

(No Model.)

C. W. HOLTZER.
ELECTRIC GAS LIGHTER.

No. 364,760.

Patented June 14, 1887.

Fig. 1.

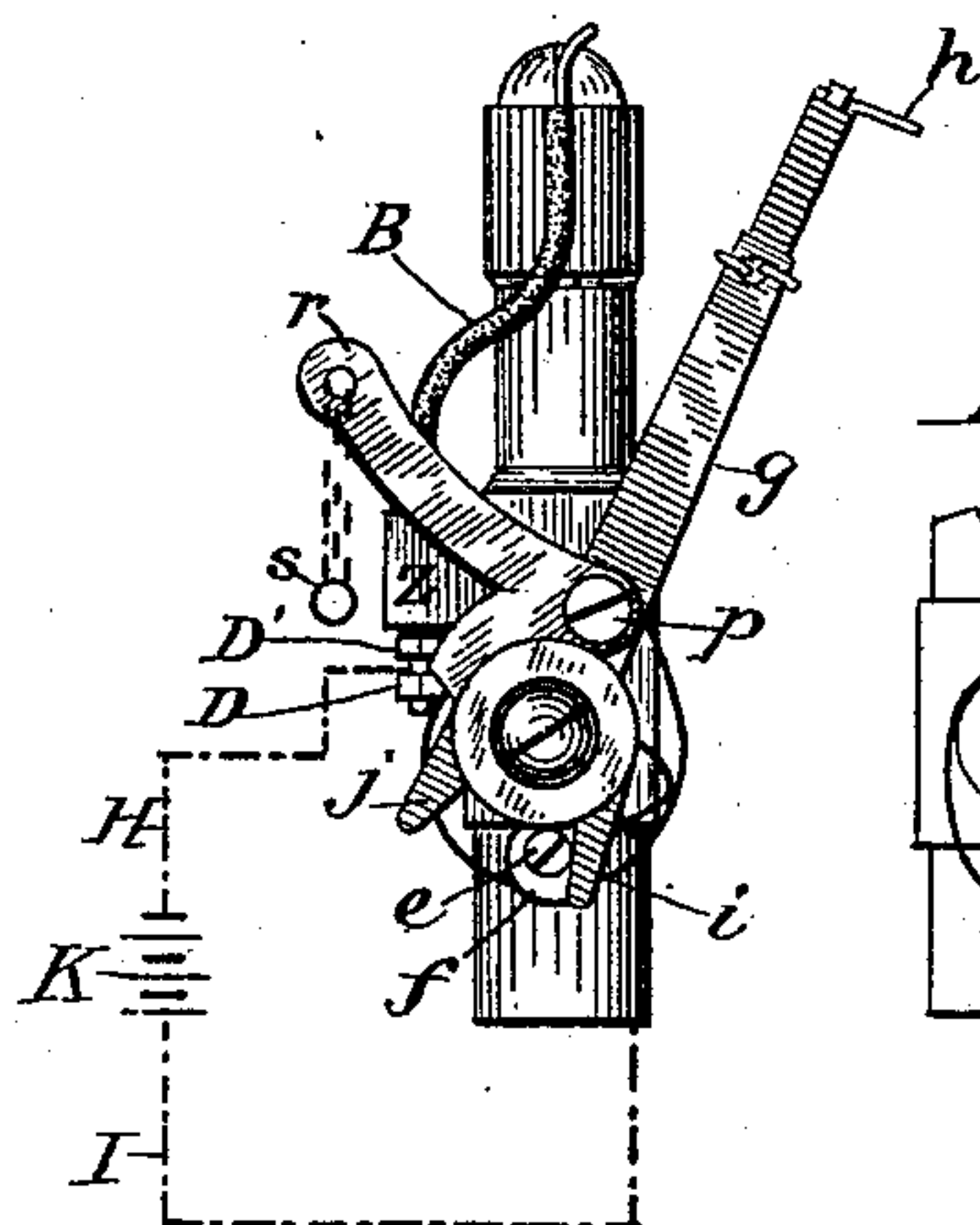


Fig. 10.

