(No Model.) 2 Sheets—Sheet 1.

L. STIERINGER.

EXTENSION ELECTROLIERS.

No. 272,169. Patented Feb. 13, 1883.

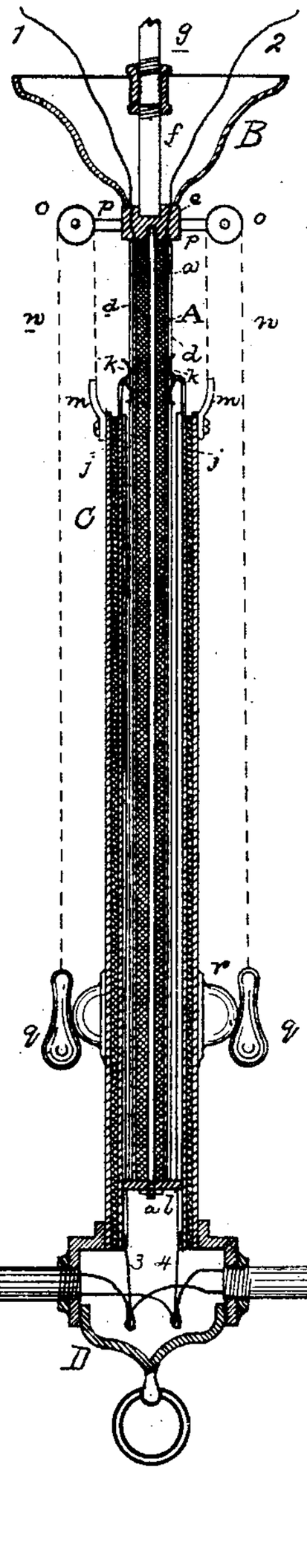

Fig. 1.

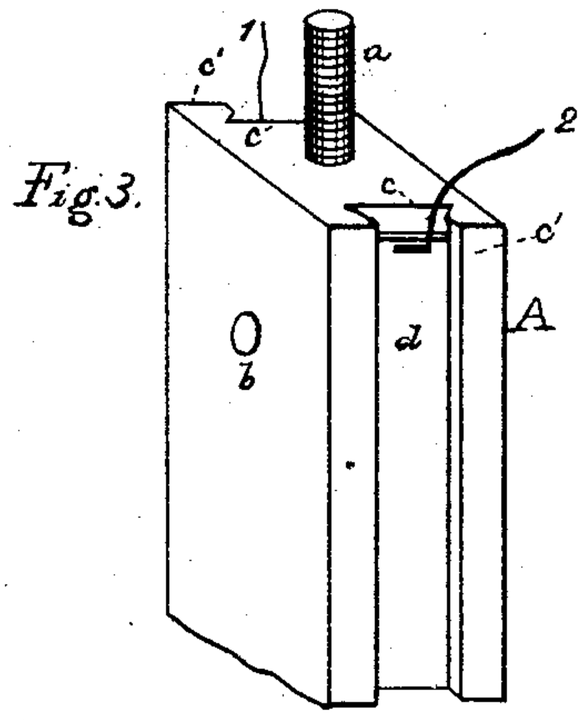

Fig. 3.

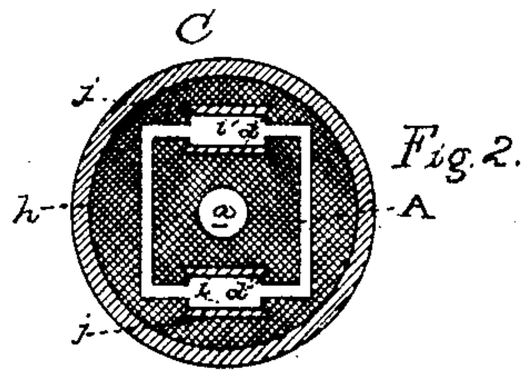

Fig. 2.

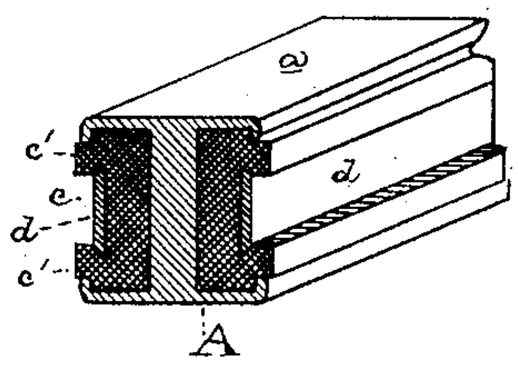

Fig 4.

