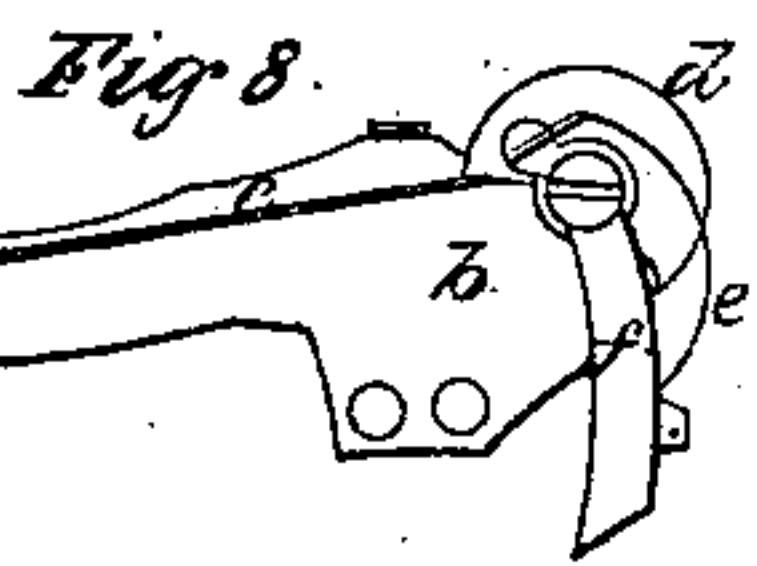
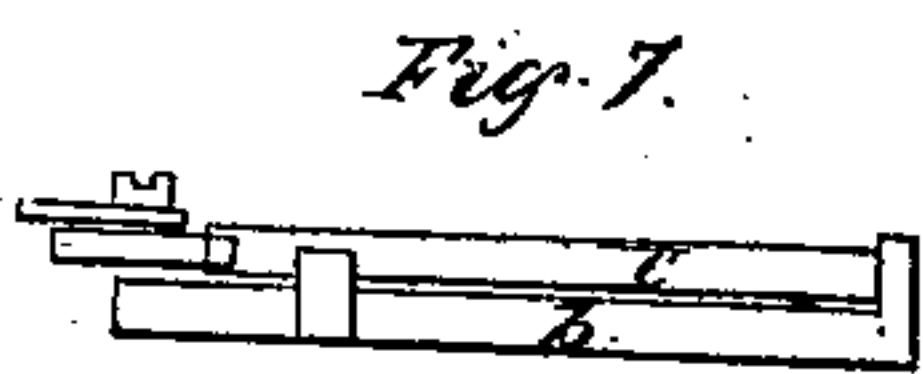
