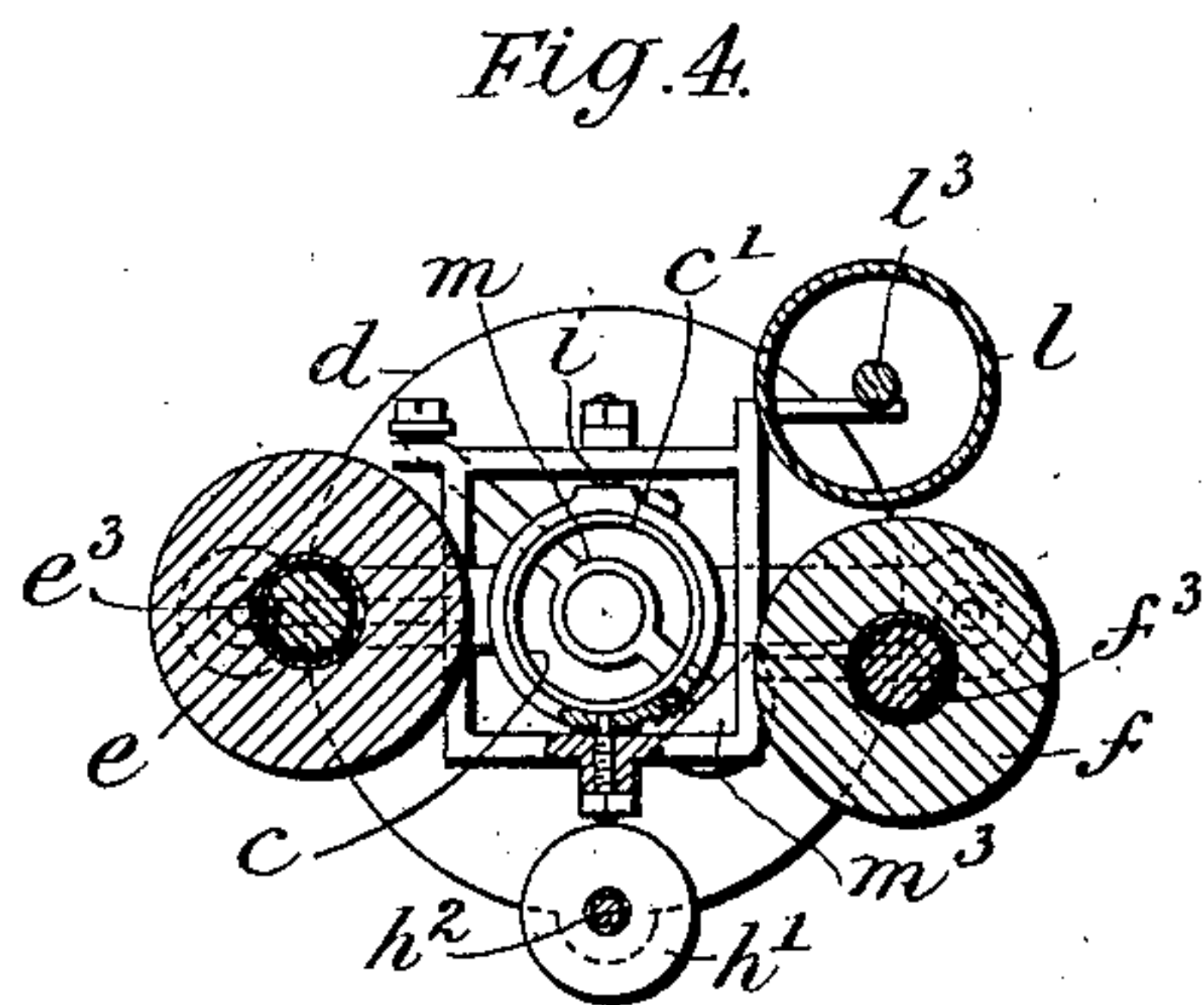
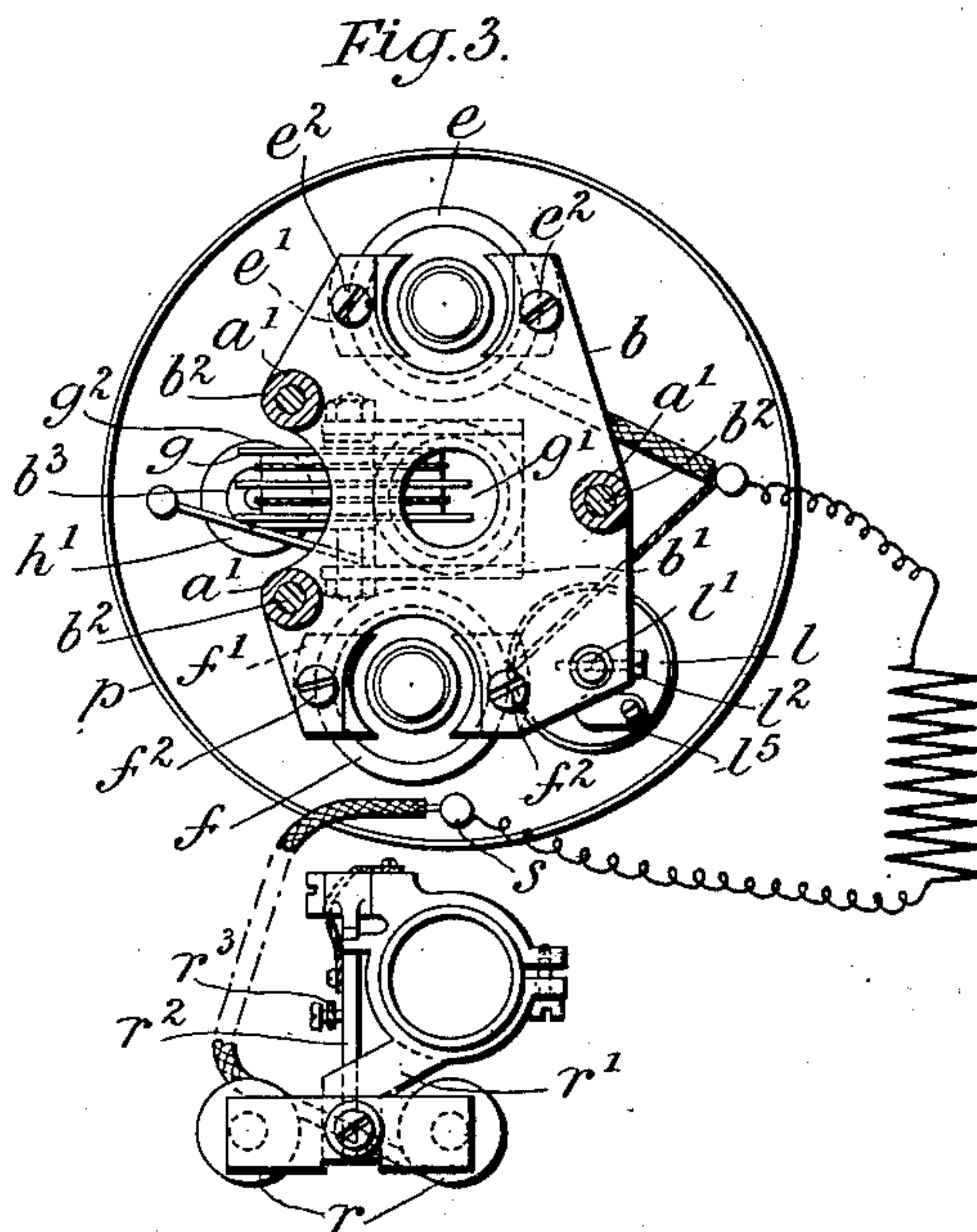
