No. 742,706. PATENTED OCT. 27, 1903.

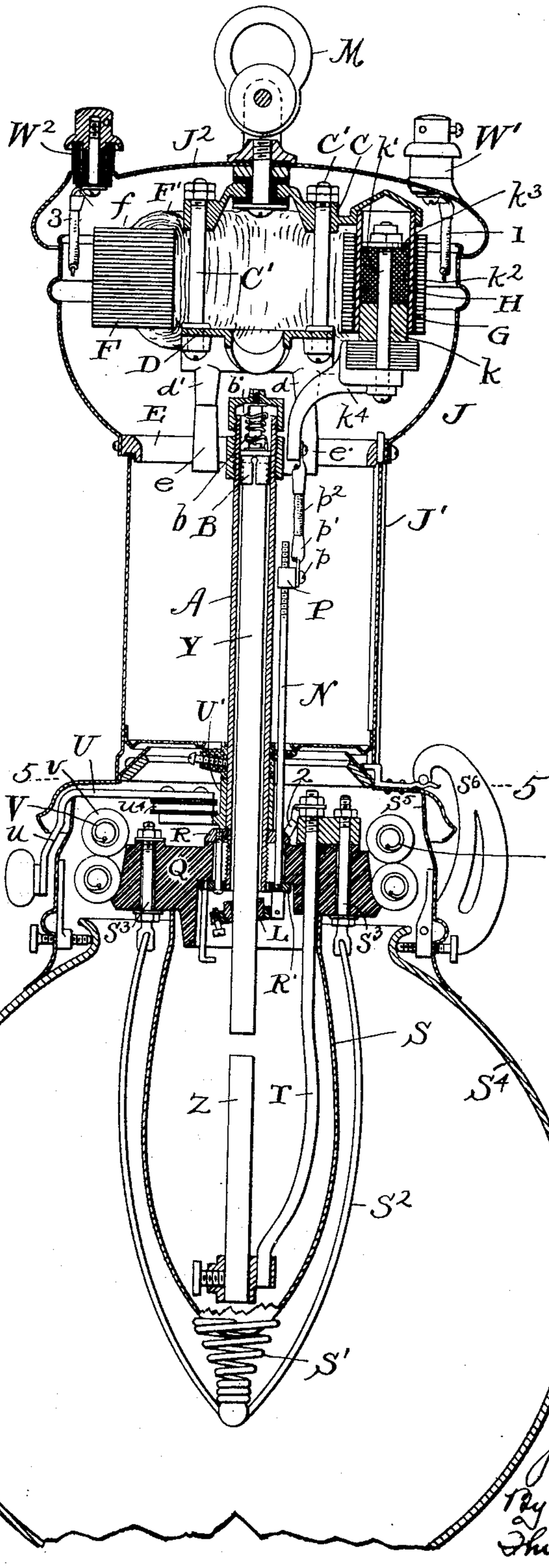
J. MELZER.

ELECTRIC ARC LAMP.

APPLICATION FILED JAN. 2, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.



Witnesses
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N. L. Brennan

Inventor:
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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2.