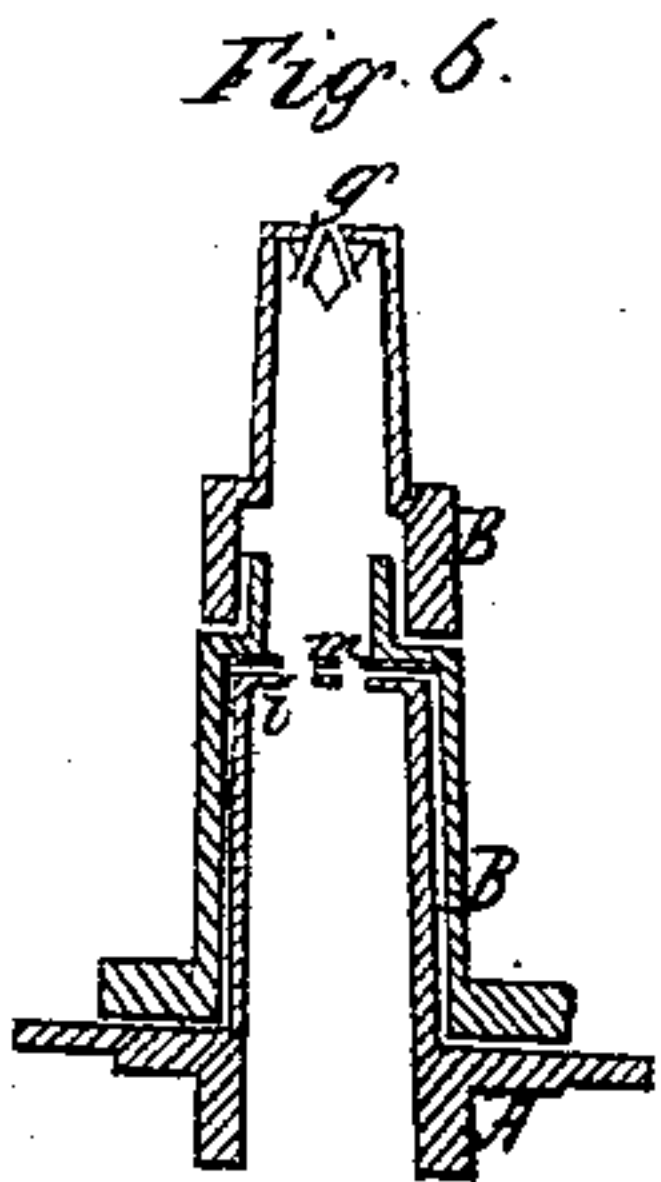
