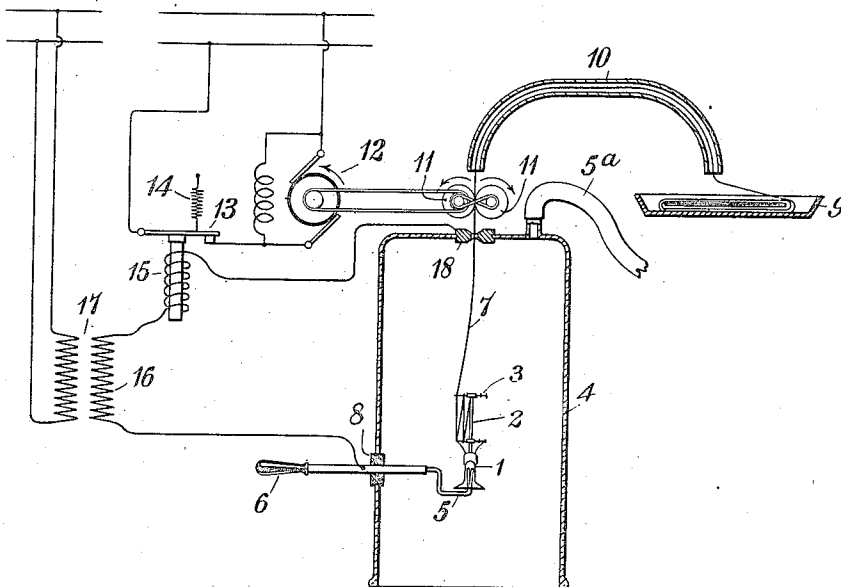


A. S. KNIGHT.
 APPARATUS FOR MANUFACTURING INCANDESCENT LAMPS.
 APPLICATION FILED NOV. 3, 1909.

1,042,451.

Patented Oct. 29, 1912.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR MANUFACTURING INCANDESCENT LAMPS.

1,042,451.

Specification of Letters Patent.

Patented Oct. 29, 1912.

Application filed November 3, 1909. Serial No. 526,046.

To all whom it may concern:

Be it known that I, ARTHUR S. KNIGHT, a subject of the King of Great Britain, and a resident of Newark, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Apparatus for Manufacturing Incandescent Lamps, of which the following is a specification.

My invention relates to apparatus to be utilized in the manufacture of electric incandescent lamps, and it has for its object to provide apparatus of the character above indicated whereby a continuous filament may be maintained taut during its application to a mounting or supports therefor and whereby the application of the filament to the supports may be otherwise facilitated.

It has heretofore been proposed to produce tungsten and similar incandescent lamp filaments in continuous lengths and to apply the same in zigzag form to a plurality of spaced anchors or supporting members by properly manipulating the filament mounting while passing an electric current through the filament for the purpose of rendering it pliable. During the manipulation of the mounting, it is given a back and forth, or reciprocating movement, and considerable difficulty has heretofore been experienced in taking up the slack in the filament and maintaining it taut during such movements.

According to the present invention, the filament is maintained taut, irrespective of the character of the movements of the mounting.

As illustrated in the single figure of the accompanying drawing, the mounting for the filament comprises a stem 1 and an arbor 2 from which projects a plurality of spaced anchors or filament supports 3. The above mentioned parts are mounted within an inverted jar 4 upon the inner end of the holder 5 that projects through the side of the jar and is provided with a handle 6 whereby it may be manipulated, as desired, for the purpose of bending a filament 7 around the supports 3, the stem of the holder being surrounded, where it passes through the jar, by a flexible bushing 8 composed of rubber or other suitable material. The filament 7, as it is applied to the supports 3, is drawn downwardly into the jar through an opening in its top, it being taken from a coil upon a tray 9 and directed in its move-

ments by a guide 10. A suitable atmosphere in which to heat and effect manipulation of the filament is introduced into the jar 4 by means of a pipe 5^a that opens into the jar at its top.

