; neither do I claim the use of a pawl and ratchet or their equivalents, for the purpose of controlling the supply of gas and consequently the size of the flame; but

I claim as my invention—

1. The combination and use of a permanent and temporary magnet, or of two temporary magnets, one fixed and one vibratory, with a pawl and ratchet situated, substantially as described, upon the supply-cock of a gas-burner, or series of burners.

2. The use of a thin slip of metal, or its equivalent, to deflect a portion of the jet of gas upon an ignited platina coil, situated entirely without the jet, as described.

CHAS. W. SMITH.

Witnesses:

EDM. F. BROWN,
J. Q. ADAMS.