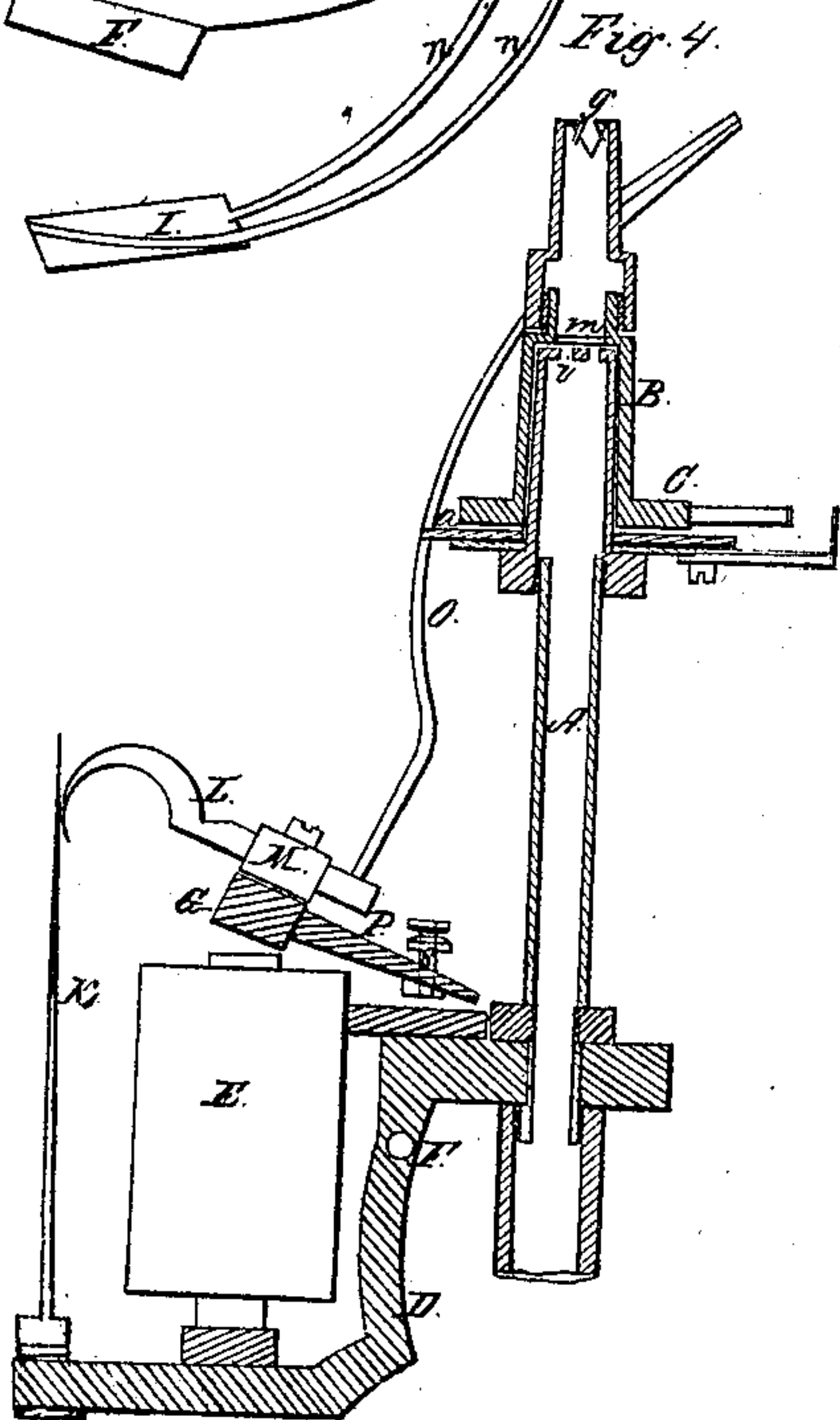
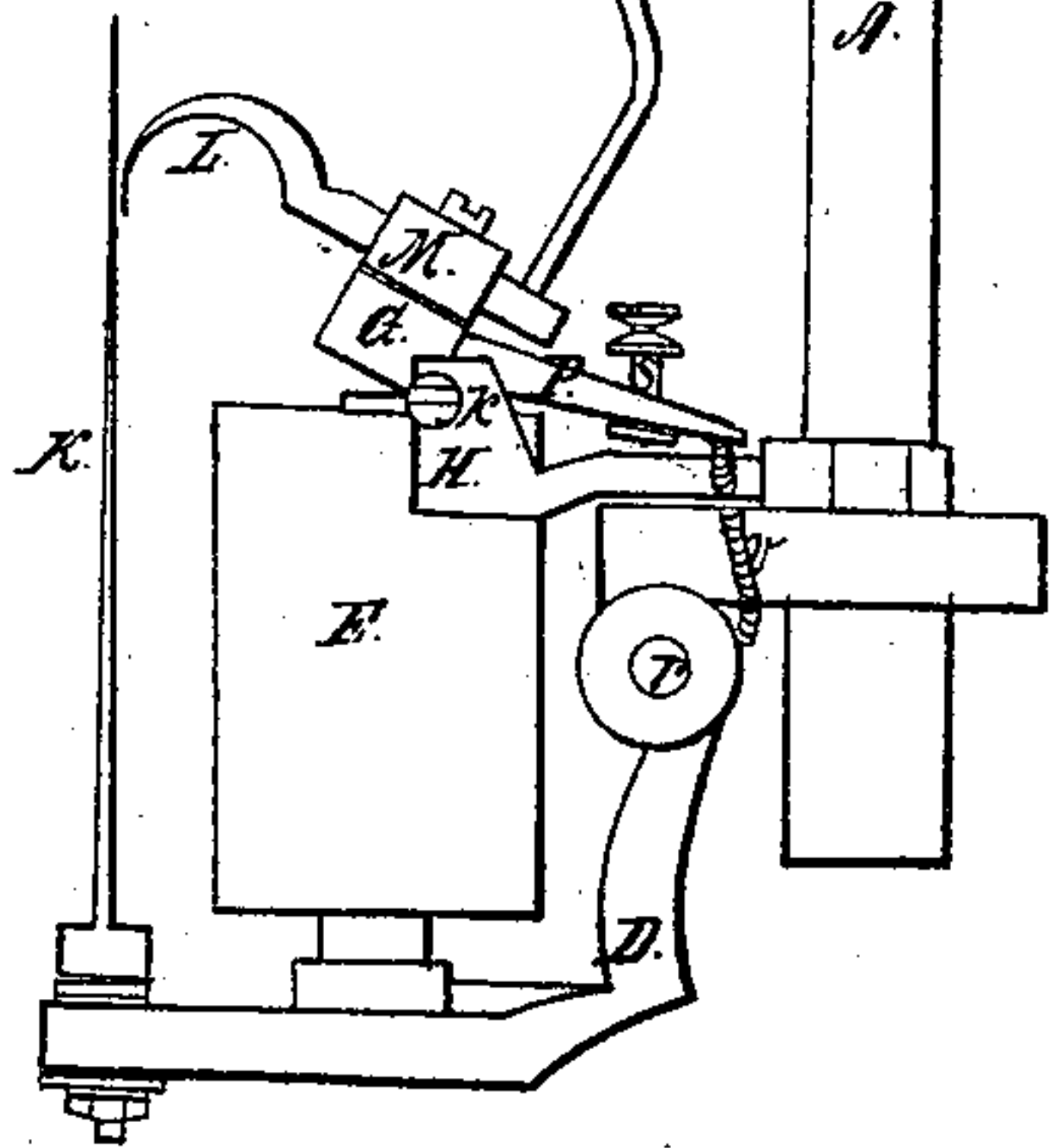
