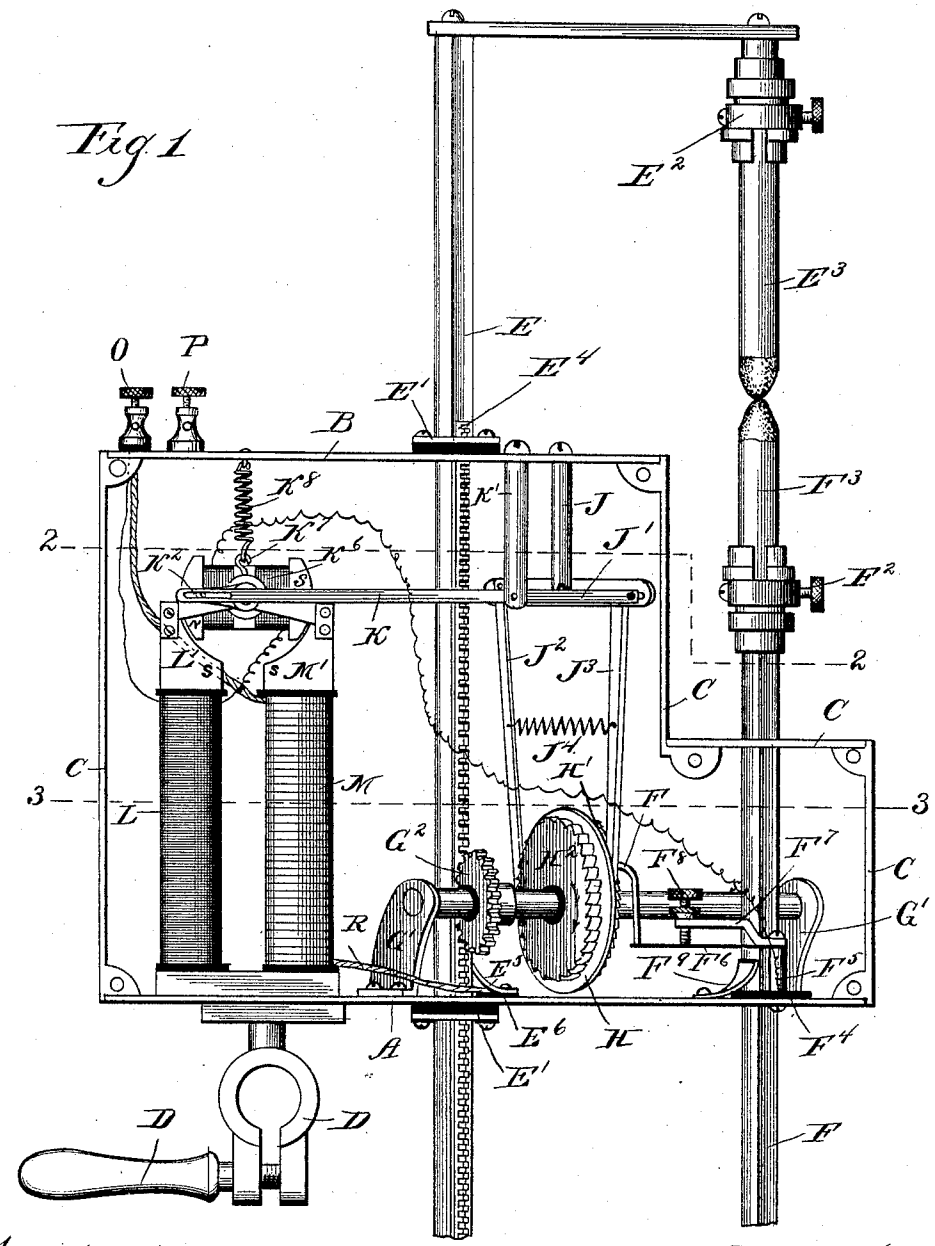
(No Model.) 2 Sheets—Sheet 1.

W. O. MEISSNER.

ELECTRIC ARC LAMP.

No. 486,488. Patented Nov. 22, 1892.

