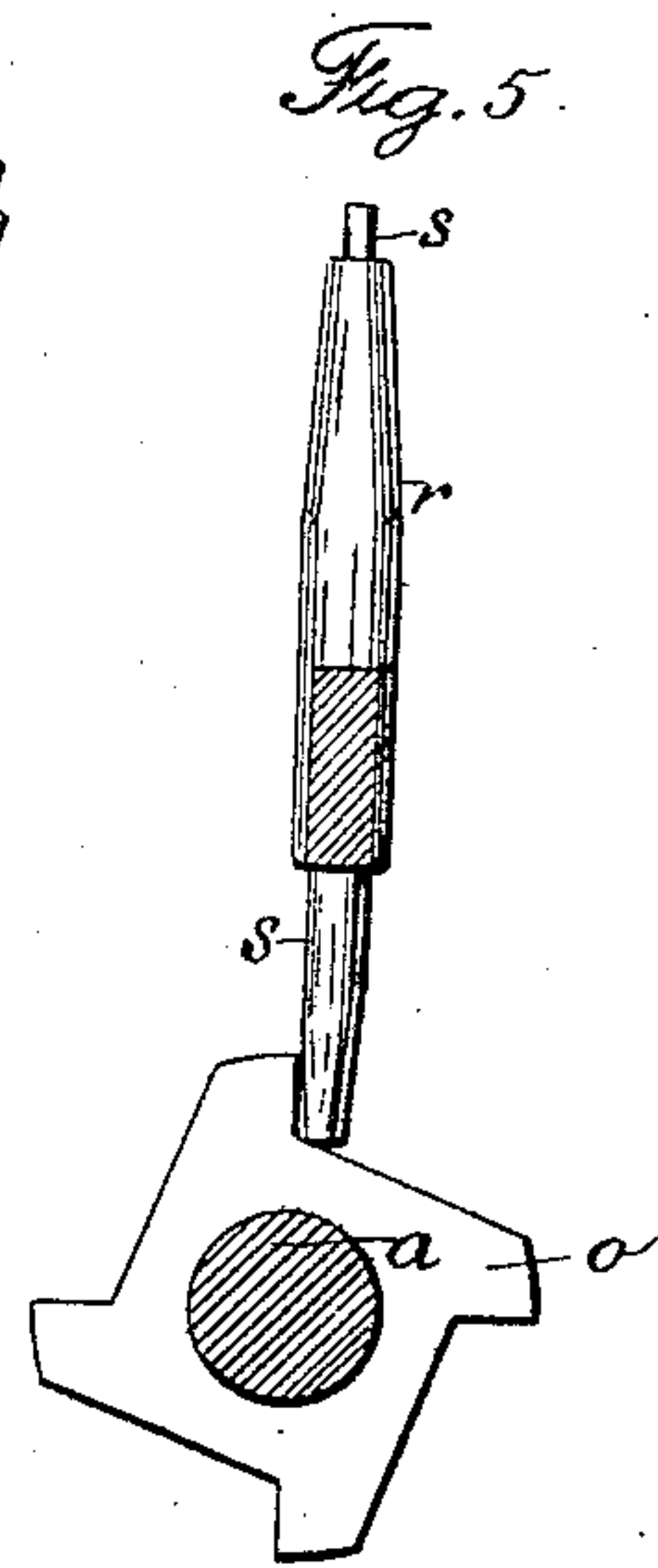