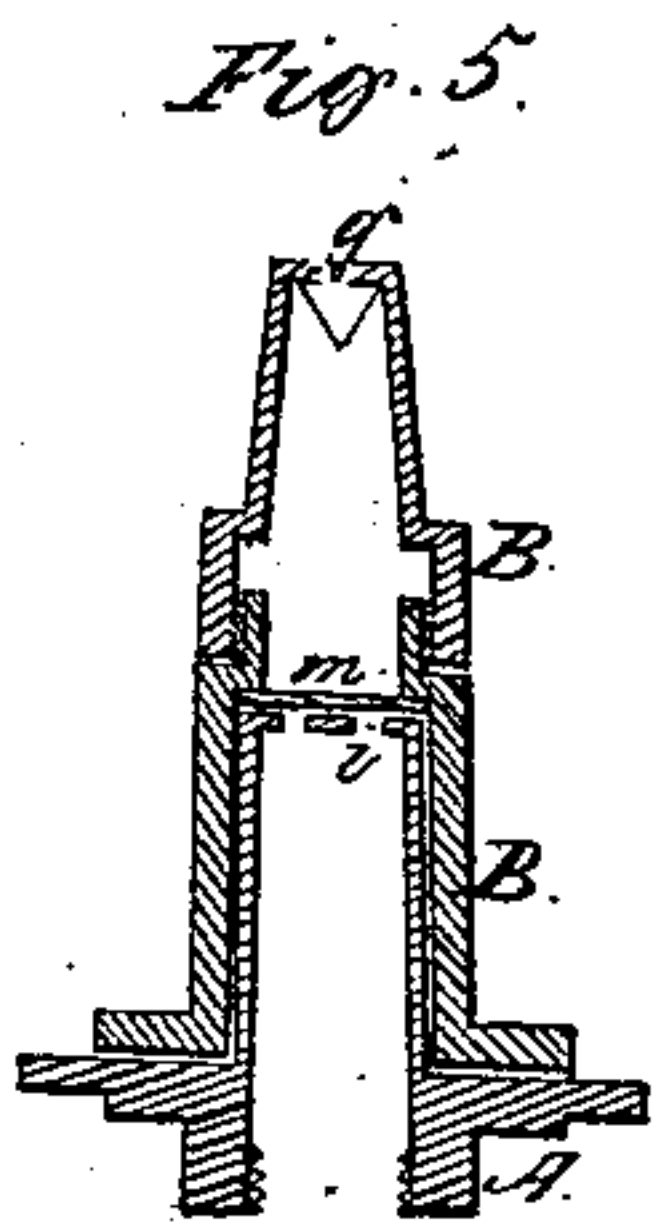