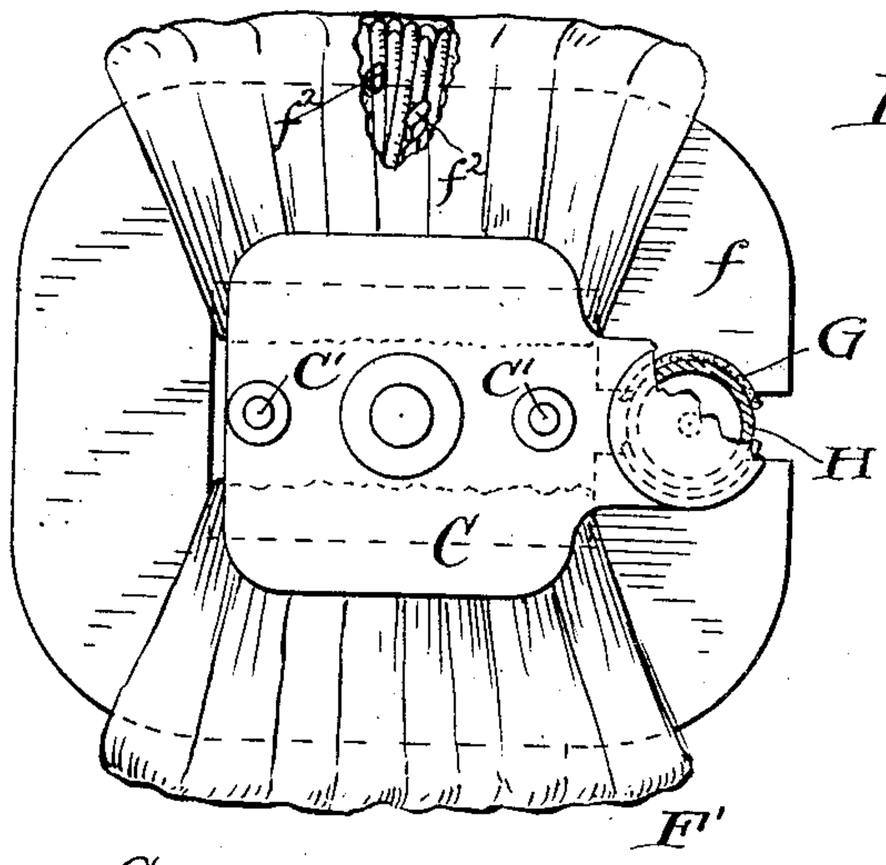


Fig. 3.

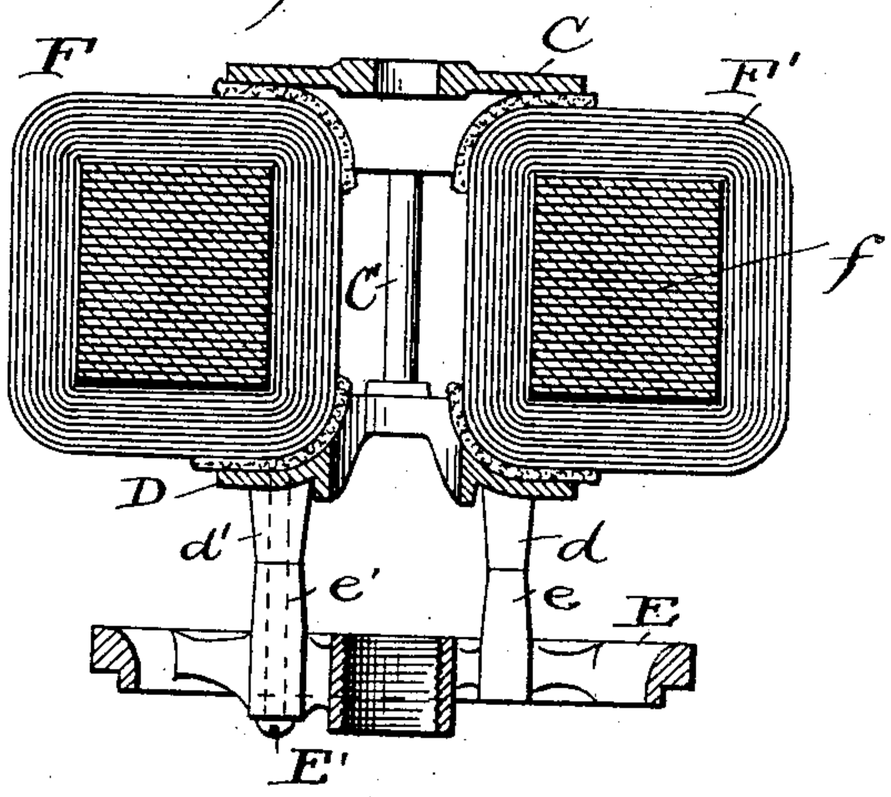


Fig. 4.

