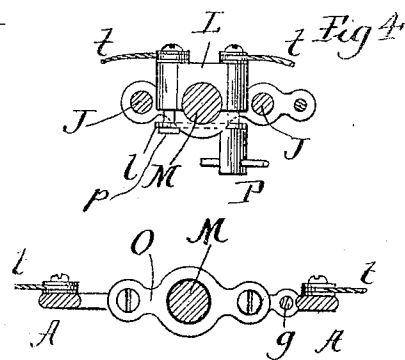
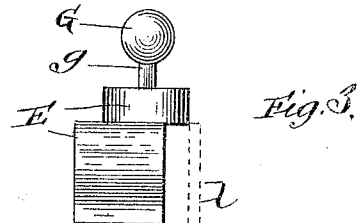
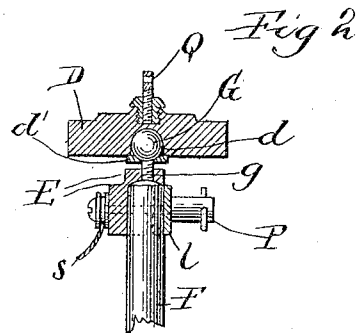
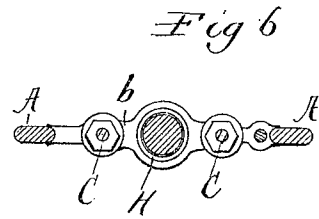
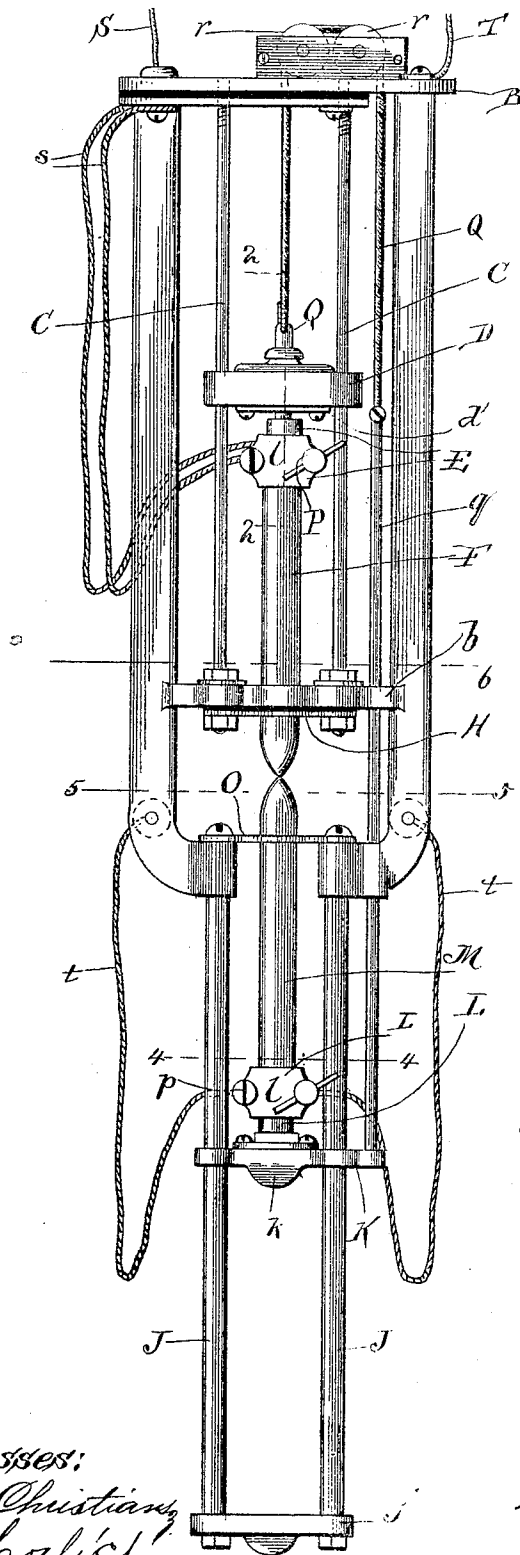


(No Model.)

W. S. BARTHOLOMEW.
ELECTRIC ARC LAMP.

No. 552,874.

Patented Jan. 7, 1896.



Witnesses:
Jno A. Christians
W. C. Collier

Inventor:
William S. Bartholomew
By Louis K. Gilson
att.

UNITED STATES PATENT OFFICE.

WILLIAM S. BARTHOLOMEW, OF CHICAGO, ILLINOIS.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 552,874, dated January 7, 1896.

Application filed September 23, 1895. Serial No. 563,319. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. BARTHOLOMEW, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electric-Arc Lamps; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The invention relates to the construction of the frame of the lamp, and particularly to the manner of securing the carbon-holders and of guiding the carbons.

The object of the invention is to secure a loose or jointed attachment of the carbons and still insure a true contact of their points.

