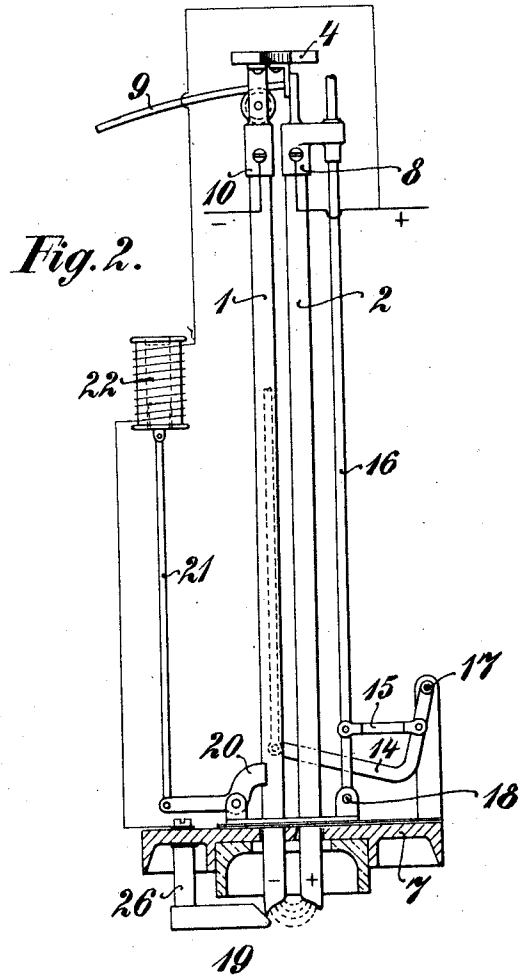
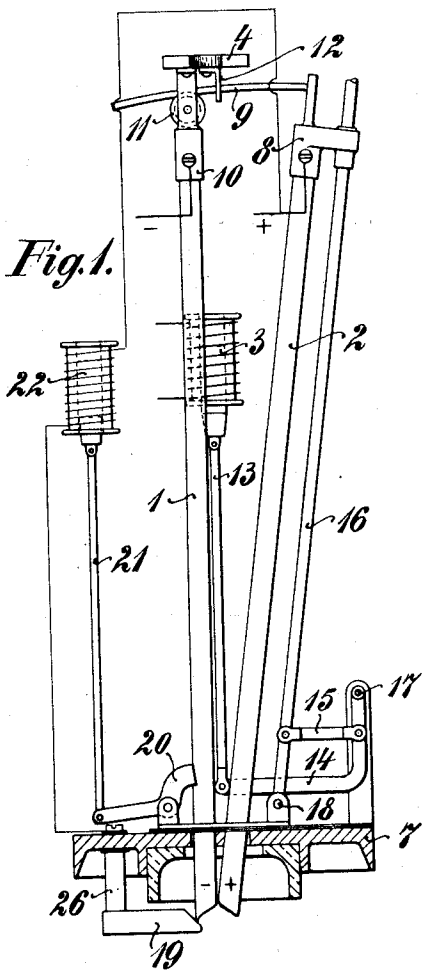
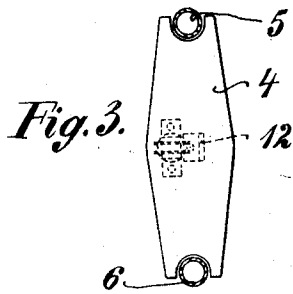


P. HANISCH & J. ROSEMEYER.
ARC LAMP.
APPLICATION FILED JAN. 28, 1909.

Patented Apr. 16, 1912.
2 SHEETS-SHEET 1.

1,023,424.