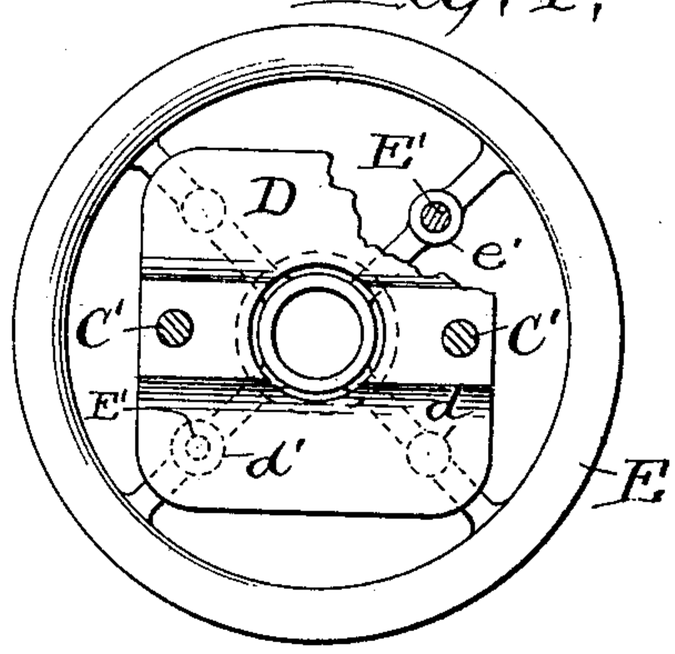
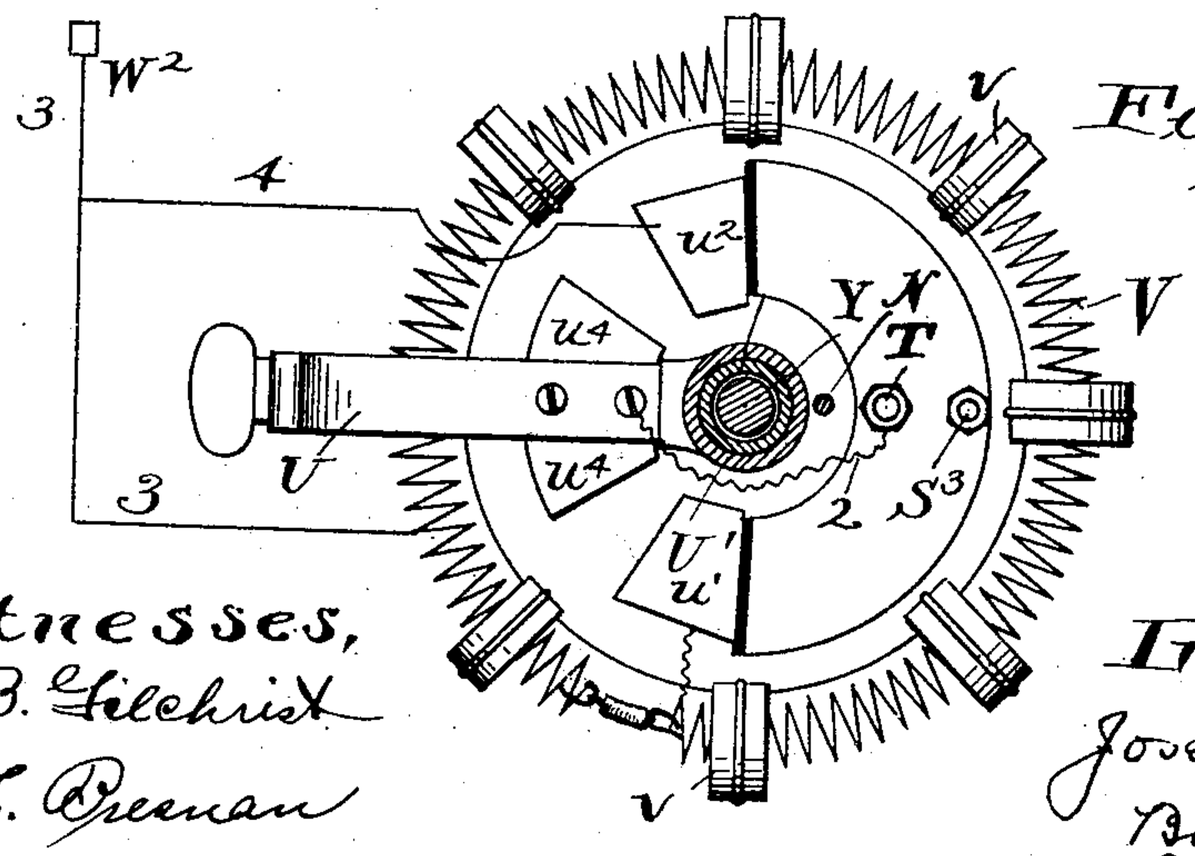


Fig. 5.