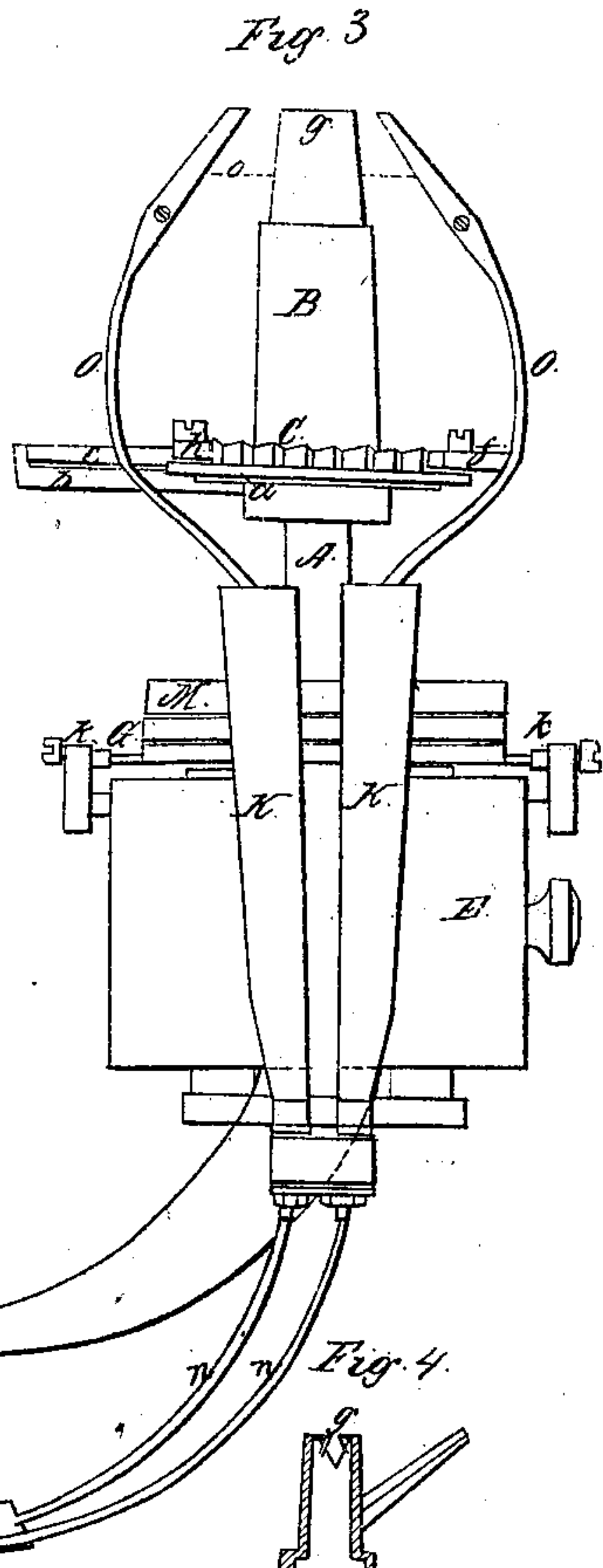
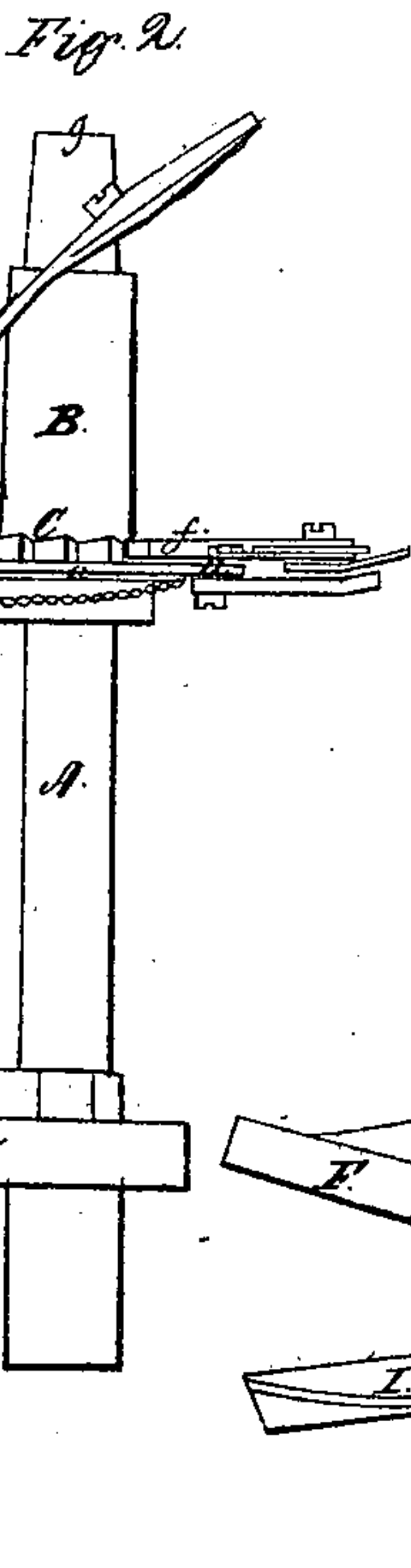