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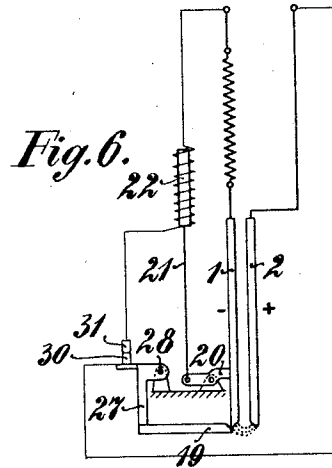
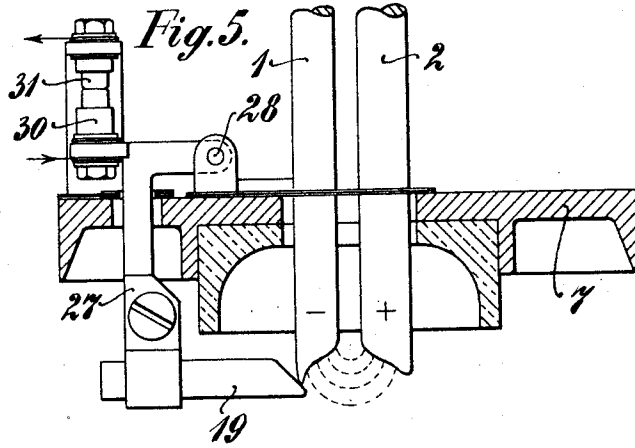
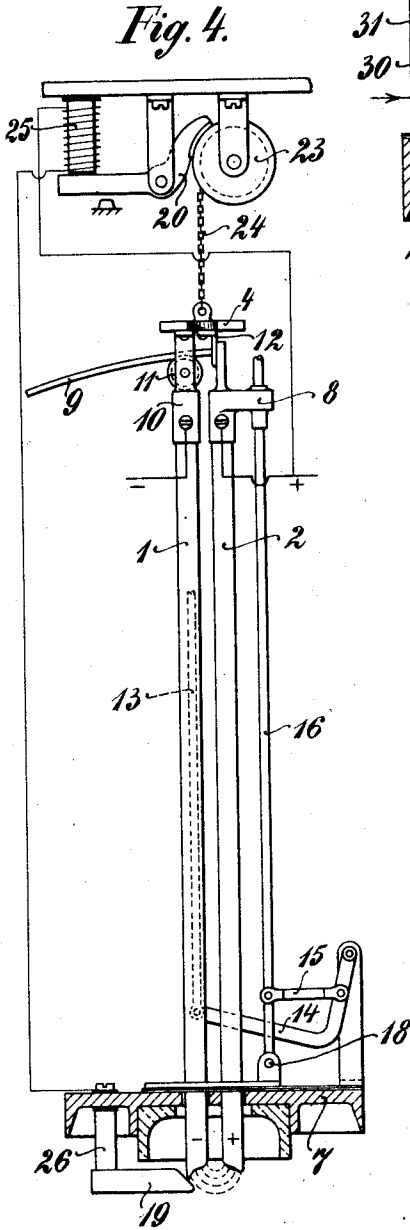
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Witnesses:

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UNITED STATES PATENT OFFICE.

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ARC-LAMP.

1,023,424.

Specification of Letters Patent.

Patented Apr. 16, 1912.

Application filed January 28, 1909. Serial No. 474,725.

To all whom it may concern:

Be it known that we, PAUL HANISCH, a subject of the Emperor of Germany, residing at Cologne-on-the-Rhine, Germany, and JOSEF ROSEMEYER, a subject of the Emperor of Germany, residing at Cologne-Lindenthal, Germany, have invented a new and useful Improvement in Arc-Lamps, of which the following is a specification.

This invention relates to an arc lamp having downwardly directed carbons, and it has for its object a new arrangement for controlling the adjustment of the carbons as they burn away.

According to this invention one of the two carbons, which are mechanically connected at their upper ends, rests by its lower end against a support and acts either by its pressure on the support or indirectly through the closing of an electric circuit to operate a brake mechanism which supports the carbons until they burn away so as to tend to leave a gap between the one carbon and its support. If the support is movable it will then turn so as to follow the carbon, or if the support is fixed the contact between it and the carbon will be broken. In either case the brake mechanism is actuated so as to permit the two carbons moving downward until the one of them again rests properly upon the support. The brake mechanism is thereupon thrown into action so as to hold up the carbons until the next release takes place.

In the accompanying drawings, Figures 1 and 2 show in vertical elevation an arc lamp constructed according to this invention. Fig. 1 illustrates the lamp before the current is switched on, the guiding rod being removed for the sake of better illustration of the other parts, and Fig. 2 shows the lamp in the burning position, the guide rods also being omitted for the same purpose. Fig. 3 is a plan view of the carbon cross guide with the vertical guides in cross section. Figs. 4, 5 and 6 show modified forms of construction according to the invention, Fig. 6 being a diagram of connections of the form according to Fig. 5.