Fig. 1



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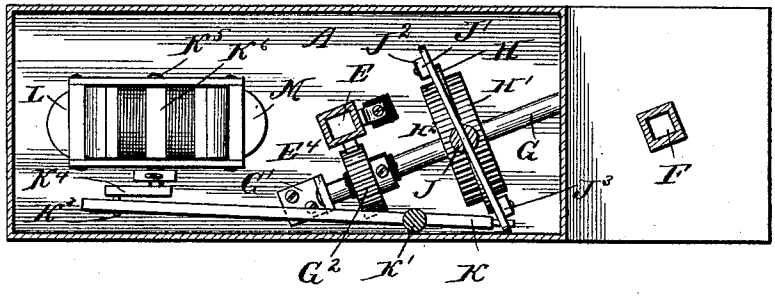
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Fig 2



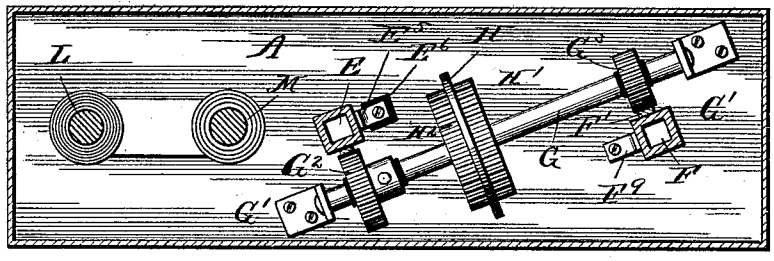


Fig 3

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UNITED STATES PATENT OFFICE.

WILLIAM O. MEISSNER, OF CHICAGO, ILLINOIS.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 486,488, dated November 22, 1892.

Application filed April 13, 1892. Serial No. 429,061. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM O. MEISSNER, a subject of the Emperor of Germany, residing at Chicago, county of Cook, State of Illinois, have invented a new and useful Arc Lamp, of which the following is a specification.

My invention relates to arc lamps, and especially, perhaps, to focusing arc lamps, though it is equally applicable to other than focusing-lamps, for with slight modifications or omissions it could be made to move but one of the carbons instead of both of them. It is illustrated in the accompanying drawings, wherein—

Figure 1 is an interior view of the mechanism of the lamp. Fig. 2 is a horizontal section on the line 2 2. Fig. 3 is a horizontal section on the line 3 3.

Like parts are indicated by the same letter in all the figures.

A is the lower plate, and B the upper plate, of the frame, and these two plates are suitably connected by the parts C C. On the lower plate A is shown the adjustable clamp D with handle D′, whereby the lamp may be conveniently secured upon an axis at any desired position.

E is the upper-carbon rod passing through the insulation-collars E′ E′ and carrying the upper-carbon holder E^2, to which the carbon E^3 is secured. This rod is preferably rectangular in cross-section, or at least other than round, and has the rack B^4 along one side. A contact-brush E^5 on the insulated support E^6 rises from the bottom and bears upon one side of the rod E.

F is the lower-carbon rod, having a like rack F′ and carrying the lower-carbon holder F^2, to which the lower carbon F^3 is attached.

F^4 is the insulation-block, from which rises the standard F^5, which carries the contact-spring F^6 and the arm F^7, with the adjustable set-screw F^8 bearing upon such spring, so as to adjust its position at will.

F^9 is a spring-brush, which rises from the bottom of the lamp and bears upon the lower-carbon rod F.

G is a shaft journaled on the standard G′ G′ and provided with the large pinion G^2 to engage the rack E^4 and the small pinion G^3 to engage the rack F′. These pinions are preferably insulated on the shaft, as shown. The shaft also carries a double ratchet-wheel, having the central flange H and the oppositely-facing ratchets H′ H^2.

J is a hanger depending from the top B of the lamp. Pivoted at its lower extremity is the cross-bar J′, to which are pivoted at its extremities the dogs J^2 J^3, held toward each other by the spring J^4 and adapted one to engage one ratchet-wheel and the other to engage the opposite ratchet-wheel on the shaft G. At one end of this cross-bar J′ is an aperture, through which passes the end of the rock-bar K, pivoted upon the hanger K′ and slotted at K^2 to receive the pin K^3, which projects from the crank-arm K^4 on the axis K^5 of the magnet K^6. Projecting from the axis of the same magnet in an upper direction is the hook K^7, to which is attached the spring K^8 from the top of the lamp.

L is a shunt-magnet, and M a main magnet, secured to the bottom of the lamp and provided with their respective pole-pieces L′ and M′. The magnet K^6 is provided with two poles N and S, adapted to move along and in close proximity to the poles L′ and M′.