Just before passing into the opening in the top of the jar 4, the filament is engaged by a pair of rolls 11 that are driven, in such direction as to oppose its downward feeding movement, by means of a motor 12, the circuit of which is governed by means of an automatically actuated switch 13. The switch 13 is maintained closed against the tension of the spring 14 by means of an electromagnet 15, the winding of which is included in circuit with the holder 5, the mounting for the lamp filament, a portion of the filament 7, and the secondary winding 16 of a transformer 17, the primary winding of which is supplied from any suitable source. Current is conducted to the filament 7, as it passes downwardly into the jar 4, by means of a terminal device 18 that is supported by the jar and is provided with a central aperture through which the filament passes, and which contains mercury for making electrical contact with the filament.

In order to apply the filament to its mounting, the mounting is so manipulated by means of the holder 5 as to bend the filament about the supports 3, the filament being heated, by the passage of electric current therethrough, sufficiently to render it pliable. As the filament is applied to the supports, it is drawn downwardly between the rolls 11, against the opposing action thereof, and is thereby maintained taut irrespective of the character of the movements of the mounting. If the filament breaks within the jar 4, the circuit including the electromagnet winding 15 is interrupted, and the spring 14 opens the switch 13, thereby, in turn, interrupting the circuit of the motor 12. The rolls 11 then become stationary and there is no further movement of the filament.

It is, of course, understood that other means than the transformer 17 may be employed for supplying current to the circuit including the filament and its mounting, and that the rolls 11 may be driven by other means than the motor 12, or by means of an alternating current motor, or any other suitable motor. For the best operation of

the apparatus, the rolls may be faced with soft rubber, though rolls differing in character therefrom may be found suitable in practice.

5 I claim as my invention:

1. Apparatus for applying an incandescent lamp filament to a mounting therefor comprising an adjustable holder for the mounting, and means opposing feeding of
10 the filament toward the mounting.

2. Apparatus for applying an incandescent lamp filament to a mounting therefor comprising an adjustable holder for the mounting, means opposing feeding of the
15 filament toward the mounting and means for rendering said opposing means ineffective upon breakage of the filament.

3. Apparatus for applying an incandescent lamp filament to a mounting therefor comprising an adjustable holder for the
20 mounting, an electrical circuit including said holder, mounting and a portion of the filament, means opposing feeding of the filament toward the mounting, and means for
25 rendering said opposing means ineffective upon interruption of said circuit.

4. Apparatus for applying an incandescent lamp filament to a mounting therefor comprising an adjustable holder for the
30 mounting, a roll engaging the filament and opposing feeding thereof toward the mounting, driving means for the roll, an electrical circuit including the holder, the mounting and a portion of the filament, and means
35 for rendering the said driving means ineffective upon interruption of the said circuit.

5. Apparatus for applying an incandescent lamp filament to a mounting therefor comprising an adjustable holder for the
40 mounting, means adapted to oppose feeding of the filament toward the mounting, actuating means for the said opposing means, an electrical circuit including the said holder, the mounting and a portion of the
45 filament, an electro-magnet winding also in-

cluded in the said circuit, and a switch governed by the said electro-magnet winding and adapted to render the said actuating means ineffective upon interruption of the said circuit.

6. Apparatus for applying an incandescent lamp filament to a mounting therefor comprising an adjustable holder for the mounting, a roll engaging the filament and opposing feeding thereof toward the mounting, a motor for driving the roll, an electrical circuit including the holder, the mounting and a portion of the filament, an electro-magnet winding also included in the
55 said circuit, and a switch governed by the electro-magnet winding and adapted to open the motor circuit upon interruption of the aforesaid circuit.

7. Apparatus for applying a filament to a mounting therefor comprising means actively opposing movement of the filament
65 toward the mounting.

8. Apparatus for applying a filament to a mounting therefor comprising means actively tending to effect movement of the
70 filament away from the mounting.

9. Apparatus for applying a filament to a mounting therefor comprising means tending to effect movement of the filament away from the mounting, and means for rendering
75 the aforesaid means ineffective upon breakage of the filament.

10. Apparatus for applying a filament to a mounting therefor comprising a device engaging the filament, and means for actuating the same to oppose feeding of the filament toward the mounting.

In testimony whereof, I have hereunto subscribed my name this 18th day of October, 1909.

ARTHUR S. KNIGHT.

Witnesses:

GEORGE P. SCHOLL,
R. C. KARCHNER.