WITNESSES:

E. C. Rowland

H. W. Seeley

INVENTOR:

Luther Stieringer

By Richd. N. Dyer

Atty.

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

L. STIERINGER.

EXTENSION ELECTROLIERS.

No. 272,169. Patented Feb. 13, 1883.

Fig. 5.

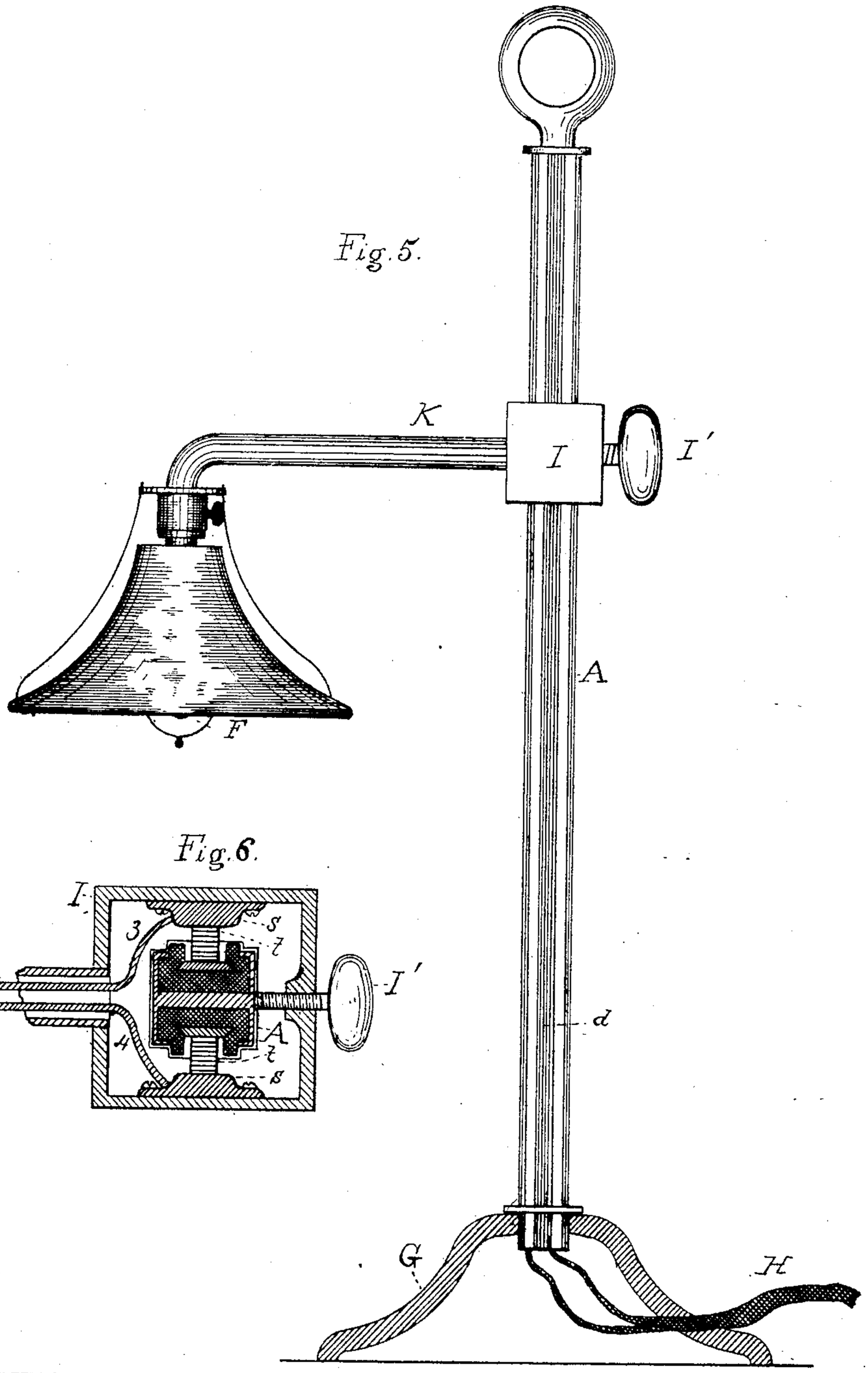

Fig. 6.

WITNESSES:

Edw. C. Rowland

H. W. Seley

INVENTOR:

Luther Stieringer

By Rich'd N. Dyer,

Atty.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

LUTHER STIERINGER, OF NEW YORK, N. Y.

EXTENSION-ELECTROLIER.

SPECIFICATION forming part of Letters Patent No. 272,169, dated February 13, 1883.

