

(No Model.)

3 Sheets—Sheet 2.

R. SCHEFBAUER.
ELECTRIC ARC LAMP.

No. 394,791.

Patented Dec. 18, 1888.

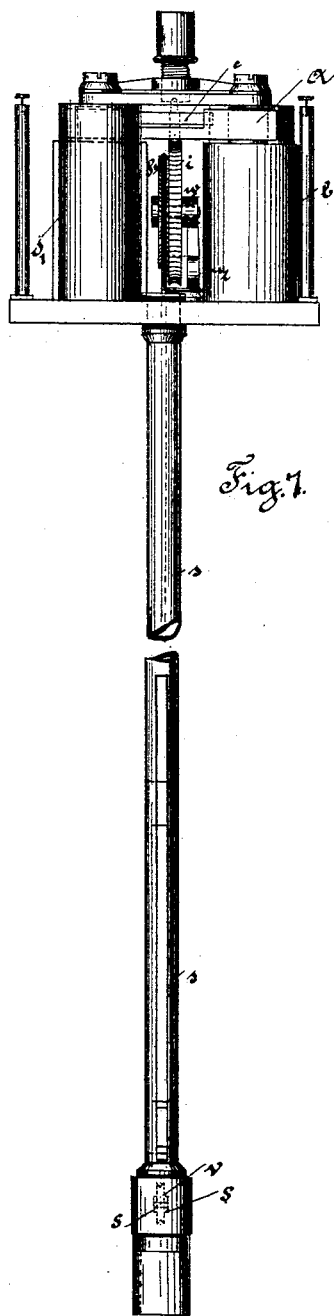


Fig. 7.



Fig. 10

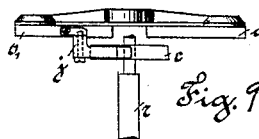


Fig. 9

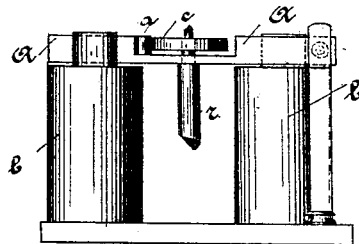


Fig. 8

Witnesses.
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J. Reynolds.

Inventor.
Rupert Scheffbauer
by
W. H. Babcock
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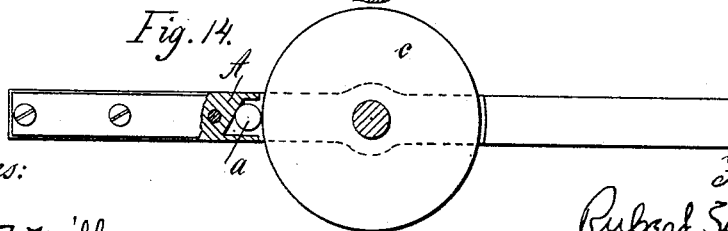
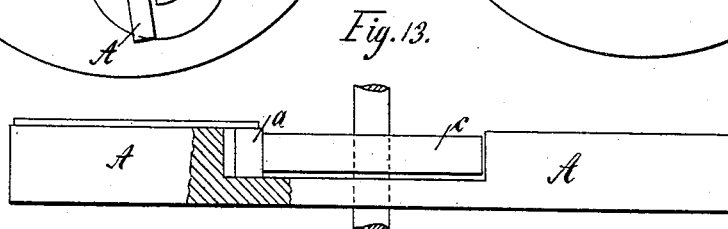
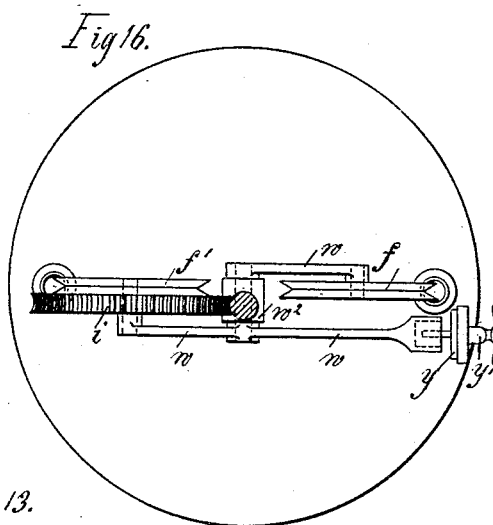
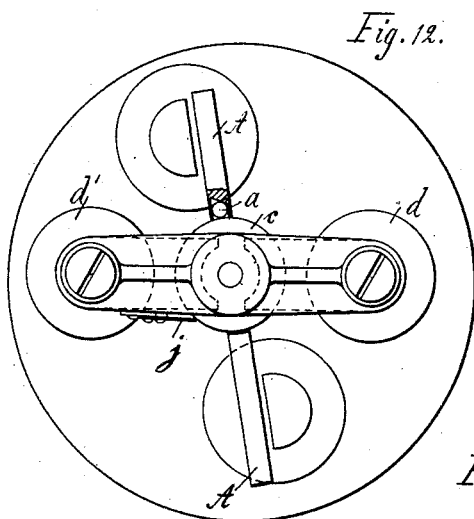
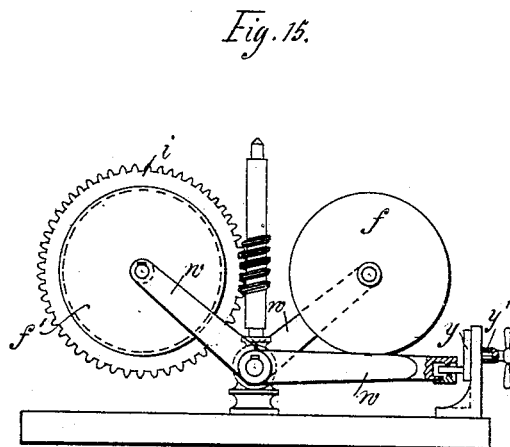
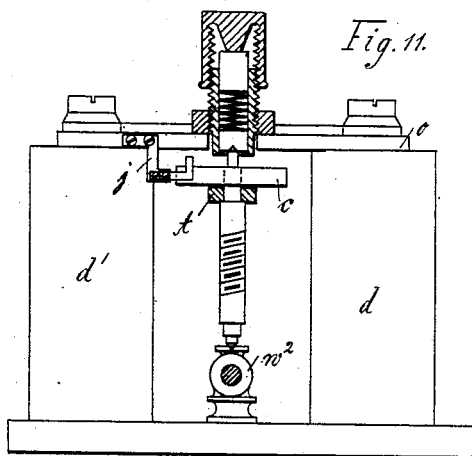
(No Model.)

