(No Model.)

J. A. MOSHER.

ELECTRIC ARC LAMP.

No. 446,459. Patented Feb. 17, 1891.

Fig. 1.

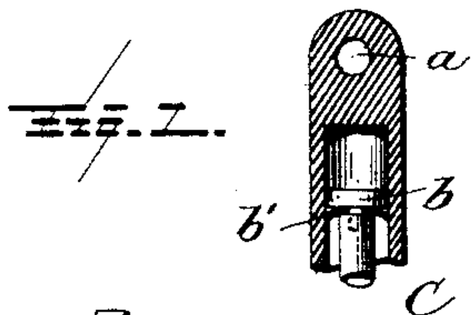

Fig. 2.

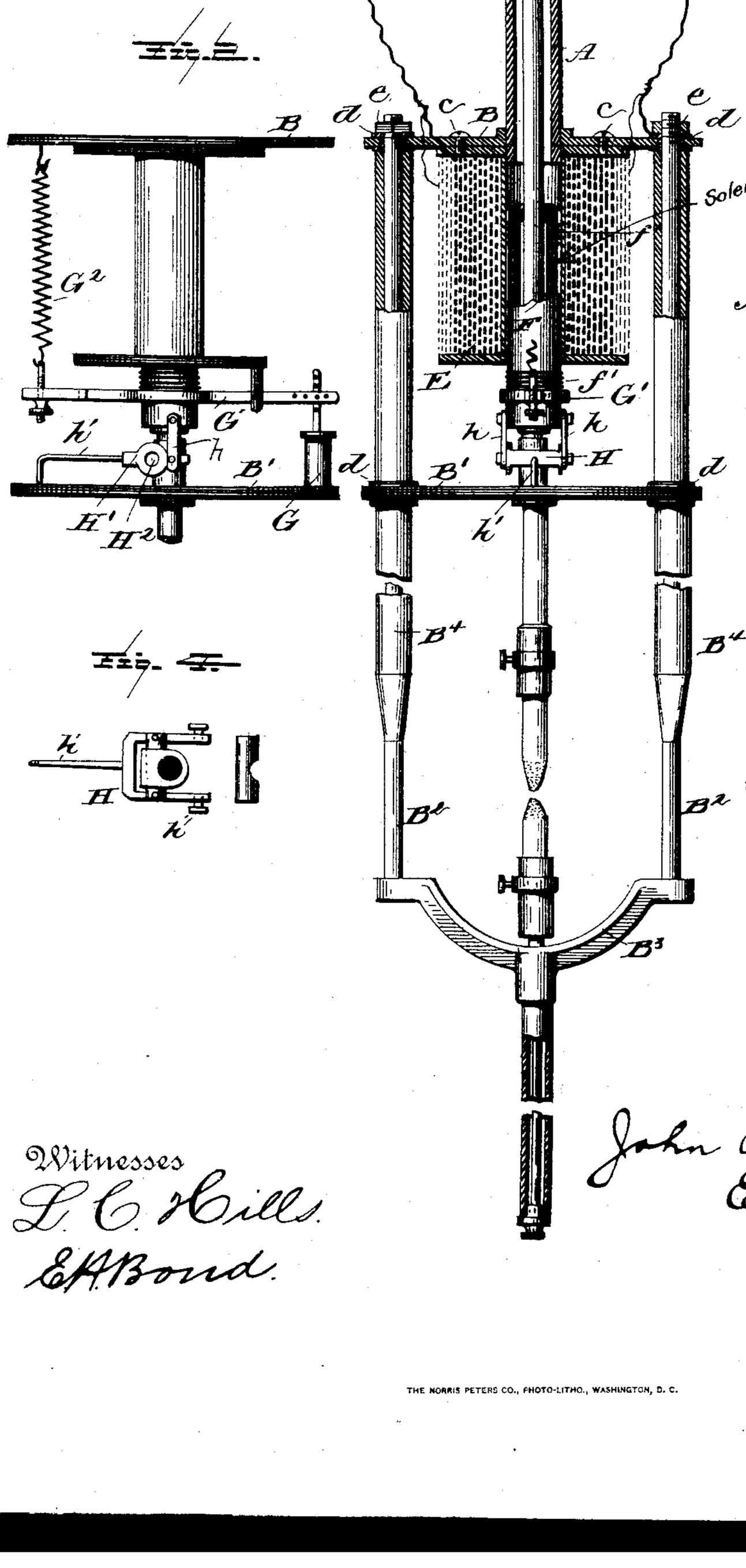

Fig. 3.