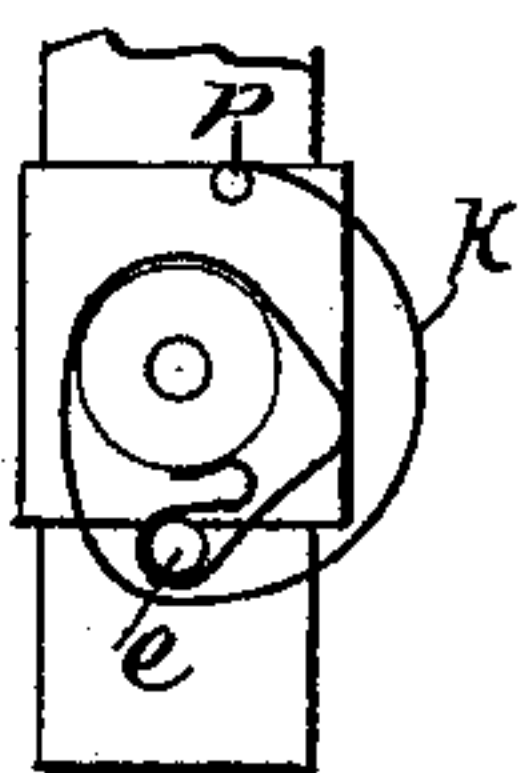


Fig. 2.

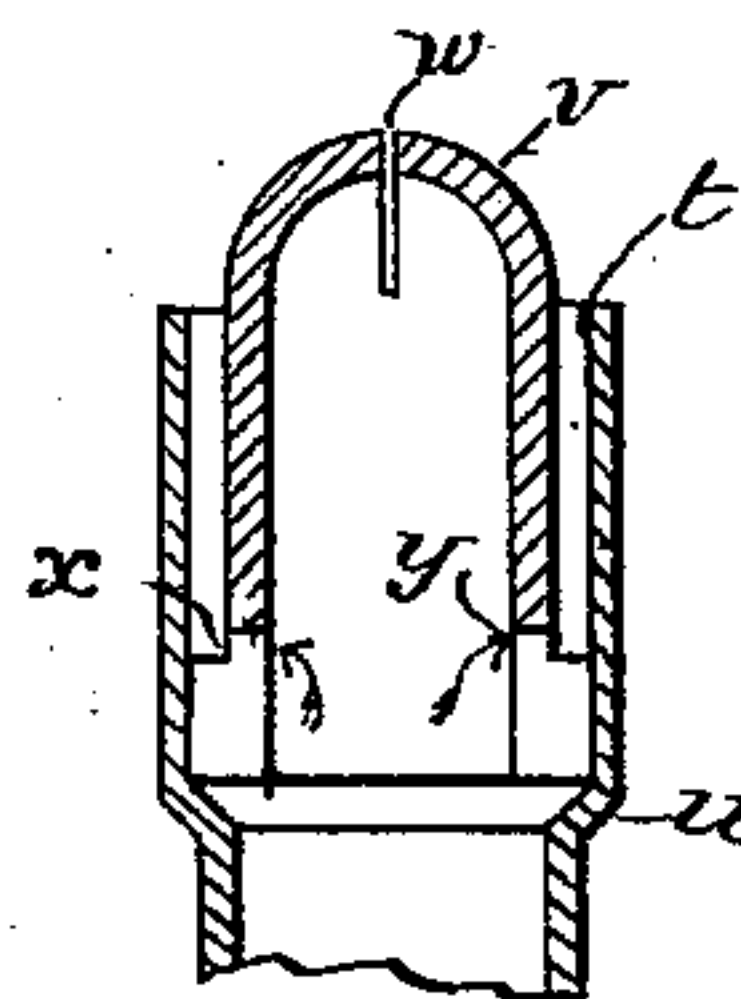


Fig. 4.