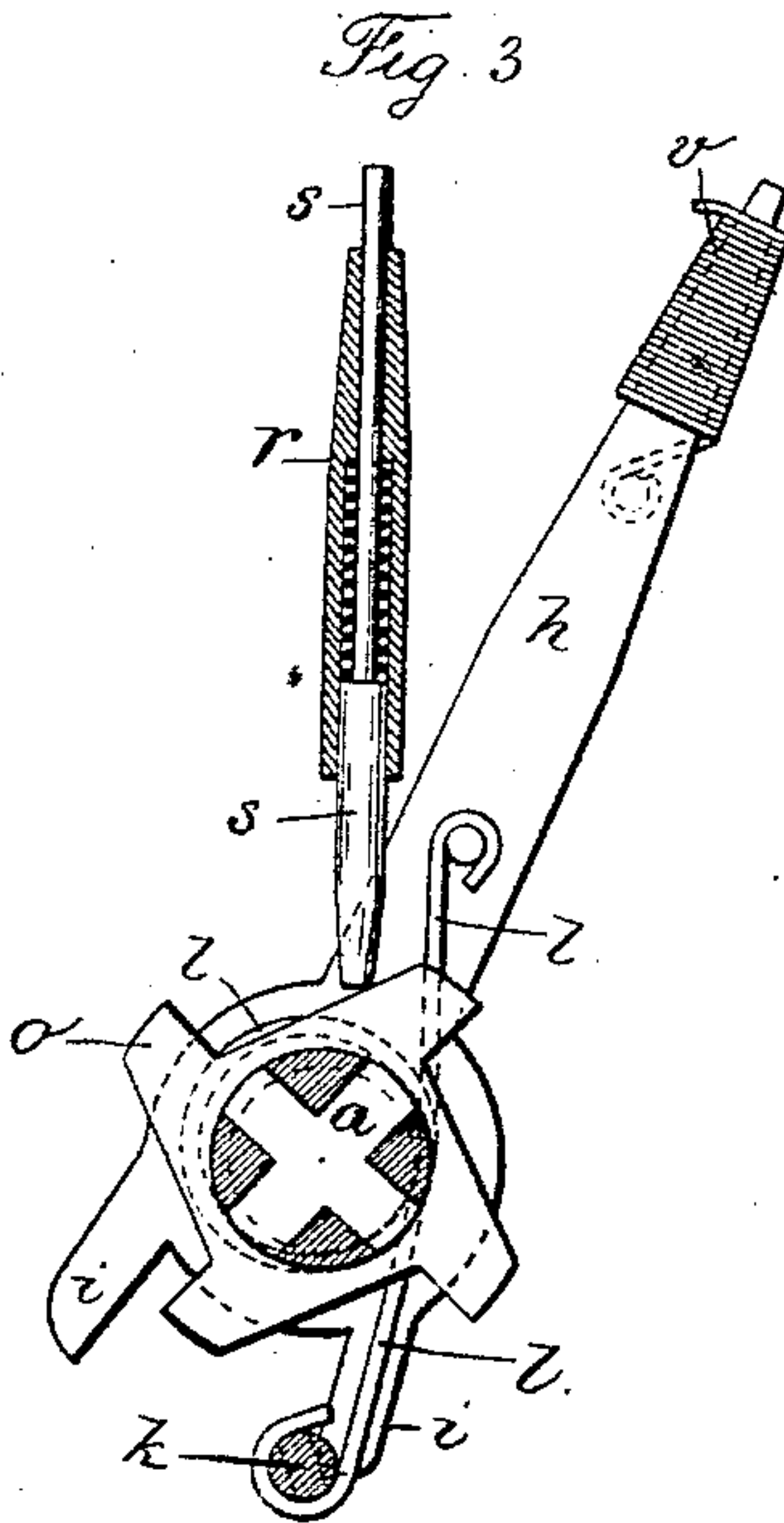
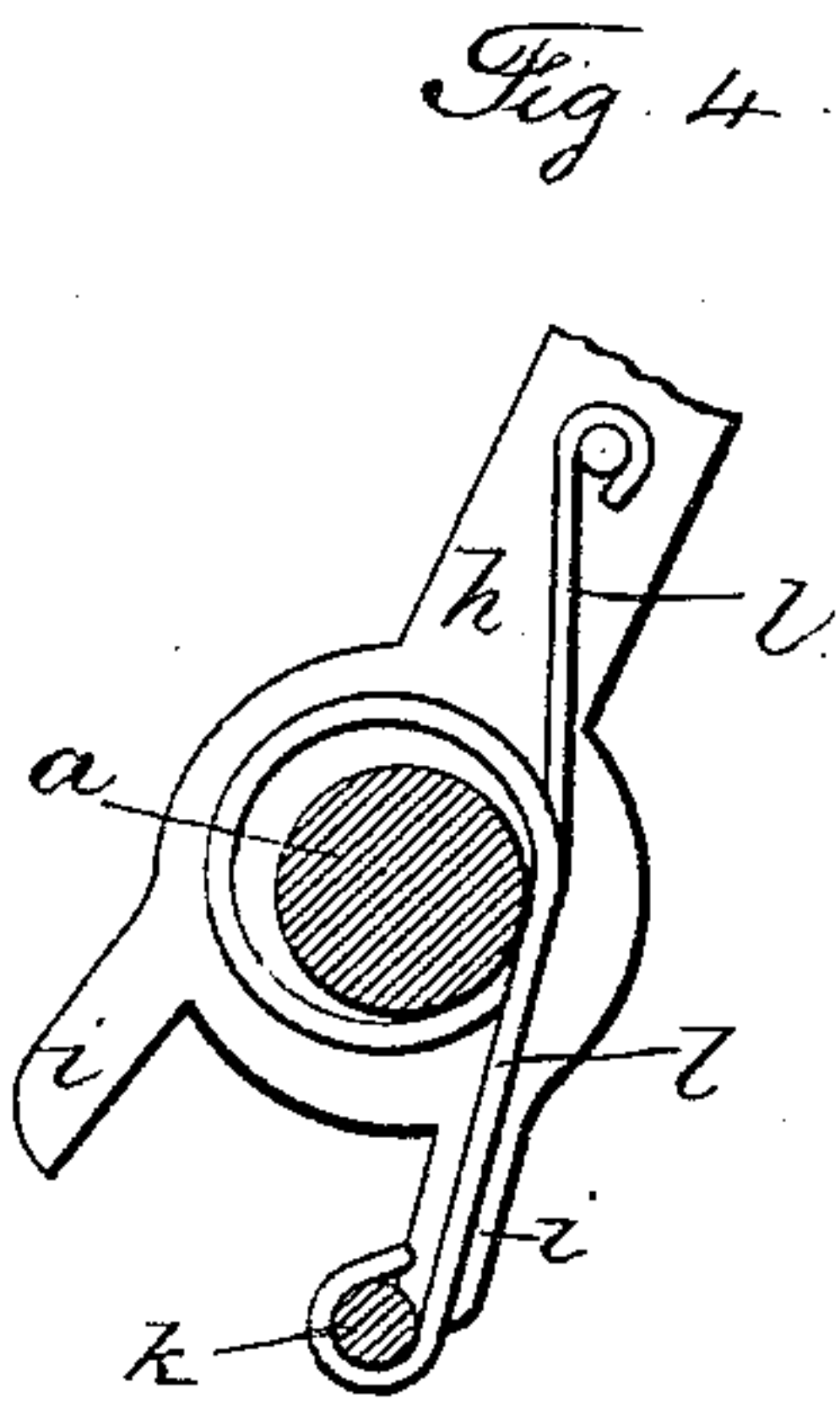