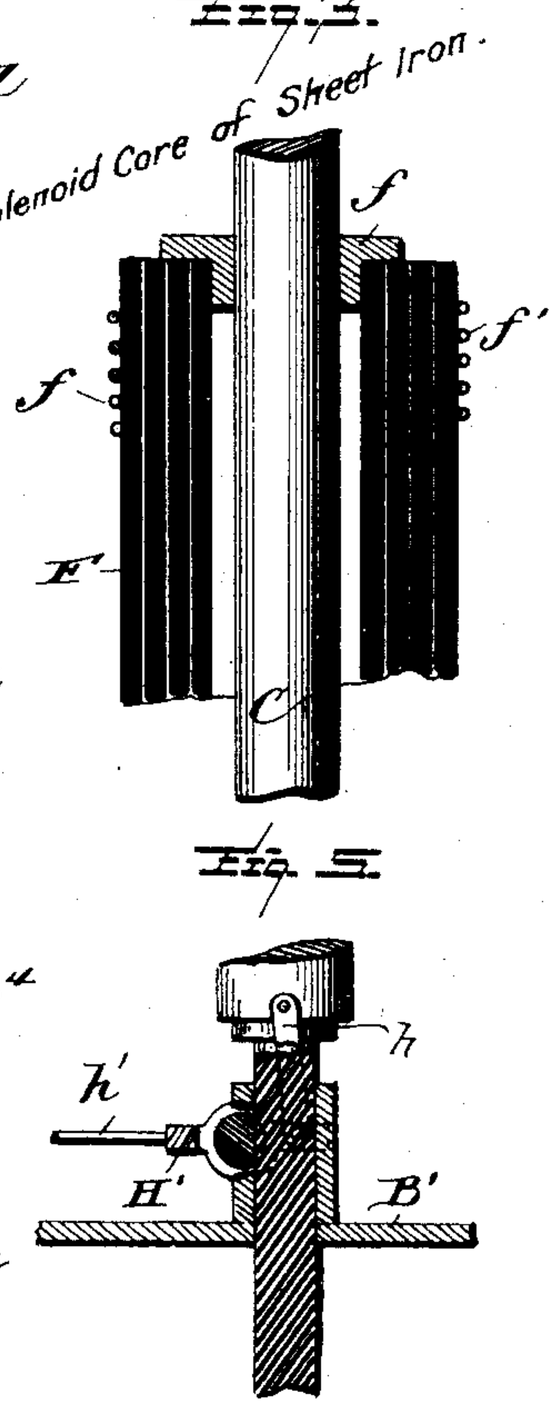

Fig. 4.

Witnesses
L. C. Hills.
E. A. Bond.

Inventor
John Arthur Mosher
E. B. Stocking
Attorney

UNITED STATES PATENT OFFICE.

JOHN ARTHUR MOSHER, OF ABILENE, KANSAS, ASSIGNOR TO THE MOSHER ARC LAMP COMPANY, OF SAME PLACE.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 446,459, dated February 17, 1891.

Application filed July 8, 1890. Serial No. 358,073. (No model.)

To all whom it may concern:

Be it known that I, JOHN ARTHUR MOSHER, a citizen of the United States, residing at Abilene, in the county of Dickinson, State of Kansas, have invented certain new and useful Improvements in Arc Lamps, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in arc lamps; and it has for its object, among others, to provide for the regulation of the downward and upward movement of the carbon-rod when the lamp is feeding.

It has for a further object to provide an improved brake device or grip for suddenly arresting the movement and holding in position the carbon-rod when desired.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be particularly pointed out in the appended claims.

The invention is clearly illustrated in the accompanying drawings which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a side elevation illustrating my improvement, with parts broken away and others in vertical section. Fig. 2 is a detail in side elevation looking at right angles to Fig. 1. Fig. 3 is an enlarged vertical section of the magnet-core. Fig. 4 is a plan view of the grip device removed. Fig. 5 is a vertical section through the lower part of Fig. 2.

Like letters of reference indicate like parts throughout the several views.

Referring now to the details of the drawings by letter, A designates a hollow metallic tube, closed at its upper end and at said upper end provided with an aperture *a* to receive the hook or other means by which the lamp may be suspended. This tube extends through and is attached to the disk B, as shown in Fig. 1, being extended through the disk for the purpose of holding the solenoid spool laterally in position.

