(No Model.)

F. H. CARPENTER.

ELECTRIC ARC LAMP.

No. 462,660. Patented Nov. 3, 1891.

Fig. 2.

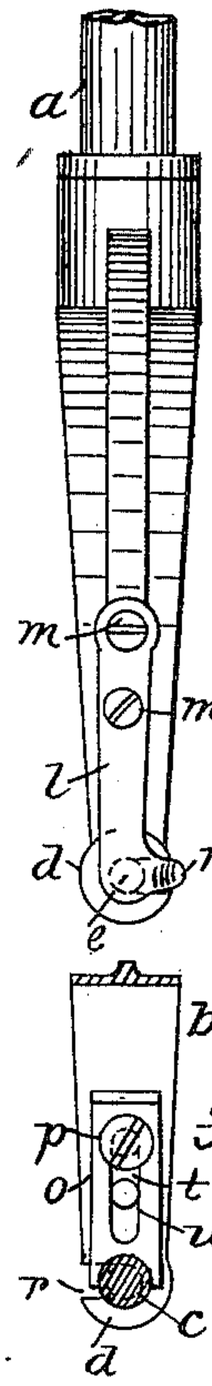


Fig. 1.

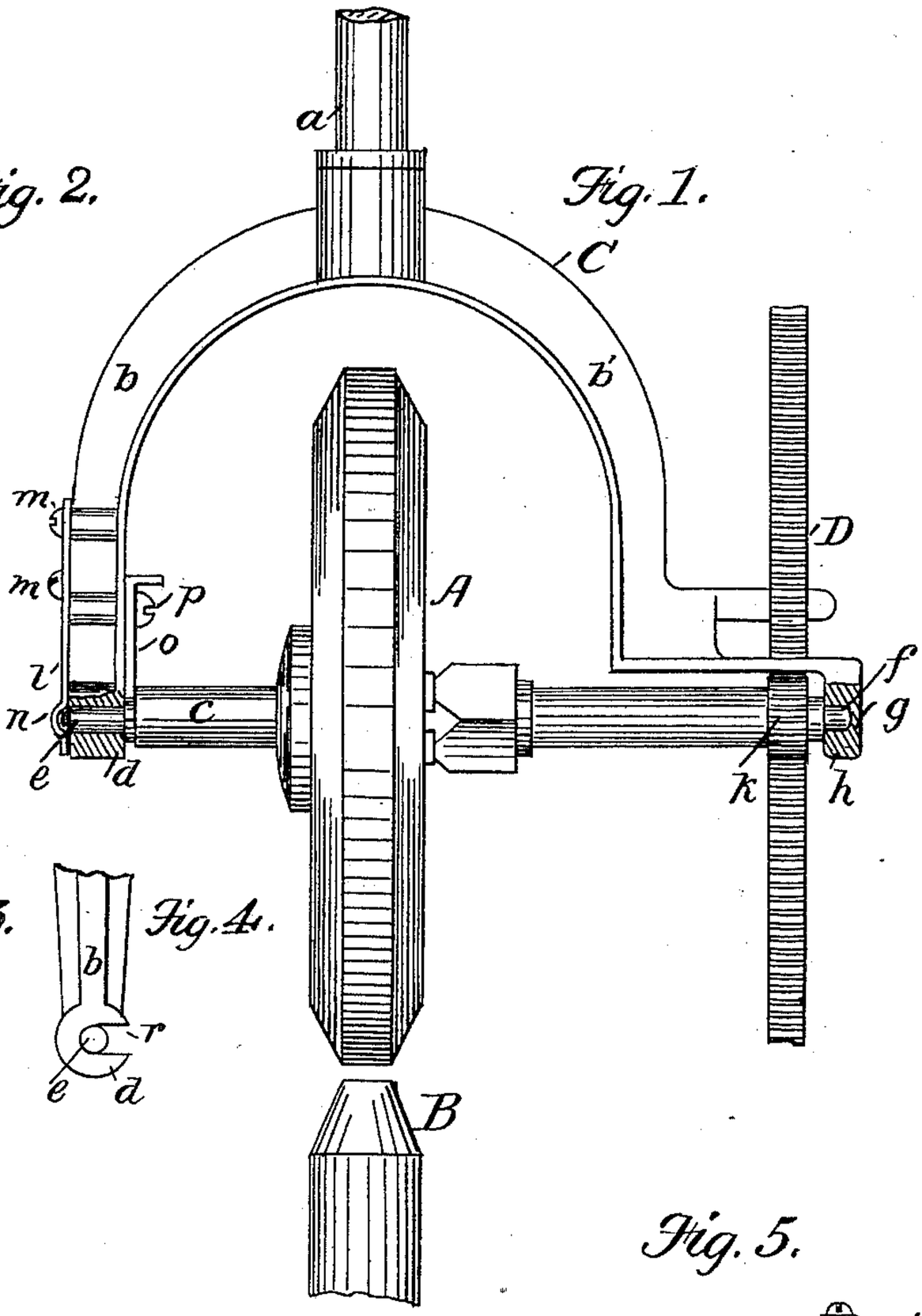
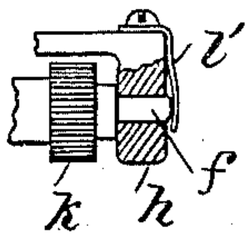


Fig. 3.