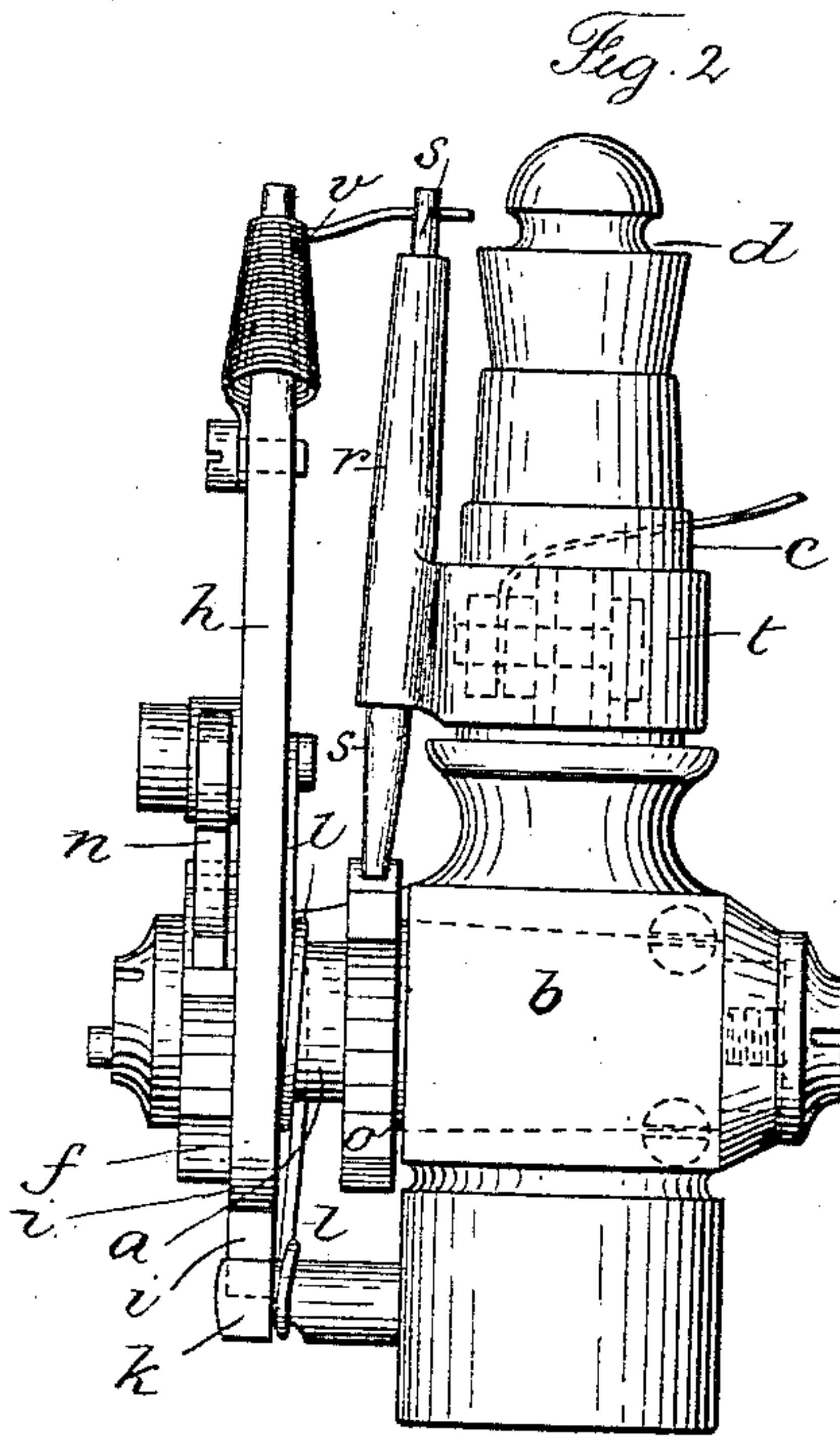