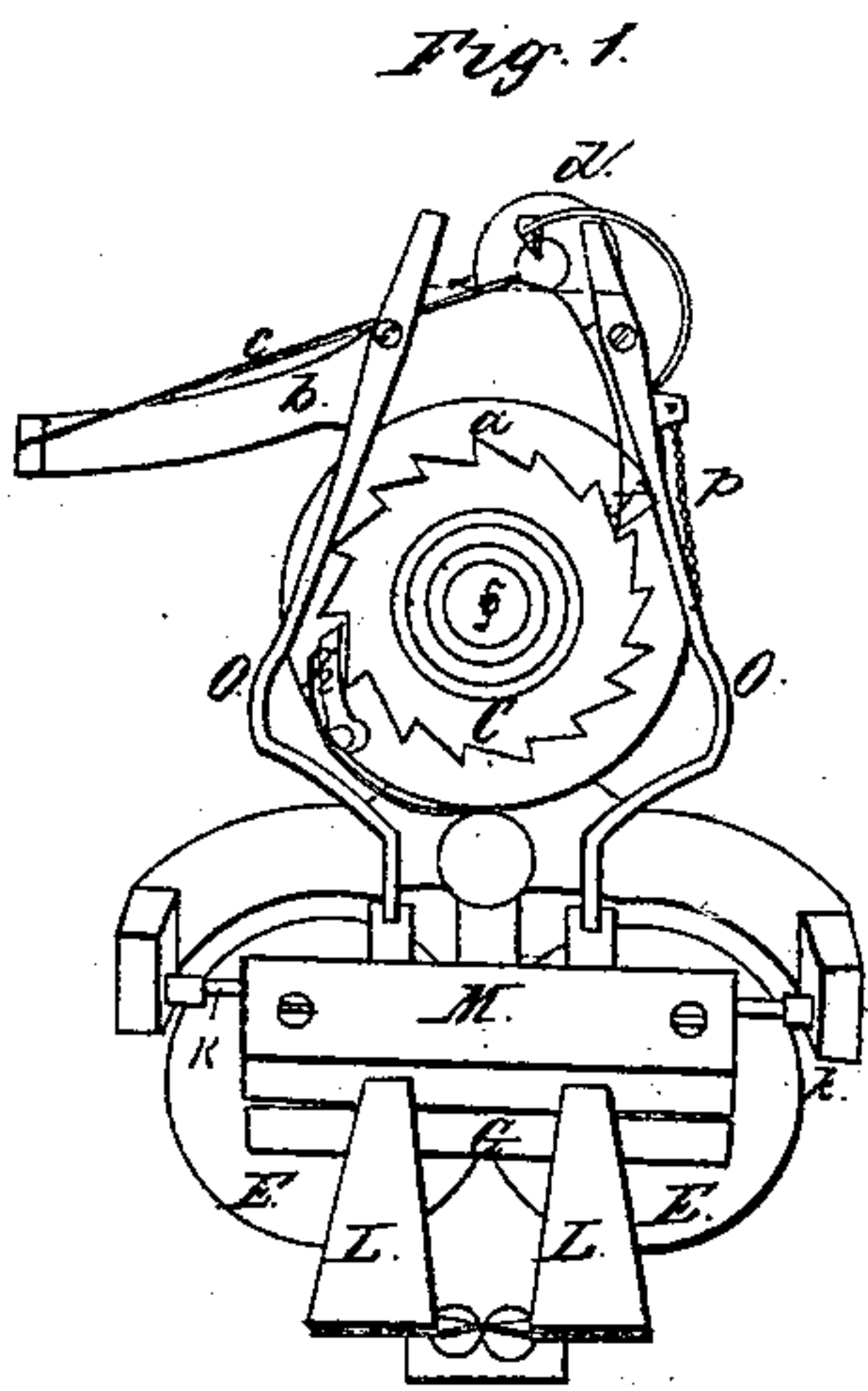