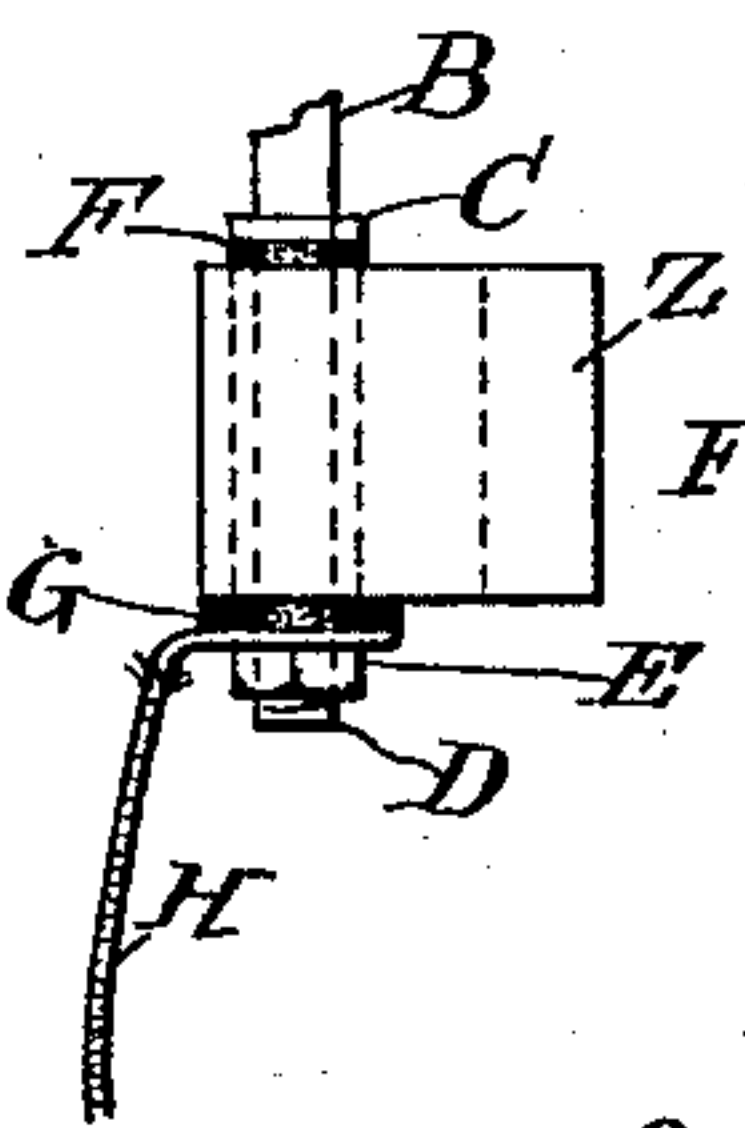
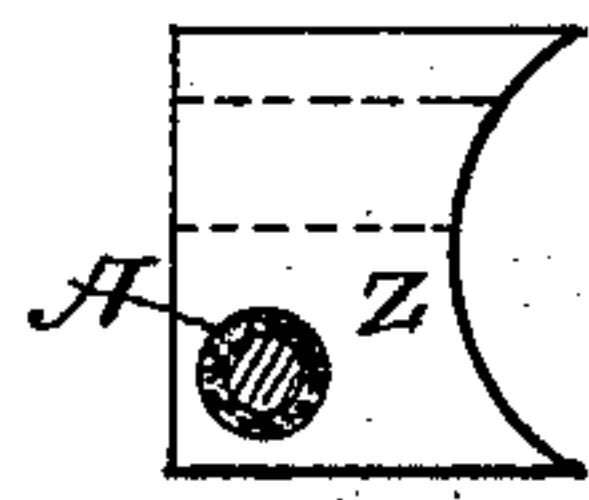


Fig. 5.

Fig. 3.