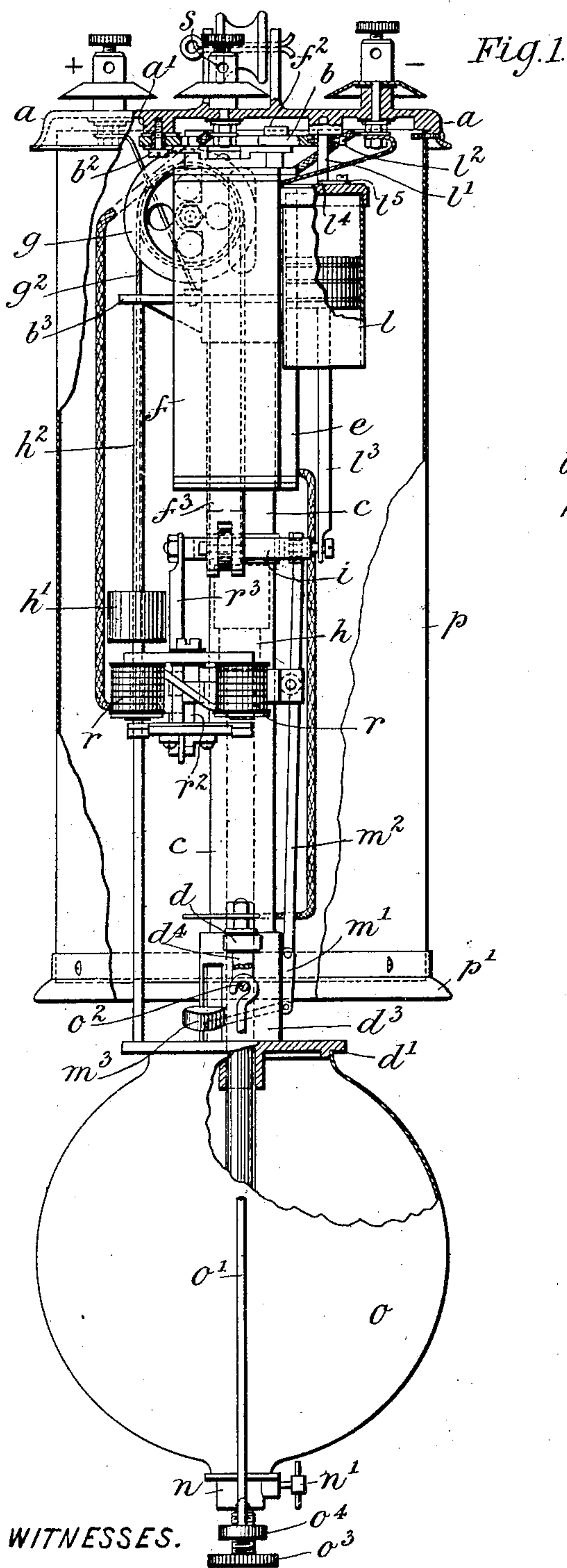