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No. 742,706. Patented October 27, 1903.

UNITED STATES PATENT OFFICE.

JOSEPH MELZER, OF CLEVELAND, OHIO, ASSIGNOR TO THE OSBORN-MORGAN COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF NEW JERSEY.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 742,706, dated October 27, 1903.

Application filed January 2, 1903. Serial No. 137,393. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH MELZER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Electric-Arc Lamps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The object of this invention is to provide an arc-lamp adapted for either direct or alternating current in a form which shall be very cheap in construction, while being efficient in service. In accomplishing this I arrange the magnet which operates the carbon-clutch in such a form that it itself operates as the choking-coil. This very much simplifies the construction. To further simplify the construction, I connect the dash-pot directly with the armature of the magnet, the connection between the armature and clutch having a flexible portion to prevent continually jerking the clutch when alternating current is used. The dash-pot prevents the too sudden shifting of the carbon, as is usual; but by rigidly mounting one of its members, as the plunger, upon the armature the construction is simplified and the efficiency increased. This is one of the features of my invention.

Other features will appear hereinafter in the more specific description, wherefore my invention may be most conveniently summarized as consisting of the combination of parts described herein and definitely set out in the claims.

In the drawings which clearly illustrate my invention, Figure 1 is a vertical central section of the lamp. Fig. 2 is a plan in section of the combined magnet and choking-coil. Fig. 3 is a vertical section across the two arms of the magnet. Fig. 4 is a plan of the frame parts below the magnet. Fig. 5 is a sectional plan on the line 5 5 of Fig. 1, showing the switch.

Referring to the parts by letters, A represents a central tube, which contains the upper carbon and which constitutes a portion of the main frame of the lamp. In this tube is contained a thimble B for receiving the upper end of the upper carbon Y, this thimble being connected by a flexible conductor *b* with the cap *b'*, screwed onto the end of the tube. On the upper end of this tube A, beneath the cap *b'*, is screwed a spider-ring E. This ring carries the portions J and J' of the casing. Rising from the ring are lugs *e* and *e'*, on which rest dependent lugs *d* and *d'* from a plate D, the ring and the plate being secured together by bolts E', screwing through the lugs *e'* and *d'*. The magnet F is clamped between the plate D and the plate C above it, bolts C' holding these parts together.

The magnet F, which operates also as the choking-coil, is of the horseshoe type, having a laminated core *f*, composed of a series of iron plates, around which is wound the usual conductor F', and this conductor is so arranged that connections can be made to it at various points, according to the current with which the lamp is to be used. These various points of connection are indicated at f^2 in Fig. 2.

The pole-faces of the horseshoe are concaved to make a circular recess, and in this recess is the cylinder H of the dash-pot, supported by the plate C, which at this point makes a head for the cylinder. This cylinder is of some non-magnetic material, as brass, and between it and the magnet there is preferably a padding G of felt or mica or some non-conductor of heat.

Within the dash-pot cylinder H slides the dash-pot plunger. This plunger has a head *k* of magnetic material partly outside the cylinder, which constitutes the armature for magnet. A rod *k'* rises from this head, and a graphite filler k^2 around this rod constitutes a piston for the cylinder, the graphite being carried between the inner head *k* and a washer k^3 at the upper end of the rod.

The result of the above-described construction is that whenever the flow of current through the magnet increases the plunger is drawn upward. When it decreases, the plunger gradually descends by gravity.

Any usual form of clutch may be employed—as, for example, a ring-clutch L shown. Extending upward from this clutch is a rod N, the upper end of which is threaded. On this thread screws a nut P, to which is secured by a screw *p* the lower end of a sheet-metal clamp *p'*, which grasps a cord p^2, connected in

like manner at its upper end to an arm k^4, depending from the plunger of the dash-pot. The flexibility of the cord prevents the very slight vibration of the plunger consequent upon alterations of the current from affecting the clutch, while the arrangement of the nut P allows the very convenient adjustment of these parts by the removal of the screw p and the turning of the nut in one direction or the other. The use of the flexible connection is already set out and claimed in my prior application, Serial No. 123,727; but the adjustable arrangement of the same shown herein is one of the features of this invention.