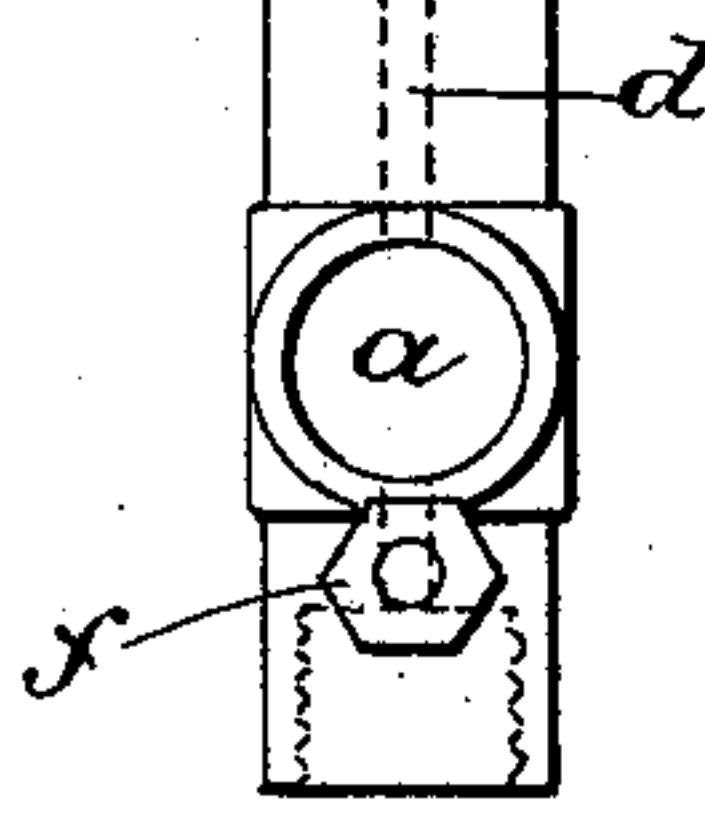


Fig. 11.

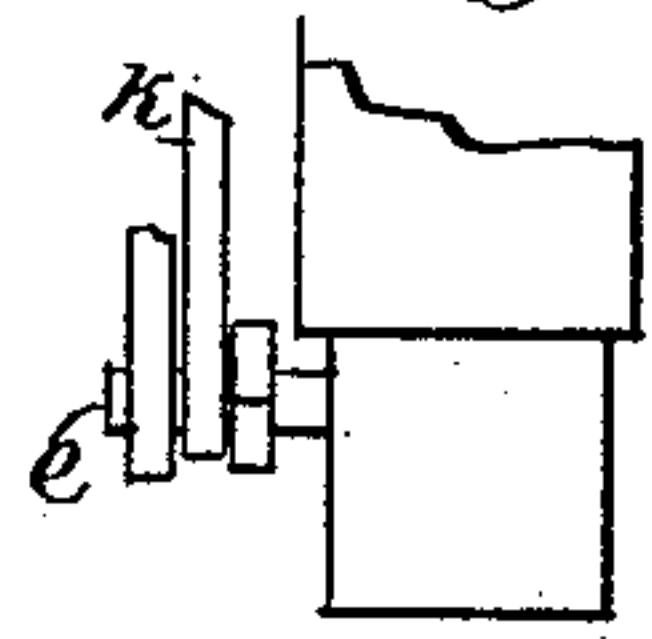


Fig. 9.

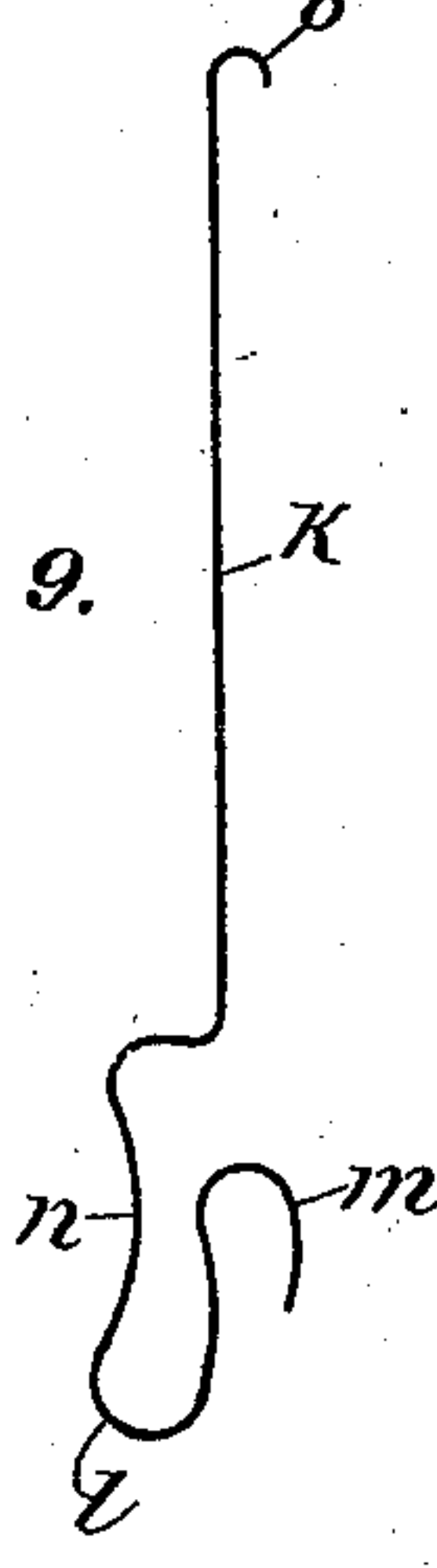


Fig. 6.