J. L. DAVIES.
ELECTRIC ARC LAMP.

APPLICATION FILED FEB. 11, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES.

Albert Jones
Samuel Perceval

INVENTOR.

John Stewellyn Davies

By his Attorneys.

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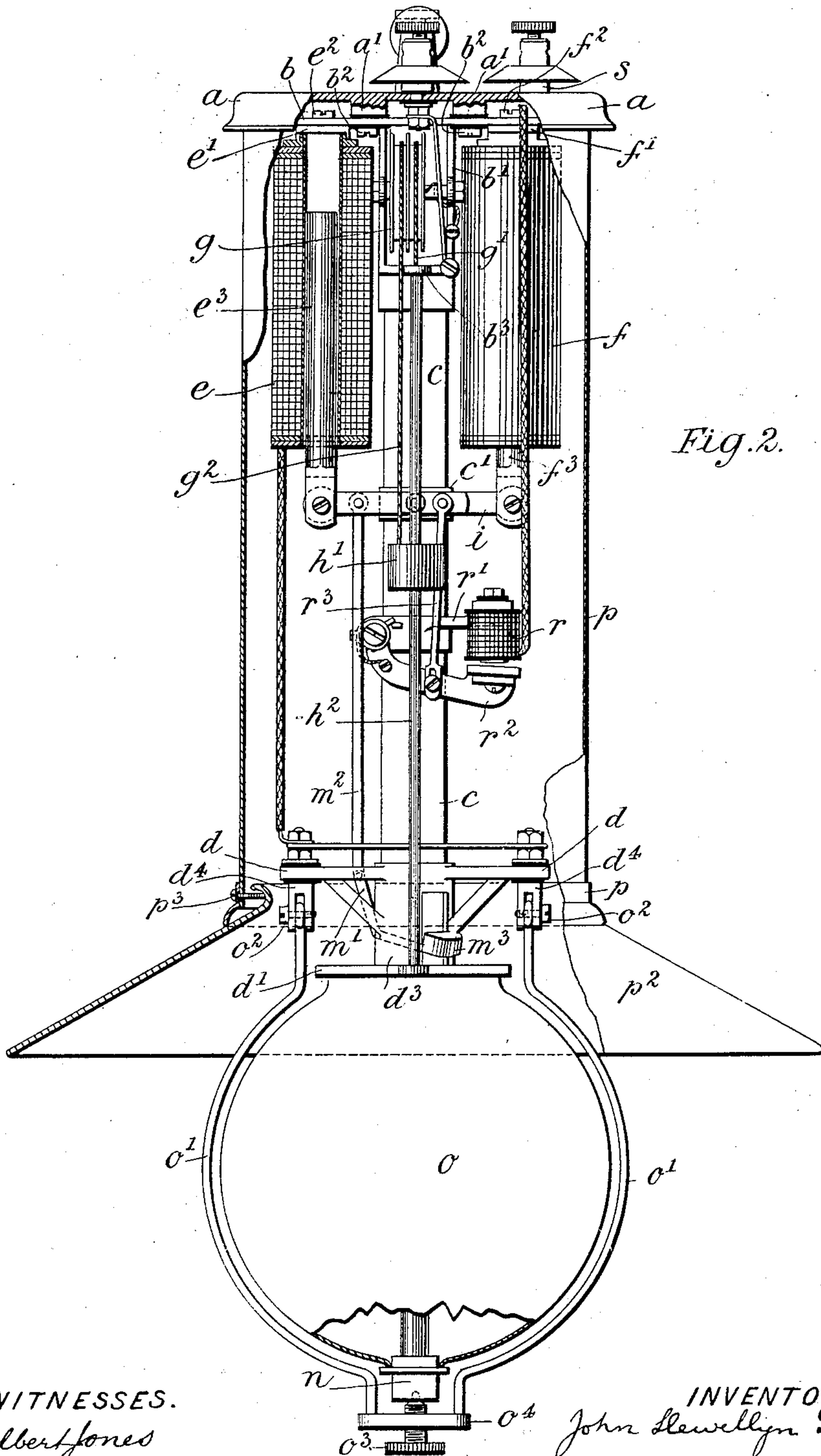