A. WILSON.
LIGHTING LAMPS BY GALVANIC CURRENT.
No. 19,460. Patented Feb. 23, 1858.



UNITED STATES PATENT OFFICE.

ARCHELAUS WILSON, OF BOSTON, MASSACHUSETTS.

IMPROVED METHOD OF LIGHTING GAS BY ELECTRO-GALVANIC BATTERIES.

Specification forming part of Letters Patent No. 19,460, dated February 23, 1858.

To all whom it may concern:

Be it known that I, ARCHELAUS WILSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Apparatus for Lighting Gas and Other Lamps by Means of Electricity or the Current from a Galvanic Battery, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan of my improved apparatus. Fig. 2 is a side elevation; Fig. 3, a front elevation; Fig. 4, a vertical section through the same; Figs. 5, 6, 7, and 8, details, to be referred to.

The efforts heretofore made to light gas or other lamps by means of a current of electricity, the gas being ignited by passing the current through or along a conducting-wire placed immediately over the jet issuing from the burner, have, so far as I am informed, been unsuccessful owing to this fact, among others, that the wires, being permanently held in the flame, will soon burn out or corrode.

The object of my invention is to light a gas or other burner for the purpose of illumination by a current of electricity in such a manner that after ignition has been produced the conductor of electricity shall not be exposed to the injurious effects of the flame; and to this end my said invention consists in effecting this by combining with a gas or other burner or burners a vibrating electric conductor which shall pass in close proximity with gas to be ignited, and after producing ignition pass off beyond reach of the flame; and my invention consists in the employment of the motive power of an electro-magnet for the purpose of bringing the electric conductor up to the burner or carrying it out of the flame.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried out the same.

In the drawings, A is the gas-pipe, to which is attached near its upper end a disk, *a*, to one side of which is fastened a block, *b*, Fig. 8. To this block is secured by one end a long spring, *c*, that carries at its other end a block, *d*. To this block *d* is pivoted a pawl, *f*, with its spring *e*. The end of the pipe A is closed, and its extremity is perforated with two small holes, *i*, Figs. 5 and 6, similar to those in an ordinary

burner. Over the end of the pipe A is fitted a cap or tip, B, formed, as shown in the drawings, with a plate at *m*, which rests on the end of the pipe A, and is perforated with two holes corresponding to the holes *i*. The tip is finished as usual at *g*, where the gas is burned. To the lower part of this cap B is attached a ratchet-wheel, C, which rests on the disk *a*. A retaining-pawl, *h*, is pivoted to the disk *a* and engages with the ratchet C, which is caused to revolve by the vibration of the block *d* on the end of the spring *c*, the pawl *f* engaging with this ratchet. The manner in which the block *d* is vibrated will be presently explained.

To the pipe A, a short distance below the disk *a*, is attached a bracket, D, which supports the electro-magnets E, the wires from which lead to a suitable battery, F, so that when the circuit is completed by means of a key-board or other suitable arrangement the coils E become magnetic and attract the armature G, pivoted immediately above them, at *k*, to an arm, H, attached to the upper part of the bracket D. The two poles of another galvanic battery, I, are connected by wires *n* to two thin elastic metal strips, K. Two contact-points, L, are secured on a block, M, of some non-conducting substance, which is attached to the armature G. From these points L rise the bent rods O, that extend up alongside of the burner and are furnished at their upper ends with jaws or nippers, in which is secured at a proper height a thin platina wire, (represented by a red line, *o*, Fig. 3,) which extends from one to the other. A cord or chain, *p*, connects one of the rods O to the pawl *f*, so that as the armature G is drawn down and the rods O are vibrated the block *d* is drawn forward and the pawl *f* feeds around the ratchet C. This turns the cap B for the purpose of bringing the holes in the plate *m* into or out of line with the openings *i* in the end of the pipe A, and thus either turning on or shutting off the jet of gas.