The invention is carried into effect by the use of a ball-and-socket joint as an attachment between the carbon-holder and the traveling cross-head, the point of the carbon being passed through a guide-plate, so that while the butts of the carbons may move their contact ends are held in proper alignment.

Figure 1 is an elevation of the lamp-frame. Fig. 2 is a detail section on the line 2 2 of Fig. 1. Fig. 3 is a side elevation of the carbon-holder. Fig. 4 is a plan section on the line 4 4 of Fig. 1. Fig. 5 is a similar view on the line 5 5 of Fig. 1. Fig. 6 is a similar view on the line 6 6 of Fig. 1.

The two main members of the frame of the lamp, commonly called the "posts," are indicated by A A and depend from a cross-plate B, to which they are rigidly attached. These posts extend a little below the point at which the arc is to be located and are rigidly connected by a centrally-apertured plate *b* a little above the arc.

A pair of parallel guide-rods C C are firmly set in the plates B *b*, and upon them runs a traveler D. The holder E for the upper carbon F is carried by the traveler D and is united thereto by a universal joint, preferably of the ball-and-socket variety, as shown. This joint consists of a ball G, fitting within the socket *d* in the under face of the traveler D, and secured therein by means of a plate *d'*, attached to the traveler by suitable screws and having

an aperture for the protrusion of a stem *g*, formed integrally with the ball G and screwed into or otherwise attached to the block E, forming the carbon-holder.

The lower end of the carbon F passes through the cross-bar *b*, whose aperture is sufficiently large to accommodate without contact carbons of any size likely to be used in the lamp. An apertured guide-plate H is secured to one side, either the upper or lower, of the cross-bar *b*, its aperture being only enough greater in diameter than the carbon pencil intended to be used to avoid friction.

Projecting downwardly from and rigidly secured to the lower ends of the posts A A, which are turned inwardly, are a pair of guide-rods J J, united at their lower ends by means of a cross-bar *j*. A traveler K slides upon the rods J and carries the lower-carbon electrode M, the carbon pencil being connected to the traveler by means of a carbon-holder L, whose attachment to the traveler is by means of the same form of joint as is employed in uniting the upper-carbon holder to the traveler D. The traveler K being, for the reason herein-after explained, lighter than the traveler D, it is formed with a depending boss *k* to furnish stock within which to form the socket for the ball.

The upper end of the lower-carbon electrode passes through an apertured guide-plate O, whose aperture *o* is of a diameter which exceeds that of the carbon pencil intended to be used in the lamps only enough to avoid friction. This guide-plate is rigidly secured to the posts A.

The upper and lower carbon holders E L are alike, consisting of a block having a recess in one side, within which the butt of the carbon pencil is placed, and a clamping-plate *l*, crossing the recess, one of its ends being loosely held by a screw *p* and the other by a thumb-screw P, by means of which the plate may be pressed against the carbon pencil, so as to hold it firmly.

The two travelers D K are connected by means of a cable or chain Q, one end of which is attached to the traveler D and the other to a vertical rod *q*, rigidly fixed in the traveler K and sliding in apertures in the cross-plate *b* and in the lower end of one of the posts A. The chain Q is hung over a pair of

sheaves *r r*, suitably mounted in the head of the lamp. The upper traveler *D* is made heavier than the lower one *K* for the purpose of counterweighting, so that the carbon electrodes are maintained in constant contact by gravity.

The current reaches the upper carbon through the flexible cable *S*, leading to the lamp-frame, but insulated therefrom, and the wires *s*, in electrical connection with the cables *S* and the carbon-holder *E*. It reaches the lower carbon through the cable *T*, in electrical connection with the frame of the lamp, and the wires *t t*, leading from the posts *A A* to the carbon-holder *L*.

The guide-plates *H O* are easily removed, so that if it is desired to change the size of the carbon pencils used in the lamp these plates can be changed.

While I have shown one species of universal joint, and the one which I prefer, it is clear that any attachment between the carbon-holder and the traveler which admits of flexure in any direction comes within the scope of the invention, and I do not therefore limit myself to the form shown.

I claim—

In an electric lamp having its arc localized,

the combination with a pair of frame posts, a cross-plate from which such posts depend and an apertured cross-plate uniting such posts immediately above the arc, of a pair of guide-rods extending between such upper and lower cross-plates, a pair of guide-rods secured to the frame immediately below the arc and extending downwardly, a traveler mounted to slide upon each pair of guide-rods the upper traveler being counterweighted, flexible connection between the two travelers, sheaves at the upper portion of the lamp frame over which such flexible connection is hung, a carbon holder or clamp for co-operating with each traveler, ball and socket joint connection between the travelers and their co-operating holders, apertured guide-plates immediately above and below the arc adapted to prevent the angular movement of the carbon pencils, substantially as described and for the purpose specified.

In testimony whereof I affix my signature in the presence of two witnesses.

WILLIAM S. BARTHOLOMEW.

Witnesses:

J. A. MOSHER,

MILO B. GILLSON.