Secured to the lower end of the tube A by clamping-plates R and R′ screwing thereonto is an insulating-block Q, which carries the rod T for the lower carbon. It also supports the inner globe S through the intervention of the spring S′, links S^2, and bolts S^3. The outer globe S^4 is supported by means of usual set-screws from a casing S^5, suspended by hooks S^6, of which three may be conveniently employed. These parts, however, may be of any desired construction.

Mounted on the sleeve U′, secured around the tube A, is a switch U, which operates to open the circuit or close it either without resistance or through the resistance V, which consists of a helix of resistance-wire supported within insulators located at intervals around the periphery of the block Q. The resistance-wire is used when the direct current is employed, but idle with the alternating current, as the choking-coil then takes its place.

The blade u^4 of the switch is connected with the negative-carbon rod T and coöperates with the two contact-plates u' and u^2, the former of which is connected through the resistance V to the negative terminal, and the latter of which is connected directly without resistance to the magnet, the positive electrode leading through the choking-coil or magnet.

In Fig. 1, W′ is the positive binding-post, and W^2 the negative binding-post, supported by a portion of the casing J^2, clamped between the frame-plate C and the supporting-eye M. The course of the current is as follows: from the positive binding-post W′, via the conductor 1, through the choking-coil to the frame, and thence to the upper carbon Y, thence to the lower carbon Z, and via the rod T and the conductor 2 to the blade u^4 of the switch. In the mid-position of the switch the circuit is open at this point. If the switch-lever is shifted to engage the contact-point u', the circuit continues via the resistance V to the conductor 3 and thence to the negative binding-post W^2. If the switch is in the other extreme position, the circuit continues from the switch-lever to the contact-point u^2, to the conductor 4, and thence to the negative binding-post W^2.

By the above-described construction it will be seen that I have provided in a very simple structure a lamp which may be used with either direct or alternating currents, the switch being simply thrown from the off position in one direction for a direct current and in the other direction for an alternating current. The consolidation of the operating-magnet and choking-coil into one structure, and likewise the consolidation into one structure of the armature and dash-pot plunger, simplifies and cheapens the construction.

I claim—

1. In an arc-lamp, the combination of a horseshoe-magnet, a dash-pot cylinder mounted between the pole-faces of the magnet, a plunger for said cylinder connected with the armature of the magnet and the carbon-clutch, substantially as described.

2. In an arc-lamp, in combination, a horizontal horseshoe-magnet, a vertical dash-pot cylinder mounted between the pole-faces of the magnet, an armature for said magnet rigidly connected with the plunger of the dash-pot, and a clutch connected with the armature, substantially as described.

3. In an arc-lamp, in combination, a horseshoe-magnet, a plate above the same for supporting the magnet, a dash-pot cylinder mounted between the pole-faces of the magnet, said plate constituting the head of the cylinder, a plunger for the dash-pot, the armature of the magnet being rigidly connected with said plunger, and a clutch operated by said armature, substantially as described.

4. In an arc-lamp, in combination, a horizontal horseshoe-magnet, a dash-pot cylinder mounted between the pole-faces of the magnet, a framework for supporting said magnet, a central tube for the upper carbon carried by said framework, a plunger for said dash-pot, an armature rigid therein, an inwardly-extending arm rigid with the armature, a clutch for the upper carbon, and a flexible connection between said clutch and said arm, substantially as described.

5. In an arc-lamp, in combination, a horseshoe-magnet, a cylinder mounted between the pole-faces thereof, a plunger for said cylinder, a rod extending through said plunger, an armature and an arm rigidly connected with said plunger by said rod, and a clutch operated by said arm, substantially as described.

6. In an arc-lamp, in combination, a magnet, an armature therefor, an arm carried thereby, a flexible cord secured to said arm and carrying a metal clip, a nut to which said clip is removably secured, a rod on which said nut screws, and a clutch operated by said rod, substantially as described.

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

JOSEPH MELZER.

Witnesses:

H. C. OSBORN,

ALBERT H. BATES.