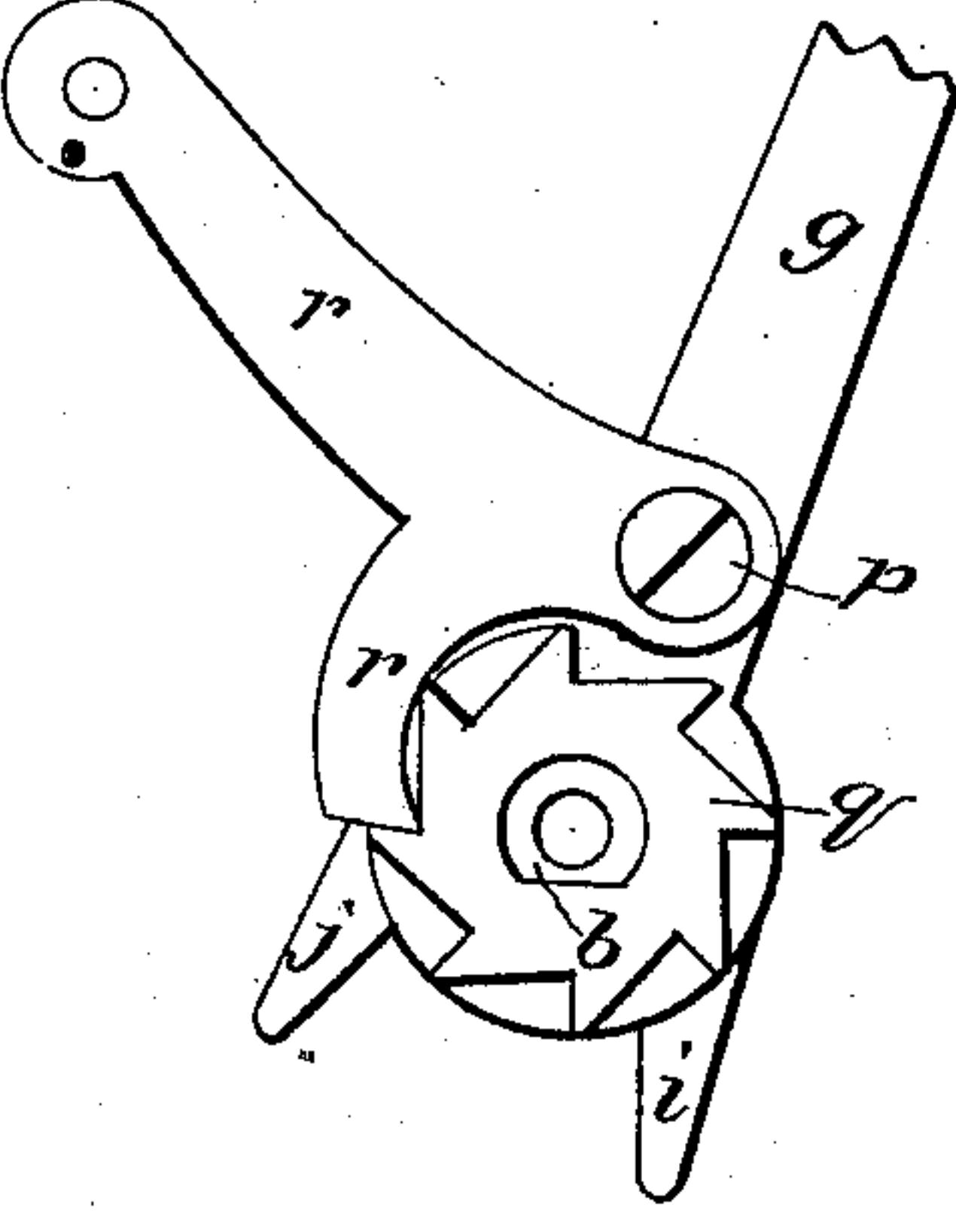


Fig. 7.