Application filed September 7, 1882. (No model.)

To all whom it may concern:

Be it known that I, LUTHER STIERINGER, of the city, county, and State of New York, have invented a new and useful Improvement in Extension-Electroliers, of which the following is a specification.

The object of my invention is to provide an extension or adjustable electrolier, bracket, stand-lamp, or other form of electrical fixture for use with incandescing electric lamps, which shall be of simple construction and operation, and shall be efficient and durable in use; and said invention consists in the novel devices and combinations of devices employed by me in accomplishing this object, as hereinafter described, and pointed out in the claims.

Fixtures embodying my invention are shown in the accompanying drawings, in which Figure 1 is a sectional view of a two-armed electrolier constructed according to my invention; Fig. 2, a transverse section of the main supporting-stem of the same; Fig. 3, a perspective view of the upper portion of the inner or supporting rod; Fig. 4, a view of a modification of the inner or supporting rod; Fig. 5, an elevation of an adjustable stand-lamp embodying some of the features of the invention, and Fig. 6 a horizontal section of the same through the sliding box thereof.

A is a rod of suitable insulating material, such substances as hard rubber and vulcanized fiber being well adapted for the purpose. This rod has a central core, *a*, preferably of steel, and secured against longitudinal movement within the insulating-rod by one or more cross-pins, *b*, Fig. 3. The object of this metal core is to strengthen the rod and prevent it from breaking without entirely destroying its elasticity. Two sides of the insulating-rod are grooved and dovetailed, as seen at *c c*, and in the dovetails are driven metal strips *d*, held merely by friction, so that they can contract and expand independent of the insulating supporting-rod, and will not be buckled by the bending of such rod. Each strip or band *d* may, however, be held at one point to prevent displacement, care being taken not to make connection with the metal strengthening-core. The edges *c'* of the grooves *c* project beyond the metal strips *d*, protecting such strips from accidental contact with external metallic parts. The upper end of the core *a* screws into the block *e*, from which the rod A is supported, upon which block *e* rests the canopy B. The pipe *f*, which extends upward from block *e*, is screwed to the house-pipe *g*, projecting downwardly from the ceiling.

If desired, an insulating-joint like that shown in my Patent No. 259,235 may be used in connecting the pipes *f g*. The insulated wires 1 2 may either pass through the pipe *g* or outside of it, as shown. After passing through the block *e* the wires are soldered to the conducting-strips *d*. Such strips do not extend quite to the top of the insulating portion A, so that there is no danger of an accidental short-circuit across the top of the rod.

C is an inclosing metal tube lined with hard rubber, vulcanized fiber, or other suitable insulating material, *h*. The insulating portion *h* has dovetailed grooves *i i*, which hold by friction metal strips *j j*, which come opposite the strips *d d* of the inner rod. The grooves *i* are also provided with projecting edges to protect the strips *j*.

To the lower end of strips *j j* are soldered the wires 3 4 within the distributing-body D, into which is screwed the tube C, and from which extend the arms E E, each carrying an incandescing electric lamp, F. Within the body the wire connections to the lamps are also made, as shown.

Instead of a distributing-body with a number of lamp-arms projecting therefrom, a socket for a single lamp may be connected directly with the lower end of the tube C.

Each metal strip *j j* carries at its upper end a contact-spring, *k*, which bears against one of the strips *d d* in the grooves *c c*, and is guided by the projecting sides of the groove, a sliding electrical contact thus being provided. A washer, *l*, of an insulating substance, preferably leather, is attached to the lower end of rod A, to cause a certain amount of friction between said rod and the outer tube. By this means the parts are better guided, and the nice adjustment of the counterpoise weight or weights which support the outer tube at the desired height is rendered unnecessary. The contact-springs *k* assist also in this by their friction. Such counterpoise-weights are arranged preferably as follows:

To fingers *m m*, projecting from the tube C, are attached chains or cords *n n*, passing over pulleys *o o*, which are supported by arms *p p*, projecting from the block *e*. To the chains *n n* are suspended weights *q q*, which are shown as connected together, both being attached to a ring, *r*, encircling and sliding upon the tube C; but the weights may be separate, if desired, and one weight alone could be used.