In all the figures, the two carbons are marked 1 and 2, and these carbons are arranged to move in a vertical direction while they are so connected mechanically the one with the other that their points must burn away equally. The one carbon is always

caused to move vertically while the other is arranged to turn or pivot for striking the arc so as to bring its point against that of the other carbon so long as no current is flowing through the lamp. As soon, however, as the current is switched on, it passes through the points of the carbons while an electromagnet or solenoid 3 is actuated, causing the movable carbon 2 to turn and to come into the burning position shown in Fig. 2 as described below. For guiding the carbon 1, a cross piece 4 is provided, arranged to move between vertical guides 5 and 6. The carbon 2 has a swinging movement in the opening in the burner plate 7 through which said carbon passes. On the carbon holder 8 of the pivoting carbon, is fixed an arc-shaped bar 9 which engages with the carbon holder 10 of the other carbon 1. In order to reduce the friction between the parts, a roller 11 is preferably provided for the bar 9 to work over. The movement of the carbon 2 is limited by a stop 12 fixed beneath the cross piece 4. We should consider a reversal of this arrangement as fully within the scope of our invention. The electromagnet or solenoid 3 effects the movement of the carbon 2 when the current is switched on, by the intermediary of a rod 13 connected to an elbow lever 14 pivoted at 17 on a fixed support. The lever 13 is connected by a link 15 to a rod 16 which is pivoted at 18 and slides through a guiding hole in the carbon holder 8 of the carbon 2. The drawing up of the rod 13 by the electromagnet or solenoid causes the parts to move from the position of Fig. 1 to that of Fig. 2 by which the lower ends of the carbons are separated, the carbon 2 moving parallel to the rod 16.

The most important part of the invention rests in the device controlling the adjustment of the carbons as they burn away. A supporting piece 19 projects beneath the carbon 1 which only moves vertically. Both the carbons are held in a vertical direction by means of a brake 20 so long as the carbon 1 rests with its point against the support 19. As soon, however, as there is a tendency to form a small gap between the carbon and the support as the former burns away, the brake is released to such an extent that the carbons are allowed to fall until the carbon 1 again rests properly upon its support.

Various arrangements can be used for ac-

tuating the brake; in the construction shown in Figs. 1, 2 and 6, the rod 21 actuated by an electromagnet or solenoid 22 moves the brake block while the circuit of 22 is a shunt on the lamp terminals which is kept closed as long as the carbon 1 rests on its support, but is broken when the carbon burns away so as to tend to leave the support. In other cases the support may be made movable so that it tends to follow the point of the carbon as this latter burns away, and this motion can be made by suitable means to control the brake as hereinafter further explained. Fig. 7 shows such a construction. Finally the one device may be combined with the other in such a way that the movable support controls contact points arranged in any suitable position to open and close the circuit of the electromagnet or solenoid controlling the brake. This modified construction is illustrated in Fig. 5 and is hereinafter explained.

When the brake is actuated by an electromagnet, the position of the brake and the manner in which it controls the movement of the carbons may be very various. The brake may act directly on one of the carbons as illustrated for example in Figs. 1, 2, and 6, or it may act upon a drum 23 as is shown in Fig. 4, over which drum a chain 24 passes supporting the carrier 4 of the carbons. The electromagnet 25 releases or applies the brake according as the carbon 1 ceases to rest upon the support 19 or rests efficiently thereon. The shunt circuit for the electromagnet will be evident at once from the drawing. The arrangement of the brake device and of the electromagnet can obviously be modified in a great many ways without departing from the invention. When a fixed support 19 is used, this is preferably held by means of a bracket 26 on the burner plate 7.

When the mechanical device for controlling the brake is combined with the electromagnetic device, the arrangement may be substantially that illustrated by Figs. 5 and 6. The support 19 is in this case again

hung on a lever 27 pivoting about a fixed point 28 so that as the carbons burn away the lever can turn a little; the movement of the lever is utilized to open and close an electric contact between the part 30 attached to the lever and the part 31 suitably fixed in the lamp. The contacts 30 and 31 are included in the shunt circuit of an electromagnet or solenoid 22 by which the brake 20 is actuated through a link 21 as indicated in Fig. 6. The contacts 30 and 31 might of course be arranged in any other convenient way. A very small amount of burning away of the carbon suffices to permit the support 19 to move sufficiently to break the contact between 30 and 31 and so to cause the brake to be released.

The constructions hereinbefore described and illustrated in the accompanying drawing are intended to serve as examples according to this invention, the scope of which is defined by the following claims.

What we claim is:

In an arc lamp having downwardly directed carbons, one of said carbons being pivotally mounted to strike the arc and the other mounted for vertical movement, an arc-shaped bar on the carbon holder of the pivoted carbon adapted to engage the carbon holder of the vertically movable carbon, means for limiting the movement of the pivoted carbon, an elbow lever pivotally mounted on a fixed support, an electromagnet, a rod connecting said magnet with said elbow lever, a link connected to said elbow lever, and a pivotally mounted rod connected with said link and mounted to slide through an opening in the carbon holder of the pivoted carbon.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

PAUL HANISCH.
JOSEF ROSEMEYER.

Witnesses:

LOUIS VANDORY,
H. J. DUNLAP.