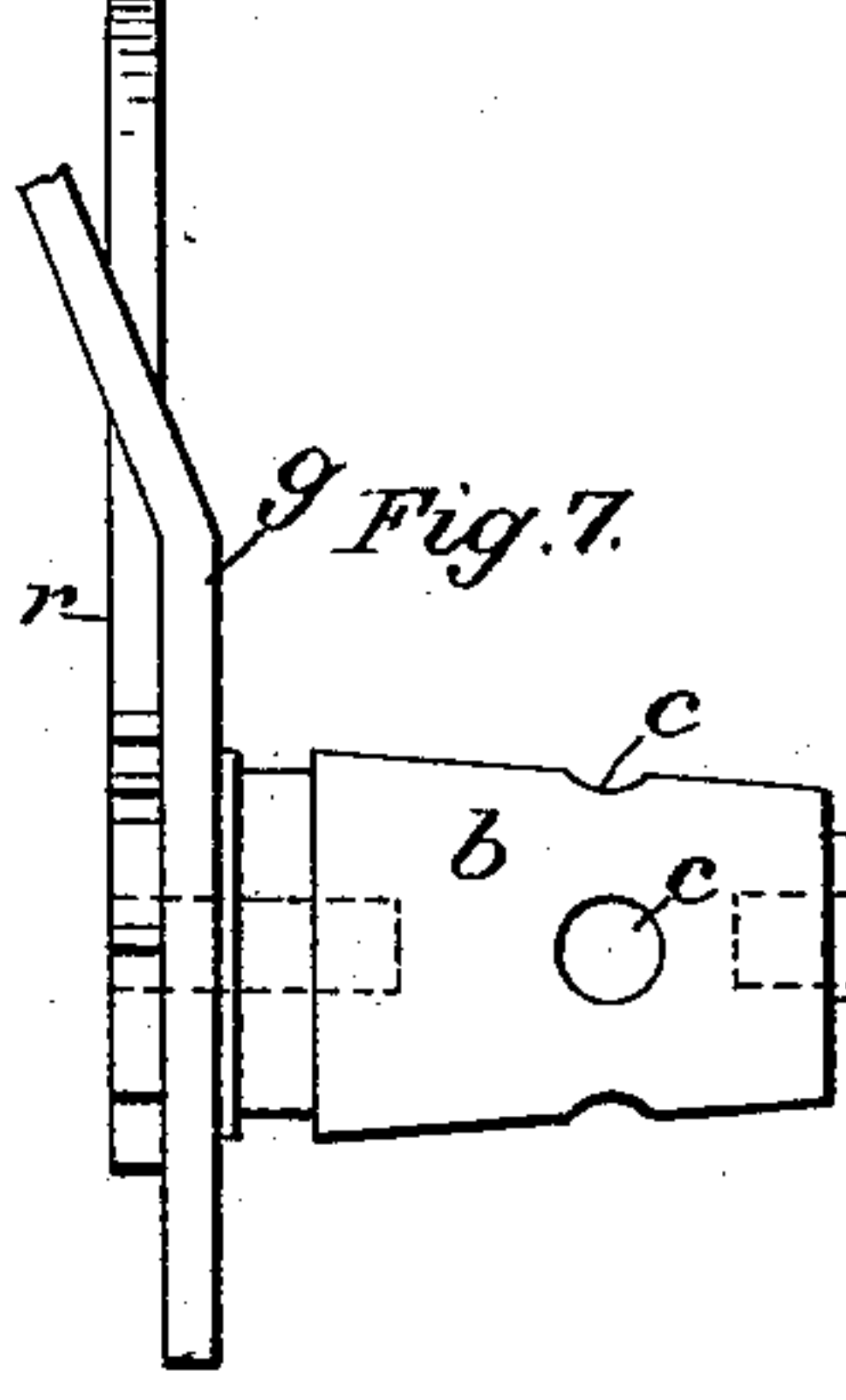
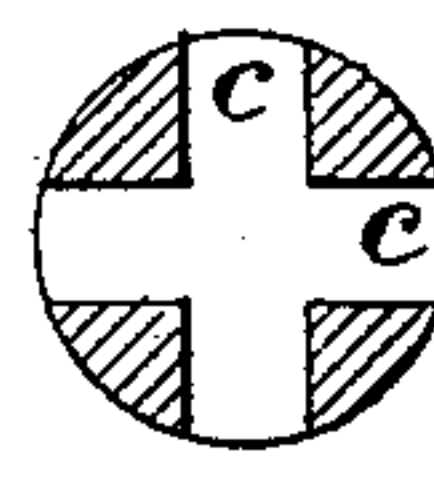