The counter-weights used in an extension-electrolier and in connection with the sliding electrical contacts have an especial advantage not possessed by counter-weights when employed in an extension gas-chandelier. In an extension gas-chandelier it is necessary that the sliding part should pass through gas-tight stuffing-boxes, or be sealed gas-tight by means of a water-chamber. With the stuffing-boxes the counter-weights have to be made heavy enough to overcome the greater part of the excessive friction, and variations which occur in that friction cause the weights to raise the slide or make the slide stick fast. With the water-seal the evaporation of the water destroys the balance and makes the slide inoperative. In my extension-electrolier, however, the counter-weights are opposed only to the weight of the sliding part of the electrolier, which remains constant, only sufficient friction being provided by means of the contact-springs alone, or with the aid of the washer *l* or equivalent device, to avoid the necessity of an exact adjustment, and to overcome the slight additional weight thrown upon one side or the other by the cords or small chains at different degrees of extension.

The counter-weights in the extension-electrolier form an exceedingly cheap, durable, and efficient device for the purpose for which they are used.

The construction shown of sliding and stationary parts may be reversed, the tube C being attached above and the rod A secured to the distributing-body, so that the rod is moved up and down within the tube; but the arrangement shown is preferable, for here the conducting-strips are never exposed except near the top of the fixture, where they are out of reach, while if the rod slid out of the tube its conductors would be exposed whenever the lamps are lowered, in which case the danger of the occurrence of a short-circuit would be increased.

The supporting-rod A can be made, if desired, in the form shown in Fig. 4, the core *a* dividing the insulating portion into two parts, and being of an H shape, so as to inclose two sides of the insulation, the other two sides being grooved to hold the conducting-strips, as before. The insulation should, however, extend beyond the edges of the core, as shown, to prevent the possibility of a short-circuit.

Instead of the conducting-strips *j* within the tube C, wires may be run through the tube, extending downwardly from the contact-spring *k* and separated by insulation from the bands of the rod; or such wires may be placed in small tubes within or outside of the tube C; or a square tube might be placed inside the circular tube C and the wires run in the spaces between them.

The amount of insulating material necessary within the outer tube may be reduced by merely placing grooved strips of such material on two sides of the tube, opposite the metal bands of the inner rod, and omitting it on the remaining portion.

The peculiar supporting-rod A, carrying the contact strips or bands in grooves, may be applied to other forms of electrical fixtures besides extension-electroliers—such, for instance, as to extension wall-brackets or to adjustable stand-lamps. The application to adjustable stand-lamps is shown in Figs. 5 and 6, the form of supporting-rod illustrated in Fig. 4 being shown as used for the special purpose.

The rod A is supported upon a base, G, through which passes the flexible cord H, having its conductors secured to the strips or bands *d d;* or, if the base G is stationary, ordinary wires will be run up through or along the support to the inside of the base, where they will be secured to the strips *d d*.

I is a box sliding on the rod A, and secured at any point of adjustment by the set-screw I′. This sliding box has one or more lamp-arms, K, projecting therefrom, provided with incandescing electric lamps F. The wires 3 4 from each lamp-arm run to metal blocks or plates *s* within the box I, from which blocks or plates springs *t* project, pressing upon the bands *d d* of the supporting-rod A, and completing the circuit through the lamp or lamps.

What I claim is—

1. In extension or adjustable electrical fixtures, the rod of insulating material having a metallic core and supporting metallic conductors, substantially as set forth.

2. In extension or adjustable electrical fixtures, the metal contact strips or bands *d d* or *j j*, held in dovetail grooves of supporting insulation, substantially as set forth.

3. In extension or adjustable electrical fixtures, the combination, with supporting insulation having dovetail grooves, of the metal contact strips or bands held in such dovetail grooves, the edges of the grooves being extended beyond the surface of the metal strips or bands, substantially as set forth.

4. In electroliers, the combination, with the insulating-rod having a metallic core, of the conducting-strips placed in grooves in the sides of said insulating-rod, substantially as set forth.

5. The combination, with the inner rod of insulation, having a metal core, and the conducting-strips held in dovetail grooves in such rod, of the inclosing-tube carrying conductors, and contact-springs connected with the conductors of the inclosing-tube, and bearing upon the strips of the rod, substantially as set forth.

6. The combination, with the inner insulating-rod, having dovetailed grooves, which hold conducting-strips, of the outer inclosing-tube

lined with insulation, such insulation being provided with similar grooves holding corresponding conducting-strips, and contact-springs electrically connecting opposite strips, substantially as set forth.

7. In an extension-electrolier, the combination, with a rod of insulation having a strengthening-core, and provided with metal strips or bands held in dovetail grooves, and an inclosing-tube provided with conductors and contact-springs, of a counterpoise weight or weights proportioned to counterbalance the weight only of the movable part, substantially as set forth.

This specification signed and witnessed this 9th day of August, 1882.

LUTHER STIERINGER.

Witnesses:

WM. H. MEADOWCROFT,

H. W. SEELY.