Fig. 4.

Fig. 5.



Witnesses.
M. A. Pierce.
V. M. Berthold.

Inventor.
Fred H. Carpenter
by his attorney
Geo. Willis Pierce

UNITED STATES PATENT OFFICE.

FRED H. CARPENTER, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE RUSSELL ELECTRIC COMPANY, OF SAME PLACE.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 462,660, dated November 3, 1891.

Application filed May 1, 1891. Serial No. 391,179. (No model.)

To all whom it may concern:

Be it known that I, FRED H. CARPENTER, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Electric-Arc Lamps, of which the following is a specification.

This invention relates to improvements in electric lamps such as is described in the patent of E. C. Russell, No. 432,284, and its especial object is to provide means for securing the disk carbon-holder firmly in its seat and to prevent the formation of arcs or sparking between the carbon-holder and its supporting-frame.

It has been heretofore customary to insert the carbon-holder into a frame which has been provided with means for journaling the same, with the intention that a circuit would be found for the electric current through the several parts of the apparatus without deterioration of the parts or loss of current. This has been found not to be true in the practical working of the lamp, as when the operating parts become loose by friction of part upon part, small arcs are formed, which not only are destructive to the mechanism, but introduce great resistance into the circuit.

My invention aims to provide means for obviating this trouble and to secure perfect contact between the moving and operating parts without any liability of increasing the resistance of the circuit.

In the drawings, Figure 1 is a front view of a portion of an arc lamp such as is described in the above-mentioned patent. Fig. 2 is a side view of the same. Figs. 3 and 4 are views of details, and Fig. 5 is a modification.

a is the carbon-rod connected with the feeding and regulating mechanism, (not shown,) and is shown as connected with the carbon-holder support or frame C. The latter is in the form of a yoke, although I am not confined to such a form, as any suitable support for the carbon-holder may be used. The yoke C is formed of the sides *b* and *b'*, at the extremities of which are hubs *d* and *h*, in which the ends *e* and *f* of the carbon-holder *c* are journaled. The carbon-holder *c* has near its center a disk carbon A, secured thereto, and upon one end a pinion *k*, which meshes with the stationary rack D. Directly under the disk carbon is a pencil carbon B.

The carbon-holder *c* is journaled in the frame C in such a way that it can be easily put thereinto and removed. At the right side the journal *f* does not extend entirely through the hub *h*, an abutment *g* being left therein, so that the end of the journal *f* may press upon it. At the other side a slot *r* is cut from the bearing outward, so that the journal *d* may be introduced and withdrawn. *o* is a sliding plate, which serves to lock the end of the spindle of the carbon-holder when it is in its bearing *d*, as seen in Fig. 3, which is a view of the inner face of the side *b*. The slide has a slot *t* extending nearly its length. A screw *p* secures it to the arm *b*. A steady-pin *u* is inserted in the arm and projects through the slot to serve as a guide. The lower end of the slide is hollowed out and embraces the end of the spindle, as shown, and holds it in place.

Fig. 4 shows the end of the journal *e* and the slot *r* in the hub *d*. *l* is a flat spring secured to the arm *b* by screws *m m*. Its lower end covers the end of the journal *e* of the carbon-holder and is provided with a lip *n*. The journal *e* projects slightly beyond the outer face of the hub *d*, so that the spring *l* rests against it.

When the carbon-holder is to be introduced into the frame C, the journal *f* is placed into its seat in the hub *h*, and the other journal *e* is pushed into the slot *r* of the hub *d* and the slide *o* dropped down to embrace the spindle. As the journal *e* swings into place its end strikes the lip *n* of the spring *l* and presses the spring outward slightly.

By means of the spring *l* a perfect electrical contact is secured between the frame C, the carbon-holder *c*, and the disk carbon A. The spring forces the end *f* of the spindle against the abutment *g* of the hub *h* and is itself in contact with the other end *e*. The current comes down the carbon-rod *a* through the frame C, carbon-holder *c*, disk carbon A to the pencil carbon B, and when the disk carbon is slowly rotating, as it is when an arc is formed between the two electrodes A B, a rubbing contact is maintained at both ends of

the carbon-holder *c* by means of the pressure exerted upon the same by the spring *l*, and the current flows through the parts without appreciable resistance.

Fig. 5 shows a modification. The journal *f* projects through the hub *h* and bears upon a spring *l'*, secured to the top of the hub. I may use this spring *l'* in connection with the other spring *l* if I choose, although I prefer to use the spring *l* only.

It is obvious that the flat spring *l* acts not only as an electric contact between the frame and the spindle, but also to hold the spindle pressed against the abutment *g* and prevent all endwise motion of the spindle acting directly upon the end of the spindle.

I claim—

In an electric-arc lamp, a disk carbon and its holder journaled in a supporting-frame, which is attached to a carbon-rod, and a spring, as *l*, provided with a lip *n*, secured at one end to the said frame, its free end pressing upon one end of the said carbon-holder, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 30th day of April, 1891.

FRED H. CARPENTER.

Witnesses:

GEO. WILLIS PIERCE,

J. HARTFORD BEAUMONT.