Fig. 8.



Witnesses:

J. A. Hurdle

John P. Wright.

Inventor

Charles W. Holtzer

By

Edward P. Thompson
Attorney

UNITED STATES PATENT OFFICE.

CHARLES W. HOLTZER, OF BROOKLINE, MASSACHUSETTS.

ELECTRIC GAS-LIGHTER.

SPECIFICATION forming part of Letters Patent No. 364,760, dated June 14, 1887.

Application filed January 11, 1887. Serial No. 224,003. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. HOLTZER, a citizen of the United States, and a resident of Brookline, county of Norfolk, and State of Massachusetts, have invented certain new and useful Improvements in Electric Gas-Lighters, of which the following is a specification.

This invention relates to electric gas-lighters employed in connection with gas produced from gasoline, naphtha, or similar volatile liquids.

The object of the invention is to provide improvements in mechanical details and construction.

Figure 1 is a general outside view of the device. Fig. 2 is a longitudinal sectional view of the upper part of the burner, including the tip. Fig. 3 shows the tubular part for the passage of the gas and for the attachment of the other parts. Fig. 4 shows an insulated support for one of the electrodes. Fig. 5 shows the same support with the said electrode attached. Fig. 6 is a view of the ratchet-gearing for operating the valve. Fig. 7 is a side view of Fig. 6, showing also the valve, which is a rotary valve. Fig. 8 is a cross-section of the valve; and Fig. 9 shows the spring for pulling back the valve into a predetermined position, the said spring being shown not under tension. Fig. 10 shows a full view of the normal position of the spring *k*, some of the parts of the device being removed, the spring having four points of support—the first being the screw *E*, supporting the curved portion *l*, the second being the lower portion of the valve *b*, supporting the curved portion *m*, the third being the upper portion of the valve supporting the lower portion of the straight part between *o* and *n*, as shown in Fig. 9, and the fourth being the screw *p*, supporting the hoof *o*. When the spring shown in Fig. 9 is bent to occupy the position in Fig. 10, its shape is necessarily different from that shown in Fig. 9. Thus the curve *n* becomes nearly straight and the lower part of the straight portion between *o* and *n* becomes very much curved in passing around the upper surface of the valve; also one of the sharp turns between *n* and *o* in Fig. 9 becomes nearly straightened in Fig. 10. That portion of the spring which presses upon the upper portion of the valve serves as a second retain-

ing-spring. Fig. 11 is a side view of the lower portion of Fig. 3, showing also a side view of a portion of the spring. The object of the two curves shown in Fig. 9, between *n* and *o*, is for the purpose of producing the desired amount of pressure and friction upon the valve of the burner. I have tried several forms of springs, but that shown in Fig. 9 I prefer.