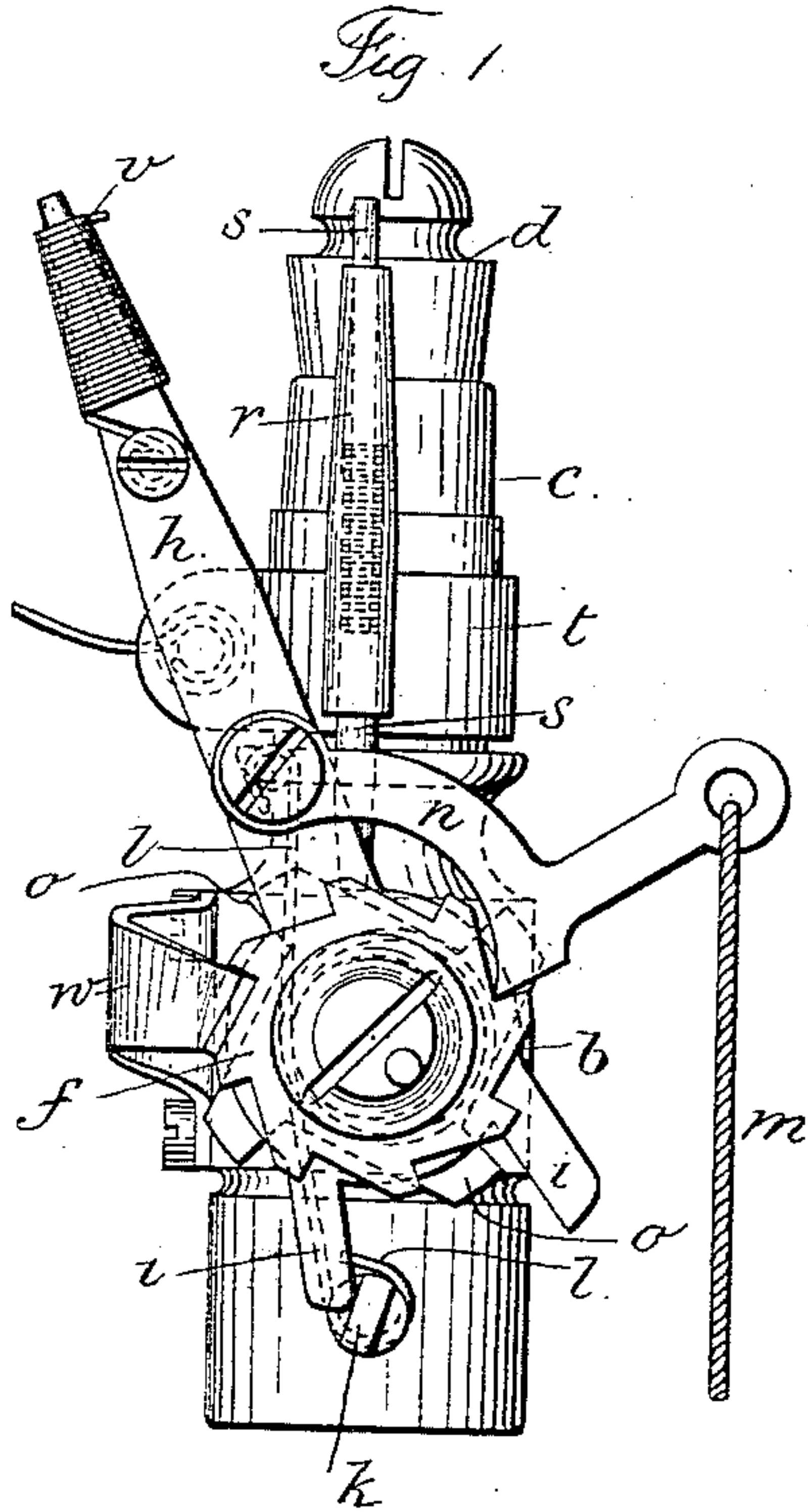


