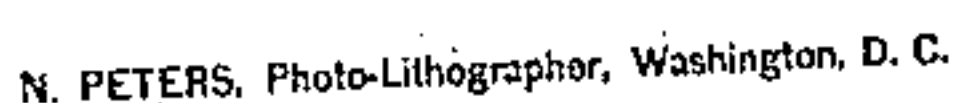


S. BERGMANN.
ELECTRIC LIGHT FIXTURE.

Patented Mar. 2, 1886.



UNITED STATES PATENT OFFICE.

SIGMUND BERGMANN, OF NEW YORK, N. Y., ASSIGNOR TO BERGMANN & CO.,
OF SAME PLACE.

ELECTRIC-LIGHT FIXTURE.

SPECIFICATION forming part of Letters Patent No. 337,296, dated March 2, 1886.

Application filed October 31, 1884. Serial No. 146,889. (No model.)

To all whom it may concern:

Be it known that I, SIGMUND BERGMANN, of New York, in the county and State of New York, have invented a certain new and useful Improvement in Electric-Light Fixtures, of which the following is a specification.

My invention relates to the wiring of all kinds of electric-light fixtures, my object being to facilitate the placing of the wires in the fixtures, and to do away with any danger of abrading the insulations when the wires are brought around sharp angles and curves within a fixture.

To this end my invention consists, mainly, in the use of flexible conductors for wiring electric-light fixtures--that is to say, of conductors each made up of a number of fine wires massed together and surrounded by an insulating covering--two of such conductors being usually twisted together, so that an exceedingly flexible conducting-cord is formed.

In nearly all fixtures, and especially in those of an elaborate ornamental character, there are many sharp angles and short curves in the hollow tubes and arms of which the fixture is composed and through which the conducting-wires have to be brought. The difficulties which arise in the use of the ordinary stiff insulated wires in such cases will readily be appreciated; but the flexible conductors are very readily passed through such arms and around the sharpest angles therein. In combination fixtures for gas and electric light, where the wires are drawn through narrow spaces in the ornamental shell surrounding the gas-tube, the use of the flexible conductors is especially desirable; and also in swinging brackets in which the flexible conductors are passed continuously through the joints. In those fixtures in which a straight central stem is employed with branch arms extending from it, I prefer to employ stiff wires for the primary wires, or those extending straight through the stem to the distributing-body, and to connect flexible conductors to them to form the secondary wires extending through the arms to the lamps. The primary wires may, however, be larger flexible conductors, to which the smaller secondary wires are connected; or flexible wires may extend from the rigid house-wires continuously

through the central stem and out through each lamp-arm.

In the accompanying drawings, Figure 1 shows the application of my invention to a suspended electrolier with two arms. Fig. 2 shows the same with a combination fixture. Fig. 3 illustrates its application to an ordinary wall-bracket. Fig. 4 represents the flexible conductor which I prefer to employ, and Figs. 5, 6, and 7 illustrate the different modes of running primary and secondary wires.

Referring first to Fig. 1, A is the straight central stem of the electrolier suspended from the ceiling and surrounded by the ornamental shell B. Through the stem A the insulated stiff wires *aa* extend to the distributing-body C, which is supported from below by rod *b*. From the distributing-body the curved lamp-arms D D extend, each carrying an electric-lamp socket, *c*, and lamp *d*. In the space below the distributing-body flexible conductors *ee* and *e'e'* are connected in multiple arc with the rigid wires *aa*, preferably as shown in Fig. 5, the bared ends of the wires being twisted together and covered with a wrapping of insulating-tape, *f*. The conductors *ee* are twisted into a flexible cord, *e'*, which passes through one arm D to the lamp, while the wires *e'e'*, similarly twisted, extend through the other arm. These secondary conductors *e'* extend to the lamp-sockets, and are connected as usual to the terminals thereof.

The preferred flexible conductors (shown in Fig. 4) consist each of a mass of fine wires, *g*, wound with cotton or other fibrous insulating material, *h*, then covered with rubber, *i*, and finally again wrapped with an external cotton covering, *k*. These conductors are very flexible, and at the same time have a substantial and moisture-proof insulating-covering.

In passing through the arms D D it will be seen that the conductors have to turn the sharp angles within the balls *ll* and to pass around the curves *mm*. It would be difficult to accomplish this with the ordinary stiff wires; but with the flexible conductors it is readily done.

It is evident that in fixtures of still more elaborate design still greater difficulty would occur, and my invention is of still more importance.

Instead of bringing stiff wires through the stem, I may in some cases use flexible conductors $n n$, Fig. 6, larger than the secondary conductors, such secondary conductors being 5 connected to them in multiple arc, as before; or I may use the continuous flexible conductors $o o'$, Fig. 7, extending through the stem and bent out into the arms in cases where, instead of using primary and secondary wires, a pair of 10 wires is run through the stem for each lamp.

In the combined gas and electric-light fixture shown in Fig. 2, the stiff primary wires a are carried between the central stem, A , which conveys the gas, and the surrounding 15 shell B , and similar shells surround the distributing-arms $D D$, terminating in the balls p , through which shells the flexible secondary conductors e^2 are brought, and from the balls p the gas-arms $r r$ and electric-lamp arms $s s$ 20 extend. It will be seen that as the gas-arms support the balls p they must pass to the centers thereof, so that the electrical conductors must be bent and crowded into a narrow space, which would be practically impossible with 25 rigid wires. Similar difficulties exist to a

greater or less extent in all combination fixtures.

In Fig. 3 the flexible conductors are brought through the hollow arm of a wall-bracket, F , and carried around the angles and curves 30 thereof.

What I claim is—

1. In an electric-light fixture, the combination, with an inclosing tube or body, of two flexible separately-insulated electrical conductors 35 united into a single cord passing through said tube or body, substantially as set forth.

2. In an electric-light fixture, the combination of stiff or rigid conductors for the primary circuit and secondary circuits, each composed of two flexible separately-insulated 40 electrical conductors united into a single cord, substantially as set forth.

This specification signed and witnessed this 27th day of October, 1884.

SIGMUND BERGMANN.

Witnesses:

WM. H. MEADOWCROFT,
THOS. G. GREENE, Jr.