The device consists of the combination of a tubular portion having a transverse hole, *a*, for the reception of a conical valve, *b*, having two transverse holes, *c*, which are adapted to come in line with the hole *d*, one at a time, the said hole *d* passing through the said tubular portion; a cylindrical projection, *e*, below the hole *a*, an annular projection, *f*, upon said cylindrical projection *e*, a lever, *g*, carrying a platinum electrode, *h*, upon one end and two projections or stops, *i* and *j*, upon the other end, the stop *i* resting against the projection *e* in its normal position and the lever *g* being rotatable upon that portion of the valve which projects from the hole; a spring, *k*, having the curved portion *l* resting upon the projection *e* in such a manner that the curved portion *m* presses against the valve *b*, the curved portions *l* and *m* being in opposite directions, substantially like the letter *S*, and the curved portion *n* resting upon the portion of the valve just above the point where the curved portion *m* rests, and the curved portion or hook *o* upon the other end of the spring *k* being attached to a screw, *p*, upon the lever *g*, between the electrode *h* and the valve *b*; a ratchet-wheel, *q*, having fixed connection with the valve *b*, the lever *g* being between the wheel *q* and the said tubular portion; a ratchet, *r*, pivoted upon the said screw *p*, gearing into the ratchet-wheel *q* and having an operating-handle, *s*; an enlarged tubular opening, *t*, in the upper part of said tubular portion, the enlargement forming a shoulder, *u*; a tip, *v*, having the escape-slit *w* in its upper portion and an annular flange or projection, *x*, at its lower portion; slots *y*, made into said flange and through said tip at its lower portion, and a rectangular projection, *Z*, secured to said tubular portion above the valve and provided with a hole in which fits an insulating-ring, *A*, and the electrode *B*, which is provided with a projection, *C*, with a screw-thread, *D*, with a nut, *E*, and with insulating-

washers F and G, F being between the parts C and Z, and the washer G being between the parts E and Z. The conductor H from the electrical generator K may be secured between the washer G and the nut E, as shown in Fig. 5, or it may be preferably placed between two nuts, D and D', as shown in Fig. 1. The spring *k* is attached to the rod *e* between the annular projection *f* and the stop *i*. The portion *f* may have a circular periphery, as shown in Fig. 1; but it should preferably have a hexagonal periphery, as shown in Fig. 3.

The functions of the several parts of my invention are as follows: When the operating-handle is pulled downward, the ratchet *r* turns the ratchet-wheel *q*, which turns the valve *b* through one eighth of a revolution, and thereby allows the gas to escape. The retractile spring *k* pulls back the ratchet *r* into its normal position, but the curved portion *m* of the spring prevents the valve from turning also. By repeating the operation, the valve is turned another eighth of a revolution, so that the gas is again cut off. It may be noticed here that the spring *k*, all made in one piece, serves both as a retractile spring for the electrode *g* and the ratchet *r*, as well as a means for preventing a backward motion of the valve *b*. The projection *e* serves to limit the motion of the ratchet *r* and of the part *g*, because the part *i* or *j* strikes against the part *e* during the motion of the part *g*. The screw *p* serves both as a pivot-support for the ratchet *r* and for the spring *k*. The parts *i* and *j* serve not only as stops to the motion of the ratchet, but as a means of maintaining the spring *k* upon the projecting rod *e*. The tubular portion in the usual form of burner becomes so hot as to injure insulating substances. For this reason the projection Z is provided for the support of one, B, of the electrodes. The slots *y* serve as an exit for the gas, which escapes and surrounds the burner-tip *v* in and above the opening *t*, the said burner-tip being made of metal. The shoulder *u* serves as a support for the flange *x*.

It is almost impossible to electrically ignite gasoline vapor and similar vapors unless the slots *y* and the enlarged tubular opening are provided. The reason is not clearly understood; but it is thought that the vapor, as it passes out of both the slot *w* and the opening *t*, becomes mixed with the air, and is therefore a more easily-exploded mixture.

I claim as my invention—

1. In an electric gas-lighter, a tubular portion, in combination with an upper tubular portion, which is provided with a removable tip, which has a flange forming an enlarged portion at the lower end and resting upon the bottom of the enlarged tubular portion, the said tip having also slots cut into the flange and into itself.

2. In an electric gas-lighter, the combination of a main tubular portion, a rotatable valve to said tubular portion, ratchet-gearing having operating connection with said valve and with a movable electrode of said lighter, the other electrode being stationary, a fixed projection to said tubular portion, and a spring bearing frictionally upon the upper and lower parts of the valve and connected to the movable electrode.

3. In an electric gas-lighter, the combination of a gas-burner having gas-outlets, the one being a slot in the uppermost part of the burner and the other being an annular opening surrounding said slot, and suitable electrodes within igniting distance of said opening, substantially as and for the purpose described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 30th day of December, 1886.

CHARLES W. HOLTZER.

Witnesses:

S. K. HAMILTON,
E. H. HOBBS.