T. H. RHODES.
ELECTRIC GAS LIGHTING.

No. 277,610.

Patented May 15, 1883.



Witnesses:
J. Haib
Chas. H. Smith

Inventor:
Thomas H. Rhodes
per Lemuel W. Serrell atty.

UNITED STATES PATENT OFFICE.

THOMAS H. RHODES, OF BROOKLYN, NEW YORK.

ELECTRIC GAS-LIGHTING.

SPECIFICATION forming part of Letters Patent No. 277,610, dated May 15, 1883.

Application filed January 2, 1883. (No model.)

To all whom it may concern:

Be it known that I, THOMAS H. RHODES, of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Electric Gas-Lighting, of which the following is a specification.

The object of this invention is to remove the electrodes or spark-points from contact with the gas-flame, so that said points will not be injured, and also to lessen the cost of the parts and simplify the construction. I turn the gas-cock by the progressive movement of a ratchet-wheel and pawl. The pawl becomes the lever for turning the cock, and also for moving an arm that carries a spring-electrode. I use an insulated lifter that raises a sliding electrode as the gas is shut off, and as the gas is turned on and the swinging electrode is moved across the path of the sliding electrode the spark is drawn and the sliding electrode drops out of the way of the gas-flame, and the swinging electrode is turned back to its place. An important function of the lifter and sliding electrode is to prevent the circuit remaining closed at the point of contact near the tip of the burner, thereby avoiding a waste of the battery. As soon as the spark is made by breaking contact, the sliding electrode drops down, and the swinging electrode, in its return movement, passes over it without touching. When the gas is extinguished no contact is made in either forward or backward movements. The pendent gas-lighters now in use make contact at the tip of the burner each time the movable electrode is vibrated, which causes unnecessary expenditure of battery-power, and increases the liability fourfold of the circuit remaining closed accidentally. This fault is entirely overcome in the present invention by bringing the electrodes together and drawing the spark only once in four movements of the swinging electrode as it is carried back and forth near the sliding electrode.

In the drawings, Figure 1 is a side view of the burner and lighting device. Fig. 2 is an elevation at right angles to Fig. 1. Fig. 3 is a diagram of the lever-arm, sliding electrode, and gasways in the cock, seen from the side next to the burner. Fig. 4 shows the lower end of the lever-arm and its spring, and Fig. 5 represents the sliding electrode and its lifter.