3 Sheets—Sheet 3.

R. SCHEFBAUER.
ELECTRIC ARC LAMP.

No. 394,791.

Patented Dec. 18, 1888.



Witnesses:

Chas A. Mills,
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Inventor:
Rupert Scheffbauer,
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UNITED STATES PATENT OFFICE.

RUPERT SCHEFBAUER, OF DRESDEN, SAXONY, GERMANY, ASSIGNOR TO
WEBER & SCHEFBAUER, OF SAME PLACE.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 394,791, dated December 18, 1888.

Application filed April 7, 1887. Serial No. 234,092. (No model.) Patented in Belgium May 16, 1887, No. 77,340; in Germany May 27, 1887, No. 39,498; in France October 3, 1887, No. 183,379, and in Italy October 4, 1887, No. 22,217.

To all whom it may concern:

Be it known that I, RUPERT SCHEFBAUER, mechanician, of Dresden, Kaulbachstrasse 18, a citizen of Germany, residing at Dresden, in the Kingdom of Saxony, have invented certain new and useful Improvements in the Manufacture of Lamps for Electrical Lights, (for which I have received patents in Belgium May 16, 1887, No. 77,340; in Germany May 27, 1887, No. 39,498; in France October 3, 1887, No. 183,379, and in Italy October 4, 1887, No. 22,217;) 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.

The object of my invention is to effect improvements in the method of feeding carbons in electric-arc lamps.

This arc lamp differs essentially from those heretofore constructed, inasmuch as, first, it is not what is called a "free-fall lamp"—that is to say, a lamp in which the weight of the upper-carbon holder overcomes that of the lower—whereby when the current is not passing the upper carbon sinks automatically, and thereby simultaneously raises the lower carbon; secondly, the upper as well as the lower carbons are not actuated by the power of a spiral spring, and, thirdly, the lamp is void of all clock-work and band-connections, as well as of long racks or guiding-rods, which require the upper structure of the lamp to be of such a length or height as to equal the united length of the two carbons.

By means of my improvements it is possible to construct a lamp which, with its superstructure, does not exceed twenty-eight inches in height. My improved lamp is also capable of operating in any position, whether horizontally, vertically, or otherwise, and with the controlling mechanism at either end, and which under the influence of vibrations, shocks, or other disturbing operations—such as arise upon locomotive-engines and on board ship and otherwise—will not interfere with the quiet burning of the lamp; and in order that my said invention may be particularly described and ascertained, reference is hereby

made to the accompanying drawings, in which similar letters of reference indicate corresponding parts

Figure 1 represents a front elevation of the mechanism embodying my invention, partly broken away and partly in section. Fig. 2 represents a plan view of the same, some parts being removed. Fig. 3 represents a side elevation of the magnets and proximate devices, the casing of the air-valve being broken away. Figs. 4, 5, and 6 are detail views. Fig. 7 represents a side elevation of the mechanism embodying my invention. Figs. 8, 9, 10, 11, 12, 13, 14, 15, and 16 are detail views.