The armature G is drawn up into the position shown in the drawings by a spring, *q*, Fig. 2, attached to an arm, P, projecting back from the armature, and to a pin, *r*, projecting from the bracket D. A pin, S, with screw-nuts, rises from the arms H, where they are attached to the bracket through a slot in the arm P. By adjusting these nuts the vibration of the armature on its pivots *k* is regulated so

as to bring the platina wire *o* directly over the apertures in the tip at *g*.

Operation: The circuit of the battery F being closed, the coils E are rendered magnetic and the armature G is drawn down toward them as far as allowed by the regulating-nuts on the pin S. This vibrates the rods O and brings the thin platina wire *o* immediately over the openings in the tip *g*. At the same time the points L connected with the rods O are brought into contact with the elastic strips K, which are connected with the two poles of the battery I, and the circuit of this battery is closed, by which the wire *o* becomes heated and ignites the gas as it escapes from the tip. As the rods O are vibrated the block *d* is drawn forward, and the pawl *f* causes the ratchet C to be rotated one notch each time the circuit of the battery F is completed. This ratchet-wheel and pawl may be so arranged that a single vibration of the rods O will be sufficient to open the gas-cock, or they may be arranged as in the drawings, requiring several vibrations of the rods O to bring the openings in the end of the pipe A to coincide with those in the cap, when the gas will issue from the tip *g* and be immediately ignited by the hot platina wire *o*. The latter arrangement is the one which I prefer, as it does not require so great a vibration of the rods. The instant the circuit is broken the spring *q* draws down the arm P and throws the rods O into the position shown in the drawings, taking the platina wire out of contact with the jet of ignited gas, and thus prevents it from being burned away, as it would be liable to if left exposed to the flame from the burner.

I have heretofore spoken only of applying this apparatus to the lighting of gas-lamps; but it is also applicable to oil and other lamps, particularly in any situation where the lamp or burner is in a position not easily accessible; and although I have described my said invention as applied by means of two batteries—one to supply the current to the igniting-conductor, and the other to supply the electro-magnet for giving the required motion to the lighting-conductor to carry it away from the flame after ignition has been produced, and to operate the valve apparatus for letting on and shutting off the gas—I have only done this because, in my judgment, it is the best mode of application of my said invention with which I am now acquainted; but I do not wish to be understood as limiting my claim of invention to such mode of application, as it will be ob-

vious that the same battery may be employed for all three of these purposes by having the same current pass through the coils surrounding the magnet and thence to the lighting-conductor, so that the one current will supply the motive power for letting on and shutting off the gas and for vibrating the lighting-conductor, and for supplying the conductor to effect the required ignition; and it will be equally obvious that a separate battery may be employed for each of these operations by having a second electro-magnet to operate an armature connected with the apparatus for letting on and shutting off the gas; or the one current which supplies the vibrating conductor may be so employed as merely to operate a detent or equivalent device to start and stop a mechanism actuated by a weight, spring, or other motor to give the required movement or movements for letting on the gas and then removing the conductor or for shutting off the gas; or the current of electricity may be simply employed to supply the lighting-conductor and the required movements for letting on and shutting off the gas and removing the conductor from the flame after ignition has been produced by an independent mechanism.

It is also evident that, in lieu of bringing up the electric conductor to ignite the gas by means of an electro-magnet and carrying it back by means of a spring, the conductor may be brought up by a spring and carried back by the magnet. This method will be adopted when the apparatus is worked with a closed circuit.

Instead of employing an electro-magnet to each burner, one magnet may be made to operate the electric conductors of several burners without departing from the principle of my invention.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. Combining with a gas or other burner a vibrating electric conductor, substantially as and for the purpose specified, so that after producing ignition the conductor shall be removed from the flame, substantially as described.

2. The employment of the motive power of an electro-magnet with the combined vibrating electric conductor and burner, substantially as described.

ARCHELAUS WILSON.

In presence of—

E. A. ANDREWS,
I. H. WILSON.