C is a carbon rod or holder, the upper end of which is fitted with a piston-head *b*, preferably of metal, and beneath said head is a flexible cup *b'*, preferably of leather. The object of this device is to check and regulate the downward or upward movement of the carbon-rod when the lamp is feeding. The piston-head being nearly air-tight, the carbon-rod can descend or ascend only as fast as the air in the space above the piston-head expands or contracts, as the case may be, and after the arc is formed sufficient air can pass the piston-head to restore the air above to its normal condition.

D is a metal disk, constructed as shown, and carrying the binding-post D'. It is designed to slide freely on the tube A, and is for the purpose of providing inclosed space above the disk B sufficient to contain a rheostat when the lamp is to be used on a circuit of constant potential.

E is a solenoid or main-circuit coil of coarse wire, having a differential winding of fine wire for a derived circuit on the outside, as shown in Fig. 1, and is suspended from the disk B by screws or other analogous means *c*.

F is the magnet-core, made by winding a sheet of annealed charcoal iron, of suitable size, onto two brass bushings *f*, and is secured by a winding of fine brass wire *f'* at either end, as shown. The bushings *f* slide closely but freely on the carbon-rod, which thus provides a guide to the core and prevents the same from touching the solenoid and thus preventing friction on the same. By this construction and arrangement the magnet-core can operate freely at any angle that the lamps may be caused to assume by reason of wind or from any other cause.

The supporting-frame, consisting of a disk B and B', is held together by means of side rods B^2, the lower ends of which are suitably held in lugs on the inverted yoke-piece B^3, in which the lower carbon-holder is supported, and these rods are re-enforced by tubes B^4, which inclose said rods from the top of the frame to a point just above the line of arc, say about two inches, thus insuring maximum strength with minimum of shadow. Said tubes are cut at proper length to divide the distance between the disk B and B', as shown, suitable insulating collars or pieces *d* being inserted at the proper point, as shown, and the whole clamped together by means of suitable nuts *e*, as shown in Fig. 1.

G is the usual dash-pot connected to the

end of the walking-beam G′, and supported upon the disk B′, for the purpose of preventing "pumping," as used in the art. G^2 is a spring connecting the opposite ends of the walking-beam with the disk B for the purpose of helping to sustain the weight of the suspended parts. The walking-beam is swung on the magnet-core in any suitable manner.

The grip device or grip is constructed as follows: H is a metallic frame suspended from the magnet-core by means of the links *h*. H′ is a metal block, through which the grip-pin H^2 passes horizontally, and through which the carbon-rod passes vertically, as shown in Fig. 4. *h′* is a trip rod or lever attached to the frame H, as shown in Figs. 2 and 4, and operates to release pressure of the grip-pin on the carbon-rod when desired.

The operation of the lamp is as follows: When no current is on, the carbons are together and the magnet-core is lowered to its fullest extent. When the current is turned in, the said core rises, and by lifting with it the grip-frame H and its connected parts causes a partial revolution of the grip-pin H^2, which binding the carbon-rod the whole rises to the point requisite to form the proper arc. As the arc lengthens by consumption of carbon the derived circuit-coil increases in power and, owing to its differential winding, weakens the main-circuit coil, thus allowing the magnet-core F to descend sufficiently to put in operation the trip rod or lever *h′*, which, striking on the disk B′, operates to revolve the grip-pin sufficiently to release the carbon-rod, allowing it to descend as required to maintain the proper arc.

What I claim as new is—

1. The combination, with the tube and the carbon rod or holder having a piston-head working therein, of the metal disk carrying the main binding-posts and movable on the tube, substantially as described.

2. The combination, with the tube and the carbon rod or holder provided with a piston-head movable in said tube, of the disk extending around the tube and the solenoid depending from and secured to said disk, and the magnet-core movable on and guided by the carbon rod or holder, and the metal disk carrying the main binding-posts and movable on the tube, substantially as described.

3. The combination, with the movable core, the stationary disk B′, and the movable metal disk carrying the main binding-posts, of the frame swung from the core, the transverse grip-pin carried by said frame, the carbon-holder, and the trip-lever attached to said frame, substantially as described.

4. The combination, with the carbon-rod, of the core formed of laminated iron and bushings movable on the carbon-rod, substantially as described.

5. The combination, with the carbon-rod, of the core formed of laminated iron and bushings movable on the carbon-rod, and a grip carried by said core, substantially as described.

6. The combination, with the carbon-rod, of the core formed of laminated iron and bushings movable on the carbon-rod, and a rotatable grip carried by said core and provided with a horizontal trip arm or lever, substantially as described.

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

JOHN ARTHUR MOSHER.

Witnesses:
W. A. BURBANK,
L. H. WORTHINGTON,
W. P. GULICK.