Fig. 2.

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UNITED STATES PATENT OFFICE.

JOHN LLEWELLYN DAVIES, OF LONDON, ENGLAND.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 731,025, dated June 16, 1903.

Application filed February 11, 1902. Serial No. 93,568. (No model.)

To all whom it may concern:

Be it known that I, JOHN LLEWELLYN DAVIES, a subject of the King of Great Britain and Ireland, whose post-office address is 11 Horsell road, Highbury, London, England, have invented certain new and useful Improvements in or Connected with Electric-Arc Lamps; and I do hereby 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.

This invention for improvements in or connected with electric-arc lamps relates to an improved arrangement of the framework, to an improved arrangement of the regulating mechanism, to an improved arrangement for supporting the globe, and to an improved mode of fixing the reflector.

In the accompanying sheet of illustrative drawings, Figures 1 and 2 are vertical sections at right angles to one another of an arc-lamp constructed according to this invention, and Fig. 3 is a plan of the same. Fig. 4 is a plan showing the regulating mechanism.

The framework of the lamp comprises the top or crown-plate *a*, the coil-plate *b*, fixed to but insulated from the crown-plate *a*, and provided with the depending-bracket *b'*, the main or central tube *c*, fixed in the bottom of the bracket *b'*, and the lower yoke *d* and globe-plate *d'*. The coil-plate *b* is secured to the crown-plate *a* by screws *b²*, screwing into bosses *a'* on the under side of the crown-plate, and is insulated therefrom by means of insulating bushes and washers. The regulating-coils *e f* are secured to the coil-plate *b* by means of flanges *e' f'* on the top of the fixed tube of the coils and screws *e² f²*. A double pulley *g* is mounted with its axis horizontally in the bracket *b'*, and a cord *g'*, fixed at one end to one part of the pulley and passing around the pulley, is connected at its other end to the upper-carbon holder *h*. A cord *g²*, fixed at one end to the other part of the pulley and passing around the pulley, is connected at its other end to a weight *h'*, having a circular hole and sliding on a square or triangular guide-rod *h²*, fixed at its upper end in the arm *b³*, projecting from the bracket *b'*, and at its lower end in the globe-plate *d'*. The square or triangular rod gives a free slide to

the weight and obviates any liability to stick through dirt or canting of the weight. The movable cores *e³ f³* of the coils *e f* are connected to opposite ends of the lever *i*, that is bifurcated to surround the central tube *c*, and pivots on a ring *c*, fixed to the tube *c*. The dash-pot cylinder *l* is provided with a tail-piece *l'*, that passes through a hole in the coil-plate and is pivoted to it by a screw *l²*, passing through the tailpiece. The piston-rod *l³* of the dash-pot is pivoted to the lever *i*. The cylinder is provided at the top with a valve *l⁴*, such as a ball, covered by the plate *l⁵*.