I find it preferable to use a four-way cock, so that there will be eight back and forth movements each revolution of the cock—four to turn on the gas and light the same, and four intermediate to turn off the gas and extinguish the light. I do not, however, limit myself in this particular, as the cock may have three or more ways, the other parts being constructed to conform thereto.

The plug *a*, having four ways through it, is in the barrel *b*, that is provided with a socket for screwing it to the gas-pipe, and above the cock are the burner-tube *c* and tip *d*.

Upon the outer end of the cock *a* there is a ratchet-wheel, *f*, with eight teeth, and behind it is a lever-arm, *h*, having an eye that loosely surrounds the plug *a*, close behind the ratchet-wheel; and there are two legs, *i i*, upon the lever, and a stop, *k*, on the burner, for limiting the movement of the lever-arm *h*.

A spring, *l*, is attached at one end to the stud or stop *k* and coiled around the plug *a*, and the upper end is connected to the lever-arm *h*, and serves to throw the arm *h* back to its normal position at the left, as seen in Fig. 1.

Upon the arm *h* the pawl *n* is hinged, and its end acts upon the ratchet-wheel *f*, and there is an extension to the pawl, forming a lever, to which a pull cord or wire, *m*, is attached, so that on pulling such cord the pawl and lever-arm *h* are moved and the cock *a* turned one-eighth of a revolution, and then the parts are returned to their normal position by the spring.

Upon the plug of the cock there is an insulated lifter in the form of four cams or teeth, *o*, either of hard rubber or other insulating material or of metal insulated. This lifter acts at the lower end of the sliding electrode *s*, which is held by and slides in a tubular guide, *r*, upon a band, *t*, that is clamped around the burner-tube by a screw, there being a layer of insulating material between the band and the burner-tube *c*. The wire from the battery is attached to this insulated band *t*.

The electrode *v*, at the upper end of the arm *h*, is preferably in the form of a helix, with one end extending off as an arm toward the burner-tip, the other end fastened to the arm *h*. In the normal position the electrodes *s* and *v* are entirely out of the way of the gas-flame burning from the tip; but when the gas is

turned off by the partial rotation of the cock *a* the lifter *o* is also turned and partially lifts the sliding electrode *s*, and when the lever is again moved to turn on the gas the sliding electrode is still further lifted by the insulated lifter *o*, and its upper end is now high enough to arrest the movement of the outer end of the electrode *v* as it is swung by its arm *h*. The further movement of this arm *h* causes the spring of the electrode to be partially wound up, then the electrode to separate with a sudden spring, and the spark is drawn into the gas itself as it issues from the tip *d*, hence igniting such gas. The movement of the parts, as the cock is fully opened, causes the point of the lifter that had elevated the sliding electrode to pass from beneath it and allow said electrode to be thrown down out of the way of the flame by the action of a spring, and as the pull is released the parts assume their normal position by the spring *l*, throwing the lever *h* back and carrying the spring-electrode *s* to the position shown in Fig. 5. In this movement the electrodes do not come in contact with each other, neither do they touch, as the lever *h* is swung first one way and then the other in turning off the gas. The spring-pawl *w* prevents the cock turning back. It is to be understood that one wire of the circuit is connected with the insulated band *t* and the other to the gas pipe or fixture, and the current will not pass, except when the electrodes are in contact at

the spark-points, which contact is only once during the four movements of the lever *h*; hence there is no more battery-power used than is necessary for drawing the spark to light the gas, and there is little or no risk of the electrodes accidentally remaining in contact and consuming the battery unnecessarily. 35

I claim as my invention— 40

1. The combination, with a gas burner and cock, a swinging arm, and electrode, of a sliding electrode and means for moving the cock and swinging electrode simultaneously, and for raising and lowering the sliding electrode, substantially as specified. 45

2. The combination, with the gas burner and cock, of a sliding electrode and a lifter acting to raise the electrode, and a swinging electrode, substantially as set forth. 50

3. The combination, with the gas burner and cock, of mechanism for rotating the cock progressively, an electrode, a lifter for raising the same as the gas is turned off, an electrode that is moved when the gas is turned on and draws the spark, and means, substantially as specified, for moving the electrodes away from the flame, as set forth. 55

Signed by me this 29th day of December, A. D. 1882.

THOS. H. RHODES.

Witnesses:

GEO. T. PINCKNEY,
WILLIAM G. MOTT.