O is the positive binding-post, and P the negative, connected to the line-wire. From the positive post O leads the heavy-current conductor R through the main magnet M to the brush E^5, thence to the carbon-rod E, through the carbons to the lamp-frame, and thence to the binding-post P. The binding-post O is of course insulated from the frame. A fine shunt-wire leads from the binding-post O through the shunt-magnet L, through the magnet K^6 to the post F^5, along the spring F^6, and to the finger T, which depends from the dog J^3, and thence to the frame of the lamp and to the binding-post P. The windings are such that the poles L′ and M′ of the magnets L and M are always south poles, while N is the north pole and S the south pole of the magnet K^6. It will be easily seen that these devices can be greatly changed in their construction and operation without departing from the spirit of my invention and that certain parts might be dispensed with and others substituted without interfering with the operation of the remaining parts.

The use and operation of my invention are

as follows: Assuming that the two carbons E^3 and F^3 are in contact, as shown, when the current is turned into the lamp the two circuits last above described will be closed and a current will flow through each. Since the carbons are in contact, the main circuit through the magnet M will have a free passage, and this circuit will take the greater part of the current, but a small portion flowing through the shunt-circuit. The result of this will be that the magnet M will overpower or alter the natural magnetism of the magnet K^6, or at least will draw down the usually-south pole of said magnet. This will rock the magnet K^6 on its axle and depress the dog J^3, lifting the dog J^2. This dog will engage its opposed ratchet-wheel and rotate the shaft G in the direction indicated by the arrow, and since the pinions and racks are on opposite sides of the shaft G the two carbons will be separated and the arc established. As the resistance of the arc increases, the shunt and main circuits will arrive at a balance, which will restore the magnet K^6, under the influence of spring K^8, to its normal horizontal position. If the arc resistance increases, a greater portion of the current will be diverted to the shunt-circuit and the magnet K^6 will be rocked in the opposite direction, thus bringing the carbons nearer together; but at each motion of approach of the carbons the dog J^3 will rise, thus disengaging the finger T from the spring F^6 and breaking the shunt-circuit. The spring K^8 will restore the magnet K^6 and the dogs J^2 J^3 to their normal position. Thus any change in the resistance of the arc will immediately be corrected in the manner indicated.

I have shown two carbon-rods, though the moving mechanism may be adapted to operate but one of them, in which event the other rod is fixed and serves simply as a carbon-holder.

I claim—

1. In an arc lamp, the combination of carbon-rods with racks associated therewith, a shaft with two pinions thereon to engage such carbon-rod racks, two oppositely-faced ratchet-wheels, two dogs on the ends of a pivoted cross-bar, and means for rocking such cross-bar, said dogs opposed to said ratchet-wheels, so that when the cross-bar rocks the racks are engaged and move in either direction.

2. In an arc lamp, the combination of two carbon-rods with racks thereon, a shaft, pinions on said shaft, adapted to engage each one of said racks, said carbon-rods on opposite sides of said shaft, and means for rotating said shaft in either direction responsive to variations in the resistance of the arc, said means containing two oppositely-faced ratchet-wheels on the shaft and dogs associated therewith, and a rock-bar, on the ends of which such dogs are pivoted, and a shunt-magnet adapted to rock such bar.

3. In an arc lamp, the combination of two carbon-rods with racks thereon, a single shaft, pinions on such shaft, adapted each to engage one of said racks, and means for rotating said shaft in either direction responsive to variations in the resistance of the arc, said means containing two oppositely-faced ratchet-wheels on the shaft and dogs associated therewith, and a rock-bar, on the ends of which such dogs are pivoted, and a shunt-magnet adapted to rock such bar.

4. In an arc lamp, the combination of two carbon-rods with racks thereon, a single shaft, pinions on such shaft, adapted each to engage one of said racks, and means for alternately rotating said shaft in either direction responsive to variations in the resistance of the arc, such means comprising an electrically-actuated rock-bar, and two oppositely-faced ratchet-wheels on the shaft, and dogs to engage the same, said dogs attached to such rock-bar.

5. In an arc lamp, the combination of two carbon-rods with a shaft between them, driving connections between the shaft and the rods, driving mechanism to alternately rotate the shaft in opposite directions, and means for operating said mechanism, containing a main and a shunt magnet, and an electromagnet responsive in its position to the balance between the main and the shunt magnet.

6. In an arc lamp, the combination of two carbon-rods with a shaft and driving connections from the shaft to the rods with mechanism for alternately rotating the shaft in opposite directions, and a motor for such mechanism, consisting of a main and shunt magnet with an armature-magnet whose poles are continuously exposed to the poles of the main shunt-magnet and a connection from such armature-magnet to the driving mechanism.

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Witnesses:
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