The lamp may be treated as consisting of two parts—first, the apparatus for operating or propelling the carbons and establishing the arc light, and, secondly, the guiding mechanism connecting the two carbon-holders by means of an endless band.

The first portion of the apparatus serves to effectually and accurately propel the carbons, according to the consumption, by means of the lever A, which is subjected to an oscillating motion by the electro-magnets in derivation $b b'$, whereby the friction-roller a imparts a rotary motion to the iron disk c in one direction only. This disk is fixed to the axle which carries the worm r , such worm gearing with the worm-wheel i , fixed to the chain-wheel f . f' is a loose chain-wheel of the same diameter as f . The wheels $f f'$ carry the endless chain u , which is kept in tension by the beam S , fitted with wheels $v v'$ and spring z , as shown in Fig. 1. The endless chain u is driven by the chain-wheel f' , and this chain propels the two carbon-holders $g g'$, attached thereto. The propulsion proceeds uninterruptedly and is controlled as to speed by the intensity of the current required and by the tension produced by the length of the arc light, and also by the consumption of the carbons suitable to the required candle-power of the lamp.

For the establishment of the arc light the two electro-magnets $d d'$, placed in the main circuit, are provided and fitted with the armature $o o'$, having an enlarged center immedi-

ately above the iron disk *c* and worm *r*. As soon as the current passes through the chief magnets, which occurs when the two carbons come in contact, the magnets become so magnetized at the poles that they lift up the disk *c* with the screw *r*. This action causes the worm *r* to act upon the worm-wheel *i* as a rack and pinion, moving the worm-wheel in the reverse direction, whereby the carbons are separated from each other. When the arc becomes too great, the magnets in derivation *b b'* come into action and propel the carbons by means of the lever *A* and roller-pawl *a*, each motion of the arms *A A* toward the magnets *b b'*, propelling the two carbons toward each other equally and simultaneously. In order to insure the progressive rotation of the disk *c*, by means of the oscillation of the lever *A*, the disk is fitted with a spring-brake, *j*, fixed at the side of the armature in such a manner that during the backward motion of the lever the disk *c* is held stationary by the brake, and the friction-roller *a* recedes from the disk, owing to the inclined surface of the fixed pawl, the opposite motion of the lever causing the roller *a* to become jammed against the disk *c*, and thereby drive the same, in a manner well understood.

The chain is connected to and insulated from the first carbon-holder, *g*, passing through the slotted guiding-tube *s'*, around the rollers *v'* and *v*, and is carried to and insulated from the second carbon-holder, *g'*, whence it passes through the other slotted guiding-tube, *s*, over the chain-wheels *f f'*, and returning to the first carbon-holder, *g*. The guiding-tubes *s s'* are well insulated at each end, as shown in section in Fig. 1.

In order to separate the two carbon-holders for the purpose of fixing fresh carbons, an eccentrically-mounted pin, *y*, is fitted to a disk and movable key, *y'*. The eccentric-pin lifts

the forked carrier *w*, (shown by dotted lines in Fig. 1,) which pivots upon the center *W*², whereby the worm-wheel *i* is thrown out of gear with the worm, and consequently the chain and carbon-holders can be moved to any convenient position. By returning the eccentric to its normal position the worm-wheel gears with the thread of the worm *r*, and the chain is then again operated upon, as before described.

I claim—

1. In combination with apparatus for feeding the carbons in electric-arc lamps, the insulated carbon-holders *g g'*, the endless chain *u*, passing over chain-wheels *f f'* and rollers *v v'*, and the slotted guiding-tubes *s s'*, the beam *S*, to which rollers *v v'* are attached, and the spring *z*, bearing against an attachment of said beam for applying tension to said endless chain, all severally operating substantially as hereinbefore described, and shown on the drawings.

2. The combination of the lever *A*, having an intermittent motion, the disk *c*, with the roller-pawl, a brake-spring, *j*, worm *r*, worm-wheel *i*, the magnets *d d'*, and armature *o o'*, the carbon points being fed, the disk rotated and raised, and the motion of the worm-wheel reversed for separating the carbon points, substantially as set forth.

3. In combination with carbon-feeding devices, the disengaging appliances consisting of the forked carrier *w*, pivoting upon the center *w*², operating substantially as hereinbefore described, and shown on the drawings.

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

RUPERT SCHEFBAUER.

Witnesses:

CARL F. REICHERT,
PAUL DRUCKMÜLLER.