The carbon-gripping device consists of a ring *m*, loosely surrounding the upper carbon and connected at one side by the links *m' m²* to the lever *i* and provided at its opposite side with a weight *m³*, that when there is no current in the lamp just rests on the globe-plate.

The lower-carbon holder *n* consists of a bush having a central hole in which the carbon is clamped by a screw *n'* and provided with a flange that bears against a lip on the lower end of the globe *o*. The side rods *o'* are curved to the shape of the globe, and are hooked at their upper ends onto the pins *o²*, fixed in brackets *d⁴*, fixed to but insulated from the yoke-piece *d*. The lower ends of the side rods *o* are connected by a yoke-piece *o⁴*, in which is a central screw *o³*, whose upper end bears against a central recess in the bottom of the carbon-holder *n*. The side rods *o'* are hooked over the pins *o²* in the brackets *d⁴*, the globe and carbon-holder are put into position, the side rods and yoke *o⁴* are swiveled under the globe, and the screw *o³* is operated to force the globe up against the globe-plate *d'*. It will be seen that the yoke *d*, mechanism-chamber *d³*, and globe-plate *d'* are made in one piece, and thus form with the other parts a very simple and cheap frame.

An ornamental ring *p'* is fixed to the bottom of the casing *p* fixed at its upper end to the crown-plate *a*, and the reflector *p²* is held to the casing by means of the projecting ends of the screws *p³*, that fix the ring to the casing passing below the curved-over end of the reflector.

The coils *r* of the cut-out are mounted on but insulated from a bracket *r'*, clamped to the central tube *c*, and the cut-out lever *r²*

is pivoted to the bracket and falls by gravity away from the coils. A link r^3 connects the lever r^2 and the lever i .

The current passes from the insulated positive terminal $+$, fixed on the crown-plate a , to the central tube, pulley g , cord g' , upper-carbon holder, through the carbons to the lower-carbon holder, through the side rods o' and insulated brackets d' to the series coil e and negative terminal $-$. The shunt-coil f is connected across the terminals of the lamp. The cut-out lever is in connection with the central tube, and the core of the cut-out coil is connected to the coil, itself connected to a terminal s on the crown-plate, connected through a compensating coil to the negative terminal $-$. The carbons of the lamp being in contact by gravity and the current passed to the lamp, the series solenoid e draws in its core and the carbon-gripping device m is raised by the lever i and the links m' m^2 , and it first grips the upper carbon and then draws it upward, raising the weight m^3 off the plate. As the carbons consume the shunt-coil increases in power and the gripping device is gradually lowered until the weight m^3 rests on the plate, when the carbon will be partially released and will gradually and regularly feed forward. Should the current through the carbons fail, the shunt-coil causes the lever i to draw up and cut out lever r^2 and complete the cut-out circuit through the cut-out coils that then hold the cut-out lever in position. If the carbons again come together and current passes through the series solenoid, the lever i and cut-out lever r^2 fall and break the cut-out circuit.

What I claim, and desire to secure by Letters Patent, is—

1. The construction of framework of an electric-arc lamp consisting of a crown-plate, a

coil-plate fixed to, but insulated from, the crown-plate, and provided with a depending bracket, coils suspended from the coil-plate, a main or central tube fixed in the bracket, and the lower yoke and globe-plate, substantially as described.

2. The arrangement of regulating mechanism of an arc-lamp comprising the double pulley, cords fixed to the pulleys, the top-carbon holder connected to the one cord, a counterweight with a circular hole connected to the other cord, and an angular guide-rod for the counterweight.

3. The arrangement for supporting the globe consisting of the lower-carbon holder bearing against the bottom of the globe, the globe-plate against which the upper edge of the globe bears, the side rods curved to the globe and provided with hooks at their upper ends, fixed pins over which the hooks are adapted to pass, the yoke connecting the side rods at the bottom, and the adjustable screw in the yoke serving to press the carbon-holder and globe upward, substantially as described.

4. In an arc-lamp the main framework comprising a main central tube and a casting fixed on the lower end of the tube consisting of an upper yoke-plate, a lower globe-plate and an intermediate tube connecting the two plates and forming the chamber for the arc-regulating mechanism.

5. The means for supporting the reflector, consisting of a ring fitting over the bottom of the casing, and screws having internally-projecting ends that fix the ring to the casing.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOHN LLEWELLYN DAVIES.

Witnesses:

SAMUEL PERCIVAL,

HERBERT C. BOLWELL.